Schattenwurfgutachten

Reinstedt Nord

Projektnummer: 100002595

Rev. 01

Gutachten zur Ermittlung des Schattenwurfs am Standort Reinstedt Nord

Wörrstadt, den 16.02.2024

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Revisionstabelle

Version	Erstellt	Geprüft	Änderung(en)	Auswirkung(en)	Datum
0	Erika Rosati	Marius Petry	-	-	04.04.2023
1	Marius Petry	Erika Rosati	Verschiebung der Anlagen, Änderung der VB	Änderung der Schattenzeiten	16.02.2024

1 Einleitung

Die JUWI GmbH plant am Standort Reinstedt Nord die Errichtung und den Betrieb von 2 Windenergieanlagen des Typs VESTAS V162-6.2MW-6.200 mit einer Nabenhöhe von 169 m. Im Rahmen des Genehmigungsverfahrens sind die zu erwartenden Schattenimmissionen nach den Grundlagen der „WKA-Schattenwurfhinweise“, welche durch die Bund/Länder-Arbeitsgemeinschaft Immissionsschutz (LAI) erarbeitet wurden, für die umliegenden Siedlungsräume zu ermitteln. Bei der Untersuchung und Beurteilung sind bereits bestehende, im Genehmigungsverfahren oder im Antrag auf Vorbescheid befindliche Windenergieanlagen als Vorbelastung zu berücksichtigen.

2 Grundlagen

2.1 Standortbeschreibung

Die zu beurteilenden Windenergieanlagen befinden sich im Bundesland Sachsen - Anhalt. Im Umkreis von etwa 5 km der geplanten Anlagen befinden sich die Ortschaften Reinstedt, Hoym, Nachterstedt, Frose, Wilsleben, Aschersleben, Westdorf, Welbsleben, Endorf und Ermsleben.

Südöstlich des Parks verläuft die Bundesstraße B 185. Im Nordosten verläuft die Landstraße L 85, die Autobahn A 36, sowie Bahntrassen, die nach Nordwesten verlaufen.

Der geplante Standort befindet sich auf als Acker genutzten Freiflächen. Eine Baumschule befindet sich in der Nähe des geplanten Windparks. Die neu geplanten Anlagen sind bereits unmittelbar von Bestandanlagen umgeben. Bei den Bestandsanlagen handelt es sich um 14x Enercon E-82, 5x mit einer Nabenhöhe von 138,3 m und 9x mit einer Nabenhöhe von 108,3 m, 1x Enercon E-70 mit einer Nabenhöhe von 98 m sowie 1x NEG MICON NM72 mit einer Nabenhöhe von 98 m. Ferner wird das von Juwi beantragte Projekt Reinstedt 1+2+3, bestehend aus 9x Vestas V162-6.2MW + 2x Vestas V150-6.0MW mit einer Nabenhöhe von 169 m und das von SAB beantragte Projekt, bestehend aus 4x Vestas V162 mit einer Nabenhöhe von 169 m, als Vorbelastung berücksichtigt.

2.2 Anlagenbeschreibung

Bei den am Standort Reinstedt Nord geplanten Windenergieanlagen handelt es sich um Windenergieanlagen des Typs VESTAS V162-6.2MW-6.200 mit jeweils 6200 Kilowatt Nennleistung, einem Rotordurchmesser von 162 m und einer Nabenhöhe von 169 m.

In Tabelle 2.2-1 sind die technischen Daten und Koordinaten zu den geplanten Windenergieanlagen aufgeführt.

WEA-Nr.	WEA-Typ	Leistung	Naben-höhe	Rotor ∅	Standort-höhe	Gesamt-höhe	Koordinaten in UTM (north)-ETRS89 Zone: 32	
		[kW]	[m]	[m]	[m]	[m]	Rechtswert	Hochwert
WEA 14	VESTAS V162-6.2MW-6.200	6.200	169,0	162,0	138,4	388,4	665.022	5.738.335
WEA 15	VESTAS V162-6.2MW-6.200	6.200	169,0	162,0	139,0	389,0	665.473	5.738.197

Tabelle 2.2-1: Technische Daten der geplanten Windenergieanlagen

In Tabelle 2.2-2 werden die als Vorbelastung zu berücksichtigenden Windenergieanlagen beschrieben.

WEA-Nr.	WEA-Typ	Status	Leistung	Naben-höhe	Rotor∅	Standort-höhe	Gesamt-höhe	Koordinaten in UTM (north)-ETRS89 Zone: 32	
			[kW]	[m]	[m]	[m]	[m]	Rechtswert	Hochwert
01B	ENERCON E-82-2.000	Bestand	2.000	108,3	82,0	139,8	289,1	664.192	5.738.461
02B	ENERCON E-82-2.000	Bestand	2.000	108,3	82,0	140,0	289,3	664.575	5.738.313
05B	ENERCON E-82-2.000	Bestand	2.000	108,3	82,0	141,0	290,3	664.055	5.738.194
06B	NEG MICON NM72-1500C-1.500/400	Bestand	1.500	98,0	72,0	141,8	275,8	664.317	5.737.897
09B	ENERCON E-82-2.000	Bestand	2.000	108,3	82,0	141,7	291,0	665.588	5.737.475
10B	ENERCON E-82-2.000	Bestand	2.000	108,3	82,0	142,7	292,0	663.925	5.737.920
11B	ENERCON E-82-2.000	Bestand	2.000	108,3	82,0	143,5	292,8	664.218	5.737.592
13B	ENERCON E-82-2.000	Bestand	2.000	108,3	82,0	144,0	293,3	663.801	5.737.659
14B	ENERCON E-82-2.000	Bestand	2.000	138,3	82,0	145,1	324,4	663.990	5.737.275
15B	ENERCON E-82-2.000	Bestand	2.000	138,3	82,0	144,8	324,1	664.353	5.737.210
18B	ENERCON E-82-2.000	Bestand	2.000	138,3	82,0	147,8	327,1	663.679	5.737.097
19B	ENERCON E-82-2.000	Bestand	2.000	138,3	82,0	147,9	327,2	664.036	5.736.897
20B	ENERCON E-82-2.000	Bestand	2.000	138,3	82,0	145,7	325,0	664.405	5.736.922
27B	ENERCON E-82-2.000	Bestand	2.000	108,3	82,0	144,5	293,8	665.341	5.736.504
28B	ENERCON E-82-2.000	Bestand	2.000	108,3	82,0	144,3	293,6	665.573	5.736.394
29B	ENERCON E-70 E4-2.000	Bestand	2.000	98,2	71,0	151,0	284,7	664.426	5.736.423
SAB W1	VESTAS V162-5.6MW-5.600	beantragt	5.600	169,0	162,0	139,2	389,2	665.887	5.737.960
SAB W2	VESTAS V162-5.6MW-5.600	beantragt	5.600	169,0	162,0	141,7	391,7	666.117	5.737.565
SAB W3	VESTAS V162-5.6MW-5.600	beantragt	5.600	169,0	162,0	142,2	392,2	665.875	5.737.247
SAB W4	VESTAS V162-5.6MW-5.600	beantragt	5.600	169,0	162,0	143,3	393,3	666.355	5.737.175
WEA 02	VESTAS V162-6.2MW-6.200	genehmigt	6.200	169,0	162,0	142,6	392,6	664.581	5.737.492
WEA 03	VESTAS V162-6.2MW-6.200	genehmigt	6.200	169,0	162,0	141,1	391,1	664.853	5.737.776
WEA 04	VESTAS V162-6.2MW-6.200	genehmigt	6.200	169,0	162,0	141,0	391,0	665.250	5.737.709
WEA 06	VESTAS V150-6.0MW-6.000	beantragt	6.000	169,0	150,0	142,8	386,8	665.380	5.737.130
WEA 07	VESTAS V150-6.0MW-6.000	beantragt	6.000	169,0	150,0	143,7	387,7	665.260	5.736.843
WEA 08	VESTAS V162-6.2MW-6.200	genehmigt	6.200	169,0	162,0	149,4	399,4	664.873	5.736.300
WEA 09	VESTAS V162-6.2MW-6.200	genehmigt	6.200	169,0	162,0	156,3	406,3	664.625	5.735.978
WEA 10	VESTAS V162-6.2MW-6.200	genehmigt	6.200	169,0	162,0	143,5	393,5	664.863	5.737.172
WEA 11	VESTAS V162-6.2MW-6.200	genehmigt	6.200	169,0	162,0	145,7	395,7	664.747	5.736.744
WEA 12	VESTAS V162-6.2MW-6.200	genehmigt	6.200	169,0	162,0	157,1	407,1	664.199	5.736.129

WEA 13	VESTAS V162-6.2MW-6.200	genehmigt	6.200	169,0	162,0	152,6	402,6	664.060	5.736.520

Tabelle 2.2-2: Technische Daten der als Vorbelastung zu berücksichtigenden Windenergieanlagen

Die Standorthöhen wurden anhand des digitalen Geländemodells „DGM50“ mit einer Gitterweite von 50 m ermittelt. Dieses Modell weist eine Höhenungenauigkeit je nach Geländetyp von +/- 1 bis 4 m auf.[1]

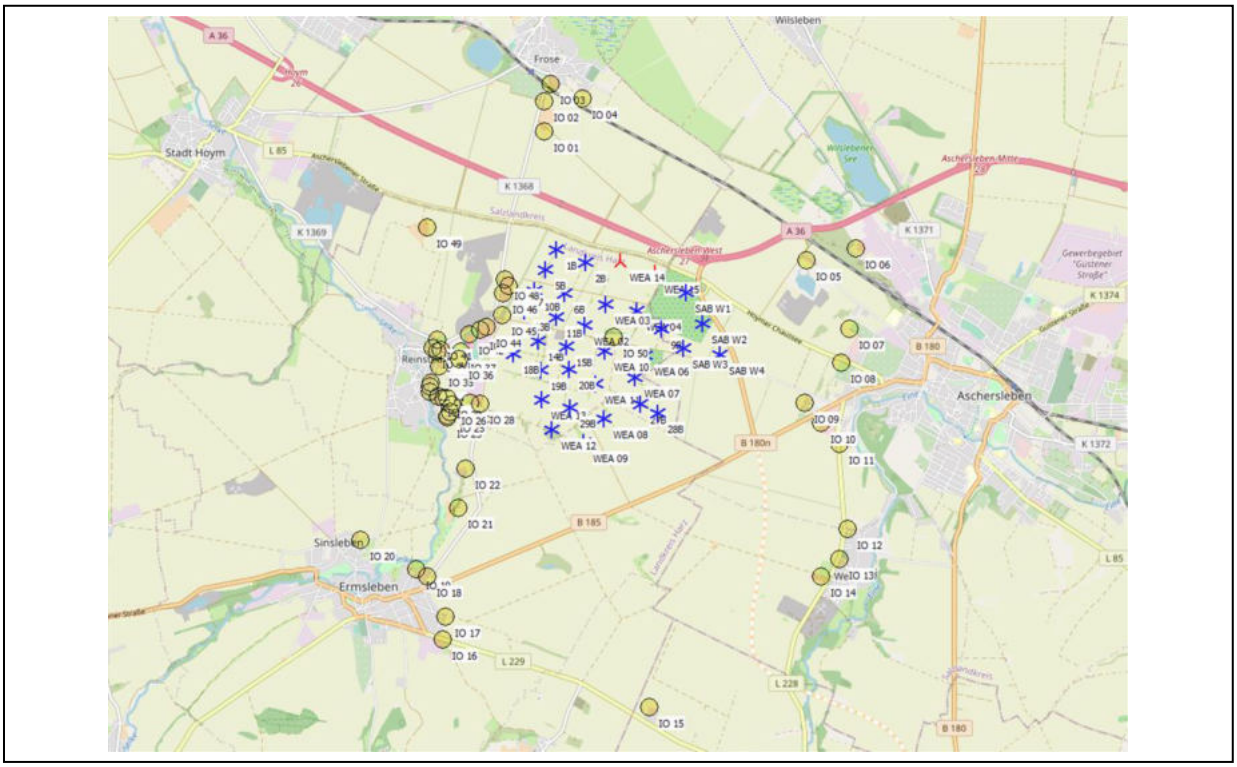


Abbildung 2.2: Darstellung der berücksichtigten Windenergieanlagen und Immissionsorte

2.3 Betriebszeiten

Für eine Untersuchung der von den geplanten Windenergieanlagen ausgehenden möglichen Schattenimmissionen sind nur die Zeiten zwischen Sonnenaufgang und

[1] Quelle der Information: https://sg.geodatenzentrum.de/web_public/gdz/dokumentation/deu/dgm50.pdf (2016)

Sonnenuntergang von Belang. Diese ändern sich je nach Jahreszeit und werden in der Untersuchung berücksichtigt.
Es ist vorgesehen, die geplanten Windenergieanlagen kontinuierlich über die Zeit zwischen Sonnenaufgang und Sonnenuntergang zu betreiben.

2.4 Berechnungsgrundlagen

Der Schattenwurf von Windenergieanlagen auf sich dahinter befindliche Objekte wird durch folgende Faktoren beeinflusst:

- Position und technische Parameter der Windenergieanlage
- Position des Immissionsortes sowie die Ausdehnung des Immissionsortes
- Geographische Lage des Standortes
- Sonnenstand in Abhängigkeit der Neigung der Erdachse, Erdrotation und Laufbahn der Erde um die Sonne

Mit Hilfe des Moduls „Shadow“ in dem Simulationsprogramm WindPRO kann der Schattenwurf, der durch die Rotation der Rotorblätter verursacht wird, in der räumlichen Umgebung einer oder mehrerer Windenergieanlagen berechnet und dokumentiert werden.

Anhand so genannter „Schattenrezeptoren“ wird dabei der Schattenwurf für einzelne Immissionsorte (z. B. die nächstgelegenen Wohnbebauungen) berechnet. Ergebnis ist neben der absoluten jährlichen Schattenwurfdauer auch eine kalendarische Darstellung der zeitlichen Verteilung des Schattenwurfs.
Zudem wird auf Schattenwurfkarten das Berechnungsergebnis mittels Isolinien (Linien gleicher Schattenwurfdauer im Jahr) graphisch dargestellt.

Für die Berechnung der Schattenimmissionen wird der Sonnenverlauf über ein Jahr in 1-Minuten-Schritten simuliert und für jeden Schritt der Schattenwurf an den Rezeptorflächen (Schattenrezeptor) berechnet.

2.5 „Worst-Case“-Betrachtung

In der „Worst-Case“-Betrachtung wird dabei vereinfacht angenommen, dass:

- die Sonne den ganzen Tag, an allen Tagen im Jahr scheint (wolkenloser Himmel).
- alle Windenergieanlagen ständig in Betrieb sind und sich drehen.
- die Windrichtung dem Azimutwinkel der Sonne entspricht, d. h. die Sonneneinstrahlung senkrecht zur Rotorkreisfläche steht (so wird die maximal mögliche Schattenimmission ermittelt).

Im Mai 2002 wurden vom LAI die „Hinweise zur Ermittlung und Beurteilung der optischen Immissionen von Windkraftanlagen“ beschlossen und den Ländern empfohlen, sich daran zu orientieren. Eine Aktualisierung der „WKA-Schattenwurfhinweise“[2] wurde im Januar 2020 veröffentlicht. Kern der Empfehlung ist, dass 30 Stunden astronomisch maximal möglicher Schattenwurf im Jahr bzw. 30 Minuten astronomisch maximal möglicher Schattenwurf am Tag („Worst-Case“-Annahme) als zumutbar eingeschätzt werden.
Diese Werte werden derzeit von den Genehmigungsbehörden als Richtwert angesehen. Die durchgeführte Berechnung basiert auf den „Worst-Case“-Annahmen.

Bei einer Überschreitung der in diesem Schattenwurfgutachten geprüften Richtwerte kann durch eine Schattenabschaltautomatik der Windenergieanlagen die Einhaltung der Richtwerte an den Immissionsorten sichergestellt und dokumentiert werden.

[2] Quelle: https://www.lai-immissionsschutz.de/documents/wka_schattenwurfhinweise_stand_23_1588595757.01 (23.01.2020)

Die Abschaltautomatik steuert dabei die jeweilige Windenergieanlage und schaltet diese individuell ab. Anhand von Sonnenstand, Sonnenscheinintensität (gemessen mittels eines Helligkeitssensors) und Windrichtung wird kontinuierlich ermittelt, ob es zu einer Schattenimmission an einem kritischen Immissionsort kommt. Sofern der zulässige Richtwert der maximalen Schattenimmission erreicht ist, wird die Windenergieanlage automatisch gestoppt. Der Betrieb der jeweiligen Windenergieanlage wird erst dann wieder aufgenommen, wenn ausgeschlossen ist, dass es an einem Immissionsort, bei dem der Richtwert bereits erreicht wurde, zu weiterem Schattenwurf kommt (vgl. Kapitel 2.7).

2.6 Realitätsnahe Schattenwurfdauer

Die tatsächliche Schattenwurfdauer ist deutlich geringer als jene der „Worst-Case“-Betrachtung. Vor allem Bewölkung, Windrichtungsverteilung und Stillstandzeiten reduzieren die tatsächliche Schattenwurfdauer erkennbar.

Diese realitätsnahen Werte über den tatsächlich zu erwartenden Schattenwurf können ebenfalls berechnet werden (meteorologisch wahrscheinliche Beschattungsdauer). In die Berechnung fließen statistische Informationen über die monatliche Sonnenscheinwahrscheinlichkeit, die Windrichtungsverteilung und die Betriebsstunden ein.

Die monatliche Sonnenscheinwahrscheinlichkeit beschreibt das Verhältnis zwischen den zu erwartenden Sonnenscheinstunden eines Monats zu den Gesamt-Tagesstunden des jeweiligen Monats. Die Daten über die monatliche Sonnenwahrscheinlichkeit werden einer nahe gelegenen, repräsentativen Klimastation entnommen.

Die Windrichtungsverteilung sowie die zu erwartenden Betriebsstunden werden einer vorab durchgeführten Ertragsberechnung entnommen.

2.7 Tatsächliche Schattenwurfdauer

Bei Überschreitungen der „Worst-Case“-Annahmen ist durch geeignete Maßnahmen die Einhaltung der Immissionsschutzanforderungen zu gewährleisten, in der Regel über den Einsatz einer Abschaltautomatik.

Wird eine Abschaltautomatik eingesetzt, die meteorologische Parameter berücksichtigt (z. B. Intensität des Sonnenlichtes), wird die tatsächliche Beschattungsdauer vom LAI nach den „WKA-Schattenwurfhinweisen“ auf 8 Stunden/Jahr und 30 Minuten/Tag begrenzt.

2.8 Immissionsorte

Die in der Berechnung berücksichtigten Immissionsorte werden in Tabelle 2.8 dargestellt. Die Immissionsorte stellen nach den „WKA-Schattenwurfhinweisen“ schutzwürdige Gebäude beziehungsweise Räume dar, die eine tägliche Nutzung aufweisen. Dazu zählen unter anderem:

- Wohnräume, einschließlich Wohndielen,
- Schlafräume, einschließlich Übernachtungsräume in Beherberungsstätten und Bettenräume in Krankhäusern und Sanatorien,
- Unterrichtsräume in Schulen, Hochschulen und ähnlichen Einrichtungen,
- Büroräume, Praxisräume, Arbeitsräume, Schulungsräume
- direkt an Gebäuden beginnende Außenflächen (z.B. Terrassen und Balkone)

Immissionsorte die in der „Worst-Case“-Betrachtung eine Überschreitung der gültigen Richtwerte durch die Gesamtbelastung (vgl. Kapitel 3.3) erfahren, werden kurz vor oder bei Baubeginn durch ein externes Unternehmen erfasst und vermessen. Dieses Vermessungsprotokoll beinhaltet die Koordinaten, Abmaße, Ausrichtung, Gebäudetyp sowie Höhe über NN und bildet die Grundlage für die Einprogrammierung schutzbedürftiger Gebäude in der Abschaltautomatik. Dadurch ist gewährleistet, dass

alle Bereiche in der schattenkritischen Umgebung berücksichtigt und vor unzulässiger Schattenimmission geschützt sind.

IO	Bezeichnung IO	Koordinaten in UTM (north)-ETRS89 Zone: 32		Höhe über Normal-höhennull	Nächst-gelegene WEA	Entfernung
		Rechtswert	Hochwert	[m]		[m]
IO 01	Frose - Reinstedter Str. - Industrie	663.985	5.739.985	131,2	WEA 14	1.949
IO 02	Frose - Reinstedter Str. 1	663.975	5.740.369	128,9	WEA 14	2.288
IO 03	Frose - Vor dem Bahnhof 274E	664.043	5.740.595	127,1	WEA 14	2.463
IO 04	Frose - Wohngebiet	664.463	5.740.418	126,4	WEA 14	2.157
IO 05	Aschersleben - Außenbereich	667.439	5.738.423	116,9	WEA 15	1.979
IO 06	Aschersleben - MAWEA	668.069	5.738.608	109,6	WEA 15	2.628
IO 07	Aschersleben - Am Hangelsberg	668.027	5.737.557	132,4	WEA 15	2.633
IO 08	Aschersleben - Am Chausee 23	667.933	5.737.122	142,7	WEA 15	2.685
IO 09	Aschersleben - Am Harzblick 49	667.477	5.736.590	147,3	WEA 15	2.569
IO 10	Aschersleben - Am Harzblick 45	667.694	5.736.334	147,4	WEA 15	2.899
IO 11	Aschersleben - Über der Eine 18A	667.947	5.736.066	147,2	WEA 15	3.265
IO 12	Westdorf - Am Landgraben 1A	668.079	5.734.974	149,2	WEA 15	4.145
IO 13	Westdorf - Aschersleben Str. 2A	667.987	5.734.573	149,9	WEA 15	4.411
IO 14	Westdorf - Autoverwertung Lorenz	667.759	5.734.343	155,8	WEA 15	4.481
IO 15	Welbsleben - Außenbereich	665.590	5.732.580	186,5	WEA 15	5.618
IO 16	Ermsleben - KFZ Werkstatt	662.882	5.733.364	168,2	WEA 14	5.412
IO 17	Ermsleben - Neue Str.	662.906	5.733.663	162,0	WEA 14	5.129
IO 18	Ermsleben - Am Mittelweg	662.657	5.734.178	161,0	WEA 14	4.783
IO 19	Ermsleben - Mühlenstraße	662.513	5.734.267	150,6	WEA 14	4.780
IO 20	Ermsleben - Radislebener Weg	661.775	5.734.619	162,3	WEA 14	4.935
IO 21	Falkenstein - Mühlenstraße	663.024	5.735.076	149,2	WEA 14	3.823
IO 22	Strommühle	663.112	5.735.593	147,7	WEA 14	3.342
IO 23	Reinstedt - Forellenweg 10	662.845	5.736.237	140,6	WEA 14	3.023
IO 24	Reinstedt - Forellenweg 8	662.851	5.736.271	140,1	WEA 14	2.996
IO 25	Reinstedt - Forellenweg 6	662.876	5.736.316	140,1	WEA 14	2.946
IO 26	Reinstedt - Forellenweg 1	662.907	5.736.412	139,5	WEA 14	2.859
IO 27	Reinstedt - Ermslebener Straße 1	663.139	5.736.445	139,4	WEA 14	2.668
IO 28	Reinstedt - Alphabillard	663.274	5.736.434	139,3	WEA 14	2.582
IO 29	Reinstedt - Ermslebener Straße 11	662.841	5.736.488	139,0	WEA 14	2.858
IO 30	Reinstedt - Ermslebener Straße 8	662.798	5.736.491	138,9	WEA 14	2.889
IO 31	Reinstedt - Ermslebener Straße 5B	662.725	5.736.507	138,8	WEA 14	2.936
IO 32	Reinstedt - Schielestraße 1	662.607	5.736.564	137,8	WEA 14	2.995
IO 33	Reinstedt - Schielestraße 4a	662.615	5.736.644	137,8	WEA 14	2.942
IO 34	Reinstedt - Schielestraße 6	662.626	5.736.685	137,6	WEA 14	2.909
IO 35	Reinstedt - Wiedemann	662.715	5.736.901	137,3	WEA 14	2.716
IO 36	Reinstedt - Solarpark	662.972	5.737.006	137,5	WEA 14	2.443
IO 37	Reinstedt - Fußballplatz	662.994	5.737.096	138,0	WEA 14	2.377

IO 38	Reinstedt - Neu-Seeland Agrar	662.740	5.737.113	137,0	WEA 14	2.589
IO 39	Reinstedt - Unterdorf 66a	662.695	5.737.092	136,9	WEA 14	2.638
IO 40	Reinstedt - Schielestraße	662.633	5.737.132	136,5	WEA 14	2.675
IO 41	Reinstedt - Siedlung 15	662.682	5.737.242	136,7	WEA 14	2.583
IO 42	Reinstedt - Hotel Harz-Ring	663.093	5.737.326	134,3	WEA 14	2.177
IO 43	Reinstedt - Bauschuttrecycling	663.240	5.737.394	137,7	WEA 14	2.015
IO 44	Reinstedt - Bauschuttrecycling 2	663.322	5.737.428	142,9	WEA 14	1.927
IO 45	Reinstedt - alter Bahnhof	663.519	5.737.594	144,4	WEA 14	1.680
IO 46	Reinstedt - Solarpark	663.520	5.737.871	143,4	WEA 14	1.572
IO 47	Reinstedt - Metallbau Klug	663.591	5.737.975	143,2	WEA 14	1.476
IO 48	Reinstedt - ACZ Transport	663.531	5.738.047	143,1	WEA 14	1.519
IO 49	Reinstedt - Danpower Energie Service	662.505	5.738.693	139,3	WEA 14	2.542
IO 50	Reinstedt - Mitteldeutsche Baumschulen	664.973	5.737.351	143,3	WEA 15	983

Tabelle 2.8: Beschreibung der Immissionsorte

Da es sich bei IO 45 um eine leerstehende Ruine handelt, wurde dieser Immissionsort nicht in den Berechnungen berücksichtigt.

3 Berechnungsergebnis

Im Zuge der Berechnung werden die von den Windenergieanlagen verursachte Vor-, Zusatz- und die Gesamtbelastung jeweils getrennt berechnet.

Dabei berücksichtigt die Berechnung der Vorbelastung nur Windenergieanlagen, die schon in der Umgebung des geplanten Standortes bestehen oder bereits im Genehmigungsverfahren sind beziehungsweise für die ein Antrag auf Vorbescheid gestellt wurde.

In der Berechnung der Zusatzbelastung werden die zusätzlichen, durch die neu geplanten Windenergieanlagen verursachten Schattenimmissionen berechnet.

Die Gesamtbelastung bestimmt die Schattenimmissionen der Vor- und Zusatzbelastung zusammen. Kommt es bereits durch die zu berücksichtigende Vorbelastung zu Immissionen, so müssen diese im Hinblick auf eventuelle Überschreitungen in der Betrachtung der Gesamtbelastung berücksichtigt werden. Sind in der Nähe des geplanten Windparks keine existierenden oder beantragten Windenergieanlagen vorhanden, so werden nur die neu geplanten

Windenergieanlagen berechnet. In diesem Fall spricht man von einer Neubelastung anstatt einer Gesamtbelastung.

Für alle Immissionsorte wurde als Berechnungsmethode der „Gewächshausmodus“ gewählt. Dies hat den Vorteil, dass unabhängig von der Richtung, aus der die Immission am Immissionsort ankommt, eine Immission registriert wird.

In den folgenden Tabellen werden die Ergebnisse der „Worst-Case“-Berechnung den Ergebnissen der realitätsnahen Betrachtung gegenübergestellt, um den reduzierenden Einfluss der tatsächlichen Sonnenscheindauer, der Windrichtungsverteilung und der Stillstandswahrscheinlichkeit zu verdeutlichen. Die Berechnung des meteorologisch wahrscheinlichen Schattenwurfs wird in WindPRO auf Basis der „Worst-Case“-Ergebnisse und eines mittleren statistischen Reduktionsfaktors, bestehend aus den oben genannten Einzelfaktoren, berechnet.

In den Reduktionsfaktor der Stillstandswahrscheinlichkeit geht dabei unter anderem die mittlere Einschaltgeschwindigkeit der berücksichtigten Windenergieanlagen ein. Eine höhere Einschaltgeschwindigkeit bedingt eine prozentual gesehen niedrigere Betriebsdauer. Gehen unterschiedliche Windenergieanlagentypen in die Berechnung ein, wird ein über alle berücksichtigten Windenergieanlagen gemittelter Wert für die Einschaltgeschwindigkeit verwendet. Als mögliche Konsequenz kann es zu abweichenden Ergebnissen in der realitätsnahen Betrachtung zwischen Vor-, Zusatz- und Gesamtbelastung kommen, wenn die Zusammensetzung der berücksichtigten Windenergieanlagentypen in den einzelnen Berechnungen nicht identisch ist (siehe Anhang 5.3).

Die detaillierten Ergebnisse der Vor-, Zusatz- und Gesamtbelastung können dem Anhang entnommen werden. Ergänzend befinden sich dort auch Grafiken der Ergebnisse mit Rasterdarstellungen und Isolinien der relevanten Beschattungszeiten.

3.1 Vorbelastung

Die Berechnungsergebnisse der „Worst-Case“-Annahme zur Vorbelastung sind für jeden Immissionsort in Tabelle 3.1 dargestellt.

IO	Bezeichnung IO	Schattenwurfdauer Worst-Case		realitätsnahe Schattenwurf-dauer
		gesamt [hh:mm / Jahr]	maximal [hh:mm / Tag]	gesamt [hh:mm / Jahr]
IO 01	Frose - Reinstedter Str. - Industrie	00:00	00:00	00:00
IO 02	Frose - Reinstedter Str. 1	00:00	00:00	00:00
IO 03	Frose - Vor dem Bahnhof 274E	00:00	00:00	00:00
IO 04	Frose - Wohngebiet	00:00	00:00	00:00
IO 05	Aschersleben - Außenbereich	**50:10**	00:28	07:57
IO 06	Aschersleben - MAWEA	00:00	00:00	00:00
IO 07	Aschersleben - Am Hangelsberg	14:14	00:22	03:06
IO 08	Aschersleben - Am Chausee 23	17:46	00:24	04:31
IO 09	Aschersleben - Am Harzblick 49	**41:43**	**00:32**	10:24
IO 10	Aschersleben - Am Harzblick 45	23:47	00:26	05:45
IO 11	Aschersleben - Über der Eine 18A	00:01	00:01	00:00
IO 12	Westdorf - Am Landgraben 1A	00:00	00:00	00:00
IO 13	Westdorf - Aschersleben Str. 2A	00:00	00:00	00:00
IO 14	Westdorf - Autoverwertung Lorenz	00:00	00:00	00:00
IO 15	Welbsleben - Außenbereich	00:00	00:00	00:00
IO 16	Ermsleben - KFZ Werkstatt	00:00	00:00	00:00
IO 17	Ermsleben - Neue Str.	00:00	00:00	00:00
IO 18	Ermsleben - Am Mittelweg	00:00	00:00	00:00
IO 19	Ermsleben - Mühlenstraße	00:00	00:00	00:00
IO 20	Ermsleben - Radislebener Weg	00:00	00:00	00:00
IO 21	Falkenstein - Mühlenstraße	20:08	00:22	05:22
IO 22	Strommühle	**75:29**	**00:49**	20:04
IO 23	Reinstedt - Forellenweg 10	**56:09**	**00:43**	13:54
IO 24	Reinstedt - Forellenweg 8	**54:57**	**00:43**	13:31
IO 25	Reinstedt - Forellenweg 6	**55:53**	**00:44**	13:37
IO 26	Reinstedt - Forellenweg 1	**74:13**	**00:51**	17:52
IO 27	Reinstedt - Ermslebener Straße 1	**122:37**	**01:03**	30:06
IO 28	Reinstedt - Alphabillard	**118:09**	**01:10**	29:14
IO 29	Reinstedt - Ermslebener Straße 11	**63:23**	**00:49**	15:11
IO 30	Reinstedt - Ermslebener Straße 8	**49:07**	**00:48**	11:16
IO 31	Reinstedt - Ermslebener Straße 5B	**49:29**	**00:45**	11:25
IO 32	Reinstedt - Schielestraße 1	**32:32**	00:26	07:32
IO 33	Reinstedt - Schielestraße 4a	**35:43**	00:26	08:21
IO 34	Reinstedt - Schielestraße 6	**36:17**	00:27	08:29
IO 35	Reinstedt - Wiedemann	**57:22**	**00:43**	12:56
IO 36	Reinstedt - Solarpark	**111:30**	**01:01**	25:08
IO 37	Reinstedt - Fußballplatz	**113:09**	**00:56**	24:28
IO 38	Reinstedt - Neu-Seeland Agrar	**63:26**	**00:33**	14:19
IO 39	Reinstedt - Unterdorf 66a	**60:01**	**00:32**	13:40

IO 40	Reinstedt - Schielestraße	**50:26**	00:29	11:23
IO 41	Reinstedt - Siedlung 15	**53:11**	00:25	11:24
IO 42	Reinstedt - Hotel Harz-Ring	**145:50**	**00:42**	28:42
IO 43	Reinstedt - Bauschuttrecycling	**200:31**	**01:04**	37:35
IO 44	Reinstedt - Bauschuttrecycling 2	**227:57**	**01:13**	43:09
IO 46	Reinstedt - Solarpark	**242:46**	**01:31**	46:40
IO 47	Reinstedt - Metallbau Klug	**262:49**	**01:28**	48:24
IO 48	Reinstedt - ACZ Transport	**213:32**	**01:10**	38:12
IO 49	Reinstedt - Danpower Energie Service	00:35	00:06	00:06
IO 50	Reinstedt - Mitteldeutsche Baumschulen	**832:48**	**04:43**	156:34

Tabelle 3.1: Ergebnis der Schattenwurfberechnung für die Vorbelastung

3.2 Zusatzbelastung

Die Berechnungsergebnisse für die zu berücksichtigenden Windenergieanlagen sind in Tabelle 3.2 dargestellt.

IO	Bezeichnung IO	Schattenwurfdauer Worst-Case		realitätsnahe Schattenwurf-dauer
		gesamt [hh:mm / Jahr]	maximal [hh:mm / Tag]	gesamt [hh:mm / Jahr]
IO 01	Frose - Reinstedter Str. - Industrie	00:00	00:00	00:00
IO 02	Frose - Reinstedter Str. 1	00:00	00:00	00:00
IO 03	Frose - Vor dem Bahnhof 274E	00:00	00:00	00:00
IO 04	Frose - Wohngebiet	00:00	00:00	00:00
IO 05	Aschersleben - Außenbereich	05:51	00:19	01:13
IO 06	Aschersleben - MAWEA	00:00	00:00	00:00
IO 07	Aschersleben - Am Hangelsberg	00:00	00:00	00:00
IO 08	Aschersleben - Am Chausee 23	00:00	00:00	00:00
IO 09	Aschersleben - Am Harzblick 49	00:00	00:00	00:00
IO 10	Aschersleben - Am Harzblick 45	00:00	00:00	00:00
IO 11	Aschersleben - Über der Eine 18A	00:00	00:00	00:00
IO 12	Westdorf - Am Landgraben 1A	00:00	00:00	00:00
IO 13	Westdorf - Aschersiebener Str. 2A	00:00	00:00	00:00
IO 14	Westdorf - Autoverwertung Lorenz	00:00	00:00	00:00
IO 15	Welbsleben - Außenbereich	00:00	00:00	00:00
IO 16	Ermsleben - KFZ Werkstatt	00:00	00:00	00:00
IO 17	Ermsleben - Neue Str.	00:00	00:00	00:00
IO 18	Ermsleben - Am Mittelweg	00:00	00:00	00:00
IO 19	Ermsleben - Mühlenstraße	00:00	00:00	00:00
IO 20	Ermsleben - Radislebener Weg	00:00	00:00	00:00

IO 21	Falkenstein - Mühlenstraße	00:00	00:00	00:00
IO 22	Strommühle	00:00	00:00	00:00
IO 23	Reinstedt - Forellenweg 10	00:00	00:00	00:00
IO 24	Reinstedt - Forellenweg 8	00:00	00:00	00:00
IO 25	Reinstedt - Forellenweg 6	00:00	00:00	00:00
IO 26	Reinstedt - Forellenweg 1	00:00	00:00	00:00
IO 27	Reinstedt - Ermslebener Straße 1	00:00	00:00	00:00
IO 28	Reinstedt - Alphabillard	00:00	00:00	00:00
IO 29	Reinstedt - Ermslebener Straße 11	00:00	00:00	00:00
IO 30	Reinstedt - Ermslebener Straße 8	00:00	00:00	00:00
IO 31	Reinstedt - Ermslebener Straße 5B	00:00	00:00	00:00
IO 32	Reinstedt - Schielestraße 1	00:00	00:00	00:00
IO 33	Reinstedt - Schielestraße 4a	00:00	00:00	00:00
IO 34	Reinstedt - Schielestraße 6	00:00	00:00	00:00
IO 35	Reinstedt - Wiedemann	00:00	00:00	00:00
IO 36	Reinstedt - Solarpark	00:00	00:00	00:00
IO 37	Reinstedt - Fußballplatz	00:00	00:00	00:00
IO 38	Reinstedt - Neu-Seeland Agrar	00:00	00:00	00:00
IO 39	Reinstedt - Unterdorf 66a	00:00	00:00	00:00
IO 40	Reinstedt - Schielestraße	00:00	00:00	00:00
IO 41	Reinstedt - Siedlung 15	00:00	00:00	00:00
IO 42	Reinstedt - Hotel Harz-Ring	00:00	00:00	00:00
IO 43	Reinstedt - Bauschuttrecycling	10:42	00:20	02:59
IO 44	Reinstedt - Bauschuttrecycling 2	12:00	00:21	03:20
IO 46	Reinstedt - Solarpark	17:57	00:25	04:48
IO 47	Reinstedt - Metallbau Klug	19:13	00:26	04:58
IO 48	Reinstedt - ACZ Transport	17:23	00:25	04:24
IO 49	Reinstedt - Danpower Energie Service	00:00	00:00	00:00
IO 50	Reinstedt - Mitteldeutsche Baumschulen	00:00	00:00	00:00

Tabelle 3.2: Ergebnis der Schattenwurfberechnung für die Zusatzbelastung

3.3 Gesamtbelastung

Die Berechnungsergebnisse für die zu berücksichtigenden Windenergieanlagen der Gesamtbelastung sind in Tabelle 3.3-1 dargestellt.

IO	Bezeichnung IO	Schattenwurfdauer Worst-Case		realitätsnahe Schattenwurf-dauer
		gesamt [hh:mm / Jahr]	maximal [hh:mm / Tag]	gesamt [hh:mm / Jahr]
IO 01	Frose - Reinstedter Str. - Industrie	00:00	00:00	00:00

IO 02	Frose - Reinstedter Str. 1	00:00	00:00	00:00
IO 03	Frose - Vor dem Bahnhof 274E	00:00	00:00	00:00
IO 04	Frose - Wohngebiet	00:00	00:00	00:00
IO 05	Aschersleben - Außenbereich	**56:01**	00:28	09:10
IO 06	Aschersleben - MAWEA	00:00	00:00	00:00
IO 07	Aschersleben - Am Hangelsberg	14:14	00:22	03:05
IO 08	Aschersleben - Am Chausee 23	17:46	00:24	04:31
IO 09	Aschersleben - Am Harzblick 49	**41:44**	**00:32**	10:24
IO 10	Aschersleben - Am Harzblick 45	23:47	00:26	05:45
IO 11	Aschersleben - Über der Eine 18A	00:01	00:01	00:00
IO 12	Westdorf - Am Landgraben 1A	00:00	00:00	00:00
IO 13	Westdorf - Aschersleben Str. 2A	00:00	00:00	00:00
IO 14	Westdorf - Autoverwertung Lorenz	00:00	00:00	00:00
IO 15	Welbsleben - Außenbereich	00:00	00:00	00:00
IO 16	Ermsleben - KFZ Werkstatt	00:00	00:00	00:00
IO 17	Ermsleben - Neue Str.	00:00	00:00	00:00
IO 18	Ermsleben - Am Mittelweg	00:00	00:00	00:00
IO 19	Ermsleben - Mühlenstraße	00:00	00:00	00:00
IO 20	Ermsleben - Radislebener Weg	00:00	00:00	00:00
IO 21	Falkenstein - Mühlenstraße	20:08	00:22	05:22
IO 22	Strommühle	**75:29**	**00:49**	20:03
IO 23	Reinstedt - Forellenweg 10	**56:09**	**00:43**	13:53
IO 24	Reinstedt - Forellenweg 8	**54:57**	**00:43**	13:30
IO 25	Reinstedt - Forellenweg 6	**55:53**	**00:44**	13:36
IO 26	Reinstedt - Forellenweg 1	**74:12**	**00:51**	17:51
IO 27	Reinstedt - Ermslebener Straße 1	**122:37**	**01:03**	30:05
IO 28	Reinstedt - Alphabillard	**118:09**	**01:10**	29:13
IO 29	Reinstedt - Ermslebener Straße 11	**63:23**	**00:49**	15:10
IO 30	Reinstedt - Ermslebener Straße 8	**49:07**	**00:48**	11:15
IO 31	Reinstedt - Ermslebener Straße 5B	**49:29**	**00:45**	11:24
IO 32	Reinstedt - Schielestraße 1	**32:33**	00:26	07:32
IO 33	Reinstedt - Schielestraße 4a	**35:43**	00:26	08:20
IO 34	Reinstedt - Schielestraße 6	**36:17**	00:27	08:29
IO 35	Reinstedt - Wiedemann	**57:22**	**00:43**	12:55
IO 36	Reinstedt - Solarpark	**111:30**	**01:01**	25:07
IO 37	Reinstedt - Fußballplatz	**113:09**	**00:56**	24:27
IO 38	Reinstedt - Neu-Seeland Agrar	**63:26**	**00:33**	14:18
IO 39	Reinstedt - Unterdorf 66a	**60:01**	**00:32**	13:40
IO 40	Reinstedt - Schielestraße	**50:27**	00:29	11:23
IO 41	Reinstedt - Siedlung 15	**53:11**	00:25	11:24
IO 42	Reinstedt - Hotel Harz-Ring	**145:50**	**00:42**	28:41
IO 43	Reinstedt - Bauschuttrecycling	**209:42**	**01:04**	40:06
IO 44	Reinstedt - Bauschuttrecycling 2	**237:55**	**01:13**	45:52
IO 46	Reinstedt - Solarpark	**260:43**	**01:31**	51:25

IO 47	Reinstedt - Metallbau Klug	**281:38**	**01:28**	53:12
IO 48	Reinstedt - ACZ Transport	**228:20**	**01:10**	41:51
IO 49	Reinstedt - Danpower Energie Service	00:35	00:06	00:06
IO 50	Reinstedt - Mitteldeutsche Baumschulen	**832:48**	**04:43**	156:25

Tabelle 3.3-1: Ergebnis der Schattenwurfberechnung für die Gesamtbelastung

Die oben dargestellten Ergebnisse zeigen, dass die Immisionsorte IO 01, IO 02, IO 03, IO 04, IO 06, IO 12, IO 13, IO 14, IO 15, IO 16, IO 17, IO 18, IO 19 und IO 20 nicht von Schattenwurf durch die Vorbelastung oder Zusatzbelastung betroffen sind.
An den Immissionsorten IO 05, IO 09, IO 22, IO 23, IO 24, IO 25, IO 26, IO 27, IO 28, IO 29, IO 30, IO 31, IO 32, IO 33, IO 34, IO 35, IO 36, IO 37, IO 38, IO 39, IO 40, IO 41, IO 42, IO 43, IO 44, IO 46, IO 47, IO 48 und IO 50 kommt es bereits durch die Vorbelastung zu einer Ausschöpfung bzw. Überschreitung der Richtwerte. Eine Erhöhung der Beschattungszeiten durch die Zusatzbelastung ist an diesen Immissionsorten nicht zulässig.
Die Berechnungen zeigen, dass die Immisionsorte IO 05, IO 43, IO 44, IO 46, IO 47 und IO 48 im Einwirkungsbereich der geplanten Anlagen liegen.
In der Gesamtbelastung kommt es an folgenden Immissionsorten zu Überschreitungen der betrachten Richtwerte von 30 Stunden/Jahr bzw. 30 Minuten/Tag: IO 05, IO 09, IO 22, IO 23, IO 24, IO 25, IO 26, IO 27, IO 28, IO 29, IO 30, IO 31, IO 32, IO 33, IO 34, IO 35, IO 36, IO 37, IO 38, IO 39, IO 40, IO 41, IO 42, IO 43, IO 44, IO 46, IO 47, IO 48 und IO 50. Die nicht genannten Immissionsorte, die in diesem Schattenwurfgutachten betrachtet wurden, erfahren keine Überschreitung.

Die genannten Überschreitungen werden an den Immissionsorten IO 05, IO 43, IO 44, IO 46, IO 47 und IO 48 durch die Zusatzbelastung erhöht bzw. hervorgerufen. Zum Schutze der betroffenen Immissionsorte wird der Einbau einer Schattenabschaltautomatik empfohlen.

WEA-Nr.	Koordinaten in UTM (north)-ETRS89 Zone: 32		Schattenwurfdauer Worst-Case	
	Rechtswert	Hochwert	gesamt [hh:mm / Jahr]	maximal [hh:mm / Tag]
WEA 14	665.022	5.738.335	39:14	00:40
WEA 15	665.473	5.738.197	19:15	00:27

Tabelle 3.3-2: Geplante Windenergieanlagen mit Schattenwurfzeiten

4 Zusammenfassung

Für den Standort Reinstedt Nord wurde unter Berücksichtigung einer möglichen Vorbelastung von 16 bestehenden und 15 beantragten Windenergieanlagen eine Schattenberechnung für die in Abschnitt 2.8 vorgestellten Immissionsorte durchgeführt.

Die durchgeführten Berechnungen kommen zu dem Ergebnis, dass die in diesem Gutachten angesetzen Richtwerte in Höhe von 30 Stunden/Jahr und 30 Minuten/Tag für die Gesamtbelastung an folgenden Immissionsorten überschritten wird: IO 05, IO 09, IO 22, IO 23, IO 24, IO 25, IO 26, IO 27, IO 28, IO 29, IO 30, IO 31, IO 32, IO 33, IO 34, IO 35, IO 36, IO 37, IO 38, IO 39, IO 40, IO 41, IO 42, IO 43, IO 44, IO 46, IO 47, IO 48 und IO 50.

An den Immissionsorten IO 05, IO 43, IO 44, IO 46, IO 47 und IO 48 trägt die Zusatzbelastung zur Überschreitung der Richtwerte bei oder verursacht diese.

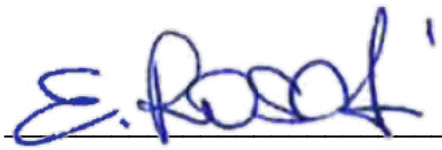
Aufgrund der Überschreitungen der angesetzen Richtwerte wird empfohlen, alle geplanten Windenergieanlagen mit einer Schattenabschaltautomatik (siehe Abschnitt 2.5) auszustatten. Mit der Einrichtung einer solchen Schattenabschaltautomatik werden die geltenden Richtwerte bezüglich des Schattenwurfs durch Windenergieanlagen an allen Immissionsorten eingehalten.
Unter Berücksichtigung der realen meteorologischen Gegebenheiten verringert sich die zu erwartende Schattenwurfdauer an allen Immissionsorten deutlich. Dieses

Gutachten macht über die technische Umsetzung der Schattenabschaltautomatik keine Aussagen, die Umsetzung am Windpark bleibt dem jeweiligen Hersteller bzw. Investor überlassen.

Erstellt: Marius Petry

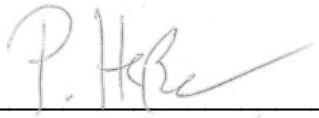
Wörrstadt, den 16.02.2024

Geprüft: Erika Rosati



Wörrstadt, den 19.02.2024

Freigegeben: Philipp Heße

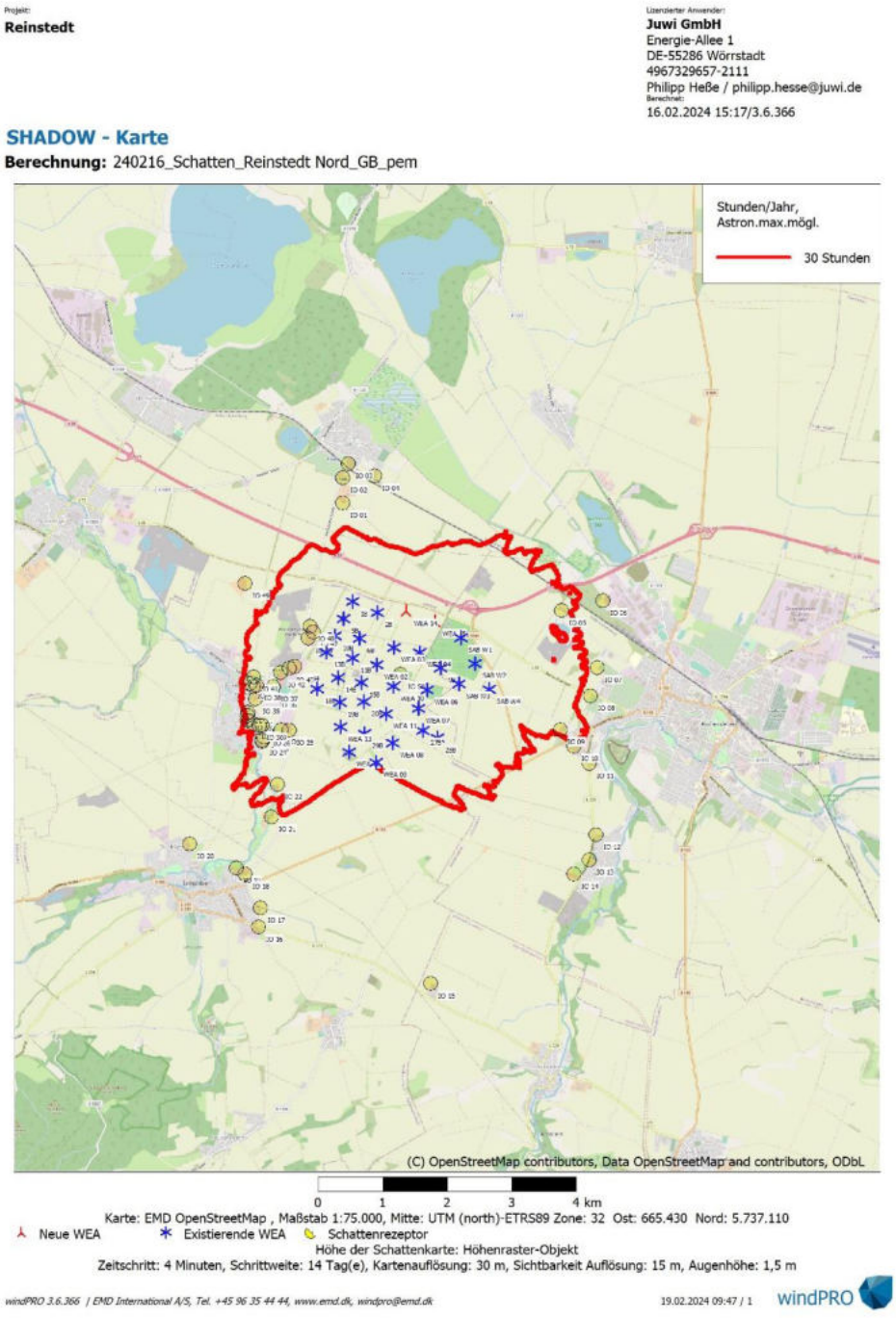


Wörrstadt, den 19.02.2024

5 Anhang

5.1 Schattenkarte der Gesamtbelastung

- Stunden/Jahr (astronomisch maximal möglich)



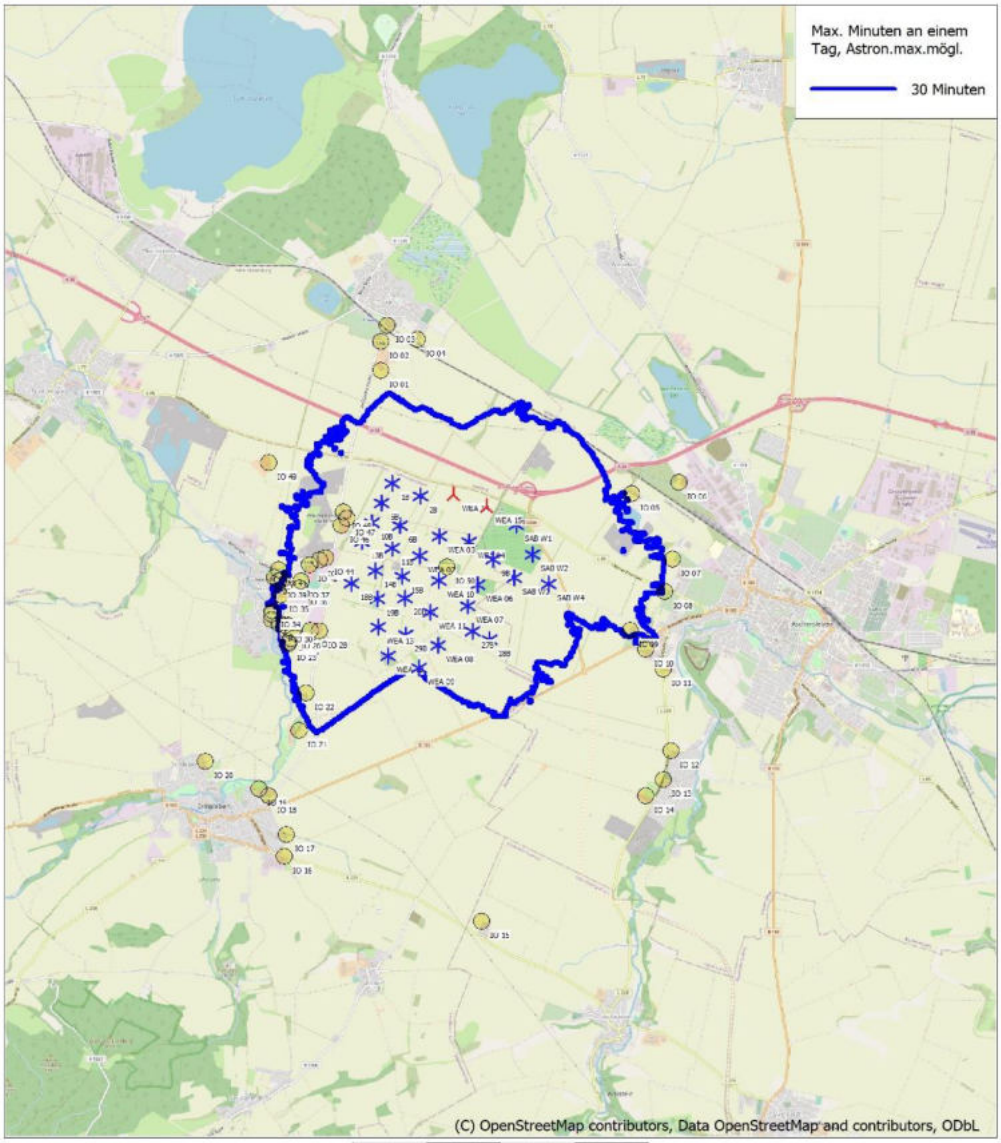
- Minuten/Tag (astronomisch maximal möglich)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Philipp Heße / philipp.hesse@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Karte

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem



0 1 2 3 4 km

Karte: EMD OpenStreetMap , Maßstab 1:75.000, Mitte: UTM (north)-ETRS89 Zone: 32 Ost: 665.430 Nord: 5.737.110

Neue WEA Existierende WEA Schattenrezeptor

Höhe der Schattenkarte: Höhenraster-Objekt

Zeitschritt: 4 Minuten, Schrittweite: 14 Tag(e), Kartenauflösung: 30 m, Sichtbarkeit Auflösung: 15 m, Augenhöhe: 1,5 m

5.2 Schattenberechnungsergebnis

5.2.1 Vorbelastung

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Hauptergebnis

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem

Annahmen für Schattenwurfberechnung

Beschattungsbereich der WEA
Schatten nur relevant, wo Rotorblatt mind. 20% der Sonne verdeckt
Siehe WEA-Tabelle

Minimale relevante Sonnenhöhe über Horizont	3 °
Tage zwischen Berechnungen	1 Tag(e)
Berechnungszeitsprung	1 Minuten

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsstunden ermittelt aus WEA in Berechnung und Windverteilung:
231123_WLS630_169m_1y_MCP_EU+_2022 (100)

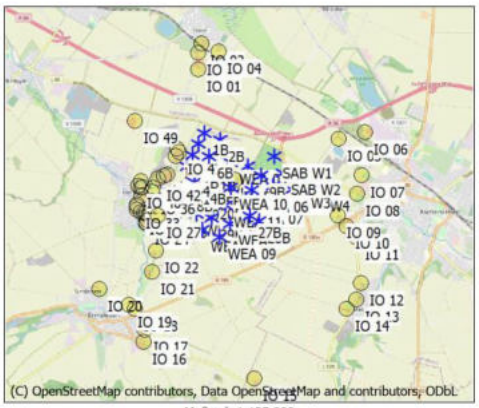
Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Eine WEA wird nicht berücksichtigt, wenn sie von keinem Teil der Rezeptorfläche aus sichtbar ist. Die Sichtbarkeitsberechnung basiert auf den folgenden Annahmen:
Verwendete Höhenlinien: Höhenraster-Objekt
Rasterauflösung: 1,0 m

Alle Koordinatenangaben in:
UTM (north)-ETRS89 Zone: 32



Maßstab 1:125.000

✱ Existierende WEA Schattenrezeptor

WEA

	Ost	Nord	Z	Beschreibung	WEA-Typ Aktuell	Hersteller	Typ	Nennleistung	Rotordurchmesser	Nabenhöhe	Schattendaten Beschatt.-Bereich	U/min
			[m]					[kW]	[m]	[m]	[m]	[U/min]
10B	663.925	5.737.920	142,7	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
11B	664.218	5.737.592	143,5	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
13B	663.801	5.737.659	144,0	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
14B	663.990	5.737.275	145,1	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	138,3	1.547	19,5
15B	664.353	5.737.210	144,8	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	138,3	1.547	19,5
18B	663.679	5.737.097	147,8	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	138,3	1.547	19,5
19B	664.036	5.736.897	147,9	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	138,3	1.547	19,5
1B	664.192	5.738.461	139,8	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
20B	664.405	5.736.922	145,7	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	138,3	1.547	19,5
27B	665.341	5.736.504	144,5	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
28B	665.573	5.736.394	144,3	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
29B	664.426	5.736.423	151,0	ENERCON E-70 E4 2000 71.0 !O! N...	Nein	ENERCON	E-70 E4-2.000	2.000	71,0	98,2	1.643	20,0
2B	664.575	5.738.313	140,0	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
5B	664.055	5.738.194	141,0	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
6B	664.317	5.737.897	141,8	NEG MICON NM72-1500C 1500-400...	Nein	NEG MICON	NM72-1500C-1.500/400	1.500	72,0	98,0	2.500	17,3
9B	665.588	5.737.475	141,7	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
SAB W1	665.887	5.737.960	139,2	VESTAS V162-5.6MW 5600 162.0 !...	Ja	VESTAS	V162-5.6MW-5.600	5.600	162,0	169,0	2.041	9,3
SAB W2	666.117	5.737.565	141,7	VESTAS V162-5.6MW 5600 162.0 !...	Ja	VESTAS	V162-5.6MW-5.600	5.600	162,0	169,0	2.041	9,3
SAB W3	665.875	5.737.247	142,2	VESTAS V162-5.6MW 5600 162.0 !...	Ja	VESTAS	V162-5.6MW-5.600	5.600	162,0	169,0	2.041	9,3
SAB W4	666.355	5.737.175	143,3	VESTAS V162-5.6MW 5600 162.0 !...	Ja	VESTAS	V162-5.6MW-5.600	5.600	162,0	169,0	2.041	9,3
WEA 02	664.581	5.737.492	142,6	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 03	664.853	5.737.776	141,1	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 04	665.250	5.737.709	141,0	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 06	665.380	5.737.130	142,8	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 07	665.260	5.736.843	143,7	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 08	664.873	5.736.300	149,4	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 09	664.625	5.735.978	156,3	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 10	664.863	5.737.172	143,5	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 11	664.747	5.736.744	145,7	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 12	664.199	5.736.129	157,1	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 13	664.060	5.736.520	152,6	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Hauptergebnis

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem

Schattenrezeptor-Eingabe

Nr.	Name	Ost	Nord	Z	Breite	Höhe	Höhe ü.Gr.	Neigung des Fensters	Ausrichtungsmodus	Augenhöhe (ZVI) ü.Gr.
				[m]	[m]	[m]	[m]	[°]		[m]
IO 01	Frose - Reinstedter Str. - Industrie	663.985	5.739.985	131,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 02	Frose - Reinstedter Str. 1	663.975	5.740.369	128,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 03	Frose - Vor dem Bahnhof 274E	664.043	5.740.595	127,1	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 04	Frose - Wohngebiet	664.463	5.740.418	126,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 05	Aschersleben - Außenbereich	667.439	5.738.423	116,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 06	Aschersleben - MAWEA	668.069	5.738.608	109,6	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 07	Aschersleben - Am Hangelsberg	668.027	5.737.557	132,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 08	Aschersleben - Am Chausee 23	667.933	5.737.122	142,7	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 09	Aschersleben - Am Harzblick 49	667.477	5.736.590	147,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 10	Aschersleben - Am Harzblick 45	667.694	5.736.334	147,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 11	Aschersleben - Über der Eine 18A	667.947	5.736.066	147,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 12	Westdorf - Am Landgraben 1A	668.079	5.734.974	149,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 13	Westdorf - Ascherslebener Str. 2A	667.987	5.734.573	149,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 14	Westdorf - Autoverwertung Lorenz	667.759	5.734.343	155,8	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 15	Welbsleben - Außenbereich	665.590	5.732.580	186,5	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 16	Ermsleben - KFZ Werkstatt	662.882	5.733.364	168,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 17	Ermsleben - Neue Str.	662.906	5.733.663	162,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 18	Ermsleben - Am Mittelweg	662.657	5.734.178	161,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 19	Ermsleben - Mühlenstraße	662.513	5.734.267	150,6	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 20	Ermsleben - Radislebener Weg	661.775	5.734.619	162,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 21	Falkenstein - Mühlenstraße	663.024	5.735.076	149,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 22	Strommühle	663.112	5.735.593	147,7	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 23	Reinstedt - Forellenweg 10	662.845	5.736.237	140,6	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 24	Reinstedt - Forellenweg 8	662.851	5.736.271	140,1	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 25	Reinstedt - Forellenweg 6	662.876	5.736.316	140,1	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 26	Reinstedt - Forellenweg 1	662.907	5.736.412	139,5	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 27	Reinstedt - Ermslebener Straße 1	663.139	5.736.445	139,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 28	Reinstedt - Alphabillard	663.274	5.736.434	139,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 29	Reinstedt - Ermslebener Straße 11	662.841	5.736.488	139,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 30	Reinstedt - Ermslebener Straße 8	662.798	5.736.491	138,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 31	Reinstedt - Ermslebener Straße 5B	662.725	5.736.507	138,8	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 32	Reinstedt - Schielestraße 1	662.607	5.736.564	137,8	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 33	Reinstedt - Schielestraße 4a	662.615	5.736.644	137,8	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 34	Reinstedt - Schielestraße 6	662.626	5.736.685	137,6	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 35	Reinstedt - Wiedemann	662.715	5.736.901	137,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 36	Reinstedt - Solarpark	662.972	5.737.006	137,5	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 37	Reinstedt - Fußballplatz	662.994	5.737.096	138,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 38	Reinstedt - Neu-Seeland Agrar	662.740	5.737.113	137,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 39	Reinstedt - Unterdorf 66a	662.695	5.737.092	136,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 40	Reinstedt - Schielestraße	662.633	5.737.132	136,5	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 41	Reinstedt - Siedlung 15	662.682	5.737.242	136,7	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 42	Reinstedt - Hotel Harz-Ring	663.093	5.737.326	134,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 43	Reinstedt - Bauschuttrecycling	663.240	5.737.394	137,7	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 44	Reinstedt - Bauschuttrecycling 2	663.322	5.737.428	142,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 46	Reinstedt - Solarpark	663.520	5.737.871	143,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 47	Reinstedt - Metallbau Klug	663.591	5.737.975	143,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 48	Reinstedt - ACZ Transport	663.531	5.738.047	143,1	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 49	Reinstedt - Danpower Energie Service	662.505	5.738.693	139,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 50	Reinstedt - Mitteldeutsche Baumschulen	664.973	5.737.351	143,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0

Berechnungsergebnisse

Schattenrezeptor

Nr.	Name	astron. max. mögl. Beschattungsdauer Stunden/Jahr [h/a]	Schattentage/Jahr [d/a]	Max.Schattendauer/Tag [h/d]	met. wahrsch. Beschattungsdauer Stunden/Jahr [h/a]
IO 01	Frose - Reinstedter Str. - Industrie	0:00	0	0:00	0:00
IO 02	Frose - Reinstedter Str. 1	0:00	0	0:00	0:00
IO 03	Frose - Vor dem Bahnhof 274E	0:00	0	0:00	0:00
IO 04	Frose - Wohngebiet	0:00	0	0:00	0:00
IO 05	Aschersleben - Außenbereich	50:10	156	0:28	7:57
IO 06	Aschersleben - MAWEA	0:00	0	0:00	0:00
IO 07	Aschersleben - Am Hangelsberg	14:14	53	0:22	3:06
IO 08	Aschersleben - Am Chausee 23	17:46	62	0:24	4:31

(Fortsetzung nächste Seite)...

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
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DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Hauptergebnis

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem

...(Fortsetzung von vorheriger Seite)

Nr.	Name	astron. max. mögl. Beschattungsdauer Stunden/Jahr [h/a]	Schattentage/Jahr [d/a]	Max.Schattendauer/Tag [h/d]	met. wahrsch. Beschattungsdauer Stunden/Jahr [h/a]
IO 09	Aschersleben - Am Harzblick 49	41:43	94	0:32	10:24
IO 10	Aschersleben - Am Harzblick 45	23:47	76	0:26	5:45
IO 11	Aschersleben - Über der Eine 18A	0:01	1	0:01	0:00
IO 12	Westdorf - Am Landgraben 1A	0:00	0	0:00	0:00
IO 13	Westdorf - Aschersleben Str. 2A	0:00	0	0:00	0:00
IO 14	Westdorf - Autoverwertung Lorenz	0:00	0	0:00	0:00
IO 15	Welbsleben - Außenbereich	0:00	0	0:00	0:00
IO 16	Ermsleben - KFZ Werkstatt	0:00	0	0:00	0:00
IO 17	Ermsleben - Neue Str.	0:00	0	0:00	0:00
IO 18	Ermsleben - Am Mittelweg	0:00	0	0:00	0:00
IO 19	Ermsleben - Mühlenstraße	0:00	0	0:00	0:00
IO 20	Ermsleben - Radislebener Weg	0:00	0	0:00	0:00
IO 21	Falkenstein - Mühlenstraße	20:08	78	0:22	5:22
IO 22	Strommühle	75:29	135	0:49	20:04
IO 23	Reinstedt - Forellenweg 10	56:09	153	0:43	13:54
IO 24	Reinstedt - Forellenweg 8	54:57	146	0:43	13:31
IO 25	Reinstedt - Forellenweg 6	55:53	144	0:44	13:37
IO 26	Reinstedt - Forellenweg 1	74:13	195	0:51	17:52
IO 27	Reinstedt - Ermslebener Straße 1	122:37	225	1:03	30:06
IO 28	Reinstedt - Alphabillard	118:09	203	1:10	29:14
IO 29	Reinstedt - Ermslebener Straße 11	63:23	196	0:49	15:11
IO 30	Reinstedt - Ermslebener Straße 8	49:07	159	0:48	11:16
IO 31	Reinstedt - Ermslebener Straße 5B	49:29	158	0:45	11:25
IO 32	Reinstedt - Schielestraße 1	32:32	126	0:26	7:32
IO 33	Reinstedt - Schielestraße 4a	35:43	148	0:26	8:21
IO 34	Reinstedt - Schielestraße 6	36:17	152	0:27	8:29
IO 35	Reinstedt - Wiedemann	57:22	199	0:43	12:56
IO 36	Reinstedt - Solarpark	111:30	267	1:01	25:08
IO 37	Reinstedt - Fußballplatz	113:09	278	0:56	24:28
IO 38	Reinstedt - Neu-Seeland Agrar	63:26	234	0:33	14:19
IO 39	Reinstedt - Unterdorf 66a	60:01	229	0:32	13:40
IO 40	Reinstedt - Schielestraße	50:26	207	0:29	11:23
IO 41	Reinstedt - Siedlung 15	53:11	211	0:25	11:24
IO 42	Reinstedt - Hotel Harz-Ring	145:50	344	0:42	28:42
IO 43	Reinstedt - Bauschuttrecycling	200:31	353	1:04	37:35
IO 44	Reinstedt - Bauschuttrecycling 2	227:57	350	1:13	43:09
IO 46	Reinstedt - Solarpark	242:46	342	1:31	46:40
IO 47	Reinstedt - Metallbau Klug	262:49	349	1:28	48:24
IO 48	Reinstedt - ACZ Transport	213:32	334	1:10	38:12
IO 49	Reinstedt - Danpower Energie Service	0:35	9	0:06	0:06
IO 50	Reinstedt - Mitteldeutsche Baumschulen	832:48	365	4:43	156:34

Gesamtdauer Beschattung an Rezeptoren pro WEA

Nr.	Name	Maximal [h/a]	Erwartet [h/a]
10B	ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (326)	158:00	39:00
11B	ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (327)	66:50	15:46
13B	ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (328)	202:28	38:42
14B	ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (337)	124:57	24:32
15B	ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (335)	65:23	12:42
18B	ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (336)	141:22	31:32
19B	ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (338)	105:28	24:34
1B	ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (322)	17:46	4:23
20B	ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (339)	57:30	10:50
27B	ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (334)	0:00	0:00
28B	ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (329)	0:00	0:00
29B	ENERCON E-70 E4 2000 71.0 !O! NH: 98,2 m (Ges:133,7 m) (340)	30:00	5:33
2B	ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (323)	28:04	7:35
5B	ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (324)	86:42	23:15
6B	NEG MICON NM72-1500C 1500-400 72.0 !O! NH: 98,0 m (Ges:134,0 m) (333)	43:49	10:31
9B	ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (325)	18:48	5:13
SAB W1	VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (318)	26:21	5:58
SAB W2	VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (319)	45:24	11:13
SAB W3	VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (320)	62:26	14:24

(Fortsetzung nächste Seite)...

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Hauptergebnis

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem

...(Fortsetzung von vorheriger Seite)

Nr.	Name	Maximal [h/a]	Erwartet [h/a]
SAB W4	VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (321)	89:39	18:02
WEA 02	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (972)	177:53	42:09
WEA 03	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (973)	55:05	13:03
WEA 04	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (978)	24:10	5:10
WEA 06	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (982)	104:21	19:55
WEA 07	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (979)	135:24	18:43
WEA 08	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (970)	47:19	9:44
WEA 09	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (971)	99:28	18:54
WEA 10	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (976)	358:58	74:44
WEA 11	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (977)	204:08	31:56
WEA 12	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (968)	202:52	35:37
WEA 13	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (969)	240:45	46:00

Summen in Rezeptortabelle und WEA-Tabelle können sich unterscheiden, da eine WEA gleichzeitig an zwei oder mehr Rezeptoren Beschattung verursachen kann und/oder ein Rezeptor gleichzeitig von zwei oder mehr WEA beschattet werden kann.

Die Berechnung der Gesamtsumme für einen Rezeptor arbeitet mit einer gemittelten Richtungskorrektur für alle WEA, die an einem gegebenen Tag zur Beschattung beitragen. Wenn der Schattenwurf durch mehrere WEA an einem Tag nicht gleichzeitig stattfindet, kann die so ermittelte Summe geringfügig von der Summe der Beschattungszeiten abweichen, die für die individuellen WEA berechnet werden.

Projekt:
Reinstedt

Lizenzierter Anwender:
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4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 01 - Frose - Reinstedter Str. - Industrie

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:37	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:43	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:06
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:49	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:07	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:33	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:42	07:31	07:26	08:11
	16:27	17:21	18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:56	06:47	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:35	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:33	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:34	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:24	16:05
17	08:14	07:27	06:27	06:17	05:20	04:56	05:15	06:01	06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19	04:56	05:16	06:03	06:53	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:11	21:38	21:20	20:26	19:16	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:56	05:24	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:04	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:02	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:19	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	259	278	367	416	485	498	501	453	381	332	267	244
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
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Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 02 - Frose - Reinstedter Str. 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:37	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:43	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:06
6	08:21	07:48	06:52	06:41	05:38	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:04	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41	16:38	16:06
8	08:21	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:49	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:07	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:33	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:42	07:31	07:26	08:11
	16:27	17:21	18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:04
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:56	06:47	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:35	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:33	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:34	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:24	16:05
17	08:14	07:27	06:27	06:17	05:20	04:56	05:15	06:01	06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19	04:55	05:16	06:03	06:53	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:37	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:22	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:11	21:38	21:20	20:26	19:16	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:56	05:24	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:04	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:02	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:19	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:09	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	259	278	367	416	485	498	501	453	381	332	267	244
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 03 - Frose - Vor dem Bahnhof 274E

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:14	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:00	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:37	21:02	19:59	18:50	16:45	16:07
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:43	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
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	16:38	17:33	18:23	20:16	21:05	21:37	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:55	05:18	06:04	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:22	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:11	21:38	21:20	20:26	19:16	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:56	05:24	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:04	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:02	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:19	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:09	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	259	278	367	416	485	498	501	453	381	332	267	244
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 04 - Frose - Wohngebiet

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:08	07:58
	16:14	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:00	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:37	21:02	19:59	18:50	16:45	16:07
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:43	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:06
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	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
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	16:21	17:13	18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41	16:38	16:06
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11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:42	07:31	07:25	08:11
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	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:09	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	259	278	367	416	485	498	501	453	381	332	267	244
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 05 - Aschersleben - Außenbereich

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April	Mai	Juni
1	08:22		15:13 (SAB W4)	07:55		16:11 (SAB W3)	07:02			06:52	05:48	05:03
	16:14	18	15:31 (SAB W4)	17:02	17	16:28 (SAB W3)	17:53			19:47	20:37	21:23
2	08:22		15:14 (SAB W4)	07:54		16:10 (SAB W3)	07:00			06:50	05:46	05:02
	16:15	18	15:32 (SAB W4)	17:04	19	16:29 (SAB W3)	17:55			19:49	20:39	21:24
3	08:22		15:14 (SAB W4)	07:52		16:09 (SAB W3)	06:58			06:48	05:44	05:01
	16:17	19	15:33 (SAB W4)	17:06	20	16:29 (SAB W3)	17:57			19:50	20:41	21:25
4	08:22		15:14 (SAB W4)	07:51		16:09 (SAB W3)	06:56		17:20 (SAB W1)	06:45	05:42	05:00
	16:18	19	15:33 (SAB W4)	17:07	20	16:29 (SAB W3)	17:59	7	17:27 (SAB W1)	19:52	20:42	21:26
5	08:21		15:14 (SAB W4)	07:49		16:10 (SAB W3)	06:54		17:17 (SAB W1)	06:43	05:40	05:00
	16:19	20	15:34 (SAB W4)	17:09	20	16:30 (SAB W3)	18:00	13	17:30 (SAB W1)	19:54	20:44	21:27
6	08:21		15:14 (SAB W4)	07:47		16:10 (SAB W3)	06:51		17:14 (SAB W1)	06:41	05:38	04:59
	16:20	20	15:34 (SAB W4)	17:11	24	16:34 (SAB W2)	18:02	17	17:31 (SAB W1)	19:55	20:46	21:28
7	08:21		15:14 (SAB W4)	07:46		16:10 (SAB W3)	06:49		17:13 (SAB W1)	06:38	05:37	04:58
	16:21	22	15:36 (SAB W4)	17:13	27	16:37 (SAB W2)	18:04	19	17:32 (SAB W1)	19:57	20:47	21:29
8	08:20		15:14 (SAB W4)	07:44		16:11 (SAB W3)	06:47		17:12 (SAB W1)	06:36	05:35	04:58
	16:23	22	15:36 (SAB W4)	17:15	28	16:39 (SAB W2)	18:06	21	17:33 (SAB W1)	19:59	20:49	21:30
9	08:20		15:15 (SAB W4)	07:42		16:12 (SAB W3)	06:45		17:12 (SAB W1)	06:34	05:33	04:57
	16:24	22	15:37 (SAB W4)	17:17	28	16:40 (SAB W2)	18:07	22	17:34 (SAB W1)	20:00	20:51	21:31
10	08:19		15:15 (SAB W4)	07:40		16:13 (SAB W3)	06:43		17:10 (SAB W1)	06:32	05:31	04:57
	16:25	23	15:38 (SAB W4)	17:19	28	16:41 (SAB W2)	18:09	23	17:33 (SAB W1)	20:02	20:52	21:32
11	08:19		15:15 (SAB W4)	07:39		16:15 (SAB W3)	06:40		17:10 (SAB W1)	06:30	05:30	04:57
	16:27	23	15:38 (SAB W4)	17:20	26	16:41 (SAB W2)	18:11	23	17:33 (SAB W1)	20:04	20:54	21:32
12	08:18		15:15 (SAB W4)	07:37		16:19 (SAB W2)	06:38		17:10 (SAB W1)	06:27	05:28	04:56
	16:28	23	15:38 (SAB W4)	17:22	23	16:42 (SAB W2)	18:13	23	17:33 (SAB W1)	20:06	20:55	21:33
13	08:17		15:15 (SAB W4)	07:35		16:19 (SAB W2)	06:36		17:10 (SAB W1)	06:25	05:26	04:56
	16:30	24	15:39 (SAB W4)	17:24	24	16:43 (SAB W2)	18:14	22	17:32 (SAB W1)	20:07	20:57	21:34
14	08:17		15:16 (SAB W4)	07:33		16:19 (SAB W2)	06:33		17:10 (SAB W1)	06:23	05:25	04:56
	16:31	24	15:40 (SAB W4)	17:26	24	16:43 (SAB W2)	18:16	21	17:31 (SAB W1)	20:09	20:58	21:34
15	08:16		15:16 (SAB W4)	07:31		16:19 (SAB W2)	06:31		17:11 (SAB W1)	06:21	05:23	04:56
	16:33	24	15:40 (SAB W4)	17:28	24	16:43 (SAB W2)	18:18	19	17:30 (SAB W1)	20:11	21:00	21:35
16	08:15		15:17 (SAB W4)	07:29		16:18 (SAB W2)	06:29		17:13 (SAB W1)	06:19	05:22	04:55
	16:34	24	15:41 (SAB W4)	17:30	24	16:42 (SAB W2)	18:20	16	17:29 (SAB W1)	20:12	21:02	21:35
17	08:14		15:16 (SAB W4)	07:27		16:19 (SAB W2)	06:27		17:14 (SAB W1)	06:16	05:20	04:55
	16:36	24	15:40 (SAB W4)	17:31	23	16:42 (SAB W2)	18:21	12	17:26 (SAB W1)	20:14	21:03	21:36
18	08:13		15:17 (SAB W4)	07:25		16:19 (SAB W2)	06:24		17:17 (SAB W1)	06:14	05:19	04:55
	16:38	23	15:40 (SAB W4)	17:33	22	16:41 (SAB W2)	18:23	6	17:23 (SAB W1)	20:16	21:05	21:36
19	08:12		15:17 (SAB W4)	07:23		16:20 (SAB W2)	06:22			06:12	05:17	04:55
	16:39	24	15:41 (SAB W4)	17:35	21	16:41 (SAB W2)	18:25			20:17	21:06	21:37
20	08:11		15:18 (SAB W4)	07:21		16:21 (SAB W2)	06:20			06:10	05:16	04:56
	16:41	23	15:41 (SAB W4)	17:37	19	16:40 (SAB W2)	18:26			20:19	21:07	21:37
21	08:10		15:19 (SAB W4)	07:19		16:23 (SAB W2)	06:17			06:08	05:15	04:56
	16:42	22	15:41 (SAB W4)	17:39	15	16:38 (SAB W2)	18:28			20:21	21:09	21:37
22	08:09		15:19 (SAB W4)	07:17		16:25 (SAB W2)	06:15			06:06	05:13	04:56
	16:44	21	15:40 (SAB W4)	17:41	11	16:36 (SAB W2)	18:30			20:22	21:10	21:37
23	08:08		15:21 (SAB W4)	07:15			06:13			06:04	05:12	04:56
	16:46	19	15:40 (SAB W4)	17:42			18:32			20:24	21:12	21:38
24	08:07		15:22 (SAB W4)	07:13			06:11			06:02	05:11	04:56
	16:48	18	15:40 (SAB W4)	17:44			18:33			20:26	21:13	21:38
25	08:05		15:23 (SAB W4)	07:11			06:08			06:00	05:10	04:57
	16:49	16	15:39 (SAB W4)	17:46			18:35			20:27	21:14	21:38
26	08:04		15:25 (SAB W4)	07:09			06:06			05:58	05:09	04:57
	16:51	13	15:38 (SAB W4)	17:48			18:37			20:29	21:16	21:38
27	08:03		15:27 (SAB W4)	07:07			06:04			05:56	05:08	04:58
	16:53	9	15:36 (SAB W4)	17:50			18:38			20:31	21:17	21:38
28	08:01		16:14 (SAB W3)	07:05			06:01			05:54	05:06	04:58
	16:55	8	16:22 (SAB W3)	17:51			18:40			20:32	21:18	21:38
29	08:00		16:12 (SAB W3)				06:59			05:52	05:05	04:59
	16:56	12	16:24 (SAB W3)				19:42			20:34	21:19	21:37
30	07:58		16:11 (SAB W3)				06:57			05:50	05:04	04:59
	16:58	15	16:26 (SAB W3)				19:44			20:36	21:21	21:37
31	07:57		16:10 (SAB W3)				06:54				05:04	
	17:00	17	16:27 (SAB W3)				19:45				21:22	
Sonnenscheinstunden	260			278			367			416	484	498
astr.max.mögl.Beschattung		609			487			264				
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27				
Reduktion Betriebsdauer		0,96			0,96			0,96				
Reduktion Windrichtung		0,66			0,70			0,71				
Gesamte Reduktion		0,13			0,21			0,18				
Met.wahrsch.Beschattung		81			102			48				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 05 - Aschersleben - Außenbereich

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September			Oktober			November			Dezember		
1	05:00		05:36		06:25			07:14			07:07			07:58		
	21:37		21:05		20:04			18:55	23	18:12 (SAB W1)	16:49	28	16:10 (SAB W2)	16:09	23	15:20 (SAB W4)
2	05:00		05:37		06:27			07:16		17:49 (SAB W1)	07:09		15:41 (SAB W3)	08:00		14:58 (SAB W4)
	21:37		21:04		20:01			18:52	23	18:12 (SAB W1)	16:47	28	16:09 (SAB W2)	16:08	23	15:21 (SAB W4)
3	05:01		05:39		06:29			07:17		17:48 (SAB W1)	07:11		15:40 (SAB W3)	08:01		14:58 (SAB W4)
	21:36		21:02		19:59			18:50	23	18:11 (SAB W1)	16:45	28	16:08 (SAB W2)	16:07	22	15:20 (SAB W4)
4	05:02		05:41		06:30			07:19		17:48 (SAB W1)	07:13		15:40 (SAB W3)	08:02		14:59 (SAB W4)
	21:36		21:00		19:57			18:48	23	18:11 (SAB W1)	16:43	26	16:06 (SAB W2)	16:07	22	15:21 (SAB W4)
5	05:03		05:42		06:32			07:21		17:49 (SAB W1)	07:15		15:40 (SAB W3)	08:04		14:59 (SAB W4)
	21:35		20:59		19:55			18:45	21	18:10 (SAB W1)	16:42	23	16:03 (SAB W2)	16:06	22	15:21 (SAB W4)
6	05:04		05:44		06:33			07:22		17:49 (SAB W1)	07:16		15:40 (SAB W3)	08:05		15:00 (SAB W4)
	21:35		20:57		19:52			18:43	20	18:09 (SAB W1)	16:40	20	16:00 (SAB W3)	16:06	20	15:20 (SAB W4)
7	05:04		05:45		06:35			07:24		17:49 (SAB W1)	07:18		15:40 (SAB W3)	08:06		15:01 (SAB W4)
	21:34		20:55		19:50			18:41	18	18:07 (SAB W1)	16:38	20	16:00 (SAB W3)	16:06	20	15:21 (SAB W4)
8	05:05		05:47		06:37			07:26		17:51 (SAB W1)	07:20		15:40 (SAB W3)	08:07		15:02 (SAB W4)
	21:34		20:53		19:48			18:39	15	18:06 (SAB W1)	16:36	20	16:00 (SAB W3)	16:05	19	15:21 (SAB W4)
9	05:06		05:48		06:38			07:27		17:53 (SAB W1)	07:22		15:41 (SAB W3)	08:09		15:02 (SAB W4)
	21:33		20:51		19:46			18:36	11	18:04 (SAB W1)	16:35	18	15:59 (SAB W3)	16:05	19	15:21 (SAB W4)
10	05:07		05:50		06:40			07:29			07:23		15:41 (SAB W3)	08:10		15:03 (SAB W4)
	21:32		20:50		19:43			18:34			16:33	18	15:59 (SAB W3)	16:05	18	15:21 (SAB W4)
11	05:08		05:52		06:41			07:31			07:25		15:41 (SAB W3)	08:11		15:04 (SAB W4)
	21:31		20:48		19:41			18:32			16:32	17	15:58 (SAB W3)	16:04	17	15:21 (SAB W4)
12	05:09		05:53		06:43			07:32			07:27		15:42 (SAB W3)	08:12		15:04 (SAB W4)
	21:31		20:46		19:39			18:30			16:30	15	15:57 (SAB W3)	16:04	17	15:21 (SAB W4)
13	05:10		05:55		06:45			07:34			07:29		15:44 (SAB W3)	08:13		15:05 (SAB W4)
	21:30		20:44		19:36			18:28			16:29	12	15:56 (SAB W3)	16:04	16	15:21 (SAB W4)
14	05:12		05:56		06:46			07:36			07:31		15:46 (SAB W3)	08:14		15:06 (SAB W4)
	21:29		20:42		19:34			18:25			16:27	8	15:54 (SAB W3)	16:04	15	15:21 (SAB W4)
15	05:13		05:58		06:48			07:38			07:32		14:59 (SAB W4)	08:15		15:07 (SAB W4)
	21:28		20:40		19:32			18:23			16:26	10	15:09 (SAB W4)	16:04	14	15:21 (SAB W4)
16	05:14		06:00		06:50			07:39			07:34		14:58 (SAB W4)	08:15		15:08 (SAB W4)
	21:27		20:38		19:29			18:21			16:24	13	15:11 (SAB W4)	16:05	14	15:22 (SAB W4)
17	05:15		06:01		06:51			07:41			07:36		14:57 (SAB W4)	08:16		15:08 (SAB W4)
	21:26		20:36		19:27			18:19			16:23	16	15:13 (SAB W4)	16:05	14	15:22 (SAB W4)
18	05:16		06:03		06:53			07:43			07:37		14:56 (SAB W4)	08:17		15:09 (SAB W4)
	21:25		20:34		19:25			18:17			16:22	18	15:14 (SAB W4)	16:05	14	15:23 (SAB W4)
19	05:18		06:04		06:54			07:44		17:00 (SAB W2)	07:39		14:56 (SAB W4)	08:18		15:09 (SAB W4)
	21:24		20:32		19:22			18:15	4	17:04 (SAB W2)	16:20	19	15:15 (SAB W4)	16:05	13	15:22 (SAB W4)
20	05:19		06:06		06:56			07:46		16:55 (SAB W2)	07:41		14:54 (SAB W4)	08:18		15:10 (SAB W4)
	21:22		20:30		19:20			18:12	12	17:07 (SAB W2)	16:19	21	15:15 (SAB W4)	16:06	13	15:23 (SAB W4)
21	05:20		06:08		06:58			07:48		16:53 (SAB W2)	07:42		14:54 (SAB W4)	08:19		15:10 (SAB W4)
	21:21		20:28		19:18			18:10	16	17:09 (SAB W2)	16:18	22	15:16 (SAB W4)	16:06	13	15:23 (SAB W4)
22	05:22		06:09		06:59			07:50		16:51 (SAB W2)	07:44		14:54 (SAB W4)	08:20		15:11 (SAB W4)
	21:20		20:25		19:15			18:08	19	17:10 (SAB W2)	16:17	23	15:17 (SAB W4)	16:06	13	15:24 (SAB W4)
23	05:23		06:11		07:01			07:51		16:50 (SAB W2)	07:46		14:55 (SAB W4)	08:20		15:11 (SAB W4)
	21:19		20:23		19:13			18:06	21	17:11 (SAB W2)	16:16	23	15:18 (SAB W4)	16:07	13	15:24 (SAB W4)
24	05:24		06:12		07:03			07:53		16:50 (SAB W2)	07:47		14:55 (SAB W4)	08:20		15:12 (SAB W4)
	21:17		20:21		19:11			18:04	22	17:12 (SAB W2)	16:15	24	15:19 (SAB W4)	16:08	13	15:25 (SAB W4)
25	05:26		06:14		07:04			06:55		15:49 (SAB W2)	07:49		14:54 (SAB W4)	08:21		15:12 (SAB W4)
	21:16		20:19		19:08			17:02	23	16:12 (SAB W2)	16:14	24	15:18 (SAB W4)	16:08	13	15:25 (SAB W4)
26	05:27		06:16		07:06		17:57 (SAB W1)	06:57		15:49 (SAB W2)	07:51		14:55 (SAB W4)	08:21		15:12 (SAB W4)
	21:15		20:17		19:06	11	18:08 (SAB W1)	17:00	24	16:13 (SAB W2)	16:13	24	15:19 (SAB W4)	16:09	14	15:26 (SAB W4)
27	05:29		06:17		07:07		17:54 (SAB W1)	06:59		15:49 (SAB W2)	07:52		14:55 (SAB W4)	08:21		15:13 (SAB W4)
	21:13		20:15		19:04	15	18:09 (SAB W1)	16:58	24	16:13 (SAB W2)	16:12	25	15:20 (SAB W4)	16:10	13	15:26 (SAB W4)
28	05:30		06:19		07:09		17:52 (SAB W1)	07:00		15:48 (SAB W2)	07:54		14:55 (SAB W4)	08:22		15:13 (SAB W4)
	21:12		20:13		19:01	19	18:11 (SAB W1)	16:56	24	16:12 (SAB W2)	16:11	24	15:19 (SAB W4)	16:10	14	15:27 (SAB W4)
29	05:31		06:21		07:11		17:51 (SAB W1)	07:02		15:48 (SAB W2)	07:55		14:56 (SAB W4)	08:22		15:13 (SAB W4)
	21:10		20:10		18:59	21	18:12 (SAB W1)	16:54	24	16:12 (SAB W2)	16:10	24	15:20 (SAB W4)	16:11	15	15:28 (SAB W4)
30	05:33		06:22		07:12		17:50 (SAB W1)	07:04		15:47 (SAB W3)	07:57		14:57 (SAB W4)	08:22		15:13 (SAB W4)
	21:09		20:08		18:57	21	18:11 (SAB W1)	16:52	24	16:11 (SAB W2)	16:09	23	15:20 (SAB W4)	16:12	16	15:29 (SAB W4)
31	05:34		06:24					07:06		15:44 (SAB W3)				08:22		15:13 (SAB W4)
	21:07		20:06					16:51	27	16:11 (SAB W2)				16:13	16	15:29 (SAB W4)
Sonnenscheinstunden	501		453		381			332			267			245		
astr.max.mögl.Beschattung						87			441			614			508	
Red.Sonnenscheinwahrsch.						0,34			0,28			0,22			0,18	
Reduktion Betriebsdauer						0,96			0,96			0,96			0,96	
Reduktion Windrichtung						0,71			0,71			0,67			0,65	
Gesamte Reduktion						0,23			0,19			0,14			0,11	
Met.wahrsch.Beschattung						20			84			87			56	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 06 - Aschersleben - MAWEA

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:14	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:54	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:00	05:37	06:27	07:16	07:09	08:00
	16:15	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:07
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:07	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:59	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38	04:59	05:03	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:38	05:37	04:58	05:04	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:05
8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:36	16:05
9	08:20	07:42	06:45	06:34	05:33	04:57	05:06	05:48	06:38	07:27	07:22	08:09
	16:24	17:17	18:07	20:00	20:51	21:31	21:33	20:51	19:45	18:36	16:35	16:05
10	08:19	07:40	06:42	06:32	05:31	04:57	05:07	05:50	06:40	07:29	07:23	08:10
	16:25	17:18	18:09	20:02	20:52	21:32	21:32	20:49	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:29	05:30	04:57	05:08	05:52	06:41	07:31	07:25	08:11
	16:27	17:20	18:11	20:04	20:54	21:32	21:31	20:48	19:41	18:32	16:32	16:04
12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:04
13	08:17	07:35	06:36	06:25	05:26	04:56	05:10	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:14	20:07	20:57	21:34	21:30	20:44	19:36	18:27	16:29	16:04
14	08:17	07:33	06:33	06:23	05:25	04:56	05:12	05:56	06:46	07:36	07:30	08:14
	16:31	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:04
16	08:15	07:29	06:29	06:18	05:22	04:55	05:14	05:59	06:50	07:39	07:34	08:15
	16:34	17:30	18:20	20:12	21:01	21:35	21:27	20:38	19:29	18:21	16:24	16:04
17	08:14	07:27	06:27	06:16	05:20	04:55	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:31	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:55	05:16	06:03	06:53	07:43	07:37	08:17
	16:37	17:33	18:23	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:17	04:55	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:20	16:05
20	08:11	07:21	06:20	06:10	05:16	04:55	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37	21:22	20:30	19:20	18:12	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
	16:42	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:13	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:25	19:15	18:08	16:17	16:06
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:12	21:37	21:19	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11	04:56	05:24	06:12	07:02	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	21:38	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:57	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:55	05:07	04:57	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:53	05:06	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:51	18:40	20:32	21:18	21:38	21:12	20:13	19:01	16:56	16:11	16:10
29	08:00		06:59	05:51	05:05	04:58	05:31	06:20	07:11	07:02	07:55	08:22
	16:56		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:04	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:21	21:37	21:09	20:08	18:57	16:52	16:09	16:12
31	07:57		06:54		05:04		05:34	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 07 - Aschersleben - Am Hangelsberg

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22 16:14	07:55 17:02	07:02 17:53	06:52 19:47 18 19:03 (SAB W2) 19:21 (SAB W2)	05:48 20:37	05:03 21:23	05:00 21:37	05:36 21:05	06:25 20:04	07:14 18:55 20 18:04 (SAB W4) 18:24 (SAB W4)	07:07 16:49	07:58 16:09
2	08:22 16:15	07:54 17:04	07:00 17:55	06:50 19:49 19 19:02 (SAB W2) 19:21 (SAB W2)	05:46 20:39	05:02 21:24	05:00 21:37	05:37 21:04	06:27 20:01	07:16 18:52 18 18:05 (SAB W4) 18:23 (SAB W4)	07:09 16:47	07:59 16:08
3	08:22 16:17	07:52 17:06	06:58 17:57	06:48 19:50 20 19:01 (SAB W2) 19:21 (SAB W2)	05:44 20:41	05:01 21:25	05:01 21:36	05:39 21:02	06:29 19:59 10 19:02 (SAB W2) 19:12 (SAB W2)	07:17 18:50 16 18:05 (SAB W4) 18:21 (SAB W4)	07:11 16:45	08:01 16:07
4	08:22 16:18	07:51 17:07	06:56 17:59	06:45 19:52 20 19:01 (SAB W2) 19:21 (SAB W2)	05:42 20:42	05:00 21:26	05:02 21:36	05:41 21:00	06:30 19:57 14 19:00 (SAB W2) 19:14 (SAB W2)	07:19 18:48 12 18:07 (SAB W4) 18:19 (SAB W4)	07:13 16:43	08:02 16:07
5	08:21 16:19	07:49 17:09	06:54 18:00	06:43 19:54 19 19:01 (SAB W2) 19:20 (SAB W2)	05:40 20:44	05:00 21:27	05:03 21:35	05:42 20:59	06:32 19:55 16 18:59 (SAB W2) 19:15 (SAB W2)	07:21 18:45 4 18:11 (SAB W4) 18:15 (SAB W4)	07:15 16:42	08:04 16:06
6	08:21 16:20	07:47 17:11	06:51 18:02	06:41 19:55 18 19:01 (SAB W2) 19:19 (SAB W2)	05:38 20:46	04:59 21:28	05:04 21:35	05:44 20:57	06:33 19:52 18 18:57 (SAB W2) 19:15 (SAB W2)	07:22 18:43	07:16 16:40	08:05 16:06
7	08:21 16:21	07:46 17:13	06:49 18:04	06:38 19:57 16 19:02 (SAB W2) 19:18 (SAB W2)	05:37 20:47	04:58 21:29	05:04 21:34	05:45 20:55	06:35 19:50 19 18:57 (SAB W2) 19:16 (SAB W2)	07:24 18:41	07:18 16:38	08:06 16:06
8	08:20 16:23	07:44 17:15	06:47 18:06	06:36 19:59 14 19:03 (SAB W2) 19:17 (SAB W2)	05:35 20:49	04:58 21:30	05:05 21:34	05:47 20:53	06:37 19:48 20 18:55 (SAB W2) 19:15 (SAB W2)	07:26 18:39	07:20 16:36	08:07 16:05
9	08:20 16:24	07:42 17:17	06:45 18:07 9 17:32 (SAB W4) 17:41 (SAB W4)	06:34 20:00 10 19:05 (SAB W2) 19:15 (SAB W2)	05:33 20:51	04:57 21:31	05:06 21:33	05:48 20:51	06:38 19:45 20 18:55 (SAB W2) 19:15 (SAB W2)	07:27 18:36	07:22 16:35	08:08 16:05
10	08:19 16:25	07:40 17:19	06:42 18:09 14 17:28 (SAB W4) 17:42 (SAB W4)	06:32 20:02	05:31 20:52	04:57 21:31	05:07 21:32	05:50 20:49	06:40 19:43 19 18:55 (SAB W2) 19:14 (SAB W2)	07:29 18:34	07:23 16:33	08:10 16:05
11	08:19 16:27	07:39 17:20	06:40 18:11 17 17:27 (SAB W4) 17:44 (SAB W4)	06:29 20:04	05:30 20:54	04:57 21:32	05:08 21:31	05:52 20:48	06:41 19:41 19 18:55 (SAB W2) 19:14 (SAB W2)	07:31 18:32	07:25 16:32	08:11 16:05
12	08:18 16:28	07:37 17:22	06:38 18:13 19 17:26 (SAB W4) 17:45 (SAB W4)	06:27 20:05	05:28 20:55	04:56 21:33	05:09 21:31	05:53 20:46	06:43 19:39 16 18:55 (SAB W2) 19:11 (SAB W2)	07:32 18:30	07:27 16:30	08:12 16:04
13	08:17 16:30	07:35 17:24	06:36 18:14 21 17:24 (SAB W4) 17:45 (SAB W4)	06:25 20:07	05:26 20:57	04:56 21:34	05:10 21:30	05:55 20:44	06:45 19:36 13 18:56 (SAB W2) 19:09 (SAB W2)	07:34 18:27	07:29 16:29	08:13 16:04
14	08:16 16:31	07:33 17:26	06:33 18:16 21 17:24 (SAB W4) 17:45 (SAB W4)	06:23 20:09	05:25 20:58	04:56 21:34	05:12 21:29	05:56 20:42	06:46 19:34 10 18:58 (SAB W2) 19:08 (SAB W2)	07:36 18:25	07:30 16:27	08:14 16:04
15	08:16 16:33	07:31 17:28	06:31 18:18 21 17:24 (SAB W4) 17:45 (SAB W4)	06:21 20:11	05:23 21:00	04:56 21:35	05:13 21:28	05:58 20:40	06:48 19:32 2 19:02 (SAB W2) 19:04 (SAB W2)	07:38 18:23	07:32 16:26	08:15 16:04
16	08:15 16:34	07:29 17:30	06:29 18:20 21 17:23 (SAB W4) 17:44 (SAB W4)	06:19 20:12	05:22 21:01	04:55 21:35	05:14 21:27	06:00 20:38	06:50 19:29	07:39 18:21	07:34 16:24	08:15 16:05
17	08:14 16:36	07:27 17:31	06:27 18:21 21 17:23 (SAB W4) 17:44 (SAB W4)	06:16 20:14	05:20 21:03	04:55 21:36	05:15 21:26	06:01 20:36	06:51 19:27	07:41 18:19	07:36 16:23	08:16 16:05
18	08:13 16:38	07:25 17:33	06:24 18:23 19 17:24 (SAB W4) 17:43 (SAB W4)	06:14 20:16	05:19 21:04	04:55 21:36	05:16 21:25	06:03 20:34	06:53 19:25	07:43 18:17	07:37 16:22	08:17 16:05
19	08:12 16:39	07:23 17:35	06:22 18:25 18 17:25 (SAB W4) 17:43 (SAB W4)	06:12 20:17	05:17 21:06	04:55 21:37	05:18 21:24	06:04 20:32	06:54 19:22	07:44 18:15	07:39 16:20	08:18 16:05
20	08:11 16:41	07:21 17:37	06:20 18:26 15 17:25 (SAB W4) 17:40 (SAB W4)	06:10 20:19	05:16 21:07	04:56 21:37	05:19 21:22	06:06 20:30	06:56 19:20	07:46 18:12	07:41 16:19	08:18 16:06
21	08:10 16:42	07:19 17:39	06:17 18:28 11 17:27 (SAB W4) 17:38 (SAB W4)	06:08 20:21	05:15 21:09	04:56 21:37	05:20 21:21	06:08 20:28	06:58 19:18	07:48 18:10	07:42 16:18	08:19 16:06
22	08:09 16:44	07:17 17:41	06:15 18:30 3 17:31 (SAB W4) 17:34 (SAB W4)	06:06 20:22	05:13 21:10	04:56 21:37	05:22 21:20	06:09 20:25	06:59 19:15 10 18:12 (SAB W4) 18:22 (SAB W4)	07:50 18:08	07:44 16:17	08:19 16:06
23	08:08 16:46	07:15 17:42	06:13 18:32	06:04 20:24	05:12 21:12	04:56 21:37	05:23 21:19	06:11 20:23	07:01 19:13 14 18:10 (SAB W4) 18:24 (SAB W4)	07:51 18:06	07:46 16:16	08:20 16:07
24	08:06 16:48	07:13 17:44	06:10 18:33	06:02 20:26	05:11 21:13	04:56 21:38	05:24 21:17	06:12 20:21	07:02 19:11 17 18:08 (SAB W4) 18:25 (SAB W4)	07:53 18:04	07:47 16:15	08:20 16:08
25	08:05 16:49	07:11 17:46	06:08 18:35	06:00 20:27	05:10 21:14	04:57 21:38	05:26 21:16	06:14 20:19	07:04 19:08 19 18:07 (SAB W4) 18:26 (SAB W4)	06:55 17:02	07:49 16:14	08:21 16:08
26	08:04 16:51	07:09 17:48	06:06 18:37	05:58 20:29	05:09 21:16	04:57 21:38	05:27 21:14	06:16 20:17	07:06 19:06 20 18:06 (SAB W4) 18:26 (SAB W4)	06:57 17:00	07:51 16:13	08:21 16:09
27	08:03 16:53	07:07 17:50	06:04 18:38	05:55 20:31	05:08 21:17	04:58 21:38	05:29 21:13	06:17 20:15	07:07 19:04 21 18:05 (SAB W4) 18:26 (SAB W4)	06:58 16:58	07:52 16:12	08:21 16:10
28	08:01 16:55	07:04 17:51	06:01 18:40	05:54 20:32	05:06 21:18	04:58 21:37	05:30 21:12	06:19 20:12	07:09 19:01 22 18:04 (SAB W4) 18:26 (SAB W4)	07:00 16:56	07:54 16:11	08:22 16:10
29	08:00 16:56		06:59 19:42 9 19:07 (SAB W2) 19:16 (SAB W2)	05:52 20:34	05:05 21:19	04:59 21:37	05:31 21:10	06:20 20:10	07:11 18:59 22 18:04 (SAB W4) 18:26 (SAB W4)	07:02 16:54	07:55 16:10	08:22 16:11
30	07:58 16:58		06:57 19:43 13 19:05 (SAB W2) 19:18 (SAB W2)	05:50 20:36	05:04 21:21	04:59 21:37	05:33 21:08	06:22 20:08	07:12 18:57 21 18:04 (SAB W4) 18:25 (SAB W4)	07:04 16:52	07:57 16:09	08:22 16:12
31	07:57 17:00		06:54 19:45 16 19:04 (SAB W2) 19:20 (SAB W2)		05:04 21:22		05:34 21:07	06:24 20:06		07:06 16:51		08:22 16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung			268	154					362	70		
Red.Sonnenscheinwahrsch.			0,27	0,36					0,34	0,28		
Reduktion Betriebsdauer			0,96	0,96					0,96	0,96		
Reduktion Windrichtung			0,72	0,72					0,72	0,72		
Gesamte Reduktion			0,18	0,25					0,23	0,19		
Met.wahrsch.Beschattung			50	38					85	14		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 08 - Aschersleben - Am Chausee 23

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	19:10 (SAB W4)	05:48	19:39 (SAB W2)	05:03	05:00	05:36	06:25	19:00 (SAB W4)	07:14	07:07	07:58
	16:14	17:02	17:53	19:47 11	19:21 (SAB W4)	20:37 17	19:56 (SAB W2)	21:23	21:37	21:05	20:04 22	19:22 (SAB W4)	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	19:07 (SAB W4)	05:46	19:40 (SAB W2)	05:02	05:00	05:38	06:27	19:00 (SAB W4)	07:16	07:09	07:59
	16:15	17:04	17:55	19:49 15	19:22 (SAB W4)	20:39 15	19:55 (SAB W2)	21:24	21:37	21:04	20:01 22	19:22 (SAB W4)	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	19:05 (SAB W4)	05:44	19:41 (SAB W2)	05:01	05:01	05:39	06:29	18:58 (SAB W4)	07:17	07:11	08:01
	16:17	17:06	17:57	19:50 19	19:24 (SAB W4)	20:41 12	19:53 (SAB W2)	21:25	21:36	21:02	19:59 24	19:22 (SAB W4)	18:50	16:45	16:07
4	08:21	07:51	06:56	06:45	19:04 (SAB W4)	05:42	19:44 (SAB W2)	05:00	05:02	05:41	06:30	18:58 (SAB W4)	07:19	07:13	08:02
	16:18	17:07	17:59	19:52 21	19:25 (SAB W4)	20:42 7	19:51 (SAB W2)	21:26	21:36	21:00	19:57 24	19:22 (SAB W4)	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	19:03 (SAB W4)	05:40		05:00	05:03	05:42	06:32	18:58 (SAB W4)	07:21	07:15	08:04
	16:19	17:09	18:00	19:54 22	19:25 (SAB W4)	20:44		21:27	21:35	20:59	19:55 24	19:22 (SAB W4)	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	19:02 (SAB W4)	05:38		04:59	05:04	05:44	06:33	18:58 (SAB W4)	07:22	07:16	08:05
	16:20	17:11	18:02	19:55 23	19:25 (SAB W4)	20:46		21:28	21:35	20:57	19:52 23	19:21 (SAB W4)	18:43	16:40	16:06
7	08:21	07:46	06:49	06:38	19:01 (SAB W4)	05:37		04:58	05:04	05:45	06:35	18:58 (SAB W4)	07:24	07:18	08:06
	16:21	17:13	18:04	19:57 24	19:25 (SAB W4)	20:47		21:29	21:34	20:55	19:50 22	19:20 (SAB W4)	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	19:01 (SAB W4)	05:35		04:58	05:05	05:47	06:37	18:58 (SAB W4)	07:26	07:20	08:07
	16:23	17:15	18:06	19:59 24	19:25 (SAB W4)	20:49		21:30	21:34	20:53	19:48 21	19:19 (SAB W4)	18:39	16:36	16:05
9	08:20	07:42	06:45	06:34	19:01 (SAB W4)	05:33		04:57	05:06	05:48 19:52 (SAB W2)	06:38	18:59 (SAB W4)	07:27	07:22	08:08
	16:24	17:17	18:07	20:00 24	19:25 (SAB W4)	20:51		21:31	21:33	20:51 9 20:01 (SAB W2)	19:45 19	19:18 (SAB W4)	18:36	16:35	16:05
10	08:19	07:40	06:42	06:32	19:01 (SAB W4)	05:31		04:57	05:07	05:50 19:50 (SAB W2)	06:40	19:00 (SAB W4)	07:29	07:23	08:10
	16:25	17:19	18:09	20:02 22	19:23 (SAB W4)	20:52		21:31	21:32	20:49 13 20:03 (SAB W2)	19:43 16	19:16 (SAB W4)	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	19:01 (SAB W4)	05:30		04:57	05:08	05:52 19:48 (SAB W2)	06:41	19:02 (SAB W4)	07:31	07:25	08:11
	16:27	17:20	18:11	20:04 22	19:23 (SAB W4)	20:54		21:32	21:31	20:48 16 20:04 (SAB W2)	19:41 12	19:14 (SAB W4)	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	19:02 (SAB W4)	05:28		04:56	05:09	05:53 19:48 (SAB W2)	06:43	19:06 (SAB W4)	07:32	07:27	08:12
	16:28	17:22	18:13	20:05 20	19:22 (SAB W4)	20:55		21:33	21:31	20:46 17 20:05 (SAB W2)	19:39 2	19:08 (SAB W4)	18:30	16:30	16:04
13	08:17	07:35	06:36	06:25	19:03 (SAB W4)	05:26		04:56	05:10	05:55 19:46 (SAB W2)	06:45		07:34	07:29	08:13
	16:30	17:24	18:14	20:07 18	19:21 (SAB W4)	20:57		21:34	21:30	20:44 19 20:05 (SAB W2)	19:36		18:27	16:29	16:04
14	08:16	07:33	06:33	06:23	19:04 (SAB W4)	05:25		04:56	05:12	05:56 19:46 (SAB W2)	06:46		07:36	07:30	08:14
	16:31	17:26	18:16	20:09 15	19:19 (SAB W4)	20:58		21:34	21:29	20:42 20 20:06 (SAB W2)	19:34		18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	19:06 (SAB W4)	05:23		04:56	05:13	05:58 19:45 (SAB W2)	06:48		07:38	07:32	08:15
	16:33	17:28	18:18	20:11 11	19:17 (SAB W4)	21:00		21:35	21:28	20:40 20 20:05 (SAB W2)	19:32		18:23	16:26	16:04
16	08:15	07:29	06:29	06:19		05:22		04:56	05:14	06:00 19:45 (SAB W2)	06:50		07:39	07:34	08:15
	16:34	17:30	18:20	20:12		21:01		21:35	21:27	20:38 21 20:06 (SAB W2)	19:29		18:21	16:24	16:05
17	08:14	07:27	06:27	06:16		05:20		04:55	05:15	06:01 19:45 (SAB W2)	06:51		07:41	07:36	08:16
	16:36	17:31	18:21	20:14		21:03		21:36	21:26	20:36 20 20:05 (SAB W2)	19:27		18:19	16:23	16:05
18	06:13	07:25	06:24	06:14		05:19		04:55	05:16	06:03 19:45 (SAB W2)	06:53		07:43	07:37	08:17
	16:38	17:33	18:23	20:16		21:04		21:36	21:25	20:34 20 20:05 (SAB W2)	19:25		18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	19:48 (SAB W2)	05:17		04:55	05:18	06:04 19:45 (SAB W2)	06:54		07:44	07:39	08:18
	16:39	17:35	18:25	20:17 2	19:50 (SAB W2)	21:06		21:36	21:24	20:32 18 20:03 (SAB W2)	19:22		18:15	16:20	16:05
20	08:11	07:21	06:20	06:10	19:44 (SAB W2)	05:16		04:56	05:19	06:06 19:45 (SAB W2)	06:56		07:46	07:41	08:18
	16:41	17:37	18:26	20:19 8	19:52 (SAB W2)	21:07		21:37	21:22	20:30 17 20:02 (SAB W2)	19:20		18:12	16:19	16:06
21	08:10	07:19	06:17	06:08	19:42 (SAB W2)	05:15		04:56	05:20	06:08 19:46 (SAB W2)	06:58		07:48	07:42	08:19
	16:43	17:39	18:28	20:21 11	19:53 (SAB W2)	21:09		21:37	21:21	20:28 13 19:59 (SAB W4)	19:18		18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	19:41 (SAB W2)	05:13		04:56	05:22	06:09 19:47 (SAB W4)	06:59		07:50	07:44	08:19
	16:44	17:41	18:30	20:22 14	19:55 (SAB W2)	21:10		21:37	21:20	20:25 11 19:58 (SAB W4)	19:15		18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	19:40 (SAB W2)	05:12		04:56	05:23	06:11 19:49 (SAB W2)	07:01		07:51	07:46	08:20
	16:46	17:42	18:32	20:24 17	19:57 (SAB W2)	21:12		21:37	21:19	20:23 7 19:56 (SAB W2)	19:13		18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	19:39 (SAB W2)	05:11		04:56	05:24	06:12	07:02		07:53	07:47	08:20
	16:48	17:44	18:33	20:26 19	19:58 (SAB W2)	21:13		21:38	21:17	20:21	19:11		18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	19:38 (SAB W2)	05:10		04:57	05:26	06:14	07:04		06:55	07:49	08:21
	16:49	17:46	18:35	20:27 20	19:58 (SAB W2)	21:14		21:38	21:16	20:19	19:08		17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	19:38 (SAB W2)	05:09		04:57	05:27	06:16	07:06		06:57	07:51	08:21
	16:51	17:48	18:37	20:29 20	19:58 (SAB W2)	21:16		21:38	21:14	20:17	19:06		17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	19:38 (SAB W2)	05:08		04:58	05:29	06:17	07:07		06:58	07:52	08:21
	16:53	17:50	18:38	20:31 20	19:58 (SAB W2)	21:17		21:38	21:13	20:15	19:04		16:58	16:12	16:10
28	08:01	07:04	06:01	05:54	19:38 (SAB W2)	05:06		04:58	05:30	06:19 19:07 (SAB W4)	07:09		07:00	07:54	08:22
	16:55	17:51	18:40	20:32 20	19:58 (SAB W2)	21:18		21:37	21:12	20:12 11 19:18 (SAB W4)	19:01		16:56	16:11	16:10
29	08:00		06:59	05:52	19:39 (SAB W2)	05:05		04:59	05:32	06:21 19:05 (SAB W4)	07:11		07:02	07:55	08:22
	16:57		19:42	20:34 19	19:58 (SAB W2)	21:19		21:37	21:10	20:10 15 19:20 (SAB W4)	18:59		16:54	16:10	16:11
30	07:58		06:57	05:50	19:39 (SAB W2)	05:05		04:59	05:33	06:22 19:03 (SAB W4)	07:12		07:04	07:57	08:22
	16:58		19:43	20:36 18	19:57 (SAB W2)	21:21		21:37	21:08	20:08 18 19:21 (SAB W4)	18:57		16:52	16:09	16:12
31	07:57		06:54			05:04			05:34	06:24 19:02 (SAB W4)			07:06		08:22
	17:00		19:45			21:22			21:07	20:06 20 19:22 (SAB W4)			16:51		16:13
Sonnenscheinstunden	260	278	367	416	484		498	501	453		381		332	267	245
astr.max.mögl.Beschattung				479	51				305	231					
Red.Sonnenscheinwahrsch.				0,36	0,43				0,43	0,34					
Reduktion Betriebsdauer				0,96	0,96				0,96	0,96					
Reduktion Windrichtung				0,71	0,69				0,69	0,72					
Gesamte Reduktion				0,24	0,28				0,29	0,23					
Met.wahrsch.Beschattung				116	14				87	54					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 09 - Aschersleben - Am Harzblick 49

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai			Juni			Juli			August			September		Oktober		November	Dezember
1	08:22		07:55		07:02		06:52		05:48			05:03		20:14 (SAB W4)	05:00		20:19 (SAB W4)	05:36		20:15 (SAB W3)	06:25		07:14		07:07	07:58
	16:14		17:02		17:53		19:47		20:37			21:23	29	20:43 (SAB W4)	21:37	31	20:50 (SAB W4)	21:05	21	20:36 (SAB W3)	20:04		18:55		16:49	16:09
2	08:22		07:54		07:00		06:50		05:46			05:02		20:14 (SAB W4)	05:01		20:19 (SAB W4)	05:38		20:15 (SAB W3)	06:27		07:16		07:09	07:59
	16:16		17:04		17:55		19:49		20:39			21:24	29	20:43 (SAB W4)	21:37	31	20:50 (SAB W4)	21:04	19	20:34 (SAB W3)	20:01		18:52		16:47	16:08
3	08:22		07:52		06:58		06:48		05:44			05:01		20:14 (SAB W4)	05:01		20:20 (SAB W4)	05:39		20:16 (SAB W3)	06:29		07:17		07:11	08:01
	16:17		17:06		17:57		19:50		20:41			21:25	30	20:44 (SAB W4)	21:36	31	20:51 (SAB W4)	21:02	17	20:33 (SAB W3)	19:59		18:50		16:45	16:07
4	08:21		07:51		06:56		06:45		05:42			05:00		20:14 (SAB W4)	05:02		20:19 (SAB W4)	05:41		20:16 (SAB W3)	06:30		07:19		07:13	08:02
	16:18		17:07		17:59		19:52		20:42			21:26	30	20:44 (SAB W4)	21:36	31	20:50 (SAB W4)	21:00	15	20:31 (SAB W3)	19:57		18:48		16:43	16:07
5	08:21		07:49		06:54		06:43		05:40			05:00		20:14 (SAB W4)	05:03		20:20 (SAB W4)	05:42		20:17 (SAB W3)	06:32		07:21		07:15	08:04
	16:19		17:09		18:00		19:54		20:44			21:27	31	20:45 (SAB W4)	21:35	31	20:51 (SAB W4)	20:59	12	20:29 (SAB W3)	19:55		18:45		16:42	16:06
6	08:21		07:47		06:51		06:41		05:38		20:10 (SAB W3)	04:59		20:14 (SAB W4)	05:04		20:20 (SAB W4)	05:44		20:19 (SAB W3)	06:33		07:22		07:16	08:05
	16:20		17:11		18:02		19:55		20:46	7	20:17 (SAB W3)	21:28	30	20:44 (SAB W4)	21:35	31	20:51 (SAB W4)	20:57	9	20:28 (SAB W3)	19:52		18:43		16:40	16:06
7	08:21		07:46		06:49		06:39		05:37		20:09 (SAB W3)	04:59		20:14 (SAB W4)	05:04		20:21 (SAB W4)	05:45		20:21 (SAB W3)	06:35		07:24		07:18	08:06
	16:21		17:13		18:04		19:57		20:47	10	20:19 (SAB W3)	21:29	31	20:45 (SAB W4)	21:34	30	20:51 (SAB W4)	20:55	4	20:25 (SAB W3)	19:50		18:41		16:38	16:06
8	08:20		07:44		06:47		06:36		05:35		20:07 (SAB W3)	04:58		20:14 (SAB W4)	05:05		20:21 (SAB W4)	05:47			06:37		07:26		07:20	08:07
	16:23		17:15		18:06		19:59		20:49	13	20:20 (SAB W3)	21:30	31	20:45 (SAB W4)	21:34	30	20:51 (SAB W4)	20:53			19:48		18:39		16:37	16:05
9	08:20		07:42		06:45		06:34		05:33		20:05 (SAB W3)	04:58		20:14 (SAB W4)	05:06		20:22 (SAB W4)	05:48			06:38		07:27		07:22	08:08
	16:24		17:17		18:07		20:00		20:51	16	20:21 (SAB W3)	21:31	32	20:46 (SAB W4)	21:33	29	20:51 (SAB W4)	20:51			19:45		18:36		16:35	16:05
10	08:19		07:40		06:42		06:32		05:31		20:05 (SAB W3)	04:57		20:15 (SAB W4)	05:07		20:22 (SAB W4)	05:50			06:40		07:29		07:23	08:10
	16:25		17:19		18:09		20:02		20:52	18	20:23 (SAB W3)	21:31	31	20:46 (SAB W4)	21:32	29	20:51 (SAB W4)	20:49			19:43		18:34		16:33	16:05
11	08:19		07:39		06:40		06:30		05:30		20:04 (SAB W3)	04:57		20:14 (SAB W4)	05:08		20:22 (SAB W4)	05:52			06:42		07:31		07:25	08:11
	16:27		17:20		18:11		20:04		20:54	20	20:24 (SAB W3)	21:32	32	20:46 (SAB W4)	21:31	29	20:51 (SAB W4)	20:48			19:41		18:32		16:32	16:05
12	08:18		07:37		06:38		06:27		05:28		20:04 (SAB W3)	04:56		20:15 (SAB W4)	05:09		20:23 (SAB W4)	05:53			06:43		07:32		07:27	08:12
	16:28		17:22		18:13		20:05		20:55	21	20:25 (SAB W3)	21:33	31	20:46 (SAB W4)	21:31	28	20:51 (SAB W4)	20:46			19:39		18:30		16:30	16:04
13	08:17		07:35		06:36		06:25		05:27		20:03 (SAB W3)	04:56		20:15 (SAB W4)	05:11		20:23 (SAB W4)	05:55			06:45		07:34		07:29	08:13
	16:30		17:24		18:14		20:07		20:57	22	20:25 (SAB W3)	21:34	32	20:47 (SAB W4)	21:30	28	20:51 (SAB W4)	20:44			19:36		18:28		16:29	16:04
14	08:16		07:33		06:33		06:23		05:25		20:03 (SAB W3)	04:56		20:15 (SAB W4)	05:12		20:24 (SAB W3)	05:56			06:46		07:36		07:30	08:14
	16:31		17:26		18:16		20:09		20:58	23	20:26 (SAB W3)	21:34	32	20:47 (SAB W4)	21:29	26	20:50 (SAB W4)	20:42			19:34		18:25		16:27	16:04
15	08:16		07:31		06:31		06:21		05:23		20:03 (SAB W3)	04:56		20:16 (SAB W4)	05:13		20:20 (SAB W3)	05:58			06:48		07:38		07:32	08:15
	16:33		17:28		18:18		20:11		21:00	22	20:25 (SAB W3)	21:35	31	20:47 (SAB W4)	21:28	30	20:50 (SAB W4)	20:40			19:32		18:23		16:26	16:04
16	08:15		07:29		06:29		06:19		05:22		20:03 (SAB W3)	04:56		20:16 (SAB W4)	05:14		20:19 (SAB W3)	06:00			06:50		07:39		07:34	08:15
	16:34		17:30		18:20		20:12		21:01	23	20:26 (SAB W3)	21:35	32	20:48 (SAB W4)	21:27	30	20:49 (SAB W4)	20:38			19:29		18:21		16:24	16:05
17	08:14		07:27		06:27		06:16		05:20		20:03 (SAB W3)	04:56		20:16 (SAB W4)	05:15		20:18 (SAB W3)	06:01			06:51		07:41		07:36	08:16
	16:36		17:32		18:21		20:14		21:03	23	20:26 (SAB W3)	21:36	32	20:48 (SAB W4)	21:26	31	20:49 (SAB W4)	20:36			19:27		18:19		16:23	16:05
18	08:13		07:25		06:24		06:14		05:19		20:03 (SAB W3)	04:55		20:16 (SAB W4)	05:16		20:17 (SAB W3)	06:03			06:53		07:43		07:37	08:17
	16:38		17:33		18:23		20:16		21:04	22	20:25 (SAB W3)	21:36	32	20:48 (SAB W4)	21:25	31	20:48 (SAB W4)	20:34			19:25		18:17		16:22	16:05
19	08:12		07:23		06:22		06:12		05:18		20:03 (SAB W3)	04:56		20:16 (SAB W4)	05:18		20:16 (SAB W3)	06:04			06:54		07:44		07:39	08:18
	16:39		17:35		18:25		20:17		21:06	22	20:25 (SAB W3)	21:36	32	20:48 (SAB W4)	21:24	31	20:47 (SAB W4)	20:32			19:22		18:15		16:20	16:05
20	08:11		07:21		06:20		06:10		05:16		20:04 (SAB W3)	04:56		20:16 (SAB W4)	05:19		20:16 (SAB W3)	06:06			06:56		07:46		07:41	08:18
	16:41		17:37		18:26		20:19		21:07	21	20:25 (SAB W3)	21:37	32	20:48 (SAB W4)	21:22	31	20:47 (SAB W4)	20:30			19:20		18:13		16:19	16:06
21	08:10		07:19		06:17		06:08		05:15		20:05 (SAB W3)	04:56		20:16 (SAB W4)	05:20		20:15 (SAB W3)	06:08			06:58		07:48		07:42	08:19
	16:43		17:39		18:28		20:21		21:09	27	20:32 (SAB W4)	21:37	32	20:48 (SAB W4)	21:21	30	20:45 (SAB W4)	20:28			19:18		18:10		16:18	16:06
22	08:09		07:17		06:15		06:06		05:13		20:04 (SAB W3)	04:56		20:16 (SAB W4)	05:22		20:15 (SAB W3)	06:09			06:59		07:50		07:44	08:19
	16:44		17:41		18:30		20:22		21:10	29	20:33 (SAB W4)	21:37	32	20:48 (SAB W4)	21:20	28	20:43 (SAB W4)	20:25			19:15		18:08		16:17	16:07
23	08:08		07:15		06:13		06:04		05:12		20:05 (SAB W3)	04:56		20:17 (SAB W4)	05:23		20:14 (SAB W3)	06:11			07:01		07:51		07:46	08:20
	16:46		17:42		18:32		20:24		21:12	30	20:35 (SAB W4)	21:37	32	20:49 (SAB W4)	21:19	25	20:39 (SAB W4)	20:23			19:13		18:06		16:16	16:07
24	08:06		07:13		06:11		06:02		05:11		20:06 (SAB W3)	04:56		20:17 (SAB W4)	05:24		20:14 (SAB W3)	06:12			07:03		07:53		07:47	08:20
	16:48		17:44		18:33		20:26		21:13	31	20:37 (SAB W4)	21:38	32	20:49 (SAB W4)	21:17	22	20:36 (SAB W3)	20:21			19:11		18:04		16:15	16:08
25	08:05		07:11		06:08		06:00		05:10		20:07 (SAB W3)	04:57		20:17 (SAB W4)	05:26		20:14 (SAB W3)	06:14			07:04		06:55		07:49	08:21
	16:49		17:46		18:35		20:27		21:14	31	20:38 (SAB W4)	21:38	32	20:49 (SAB W4)	21:16	22	20:36 (SAB W3)	20:19			19:08		17:02		16:14	16:08
26	08:04		07:09		06:06		05:58		05:09		20:08 (SAB W3)	04:57		20:18 (SAB W4)	05:27		20:13 (SAB W3)	06:16			07:06		06:57		07:51	08:21
	16:51		17:48		18:37		20:29		21:16	31	20:39 (SAB W4)	21:38	32	20:50 (SAB W4)	21:14	23	20:36 (SAB W3)	20:17			19:06		17:00		16:13	16:09
27	08:03		07:07		06:04		05:56		05:08		20:09 (SAB W3)	04:58		20:18 (SAB W4)	05:29		20:14 (SAB W3)	06:17			07:07		06:58		07:52	08:21
	16:53		17:50		18:38		20:31		21:17	30	20:39 (SAB W4)	21:38	32	20:50 (SAB W4)	21:13	23	20:37 (SAB W3)	20:15			19:04		16:58		16:12	16:10
28	08:01		07:05		06:01		05:54		05:07		20:10 (SAB W3)	04:58		20:19 (SAB W4)	05:30		20:13 (SAB W3)	06:19			07:09		07:00		07:54	08:22
	16:55		17:51		18:40		20:32		21:18	30	20:40 (SAB W4)	21:37	31	20:50 (SAB W4)	21:12	23	20:36 (SAB W3)	20:13			19:01		16:56		16:11	16:11
29	08:00				06:59		05:52		05:06		20:13 (SAB W3)	04:59		20:18 (SAB W4)	05:32		20:13 (SAB W3)	06:21			07:11		07:02		07:55	08:22
	16:57				19:42		20:34		21:19	29	20:42 (SAB W4)	21:37	32	20:50 (SAB W4)	21:10	23	20:36 (SAB W3)	20:10			18:59		16:54		16:10	16:11
30	07:58				06:57		05:50		05:05		20:15 (SAB W4)	04:59		20:19 (SAB W4)	05:33		20:14 (SAB W3)	06:22			07:12		07:04		07:57	08:22
	16:58				19:43		20:36		21:21	27	20:42 (SAB W4)	21:37	31	20:50 (SAB W4)	21:08	22	20:36 (SAB W3)	20:08			18:57		16:53		16:09	16:12
31	07:57				06:54				05:04		20:15 (SAB W4)				05:35		20:14 (SAB W3)	06:24					07:06			08:22
	17:00				19:45				21:22	27	20:42 (SAB W4)				21:07	21	20:35 (SAB W3)	20:06					16:51			16:13
Sonnenscheinstunden	260		278		367		416		484			498			501			453			381		332		267	245
astr.max.mögl.Beschattung										605			940			861			97							
Red.Sonnenscheinwahrsch.										0,43			0,35			0,40			0,43							
Reduktion Betriebsdauer										0,96			0,96			0,96			0,96							
Reduktion Windrichtung										0,67			0,67			0,67			0,68							
Gesamte Reduktion										0,28			0,22			0,26			0,28							
Met.wahrsch.Beschattung										167			209			222			27							

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 10 - Aschersleben - Am Harzblick 45

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai		Juni		Juli		August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48		05:03		20:24 (SAB W3)	05:00	20:35 (SAB W3)	05:36	06:25	07:14	07:07	07:58
	16:14	17:02	17:53	19:47	20:37		21:23	17	20:41 (SAB W3)	21:37	21:03 (SAB W4)	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46		05:02		20:24 (SAB W3)	05:01	20:35 (SAB W3)	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39		21:24	17	20:41 (SAB W3)	21:36	21:03 (SAB W4)	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44		05:01		20:25 (SAB W3)	05:01	20:35 (SAB W3)	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41		21:25	22	20:52 (SAB W4)	21:36	21:03 (SAB W4)	21:02	19:59	18:50	16:45	16:07
4	08:21	07:51	06:56	06:45	05:42		05:00		20:25 (SAB W3)	05:02	20:34 (SAB W3)	05:41	06:30	07:19	07:13	08:02
	16:18	17:07	17:59	19:52	20:42		21:26	24	20:53 (SAB W4)	21:36	21:02 (SAB W4)	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40		05:00		20:27 (SAB W3)	05:03	20:34 (SAB W3)	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:00	19:54	20:44		21:27	25	20:55 (SAB W4)	21:35	21:02 (SAB W4)	20:59	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38		04:59		20:27 (SAB W3)	05:04	20:33 (SAB W3)	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46		21:28	25	20:55 (SAB W4)	21:35	21:02 (SAB W4)	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:38	05:37		04:59		20:28 (SAB W3)	05:04	20:33 (SAB W3)	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:47		21:29	25	20:56 (SAB W4)	21:34	21:01 (SAB W4)	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35		04:58		20:28 (SAB W3)	05:05	20:33 (SAB W3)	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49		21:30	26	20:57 (SAB W4)	21:34	21:01 (SAB W4)	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33		04:58		20:29 (SAB W3)	05:06	20:33 (SAB W3)	05:48	06:38	07:27	07:22	08:08
	16:24	17:17	18:07	20:00	20:50		21:31	26	20:58 (SAB W4)	21:33	21:00 (SAB W4)	20:51	19:45	18:36	16:35	16:05
10	08:19	07:40	06:42	06:32	05:31		04:57		20:31 (SAB W3)	05:07	20:33 (SAB W3)	05:50	06:40	07:29	07:23	08:10
	16:25	17:19	18:09	20:02	20:52		21:31	25	20:59 (SAB W4)	21:32	20:58 (SAB W4)	20:49	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30		04:57		20:31 (SAB W3)	05:08	20:32 (SAB W3)	05:52	06:41	07:31	07:25	08:11
	16:27	17:20	18:11	20:04	20:54		21:32	24	20:59 (SAB W4)	21:31	20:49 (SAB W3)	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28		04:56		20:32 (SAB W3)	05:09	20:32 (SAB W3)	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55		21:33	24	21:00 (SAB W4)	21:31	20:50 (SAB W3)	20:46	19:39	18:30	16:30	16:04
13	08:17	07:35	06:36	06:25	05:27		04:56		20:34 (SAB W3)	05:11	20:32 (SAB W3)	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:14	20:07	20:57		21:34	21	21:00 (SAB W4)	21:30	20:50 (SAB W3)	20:44	19:36	18:28	16:29	16:04
14	08:16	07:33	06:33	06:23	05:25		04:56		20:41 (SAB W4)	05:12	20:32 (SAB W3)	05:56	06:46	07:36	07:30	08:14
	16:31	17:26	18:16	20:09	20:58		21:34	20	21:01 (SAB W4)	21:29	20:50 (SAB W3)	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	20:27 (SAB W3)	04:56		20:42 (SAB W4)	05:13	20:32 (SAB W3)	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	2 20:29 (SAB W3)	21:35	20	21:02 (SAB W4)	21:28	20:51 (SAB W3)	20:40	19:32	18:23	16:26	16:04
16	08:15	07:29	06:29	06:19	05:22	20:25 (SAB W3)	04:56		20:42 (SAB W4)	05:14	20:32 (SAB W3)	06:00	06:50	07:39	07:34	08:15
	16:34	17:30	18:20	20:12	21:01	6 20:31 (SAB W3)	21:35	20	21:02 (SAB W4)	21:27	20:51 (SAB W3)	20:38	19:29	18:21	16:24	16:05
17	08:14	07:27	06:27	06:16	05:20	20:25 (SAB W3)	04:56		20:42 (SAB W4)	05:15	20:31 (SAB W3)	06:01	06:51	07:41	07:36	08:16
	16:36	17:31	18:21	20:14	21:03	8 20:33 (SAB W3)	21:36	20	21:02 (SAB W4)	21:26	20:51 (SAB W3)	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	20:23 (SAB W3)	04:55		20:42 (SAB W4)	05:16	20:31 (SAB W3)	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:04	11 20:34 (SAB W3)	21:36	21	21:03 (SAB W4)	21:25	20:51 (SAB W3)	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	20:23 (SAB W3)	04:56		20:42 (SAB W4)	05:18	20:31 (SAB W3)	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	12 20:35 (SAB W3)	21:36	21	21:03 (SAB W4)	21:24	20:51 (SAB W3)	20:32	19:22	18:15	16:20	16:05
20	08:11	07:21	06:20	06:10	05:16	20:23 (SAB W3)	04:56		20:42 (SAB W4)	05:19	20:32 (SAB W3)	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	14 20:37 (SAB W3)	21:37	21	21:03 (SAB W4)	21:22	20:51 (SAB W3)	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	20:23 (SAB W3)	04:56		20:42 (SAB W4)	05:20	20:32 (SAB W3)	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	15 20:38 (SAB W3)	21:37	21	21:03 (SAB W4)	21:21	20:50 (SAB W3)	20:28	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:13	20:22 (SAB W3)	04:56		20:42 (SAB W4)	05:22	20:50 (SAB W3)	06:09	06:59	07:50	07:44	08:19
	16:44	17:41	18:30	20:22	21:10	17 20:39 (SAB W3)	21:37	21	21:03 (SAB W4)	21:20	20:49 (SAB W3)	20:25	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	20:22 (SAB W3)	04:56		20:43 (SAB W4)	05:23	20:32 (SAB W3)	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:12	18 20:40 (SAB W3)	21:37	21	21:04 (SAB W4)	21:19	20:47 (SAB W3)	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11	20:22 (SAB W3)	04:56		20:43 (SAB W4)	05:24	20:33 (SAB W3)	06:12	07:03	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	19 20:41 (SAB W3)	21:38	21	21:04 (SAB W4)	21:17	20:47 (SAB W3)	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	20:22 (SAB W3)	04:57		20:43 (SAB W4)	05:26	20:34 (SAB W3)	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	19 20:41 (SAB W3)	21:38	20	21:03 (SAB W4)	21:16	20:45 (SAB W3)	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	20:22 (SAB W3)	04:57		20:44 (SAB W4)	05:27	20:34 (SAB W3)	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	19 20:41 (SAB W3)	21:38	20	21:04 (SAB W4)	21:14	20:43 (SAB W3)	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	20:22 (SAB W3)	04:58		20:44 (SAB W4)	05:29	20:36 (SAB W3)	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	19 20:41 (SAB W3)	21:38	20	21:04 (SAB W4)	21:13	20:43 (SAB W3)	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07	20:22 (SAB W3)	04:58		20:45 (SAB W4)	05:30	20:37 (SAB W3)	06:19	07:09	07:00	07:54	08:22
	16:55	17:51	18:40	20:32	21:18	19 20:41 (SAB W3)	21:37	19	21:04 (SAB W4)	21:12	20:41 (SAB W3)	20:12	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	20:23 (SAB W3)	04:59		20:44 (SAB W4)	05:32	20:38 (SAB W3)	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	19 20:42 (SAB W3)	21:37	20	21:04 (SAB W4)	21:10	1 20:39 (SAB W3)	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:05	20:23 (SAB W3)	04:59		20:37 (SAB W3)	05:33		06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:21	19 20:42 (SAB W3)	21:37	23	21:04 (SAB W4)	21:08		20:08	18:57	16:53	16:09	16:12
31	07:57		06:54		05:04	20:24 (SAB W3)				05:35		06:24		07:06		08:22
	17:00		19:45		21:22	17 20:41 (SAB W3)				21:07		20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484		498		501		453	381	332	267	245	
astr.max.mögl.Beschattung					253		650		524							
Red.Sonnenscheinwahrsch.					0,43		0,35		0,40							
Reduktion Betriebsdauer					0,96		0,96		0,96							
Reduktion Windrichtung					0,67		0,66		0,66							
Gesamte Reduktion					0,27		0,22		0,26							
Met.wahrsch.Beschattung					69		142		134							

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 11 - Aschersleben - Über der Eine 18A

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni		Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03		05:00	05:36	06:25	07:14	07:07	07:58
	16:14	17:02	17:53	19:47	20:37	21:23		21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02		05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24		21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01		05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25		21:36	21:02	19:59	18:50	16:45	16:07
4	08:21	07:51	06:56	06:45	05:42	05:00		05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:07	17:59	19:52	20:42	21:26		21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00		05:03	05:42	06:32	07:21	07:14	08:03
	16:19	17:09	18:00	19:54	20:44	21:27		21:35	20:58	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38	04:59		05:04	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28		21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:38	05:37	04:59		05:04	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:47	21:29		21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58		05:05	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30		21:33	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58		05:06	05:48	06:38	07:27	07:22	08:08
	16:24	17:17	18:07	20:00	20:50	21:31		21:33	20:51	19:45	18:36	16:35	16:05
10	08:19	07:40	06:42	06:32	05:31	04:57		05:07	05:50	06:40	07:29	07:23	08:10
	16:25	17:19	18:09	20:02	20:52	21:31		21:32	20:49	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57		05:08	05:52	06:41	07:31	07:25	08:11
	16:27	17:20	18:11	20:04	20:54	21:32		21:31	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56		05:09	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55	21:33		21:31	20:46	19:39	18:30	16:30	16:04
13	08:17	07:35	06:36	06:25	05:27	04:56		05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:14	20:07	20:57	21:34		21:30	20:44	19:36	18:28	16:29	16:04
14	08:16	07:33	06:33	06:23	05:25	04:56		05:12	05:56	06:46	07:36	07:30	08:14
	16:31	17:26	18:16	20:09	20:58	21:34		21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56		05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35		21:28	20:40	19:32	18:23	16:26	16:04
16	08:15	07:29	06:29	06:19	05:22	04:56		05:14	06:00	06:50	07:39	07:34	08:15
	16:34	17:30	18:20	20:12	21:01	21:35		21:27	20:38	19:29	18:21	16:24	16:05
17	08:14	07:27	06:27	06:16	05:20	04:56		05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:31	18:21	20:14	21:03	21:36		21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:55		05:16	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:04	21:36		21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56		05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:36		21:23	20:32	19:22	18:15	16:20	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56		05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37		21:22	20:30	19:20	18:12	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	21:03 (SAB W4)	05:20	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	1 21:04 (SAB W4)	21:21	20:27	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:13	04:56		05:22	06:09	06:59	07:50	07:44	08:19
	16:44	17:41	18:30	20:22	21:10	21:37		21:20	20:25	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56		05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:12	21:37		21:19	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11	04:56		05:24	06:12	07:02	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37		21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57		05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	21:38		21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57		05:27	06:16	07:06	06:57	07:50	08:21
	16:51	17:48	18:37	20:29	21:16	21:38		21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58		05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:37		21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:04	06:01	05:54	05:07	04:58		05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:51	18:40	20:32	21:18	21:37		21:12	20:12	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59		05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37		21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:05	04:59		05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:21	21:37		21:08	20:08	18:57	16:53	16:09	16:12
31	07:57		06:54		05:04			05:35	06:24		07:06		08:22
	17:00		19:45		21:22			21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498		501	453	381	332	267	245
astr.max.mögl.Beschattung							1						
Red.Sonnenscheinwahrsch.							0,35						
Reduktion Betriebsdauer							0,96						
Reduktion Windrichtung							0,64						
Gesamte Reduktion							0,21						
Met.wahrsch.Beschattung							0						

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 12 - Westdorf - Am Landgraben 1A

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:15	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:21	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:14	08:03
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:58	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38	04:59	05:04	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:20	07:46	06:49	06:38	05:37	04:59	05:05	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:33	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:48	06:38	07:27	07:22	08:08
	16:24	17:17	18:07	20:00	20:50	21:31	21:33	20:51	19:45	18:36	16:35	16:05
10	08:19	07:40	06:42	06:32	05:31	04:57	05:07	05:50	06:40	07:29	07:23	08:09
	16:26	17:19	18:09	20:02	20:52	21:31	21:32	20:49	19:43	18:34	16:33	16:05
11	08:18	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:41	07:31	07:25	08:11
	16:27	17:20	18:11	20:04	20:54	21:32	21:31	20:47	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55	21:33	21:30	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:14	20:07	20:57	21:33	21:30	20:44	19:36	18:28	16:29	16:04
14	08:16	07:33	06:33	06:23	05:25	04:56	05:12	05:56	06:46	07:36	07:30	08:14
	16:31	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:37	07:32	08:14
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:15
	16:34	17:30	18:20	20:12	21:01	21:35	21:27	20:38	19:29	18:21	16:24	16:05
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	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:56	05:16	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:36	21:23	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:27	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:19
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23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:11	21:37	21:18	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11	04:57	05:24	06:12	07:02	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	21:37	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:50	08:21
	16:51	17:48	18:37	20:29	21:15	21:37	21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:37	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:04	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:21
	16:55	17:51	18:40	20:32	21:18	21:37	21:11	20:12	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:20	21:37	21:08	20:08	18:57	16:53	16:09	16:12
31	07:57		06:54		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 13 - Westdorf - Aschersleberener Str. 2A

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:15	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:21	07:51	06:56	06:45	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
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	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:58	19:55	18:45	16:42	16:06
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	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
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	16:23	17:15	18:06	19:59	20:49	21:30	21:33	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:48	06:38	07:27	07:22	08:08
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	16:28	17:22	18:13	20:05	20:55	21:33	21:30	20:46	19:39	18:30	16:30	16:05
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19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:36	21:23	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
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22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:19
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23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
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24	08:06	07:13	06:10	06:02	05:11	04:57	05:24	06:12	07:02	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
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26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:50	08:21
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27	08:02	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:07	06:58	07:52	08:21
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	16:55	17:51	18:40	20:32	21:18	21:37	21:11	20:12	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
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30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:56	08:22
	16:58		19:43	20:36	21:20	21:37	21:08	20:08	18:57	16:53	16:10	16:12
31	07:57		06:54		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 14 - Westdorf - Autoverwertung Lorenz

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:15	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:21	07:51	06:56	06:45	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:14	08:03
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:58	19:55	18:45	16:42	16:07
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	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
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	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
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	16:27	17:20	18:11	20:04	20:54	21:32	21:31	20:47	19:41	18:32	16:32	16:05
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19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:36	21:23	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:27	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:19
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:25	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:11	21:37	21:18	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:11	06:02	05:11	04:57	05:24	06:12	07:03	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:27	21:14	21:37	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:50	08:21
	16:51	17:48	18:37	20:29	21:15	21:37	21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:37	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:04	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:21
	16:55	17:51	18:40	20:32	21:18	21:37	21:11	20:12	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:56	08:22
	16:58		19:43	20:36	21:20	21:37	21:08	20:08	18:57	16:53	16:10	16:12
31	07:57		06:54		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 15 - Welbsleben - Außenbereich

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:07	07:58
	16:15	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:02	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:21	07:51	06:56	06:45	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:03
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:47	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
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	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:33	20:53	19:48	18:39	16:37	16:06
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	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
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18	08:13	07:25	06:24	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:37	08:17
	16:38	17:34	18:23	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:17	21:06	21:36	21:23	20:32	19:22	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:27	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:19
	16:45	17:41	18:30	20:22	21:10	21:37	21:20	20:25	19:15	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:37	21:19	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:27	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:50	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:37	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:32	21:18	21:37	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:55	16:10	16:12
30	07:58		06:57	05:50	05:05	05:00	05:33	06:22	07:12	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:08	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 16 - Ermsleben - KFZ Werkstatt

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
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	16:21	17:12	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
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25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:59	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:01		19:45		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 17 - Ermsleben - Neue Str.

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	05:00	05:04	05:44	06:34	07:23	07:17	08:05
	16:21	17:12	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
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8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:34	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
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	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
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	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:54	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:31	16:05
13	08:17	07:35	06:36	06:25	05:27	04:57	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
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	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:30	18:21	16:25	16:05
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	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:17	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:57	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:17	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
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26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:59	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:01		19:45		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
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	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 18 - Ermsleben - Am Mittelweg

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	05:00	05:04	05:44	06:34	07:23	07:17	08:05
	16:21	17:12	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:39	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
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	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
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	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
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	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
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	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
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	17:01		19:45		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 19 - Ermsleben - Mühlenstraße

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	05:00	05:04	05:44	06:34	07:23	07:17	08:05
	16:21	17:12	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:39	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:34	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:10	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:54	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:31	16:05
13	08:17	07:35	06:36	06:25	05:27	04:57	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:35	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:16	06:02	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:36	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:17	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:57	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:17	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:09	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
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Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
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Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

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	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 20 - Ermsleben - Radislebener Weg

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:01	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:46	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	05:00	05:04	05:44	06:34	07:23	07:17	08:05
	16:21	17:12	18:03	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:50	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:39	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:34	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:25	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
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	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
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13	08:17	07:35	06:36	06:25	05:27	04:57	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:25	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:24	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:35	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:16	06:02	06:52	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:26	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:36	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:22	06:20	06:10	05:17	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:29	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:07
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	16:45	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:57	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:09	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:59	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:23	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
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Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
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Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 21 - Falkenstein - Mühlenstraße

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
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Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:45 (WEA 09) 05:00	05:56 (WEA 09) 05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23 20	06:05 (WEA 09) 21:37 12	06:08 (WEA 09) 21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:46 (WEA 09) 05:01	05:55 (WEA 09) 05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24 20	06:06 (WEA 09) 21:37 13	06:08 (WEA 09) 21:04	20:02	18:53	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:46 (WEA 09) 05:02	05:55 (WEA 09) 05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25 19	06:05 (WEA 09) 21:36 14	06:09 (WEA 09) 21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:48 (WEA 09) 05:02	05:55 (WEA 09) 05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26 18	06:06 (WEA 09) 21:36 15	06:10 (WEA 09) 21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:48 (WEA 09) 05:03	05:55 (WEA 09) 05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27 17	06:05 (WEA 09) 21:35 16	06:11 (WEA 09) 20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:48 (WEA 09) 05:04	05:54 (WEA 09) 05:44	06:34	07:23	07:17	08:05
	16:21	17:11	18:02	19:56	20:46	21:28 16	06:04 (WEA 09) 21:35 17	06:11 (WEA 09) 20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:49 (WEA 09) 05:05	05:54 (WEA 09) 05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29 16	06:05 (WEA 09) 21:34 17	06:11 (WEA 09) 20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:50 (WEA 09) 05:06	05:54 (WEA 09) 05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30 15	06:05 (WEA 09) 21:34 18	06:12 (WEA 09) 20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:33	04:58	05:50 (WEA 09) 05:07	05:54 (WEA 09) 05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31 14	06:04 (WEA 09) 21:33 18	06:12 (WEA 09) 20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:50 (WEA 09) 05:08	05:54 (WEA 09) 05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32 14	06:04 (WEA 09) 21:32 19	06:13 (WEA 09) 20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:51 (WEA 09) 05:09	05:54 (WEA 09) 05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32 13	06:04 (WEA 09) 21:32 19	06:13 (WEA 09) 20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:51 (WEA 09) 05:10	05:54 (WEA 09) 05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:55	21:33 12	06:03 (WEA 09) 21:31 20	06:14 (WEA 09) 20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:52 (WEA 09) 05:11	05:54 (WEA 09) 05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34 11	06:03 (WEA 09) 21:30 20	06:14 (WEA 09) 20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	05:51 (WEA 09) 04:56	05:53 (WEA 09) 05:12	05:53 (WEA 09) 05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59 6	05:57 (WEA 09) 21:34 10	06:03 (WEA 09) 21:29 21	06:14 (WEA 09) 20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	05:50 (WEA 09) 04:56	05:53 (WEA 09) 05:13	05:53 (WEA 09) 05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00 10	06:00 (WEA 09) 21:35 10	06:03 (WEA 09) 21:28 22	06:15 (WEA 09) 20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	05:48 (WEA 09) 04:56	05:54 (WEA 09) 05:14	05:53 (WEA 09) 06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:12	21:02 13	06:01 (WEA 09) 21:35 9	06:03 (WEA 09) 21:27 22	06:15 (WEA 09) 20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	05:47 (WEA 09) 04:56	05:55 (WEA 09) 05:16	05:53 (WEA 09) 06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03 15	06:02 (WEA 09) 21:36 8	06:03 (WEA 09) 21:26 22	06:15 (WEA 09) 20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:15	05:19	05:46 (WEA 09) 04:56	05:55 (WEA 09) 05:17	05:54 (WEA 09) 06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05 17	06:03 (WEA 09) 21:36 8	06:03 (WEA 09) 21:25 22	06:16 (WEA 09) 20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	05:45 (WEA 09) 04:56	05:55 (WEA 09) 05:18	05:54 (WEA 09) 06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06 18	06:03 (WEA 09) 21:37 8	06:03 (WEA 09) 21:24 22	06:16 (WEA 09) 20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	05:45 (WEA 09) 04:56	05:56 (WEA 09) 05:19	05:54 (WEA 09) 06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08 19	06:04 (WEA 09) 21:37 7	06:03 (WEA 09) 21:23 21	06:15 (WEA 09) 20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	05:44 (WEA 09) 04:56	05:56 (WEA 09) 05:21	05:54 (WEA 09) 06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09 21	06:05 (WEA 09) 21:37 7	06:03 (WEA 09) 21:21 21	06:15 (WEA 09) 20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	05:44 (WEA 09) 04:56	05:57 (WEA 09) 05:22	05:54 (WEA 09) 06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10 21	06:05 (WEA 09) 21:37 7	06:04 (WEA 09) 21:20 21	06:15 (WEA 09) 20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	05:44 (WEA 09) 04:56	05:56 (WEA 09) 05:23	05:55 (WEA 09) 06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12 22	06:06 (WEA 09) 21:38 8	06:04 (WEA 09) 21:19 20	06:15 (WEA 09) 20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	05:44 (WEA 09) 04:57	05:56 (WEA 09) 05:25	05:55 (WEA 09) 06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13 22	06:06 (WEA 09) 21:38 8	06:04 (WEA 09) 21:17 19	06:14 (WEA 09) 20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	05:44 (WEA 09) 04:57	05:57 (WEA 09) 05:26	05:55 (WEA 09) 06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14 22	06:06 (WEA 09) 21:38 8	06:05 (WEA 09) 21:16 19	06:14 (WEA 09) 20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	05:45 (WEA 09) 04:58	05:56 (WEA 09) 05:28	05:57 (WEA 09) 06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16 21	06:06 (WEA 09) 21:38 9	06:05 (WEA 09) 21:15 17	06:14 (WEA 09) 20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	05:45 (WEA 09) 04:58	05:56 (WEA 09) 05:29	05:58 (WEA 09) 06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17 21	06:06 (WEA 09) 21:38 9	06:05 (WEA 09) 21:13 14	06:12 (WEA 09) 20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	05:45 (WEA 09) 04:58	05:56 (WEA 09) 05:30	05:59 (WEA 09) 06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18 21	06:06 (WEA 09) 21:38 10	06:06 (WEA 09) 21:12 12	06:11 (WEA 09) 20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	05:45 (WEA 09) 04:59	05:55 (WEA 09) 05:32	06:01 (WEA 09) 06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20 21	06:06 (WEA 09) 21:37 11	06:06 (WEA 09) 21:10 9	06:10 (WEA 09) 20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:45 (WEA 09) 05:00	05:56 (WEA 09) 05:33	06:04 (WEA 09) 06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21 21	06:06 (WEA 09) 21:37 11	06:07 (WEA 09) 21:09 1	06:05 (WEA 09) 20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04	05:45 (WEA 09)	05:35	06:24		07:06		08:22
	17:00		19:45		21:22 21	06:06 (WEA 09)	21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung					332	353	523					
Red.Sonnenscheinwahrsch.					0,43	0,35	0,40					
Reduktion Betriebsdauer					0,96	0,96	0,96					
Reduktion Windrichtung					0,71	0,71	0,71					
Gesamte Reduktion					0,29	0,24	0,27					
Met.wahrsch.Beschattung					97	83	143					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 22 - Strommühle

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April			Mai			Juni		
1	08:22		07:56		07:03		06:52			05:48		06:12 (WEA 08)	05:03		05:31 (WEA 11)
	16:15		17:02		17:54		19:47			20:38	31	06:55 (WEA 09)	21:23	48	06:30 (WEA 12)
2	08:22		07:54		07:00		06:50			05:46		06:10 (WEA 08)	05:02		05:31 (WEA 11)
	16:16		17:04		17:55		19:49			20:39	30	06:53 (WEA 09)	21:24	47	06:30 (WEA 12)
3	08:22		07:53		06:58		06:48			05:44		06:10 (WEA 08)	05:01		05:30 (WEA 11)
	16:17		17:06		17:57		19:51			20:41	23	06:49 (WEA 09)	21:25	47	06:30 (WEA 12)
4	08:22		07:51		06:56		06:46			05:42		06:09 (WEA 08)	05:01		05:30 (WEA 11)
	16:18		17:08		17:59		19:52			20:43	21	06:30 (WEA 08)	21:26	47	06:31 (WEA 12)
5	08:21		07:49		06:54		06:43			05:41		06:09 (WEA 08)	05:00		05:29 (WEA 11)
	16:19		17:10		18:01		19:54			20:44	20	06:29 (WEA 08)	21:27	46	06:30 (WEA 12)
6	08:21		07:48		06:52		06:41			05:39		06:09 (WEA 08)	04:59		05:28 (WEA 11)
	16:20		17:11		18:02		19:56			20:46	20	06:29 (WEA 08)	21:28	46	06:30 (WEA 12)
7	08:21		07:46		06:49		06:39			05:37		06:09 (WEA 08)	04:59		05:28 (WEA 11)
	16:22		17:13		18:04		19:57			20:48	20	06:29 (WEA 08)	21:29	47	06:30 (WEA 12)
8	08:20		07:44		06:47		06:37			05:35		06:09 (WEA 08)	04:58		05:28 (WEA 11)
	16:23		17:15		18:06		19:59			20:49	20	06:29 (WEA 08)	21:30	48	06:31 (WEA 12)
9	08:20		07:42		06:45		06:34			05:33		06:10 (WEA 08)	04:58		05:27 (WEA 11)
	16:24		17:17		18:08		20:01			20:51	19	06:29 (WEA 08)	21:31	47	06:30 (WEA 12)
10	08:19		07:41		06:43		06:32			05:32		06:10 (WEA 08)	04:57		05:27 (WEA 11)
	16:26		17:19		18:09		20:02			20:52	18	06:28 (WEA 08)	21:32	48	06:30 (WEA 12)
11	08:19		07:39		06:40		06:30			05:30		06:07 (WEA 12)	04:57		05:27 (WEA 11)
	16:27		17:21		18:11		20:04			20:54	19	06:26 (WEA 08)	21:32	49	06:31 (WEA 12)
12	08:18		07:37		06:38		06:28			05:28		06:05 (WEA 12)	04:57		05:26 (WEA 11)
	16:29		17:23		18:13		20:06			20:56	21	06:26 (WEA 08)	21:33	48	06:30 (WEA 12)
13	08:17		07:35		06:36		06:25			05:27		06:03 (WEA 12)	04:56		05:26 (WEA 11)
	16:30		17:24		18:15		20:07			20:57	21	06:24 (WEA 08)	21:34	49	06:30 (WEA 12)
14	08:17		07:33		06:34		06:23			05:25		06:02 (WEA 12)	04:56		05:26 (WEA 11)
	16:32		17:26		18:16		20:09			20:59	21	06:23 (WEA 12)	21:34	49	06:31 (WEA 12)
15	08:16		07:31		06:31		06:21		06:50 (WEA 09)	05:24		06:01 (WEA 12)	04:56		05:26 (WEA 11)
	16:33		17:28		18:18		20:11	2	06:52 (WEA 09)	21:00	24	06:25 (WEA 12)	21:35	49	06:31 (WEA 12)
16	08:15		07:29		06:29		06:19		06:45 (WEA 09)	05:22		06:00 (WEA 12)	04:56		05:27 (WEA 11)
	16:35		17:30		18:20		20:12	12	06:57 (WEA 09)	21:02	25	06:25 (WEA 12)	21:35	49	06:31 (WEA 12)
17	08:14		07:27		06:27		06:17		06:43 (WEA 09)	05:21		05:59 (WEA 12)	04:56		05:27 (WEA 11)
	16:36		17:32		18:22		20:14	16	06:59 (WEA 09)	21:03	27	06:26 (WEA 12)	21:36	48	06:31 (WEA 12)
18	08:13		07:25		06:25		06:15		06:41 (WEA 09)	05:19		05:59 (WEA 12)	04:56		05:27 (WEA 11)
	16:38		17:34		18:23		20:16	19	07:00 (WEA 09)	21:05	28	06:27 (WEA 12)	21:36	48	06:31 (WEA 12)
19	08:12		07:23		06:22		06:12		06:40 (WEA 09)	05:18		05:58 (WEA 12)	04:56		05:27 (WEA 11)
	16:40		17:35		18:25		20:18	21	07:01 (WEA 09)	21:06	29	06:27 (WEA 12)	21:37	48	06:31 (WEA 12)
20	08:11		07:21		06:20		06:10		06:38 (WEA 09)	05:16		05:58 (WEA 12)	04:56		05:27 (WEA 11)
	16:41		17:37		18:27		20:19	23	07:01 (WEA 09)	21:08	29	06:27 (WEA 12)	21:37	48	06:31 (WEA 12)
21	08:10		07:19		06:18		06:08		06:38 (WEA 09)	05:15		05:42 (29B)	04:56		05:27 (WEA 11)
	16:43		17:39		18:28		20:21	23	07:01 (WEA 09)	21:09	32	06:28 (WEA 12)	21:37	48	06:31 (WEA 12)
22	08:09		07:17		06:15		06:06		06:37 (WEA 09)	05:14		05:41 (29B)	04:56		05:28 (WEA 11)
	16:45		17:41		18:30		20:23	24	07:01 (WEA 09)	21:10	36	06:29 (WEA 12)	21:37	48	06:32 (WEA 12)
23	08:08		07:15		06:13		06:04		06:37 (WEA 09)	05:13		05:40 (29B)	04:56		05:28 (WEA 11)
	16:46		17:43		18:32		20:24	24	07:01 (WEA 09)	21:12	37	06:29 (WEA 12)	21:38	48	06:32 (WEA 12)
24	08:07		07:13		06:11		06:02		06:36 (WEA 09)	05:11		05:39 (29B)	04:57		05:28 (WEA 11)
	16:48		17:45		18:34		20:26	25	07:01 (WEA 09)	21:13	39	06:29 (WEA 12)	21:38	48	06:32 (WEA 12)
25	08:05		07:11		06:08		06:00		06:36 (WEA 09)	05:10		05:38 (29B)	04:57		05:29 (WEA 11)
	16:50		17:46		18:35		20:28	24	07:00 (WEA 09)	21:15	41	06:30 (WEA 12)	21:38	48	06:33 (WEA 12)
26	08:04		07:09		06:06		05:58		06:37 (WEA 09)	05:09		05:37 (29B)	04:57		05:29 (WEA 11)
	16:51		17:48		18:37		20:29	24	07:01 (WEA 09)	21:16	43	06:30 (WEA 12)	21:38	49	06:33 (WEA 12)
27	08:03		07:07		06:04		05:56		06:37 (WEA 09)	05:08		05:36 (29B)	04:58		05:29 (WEA 11)
	16:53		17:50		18:39		20:31	23	07:00 (WEA 09)	21:17	44	06:30 (WEA 12)	21:38	48	06:33 (WEA 12)
28	08:01		07:05		06:02		05:54		06:18 (WEA 08)	05:07		05:35 (29B)	04:58		05:29 (WEA 11)
	16:55		17:52		18:40		20:33	28	06:59 (WEA 09)	21:18	45	06:30 (WEA 12)	21:38	49	06:34 (WEA 12)
29	08:00				06:59		05:52		06:16 (WEA 08)	05:06		05:34 (WEA 11)	04:59		05:29 (WEA 11)
	16:57				19:42		20:34	31	06:58 (WEA 09)	21:20	46	06:30 (WEA 12)	21:37	49	06:33 (WEA 12)
30	07:59				06:57		05:50		06:14 (WEA 08)	05:05		05:33 (WEA 11)	05:00		05:30 (WEA 11)
	16:59				19:44		20:36	32	06:57 (WEA 09)	21:21	46	06:30 (WEA 12)	21:37	48	06:34 (WEA 12)
31	07:57				06:55					05:04		05:32 (WEA 11)			
	17:00				19:45					21:22	47	06:30 (WEA 12)			
Sonnenscheinstunden	260		278		367		416			484			498		
astr.max.mögl.Beschattung								351			922			1439	
Red.Sonnenscheinwahrsch.								0,36			0,43			0,35	
Reduktion Betriebsdauer								0,96			0,96			0,96	
Reduktion Windrichtung								0,71			0,71			0,71	
Gesamte Reduktion								0,24			0,29			0,24	
Met.wahrsch.Beschattung								86			270			339	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 22 - Strommühle

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September	Oktober	November	Dezember
1	05:00		05:31 (WEA 11)	05:36	06:16 (WEA 12)	06:26	07:14	07:08	07:58
	21:37	49	06:35 (WEA 12)	21:06	21	06:37 (WEA 08)	20:04	18:55	16:49	16:09
2	05:01		05:31 (WEA 11)	05:38	06:19 (WEA 12)	06:27	07:16	07:09	08:00
	21:37	48	06:35 (WEA 12)	21:04	18	06:37 (WEA 08)	20:02	18:53	16:47	16:08
3	05:02		05:32 (WEA 11)	05:39	06:20 (WEA 08)	06:29	07:18	07:11	08:01
	21:36	48	06:35 (WEA 12)	21:02	18	06:38 (WEA 08)	19:59	18:50	16:45	16:08
4	05:02		05:33 (WEA 11)	05:41	06:19 (WEA 08)	06:30	07:19	07:13	08:02
	21:36	48	06:36 (WEA 12)	21:00	19	06:38 (WEA 08)	19:57	18:48	16:44	16:07
5	05:03		05:34 (WEA 11)	05:42	06:20 (WEA 08)	06:32	07:21	07:15	08:04
	21:35	46	06:36 (WEA 12)	20:59	19	06:39 (WEA 08)	19:55	18:46	16:42	16:07
6	05:04		05:34 (WEA 11)	05:44	06:19 (WEA 08)	06:34	07:23	07:17	08:05
	21:35	46	06:36 (WEA 12)	20:57	20	06:39 (WEA 08)	19:53	18:43	16:40	16:06
7	05:05		05:35 (WEA 11)	05:46	06:19 (WEA 08)	06:35	07:24	07:18	08:06
	21:34	46	06:36 (WEA 12)	20:55	20	06:39 (WEA 08)	19:50	18:41	16:38	16:06
8	05:06		05:36 (WEA 11)	05:47	06:18 (WEA 08)	06:37	07:26	07:20	08:08
	21:34	47	06:37 (WEA 12)	20:53	21	06:39 (WEA 08)	19:48	18:39	16:37	16:06
9	05:07		05:37 (WEA 11)	05:49	06:19 (WEA 08)	06:39	07:28	07:22	08:09
	21:33	47	06:37 (WEA 12)	20:52	20	06:39 (WEA 08)	19:46	18:37	16:35	16:05
10	05:08		05:38 (WEA 11)	05:50	06:19 (WEA 08)	06:40	07:29	07:24	08:10
	21:32	48	06:38 (WEA 12)	20:50	26	07:00 (WEA 09)	19:43	18:34	16:34	16:05
11	05:09		05:39 (WEA 11)	05:52	06:20 (WEA 08)	06:42	07:31	07:25	08:11
	21:32	47	06:38 (WEA 12)	20:48	30	07:03 (WEA 09)	19:41	18:32	16:32	16:05
12	05:10		05:40 (WEA 11)	05:53	06:21 (WEA 08)	06:43	07:33	07:27	08:12
	21:31	46	06:38 (WEA 12)	20:46	32	07:04 (WEA 09)	19:39	18:30	16:30	16:05
13	05:11		05:41 (WEA 11)	05:55	06:23 (WEA 08)	06:45	07:34	07:29	08:13
	21:30	46	06:38 (WEA 12)	20:44	32	07:06 (WEA 09)	19:37	18:28	16:29	16:05
14	05:12		05:42 (WEA 11)	05:57	06:24 (WEA 08)	06:47	07:36	07:31	08:14
	21:29	45	06:38 (WEA 12)	20:42	30	07:06 (WEA 09)	19:34	18:26	16:28	16:05
15	05:13		05:43 (WEA 11)	05:58	06:26 (WEA 08)	06:48	07:38	07:32	08:15
	21:28	44	06:38 (WEA 12)	20:40	28	07:07 (WEA 09)	19:32	18:23	16:26	16:05
16	05:14		05:44 (29B)	06:00	06:44 (WEA 09)	06:50	07:40	07:34	08:16
	21:27	43	06:38 (WEA 12)	20:38	23	07:07 (WEA 09)	19:30	18:21	16:25	16:05
17	05:15		05:45 (29B)	06:01	06:44 (WEA 09)	06:51	07:41	07:36	08:16
	21:26	42	06:38 (WEA 12)	20:36	24	07:08 (WEA 09)	19:27	18:19	16:23	16:05
18	05:17		05:47 (29B)	06:03	06:43 (WEA 09)	06:53	07:43	07:38	08:17
	21:25	41	06:39 (WEA 12)	20:34	24	07:07 (WEA 09)	19:25	18:17	16:22	16:05
19	05:18		05:48 (29B)	06:05	06:43 (WEA 09)	06:55	07:45	07:39	08:18
	21:24	40	06:39 (WEA 12)	20:32	24	07:07 (WEA 09)	19:23	18:15	16:21	16:06
20	05:19		05:49 (29B)	06:06	06:42 (WEA 09)	06:56	07:46	07:41	08:19
	21:23	38	06:39 (WEA 12)	20:30	25	07:07 (WEA 09)	19:20	18:13	16:20	16:06
21	05:21		05:50 (29B)	06:08	06:43 (WEA 09)	06:58	07:48	07:43	08:19
	21:21	36	06:38 (WEA 12)	20:28	24	07:07 (WEA 09)	19:18	18:11	16:18	16:06
22	05:22		05:51 (29B)	06:10	06:42 (WEA 09)	07:00	07:50	07:44	08:20
	21:20	34	06:38 (WEA 12)	20:26	24	07:06 (WEA 09)	19:16	18:09	16:17	16:07
23	05:23		06:08 (WEA 12)	06:11	06:43 (WEA 09)	07:01	07:52	07:46	08:20
	21:19	30	06:38 (WEA 12)	20:24	22	07:05 (WEA 09)	19:13	18:07	16:16	16:07
24	05:25		06:08 (WEA 12)	06:13	06:43 (WEA 09)	07:03	07:53	07:48	08:21
	21:17	30	06:38 (WEA 12)	20:21	21	07:04 (WEA 09)	19:11	18:05	16:15	16:08
25	05:26		06:08 (WEA 12)	06:14	06:44 (WEA 09)	07:04	06:55	07:49	08:21
	21:16	29	06:37 (WEA 12)	20:19	19	07:03 (WEA 09)	19:09	17:03	16:14	16:09
26	05:27		06:10 (WEA 12)	06:16	06:45 (WEA 09)	07:06	06:57	07:51	08:21
	21:15	27	06:37 (WEA 12)	20:17	15	07:00 (WEA 09)	19:06	17:01	16:13	16:09
27	05:29		06:10 (WEA 12)	06:18	06:47 (WEA 09)	07:08	06:59	07:52	08:22
	21:13	26	06:36 (WEA 12)	20:15	12	06:59 (WEA 09)	19:04	16:59	16:12	16:10
28	05:30		06:10 (WEA 12)	06:19			07:09	07:01	07:54	08:22
	21:12	25	06:35 (WEA 12)	20:13			19:02	16:57	16:11	16:11
29	05:32		06:12 (WEA 12)	06:21			07:11	07:02	07:55	08:22
	21:10	23	06:35 (WEA 12)	20:11			18:59	16:55	16:11	16:12
30	05:33		06:13 (WEA 12)	06:22			07:13	07:04	07:57	08:22
	21:09	20	06:33 (WEA 08)	20:08			18:57	16:53	16:10	16:13
31	05:35		06:15 (WEA 12)	06:24				07:06		08:22
	21:07	21	06:36 (WEA 08)	20:06				16:51		16:13
Sonnenscheinstunden	501			453			381	332	267	245
astr.max.mögl.Beschattung		1206		611						
Red.Sonnenscheinwahrsch.		0,40		0,43						
Reduktion Betriebsdauer		0,96		0,96						
Reduktion Windrichtung		0,71		0,72						
Gesamte Reduktion		0,27		0,29						
Met.wahrsch.Beschattung		329		180						

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 23 - Reinstedt - Forellenweg 10

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22		07:56		07:03		06:52		07:22 (WEA 08)		06:42 (WEA 13)	
	16:15		17:02		17:54		19:47	37	08:07 (WEA 12)		07:09 (WEA 13)	
2	08:22		07:54		07:00		06:50		07:13 (29B)		06:43 (WEA 13)	
	16:16		17:04		17:55		19:49	34	08:05 (WEA 12)		07:08 (WEA 13)	
3	08:22		07:53		06:58		06:48		07:10 (29B)		06:44 (WEA 13)	
	16:17		17:06		17:57		19:51	29	08:01 (WEA 12)		07:08 (WEA 13)	
4	08:22		07:51		06:56		06:46		07:08 (29B)		06:45 (WEA 13)	
	16:18		17:08		17:59		19:52	20	07:35 (WEA 08)		07:06 (WEA 13)	
5	08:21		07:49		06:54		06:43		07:06 (29B)		06:46 (WEA 13)	
	16:19		17:10		18:01		19:54	15	07:32 (WEA 08)		07:05 (WEA 13)	
6	08:21		07:48		06:52		06:41		07:07 (29B)		06:47 (WEA 13)	
	16:20		17:11		18:02		19:56	10	07:17 (29B)		07:03 (WEA 13)	
7	08:21		07:46		06:49		06:39		07:06 (29B)		06:50 (WEA 13)	
	16:22		17:13		18:04		19:57	9	07:15 (29B)		07:01 (WEA 13)	
8	08:20		07:44		06:47		06:37		07:08 (29B)			
	16:23		17:15		18:06		19:59	5	07:13 (29B)			
9	08:20		07:42		06:45		06:34					
	16:24		17:17		18:08		20:01					
10	08:19		07:41		06:43		06:32					
	16:26		17:19		18:09	6	07:15 (WEA 09)					
11	08:19		07:39		06:41		06:30					
	16:27		17:21		18:11	12	07:17 (WEA 09)					
12	08:18		07:37		06:38		06:28					
	16:29		17:23		18:13	16	07:19 (WEA 09)					
13	08:17		07:35		06:36		06:25					
	16:30		17:24		18:15	18	07:20 (WEA 09)					
14	08:17		07:33		06:34		06:23					
	16:32		17:26		18:16	20	07:20 (WEA 09)					
15	08:16		07:31		06:31		06:21		06:44 (WEA 11)			
	16:33		17:28		18:18	20	07:20 (WEA 09)		20:11	12	07:03 (WEA 13)	
16	08:15		07:29		06:29		06:19		06:42 (WEA 11)			
	16:35		17:30		18:20	20	07:20 (WEA 09)		20:13	24	07:07 (WEA 13)	
17	08:14		07:27		06:27		06:17		06:40 (WEA 11)			
	16:36		17:32		18:22	20	07:19 (WEA 09)		20:14	29	07:09 (WEA 13)	
18	08:13		07:25		06:25		06:15		06:38 (WEA 11)			
	16:38		17:34		18:23	23	07:19 (WEA 09)		20:16	32	07:10 (WEA 13)	
19	08:12		07:23		06:22		06:54 (WEA 12)		06:36 (WEA 11)		05:54 (19B)	
	16:40		17:35		18:25	24	07:18 (WEA 09)		20:18	35	07:11 (WEA 13)	
20	08:11		07:21		06:20		06:52 (WEA 12)		06:34 (WEA 11)		05:53 (19B)	
	16:41		17:37		18:27	25	07:17 (WEA 09)		20:19	37	07:11 (WEA 13)	
21	08:10		07:19		06:18		06:50 (WEA 12)		06:34 (WEA 11)		05:52 (19B)	
	16:43		17:39		18:28	25	07:15 (WEA 09)		20:21	37	07:11 (WEA 13)	
22	08:09		07:17		06:15		06:49 (WEA 12)		06:34 (WEA 11)		05:52 (19B)	
	16:45		17:41		18:30	24	07:13 (WEA 09)		20:23	38	07:12 (WEA 13)	
23	08:08		07:15		06:13		06:48 (WEA 12)		06:34 (WEA 11)		05:51 (19B)	
	16:46		17:43		18:32	26	07:14 (WEA 12)		20:24	38	07:12 (WEA 13)	
24	08:07		07:13		06:11		06:47 (WEA 12)		06:34 (WEA 11)		05:51 (19B)	
	16:48		17:45		18:34	26	07:13 (WEA 12)		20:26	38	07:12 (WEA 13)	
25	08:05		07:11		06:08		06:31 (WEA 08)		06:00		06:34 (WEA 11)	
	16:50		17:46		18:35	34	07:14 (WEA 12)		20:28	38	07:12 (WEA 13)	
26	08:04		07:09		06:06		06:29 (WEA 08)		05:58		06:36 (WEA 11)	
	16:51		17:48		18:37	39	07:14 (WEA 12)		20:29	37	07:13 (WEA 13)	
27	08:03		07:07		06:04		06:26 (WEA 08)		05:56		06:37 (WEA 11)	
	16:53		17:50		18:39	41	07:12 (WEA 12)		20:31	35	07:12 (WEA 13)	
28	08:01		07:05		06:02		06:24 (WEA 08)		05:54		06:39 (WEA 11)	
	16:55		17:52		18:40	43	07:12 (WEA 12)		20:33	33	07:12 (WEA 13)	
29	08:00				06:59		07:23 (WEA 08)		05:52		06:42 (WEA 13)	
	16:57				19:42	43	08:11 (WEA 12)		20:34	29	07:11 (WEA 13)	
30	07:59				06:57		07:22 (WEA 08)		05:50		06:42 (WEA 13)	
	16:59				19:44	42	08:10 (WEA 12)		20:36	28	07:10 (WEA 13)	
31	07:57				06:55		07:22 (WEA 08)					
	17:00				19:45	40	08:09 (WEA 12)					
Sonnenscheinstunden	260		278		367		416		484		498	
astr.max.mögl.Beschattung						587		679		314		94
Red.Sonnenscheinwahrsch.						0,27		0,36		0,43		0,35
Reduktion Betriebsdauer						0,96		0,96		0,96		0,96
Reduktion Windrichtung						0,71		0,72		0,71		0,71
Gesamte Reduktion						0,18		0,25		0,29		0,24
Met.wahrsch.Beschattung						108		167		92		22

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM) Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 23 - Reinstedt - Forellenweg 10

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00			05:36			06:26			07:14		07:41 (WEA 09)	07:08	07:58
	21:37			21:06			20:04			18:55	17	07:58 (WEA 09)	16:49	16:09
2	05:01			05:38			06:27			07:16		07:43 (WEA 09)	07:09	08:00
	21:37			21:04			20:02			18:53	14	07:57 (WEA 09)	16:47	16:08
3	05:01		06:03 (19B)	05:39			06:29			07:18		07:45 (WEA 09)	07:11	08:01
	21:36	4	06:07 (19B)	21:02			19:59			18:50	9	07:54 (WEA 09)	16:45	16:08
4	05:02		06:02 (19B)	05:41			06:30		07:05 (29B)	07:19			07:13	08:02
	21:36	7	06:09 (19B)	21:01			19:57	5	07:10 (29B)	18:48			16:44	16:07
5	05:03		06:02 (19B)	05:42		07:03 (WEA 13)	06:32		07:04 (29B)	07:21			07:15	08:04
	21:36	8	06:10 (19B)	20:59	5	07:08 (WEA 13)	19:55	8	07:12 (29B)	18:46			16:42	16:07
6	05:04		06:01 (19B)	05:44		06:58 (WEA 13)	06:34		07:02 (29B)	07:23			07:17	08:05
	21:35	9	06:10 (19B)	20:57	13	07:11 (WEA 13)	19:53	10	07:12 (29B)	18:43			16:40	16:06
7	05:05		06:01 (19B)	05:46		06:57 (WEA 13)	06:35		07:02 (29B)	07:24			07:18	08:06
	21:34	10	06:11 (19B)	20:55	17	07:14 (WEA 13)	19:50	14	07:27 (WEA 08)	18:41			16:38	16:06
8	05:06		06:00 (19B)	05:47		06:55 (WEA 13)	06:37		07:02 (29B)	07:26			07:20	08:08
	21:34	11	06:11 (19B)	20:53	20	07:15 (WEA 13)	19:48	19	07:29 (WEA 08)	18:39			16:37	16:06
9	05:07		06:00 (19B)	05:49		06:54 (WEA 13)	06:39		07:04 (29B)	07:28			07:22	08:09
	21:33	12	06:12 (19B)	20:52	22	07:16 (WEA 13)	19:46	28	07:55 (WEA 12)	18:37			16:35	16:05
10	05:08		06:00 (19B)	05:50		06:52 (WEA 13)	06:40		07:06 (29B)	07:29			07:24	08:10
	21:32	13	06:13 (19B)	20:50	25	07:17 (WEA 13)	19:43	34	07:58 (WEA 12)	18:34			16:34	16:05
11	05:09		06:00 (19B)	05:52		06:52 (WEA 13)	06:42		07:15 (WEA 08)	07:31			07:25	08:11
	21:32	13	06:13 (19B)	20:48	26	07:18 (WEA 13)	19:41	35	07:59 (WEA 12)	18:32			16:32	16:05
12	05:10		06:00 (19B)	05:53		06:51 (WEA 13)	06:43		07:14 (WEA 08)	07:33			07:27	08:12
	21:31	14	06:14 (19B)	20:46	27	07:18 (WEA 13)	19:39	41	08:01 (WEA 12)	18:30			16:30	16:05
13	05:11		06:00 (19B)	05:55		06:50 (WEA 13)	06:45		07:13 (WEA 08)	07:34			07:29	08:13
	21:30	14	06:14 (19B)	20:44	29	07:19 (WEA 13)	19:37	43	08:01 (WEA 12)	18:28			16:29	16:05
14	05:12		06:00 (19B)	05:57		06:49 (WEA 13)	06:47		07:14 (WEA 08)	07:36			07:31	08:14
	21:29	14	06:14 (19B)	20:42	30	07:19 (WEA 13)	19:34	43	08:02 (WEA 12)	18:26			16:28	16:05
15	05:13		06:00 (19B)	05:58		06:46 (WEA 11)	06:48		07:13 (WEA 08)	07:38			07:32	08:15
	21:28	14	06:14 (19B)	20:40	33	07:19 (WEA 13)	19:32	43	08:01 (WEA 12)	18:23			16:26	16:05
16	05:14		05:59 (19B)	06:00		06:43 (WEA 11)	06:50		07:15 (WEA 08)	07:40			07:34	08:16
	21:27	15	06:14 (19B)	20:38	36	07:19 (WEA 13)	19:30	42	08:02 (WEA 12)	18:21			16:25	16:05
17	05:15		05:59 (19B)	06:01		06:42 (WEA 11)	06:51		07:17 (WEA 08)	07:41			07:36	08:16
	21:26	15	06:14 (19B)	20:36	37	07:19 (WEA 13)	19:27	38	08:02 (WEA 12)	18:19			16:23	16:05
18	05:17		06:00 (19B)	06:03		06:41 (WEA 11)	06:53		07:18 (WEA 08)	07:43			07:38	08:17
	21:25	15	06:15 (19B)	20:34	37	07:18 (WEA 13)	19:25	35	08:01 (WEA 12)	18:17			16:22	16:05
19	05:18		06:01 (19B)	06:05		06:40 (WEA 11)	06:55		07:34 (WEA 12)	07:45			07:39	08:18
	21:24	14	06:15 (19B)	20:32	39	07:19 (WEA 13)	19:23	27	08:01 (WEA 12)	18:15			16:21	16:06
20	05:19		06:01 (19B)	06:06		06:39 (WEA 11)	06:56		07:33 (WEA 12)	07:46			07:41	08:19
	21:23	14	06:15 (19B)	20:30	39	07:18 (WEA 13)	19:20	27	08:00 (WEA 12)	18:13			16:20	16:06
21	05:21		06:01 (19B)	06:08		06:39 (WEA 11)	06:58		07:34 (WEA 12)	07:48			07:43	08:19
	21:21	13	06:14 (19B)	20:28	38	07:17 (WEA 13)	19:18	25	07:59 (WEA 12)	18:11			16:18	16:06
22	05:22		06:01 (19B)	06:10		06:39 (WEA 11)	07:00		07:35 (WEA 12)	07:50			07:44	08:20
	21:20	12	06:13 (19B)	20:26	37	07:16 (WEA 13)	19:16	25	08:00 (WEA 09)	18:09			16:17	16:07
23	05:23		06:03 (19B)	06:11		06:39 (WEA 11)	07:01		07:35 (WEA 12)	07:52			07:46	08:20
	21:19	10	06:13 (19B)	20:24	36	07:15 (WEA 13)	19:13	26	08:01 (WEA 09)	18:07			16:16	16:07
24	05:25		06:04 (19B)	06:13		06:39 (WEA 11)	07:03		07:37 (WEA 12)	07:53			07:48	08:21
	21:18	8	06:12 (19B)	20:21	35	07:14 (WEA 13)	19:11	25	08:02 (WEA 09)	18:05			16:15	16:08
25	05:26		06:05 (19B)	06:14		06:41 (WEA 11)	07:04		07:38 (WEA 12)	06:55			07:49	08:21
	21:16	5	06:10 (19B)	20:19	32	07:13 (WEA 13)	19:09	23	08:01 (WEA 09)	17:03			16:14	16:09
26	05:27			06:16		06:42 (WEA 11)	07:06		07:41 (WEA 09)	06:57			07:51	08:21
	21:15			20:17	28	07:10 (WEA 13)	19:06	21	08:02 (WEA 09)	17:01			16:13	16:09
27	05:29			06:18		06:44 (WEA 11)	07:08		07:41 (WEA 09)	06:59			07:52	08:22
	21:13			20:15	23	07:08 (WEA 13)	19:04	21	08:02 (WEA 09)	16:59			16:12	16:10
28	05:30			06:19		06:45 (WEA 11)	07:09		07:40 (WEA 09)	07:01			07:54	08:22
	21:12			20:13	9	07:03 (WEA 13)	19:02	21	08:01 (WEA 09)	16:57			16:11	16:11
29	05:32			06:21			07:11		07:41 (WEA 09)	07:02			07:55	08:22
	21:10			20:11			18:59	20	08:01 (WEA 09)	16:55			16:10	16:12
30	05:33			06:22			07:13		07:41 (WEA 09)	07:04			07:57	08:22
	21:09			20:08			18:57	19	08:00 (WEA 09)	16:53			16:10	16:13
31	05:35			06:24						07:06				08:22
	21:07			20:06						16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		264			673			718			40			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,71			0,70			
Gesamte Reduktion		0,27			0,29			0,23			0,19			
Met.wahrsch.Beschattung		72			199			167			8			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 24 - Reinstedt - Forellenweg 8

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22		07:56		07:03		06:52		07:15 (29B)		05:48	
	16:15		17:02		17:54		19:47	29	08:06 (WEA 12)		20:38	23
2	08:22		07:54		07:00		06:50		07:13 (29B)		05:46	
	16:16		17:04		17:55		19:49	22	07:41 (WEA 08)		20:39	20
3	08:22		07:53		06:58		06:48		07:10 (29B)		05:44	
	16:17		17:06		17:57		19:51	19	07:37 (WEA 08)		20:41	17
4	08:22		07:51		06:56		06:46		07:11 (29B)		05:42	
	16:18		17:08		17:59		19:52	10	07:21 (29B)		20:43	13
5	08:21		07:49		06:54		06:43		07:11 (29B)		05:41	
	16:19		17:10		18:01		19:54	9	07:20 (29B)		20:44	4
6	08:21		07:48		06:52		06:41		07:13 (29B)		05:39	
	16:20		17:11		18:02		19:56	5	07:18 (29B)		20:46	
7	08:21		07:46		06:49		06:39				05:37	
	16:22		17:13		18:04		19:57				20:48	
8	08:20		07:44		06:47		06:37				05:35	
	16:23		17:15		18:06		19:59				20:49	
9	08:20		07:42		06:45		06:34				05:33	
	16:24		17:17		18:08	10	07:20 (WEA 09)		20:01		20:51	
10	08:19		07:41		06:43		07:08 (WEA 09)		06:32		05:32	
	16:26		17:19		18:09	14	07:22 (WEA 09)		20:02		20:52	
11	08:19		07:39		06:41		07:06 (WEA 09)		06:30		05:30	
	16:27		17:21		18:11	17	07:23 (WEA 09)		20:04		20:54	
12	08:18		07:37		06:38		07:05 (WEA 09)		06:28		05:28	
	16:29		17:23		18:13	19	07:24 (WEA 09)		20:06		20:56	
13	08:17		07:35		06:36		07:04 (WEA 09)		06:25		07:00 (WEA 13)	
	16:30		17:24		18:15	20	07:24 (WEA 09)		20:07	10	07:10 (WEA 13)	
14	08:17		07:33		06:34		07:03 (WEA 09)		06:23		06:46 (WEA 11)	
	16:32		17:26		18:16	21	07:24 (WEA 09)		20:09	24	07:13 (WEA 13)	
15	08:16		07:31		06:31		07:03 (WEA 09)		06:21		06:44 (WEA 11)	
	16:33		17:28		18:18	21	07:24 (WEA 09)		20:11	31	07:15 (WEA 13)	
16	08:15		07:29		06:29		07:01 (WEA 12)		06:19		06:42 (WEA 11)	
	16:35		17:30		18:20	22	07:23 (WEA 09)		20:13	34	07:16 (WEA 13)	
17	08:14		07:27		06:27		06:58 (WEA 12)		06:17		06:40 (WEA 11)	
	16:36		17:32		18:22	24	07:22 (WEA 09)		20:14	37	07:17 (WEA 13)	
18	08:13		07:25		06:25		06:56 (WEA 12)		06:15		06:39 (WEA 11)	
	16:38		17:34		18:23	25	07:21 (WEA 09)		20:16	38	07:17 (WEA 13)	
19	08:12		07:23		06:22		06:55 (WEA 12)		06:12		06:38 (WEA 11)	
	16:40		17:35		18:25	25	07:20 (WEA 09)		20:18	40	07:18 (WEA 13)	
20	08:11		07:21		06:20		06:54 (WEA 12)		06:10		06:37 (WEA 11)	
	16:41		17:37		18:27	25	07:19 (WEA 12)		20:19	40	07:17 (WEA 13)	
21	08:10		07:19		06:18		06:53 (WEA 12)		06:08		06:37 (WEA 11)	
	16:43		17:39		18:28	26	07:19 (WEA 12)		20:21	40	07:17 (WEA 13)	
22	08:09		07:17		06:15		06:52 (WEA 12)		06:06		06:37 (WEA 11)	
	16:45		17:41		18:30	27	07:19 (WEA 12)		20:23	40	07:17 (WEA 13)	
23	08:08		07:15		06:13		06:36 (WEA 08)		06:04		06:37 (WEA 11)	
	16:46		17:43		18:32	30	07:19 (WEA 12)		20:24	40	07:17 (WEA 13)	
24	08:07		07:13		06:11		06:33 (WEA 08)		06:02		06:38 (WEA 11)	
	16:48		17:45		18:34	36	07:18 (WEA 12)		20:26	39	07:17 (WEA 13)	
25	08:05		07:11		06:08		06:31 (WEA 08)		06:00		06:39 (WEA 11)	
	16:50		17:46		18:35	39	07:18 (WEA 12)		20:28	38	07:17 (WEA 13)	
26	08:04		07:09		06:06		06:29 (WEA 08)		05:58		06:41 (WEA 11)	
	16:51		17:48		18:37	42	07:18 (WEA 12)		20:29	36	07:17 (WEA 13)	
27	08:03		07:07		06:04		06:27 (WEA 08)		05:56		06:44 (WEA 11)	
	16:53		17:50		18:39	42	07:16 (WEA 12)		20:31	32	07:16 (WEA 13)	
28	08:01		07:05		06:02		06:26 (WEA 08)		05:54		06:48 (WEA 13)	
	16:55		17:52		18:40	41	07:15 (WEA 12)		20:33	27	07:15 (WEA 13)	
29	08:00				06:59		07:26 (WEA 08)		05:52		06:48 (WEA 13)	
	16:57				19:42	39	08:14 (WEA 12)		20:34	26	07:14 (WEA 13)	
30	07:59				06:57		07:25 (WEA 08)		05:50		06:49 (WEA 13)	
	16:59				19:44	36	08:11 (WEA 12)		20:36	24	07:13 (WEA 13)	
31	07:57				06:55		07:17 (29B)				05:04	
	17:00				19:45	33	08:09 (WEA 12)				21:22	11
Sonnenscheinstunden	260		278		367			416			484	
astr.max.mögl.Beschattung						634				690		
Red.Sonnenscheinwahrsch.						0,27				0,36		
Reduktion Betriebsdauer						0,96				0,96		
Reduktion Windrichtung						0,71				0,72		
Gesamte Reduktion						0,18				0,25		
Met.wahrsch.Beschattung						116				170		

	Juni	
1	05:03	
	21:23	10
2	05:02	
	21:24	8
3	05:01	
	21:25	6
4	05:01	
	21:26	4
5	05:00	
	21:27	
6	04:59	
	21:28	
7	04:59	
	21:29	
8	04:58	
	21:30	
9	04:58	
	21:31	
10	04:57	
	21:32	
11	04:57	
	21:32	
12	04:57	
	21:33	
13	04:56	
	21:34	
14	04:56	
	21:34	
15	04:56	
	21:35	
16	04:56	
	21:36	
17	04:56	
	21:36	
18	04:56	
	21:36	
19	04:56	
	21:37	
20	04:56	
	21:37	
21	04:56	
	21:37	
22	04:56	
	21:38	
23	04:56	
	21:38	
24	04:57	
	21:38	
25	04:57	
	21:38	
26	04:57	
	21:38	
27	04:58	
	21:38	
28	04:58	
	21:38	
29	04:59	
	21:38	
30	04:59	
	21:37	
31		
Sonnenscheinstunden	498	
astr.max.mögl.Beschattung		28
Red.Sonnenscheinwahrsch.		0,35
Reduktion Betriebsdauer		0,96
Reduktion Windrichtung		0,71
Gesamte Reduktion		0,24
Met.wahrsch.Beschattung		7

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):			
Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende
(WEA mit erstem Schatten) (WEA mit letztem Schatten)			

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 24 - Reinstedt - Forellenweg 8

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00			05:36			06:26			07:14		07:43 (WEA 09)	07:08	07:58
	21:37			21:06			20:04			18:55	20	08:03 (WEA 09)	16:49	16:09
2	05:01			05:38			06:27			07:16		07:44 (WEA 09)	07:09	08:00
	21:37			21:04			20:02			18:53	18	08:02 (WEA 09)	16:47	16:08
3	05:01			05:39			06:29			07:18		07:45 (WEA 09)	07:11	08:01
	21:36			21:02			19:59			18:50	16	08:01 (WEA 09)	16:45	16:08
4	05:02			05:41			06:30			07:19		07:46 (WEA 09)	07:13	08:02
	21:36			21:01			19:57			18:48	12	07:58 (WEA 09)	16:44	16:07
5	05:03			05:42			06:32			07:21		07:48 (WEA 09)	07:15	08:04
	21:36			20:59			19:55			18:46	8	07:56 (WEA 09)	16:42	16:07
6	05:04			05:44			06:34		07:08 (29B)	07:23			07:17	08:05
	21:35			20:57			19:53	5	07:13 (29B)	18:43			16:40	16:06
7	05:05			05:46			06:35		07:06 (29B)	07:24			07:18	08:06
	21:34			20:55			19:50	9	07:15 (29B)	18:41			16:38	16:06
8	05:06		06:09 (19B)	05:47		07:06 (WEA 13)	06:37		07:05 (29B)	07:26			07:20	08:08
	21:34	2	06:11 (19B)	20:53	7	07:13 (WEA 13)	19:48	10	07:15 (29B)	18:39			16:37	16:06
9	05:07		06:07 (19B)	05:49		07:03 (WEA 13)	06:39		07:05 (29B)	07:28			07:22	08:09
	21:33	6	06:13 (19B)	20:52	14	07:17 (WEA 13)	19:46	18	07:31 (WEA 08)	18:37			16:35	16:05
10	05:08		06:07 (19B)	05:50		07:00 (WEA 13)	06:40		07:06 (29B)	07:29			07:24	08:10
	21:32	7	06:14 (19B)	20:50	18	07:18 (WEA 13)	19:43	22	07:34 (WEA 08)	18:34			16:34	16:05
11	05:09		06:06 (19B)	05:52		06:59 (WEA 13)	06:42		07:07 (29B)	07:31			07:25	08:11
	21:32	9	06:15 (19B)	20:48	21	07:20 (WEA 13)	19:41	26	07:57 (WEA 12)	18:32			16:32	16:05
12	05:10		06:06 (19B)	05:53		06:58 (WEA 13)	06:43		07:09 (29B)	07:33			07:27	08:12
	21:31	10	06:16 (19B)	20:46	23	07:21 (WEA 13)	19:39	33	08:01 (WEA 12)	18:30			16:30	16:05
13	05:11		06:05 (19B)	05:55		06:57 (WEA 13)	06:45		07:17 (WEA 08)	07:34			07:29	08:13
	21:30	12	06:17 (19B)	20:44	25	07:22 (WEA 13)	19:37	35	08:02 (WEA 12)	18:28			16:29	16:05
14	05:12		06:05 (19B)	05:57		06:56 (WEA 13)	06:47		07:16 (WEA 08)	07:36			07:31	08:14
	21:29	12	06:17 (19B)	20:42	26	07:22 (WEA 13)	19:34	40	08:04 (WEA 12)	18:26			16:28	16:05
15	05:13		06:04 (19B)	05:58		06:55 (WEA 13)	06:48		07:15 (WEA 08)	07:38			07:32	08:15
	21:28	14	06:18 (19B)	20:40	28	07:23 (WEA 13)	19:32	42	08:04 (WEA 12)	18:23			16:26	16:05
16	05:14		06:04 (19B)	06:00		06:50 (WEA 11)	06:50		07:16 (WEA 08)	07:40			07:34	08:16
	21:27	14	06:18 (19B)	20:38	33	07:23 (WEA 13)	19:30	43	08:05 (WEA 12)	18:21			16:25	16:05
17	05:15		06:04 (19B)	06:01		06:47 (WEA 11)	06:51		07:17 (WEA 08)	07:41			07:36	08:16
	21:26	14	06:18 (19B)	20:36	37	07:24 (WEA 13)	19:27	42	08:06 (WEA 12)	18:19			16:23	16:05
18	05:17		06:05 (19B)	06:03		06:45 (WEA 11)	06:53		07:18 (WEA 08)	07:43			07:38	08:17
	21:25	14	06:19 (19B)	20:34	38	07:23 (WEA 13)	19:25	39	08:05 (WEA 12)	18:17			16:22	16:05
19	05:18		06:04 (19B)	06:05		06:44 (WEA 11)	06:55		07:20 (WEA 08)	07:45			07:39	08:18
	21:24	15	06:19 (19B)	20:32	40	07:24 (WEA 13)	19:23	38	08:06 (WEA 12)	18:15			16:21	16:06
20	05:19		06:04 (19B)	06:06		06:43 (WEA 11)	06:56		07:21 (WEA 08)	07:46			07:41	08:19
	21:23	15	06:19 (19B)	20:30	40	07:23 (WEA 13)	19:20	33	08:05 (WEA 12)	18:13			16:20	16:06
21	05:21		06:04 (19B)	06:08		06:43 (WEA 11)	06:58		07:38 (WEA 12)	07:48			07:43	08:19
	21:21	15	06:19 (19B)	20:28	40	07:23 (WEA 13)	19:18	27	08:05 (WEA 12)	18:11			16:18	16:06
22	05:22		06:04 (19B)	06:10		06:42 (WEA 11)	07:00		07:38 (WEA 12)	07:50			07:44	08:20
	21:20	15	06:19 (19B)	20:26	40	07:22 (WEA 13)	19:16	26	08:04 (WEA 12)	18:09			16:17	16:07
23	05:23		06:05 (19B)	06:11		06:42 (WEA 11)	07:01		07:38 (WEA 12)	07:52			07:46	08:20
	21:19	14	06:19 (19B)	20:24	40	07:22 (WEA 13)	19:13	25	08:03 (WEA 12)	18:07			16:16	16:07
24	05:25		06:05 (19B)	06:13		06:41 (WEA 11)	07:03		07:38 (WEA 12)	07:53			07:48	08:21
	21:18	14	06:19 (19B)	20:21	40	07:21 (WEA 13)	19:11	25	08:03 (WEA 09)	18:05			16:15	16:08
25	05:26		06:06 (19B)	06:14		06:42 (WEA 11)	07:04		07:38 (WEA 12)	06:55			07:49	08:21
	21:16	12	06:18 (19B)	20:19	38	07:20 (WEA 13)	19:09	25	08:03 (WEA 09)	17:03			16:14	16:09
26	05:27		06:07 (19B)	06:16		06:42 (WEA 11)	07:06		07:40 (WEA 12)	06:57			07:51	08:21
	21:15	11	06:18 (19B)	20:17	36	07:18 (WEA 13)	19:06	24	08:04 (WEA 09)	17:01			16:13	16:09
27	05:29		06:08 (19B)	06:18		06:44 (WEA 11)	07:08		07:42 (WEA 12)	06:59			07:52	08:22
	21:13	8	06:16 (19B)	20:15	34	07:18 (WEA 13)	19:04	23	08:05 (WEA 09)	16:59			16:12	16:10
28	05:30		06:10 (19B)	06:19		06:45 (WEA 11)	07:09		07:44 (WEA 09)	07:01			07:54	08:22
	21:12	3	06:13 (19B)	20:13	30	07:15 (WEA 13)	19:02	20	08:04 (WEA 09)	16:57			16:11	16:11
29	05:32			06:21		06:47 (WEA 11)	07:11		07:44 (WEA 09)	07:02			07:55	08:22
	21:10			20:11	23	07:13 (WEA 13)	18:59	20	08:04 (WEA 09)	16:55			16:10	16:12
30	05:33			06:22		07:01 (WEA 13)	07:13		07:44 (WEA 09)	07:04			07:57	08:22
	21:09			20:08	10	07:11 (WEA 13)	18:57	20	08:04 (WEA 09)	16:53			16:10	16:13
31	05:35			06:24						07:06				08:22
	21:07			20:06						16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		236			681			670			74			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,71			0,70			
Gesamte Reduktion		0,27			0,30			0,23			0,19			
Met.wahrsch.Beschattung		65			201			156			14			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 25 - Reinstedt - Forellenweg 6

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März			April			Mai			Juni	
1	08:22		07:56		07:03			06:52			07:16 (29B)	05:48		07:00 (WEA 13)	05:03
	16:15		17:02		17:54			19:47	21		07:43 (WEA 08)	20:38	13	07:13 (WEA 13)	21:23
2	08:22		07:54		07:00			06:50			07:17 (29B)	05:46		07:04 (WEA 13)	05:02
	16:16		17:04		17:55			19:49	10		07:27 (29B)	20:39	5	07:09 (WEA 13)	21:24
3	08:22		07:53		06:58			06:48			07:17 (29B)	05:44			05:01
	16:17		17:06		17:57			19:51	8		07:25 (29B)	20:41			21:25
4	08:22		07:51		06:56			06:46			07:19 (29B)	05:42			05:01
	16:18		17:08		17:59			19:52	3		07:22 (29B)	20:43			21:26
5	08:21		07:49		06:54			06:43				05:41			05:00
	16:19		17:10		18:01			19:54				20:44			21:27
6	08:21		07:48		06:52		07:18 (WEA 09)	06:41				05:39			04:59
	16:20		17:11		18:02	6	07:24 (WEA 09)	19:56				20:46			21:28
7	08:21		07:46		06:49		07:14 (WEA 09)	06:39				05:37			04:59
	16:22		17:13		18:04	12	07:26 (WEA 09)	19:57				20:48			21:29
8	08:20		07:44		06:47		07:12 (WEA 09)	06:37				05:35			04:58
	16:23		17:15		18:06	16	07:28 (WEA 09)	19:59				20:49			21:30
9	08:20		07:42		06:45		07:11 (WEA 09)	06:34				05:33			04:58
	16:24		17:17		18:08	18	07:29 (WEA 09)	20:01				20:51			21:31
10	08:19		07:41		06:43		07:10 (WEA 09)	06:32			07:08 (WEA 13)	05:32			04:57
	16:26		17:19		18:09	20	07:30 (WEA 09)	20:02	9		07:17 (WEA 13)	20:52			21:32
11	08:19		07:39		06:41		07:09 (WEA 09)	06:30			07:04 (WEA 13)	05:30			04:57
	16:27		17:21		18:11	20	07:29 (WEA 09)	20:04	16		07:20 (WEA 13)	20:54			21:32
12	08:18		07:37		06:38		07:09 (WEA 09)	06:28			06:50 (WEA 11)	05:28			04:57
	16:29		17:23		18:13	21	07:30 (WEA 09)	20:06	27		07:21 (WEA 13)	20:56			21:33
13	08:17		07:35		06:36		07:09 (WEA 09)	06:25			06:48 (WEA 11)	05:27		06:04 (19B)	04:56
	16:30		17:24		18:15	21	07:30 (WEA 09)	20:07	35		07:23 (WEA 13)	20:57	3	06:07 (19B)	21:34
14	08:17		07:33		06:34		07:05 (WEA 12)	06:23			06:46 (WEA 11)	05:25		06:02 (19B)	04:56
	16:32		17:26		18:16	23	07:28 (WEA 09)	20:09	38		07:24 (WEA 13)	20:59	8	06:10 (19B)	21:34
15	08:16		07:31		06:31		07:04 (WEA 12)	06:21			06:44 (WEA 11)	05:24		06:01 (19B)	04:56
	16:33		17:28		18:18	24	07:28 (WEA 09)	20:11	41		07:25 (WEA 13)	21:00	11	06:12 (19B)	21:35
16	08:15		07:29		06:29		07:02 (WEA 12)	06:19			06:43 (WEA 11)	05:22		06:00 (19B)	04:56
	16:35		17:30		18:20	25	07:27 (WEA 09)	20:13	42		07:25 (WEA 13)	21:02	12	06:12 (19B)	21:36
17	08:14		07:27		06:27		07:01 (WEA 12)	06:17			06:42 (WEA 11)	05:21		05:59 (19B)	04:56
	16:36		17:32		18:22	25	07:26 (WEA 12)	20:14	43		07:25 (WEA 13)	21:03	14	06:13 (19B)	21:36
18	08:13		07:25		06:25		07:00 (WEA 12)	06:15			06:42 (WEA 11)	05:19		05:59 (19B)	04:56
	16:38		17:34		18:23	26	07:26 (WEA 12)	20:16	44		07:26 (WEA 13)	21:05	15	06:14 (19B)	21:36
19	08:12		07:23		06:22		07:00 (WEA 12)	06:12			06:42 (WEA 11)	05:18		05:58 (19B)	04:56
	16:40		17:35		18:25	27	07:27 (WEA 12)	20:18	44		07:26 (WEA 13)	21:06	16	06:14 (19B)	21:37
20	08:11		07:21		06:20		06:59 (WEA 12)	06:10			06:41 (WEA 11)	05:16		05:58 (19B)	04:56
	16:41		17:37		18:27	28	07:27 (WEA 12)	20:19	44		07:25 (WEA 13)	21:08	16	06:14 (19B)	21:37
21	08:10		07:19		06:18		06:41 (WEA 08)	06:08			06:41 (WEA 11)	05:15		05:59 (19B)	04:56
	16:43		17:39		18:28	29	07:26 (WEA 12)	20:21	43		07:24 (WEA 13)	21:09	15	06:14 (19B)	21:37
22	08:09		07:17		06:15		06:38 (WEA 08)	06:06			06:42 (WEA 11)	05:14		05:59 (19B)	04:56
	16:45		17:41		18:30	37	07:26 (WEA 12)	20:23	42		07:24 (WEA 13)	21:10	15	06:14 (19B)	21:38
23	08:08		07:15		06:13		06:36 (WEA 08)	06:04			06:43 (WEA 11)	05:13		05:59 (19B)	04:56
	16:46		17:43		18:32	38	07:25 (WEA 12)	20:24	40		07:23 (WEA 13)	21:12	15	06:14 (19B)	21:38
24	08:07		07:13		06:11		06:33 (WEA 08)	06:02			06:44 (WEA 11)	05:11		06:00 (19B)	04:57
	16:48		17:45		18:34	42	07:24 (WEA 12)	20:26	39		07:23 (WEA 13)	21:13	14	06:14 (19B)	21:38
25	08:05		07:11		06:08		06:32 (WEA 08)	06:00			06:46 (WEA 11)	05:10		06:00 (19B)	04:57
	16:50		17:46		18:35	41	07:23 (WEA 12)	20:28	34		07:22 (WEA 13)	21:15	14	06:14 (19B)	21:38
26	08:04		07:09		06:06		06:31 (WEA 08)	05:58			06:55 (WEA 13)	05:09		06:01 (19B)	04:57
	16:51		17:48		18:37	41	07:22 (WEA 12)	20:29	27		07:22 (WEA 13)	21:16	13	06:14 (19B)	21:38
27	08:03		07:07		06:04		06:30 (WEA 08)	05:56			06:56 (WEA 13)	05:08		06:01 (19B)	04:58
	16:53		17:50		18:39	39	07:20 (WEA 12)	20:31	25		07:21 (WEA 13)	21:17	12	06:13 (19B)	21:38
28	08:01		07:05		06:02		06:30 (WEA 08)	05:54			06:56 (WEA 13)	05:07		06:02 (19B)	04:58
	16:55		17:52		18:40	35	07:18 (WEA 12)	20:33	23		07:19 (WEA 13)	21:18	11	06:13 (19B)	21:38
29	08:00				06:59		07:22 (29B)	05:52			06:57 (WEA 13)	05:06		06:03 (19B)	04:59
	16:57				19:42	30	08:14 (WEA 12)	20:34	21		07:18 (WEA 13)	21:20	9	06:12 (19B)	21:38
30	07:59				06:57		07:19 (29B)	05:50			06:59 (WEA 13)	05:05		06:04 (19B)	04:59
	16:59				19:44	23	07:46 (WEA 08)	20:36	17		07:16 (WEA 13)	21:21	7	06:11 (19B)	21:37
31	07:57				06:55		07:17 (29B)					05:04		06:05 (19B)	
	17:00				19:45	23	07:45 (WEA 08)					21:22	4	06:09 (19B)	
Sonnenscheinstunden	260		278		367			416				484			498
astr.max.mögl.Beschattung						690			736				242		
Red.Sonnenscheinwahrsch.						0,27			0,36				0,43		
Reduktion Betriebsdauer						0,96			0,96				0,96		
Reduktion Windrichtung						0,71			0,72				0,71		
Gesamte Reduktion						0,18			0,25				0,29		
Met.wahrsch.Beschattung						126			181				71		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 25 - Reinstedt - Forellenweg 6

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November	Dezember
1	05:00		05:36		06:26	07:03 (WEA 13)	07:14	07:48 (WEA 09)	07:08	07:58
	21:37		21:06		20:04 16	07:19 (WEA 13)	18:55 21	08:09 (WEA 09)	16:49	16:09
2	05:01		05:38		06:27	07:06 (WEA 13)	07:16	07:48 (WEA 09)	07:09	08:00
	21:37		21:04		20:02 9	07:15 (WEA 13)	18:53 20	08:08 (WEA 09)	16:47	16:08
3	05:01		05:39		06:29		07:18	07:48 (WEA 09)	07:11	08:01
	21:36		21:02		19:59		18:50 20	08:08 (WEA 09)	16:45	16:08
4	05:02		05:41		06:30		07:19	07:48 (WEA 09)	07:13	08:02
	21:36		21:01		19:57		18:48 18	08:06 (WEA 09)	16:44	16:07
5	05:03		05:42		06:32		07:21	07:49 (WEA 09)	07:15	08:04
	21:36		20:59		19:55		18:46 17	08:06 (WEA 09)	16:42	16:07
6	05:04		05:44		06:34		07:23	07:50 (WEA 09)	07:17	08:05
	21:35		20:57		19:53		18:43 14	08:04 (WEA 09)	16:40	16:06
7	05:05		05:46		06:35		07:24	07:51 (WEA 09)	07:18	08:06
	21:34		20:55		19:50		18:41 10	08:01 (WEA 09)	16:38	16:06
8	05:06		05:47		06:37	07:14 (29B)	07:26		07:20	08:08
	21:34		20:53		19:48 2	07:16 (29B)	18:39		16:37	16:06
9	05:07		05:49		06:39	07:11 (29B)	07:28		07:22	08:09
	21:33		20:52		19:46 8	07:19 (29B)	18:37		16:35	16:05
10	05:08		05:50		06:40	07:10 (29B)	07:29		07:24	08:10
	21:32		20:50		19:43 10	07:20 (29B)	18:34		16:34	16:05
11	05:09		05:52	07:12 (WEA 13)	06:42	07:09 (29B)	07:31		07:25	08:11
	21:32		20:48 8	07:20 (WEA 13)	19:41 19	07:35 (WEA 08)	18:32		16:32	16:05
12	05:10	06:15 (19B)	05:53	07:08 (WEA 13)	06:43	07:09 (29B)	07:33		07:27	08:12
	21:31 1	06:16 (19B)	20:46 14	07:22 (WEA 13)	19:39 23	07:37 (WEA 08)	18:30		16:30	16:05
13	05:11	06:13 (19B)	05:55	07:07 (WEA 13)	06:45	07:10 (29B)	07:34		07:29	08:13
	21:30 6	06:19 (19B)	20:44 18	07:25 (WEA 13)	19:37 23	07:37 (WEA 08)	18:28		16:29	16:05
14	05:12	06:11 (19B)	05:57	07:05 (WEA 13)	06:47	07:12 (29B)	07:36		07:31	08:14
	21:29 9	06:20 (19B)	20:42 21	07:26 (WEA 13)	19:34 30	08:04 (WEA 12)	18:26		16:28	16:05
15	05:13	06:11 (19B)	05:58	07:04 (WEA 13)	06:48	07:20 (WEA 08)	07:38		07:32	08:15
	21:28 10	06:21 (19B)	20:40 23	07:27 (WEA 13)	19:32 32	08:06 (WEA 12)	18:23		16:26	16:05
16	05:14	06:10 (19B)	06:00	07:02 (WEA 13)	06:50	07:20 (WEA 08)	07:40		07:34	08:16
	21:27 12	06:22 (19B)	20:38 26	07:28 (WEA 13)	19:30 37	08:09 (WEA 12)	18:21		16:25	16:05
17	05:15	06:09 (19B)	06:01	07:01 (WEA 13)	06:51	07:20 (WEA 08)	07:41		07:36	08:16
	21:26 13	06:22 (19B)	20:36 28	07:29 (WEA 13)	19:27 39	08:10 (WEA 12)	18:19		16:23	16:05
18	05:17	06:10 (19B)	06:03	06:52 (WEA 11)	06:53	07:19 (WEA 08)	07:43		07:38	08:17
	21:25 14	06:24 (19B)	20:34 37	07:29 (WEA 13)	19:25 41	08:10 (WEA 12)	18:17		16:22	16:05
19	05:18	06:09 (19B)	06:05	06:50 (WEA 11)	06:55	07:20 (WEA 08)	07:45		07:39	08:18
	21:24 15	06:24 (19B)	20:32 40	07:30 (WEA 13)	19:23 41	08:11 (WEA 12)	18:15		16:21	16:06
20	05:19	06:09 (19B)	06:06	06:48 (WEA 11)	06:56	07:21 (WEA 08)	07:46		07:41	08:19
	21:23 15	06:24 (19B)	20:30 41	07:29 (WEA 13)	19:20 40	08:11 (WEA 12)	18:13		16:20	16:06
21	05:21	06:09 (19B)	06:08	06:47 (WEA 11)	06:58	07:23 (WEA 08)	07:48		07:43	08:19
	21:21 15	06:24 (19B)	20:28 43	07:30 (WEA 13)	19:18 37	08:11 (WEA 12)	18:11		16:18	16:06
22	05:22	06:08 (19B)	06:10	06:46 (WEA 11)	07:00	07:25 (WEA 08)	07:50		07:44	08:20
	21:20 16	06:24 (19B)	20:26 43	07:29 (WEA 13)	19:16 32	08:11 (WEA 12)	18:09		16:17	16:07
23	05:23	06:09 (19B)	06:11	06:46 (WEA 11)	07:01	07:43 (WEA 12)	07:52		07:46	08:20
	21:19 16	06:25 (19B)	20:24 43	07:29 (WEA 13)	19:13 28	08:11 (WEA 12)	18:07		16:16	16:07
24	05:25	06:09 (19B)	06:13	06:45 (WEA 11)	07:03	07:43 (WEA 12)	07:53		07:48	08:21
	21:18 15	06:24 (19B)	20:21 43	07:28 (WEA 13)	19:11 27	08:10 (WEA 12)	18:05		16:15	16:08
25	05:26	06:09 (19B)	06:14	06:45 (WEA 11)	07:04	07:42 (WEA 12)	06:55		07:49	08:21
	21:16 15	06:24 (19B)	20:19 43	07:28 (WEA 13)	19:09 27	08:09 (WEA 12)	17:03		16:14	16:09
26	05:27	06:10 (19B)	06:16	06:44 (WEA 11)	07:06	07:43 (WEA 12)	06:57		07:51	08:21
	21:15 14	06:24 (19B)	20:17 43	07:27 (WEA 13)	19:06 26	08:09 (WEA 12)	17:01		16:13	16:09
27	05:29	06:10 (19B)	06:18	06:45 (WEA 11)	07:08	07:44 (WEA 12)	06:59		07:52	08:22
	21:13 13	06:23 (19B)	20:15 42	07:27 (WEA 13)	19:04 24	08:08 (WEA 09)	16:59		16:12	16:10
28	05:30	06:10 (19B)	06:19	06:45 (WEA 11)	07:09	07:44 (WEA 12)	07:01		07:54	08:22
	21:12 12	06:22 (19B)	20:13 40	07:25 (WEA 13)	19:02 24	08:08 (WEA 09)	16:57		16:11	16:11
29	05:32	06:12 (19B)	06:21	06:47 (WEA 11)	07:11	07:45 (WEA 12)	07:02		07:55	08:22
	21:10 10	06:22 (19B)	20:11 38	07:25 (WEA 13)	18:59 24	08:09 (WEA 09)	16:55		16:10	16:12
30	05:33	06:13 (19B)	06:22	06:49 (WEA 11)	07:13	07:47 (WEA 12)	07:04		07:57	08:22
	21:09 7	06:20 (19B)	20:08 35	07:24 (WEA 13)	18:57 22	08:09 (WEA 09)	16:53		16:10	16:13
31	05:35		06:24	06:50 (WEA 11)			07:06			08:22
	21:07		20:06 27	07:21 (WEA 13)			16:51			16:13
Sonnenscheinstunden	501		453		381		332		267	245
astr.max.mögl.Beschattung	228		696		641		120			
Red.Sonnenscheinwahrsch.	0,40		0,43		0,34		0,28			
Reduktion Betriebsdauer	0,96		0,96		0,96		0,96			
Reduktion Windrichtung	0,71		0,72		0,71		0,70			
Gesamte Reduktion	0,27		0,30		0,23		0,19			
Met.wahrsch.Beschattung	63		206		148		23			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 26 - Reinstedt - Forellenweg 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22		07:56		07:03		07:29 (WEA 09)		06:52		05:48	
	16:15		17:02		17:54	7	07:36 (WEA 09)		19:47		20:38	
2	08:22		07:54		07:00		07:26 (WEA 09)		06:50		05:46	
	16:16		17:04		17:55	13	07:39 (WEA 09)		19:49		20:39	
3	08:22		07:53		06:58		07:23 (WEA 09)		06:48	07:24 (WEA 13)	05:44	
	16:17		17:06		17:57	16	07:39 (WEA 09)		19:51	10	07:34 (WEA 13)	20:41
4	08:22		07:51		06:56		07:22 (WEA 09)		06:46		07:20 (WEA 13)	05:42
	16:18		17:08		17:59	18	07:40 (WEA 09)		19:52	17	07:37 (WEA 13)	20:43
5	08:22		07:49		06:54		07:22 (WEA 09)		06:43		07:18 (WEA 13)	05:40
	16:19		17:10		18:01	19	07:41 (WEA 09)		19:54	21	07:39 (WEA 13)	20:44
6	08:21		07:48		06:52		07:21 (WEA 09)		06:41		07:17 (WEA 13)	05:39
	16:20		17:11		18:02	21	07:42 (WEA 09)		19:56	24	07:41 (WEA 13)	20:46
7	08:21		07:46		06:49		07:20 (WEA 09)		06:39		07:14 (WEA 13)	05:37
	16:22		17:13		18:04	21	07:41 (WEA 09)		19:57	27	07:41 (WEA 13)	20:48
8	08:20		07:44		06:47		07:20 (WEA 09)		06:37		06:59 (WEA 11)	05:35
	16:23		17:15		18:06	21	07:41 (WEA 09)		19:59	38	07:42 (WEA 13)	20:49
9	08:20		07:42		06:45		07:19 (WEA 12)		06:34		06:57 (WEA 11)	05:33
	16:24		17:17		18:08	22	07:41 (WEA 09)		20:01	43	07:42 (WEA 13)	20:51
10	08:19		07:41		06:43		07:18 (WEA 12)		06:32		06:55 (WEA 11)	05:32
	16:26		17:19		18:09	24	07:42 (WEA 12)		20:02	47	07:43 (WEA 13)	20:52
11	08:19		07:39		06:41		07:16 (WEA 12)		06:30		06:54 (WEA 11)	05:30
	16:27		17:21		18:11	26	07:42 (WEA 12)		20:04	49	07:43 (WEA 13)	20:54
12	08:18		07:37		06:38		07:15 (WEA 12)		06:28		06:52 (WEA 11)	05:28
	16:29		17:23		18:13	27	07:42 (WEA 12)		20:06	50	07:42 (WEA 13)	20:56
13	08:17		07:35		06:36		07:15 (WEA 12)		06:25		06:52 (WEA 11)	05:27
	16:30		17:24		18:15	28	07:43 (WEA 12)		20:07	50	07:42 (WEA 13)	20:57
14	08:17		07:33		06:34		07:14 (WEA 12)		06:23		06:51 (WEA 11)	05:25
	16:32		17:26		18:16	28	07:42 (WEA 12)		20:09	51	07:42 (WEA 13)	20:59
15	08:16		07:31		06:31		07:14 (WEA 12)		06:21		06:51 (WEA 11)	05:24
	16:33		17:28		18:18	28	07:42 (WEA 12)		20:11	50	07:41 (WEA 13)	21:00
16	08:15		07:29		06:29		07:14 (WEA 12)		06:19		06:52 (WEA 11)	05:22
	16:35		17:30		18:20	28	07:42 (WEA 12)		20:13	49	07:41 (WEA 13)	21:02
17	08:14		07:27		06:27		06:49 (WEA 08)		06:17		06:52 (WEA 11)	05:21
	16:36		17:32		18:22	31	07:40 (WEA 12)		20:14	48	07:40 (WEA 13)	21:03
18	08:13		07:25		06:25		06:47 (WEA 08)		06:15		06:53 (WEA 11)	05:19
	16:38		17:34		18:23	36	07:40 (WEA 12)		20:16	44	07:39 (WEA 13)	21:05
19	08:12		07:23		06:22		06:45 (WEA 08)		06:12		06:54 (WEA 11)	05:18
	16:40		17:35		18:25	38	07:39 (WEA 12)		20:18	40	07:38 (WEA 13)	21:06
20	08:11		07:21		06:20		06:43 (WEA 08)		06:10		06:54 (WEA 11)	05:16
	16:41		17:37		18:27	39	07:38 (WEA 12)		20:19	35	07:36 (WEA 13)	21:08
21	08:10		07:19		06:18		06:41 (WEA 08)		06:08		07:12 (WEA 13)	05:15
	16:43		17:39		18:28	37	07:35 (WEA 12)		20:21	23	07:35 (WEA 13)	21:09
22	08:09		07:17		06:15		06:41 (WEA 08)		06:06		07:13 (WEA 13)	05:14
	16:45		17:41		18:30	33	07:33 (WEA 12)		20:23	20	07:33 (WEA 13)	21:10
23	08:08		07:15		06:13		06:36 (29B)		06:04		07:15 (WEA 13)	05:13
	16:46		17:43		18:32	26	07:28 (WEA 12)		20:24	16	07:31 (WEA 13)	21:12
24	08:07		07:13		06:11		06:33 (29B)		06:02		07:18 (WEA 13)	05:11
	16:48		17:45		18:34	25	06:59 (WEA 08)		20:26	10	07:28 (WEA 13)	21:13
25	08:05		07:11		06:08		06:31 (29B)		06:00			05:10
	16:50		17:46		18:35	26	06:58 (WEA 08)		20:28			21:15
26	08:04		07:09		06:06		06:30 (29B)		05:58			05:09
	16:51		17:48		18:37	26	06:57 (WEA 08)		20:29			21:16
27	08:03		07:07		06:04		06:29 (29B)		05:56			05:08
	16:53		17:50		18:39	24	06:55 (WEA 08)		20:31			21:17
28	08:01		07:05		06:02		06:30 (29B)		05:54			05:07
	16:55		17:52		18:40	18	06:53 (WEA 08)		20:33			21:18
29	08:00				06:59		07:31 (29B)		05:52			05:06
	16:57				19:42	7	07:38 (29B)		20:34			21:20
30	07:59				06:57				05:50			05:05
	16:59				19:44				20:36			21:21
31	07:57				06:55							05:04
	17:00				19:45							21:22
Sonnenscheinstunden	260		278		367		416		484		498	
astr.max.mögl.Beschattung						713		762		334		587
Red.Sonnenscheinwahrsch.						0,27		0,36		0,43		0,35
Reduktion Betriebsdauer						0,96		0,96		0,96		0,96
Reduktion Windrichtung						0,70		0,72		0,71		0,70
Gesamte Reduktion						0,18		0,25		0,29		0,23
Met.wahrsch.Beschattung						128		188		97		137

20	08:11	07:21	06:20	06:43 (WEA 08)	06:10	06:54 (WEA 11)	05:16	06:14 (19B)	04:56	05:36 (WEA 02)
	16:41	17:37	18:27	39	07:38 (WEA 12)	20:19	35	07:36 (WEA 13)	21:08	9	06:23 (19B)	21:37	19	05:55 (WEA 02)
21	08:10	07:19	06:18	06:41 (WEA 08)	06:08	07:12 (WEA 13)	05:15	06:15 (19B)	04:56	05:36 (WEA 02)
	16:43	17:39	18:28	37	07:35 (WEA 12)	20:21	23	07:35 (WEA 13)	21:09	7	06:22 (19B)	21:37	19	05:55 (WEA 02)
22	08:09	07:17	06:15	06:41 (WEA 08)	06:06	07:13 (WEA 13)	05:14	05:41 (WEA 02)	04:56	05:37 (WEA 02)
	16:45	17:41	18:30	33	07:33 (WEA 12)	20:23	20	07:33 (WEA 13)	21:10	4	05:45 (WEA 02)	21:38	19	05:56 (WEA 02)
23	08:08	07:15	06:13	06:36 (29B)	06:04	07:15 (WEA 13)	05:13	05:40 (WEA 02)	04:56	05:37 (WEA 02)
	16:46	17:43	18:32	26	07:28 (WEA 12)	20:24	16	07:31 (WEA 13)	21:12	7	05:47 (WEA 02)	21:38	19	05:56 (WEA 02)
24	08:07	07:13	06:11	06:33 (29B)	06:02	07:18 (WEA 13)	05:11	05:39 (WEA 02)	04:57	05:37 (WEA 02)
	16:48	17:45	18:34	25	06:59 (WEA 08)	20:26	10	07:28 (WEA 13)	21:13	9	05:48 (WEA 02)	21:38	19	05:56 (WEA 02)
25	08:05	07:11	06:08	06:31 (29B)	06:00			05:10			05:38 (WEA 02)	04:57		05:38 (WEA 02)
	16:50	17:46	18:35	26	06:58 (WEA 08)	20:28			21:15	11	05:49 (WEA 02)	21:38	19	05:57 (WEA 02)
26	08:04	07:09	06:06	06:30 (29B)	05:58			05:09			05:37 (WEA 02)	04:57		05:38 (WEA 02)
	16:51	17:48	18:37	26	06:57 (WEA 08)	20:29			21:16	13	05:50 (WEA 02)	21:38	19	05:57 (WEA 02)
27	08:03	07:07	06:04	06:29 (29B)	05:56			05:08			05:36 (WEA 02)	04:58		05:38 (WEA 02)
	16:53	17:50	18:39	24	06:55 (WEA 08)	20:31			21:17	14	05:50 (WEA 02)	21:38	19	05:57 (WEA 02)
28	08:01	07:05	06:02	06:30 (29B)	05:54			05:07			05:35 (WEA 02)	04:58		05:38 (WEA 02)
	16:55	17:52	18:40	18	06:53 (WEA 08)	20:33			21:18	16	05:51 (WEA 02)	21:38	20	05:58 (WEA 02)
29	08:00		06:59		07:31 (29B)	05:52			05:06		05:34 (WEA 02)	04:59		05:38 (WEA 02)
	16:57		19:42	7	07:38 (29B)	20:34			21:20	17	05:51 (WEA 02)	21:38	19	05:57 (WEA 02)
30	07:59		06:57			05:50			05:05		05:33 (WEA 02)	04:59		05:38 (WEA 02)
	16:59		19:44			20:36			21:21	19	05:52 (WEA 02)	21:37	20	05:58 (WEA 02)
31	07:57		06:55						05:04		05:32 (WEA 02)			
	17:00		19:45						21:22	20	05:52 (WEA 02)			
Sonnenscheinstunden	260		278		367		416		484			498		
astr.max.mögl.Beschattung						713		762		334			587	
Red.Sonnenscheinwahrsch.						0,27		0,36		0,43			0,35	
Reduktion Betriebsdauer						0,96		0,96		0,96			0,96	
Reduktion Windrichtung						0,70		0,72		0,71			0,70	
Gesamte Reduktion						0,18		0,25		0,29			0,23	
Met.wahrsch.Beschattung						128		188		97			137	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 26 - Reinstedt - Forellenweg 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November	Dezember
1	05:00		05:39 (WEA 02)	05:36	06:21 (19B)	06:26	06:53 (WEA 11)	07:14	07:54 (WEA 12)	07:08	07:58
	21:37	20	05:59 (WEA 02)	21:06 16	06:37 (19B)	20:04 49	07:42 (WEA 13)	18:55 27	08:21 (WEA 12)	16:49	16:09
2	05:01		05:38 (WEA 02)	05:38	06:21 (19B)	06:27	06:53 (WEA 11)	07:16	07:54 (WEA 12)	07:09	08:00
	21:37	20	05:58 (WEA 02)	21:04 15	06:36 (19B)	20:02 47	07:41 (WEA 13)	18:53 27	08:21 (WEA 12)	16:47	16:08
3	05:01		05:39 (WEA 02)	05:39	06:22 (19B)	06:29	06:55 (WEA 11)	07:18	07:55 (WEA 12)	07:11	08:01
	21:36	20	05:59 (WEA 02)	21:02 14	06:36 (19B)	19:59 43	07:40 (WEA 13)	18:50 25	08:20 (WEA 12)	16:45	16:08
4	05:02		05:39 (WEA 02)	05:41	06:22 (19B)	06:30	06:56 (WEA 11)	07:19	07:55 (WEA 12)	07:13	08:02
	21:36	20	05:59 (WEA 02)	21:01 13	06:35 (19B)	19:57 38	07:39 (WEA 13)	18:48 23	08:18 (WEA 09)	16:44	16:07
5	05:03		05:40 (WEA 02)	05:42	06:24 (19B)	06:32	07:11 (WEA 13)	07:21	07:56 (WEA 12)	07:15	08:04
	21:36	20	06:00 (WEA 02)	20:59 10	06:34 (19B)	19:55 27	07:38 (WEA 13)	18:46 22	08:18 (WEA 09)	16:42	16:07
6	05:04		05:39 (WEA 02)	05:44	06:25 (19B)	06:34	07:12 (WEA 13)	07:23	07:57 (WEA 09)	07:17	08:05
	21:35	20	05:59 (WEA 02)	20:57 7	06:32 (19B)	19:53 24	07:36 (WEA 13)	18:43 21	08:18 (WEA 09)	16:40	16:06
7	05:05		05:39 (WEA 02)	05:46		06:35	07:13 (WEA 13)	07:24	07:56 (WEA 09)	07:18	08:06
	21:34	21	06:00 (WEA 02)	20:55		19:50 21	07:34 (WEA 13)	18:41 21	08:17 (WEA 09)	16:38	16:06
8	05:06		05:40 (WEA 02)	05:47		06:37	07:14 (WEA 13)	07:26	07:56 (WEA 09)	07:20	08:08
	21:34	20	06:00 (WEA 02)	20:53		19:48 17	07:31 (WEA 13)	18:39 21	08:17 (WEA 09)	16:37	16:06
9	05:07		05:40 (WEA 02)	05:49		06:39	07:18 (WEA 13)	07:28	07:57 (WEA 09)	07:22	08:09
	21:33	20	06:00 (WEA 02)	20:52		19:46 10	07:28 (WEA 13)	18:37 19	08:16 (WEA 09)	16:35	16:05
10	05:08		05:40 (WEA 02)	05:50		06:40		07:29	07:58 (WEA 09)	07:24	08:10
	21:32	20	06:00 (WEA 02)	20:50		19:43		18:34 17	08:15 (WEA 09)	16:34	16:05
11	05:09		05:40 (WEA 02)	05:52		06:42		07:31	07:58 (WEA 09)	07:25	08:11
	21:32	20	06:00 (WEA 02)	20:48		19:41		18:32 15	08:13 (WEA 09)	16:32	16:05
12	05:10		05:41 (WEA 02)	05:53		06:43		07:33	08:00 (WEA 09)	07:27	08:12
	21:31	19	06:00 (WEA 02)	20:46		19:39		18:30 11	08:11 (WEA 09)	16:30	16:05
13	05:11		05:41 (WEA 02)	05:55		06:45		07:34		07:29	08:13
	21:30	19	06:00 (WEA 02)	20:44		19:37		18:28		16:29	16:05
14	05:12		05:42 (WEA 02)	05:57		06:47	07:22 (29B)	07:36		07:31	08:14
	21:29	18	06:00 (WEA 02)	20:42		19:34 6	07:28 (29B)	18:26		16:27	16:05
15	05:13		05:43 (WEA 02)	05:58		06:48	07:19 (29B)	07:38		07:32	08:15
	21:28	17	06:00 (WEA 02)	20:40		19:32 17	07:42 (WEA 08)	18:23		16:26	16:05
16	05:14		05:44 (WEA 02)	06:00		06:50	07:18 (29B)	07:40		07:34	08:16
	21:27	15	05:59 (WEA 02)	20:38		19:30 23	07:44 (WEA 08)	18:21		16:25	16:05
17	05:15		05:45 (WEA 02)	06:01		06:51	07:18 (29B)	07:41		07:36	08:16
	21:26	14	05:59 (WEA 02)	20:36		19:27 27	07:46 (WEA 08)	18:19		16:23	16:05
18	05:17		05:47 (WEA 02)	06:03		06:53	07:18 (29B)	07:43		07:38	08:17
	21:25	12	05:59 (WEA 02)	20:34		19:25 28	07:46 (WEA 08)	18:17		16:22	16:05
19	05:18		05:48 (WEA 02)	06:05	07:24 (WEA 13)	06:55	07:20 (29B)	07:45		07:39	08:18
	21:24	10	05:58 (WEA 02)	20:32 11	07:35 (WEA 13)	19:23 25	07:46 (WEA 08)	18:15		16:21	16:06
20	05:19		05:49 (WEA 02)	06:06	07:20 (WEA 13)	06:56	07:21 (29B)	07:46		07:41	08:19
	21:23	8	05:57 (WEA 02)	20:30 17	07:37 (WEA 13)	19:20 22	07:45 (WEA 08)	18:13		16:20	16:06
21	05:21		05:50 (WEA 02)	06:08	07:19 (WEA 13)	06:58	07:27 (WEA 08)	07:48		07:43	08:19
	21:21	5	05:55 (WEA 02)	20:28 20	07:39 (WEA 13)	19:18 31	08:17 (WEA 12)	18:11		16:18	16:06
22	05:22		05:51 (WEA 02)	06:09	07:02 (WEA 11)	07:00	07:27 (WEA 08)	07:50		07:44	08:20
	21:20	6	06:31 (19B)	20:26 27	07:40 (WEA 13)	19:16 35	08:20 (WEA 12)	18:09		16:17	16:07
23	05:23		06:25 (19B)	06:11	06:59 (WEA 11)	07:01	07:26 (WEA 08)	07:52		07:46	08:20
	21:19	8	06:33 (19B)	20:24 35	07:41 (WEA 13)	19:13 39	08:21 (WEA 12)	18:07		16:16	16:07
24	05:25		06:24 (19B)	06:13	06:56 (WEA 11)	07:03	07:28 (WEA 08)	07:53		07:48	08:21
	21:18	10	06:34 (19B)	20:21 41	07:41 (WEA 13)	19:11 38	08:22 (WEA 12)	18:05		16:15	16:08
25	05:26		06:22 (19B)	06:14	06:55 (WEA 11)	07:04	07:29 (WEA 08)	06:55		07:49	08:21
	21:16	13	06:35 (19B)	20:19 46	07:42 (WEA 13)	19:09 37	08:22 (WEA 12)	17:03		16:14	16:09
26	05:27		06:22 (19B)	06:16	06:54 (WEA 11)	07:06	07:31 (WEA 08)	06:57		07:51	08:21
	21:15	14	06:36 (19B)	20:17 48	07:42 (WEA 13)	19:06 34	08:23 (WEA 12)	17:01		16:13	16:09
27	05:29		06:22 (19B)	06:18	06:53 (WEA 11)	07:08	07:56 (WEA 12)	06:59		07:52	08:22
	21:13	14	06:36 (19B)	20:15 50	07:43 (WEA 13)	19:04 27	08:23 (WEA 12)	16:59		16:12	16:10
28	05:30		06:21 (19B)	06:19	06:52 (WEA 11)	07:09	07:55 (WEA 12)	07:01		07:54	08:22
	21:12	15	06:36 (19B)	20:13 50	07:42 (WEA 13)	19:02 28	08:23 (WEA 12)	16:57		16:11	16:11
29	05:32		06:21 (19B)	06:21	06:52 (WEA 11)	07:11	07:55 (WEA 12)	07:02		07:55	08:22
	21:10	16	06:37 (19B)	20:11 51	07:43 (WEA 13)	18:59 28	08:23 (WEA 12)	16:55		16:10	16:12
30	05:33		06:21 (19B)	06:22	06:52 (WEA 11)	07:13	07:55 (WEA 12)	07:04		07:57	08:22
	21:09	16	06:37 (19B)	20:08 51	07:43 (WEA 13)	18:57 28	08:23 (WEA 12)	16:53		16:10	16:13
31	05:35		06:21 (19B)	06:24	06:52 (WEA 11)			07:06			08:22
	21:07	17	06:38 (19B)	20:06 50	07:42 (WEA 13)			16:51			16:13
Sonnenscheinstunden	501			453		381		332		267	245
astr.max.mögl.Beschattung		487		572		749		249			
Red.Sonnenscheinwahrsch.		0,40		0,43		0,34		0,28			
Reduktion Betriebsdauer		0,96		0,96		0,96		0,96			
Reduktion Windrichtung		0,71		0,72		0,71		0,69			
Gesamte Reduktion		0,27		0,30		0,23		0,18			
Met.wahrsch.Beschattung		132		170		174		46			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 27 - Reinstedt - Ermslebener Straße 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22		07:56		07:03		07:34 (WEA 09)		06:52		05:48	
	16:15		17:02		17:54	22	07:56 (WEA 09)		19:47		20:38	31
2	08:22		07:54		07:00		07:33 (WEA 09)		06:50		05:46	
	16:16		17:04		17:55	24	07:57 (WEA 12)		19:49		20:39	22
3	08:22		07:53		06:58		07:32 (WEA 09)		06:48		05:44	
	16:17		17:06		17:57	26	07:58 (WEA 12)		19:51		20:41	24
4	08:22		07:51		06:56		07:32 (WEA 09)		06:46		07:30 (WEA 13)	
	16:18		17:08		17:59	28	08:00 (WEA 12)		19:52	12	07:42 (WEA 13)	
5	08:21		07:49		06:54		07:32 (WEA 09)		06:43		07:27 (WEA 13)	
	16:19		17:10		18:01	29	08:01 (WEA 12)		19:54	19	07:46 (WEA 13)	
6	08:21		07:48		06:52		07:32 (WEA 09)		06:41		07:24 (WEA 13)	
	16:20		17:11		18:02	30	08:02 (WEA 12)		19:56	24	07:48 (WEA 13)	
7	08:21		07:46		06:49		07:31 (WEA 12)		06:39		07:21 (WEA 13)	
	16:22		17:13		18:04	31	08:02 (WEA 12)		19:57	28	07:49 (WEA 13)	
8	08:20		07:44		06:47		07:31 (WEA 12)		06:37		07:20 (WEA 13)	
	16:23		17:15		18:06	32	08:03 (WEA 12)		19:59	30	07:50 (WEA 13)	
9	08:20		07:42		06:45		07:31 (WEA 12)		06:34		06:59 (WEA 11)	
	16:24		17:17		18:08	32	08:03 (WEA 12)		20:01	42	07:51 (WEA 13)	
10	08:19		07:41		06:43		07:30 (WEA 12)		06:32		06:57 (WEA 11)	
	16:26		17:19		18:09	33	08:03 (WEA 12)		20:02	48	07:52 (WEA 13)	
11	08:19		07:39		06:40		07:29 (WEA 12)		06:30		06:55 (WEA 11)	
	16:27		17:21		18:11	34	08:03 (WEA 12)		20:04	53	07:53 (WEA 13)	
12	08:18		07:37		06:38		07:29 (WEA 12)		06:28		06:53 (WEA 11)	
	16:29		17:23		18:13	33	08:02 (WEA 12)		20:06	57	07:53 (WEA 13)	
13	08:17		07:35		06:36		07:30 (WEA 12)		06:25		06:52 (WEA 11)	
	16:30		17:24		18:15	32	08:02 (WEA 12)		20:07	60	07:53 (WEA 13)	
14	08:17		07:33		06:34		07:29 (WEA 12)		06:23		06:51 (WEA 11)	
	16:32		17:26		18:16	32	08:01 (WEA 12)		20:09	61	07:53 (WEA 13)	
15	08:16		07:31		06:31		06:57 (WEA 08)		06:21		06:51 (WEA 11)	
	16:33		17:28		18:18	34	08:00 (WEA 12)		20:11	62	07:53 (WEA 13)	
16	08:15		07:29		06:29		06:53 (WEA 08)		06:19		06:50 (WEA 11)	
	16:35		17:30		18:20	42	08:00 (WEA 12)		20:13	63	07:53 (WEA 13)	
17	08:14		07:27		06:27		06:50 (WEA 08)		06:17		06:50 (WEA 11)	
	16:36		17:32		18:22	44	07:58 (WEA 12)		20:14	63	07:53 (WEA 13)	
18	08:13		07:25		06:25		06:49 (WEA 08)		06:14		06:50 (WEA 11)	
	16:38		17:34		18:23	43	07:56 (WEA 12)		20:16	63	07:53 (WEA 13)	
19	08:12		07:23		06:22		06:48 (WEA 08)		06:12		06:51 (WEA 11)	
	16:39		17:35		18:25	42	07:55 (WEA 12)		20:18	60	07:52 (WEA 13)	
20	08:11		07:21		06:20		06:48 (WEA 08)		06:10		06:50 (WEA 11)	
	16:41		17:37		18:27	38	07:53 (WEA 12)		20:19	59	07:51 (WEA 13)	
21	08:10		07:19		06:18		06:46 (WEA 08)		06:08		06:51 (WEA 11)	
	16:43		17:39		18:28	33	07:48 (WEA 12)		20:21	56	07:50 (WEA 13)	
22	08:09		07:17		06:15		06:40 (29B)		06:06		06:52 (WEA 11)	
	16:45		17:41		18:30	28	07:08 (WEA 08)		20:23	53	07:49 (WEA 13)	
23	08:08		07:15		06:13		06:38 (29B)		06:04		06:53 (WEA 11)	
	16:46		17:43		18:32	29	07:07 (WEA 08)		20:24	49	07:49 (WEA 13)	
24	08:07		07:13		06:11		06:36 (29B)		06:02		06:56 (WEA 11)	
	16:48		17:45		18:34	30	07:06 (WEA 08)		20:26	42	07:48 (WEA 13)	
25	08:05		07:11	07:41 (WEA 09)	06:08		06:35 (29B)		06:00		07:14 (WEA 13)	
	16:50		17:46	9 07:50 (WEA 09)	18:35	30	07:05 (WEA 08)		20:28	32	07:46 (WEA 13)	
26	08:04		07:09	07:38 (WEA 09)	06:06		06:35 (29B)		05:58		07:15 (WEA 13)	
	16:51		17:48	15 07:53 (WEA 09)	18:37	29	07:04 (WEA 08)		20:29	31	07:46 (WEA 13)	
27	08:03		07:07	07:36 (WEA 09)	06:04		06:34 (29B)		05:56		07:16 (WEA 13)	
	16:53		17:50	18 07:54 (WEA 09)	18:39	25	07:01 (WEA 08)		20:31	29	07:45 (WEA 13)	
28	08:01		07:05	07:35 (WEA 09)	06:02		06:35 (29B)		05:54		07:17 (WEA 13)	
	16:55		17:52	20 07:55 (WEA 09)	18:40	19	06:59 (WEA 08)		20:33	26	07:43 (WEA 13)	
29	08:00				06:59		07:37 (29B)		05:52		07:19 (WEA 13)	
	16:57				19:42	7	07:44 (29B)		20:34	22	07:41 (WEA 13)	
30	07:59				06:57				05:50		06:14 (WEA 10)	
	16:59				19:44				20:36	32	07:38 (WEA 13)	
31	07:57				06:55							
	17:00				19:45							
Sonnenscheinstunden	260		278		367		416		484		498	
astr.max.mögl.Beschattung				62		891		1176		644		1305
Red.Sonnenscheinwahrsch.				0,32		0,27		0,36		0,43		0,35
Reduktion Betriebsdauer				0,96		0,96		0,96		0,96		0,96
Reduktion Windrichtung				0,68		0,69		0,72		0,71		0,70
Gesamte Reduktion				0,21		0,18		0,25		0,29		0,23
Met.wahrsch.Beschattung				13		159		291		189		305

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 27 - Reinstedt - Ermslebener Straße 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November	Dezember
1	05:00		05:31 (WEA 02)	05:36	06:17 (WEA 10)	06:26	06:54 (WEA 11)	07:14	08:08 (WEA 12)	07:08	07:58
	21:37	45	06:26 (19B)	21:06	20	06:37 (20B)	20:04	53	07:52 (WEA 13)	18:55	33	08:41 (WEA 12)	16:49	16:09
2	05:01		05:31 (WEA 02)	05:38	06:16 (WEA 10)	06:27	06:55 (WEA 11)	07:16	08:08 (WEA 12)	07:09	08:00
	21:37	45	06:26 (19B)	21:04	23	06:39 (20B)	20:02	49	07:50 (WEA 13)	18:52	33	08:41 (WEA 12)	16:47	16:08
3	05:01		05:32 (WEA 02)	05:39	06:16 (WEA 10)	06:29	06:57 (WEA 11)	07:18	08:08 (WEA 12)	07:11	08:01
	21:36	45	06:27 (19B)	21:02	25	06:41 (20B)	19:59	42	07:49 (WEA 13)	18:50	33	08:41 (WEA 12)	16:45	16:08
4	05:02		05:33 (WEA 02)	05:41	06:16 (WEA 10)	06:30	07:17 (WEA 13)	07:19	08:07 (WEA 12)	07:13	08:02
	21:36	45	06:28 (19B)	21:01	25	06:41 (20B)	19:57	30	07:47 (WEA 13)	18:48	33	08:40 (WEA 12)	16:44	16:07
5	05:03		05:33 (WEA 02)	05:42	06:16 (WEA 10)	06:32	07:18 (WEA 13)	07:21	08:08 (WEA 12)	07:15	08:04
	21:36	45	06:27 (19B)	20:59	27	06:43 (20B)	19:55	28	07:46 (WEA 13)	18:46	32	08:40 (WEA 12)	16:42	16:07
6	05:04		05:34 (WEA 02)	05:44	06:16 (WEA 10)	06:34	07:19 (WEA 13)	07:23	08:08 (WEA 12)	07:17	08:05
	21:35	44	06:28 (19B)	20:57	26	06:42 (20B)	19:53	24	07:43 (WEA 13)	18:43	31	08:39 (WEA 12)	16:40	16:06
7	05:05		05:35 (WEA 02)	05:46	06:16 (WEA 10)	06:35	07:22 (WEA 13)	07:24	08:07 (WEA 09)	07:18	08:06
	21:34	43	06:28 (19B)	20:55	27	06:43 (20B)	19:50	19	07:41 (WEA 13)	18:41	31	08:38 (WEA 12)	16:38	16:06
8	05:06		05:36 (WEA 02)	05:47	06:16 (WEA 10)	06:37	07:24 (WEA 13)	07:26	08:07 (WEA 09)	07:20	08:08
	21:34	41	06:29 (19B)	20:53	26	06:42 (20B)	19:48	13	07:37 (WEA 13)	18:39	30	08:37 (WEA 12)	16:37	16:06
9	05:07		05:37 (WEA 02)	05:49	06:17 (WEA 10)	06:39			07:28		08:07 (WEA 09)	07:22	08:09
	21:33	39	06:29 (19B)	20:52	26	06:43 (20B)	19:46				18:37	29	08:36 (WEA 12)	16:35	16:05
10	05:08		05:48 (15B)	05:50	06:18 (WEA 10)	06:40			07:29		08:07 (WEA 09)	07:24	08:10
	21:32	33	06:30 (19B)	20:50	23	06:41 (20B)	19:43				18:34	27	08:34 (WEA 12)	16:34	16:05
11	05:09		05:48 (15B)	05:52	06:20 (WEA 10)	06:42			07:31		08:06 (WEA 09)	07:25	08:11
	21:32	33	06:30 (19B)	20:48	23	07:39 (WEA 13)	19:41				18:32	26	08:32 (WEA 12)	16:32	16:05
12	05:10		05:49 (15B)	05:53	06:21 (WEA 10)	06:43			07:33		08:07 (WEA 09)	07:27	08:12
	21:31	31	06:30 (19B)	20:46	31	07:44 (WEA 13)	19:39				18:30	22	08:29 (WEA 09)	16:30	16:05
13	05:11		05:49 (15B)	05:55	06:23 (WEA 10)	06:45			07:34		08:07 (WEA 09)	07:29	08:13
	21:30	31	06:30 (19B)	20:44	30	07:47 (WEA 13)	19:37				18:28	21	08:28 (WEA 09)	16:29	16:05
14	05:12		05:50 (15B)	05:57	07:26 (WEA 13)	06:47	07:28 (29B)	07:36	08:08 (WEA 09)	07:31	08:14
	21:29	30	06:30 (19B)	20:42	23	07:49 (WEA 13)	19:34	6	07:34 (29B)	18:26	19	08:27 (WEA 09)	16:27	16:05
15	05:13		05:51 (15B)	05:58	07:24 (WEA 13)	06:48	07:25 (29B)	07:38	08:09 (WEA 09)	07:32	08:15
	21:28	28	06:30 (19B)	20:40	27	07:51 (WEA 13)	19:32	16	07:47 (WEA 08)	18:23	17	08:26 (WEA 09)	16:26	16:05
16	05:14		05:52 (15B)	06:00	07:23 (WEA 13)	06:50	07:24 (29B)	07:40	08:10 (WEA 09)	07:34	08:16
	21:27	26	06:30 (19B)	20:38	28	07:51 (WEA 13)	19:30	24	07:50 (WEA 08)	18:21	13	08:23 (WEA 09)	16:25	16:05
17	05:15		06:10 (19B)	06:01	07:22 (WEA 13)	06:51	07:24 (29B)	07:41	08:14 (WEA 09)	07:36	08:16
	21:26	20	06:30 (19B)	20:36	31	07:53 (WEA 13)	19:27	28	07:52 (WEA 08)	18:19	6	08:20 (WEA 09)	16:23	16:05
18	05:17		06:11 (19B)	06:03	07:20 (WEA 13)	06:53	07:23 (29B)	07:43			07:38	08:17
	21:25	20	06:31 (19B)	20:34	33	07:53 (WEA 13)	19:25	29	07:52 (WEA 08)	18:17			16:22	16:05
19	05:18		06:12 (19B)	06:05	07:02 (WEA 11)	06:55	07:23 (29B)	07:45			07:39	08:18
	21:24	18	06:30 (19B)	20:32	42	07:54 (WEA 13)	19:23	30	07:53 (WEA 08)	18:15			16:21	16:06
20	05:19		06:12 (19B)	06:06	06:59 (WEA 11)	06:56	07:23 (29B)	07:46			07:41	08:19
	21:23	18	06:30 (19B)	20:30	49	07:54 (WEA 13)	19:20	30	07:53 (WEA 08)	18:13			16:20	16:06
21	05:21		06:12 (19B)	06:08	06:57 (WEA 11)	06:58	07:24 (29B)	07:48			07:43	08:19
	21:21	17	06:29 (19B)	20:28	54	07:55 (WEA 13)	19:18	29	07:53 (WEA 08)	18:11			16:18	16:06
22	05:22		06:13 (19B)	06:09	06:56 (WEA 11)	07:00	07:32 (WEA 08)	07:50			07:44	08:20
	21:20	15	06:28 (19B)	20:26	56	07:55 (WEA 13)	19:16	30	08:33 (WEA 12)	18:09			16:17	16:07
23	05:23		06:14 (19B)	06:11	06:55 (WEA 11)	07:01	07:31 (WEA 08)	07:52			07:46	08:20
	21:19	14	06:28 (19B)	20:24	60	07:56 (WEA 13)	19:13	37	08:35 (WEA 12)	18:07			16:16	16:07
24	05:25		06:15 (19B)	06:13	06:53 (WEA 11)	07:03	07:32 (WEA 08)	07:53			07:48	08:21
	21:18	12	06:27 (19B)	20:21	62	07:55 (WEA 13)	19:11	41	08:38 (WEA 12)	18:05			16:15	16:08
25	05:26		06:16 (19B)	06:14	06:53 (WEA 11)	07:04	07:31 (WEA 08)	06:55			07:49	08:21
	21:16	9	06:25 (19B)	20:19	63	07:56 (WEA 13)	19:09	44	08:39 (WEA 12)	17:03			16:14	16:09
26	05:27		06:19 (19B)	06:16	06:52 (WEA 11)	07:06	07:32 (WEA 08)	06:57			07:51	08:21
	21:15	10	06:29 (WEA 10)	20:17	63	07:55 (WEA 13)	19:06	44	08:40 (WEA 12)	17:01			16:13	16:09
27	05:29		06:22 (WEA 10)	06:18	06:52 (WEA 11)	07:08	07:34 (WEA 08)	06:59			07:52	08:22
	21:13	9	06:31 (WEA 10)	20:15	63	07:55 (WEA 13)	19:04	42	08:41 (WEA 12)	16:59			16:12	16:10
28	05:30		06:20 (WEA 10)	06:19	06:52 (WEA 11)	07:09	07:36 (WEA 08)	07:01			07:54	08:22
	21:12	12	06:32 (WEA 10)	20:13	62	07:54 (WEA 13)	19:02	38	08:41 (WEA 12)	16:57			16:11	16:11
29	05:32		06:19 (WEA 10)	06:21	06:52 (WEA 11)	07:11	08:10 (WEA 12)	07:02			07:55	08:22
	21:10	15	06:34 (WEA 10)	20:11	61	07:54 (WEA 13)	18:59	31	08:41 (WEA 12)	16:55			16:10	16:12
30	05:33		06:18 (WEA 10)	06:22	06:53 (WEA 11)	07:13	08:09 (WEA 12)	07:04			07:57	08:22
	21:09	17	06:35 (WEA 10)	20:08	60	07:54 (WEA 13)	18:57	33	08:42 (WEA 12)	16:53			16:10	16:13
31	05:35		06:18 (WEA 10)	06:24	06:53 (WEA 11)				07:06				08:22
	21:07	18	06:36 (WEA 10)	20:06	56	07:52 (WEA 13)				16:51				16:13
Sonnenscheinstunden	501		453		381		332		267	245
astr.max.mögl.Beschattung	828		1225		790		436			
Red.Sonnenscheinwahrsch.	0,40		0,43		0,34		0,28			
Reduktion Betriebsdauer	0,96		0,96		0,96		0,96			
Reduktion Windrichtung	0,71		0,72		0,71		0,68			
Gesamte Reduktion	0,27		0,30		0,23		0,18			
Met.wahrsch.Beschattung	225		364		182		80			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 28 - Reinstedt - Alphabillard

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22	07:56			07:03		07:38 (WEA 09)	06:52	07:39 (29B)	05:48	07:08 (WEA 13)	05:03
	16:15	17:02			17:54	28	08:06 (WEA 12)	19:47	1 07:40 (29B)	20:38	42 07:50 (WEA 13)	21:23
2	08:22	07:54			07:00		07:37 (WEA 09)	06:50		05:46	07:08 (WEA 13)	05:02
	16:16	17:04			17:55	32	08:09 (WEA 12)	19:49		20:39	41 07:49 (WEA 13)	21:24
3	08:22	07:53			06:58		07:36 (WEA 09)	06:48		05:44	07:09 (WEA 13)	05:01
	16:17	17:06			17:57	33	08:09 (WEA 12)	19:51		20:41	40 07:49 (WEA 13)	21:25
4	08:22	07:51			06:56		07:36 (WEA 09)	06:46		05:42	06:08 (WEA 10)	05:01
	16:18	17:08			17:59	35	08:11 (WEA 12)	19:52		20:43	44 07:48 (WEA 13)	21:26
5	08:21	07:49			06:54		07:36 (WEA 09)	06:43		05:40	06:05 (WEA 10)	05:00
	16:19	17:10			18:01	36	08:12 (WEA 12)	19:54		20:44	48 07:47 (WEA 13)	21:27
6	08:21	07:48			06:52		07:37 (WEA 09)	06:41		05:39	06:03 (WEA 10)	04:59	05:58 (19B)
	16:20	17:11			18:02	36	08:13 (WEA 12)	19:56		20:46	51 07:45 (WEA 13)	21:28	3 06:01 (19B)
7	08:21	07:46			06:49		07:36 (WEA 09)	06:39		05:37	06:02 (WEA 10)	04:59	05:57 (19B)
	16:22	17:13			18:04	37	08:13 (WEA 12)	19:57		20:48	54 07:45 (WEA 13)	21:29	6 06:03 (19B)
8	08:20	07:44			06:47		07:37 (WEA 09)	06:36	07:30 (WEA 13)	05:35	06:01 (WEA 10)	04:58	05:56 (19B)
	16:23	17:15			18:06	36	08:13 (WEA 12)	19:59	10 07:40 (WEA 13)	20:49	53 07:43 (WEA 13)	21:30	9 06:05 (19B)
9	08:20	07:42			06:45		07:37 (WEA 12)	06:34	07:25 (WEA 13)	05:33	06:01 (WEA 10)	04:58	05:55 (19B)
	16:24	17:17			18:08	37	08:14 (WEA 12)	20:01	19 07:44 (WEA 13)	20:51	51 07:42 (WEA 13)	21:31	10 06:05 (19B)
10	08:19	07:41			06:43		07:36 (WEA 12)	06:32	06:55 (WEA 07)	05:32	06:00 (WEA 10)	04:57	05:55 (19B)
	16:26	17:19			18:09	38	08:14 (WEA 12)	20:02	32 07:47 (WEA 13)	20:52	49 07:40 (WEA 13)	21:32	12 06:07 (19B)
11	08:19	07:39			06:40		07:35 (WEA 12)	06:30	06:52 (WEA 07)	05:30	05:59 (WEA 10)	04:57	05:55 (19B)
	16:27	17:21			18:11	38	08:13 (WEA 12)	20:04	40 07:48 (WEA 13)	20:54	46 07:37 (WEA 13)	21:32	13 06:08 (19B)
12	08:18	07:37			06:38		07:35 (WEA 12)	06:28	06:50 (WEA 07)	05:28	05:59 (WEA 10)	04:57	05:54 (19B)
	16:29	17:23			18:13	38	08:13 (WEA 12)	20:06	49 07:50 (WEA 13)	20:56	42 07:35 (WEA 13)	21:33	13 06:07 (19B)
13	08:17	07:35			06:36		07:36 (WEA 12)	06:25	06:48 (WEA 07)	05:27	05:58 (WEA 10)	04:56	05:54 (19B)
	16:30	17:24			18:15	37	08:13 (WEA 12)	20:07	55 07:51 (WEA 13)	20:57	33 07:30 (WEA 13)	21:34	14 06:08 (19B)
14	08:17	07:33			06:34		07:35 (WEA 12)	06:23	06:47 (WEA 07)	05:25	05:59 (WEA 10)	04:56	05:54 (19B)
	16:32	17:26			18:16	36	08:11 (WEA 12)	20:09	60 07:52 (WEA 13)	20:59	27 06:26 (20B)	21:34	15 06:09 (19B)
15	08:16	07:31			06:31		07:35 (WEA 12)	06:21	06:46 (WEA 07)	05:24	05:59 (WEA 10)	04:56	05:54 (19B)
	16:33	17:28			18:18	36	08:11 (WEA 12)	20:11	64 07:53 (WEA 13)	21:00	27 06:26 (20B)	21:35	15 06:09 (19B)
16	08:15	07:29			06:29		06:55 (WEA 08)	06:19	06:46 (WEA 07)	05:22	05:59 (WEA 10)	04:56	05:54 (19B)
	16:35	17:30			18:20	44	08:10 (WEA 12)	20:12	67 07:54 (WEA 13)	21:02	26 06:25 (20B)	21:35	16 06:10 (19B)
17	08:14	07:27			06:27		06:52 (WEA 08)	06:17	06:46 (WEA 07)	05:21	05:59 (WEA 10)	04:56	05:54 (19B)
	16:36	17:32			18:22	47	08:09 (WEA 12)	20:14	68 07:54 (WEA 13)	21:03	26 06:25 (20B)	21:36	16 06:10 (19B)
18	08:13	07:25			06:25		06:50 (WEA 08)	06:14	06:46 (WEA 11)	05:19	06:00 (WEA 10)	04:56	05:54 (19B)
	16:38	17:34			18:23	48	08:07 (WEA 12)	20:16	69 07:55 (WEA 13)	21:05	25 06:25 (20B)	21:36	16 06:10 (19B)
19	08:12	07:23			06:22		06:49 (WEA 08)	06:12	06:45 (WEA 11)	05:18	06:00 (WEA 10)	04:56	05:54 (19B)
	16:39	17:35			18:25	48	08:06 (WEA 12)	20:18	69 07:54 (WEA 13)	21:06	23 06:23 (20B)	21:37	17 06:11 (19B)
20	08:11	07:21			06:20		06:47 (WEA 08)	06:10	06:45 (WEA 11)	05:16	06:01 (WEA 10)	04:56	05:54 (19B)
	16:41	17:37			18:27	48	08:04 (WEA 12)	20:19	69 07:54 (WEA 13)	21:08	22 06:23 (20B)	21:37	17 06:11 (19B)
21	08:10	07:19			06:18		06:47 (WEA 08)	06:08	06:45 (WEA 11)	05:15	06:01 (WEA 10)	04:56	05:54 (19B)
	16:43	17:39			18:28	44	08:02 (WEA 12)	20:21	69 07:54 (WEA 13)	21:09	20 06:21 (20B)	21:37	17 06:11 (19B)
22	08:09	07:17			06:15		06:47 (WEA 08)	06:06	06:45 (WEA 11)	05:14	06:02 (WEA 10)	04:56	05:55 (19B)
	16:45	17:41			18:30	39	07:59 (WEA 12)	20:23	69 07:54 (WEA 13)	21:10	16 06:18 (WEA 10)	21:38	17 06:12 (19B)
23	08:08	07:15			06:13		06:41 (29B)	06:04	06:45 (WEA 11)	05:12	06:03 (WEA 10)	04:56	05:55 (19B)
	16:46	17:43			18:32	32	07:54 (WEA 12)	20:24	69 07:54 (WEA 13)	21:12	15 06:18 (WEA 10)	21:38	17 06:12 (19B)
24	08:07	07:13	07:45 (WEA 09)		06:11		06:37 (29B)	06:02	06:45 (WEA 11)	05:11	06:05 (WEA 10)	04:57	05:55 (19B)
	16:48	17:45	12 07:57 (WEA 09)		18:34	32	07:09 (WEA 08)	20:26	69 07:54 (WEA 13)	21:13	12 06:17 (WEA 10)	21:38	17 06:12 (19B)
25	08:05	07:11	07:43 (WEA 09)		06:08		06:35 (29B)	06:00	06:46 (WEA 11)	05:10	06:06 (WEA 10)	04:57	05:56 (19B)
	16:50	17:46	16 07:59 (WEA 09)		18:35	33	07:08 (WEA 08)	20:28	66 07:53 (WEA 13)	21:15	10 06:16 (WEA 10)	21:38	16 06:12 (19B)
26	08:04	07:09	07:41 (WEA 09)		06:06		06:35 (29B)	05:58	06:48 (WEA 11)	05:09	06:08 (WEA 10)	04:57	05:56 (19B)
	16:51	17:48	20 08:01 (WEA 09)		18:37	32	07:07 (WEA 08)	20:29	65 07:54 (WEA 13)	21:16	5 06:13 (WEA 10)	21:38	16 06:12 (19B)
27	08:03	07:07	07:39 (WEA 09)		06:04		06:33 (29B)	05:56	06:49 (WEA 11)	05:08		04:58	05:56 (19B)
	16:53	17:50	22 08:01 (WEA 09)		18:39	32	07:05 (WEA 08)	20:31	61 07:53 (WEA 13)	21:17		21:38	16 06:12 (19B)
28	08:01	07:05	07:38 (WEA 09)		06:02		06:33 (29B)	05:54	06:51 (WEA 11)	05:07		04:58	05:57 (19B)
	16:55	17:52	25 08:03 (WEA 12)		18:40	31	07:04 (WEA 08)	20:33	57 07:53 (WEA 13)	21:18		21:38	15 06:12 (19B)
29	08:00				06:59		07:34 (29B)	05:52	07:07 (WEA 13)	05:06		04:59	05:57 (19B)
	16:57				19:42	25	08:02 (WEA 08)	20:34	45 07:52 (WEA 13)	21:20		21:38	14 06:11 (19B)
30	07:59				06:57		07:34 (29B)	05:50	07:07 (WEA 13)	05:05		04:59	05:58 (19B)
	16:59				19:44	13	07:56 (WEA 08)	20:36	44 07:51 (WEA 13)	21:21		21:37	14 06:12 (19B)
31	07:57				06:55		07:35 (29B)			05:04			
	17:00				19:45	9	07:44 (29B)			21:22			
Sonnenscheinstunden	260	278			367			416		484		498	
astr.max.mögl.Beschattung			95			1090		1286		848		351	
Red.Sonnenscheinwahrsch.			0,32			0,27		0,36		0,43		0,35	
Reduktion Betriebsdauer			0,96			0,96		0,96		0,96		0,96	
Reduktion Windrichtung			0,68			0,69		0,72		0,72		0,71	
Gesamte Reduktion			0,21			0,18		0,25		0,29		0,23	
Met.wahrsch.Beschattung			20			194		317		250		82	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 28 - Reinstedt - Alphabillard

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00		05:59 (19B)	05:36		06:10 (WEA 10)	06:26		06:52 (WEA 07)	07:14		08:14 (WEA 12)	07:08	07:58
	21:37	13	06:12 (19B)	21:06	44	07:47 (WEA 13)	20:04	40	07:48 (WEA 13)	18:55	38	08:52 (WEA 12)	16:49	16:09
2	05:01		05:59 (19B)	05:38		06:09 (WEA 10)	06:27		06:53 (WEA 07)	07:16		08:14 (WEA 12)	07:09	08:00
	21:37	12	06:11 (19B)	21:04	49	07:49 (WEA 13)	20:02	32	07:45 (WEA 13)	18:52	38	08:52 (WEA 12)	16:47	16:08
3	05:01		06:00 (19B)	05:39		06:10 (WEA 10)	06:29		06:55 (WEA 07)	07:18		08:14 (WEA 12)	07:11	08:01
	21:36	11	06:11 (19B)	21:02	51	07:51 (WEA 13)	19:59	20	07:42 (WEA 13)	18:50	38	08:52 (WEA 12)	16:45	16:08
4	05:02		06:01 (19B)	05:41		06:10 (WEA 10)	06:30		07:27 (WEA 13)	07:19		08:13 (WEA 12)	07:13	08:02
	21:36	10	06:11 (19B)	21:01	52	07:52 (WEA 13)	19:57	10	07:37 (WEA 13)	18:48	38	08:51 (WEA 12)	16:44	16:07
5	05:03		06:01 (19B)	05:42		06:11 (WEA 10)	06:32			07:21		08:14 (WEA 12)	07:15	08:04
	21:35	8	06:09 (19B)	20:59	54	07:54 (WEA 13)	19:55			18:46	36	08:50 (WEA 12)	16:42	16:07
6	05:04		06:03 (19B)	05:44		06:12 (WEA 10)	06:34			07:23		08:14 (WEA 09)	07:17	08:05
	21:35	5	06:08 (19B)	20:57	53	07:55 (WEA 13)	19:53			18:43	36	08:50 (WEA 12)	16:40	16:06
7	05:05			05:46		06:14 (WEA 10)	06:35			07:24		08:12 (WEA 09)	07:18	08:06
	21:34			20:55	48	07:56 (WEA 13)	19:50			18:41	36	08:48 (WEA 12)	16:38	16:06
8	05:06			05:47		06:15 (WEA 10)	06:37			07:26		08:12 (WEA 09)	07:20	08:08
	21:34			20:53	48	07:57 (WEA 13)	19:48			18:39	35	08:47 (WEA 12)	16:37	16:05
9	05:07			05:49		07:19 (WEA 13)	06:39			07:28		08:11 (WEA 09)	07:22	08:09
	21:33			20:52	39	07:58 (WEA 13)	19:46			18:37	35	08:46 (WEA 12)	16:35	16:05
10	05:08			05:50		07:17 (WEA 13)	06:40			07:29		08:11 (WEA 09)	07:24	08:10
	21:32			20:50	41	07:58 (WEA 13)	19:43			18:34	34	08:45 (WEA 12)	16:34	16:05
11	05:09			05:52		07:17 (WEA 13)	06:42			07:31		08:10 (WEA 09)	07:25	08:11
	21:32			20:48	42	07:59 (WEA 13)	19:41			18:32	33	08:43 (WEA 12)	16:32	16:05
12	05:10			05:53		07:16 (WEA 13)	06:43		07:27 (29B)	07:33		08:11 (WEA 09)	07:27	08:12
	21:31			20:46	43	07:59 (WEA 13)	19:39	9	07:36 (29B)	18:30	30	08:41 (WEA 12)	16:30	16:05
13	05:11			05:55		07:16 (WEA 13)	06:45		07:25 (29B)	07:34		08:11 (WEA 09)	07:29	08:13
	21:30			20:44	44	08:00 (WEA 13)	19:37	11	07:36 (29B)	18:28	27	08:38 (WEA 12)	16:29	16:05
14	05:12			05:57		07:01 (WEA 11)	06:47		07:24 (29B)	07:36		08:12 (WEA 09)	07:31	08:14
	21:29			20:42	50	08:00 (WEA 13)	19:34	24	07:52 (WEA 08)	18:26	23	08:35 (WEA 09)	16:27	16:05
15	05:13			05:58		06:58 (WEA 11)	06:48		07:23 (29B)	07:38		08:13 (WEA 09)	07:32	08:15
	21:28			20:40	57	08:00 (WEA 13)	19:32	29	07:53 (WEA 08)	18:23	21	08:34 (WEA 09)	16:26	16:05
16	05:14			06:00		06:55 (WEA 11)	06:50		07:23 (29B)	07:40		08:13 (WEA 09)	07:34	08:16
	21:27			20:38	62	08:00 (WEA 13)	19:30	32	07:55 (WEA 08)	18:21	18	08:31 (WEA 09)	16:25	16:05
17	05:15			06:01		06:54 (WEA 11)	06:51		07:23 (29B)	07:41		08:15 (WEA 09)	07:36	08:16
	21:26			20:36	66	08:01 (WEA 13)	19:27	33	07:56 (WEA 08)	18:19	15	08:30 (WEA 09)	16:23	16:05
18	05:17		06:16 (WEA 10)	06:03		06:53 (WEA 11)	06:53		07:23 (29B)	07:43		08:18 (WEA 09)	07:38	08:17
	21:25	7	06:23 (WEA 10)	20:34	67	08:00 (WEA 13)	19:25	32	07:55 (WEA 08)	18:17	9	08:27 (WEA 09)	16:22	16:05
19	05:18		06:15 (WEA 10)	06:05		06:52 (WEA 11)	06:55		07:24 (29B)	07:45			07:39	08:18
	21:24	11	06:26 (WEA 10)	20:32	68	08:00 (WEA 13)	19:23	32	07:56 (WEA 08)	18:15			16:21	16:06
20	05:19		06:14 (WEA 10)	06:06		06:51 (WEA 11)	06:56		07:25 (29B)	07:46			07:41	08:19
	21:23	13	06:27 (WEA 10)	20:30	69	08:00 (WEA 13)	19:20	29	07:55 (WEA 08)	18:13			16:19	16:06
21	05:21		06:12 (WEA 10)	06:08		06:50 (WEA 11)	06:58		07:32 (WEA 08)	07:48			07:43	08:19
	21:21	16	06:28 (WEA 10)	20:28	70	08:00 (WEA 13)	19:18	37	08:43 (WEA 12)	18:11			16:18	16:06
22	05:22		06:11 (WEA 10)	06:09		06:49 (WEA 11)	07:00		07:32 (WEA 08)	07:50			07:44	08:20
	21:20	19	06:30 (20B)	20:26	70	07:59 (WEA 13)	19:16	43	08:46 (WEA 12)	18:09			16:17	16:07
23	05:23		06:12 (WEA 10)	06:11		06:50 (WEA 11)	07:01		07:32 (WEA 08)	07:52			07:46	08:20
	21:19	21	06:33 (20B)	20:24	69	07:59 (WEA 13)	19:13	47	08:48 (WEA 12)	18:07			16:16	16:07
24	05:25		06:11 (WEA 10)	06:13		06:49 (WEA 11)	07:03		07:32 (WEA 08)	07:53			07:48	08:21
	21:18	23	06:34 (20B)	20:21	69	07:58 (WEA 13)	19:11	48	08:49 (WEA 12)	18:05			16:15	16:08
25	05:26		06:10 (WEA 10)	06:14		06:49 (WEA 07)	07:04		07:32 (WEA 08)	06:55			07:49	08:21
	21:16	24	06:34 (20B)	20:19	68	07:57 (WEA 13)	19:09	49	08:50 (WEA 12)	17:03			16:14	16:09
26	05:27		06:10 (WEA 10)	06:16		06:48 (WEA 07)	07:06		07:34 (WEA 08)	06:57			07:51	08:21
	21:15	26	06:36 (20B)	20:17	68	07:56 (WEA 13)	19:06	48	08:51 (WEA 12)	17:01			16:13	16:09
27	05:29		06:10 (WEA 10)	06:18		06:48 (WEA 07)	07:08		07:36 (WEA 08)	06:59			07:52	08:22
	21:13	26	06:36 (20B)	20:15	65	07:55 (WEA 13)	19:04	46	08:52 (WEA 12)	16:59			16:12	16:10
28	05:30		06:09 (WEA 10)	06:19		06:47 (WEA 07)	07:09		07:40 (WEA 08)	07:01			07:54	08:22
	21:12	27	06:36 (20B)	20:13	64	07:54 (WEA 13)	19:02	38	08:52 (WEA 12)	16:57			16:11	16:11
29	05:32		06:10 (WEA 10)	06:21		06:47 (WEA 07)	07:11		08:16 (WEA 12)	07:02			07:55	08:22
	21:10	27	06:37 (20B)	20:11	61	07:53 (WEA 13)	18:59	36	08:52 (WEA 12)	16:55			16:10	16:12
30	05:33		06:09 (WEA 10)	06:22		06:49 (WEA 07)	07:13		08:15 (WEA 12)	07:04			07:57	08:22
	21:09	27	06:36 (20B)	20:08	54	07:52 (WEA 13)	18:57	37	08:52 (WEA 12)	16:53			16:10	16:12
31	05:35		06:10 (WEA 10)	06:24		06:50 (WEA 07)				07:06				08:22
	21:07	38	07:44 (WEA 13)	20:06	48	07:50 (WEA 13)				16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		364			1753			762			540			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,70			0,68			
Gesamte Reduktion		0,27			0,30			0,23			0,18			
Met.wahrsch.Beschattung		100			520			174			99			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 29 - Reinstedt - Ermslebener Straße 11

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56			07:03		07:29 (WEA 09)	06:52		07:27 (WEA 13)	05:48		06:26 (19B)	05:03		05:43 (WEA 02)
	16:15			17:02			17:54	17	07:46 (WEA 09)	19:47	27	07:54 (WEA 13)	20:38	14	06:40 (19B)	21:23	17	06:00 (WEA 02)
2	08:22			07:54			07:00		07:28 (WEA 09)	06:50		07:27 (WEA 13)	05:46		06:25 (19B)	05:02		05:44 (WEA 02)
	16:16			17:04			17:55	19	07:47 (WEA 09)	19:49	28	07:55 (WEA 13)	20:39	15	06:40 (19B)	21:24	17	06:01 (WEA 02)
3	08:22			07:53			06:58		07:28 (WEA 09)	06:48		07:10 (WEA 11)	05:44		06:26 (19B)	05:01		05:44 (WEA 02)
	16:17			17:06			17:57	19	07:47 (WEA 09)	19:51	33	07:54 (WEA 13)	20:41	15	06:41 (19B)	21:25	16	06:00 (WEA 02)
4	08:22			07:51			06:56		07:26 (WEA 09)	06:46		07:08 (WEA 11)	05:42		06:25 (19B)	05:01		05:46 (WEA 02)
	16:18			17:08			17:59	21	07:47 (WEA 09)	19:52	39	07:54 (WEA 13)	20:43	16	06:41 (19B)	21:26	15	06:01 (WEA 02)
5	08:22			07:49			06:54		07:26 (WEA 12)	06:43		07:06 (WEA 11)	05:40		06:25 (19B)	05:00		05:46 (WEA 02)
	16:19			17:10			18:01	22	07:48 (WEA 12)	19:54	44	07:55 (WEA 13)	20:44	15	06:40 (19B)	21:27	14	06:00 (WEA 02)
6	08:21			07:48			06:52		07:25 (WEA 12)	06:41		07:04 (WEA 11)	05:39		06:25 (19B)	04:59		05:38 (14B)
	16:20			17:11			18:02	24	07:49 (WEA 12)	19:56	47	07:55 (WEA 13)	20:46	14	06:39 (19B)	21:28	16	05:59 (WEA 02)
7	08:21			07:46			06:49		07:24 (WEA 12)	06:39		07:02 (WEA 11)	05:37		06:27 (19B)	04:59		05:37 (14B)
	16:22			17:13			18:04	25	07:49 (WEA 12)	19:57	48	07:53 (WEA 13)	20:48	12	06:39 (19B)	21:29	18	05:59 (WEA 02)
8	08:20			07:44			06:47		07:23 (WEA 12)	06:37		07:01 (WEA 11)	05:35		06:27 (19B)	04:58		05:37 (14B)
	16:23			17:15			18:06	26	07:49 (WEA 12)	19:59	49	07:53 (WEA 13)	20:49	10	06:37 (19B)	21:30	19	05:59 (WEA 02)
9	08:20			07:42			06:45		07:23 (WEA 12)	06:34		07:01 (WEA 11)	05:33		06:29 (19B)	04:58		05:36 (14B)
	16:24			17:17			18:08	27	07:50 (WEA 12)	20:01	48	07:53 (WEA 13)	20:51	7	06:36 (19B)	21:31	19	05:58 (WEA 02)
10	08:19			07:41			06:43		07:23 (WEA 12)	06:32		07:01 (WEA 11)	05:32			04:57		05:36 (14B)
	16:26			17:19			18:09	27	07:50 (WEA 12)	20:02	47	07:52 (WEA 13)	20:52			21:32	19	05:58 (WEA 02)
11	08:19			07:39			06:41		07:22 (WEA 12)	06:30		07:01 (WEA 11)	05:30			04:57		05:36 (14B)
	16:27			17:21			18:11	27	07:49 (WEA 12)	20:04	45	07:51 (WEA 13)	20:54			21:32	18	05:58 (WEA 02)
12	08:18			07:37			06:38		07:23 (WEA 12)	06:28		07:01 (WEA 11)	05:28			04:57		05:35 (14B)
	16:29			17:23			18:13	25	07:48 (WEA 12)	20:06	41	07:49 (WEA 13)	20:56			21:33	17	05:57 (WEA 02)
13	08:18			07:35			06:36		07:23 (WEA 12)	06:25		07:01 (WEA 11)	05:27			04:56		05:35 (14B)
	16:30			17:24			18:15	25	07:48 (WEA 12)	20:07	37	07:47 (WEA 13)	20:57			21:34	16	05:56 (WEA 02)
14	08:17			07:33			06:34		07:23 (WEA 12)	06:23		07:02 (WEA 11)	05:25			04:56		05:36 (14B)
	16:32			17:26			18:16	23	07:46 (WEA 12)	20:09	33	07:46 (WEA 13)	20:59			21:34	11	05:47 (14B)
15	08:16			07:31			06:31		07:24 (WEA 12)	06:21		07:04 (WEA 11)	05:24		05:50 (WEA 02)	04:56		05:36 (14B)
	16:33			17:28			18:18	21	07:45 (WEA 12)	20:11	24	07:43 (WEA 13)	21:00	6	05:56 (WEA 02)	21:35	12	05:48 (14B)
16	08:15			07:29			06:29		07:26 (WEA 12)	06:19		07:33 (WEA 13)	05:22		05:48 (WEA 02)	04:56		05:36 (14B)
	16:35			17:30			18:20	17	07:43 (WEA 12)	20:13	6	07:39 (WEA 13)	21:02	9	05:57 (WEA 02)	21:36	12	05:48 (14B)
17	08:14			07:27			06:27		07:27 (WEA 12)	06:17			05:21		05:47 (WEA 02)	04:56		05:36 (14B)
	16:36			17:32			18:22	13	07:40 (WEA 12)	20:14			21:03	11	05:58 (WEA 02)	21:36	13	05:49 (14B)
18	08:13			07:25			06:25		07:31 (WEA 12)	06:15			05:19		05:46 (WEA 02)	04:56		05:36 (14B)
	16:38			17:34			18:23	5	07:36 (WEA 12)	20:16			21:05	13	05:59 (WEA 02)	21:36	13	05:49 (14B)
19	08:12			07:24			06:22		06:45 (29B)	06:12			05:18		05:44 (WEA 02)	04:56		05:36 (14B)
	16:40			17:35			18:25	4	06:49 (29B)	20:18			21:06	15	05:59 (WEA 02)	21:37	13	05:49 (14B)
20	08:11			07:21			06:20		06:43 (29B)	06:10			05:16		05:43 (WEA 02)	04:56		05:36 (14B)
	16:41			17:37			18:27	7	06:50 (29B)	20:19			21:08	17	06:00 (WEA 02)	21:37	13	05:49 (14B)
21	08:10			07:19			06:18		06:40 (29B)	06:08			05:15		05:42 (WEA 02)	04:56		05:36 (14B)
	16:43			17:39			18:28	10	06:50 (29B)	20:21			21:09	18	06:00 (WEA 02)	21:37	13	05:49 (14B)
22	08:09			07:17			06:15		06:39 (29B)	06:06			05:14		05:42 (WEA 02)	04:56		05:37 (14B)
	16:45			17:41			18:30	11	06:50 (29B)	20:23			21:10	19	06:01 (WEA 02)	21:38	13	05:50 (14B)
23	08:08			07:15			06:13		06:40 (29B)	06:04			05:13		05:42 (WEA 02)	04:56		05:37 (14B)
	16:46			17:43			18:32	9	06:49 (29B)	20:24			21:12	19	06:01 (WEA 02)	21:38	13	05:50 (14B)
24	08:07			07:13			06:11		06:40 (29B)	06:02			05:11		05:42 (WEA 02)	04:57		05:37 (14B)
	16:48			17:45			18:34	7	06:47 (29B)	20:26			21:13	20	06:02 (WEA 02)	21:38	13	05:50 (14B)
25	08:05			07:11			06:08			06:00			05:10		05:42 (WEA 02)	04:57		05:38 (14B)
	16:50			17:46			18:35			20:28			21:15	20	06:02 (WEA 02)	21:38	13	05:51 (14B)
26	08:04			07:09		07:35 (WEA 09)	06:06			05:58			05:09		05:42 (WEA 02)	04:57		05:38 (14B)
	16:51			17:48	6	07:41 (WEA 09)	18:37			20:29			21:16	20	06:02 (WEA 02)	21:38	12	05:50 (14B)
27	08:03			07:07		07:31 (WEA 09)	06:04			05:56		06:33 (19B)	05:08		05:42 (WEA 02)	04:58		05:38 (14B)
	16:53			17:50	12	07:43 (WEA 09)	18:39			20:31	2	06:35 (19B)	21:17	20	06:02 (WEA 02)	21:38	12	05:50 (14B)
28	08:01			07:05		07:30 (WEA 09)	06:02		06:35 (WEA 13)	05:54		06:30 (19B)	05:07		05:42 (WEA 02)	04:58		05:39 (14B)
	16:55			17:52	15	07:45 (WEA 09)	18:40	13	06:48 (WEA 13)	20:33	8	06:38 (19B)	21:18	20	06:02 (WEA 02)	21:38	12	05:51 (14B)
29	08:00						06:59		07:33 (WEA 13)	05:52		06:28 (19B)	05:06		05:42 (WEA 02)	04:59		05:39 (14B)
	16:57						19:42	18	07:51 (WEA 13)	20:34	12	06:40 (19B)	21:20	20	06:02 (WEA 02)	21:38	14	05:59 (WEA 02)
30	07:59						06:57		07:30 (WEA 13)	05:50		06:27 (19B)	05:05		05:43 (WEA 02)	04:59		05:39 (14B)
	16:59						19:44	22	07:52 (WEA 13)	20:36	13	06:40 (19B)	21:21	18	06:01 (WEA 02)	21:37	18	06:01 (WEA 02)
31	07:57						06:55		07:29 (WEA 13)				05:04		05:43 (WEA 02)			
	17:00						19:45	24	07:53 (WEA 13)				21:22	18	06:01 (WEA 02)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung			33					508			631			401			441	
Red.Sonnenscheinwahrsch.			0,32					0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer			0,96					0,96			0,96			0,96			0,96	
Reduktion Windrichtung			0,68					0,69			0,72			0,71			0,70	
Gesamte Reduktion			0,21					0,18			0,25			0,29			0,23	
Met.wahrsch.Beschattung			7					90			156			117			103	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 29 - Reinstedt - Ermslebener Straße 11

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00		05:40 (14B)	05:36			06:26		07:00 (WEA 11)	07:14		08:02 (WEA 12)	07:08	07:58
	21:37	18	06:02 (WEA 02)	21:06			20:04	45	07:50 (WEA 13)	18:55	25	08:27 (WEA 12)	16:49	16:09
2	05:01		05:40 (14B)	05:38			06:27		06:59 (WEA 11)	07:16		08:01 (WEA 12)	07:09	08:00
	21:37	18	06:02 (WEA 02)	21:04			20:02	47	07:50 (WEA 13)	18:53	26	08:27 (WEA 12)	16:47	16:08
3	05:01		05:41 (14B)	05:39		06:41 (19B)	06:29		06:59 (WEA 11)	07:18		08:01 (WEA 12)	07:11	08:01
	21:36	18	06:03 (WEA 02)	21:02	3	06:44 (19B)	19:59	48	07:51 (WEA 13)	18:50	27	08:28 (WEA 12)	16:45	16:08
4	05:02		05:42 (14B)	05:41		06:38 (19B)	06:30		06:58 (WEA 11)	07:19		08:00 (WEA 12)	07:13	08:02
	21:36	18	06:04 (WEA 02)	21:01	9	06:47 (19B)	19:57	49	07:50 (WEA 13)	18:48	27	08:27 (WEA 12)	16:44	16:07
5	05:03		05:43 (14B)	05:42		06:37 (19B)	06:32		06:59 (WEA 11)	07:21		08:00 (WEA 12)	07:15	08:04
	21:36	19	06:05 (WEA 02)	20:59	11	06:48 (19B)	19:55	48	07:50 (WEA 13)	18:46	26	08:26 (WEA 12)	16:42	16:07
6	05:04		05:43 (14B)	05:44		06:36 (19B)	06:34		06:59 (WEA 11)	07:23		08:01 (WEA 12)	07:17	08:05
	21:35	18	06:05 (WEA 02)	20:57	13	06:49 (19B)	19:53	48	07:50 (WEA 13)	18:43	25	08:26 (WEA 12)	16:40	16:06
7	05:05		05:52 (WEA 02)	05:46		06:36 (19B)	06:35		07:01 (WEA 11)	07:24		08:00 (WEA 12)	07:18	08:06
	21:34	14	06:06 (WEA 02)	20:55	14	06:50 (19B)	19:50	45	07:50 (WEA 13)	18:41	25	08:25 (WEA 12)	16:38	16:06
8	05:06		05:52 (WEA 02)	05:47		06:35 (19B)	06:37		07:02 (WEA 11)	07:26		08:01 (WEA 12)	07:20	08:08
	21:34	15	06:07 (WEA 02)	20:53	15	06:50 (19B)	19:48	40	07:49 (WEA 13)	18:39	23	08:24 (WEA 12)	16:37	16:06
9	05:07		05:52 (WEA 02)	05:49		06:35 (19B)	06:39		07:04 (WEA 11)	07:28		08:01 (WEA 09)	07:22	08:09
	21:33	16	06:08 (WEA 02)	20:52	15	06:50 (19B)	19:46	34	07:48 (WEA 13)	18:37	22	08:23 (WEA 12)	16:35	16:05
10	05:08		05:52 (WEA 02)	05:50		06:34 (19B)	06:40		07:20 (WEA 13)	07:29		08:02 (WEA 09)	07:24	08:10
	21:32	16	06:08 (WEA 02)	20:50	16	06:50 (19B)	19:43	28	07:48 (WEA 13)	18:34	20	08:22 (WEA 09)	16:34	16:05
11	05:09		05:52 (WEA 02)	05:52		06:35 (19B)	06:42		07:20 (WEA 13)	07:31		08:01 (WEA 09)	07:25	08:11
	21:32	17	06:09 (WEA 02)	20:48	15	06:50 (19B)	19:41	26	07:46 (WEA 13)	18:32	19	08:20 (WEA 09)	16:32	16:05
12	05:10		05:51 (WEA 02)	05:53		06:34 (19B)	06:43		07:21 (WEA 13)	07:33		08:01 (WEA 09)	07:27	08:12
	21:31	18	06:09 (WEA 02)	20:46	15	06:49 (19B)	19:39	24	07:45 (WEA 13)	18:30	19	08:20 (WEA 09)	16:30	16:05
13	05:11		05:51 (WEA 02)	05:55		06:35 (19B)	06:45		07:21 (WEA 13)	07:34		08:02 (WEA 09)	07:29	08:13
	21:30	19	06:10 (WEA 02)	20:44	14	06:49 (19B)	19:37	22	07:43 (WEA 13)	18:28	17	08:19 (WEA 09)	16:29	16:05
14	05:12		05:51 (WEA 02)	05:57		06:36 (19B)	06:47		07:23 (WEA 13)	07:36		08:03 (WEA 09)	07:31	08:14
	21:29	19	06:10 (WEA 02)	20:42	11	06:47 (19B)	19:34	18	07:41 (WEA 13)	18:26	15	08:18 (WEA 09)	16:27	16:05
15	05:13		05:51 (WEA 02)	05:58		06:38 (19B)	06:48		07:24 (WEA 13)	07:38		08:05 (WEA 09)	07:32	08:15
	21:28	19	06:10 (WEA 02)	20:40	8	06:46 (19B)	19:32	14	07:38 (WEA 13)	18:23	11	08:16 (WEA 09)	16:26	16:05
16	05:14		05:51 (WEA 02)	06:00			06:50		07:29 (WEA 13)	07:40			07:34	08:16
	21:27	19	06:10 (WEA 02)	20:38			19:30	4	07:33 (WEA 13)	18:21			16:25	16:05
17	05:15		05:51 (WEA 02)	06:01			06:51			07:41			07:36	08:16
	21:26	19	06:10 (WEA 02)	20:36			19:27			18:19			16:23	16:05
18	05:17		05:51 (WEA 02)	06:03			06:53			07:43			07:38	08:17
	21:25	20	06:11 (WEA 02)	20:34			19:25			18:17			16:22	16:05
19	05:18		05:51 (WEA 02)	06:05			06:55		07:28 (29B)	07:45			07:39	08:18
	21:24	20	06:11 (WEA 02)	20:32			19:23	6	07:34 (29B)	18:15			16:21	16:06
20	05:19		05:51 (WEA 02)	06:06			06:56		07:26 (29B)	07:46			07:41	08:19
	21:23	20	06:11 (WEA 02)	20:30			19:20	9	07:35 (29B)	18:13			16:20	16:06
21	05:21		05:51 (WEA 02)	06:08			06:58		07:25 (29B)	07:48			07:43	08:19
	21:21	20	06:11 (WEA 02)	20:28			19:18	10	07:35 (29B)	18:11			16:18	16:06
22	05:22		05:51 (WEA 02)	06:10			07:00		07:25 (29B)	07:50			07:44	08:20
	21:20	19	06:10 (WEA 02)	20:26			19:16	10	07:35 (29B)	18:09			16:17	16:07
23	05:23		05:53 (WEA 02)	06:11			07:01		07:26 (29B)	07:52			07:46	08:20
	21:19	18	06:11 (WEA 02)	20:24			19:13	8	07:34 (29B)	18:07			16:16	16:07
24	05:25		05:54 (WEA 02)	06:13			07:03		07:28 (29B)	07:53			07:48	08:21
	21:18	16	06:10 (WEA 02)	20:21			19:11	5	07:33 (29B)	18:05			16:15	16:08
25	05:26		05:55 (WEA 02)	06:14			07:04			06:55			07:49	08:21
	21:16	14	06:09 (WEA 02)	20:19			19:09			17:03			16:14	16:09
26	05:27		05:57 (WEA 02)	06:16			07:06		08:11 (WEA 12)	06:57			07:51	08:21
	21:15	12	06:09 (WEA 02)	20:17			19:06	11	08:22 (WEA 12)	17:01			16:13	16:09
27	05:29		05:58 (WEA 02)	06:18		07:35 (WEA 13)	07:08		08:08 (WEA 12)	06:59			07:52	08:22
	21:13	10	06:08 (WEA 02)	20:15	6	07:41 (WEA 13)	19:04	16	08:24 (WEA 12)	16:59			16:12	16:10
28	05:30		05:59 (WEA 02)	06:19		07:05 (WEA 11)	07:09		08:06 (WEA 12)	07:01			07:54	08:22
	21:12	7	06:06 (WEA 02)	20:13	24	07:44 (WEA 13)	19:02	19	08:25 (WEA 12)	16:57			16:11	16:11
29	05:32		06:01 (WEA 02)	06:21		07:03 (WEA 11)	07:11		08:04 (WEA 12)	07:02			07:55	08:22
	21:10	4	06:05 (WEA 02)	20:11	33	07:47 (WEA 13)	18:59	22	08:26 (WEA 12)	16:55			16:10	16:12
30	05:33			06:22		07:02 (WEA 11)	07:13		08:03 (WEA 12)	07:04			07:57	08:22
	21:09			20:08	37	07:48 (WEA 13)	18:57	24	08:27 (WEA 12)	16:53			16:10	16:13
31	05:35			06:24		07:00 (WEA 11)				07:06				08:22
	21:07			20:06	43	07:49 (WEA 13)				16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		480			302			680			327			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,72			0,68			
Gesamte Reduktion		0,27			0,30			0,23			0,18			
Met.wahrsch.Beschattung		130			89			159			60			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)	
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)	

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 30 - Reinstedt - Ermslebener Straße 8

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar			März		April			Mai			Juni		
1	08:22		07:56			07:03		07:28 (WEA 09)	06:52		07:27 (WEA 13)	05:48		06:27 (19B)	05:03		05:39 (14B)
	16:15		17:02			17:54	17	07:45 (WEA 09)	19:47	27	07:54 (WEA 13)	20:38	16	06:43 (19B)	21:23	6	05:45 (14B)
2	08:22		07:54			07:00		07:27 (WEA 09)	06:50		07:27 (WEA 13)	05:46		06:27 (19B)	05:02		05:39 (14B)
	16:16		17:04			17:55	18	07:45 (WEA 09)	19:49	27	07:54 (WEA 13)	20:39	15	06:42 (19B)	21:24	8	05:47 (14B)
3	08:22		07:53			06:58		07:27 (WEA 09)	06:48		07:10 (WEA 11)	05:44		06:28 (19B)	05:01		05:38 (14B)
	16:17		17:06			17:57	19	07:46 (WEA 09)	19:51	36	07:54 (WEA 13)	20:41	14	06:42 (19B)	21:25	10	05:48 (14B)
4	08:22		07:51			06:56		07:25 (WEA 09)	06:46		07:08 (WEA 11)	05:42		06:28 (19B)	05:01		05:38 (14B)
	16:18		17:08			17:59	20	07:45 (WEA 09)	19:52	40	07:54 (WEA 13)	20:43	14	06:42 (19B)	21:26	11	05:49 (14B)
5	08:22		07:49			06:54		07:25 (WEA 12)	06:43		07:06 (WEA 11)	05:40		06:29 (19B)	05:00		05:38 (14B)
	16:19		17:10			18:01	21	07:46 (WEA 12)	19:54	43	07:54 (WEA 13)	20:44	11	06:40 (19B)	21:27	11	05:49 (14B)
6	08:21		07:48			06:52		07:24 (WEA 12)	06:41		07:04 (WEA 11)	05:39		06:30 (19B)	04:59		05:37 (14B)
	16:20		17:11			18:02	23	07:47 (WEA 12)	19:56	46	07:54 (WEA 13)	20:46	9	06:39 (19B)	21:28	12	05:49 (14B)
7	08:21		07:46			06:49		07:23 (WEA 12)	06:39		07:02 (WEA 11)	05:37		06:32 (19B)	04:59		05:37 (14B)
	16:22		17:13			18:04	24	07:47 (WEA 12)	19:57	48	07:53 (WEA 13)	20:48	5	06:37 (19B)	21:29	13	05:50 (14B)
8	08:20		07:44			06:47		07:22 (WEA 12)	06:37		07:02 (WEA 11)	05:35			04:58		05:38 (14B)
	16:23		17:15			18:06	25	07:47 (WEA 12)	19:59	47	07:52 (WEA 13)	20:49			21:30	13	05:51 (14B)
9	08:20		07:42			06:45		07:22 (WEA 12)	06:34		07:02 (WEA 11)	05:33			04:58		05:37 (14B)
	16:24		17:17			18:08	26	07:48 (WEA 12)	20:01	45	07:51 (WEA 13)	20:51			21:31	14	05:51 (14B)
10	08:19		07:41			06:43		07:22 (WEA 12)	06:32		07:02 (WEA 11)	05:32			04:57		05:38 (14B)
	16:26		17:19			18:09	26	07:48 (WEA 12)	20:02	43	07:50 (WEA 13)	20:52			21:32	13	05:51 (14B)
11	08:19		07:39			06:41		07:21 (WEA 12)	06:30		07:02 (WEA 11)	05:30			04:57		05:38 (14B)
	16:27		17:21			18:11	26	07:47 (WEA 12)	20:04	41	07:49 (WEA 13)	20:54			21:32	14	05:52 (14B)
12	08:18		07:37			06:38		07:22 (WEA 12)	06:28		07:02 (WEA 11)	05:28			04:57		05:37 (14B)
	16:29		17:23			18:13	24	07:46 (WEA 12)	20:06	37	07:47 (WEA 13)	20:56			21:33	14	05:51 (14B)
13	08:18		07:35			06:36		07:22 (WEA 12)	06:25		07:03 (WEA 11)	05:27			04:56		05:38 (14B)
	16:30		17:24			18:15	24	07:46 (WEA 12)	20:07	31	07:45 (WEA 13)	20:57			21:34	14	05:52 (14B)
14	08:17		07:33			06:34		07:22 (WEA 12)	06:23		07:04 (WEA 11)	05:25			04:56		05:38 (14B)
	16:32		17:26			18:16	22	07:44 (WEA 12)	20:09	23	07:42 (WEA 13)	20:59			21:34	14	05:52 (14B)
15	08:16		07:31			06:31		07:23 (WEA 12)	06:21		07:08 (WEA 11)	05:24			04:56		05:38 (14B)
	16:33		17:28			18:18	20	07:43 (WEA 12)	20:11	3	07:11 (WEA 11)	21:00			21:35	14	05:52 (14B)
16	08:15		07:29			06:29		07:25 (WEA 12)	06:19			05:22			04:56		05:38 (14B)
	16:35		17:30			18:20	16	07:41 (WEA 12)	20:13			21:02			21:36	15	05:53 (14B)
17	08:14		07:27			06:27		07:26 (WEA 12)	06:17			05:21			04:56		05:39 (14B)
	16:36		17:32			18:22	12	07:38 (WEA 12)	20:14			21:03			21:36	14	05:53 (14B)
18	08:13		07:25			06:25			06:15			05:19			04:56		05:39 (14B)
	16:38		17:34			18:23			20:16			21:05			21:36	14	05:53 (14B)
19	08:12		07:24			06:22		06:45 (29B)	06:12			05:18			04:56		05:39 (14B)
	16:40		17:35			18:25	4	06:49 (29B)	20:18			21:06			21:37	14	05:53 (14B)
20	08:11		07:21			06:20		06:43 (29B)	06:10			05:16			04:56		05:39 (14B)
	16:41		17:37			18:27	7	06:50 (29B)	20:19			21:08			21:37	14	05:53 (14B)
21	08:10		07:19			06:18		06:40 (29B)	06:08			05:15			04:56		05:39 (14B)
	16:43		17:39			18:28	10	06:50 (29B)	20:21			21:09			21:37	14	05:53 (14B)
22	08:09		07:17			06:15		06:40 (29B)	06:06			05:14			04:56		05:40 (14B)
	16:45		17:41			18:30	9	06:49 (29B)	20:23			21:10			21:38	14	05:54 (14B)
23	08:08		07:15			06:13		06:40 (29B)	06:04			05:13			04:56		05:40 (14B)
	16:46		17:43			18:32	9	06:49 (29B)	20:24			21:12			21:38	14	05:54 (14B)
24	08:07		07:13			06:11		06:41 (29B)	06:02			05:11			04:57		05:40 (14B)
	16:48		17:45			18:34	5	06:46 (29B)	20:26			21:13			21:38	14	05:54 (14B)
25	08:05		07:11			06:08			06:00			05:10			04:57		05:41 (14B)
	16:50		17:46			18:35			20:28			21:15			21:38	14	05:55 (14B)
26	08:04		07:09		07:36 (WEA 09)	06:06			05:58		06:33 (19B)	05:09			04:57		05:40 (14B)
	16:51		17:48	2	07:38 (WEA 09)	18:37			20:29	7	06:40 (19B)	21:16			21:38	15	05:55 (14B)
27	08:03		07:07		07:31 (WEA 09)	06:04		06:37 (WEA 13)	05:56		06:31 (19B)	05:08			04:58		05:40 (14B)
	16:53		17:50	10	07:41 (WEA 09)	18:39	9	06:46 (WEA 13)	20:31	11	06:42 (19B)	21:17			21:38	15	05:55 (14B)
28	08:01		07:05		07:29 (WEA 09)	06:02		06:34 (WEA 13)	05:54		06:30 (19B)	05:07			04:58		05:41 (14B)
	16:55		17:52	14	07:43 (WEA 09)	18:40	16	06:50 (WEA 13)	20:33	12	06:42 (19B)	21:18			21:38	14	05:55 (14B)
29	08:00					06:59		07:32 (WEA 13)	05:52		06:29 (19B)	05:06			04:59		05:41 (14B)
	16:57					19:42	20	07:52 (WEA 13)	20:34	14	06:43 (19B)	21:20			21:38	14	05:55 (14B)
30	07:59					06:57		07:29 (WEA 13)	05:50		06:28 (19B)	05:05			04:59		05:41 (14B)
	16:59					19:44	23	07:52 (WEA 13)	20:36	15	06:43 (19B)	21:21			21:37	14	05:55 (14B)
31	07:57					06:55		07:28 (WEA 13)				05:04					
	17:00					19:45	25	07:53 (WEA 13)				21:22					
Sonnenscheinstunden	260		278			367		416				484			498		
astr.max.mögl.Beschattung				26			500			596			84			394	
Red.Sonnenscheinwahrsch.				0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer				0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung				0,68			0,69			0,72			0,72			0,70	
Gesamte Reduktion				0,21			0,18			0,25			0,29			0,23	
Met.wahrsch.Beschattung				5			89			147			25			92	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 30 - Reinstedt - Ermslebener Straße 8

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00		05:42 (14B)	05:36			06:26		07:01 (WEA 11)	07:14		08:01 (WEA 12)	07:08	07:58
	21:37	14	05:56 (14B)	21:06			20:04	41	07:48 (WEA 13)	18:55	24	08:25 (WEA 12)	16:49	16:09
2	05:01		05:42 (14B)	05:38			06:27		07:00 (WEA 11)	07:16		08:00 (WEA 12)	07:09	08:00
	21:37	13	05:55 (14B)	21:04			20:02	43	07:48 (WEA 13)	18:53	25	08:25 (WEA 12)	16:47	16:08
3	05:01		05:42 (14B)	05:39			06:29		07:00 (WEA 11)	07:18		08:00 (WEA 12)	07:11	08:01
	21:36	14	05:56 (14B)	21:02			19:59	45	07:49 (WEA 13)	18:50	26	08:26 (WEA 12)	16:45	16:08
4	05:02		05:43 (14B)	05:41			06:30		06:59 (WEA 11)	07:19		07:59 (WEA 12)	07:13	08:02
	21:36	13	05:56 (14B)	21:01			19:57	47	07:49 (WEA 13)	18:48	26	08:25 (WEA 12)	16:44	16:07
5	05:03		05:44 (14B)	05:42			06:32		06:59 (WEA 11)	07:21		07:59 (WEA 12)	07:15	08:04
	21:36	12	05:56 (14B)	20:59			19:55	48	07:50 (WEA 13)	18:46	25	08:24 (WEA 12)	16:42	16:07
6	05:04		05:43 (14B)	05:44		06:41 (19B)	06:34		06:59 (WEA 11)	07:23		08:00 (WEA 12)	07:17	08:05
	21:35	12	05:55 (14B)	20:57	6	06:47 (19B)	19:53	46	07:49 (WEA 13)	18:43	24	08:24 (WEA 12)	16:40	16:06
7	05:05		05:44 (14B)	05:46		06:40 (19B)	06:35		07:01 (WEA 11)	07:24		07:59 (WEA 12)	07:18	08:06
	21:34	11	05:55 (14B)	20:55	10	06:50 (19B)	19:50	44	07:49 (WEA 13)	18:41	24	08:23 (WEA 12)	16:38	16:06
8	05:06		05:45 (14B)	05:47		06:38 (19B)	06:37		07:02 (WEA 11)	07:26		08:00 (WEA 12)	07:20	08:08
	21:34	10	05:55 (14B)	20:53	12	06:50 (19B)	19:48	40	07:48 (WEA 13)	18:39	22	08:22 (WEA 12)	16:37	16:06
9	05:07		05:45 (14B)	05:49		06:38 (19B)	06:39		07:04 (WEA 11)	07:28		08:01 (WEA 09)	07:22	08:09
	21:33	10	05:55 (14B)	20:52	13	06:51 (19B)	19:46	36	07:48 (WEA 13)	18:37	20	08:21 (WEA 12)	16:35	16:05
10	05:08		05:46 (14B)	05:50		06:37 (19B)	06:40		07:20 (WEA 13)	07:29		08:01 (WEA 09)	07:24	08:10
	21:32	9	05:55 (14B)	20:50	14	06:51 (19B)	19:43	28	07:48 (WEA 13)	18:34	19	08:20 (WEA 09)	16:34	16:05
11	05:09		05:47 (14B)	05:52		06:37 (19B)	06:42		07:19 (WEA 13)	07:31		08:00 (WEA 09)	07:25	08:11
	21:32	7	05:54 (14B)	20:48	15	06:52 (19B)	19:41	27	07:46 (WEA 13)	18:32	19	08:19 (WEA 09)	16:32	16:05
12	05:10		05:49 (14B)	05:53		06:36 (19B)	06:43		07:20 (WEA 13)	07:33		08:01 (WEA 09)	07:27	08:12
	21:31	4	05:53 (14B)	20:46	15	06:51 (19B)	19:39	25	07:45 (WEA 13)	18:30	17	08:18 (WEA 09)	16:30	16:05
13	05:11			05:55		06:37 (19B)	06:45		07:20 (WEA 13)	07:34		08:01 (WEA 09)	07:29	08:13
	21:30			20:44	14	06:51 (19B)	19:37	23	07:43 (WEA 13)	18:28	16	08:17 (WEA 09)	16:29	16:05
14	05:12			05:57		06:36 (19B)	06:47		07:22 (WEA 13)	07:36		08:03 (WEA 09)	07:31	08:14
	21:29			20:42	14	06:50 (19B)	19:34	20	07:42 (WEA 13)	18:26	13	08:16 (WEA 09)	16:28	16:05
15	05:13			05:58		06:37 (19B)	06:48		07:23 (WEA 13)	07:38		08:05 (WEA 09)	07:32	08:15
	21:28			20:40	13	06:50 (19B)	19:32	16	07:39 (WEA 13)	18:23	9	08:14 (WEA 09)	16:26	16:05
16	05:14			06:00		06:38 (19B)	06:50		07:26 (WEA 13)	07:40			07:34	08:16
	21:27			20:38	10	06:48 (19B)	19:30	10	07:36 (WEA 13)	18:21			16:25	16:05
17	05:15			06:01		06:40 (19B)	06:51			07:41			07:36	08:16
	21:26			20:36	6	06:46 (19B)	19:27			18:19			16:23	16:05
18	05:17			06:03			06:53			07:43			07:38	08:17
	21:25			20:34			19:25			18:17			16:22	16:05
19	05:18			06:05			06:55		07:29 (29B)	07:45			07:39	08:18
	21:24			20:32			19:23	4	07:33 (29B)	18:15			16:21	16:06
20	05:19			06:06			06:56		07:26 (29B)	07:46			07:41	08:19
	21:23			20:30			19:20	8	07:34 (29B)	18:13			16:20	16:06
21	05:21			06:08			06:58		07:25 (29B)	07:48			07:43	08:19
	21:21			20:28			19:18	10	07:35 (29B)	18:11			16:18	16:06
22	05:22			06:10			07:00		07:25 (29B)	07:50			07:44	08:20
	21:20			20:26			19:16	10	07:35 (29B)	18:09			16:17	16:07
23	05:23			06:11			07:01		07:26 (29B)	07:52			07:46	08:20
	21:19			20:24			19:13	8	07:34 (29B)	18:07			16:16	16:07
24	05:25			06:13			07:03		07:28 (29B)	07:53			07:48	08:21
	21:18			20:21			19:11	5	07:33 (29B)	18:05			16:15	16:08
25	05:26			06:14			07:04		07:29 (29B)	06:55			07:49	08:21
	21:16			20:19			19:09	1	07:30 (29B)	17:03			16:14	16:09
26	05:27			06:16			07:06		08:10 (WEA 12)	06:57			07:51	08:21
	21:15			20:17			19:06	9	08:19 (WEA 12)	17:01			16:13	16:09
27	05:29			06:18			07:08		08:07 (WEA 12)	06:59			07:52	08:22
	21:13			20:15			19:04	15	08:22 (WEA 12)	16:59			16:12	16:10
28	05:30			06:19		07:08 (WEA 11)	07:09		08:04 (WEA 12)	07:01			07:54	08:22
	21:12			20:13	4	07:12 (WEA 11)	19:02	19	08:23 (WEA 12)	16:57			16:11	16:11
29	05:32			06:21		07:05 (WEA 11)	07:11		08:03 (WEA 12)	07:02			07:55	08:22
	21:10			20:11	23	07:43 (WEA 13)	18:59	21	08:24 (WEA 12)	16:55			16:10	16:12
30	05:33			06:22		07:04 (WEA 11)	07:13		08:02 (WEA 12)	07:04			07:57	08:22
	21:09			20:08	31	07:46 (WEA 13)	18:57	23	08:25 (WEA 12)	16:53			16:10	16:13
31	05:35			06:24		07:02 (WEA 11)				07:06				08:22
	21:07			20:06	37	07:47 (WEA 13)				16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		129			237			672			309			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,70			0,72			0,72			0,68			
Gesamte Reduktion		0,27			0,30			0,23			0,18			
Met.wahrsch.Beschattung		35			70			157			57			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 31 - Reinstedt - Ermslebener Straße 5B

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56			07:03			07:27 (WEA 09)	06:52		07:28 (WEA 13)	05:48		06:34 (19B)	05:03		05:42 (14B)
	16:15			17:02			17:54	16		07:43 (WEA 09)	19:47	27	07:55 (WEA 13)	20:38	11	06:45 (19B)	21:23	14	05:56 (14B)
2	08:22			07:54			07:00			07:26 (WEA 09)	06:50		07:13 (WEA 11)	05:46		06:35 (19B)	05:02		05:43 (14B)
	16:16			17:04			17:55	18		07:44 (WEA 09)	19:49	35	07:56 (WEA 13)	20:39	8	06:43 (19B)	21:24	14	05:57 (14B)
3	08:22			07:53			06:58			07:26 (WEA 09)	06:48		07:10 (WEA 11)	05:44			05:01		05:43 (14B)
	16:17			17:06			17:57	19		07:45 (WEA 09)	19:51	39	07:55 (WEA 13)	20:41			21:25	15	05:58 (18B)
4	08:22			07:51			06:56			07:25 (WEA 09)	06:46		07:08 (WEA 11)	05:42			05:01		05:43 (14B)
	16:18			17:08			17:59	19		07:44 (WEA 09)	19:52	41	07:54 (WEA 13)	20:43			21:26	16	05:59 (18B)
5	08:22			07:49			06:54			07:24 (WEA 12)	06:43		07:06 (WEA 11)	05:41			05:00		05:43 (14B)
	16:19			17:10			18:01	21		07:45 (WEA 12)	19:54	44	07:54 (WEA 13)	20:44			21:27	17	06:00 (18B)
6	08:21			07:48			06:52			07:24 (WEA 12)	06:41		07:05 (WEA 11)	05:39			04:59		05:43 (14B)
	16:20			17:11			18:02	22		07:46 (WEA 12)	19:56	45	07:54 (WEA 13)	20:46			21:28	17	06:00 (18B)
7	08:21			07:46			06:49			07:22 (WEA 12)	06:39		07:04 (WEA 11)	05:37			04:59		05:44 (14B)
	16:22			17:13			18:04	23		07:45 (WEA 12)	19:57	43	07:52 (WEA 13)	20:48			21:29	17	06:01 (18B)
8	08:20			07:44			06:47			07:22 (WEA 12)	06:37		07:04 (WEA 11)	05:35			04:58		05:45 (14B)
	16:23			17:15			18:06	24		07:46 (WEA 12)	19:59	41	07:51 (WEA 13)	20:49			21:30	17	06:02 (18B)
9	08:20			07:42			06:45			07:21 (WEA 12)	06:34		07:04 (WEA 11)	05:33			04:58		05:44 (14B)
	16:24			17:17			18:08	25		07:46 (WEA 12)	20:01	39	07:50 (WEA 13)	20:51			21:31	17	06:01 (18B)
10	08:19			07:41			06:43			07:22 (WEA 12)	06:32		07:05 (WEA 11)	05:32			04:57		05:45 (14B)
	16:26			17:19			18:09	24		07:46 (WEA 12)	20:02	34	07:48 (WEA 13)	20:52			21:32	17	06:02 (18B)
11	08:19			07:39			06:41			07:21 (WEA 12)	06:30		07:06 (WEA 11)	05:30			04:57		05:46 (14B)
	16:27			17:21			18:11	24		07:45 (WEA 12)	20:04	27	07:45 (WEA 13)	20:54			21:32	17	06:03 (18B)
12	08:18			07:37			06:38			07:21 (WEA 12)	06:28		07:06 (WEA 11)	05:28			04:57		05:45 (14B)
	16:29			17:23			18:13	23		07:44 (WEA 12)	20:06	16	07:40 (WEA 13)	20:56			21:33	17	06:02 (18B)
13	08:18			07:35			06:36			07:22 (WEA 12)	06:25		07:09 (WEA 11)	05:27			04:56		05:46 (14B)
	16:30			17:24			18:15	22		07:44 (WEA 12)	20:07	5	07:14 (WEA 11)	20:57			21:34	17	06:03 (18B)
14	08:17			07:33			06:34			07:22 (WEA 12)	06:23			05:25			04:56		05:46 (14B)
	16:32			17:26			18:16	19		07:41 (WEA 12)	20:09			20:59			21:34	17	06:03 (18B)
15	08:16			07:31			06:31			07:24 (WEA 12)	06:21			05:24			04:56		05:47 (14B)
	16:33			17:28			18:18	16		07:40 (WEA 12)	20:11			21:00			21:35	17	06:04 (18B)
16	08:15			07:29			06:29			07:26 (WEA 12)	06:19			05:22			04:56		05:47 (14B)
	16:35			17:30			18:20	12		07:38 (WEA 12)	20:13			21:02			21:36	17	06:04 (18B)
17	08:14			07:27			06:27			07:30 (WEA 12)	06:17			05:21			04:56		05:47 (18B)
	16:36			17:32			18:22	1		07:31 (WEA 12)	20:14			21:03			21:36	17	06:04 (18B)
18	08:13			07:26			06:25				06:15			05:19			04:56		05:47 (18B)
	16:38			17:34			18:23				20:16			21:05			21:36	18	06:05 (18B)
19	08:12			07:24			06:22				06:12			05:18			04:56		05:47 (18B)
	16:40			17:35			18:25				20:18			21:06			21:37	18	06:05 (18B)
20	08:11			07:21			06:20				06:10			05:16			04:56		05:47 (18B)
	16:41			17:37			18:27				20:19			21:08			21:37	18	06:05 (18B)
21	08:10			07:19			06:18				06:08			05:15			04:56		05:47 (18B)
	16:43			17:39			18:28				20:21			21:09			21:37	18	06:05 (18B)
22	08:09			07:17			06:15				06:06		06:39 (19B)	05:14			04:56		05:48 (18B)
	16:45			17:41			18:30				20:23	3	06:42 (19B)	21:10			21:38	18	06:06 (18B)
23	08:08			07:15			06:13				06:04		06:36 (19B)	05:13			04:56		05:48 (18B)
	16:46			17:43			18:32				20:24	9	06:45 (19B)	21:12			21:38	18	06:06 (18B)
24	08:07			07:13			06:11				06:02		06:35 (19B)	05:11		05:46 (14B)	04:57		05:48 (18B)
	16:48			17:45			18:34				20:26	11	06:46 (19B)	21:13	6	05:52 (14B)	21:38	18	06:06 (18B)
25	08:05			07:11			06:08				06:00		06:34 (19B)	05:10		05:45 (14B)	04:57		05:49 (18B)
	16:50			17:46			18:35				20:28	13	06:47 (19B)	21:15	8	05:53 (14B)	21:38	17	06:06 (18B)
26	08:04			07:09		07:36 (WEA 09)	06:06			06:38 (WEA 13)	05:58		06:34 (19B)	05:09		05:44 (14B)	04:57		05:49 (14B)
	16:51			17:48	1	07:37 (WEA 09)	18:37	12		06:50 (WEA 13)	20:29	14	06:48 (19B)	21:16	10	05:54 (14B)	21:38	17	06:06 (18B)
27	08:03			07:07		07:30 (WEA 09)	06:04			06:34 (WEA 13)	05:56		06:33 (19B)	05:08		05:44 (14B)	04:58		05:49 (14B)
	16:53			17:50	10	07:40 (WEA 09)	18:39	18		06:52 (WEA 13)	20:31	15	06:48 (19B)	21:17	11	05:55 (14B)	21:38	17	06:06 (18B)
28	08:02			07:05		07:28 (WEA 09)	06:02			06:33 (WEA 13)	05:54		06:33 (19B)	05:07		05:43 (14B)	04:58		05:49 (18B)
	16:55			17:52	14	07:42 (WEA 09)	18:40	20		06:53 (WEA 13)	20:33	14	06:47 (19B)	21:18	12	05:55 (14B)	21:38	18	06:07 (18B)
29	08:00						06:59			07:31 (WEA 13)	05:52		06:33 (19B)	05:06		05:43 (14B)	04:59		05:49 (14B)
	16:57						19:42	24		07:55 (WEA 13)	20:34	14	06:47 (19B)	21:20	13	05:56 (14B)	21:38	17	06:06 (18B)
30	07:59						06:57			07:29 (WEA 13)	05:50		06:34 (19B)	05:05		05:42 (14B)	04:59		05:50 (14B)
	16:59						19:44	25		07:54 (WEA 13)	20:36	12	06:46 (19B)	21:21	14	05:56 (14B)	21:37	17	06:07 (18B)
31	07:57						06:55			07:29 (WEA 13)				05:04		05:42 (14B)			
	17:00						19:45	26		07:55 (WEA 13)				21:22	14	05:56 (14B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung					25			453			541			107			509	
Red.Sonnenscheinwahrsch.					0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer					0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung					0,68			0,69			0,72			0,71			0,70	
Gesamte Reduktion					0,21			0,18			0,25			0,29			0,23	
Met.wahrsch.Beschattung					5			81			133			31			119	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 31 - Reinstedt - Ermslebener Straße 5B

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November	Dezember
1	05:00	05:50 (14B)	05:36		06:26	07:05 (WEA 11)	07:14	08:00 (WEA 12)	07:08	07:58
	21:37 17	06:07 (18B)	21:06		20:04 28	07:45 (WEA 13)	18:55 23	08:23 (WEA 12)	16:49	16:09
2	05:01	05:49 (14B)	05:38		06:27	07:03 (WEA 11)	07:16	08:00 (WEA 12)	07:09	08:00
	21:37 18	06:07 (18B)	21:04		20:02 34	07:46 (WEA 13)	18:53 23	08:23 (WEA 12)	16:47	16:08
3	05:01	05:50 (14B)	05:39		06:29	07:02 (WEA 11)	07:18	08:00 (WEA 12)	07:11	08:01
	21:36 17	06:07 (18B)	21:02		19:59 39	07:48 (WEA 13)	18:50 24	08:24 (WEA 12)	16:45	16:08
4	05:02	05:50 (14B)	05:41		06:31	07:01 (WEA 11)	07:19	07:58 (WEA 12)	07:13	08:02
	21:36 17	06:07 (18B)	21:01		19:57 41	07:48 (WEA 13)	18:48 25	08:23 (WEA 12)	16:44	16:07
5	05:03	05:50 (14B)	05:42		06:32	07:01 (WEA 11)	07:21	07:58 (WEA 12)	07:15	08:04
	21:36 17	06:07 (18B)	20:59		19:55 43	07:49 (WEA 13)	18:46 25	08:23 (WEA 12)	16:42	16:07
6	05:04	05:49 (14B)	05:44		06:34	07:00 (WEA 11)	07:23	07:59 (WEA 12)	07:17	08:05
	21:35 17	06:06 (18B)	20:57		19:53 44	07:49 (WEA 13)	18:43 24	08:23 (WEA 12)	16:40	16:06
7	05:05	05:50 (14B)	05:46		06:35	07:01 (WEA 11)	07:24	07:58 (WEA 12)	07:18	08:06
	21:34 16	06:06 (18B)	20:55		19:50 44	07:49 (WEA 13)	18:41 23	08:21 (WEA 12)	16:38	16:06
8	05:06	05:50 (14B)	05:47		06:37	07:02 (WEA 11)	07:26	07:59 (WEA 12)	07:20	08:08
	21:34 16	06:06 (18B)	20:53		19:48 43	07:49 (WEA 13)	18:39 21	08:20 (WEA 12)	16:37	16:06
9	05:07	05:50 (14B)	05:49		06:39	07:04 (WEA 11)	07:28	08:00 (WEA 09)	07:22	08:09
	21:33 16	06:06 (18B)	20:52		19:46 40	07:49 (WEA 13)	18:37 19	08:19 (WEA 09)	16:35	16:05
10	05:08	05:50 (14B)	05:50	06:47 (19B)	06:40	07:06 (WEA 11)	07:29	08:00 (WEA 09)	07:24	08:10
	21:32 15	06:05 (18B)	20:50 3	06:50 (19B)	19:43 36	07:49 (WEA 13)	18:34 19	08:19 (WEA 09)	16:34	16:05
11	05:09	05:50 (14B)	05:52	06:44 (19B)	06:42	07:07 (WEA 11)	07:31	07:59 (WEA 09)	07:25	08:11
	21:32 14	06:04 (14B)	20:48 9	06:53 (19B)	19:41 30	07:48 (WEA 13)	18:32 19	08:18 (WEA 09)	16:32	16:05
12	05:10	05:51 (14B)	05:53	06:42 (19B)	06:43	07:21 (WEA 13)	07:33	08:00 (WEA 09)	07:27	08:12
	21:31 13	06:04 (14B)	20:46 11	06:53 (19B)	19:39 26	07:47 (WEA 13)	18:30 17	08:17 (WEA 09)	16:30	16:05
13	05:11	05:51 (14B)	05:55	06:42 (19B)	06:45	07:21 (WEA 13)	07:34	08:01 (WEA 09)	07:29	08:13
	21:30 13	06:04 (14B)	20:44 13	06:55 (19B)	19:37 25	07:46 (WEA 13)	18:28 15	08:16 (WEA 09)	16:29	16:05
14	05:12	05:51 (14B)	05:57	06:41 (19B)	06:47	07:21 (WEA 13)	07:36	08:02 (WEA 09)	07:31	08:14
	21:29 13	06:04 (14B)	20:42 13	06:54 (19B)	19:34 24	07:45 (WEA 13)	18:26 13	08:15 (WEA 09)	16:28	16:05
15	05:13	05:51 (14B)	05:58	06:41 (19B)	06:48	07:22 (WEA 13)	07:38	08:04 (WEA 09)	07:32	08:15
	21:28 13	06:04 (14B)	20:40 14	06:55 (19B)	19:32 21	07:43 (WEA 13)	18:23 9	08:13 (WEA 09)	16:26	16:05
16	05:14	05:52 (14B)	06:00	06:40 (19B)	06:50	07:23 (WEA 13)	07:40		07:34	08:16
	21:27 11	06:03 (14B)	20:38 14	06:54 (19B)	19:30 18	07:41 (WEA 13)	18:21		16:25	16:05
17	05:15	05:52 (14B)	06:01	06:41 (19B)	06:51	07:25 (WEA 13)	07:41		07:36	08:16
	21:26 11	06:03 (14B)	20:36 13	06:54 (19B)	19:27 14	07:39 (WEA 13)	18:19		16:23	16:05
18	05:17	05:54 (14B)	06:03	06:40 (19B)	06:53	07:29 (WEA 13)	07:43		07:38	08:17
	21:25 9	06:03 (14B)	20:34 13	06:53 (19B)	19:25 5	07:34 (WEA 13)	18:17		16:22	16:05
19	05:18	05:55 (14B)	06:05	06:41 (19B)	06:55		07:45		07:39	08:18
	21:24 7	06:02 (14B)	20:32 11	06:52 (19B)	19:23		18:15		16:21	16:06
20	05:19	05:57 (14B)	06:06	06:42 (19B)	06:56		07:46		07:41	08:19
	21:23 3	06:00 (14B)	20:30 8	06:50 (19B)	19:20		18:13		16:20	16:06
21	05:21		06:08		06:58		07:48		07:43	08:19
	21:21		20:28		19:18		18:11		16:18	16:06
22	05:22		06:10		07:00		07:50		07:44	08:20
	21:20		20:26		19:16		18:09		16:17	16:07
23	05:23		06:11		07:01		07:52		07:46	08:20
	21:19		20:24		19:13		18:07		16:16	16:07
24	05:25		06:13		07:03		07:53		07:48	08:21
	21:18		20:21		19:11		18:05		16:15	16:08
25	05:26		06:14		07:04		06:55		07:49	08:21
	21:16		20:19		19:09		17:03		16:14	16:09
26	05:27		06:16		07:06		06:57		07:51	08:21
	21:15		20:17		19:06		17:01		16:13	16:09
27	05:29		06:18		07:08	08:09 (WEA 12)	06:59		07:52	08:22
	21:13		20:15		19:04 9	08:18 (WEA 12)	16:59		16:12	16:10
28	05:30		06:19		07:09	08:05 (WEA 12)	07:01		07:54	08:22
	21:12		20:13		19:02 15	08:20 (WEA 12)	16:57		16:11	16:11
29	05:32		06:21		07:11	08:03 (WEA 12)	07:02		07:55	08:22
	21:10		20:11		18:59 19	08:22 (WEA 12)	16:55		16:10	16:12
30	05:33		06:22	07:10 (WEA 11)	07:13	08:02 (WEA 12)	07:04		07:57	08:22
	21:09		20:08 5	07:15 (WEA 11)	18:57 21	08:23 (WEA 12)	16:53		16:10	16:13
31	05:35		06:24	07:06 (WEA 11)			07:06			08:22
	21:07		20:06 16	07:40 (WEA 13)			16:51			16:13
Sonnenscheinstunden	501		453		381		332		267	245
astr.max.mögl.Beschattung		273		143		619		299		
Red.Sonnenscheinwahrsch.		0,40		0,43		0,34		0,28		
Reduktion Betriebsdauer		0,96		0,96		0,96		0,96		
Reduktion Windrichtung		0,71		0,72		0,72		0,68		
Gesamte Reduktion		0,27		0,29		0,23		0,18		
Met.wahrsch.Beschattung		74		42		145		55		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 32 - Reinstedt - Schielestraße 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22	07:56	07:03	07:30 (WEA 12) 06:52	07:36 (WEA 13) 05:48	05:03 06:04 (18B)
	16:15	17:02	17:54 14	07:44 (WEA 12) 19:47 23	07:59 (WEA 13) 20:38	21:23 11 06:15 (18B)
2	08:22	07:54	07:00	07:29 (WEA 12) 06:50	07:36 (WEA 13) 05:46	05:02 06:05 (18B)
	16:16	17:04	17:55 16	07:45 (WEA 12) 19:49 23	07:59 (WEA 13) 20:39	21:24 10 06:15 (18B)
3	08:22	07:53	06:58	07:28 (WEA 12) 06:48	07:36 (WEA 13) 05:44	05:01 06:06 (18B)
	16:17	17:06	17:57 19	07:47 (WEA 12) 19:51 21	07:57 (WEA 13) 20:41	21:25 8 06:14 (18B)
4	08:22	07:51	06:56	07:26 (WEA 12) 06:46	07:37 (WEA 13) 05:42	05:01 06:08 (18B)
	16:18	17:08	17:59 21	07:47 (WEA 12) 19:52 18	07:55 (WEA 13) 20:43	21:26 5 06:13 (18B)
5	08:22	07:49	06:54	07:25 (WEA 12) 06:43	07:39 (WEA 13) 05:41	05:00
	16:19	17:10	18:01 22	07:47 (WEA 12) 19:54 14	07:53 (WEA 13) 20:44	21:27
6	08:21	07:48	06:52	07:25 (WEA 12) 06:41	07:42 (WEA 13) 05:39	04:59
	16:20	17:11	18:02 22	07:47 (WEA 12) 19:56 8	07:50 (WEA 13) 20:46	21:28
7	08:21	07:46	06:49	07:24 (WEA 12) 06:39	05:37	04:59
	16:22	17:13	18:04 23	07:47 (WEA 12) 19:57	20:48	21:29
8	08:20	07:44	06:47	07:24 (WEA 12) 06:37	05:35	04:58
	16:23	17:15	18:06 22	07:46 (WEA 12) 19:59	20:49	21:30
9	08:20	07:42	06:45	07:25 (WEA 12) 06:34	05:33	04:58
	16:24	17:17	18:08 21	07:46 (WEA 12) 20:01	20:51	21:31
10	08:19	07:41	06:43	07:25 (WEA 12) 06:32	05:32	04:57
	16:26	17:19	18:09 21	07:46 (WEA 12) 20:02	20:52	21:32
11	08:19	07:39	06:41	07:25 (WEA 12) 06:30	05:30	04:57
	16:27	17:21	18:11 19	07:44 (WEA 12) 20:04	20:54	21:33
12	08:18	07:37	06:38	07:27 (WEA 12) 06:28	05:28	04:57
	16:29	17:23	18:13 15	07:42 (WEA 12) 20:06	20:56	21:33
13	08:18	07:35	06:36	07:29 (WEA 12) 06:25	05:27	04:56
	16:30	17:24	18:15 11	07:40 (WEA 12) 20:07	20:57	21:34
14	08:17	07:33	06:34	07:32 (WEA 12) 06:23	05:25 06:07 (18B)	04:56
	16:32	17:26	18:16 3	07:35 (WEA 12) 20:09	20:59 3 06:10 (18B)	21:34
15	08:16	07:31	06:31	06:21	05:24 06:05 (18B)	04:56
	16:33	17:28	18:18	20:11	21:00 8 06:13 (18B)	21:35
16	08:15	07:29	06:29	06:19 06:49 (19B)	05:22 06:03 (18B)	04:56
	16:35	17:30	18:20	20:13 8 06:57 (19B)	21:02 11 06:14 (18B)	21:36
17	08:14	07:27	06:27	06:17 06:48 (19B)	05:21 06:02 (18B)	04:56
	16:36	17:32	18:22	20:14 10 06:58 (19B)	21:03 13 06:15 (18B)	21:36
18	08:13	07:26	06:25	06:15 06:47 (19B)	05:19 06:02 (18B)	04:56
	16:38	17:34	18:23	20:16 12 06:59 (19B)	21:05 14 06:16 (18B)	21:36
19	08:12	07:24	06:22	06:12 06:46 (19B)	05:18 06:00 (18B)	04:56
	16:40	17:35	18:25	20:18 13 06:59 (19B)	21:06 16 06:16 (18B)	21:37
20	08:11	07:22	06:20	06:10 06:45 (19B)	05:16 06:00 (18B)	04:56
	16:41	17:37	18:27	20:19 13 06:58 (19B)	21:08 16 06:16 (18B)	21:37
21	08:10	07:19	06:18	06:50 (WEA 13) 06:08	06:45 (19B) 05:15	06:00 (18B) 04:56
	16:43	17:39	18:28 2	06:52 (WEA 13) 20:21 12	06:57 (19B) 21:09 17	06:17 (18B) 21:37
22	08:09	07:17	06:15	06:45 (WEA 13) 06:06	06:45 (19B) 05:14	06:01 (18B) 04:56
	16:45	17:41	18:30 12	06:57 (WEA 13) 20:23 12	06:57 (19B) 21:10 16	06:17 (18B) 21:38
23	08:08	07:15	06:13	06:42 (WEA 13) 06:04	06:46 (19B) 05:13	06:01 (18B) 04:56
	16:46	17:43	18:32 17	06:59 (WEA 13) 20:24 10	06:56 (19B) 21:12 17	06:18 (18B) 21:38
24	08:07	07:13	06:11	06:40 (WEA 13) 06:02	06:47 (19B) 05:11	06:01 (18B) 04:57
	16:48	17:45	18:34 20	07:00 (WEA 13) 20:26 7	06:54 (19B) 21:13 17	06:18 (18B) 21:38
25	08:05	07:11	06:08	06:39 (WEA 13) 06:00	05:10	06:01 (18B) 04:57
	16:50	17:46	18:35 22	07:01 (WEA 13) 20:28	21:15 17	06:18 (18B) 21:38
26	08:04	07:09	06:06	06:38 (WEA 13) 05:58	05:09	06:01 (18B) 04:57
	16:51	17:48	18:37 23	07:01 (WEA 13) 20:29	21:16 17	06:18 (18B) 21:38
27	08:03	07:07	06:04	06:36 (WEA 13) 05:56	05:08	06:02 (18B) 04:58
	16:53	17:50	18:39 25	07:01 (WEA 13) 20:31	21:17 15	06:17 (18B) 21:38
28	08:02	07:05 07:33 (WEA 12)	06:02	06:36 (WEA 13) 05:54	05:07	06:02 (18B) 04:58
	16:55	17:52 8 07:41 (WEA 12)	18:40 25	07:01 (WEA 13) 20:33	21:18 15	06:17 (18B) 21:38
29	08:00		06:59	07:36 (WEA 13) 05:52	05:06	06:02 (18B) 04:59
	16:57		19:42 25	08:01 (WEA 13) 20:34	21:20 15	06:17 (18B) 21:38
30	07:59		06:57	07:35 (WEA 13) 05:50	05:05	06:03 (18B) 04:59
	16:59		19:44 25	08:00 (WEA 13) 20:36	21:21 13	06:16 (18B) 21:37
31	07:57		06:55	07:35 (WEA 13)	05:04	06:03 (18B)
	17:00		19:45 25	08:00 (WEA 13)	21:22 12	06:15 (18B)
Sonnenscheinstunden	260	278	367	416	484	498
astr.max.mögl.Beschattung		8	470	204	252	34
Red.Sonnenscheinwahrsch.		0,32	0,27	0,36	0,43	0,35
Reduktion Betriebsdauer		0,96	0,96	0,96	0,96	0,96
Reduktion Windrichtung		0,68	0,70	0,72	0,71	0,71
Gesamte Reduktion		0,21	0,18	0,25	0,29	0,24
Met.wahrsch.Beschattung		2	84	50	74	8

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 32 - Reinstedt - Schielestraße 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00			05:36			06:26			07:14		08:06 (WEA 12)	07:08	07:58
	21:37			21:06			20:04			18:55	14	08:20 (WEA 12)	16:49	16:09
2	05:01			05:38			06:27			07:16		08:05 (WEA 12)	07:09	08:00
	21:37			21:04			20:02			18:53	17	08:22 (WEA 12)	16:47	16:08
3	05:01			05:39			06:29			07:18		08:03 (WEA 12)	07:11	08:01
	21:36			21:02			19:59			18:50	20	08:23 (WEA 12)	16:45	16:08
4	05:02			05:41			06:31			07:19		08:02 (WEA 12)	07:13	08:03
	21:36			21:01			19:57			18:48	21	08:23 (WEA 12)	16:44	16:07
5	05:03			05:42			06:32			07:21		08:01 (WEA 12)	07:15	08:04
	21:36			20:59			19:55			18:46	22	08:23 (WEA 12)	16:42	16:07
6	05:04			05:44			06:34		07:38 (WEA 13)	07:23		08:01 (WEA 12)	07:17	08:05
	21:35			20:57			19:53	7	07:45 (WEA 13)	18:43	23	08:24 (WEA 12)	16:40	16:06
7	05:05			05:46			06:35		07:34 (WEA 13)	07:24		08:01 (WEA 12)	07:18	08:06
	21:34			20:55			19:50	14	07:48 (WEA 13)	18:41	23	08:24 (WEA 12)	16:38	16:06
8	05:06		06:15 (18B)	05:47			06:37		07:32 (WEA 13)	07:26		08:00 (WEA 12)	07:20	08:08
	21:34	4	06:19 (18B)	20:53			19:48	17	07:49 (WEA 13)	18:39	22	08:22 (WEA 12)	16:37	16:06
9	05:07		06:14 (18B)	05:49			06:39		07:30 (WEA 13)	07:28		08:01 (WEA 12)	07:22	08:09
	21:33	7	06:21 (18B)	20:52			19:46	21	07:51 (WEA 13)	18:37	21	08:22 (WEA 12)	16:35	16:05
10	05:08		06:13 (18B)	05:50			06:40		07:29 (WEA 13)	07:29		08:01 (WEA 12)	07:24	08:10
	21:32	9	06:22 (18B)	20:50			19:43	23	07:52 (WEA 13)	18:34	20	08:21 (WEA 12)	16:34	16:05
11	05:09		06:12 (18B)	05:52			06:42		07:28 (WEA 13)	07:31		08:01 (WEA 12)	07:25	08:11
	21:32	11	06:23 (18B)	20:48			19:41	24	07:52 (WEA 13)	18:32	18	08:19 (WEA 12)	16:32	16:05
12	05:10		06:12 (18B)	05:53			06:43		07:27 (WEA 13)	07:33		08:02 (WEA 12)	07:27	08:12
	21:31	12	06:24 (18B)	20:46			19:39	25	07:52 (WEA 13)	18:30	16	08:18 (WEA 12)	16:30	16:05
13	05:11		06:12 (18B)	05:55			06:45		07:26 (WEA 13)	07:34		08:05 (WEA 12)	07:29	08:13
	21:30	12	06:24 (18B)	20:44			19:37	25	07:51 (WEA 13)	18:28	11	08:16 (WEA 12)	16:29	16:05
14	05:12		06:11 (18B)	05:57			06:47		07:26 (WEA 13)	07:36		08:09 (WEA 12)	07:31	08:14
	21:29	14	06:25 (18B)	20:42			19:34	26	07:52 (WEA 13)	18:26	2	08:11 (WEA 12)	16:28	16:05
15	05:13		06:11 (18B)	05:58			06:48		07:25 (WEA 13)	07:38			07:32	08:15
	21:28	14	06:25 (18B)	20:40			19:32	26	07:51 (WEA 13)	18:23			16:26	16:05
16	05:14		06:10 (18B)	06:00			06:50		07:26 (WEA 13)	07:40			07:34	08:16
	21:27	16	06:26 (18B)	20:38			19:30	24	07:50 (WEA 13)	18:21			16:25	16:05
17	05:15		06:10 (18B)	06:01			06:51		07:26 (WEA 13)	07:41			07:36	08:17
	21:26	16	06:26 (18B)	20:36			19:27	24	07:50 (WEA 13)	18:19			16:23	16:05
18	05:17		06:11 (18B)	06:03			06:53		07:26 (WEA 13)	07:43			07:38	08:17
	21:25	16	06:27 (18B)	20:34			19:25	22	07:48 (WEA 13)	18:17			16:22	16:05
19	05:18		06:10 (18B)	06:05		06:53 (19B)	06:55		07:27 (WEA 13)	07:45			07:39	08:18
	21:24	17	06:27 (18B)	20:32	8	07:01 (19B)	19:23	20	07:47 (WEA 13)	18:15			16:21	16:06
20	05:19		06:10 (18B)	06:06		06:51 (19B)	06:56		07:27 (WEA 13)	07:46			07:41	08:19
	21:23	17	06:27 (18B)	20:30	10	07:01 (19B)	19:20	18	07:45 (WEA 13)	18:13			16:20	16:06
21	05:21		06:10 (18B)	06:08		06:51 (19B)	06:58		07:29 (WEA 13)	07:48			07:43	08:19
	21:21	17	06:27 (18B)	20:28	12	07:03 (19B)	19:18	14	07:43 (WEA 13)	18:11			16:18	16:06
22	05:22		06:10 (18B)	06:10		06:49 (19B)	07:00		07:33 (WEA 13)	07:50			07:44	08:20
	21:20	17	06:27 (18B)	20:26	13	07:02 (19B)	19:16	7	07:40 (WEA 13)	18:09			16:17	16:07
23	05:23		06:11 (18B)	06:11		06:49 (19B)	07:01			07:52			07:46	08:20
	21:19	16	06:27 (18B)	20:24	14	07:03 (19B)	19:13			18:07			16:16	16:07
24	05:25		06:11 (18B)	06:13		06:49 (19B)	07:03			07:53			07:48	08:21
	21:18	16	06:27 (18B)	20:21	13	07:02 (19B)	19:11			18:05			16:15	16:08
25	05:26		06:11 (18B)	06:14		06:49 (19B)	07:04			06:55			07:49	08:21
	21:16	15	06:26 (18B)	20:19	12	07:01 (19B)	19:09			17:03			16:14	16:09
26	05:27		06:12 (18B)	06:16		06:50 (19B)	07:06			06:57			07:51	08:21
	21:15	14	06:26 (18B)	20:17	10	07:00 (19B)	19:06			17:01			16:13	16:09
27	05:29		06:13 (18B)	06:18		06:51 (19B)	07:08			06:59			07:52	08:22
	21:13	12	06:25 (18B)	20:15	7	06:58 (19B)	19:04			16:59			16:12	16:10
28	05:30		06:14 (18B)	06:19			07:09			07:01			07:54	08:22
	21:12	10	06:24 (18B)	20:13			19:02			16:57			16:11	16:11
29	05:32		06:16 (18B)	06:21			07:11			07:02			07:55	08:22
	21:10	7	06:23 (18B)	20:11			18:59			16:55			16:10	16:12
30	05:33			06:22			07:13		08:10 (WEA 12)	07:04			07:57	08:22
	21:09			20:08			18:57	9	08:19 (WEA 12)	16:53			16:10	16:13
31	05:35			06:24						07:06				08:22
	21:07			20:06						16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		289			99			346			250			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,72			0,68			
Gesamte Reduktion		0,27			0,29			0,23			0,18			
Met.wahrsch.Beschattung		79			29			81			46			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 33 - Reinstedt - Schielestraße 4a

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56			07:03			07:35 (WEA 12)	06:52		07:54 (WEA 13)	05:48			05:03		
	16:15			17:02			17:54	22		07:57 (WEA 12)	19:47	7	08:01 (WEA 13)	20:38			21:23		
2	08:22			07:54			07:00			07:35 (WEA 12)	06:50			05:46			05:02		
	16:16			17:04			17:55	22		07:57 (WEA 12)	19:49			20:39			21:24		
3	08:22			07:53			06:58			07:35 (WEA 12)	06:48			05:44			05:01		
	16:17			17:06			17:57	22		07:57 (WEA 12)	19:51			20:41			21:25		
4	08:22			07:51			06:56			07:34 (WEA 12)	06:46			05:42			05:01		
	16:18			17:08			17:59	22		07:56 (WEA 12)	19:52			20:43			21:26		
5	08:22			07:49			06:54			07:34 (WEA 12)	06:43			05:41			05:00		
	16:19			17:10			18:01	21		07:55 (WEA 12)	19:54			20:44			21:27		
6	08:21			07:48			06:52			07:35 (WEA 12)	06:41			05:39			04:59		05:28 (6B)
	16:20			17:11			18:02	20		07:55 (WEA 12)	19:56			20:46			21:28	1	05:29 (6B)
7	08:21			07:46			06:49			07:35 (WEA 12)	06:39			05:37		06:09 (14B)	04:59		05:28 (6B)
	16:22			17:13			18:04	18		07:53 (WEA 12)	19:57			20:48	10	06:24 (18B)	21:29	2	05:30 (6B)
8	08:20			07:44			06:47			07:36 (WEA 12)	06:37			05:35		06:06 (14B)	04:58		05:28 (6B)
	16:23			17:15			18:06	15		07:51 (WEA 12)	19:59			20:49	19	06:25 (18B)	21:30	2	05:30 (6B)
9	08:20			07:42			06:45			07:39 (WEA 12)	06:34			05:33		06:06 (14B)	04:58		05:27 (6B)
	16:24			17:17			18:08	10		07:49 (WEA 12)	20:01			20:51	21	06:27 (18B)	21:31	3	05:30 (6B)
10	08:19			07:41			06:43				06:32			05:32		06:05 (14B)	04:57		05:27 (6B)
	16:26			17:19			18:09				20:02			20:52	23	06:28 (18B)	21:32	3	05:30 (6B)
11	08:19			07:39			06:41				06:30		07:01 (19B)	05:30		06:04 (14B)	04:57		05:27 (6B)
	16:27			17:21			18:11				20:04	7	07:08 (19B)	20:54	24	06:28 (18B)	21:33	4	05:31 (6B)
12	08:18			07:37			06:38				06:28		06:58 (19B)	05:28		06:04 (14B)	04:57		05:26 (6B)
	16:29			17:23			18:13				20:06	11	07:09 (19B)	20:56	25	06:29 (18B)	21:33	4	05:30 (6B)
13	08:18			07:35			06:36				06:25		06:57 (19B)	05:27		06:03 (14B)	04:56		05:26 (6B)
	16:30			17:24			18:15				20:07	12	07:09 (19B)	20:57	25	06:28 (18B)	21:34	4	05:30 (6B)
14	08:17			07:33			06:34				06:23		06:56 (19B)	05:25		06:04 (14B)	04:56		05:26 (6B)
	16:32			17:26			18:16				20:09	14	07:10 (19B)	20:59	25	06:29 (18B)	21:34	5	05:31 (6B)
15	08:16			07:31			06:31				06:21		06:56 (19B)	05:24		06:05 (14B)	04:56		05:26 (6B)
	16:33			17:28			18:18				20:11	14	07:10 (19B)	21:00	24	06:29 (18B)	21:35	5	05:31 (6B)
16	08:15			07:29			06:29				06:19		06:56 (19B)	05:22		06:05 (14B)	04:56		05:26 (6B)
	16:35			17:30			18:20				20:13	13	07:09 (19B)	21:02	24	06:29 (18B)	21:36	5	05:31 (6B)
17	08:14			07:27			06:27			06:56 (WEA 13)	06:17		06:57 (19B)	05:21		06:06 (14B)	04:56		05:26 (6B)
	16:36			17:32			18:22	11		07:07 (WEA 13)	20:14	11	07:08 (19B)	21:03	23	06:29 (18B)	21:36	5	05:31 (6B)
18	08:13			07:26			06:25			06:53 (WEA 13)	06:15		06:58 (19B)	05:19		06:07 (14B)	04:56		05:26 (6B)
	16:38			17:34			18:23	17		07:10 (WEA 13)	20:16	9	07:07 (19B)	21:05	22	06:29 (18B)	21:36	5	05:31 (6B)
19	08:12			07:24			06:22			06:52 (WEA 13)	06:12		06:59 (19B)	05:18		06:08 (14B)	04:56		05:26 (6B)
	16:40			17:35			18:25	19		07:11 (WEA 13)	20:18	6	07:05 (19B)	21:06	18	06:27 (18B)	21:37	5	05:31 (6B)
20	08:11			07:22			06:20			06:51 (WEA 13)	06:10			05:16		06:13 (18B)	04:56		05:26 (6B)
	16:41			17:37			18:27	22		07:13 (WEA 13)	20:19			21:08	14	06:27 (18B)	21:37	5	05:31 (6B)
21	08:10			07:19			06:18			06:49 (WEA 13)	06:08			05:15		06:14 (18B)	04:56		05:26 (6B)
	16:43			17:39			18:28	23		07:12 (WEA 13)	20:21			21:09	13	06:27 (18B)	21:37	5	05:31 (6B)
22	08:09			07:17			06:15			06:48 (WEA 13)	06:06			05:14		06:16 (18B)	04:56		05:27 (6B)
	16:45			17:41			18:30	25		07:13 (WEA 13)	20:23			21:10	10	06:26 (18B)	21:38	5	05:32 (6B)
23	08:08			07:15			06:13			06:48 (WEA 13)	06:04			05:13		06:17 (18B)	04:56		05:27 (6B)
	16:46			17:43			18:32	25		07:13 (WEA 13)	20:24			21:12	8	06:25 (18B)	21:38	5	05:32 (6B)
24	08:07			07:13		07:42 (WEA 12)	06:11			06:47 (WEA 13)	06:02			05:11		06:20 (18B)	04:57		05:27 (6B)
	16:48			17:45	9	07:51 (WEA 12)	18:34	25		07:12 (WEA 13)	20:26			21:13	2	06:22 (18B)	21:38	5	05:32 (6B)
25	08:05			07:11		07:39 (WEA 12)	06:08			06:47 (WEA 13)	06:00			05:10			04:57		05:28 (6B)
	16:50			17:46	15	07:54 (WEA 12)	18:35	25		07:12 (WEA 13)	20:28			21:15			21:38	5	05:33 (6B)
26	08:04			07:09		07:38 (WEA 12)	06:06			06:47 (WEA 13)	05:58			05:09			04:57		05:28 (6B)
	16:51			17:48	17	07:55 (WEA 12)	18:37	25		07:12 (WEA 13)	20:29			21:16			21:38	5	05:33 (6B)
27	08:03			07:07		07:36 (WEA 12)	06:04			06:47 (WEA 13)	05:56			05:08			04:58		05:28 (6B)
	16:53			17:50	19	07:55 (WEA 12)	18:39	23		07:10 (WEA 13)	20:31			21:17			21:38	5	05:33 (6B)
28	08:02			07:05		07:35 (WEA 12)	06:02			06:47 (WEA 13)	05:54			05:07			04:58		05:29 (6B)
	16:55			17:52	21	07:56 (WEA 12)	18:40	23		07:10 (WEA 13)	20:33			21:18			21:38	5	05:34 (6B)
29	08:00						06:59			07:48 (WEA 13)	05:52			05:06			04:59		05:29 (6B)
	16:57						19:42	21		08:09 (WEA 13)	20:34			21:20			21:38	4	05:33 (6B)
30	07:59						06:57			07:48 (WEA 13)	05:50			05:05			04:59		05:30 (6B)
	16:59						19:44	18		08:06 (WEA 13)	20:36			21:21			21:37	4	05:34 (6B)
31	07:57						06:55			07:50 (WEA 13)				05:04					
	17:00						19:45	14		08:04 (WEA 13)				21:22					
Sonnenscheinstunden	260			278			367				416			484			498		
astr.max.mögl.Beschattung					81			488				104			330			106	
Red.Sonnenscheinwahrsch.					0,32			0,27				0,36			0,43			0,35	
Reduktion Betriebsdauer					0,96			0,96				0,96			0,96			0,96	
Reduktion Windrichtung					0,68			0,70				0,72			0,72			0,69	
Gesamte Reduktion					0,21			0,18				0,25			0,29			0,23	
Met.wahrsch.Beschattung					17			88				26			97			24	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 33 - Reinstedt - Schielestraße 4a

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00		05:31 (6B)	05:36		06:14 (14B)	06:26		07:00 (19B)	07:14			07:08	07:58
	21:37	4	05:35 (6B)	21:06	25	06:39 (18B)	20:04	7	07:07 (19B)	18:55			16:49	16:09
2	05:01		05:31 (6B)	05:38		06:14 (14B)	06:27			07:16			07:09	08:00
	21:37	4	05:35 (6B)	21:04	24	06:38 (18B)	20:02			18:53			16:47	16:08
3	05:01		05:32 (6B)	05:39		06:15 (14B)	06:29			07:18			07:11	08:01
	21:36	3	05:35 (6B)	21:02	23	06:38 (18B)	19:59			18:50			16:45	16:08
4	05:02		05:33 (6B)	05:41		06:15 (14B)	06:31			07:19		08:17 (WEA 12)	07:13	08:03
	21:36	3	05:36 (6B)	21:01	21	06:36 (18B)	19:57			18:48	7	08:24 (WEA 12)	16:44	16:07
5	05:03		05:34 (6B)	05:42		06:17 (14B)	06:32			07:21		08:14 (WEA 12)	07:15	08:04
	21:36	2	05:36 (6B)	20:59	16	06:35 (18B)	19:55			18:46	13	08:27 (WEA 12)	16:42	16:07
6	05:04		05:34 (6B)	05:44		06:20 (14B)	06:34			07:23		08:13 (WEA 12)	07:17	08:05
	21:35	1	05:35 (6B)	20:57	3	06:31 (18B)	19:53			18:43	16	08:29 (WEA 12)	16:40	16:06
7	05:05		05:35 (6B)	05:46			06:35			07:24		08:11 (WEA 12)	07:18	08:06
	21:34	1	05:36 (6B)	20:55			19:50			18:41	19	08:30 (WEA 12)	16:38	16:06
8	05:06			05:47			06:37			07:26		08:10 (WEA 12)	07:20	08:08
	21:34			20:53			19:48			18:39	20	08:30 (WEA 12)	16:37	16:06
9	05:07			05:49			06:39			07:28		08:09 (WEA 12)	07:22	08:09
	21:33			20:52			19:46			18:37	22	08:31 (WEA 12)	16:35	16:05
10	05:08			05:50			06:40			07:29		08:09 (WEA 12)	07:24	08:10
	21:32			20:50			19:43			18:34	22	08:31 (WEA 12)	16:34	16:05
11	05:09			05:52			06:42		07:47 (WEA 13)	07:31		08:08 (WEA 12)	07:25	08:11
	21:32			20:48			19:41	5	07:52 (WEA 13)	18:32	22	08:30 (WEA 12)	16:32	16:05
12	05:10			05:53			06:43		07:43 (WEA 13)	07:33		08:08 (WEA 12)	07:27	08:12
	21:31			20:46			19:39	13	07:56 (WEA 13)	18:30	22	08:30 (WEA 12)	16:30	16:05
13	05:11			05:55			06:45		07:40 (WEA 13)	07:34		08:08 (WEA 12)	07:29	08:13
	21:30			20:44			19:37	17	07:57 (WEA 13)	18:28	22	08:30 (WEA 12)	16:29	16:05
14	05:12			05:57			06:47		07:39 (WEA 13)	07:36		08:09 (WEA 12)	07:31	08:14
	21:29			20:42			19:34	20	07:59 (WEA 13)	18:26	20	08:29 (WEA 12)	16:28	16:05
15	05:13			05:58			06:48		07:37 (WEA 13)	07:38		08:09 (WEA 12)	07:33	08:15
	21:28			20:40			19:32	22	07:59 (WEA 13)	18:23	19	08:28 (WEA 12)	16:26	16:05
16	05:14			06:00			06:50		07:36 (WEA 13)	07:40		08:10 (WEA 12)	07:34	08:16
	21:27			20:38			19:30	24	08:00 (WEA 13)	18:21	16	08:26 (WEA 12)	16:25	16:05
17	05:15			06:01			06:51		07:36 (WEA 13)	07:41		08:11 (WEA 12)	07:36	08:17
	21:26			20:36			19:27	24	08:00 (WEA 13)	18:19	13	08:24 (WEA 12)	16:23	16:05
18	05:17			06:03			06:53		07:34 (WEA 13)	07:43		08:14 (WEA 12)	07:38	08:17
	21:25			20:34			19:25	26	08:00 (WEA 13)	18:17	7	08:21 (WEA 12)	16:22	16:05
19	05:18			06:05			06:55		07:34 (WEA 13)	07:45			07:39	08:18
	21:24			20:32			19:23	26	08:00 (WEA 13)	18:15			16:21	16:06
20	05:19		06:28 (18B)	06:06			06:56		07:33 (WEA 13)	07:46			07:41	08:19
	21:23	5	06:33 (18B)	20:30			19:20	26	07:59 (WEA 13)	18:13			16:20	16:06
21	05:21		06:26 (18B)	06:08			06:58		07:34 (WEA 13)	07:48			07:43	08:19
	21:21	9	06:35 (18B)	20:28			19:18	25	07:59 (WEA 13)	18:11			16:18	16:06
22	05:22		06:25 (18B)	06:10			07:00		07:34 (WEA 13)	07:50			07:44	08:20
	21:20	11	06:36 (18B)	20:26			19:16	24	07:58 (WEA 13)	18:09			16:17	16:07
23	05:23		06:24 (18B)	06:11			07:01		07:34 (WEA 13)	07:52			07:46	08:20
	21:19	13	06:37 (18B)	20:24			19:13	22	07:56 (WEA 13)	18:07			16:16	16:07
24	05:25		06:24 (18B)	06:13		07:02 (19B)	07:03		07:35 (WEA 13)	07:53			07:48	08:21
	21:18	14	06:38 (18B)	20:21	6	07:08 (19B)	19:11	20	07:55 (WEA 13)	18:05			16:15	16:08
25	05:26		06:18 (14B)	06:14		07:00 (19B)	07:04		07:35 (WEA 13)	06:55			07:49	08:21
	21:16	20	06:38 (18B)	20:19	10	07:10 (19B)	19:09	18	07:53 (WEA 13)	17:03			16:14	16:09
26	05:27		06:17 (14B)	06:16		06:58 (19B)	07:06		07:37 (WEA 13)	06:57			07:51	08:21
	21:15	22	06:39 (18B)	20:17	12	07:10 (19B)	19:06	14	07:51 (WEA 13)	17:01			16:13	16:09
27	05:29		06:16 (14B)	06:18		06:58 (19B)	07:08		07:41 (WEA 13)	06:59			07:52	08:22
	21:13	23	06:39 (18B)	20:15	13	07:11 (19B)	19:04	6	07:47 (WEA 13)	16:59			16:12	16:10
28	05:30		06:15 (14B)	06:19		06:57 (19B)	07:09			07:01			07:54	08:22
	21:12	24	06:39 (18B)	20:13	13	07:10 (19B)	19:02			16:57			16:11	16:11
29	05:32		06:15 (14B)	06:21		06:57 (19B)	07:11			07:02			07:55	08:22
	21:10	25	06:40 (18B)	20:11	13	07:10 (19B)	18:59			16:55			16:10	16:12
30	05:33		06:14 (14B)	06:22		06:58 (19B)	07:13			07:04			07:57	08:22
	21:09	25	06:39 (18B)	20:08	12	07:10 (19B)	18:57			16:53			16:10	16:13
31	05:35		06:15 (14B)	06:24		06:58 (19B)				07:06				08:22
	21:07	25	06:40 (18B)	20:06	10	07:08 (19B)				16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		234			201			339			260			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,71			0,68			
Gesamte Reduktion		0,27			0,30			0,23			0,18			
Met.wahrsch.Beschattung		64			59			79			48			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 34 - Reinstedt - Schielestraße 6

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar			März		April			Mai			Juni		
1	08:22		07:56			07:03		07:39 (WEA 12)	06:52		05:48			05:03		
	16:15		17:02			17:54	23	08:02 (WEA 12)	19:47		20:38			21:23		
2	08:22		07:54			07:00		07:39 (WEA 12)	06:50		05:46			05:02		05:31 (6B)
	16:16		17:04			17:55	22	08:01 (WEA 12)	19:49		20:39			21:24	1	05:32 (6B)
3	08:22		07:53			06:58		07:40 (WEA 12)	06:48		05:44			05:01		05:30 (6B)
	16:17		17:06			17:57	21	08:01 (WEA 12)	19:51		20:41			21:25	2	05:32 (6B)
4	08:22		07:51			06:56		07:40 (WEA 12)	06:46		05:42		06:23 (18B)	05:01		05:30 (6B)
	16:18		17:08			17:59	19	07:59 (WEA 12)	19:52		20:43	8	06:31 (18B)	21:26	3	05:33 (6B)
5	08:22		07:49			06:54		07:41 (WEA 12)	06:43		05:41		06:12 (14B)	05:00		05:29 (6B)
	16:19		17:10			18:01	17	07:58 (WEA 12)	19:54		20:44	18	06:32 (18B)	21:27	3	05:32 (6B)
6	08:21		07:48			06:52		07:42 (WEA 12)	06:41		05:39		06:10 (14B)	04:59		05:28 (6B)
	16:20		17:11			18:02	15	07:57 (WEA 12)	19:56		20:46	23	06:33 (18B)	21:28	4	05:32 (6B)
7	08:21		07:46			06:49		07:44 (WEA 12)	06:39		05:37		06:10 (14B)	04:59		05:28 (6B)
	16:22		17:13			18:04	9	07:53 (WEA 12)	19:57		20:48	25	06:35 (18B)	21:29	4	05:32 (6B)
8	08:20		07:44			06:47			06:37	07:08 (19B)	05:35		06:09 (14B)	04:58		05:28 (6B)
	16:23		17:15			18:06			19:59	4 07:12 (19B)	20:49	26	06:35 (18B)	21:30	5	05:33 (6B)
9	08:20		07:42			06:45			06:34	07:05 (19B)	05:33		06:09 (14B)	04:58		05:27 (6B)
	16:24		17:17			18:08			20:01	9 07:14 (19B)	20:51	27	06:36 (18B)	21:31	5	05:32 (6B)
10	08:19		07:41			06:43			06:32	07:04 (19B)	05:32		06:08 (14B)	04:57		05:27 (6B)
	16:26		17:19			18:09			20:02	11 07:15 (19B)	20:52	27	06:35 (18B)	21:32	6	05:33 (6B)
11	08:19		07:39			06:41			06:30	07:03 (19B)	05:30		06:08 (14B)	04:57		05:27 (6B)
	16:27		17:21			18:11			20:04	13 07:16 (19B)	20:54	27	06:35 (18B)	21:33	6	05:33 (6B)
12	08:18		07:37			06:38			06:28	07:02 (19B)	05:28		06:09 (14B)	04:57		05:26 (6B)
	16:29		17:23			18:13			20:06	13 07:15 (19B)	20:56	26	06:35 (18B)	21:33	6	05:32 (6B)
13	08:18		07:35			06:36			06:25	07:02 (19B)	05:27		06:09 (14B)	04:56		05:26 (6B)
	16:30		17:24			18:15			20:07	13 07:15 (19B)	20:57	25	06:34 (18B)	21:34	6	05:32 (6B)
14	08:17		07:33			06:34		07:04 (WEA 13)	06:23	07:02 (19B)	05:25		06:10 (14B)	04:56		05:27 (6B)
	16:32		17:26			18:16	8	07:12 (WEA 13)	20:09	12 07:14 (19B)	20:59	24	06:34 (18B)	21:34	5	05:32 (6B)
15	08:16		07:31			06:31		07:01 (WEA 13)	06:21	07:03 (19B)	05:24		06:11 (14B)	04:56		05:28 (6B)
	16:33		17:28			18:18	14	07:15 (WEA 13)	20:11	10 07:13 (19B)	21:00	23	06:34 (18B)	21:35	4	05:32 (6B)
16	08:15		07:29			06:29		06:59 (WEA 13)	06:19	07:04 (19B)	05:22		06:13 (14B)	04:56		05:28 (6B)
	16:35		17:30			18:20	18	07:17 (WEA 13)	20:13	8 07:12 (19B)	21:02	18	06:33 (18B)	21:36	4	05:32 (6B)
17	08:14		07:27			06:27		06:56 (WEA 13)	06:17		05:21		06:20 (18B)	04:56		05:29 (6B)
	16:36		17:32			18:22	21	07:17 (WEA 13)	20:14		21:03	13	06:33 (18B)	21:36	3	05:32 (6B)
18	08:13		07:26			06:25		06:55 (WEA 13)	06:15		05:19		06:22 (18B)	04:56		05:29 (6B)
	16:38		17:34			18:23	23	07:18 (WEA 13)	20:16		21:05	10	06:32 (18B)	21:36	3	05:32 (6B)
19	08:12		07:24			06:22		06:55 (WEA 13)	06:12		05:18		06:23 (18B)	04:56		05:30 (6B)
	16:40		17:35			18:25	24	07:19 (WEA 13)	20:18		21:06	6	06:29 (18B)	21:37	2	05:32 (6B)
20	08:11		07:22			06:20		06:54 (WEA 13)	06:10		05:16			04:56		05:30 (6B)
	16:41		17:37			18:27	25	07:19 (WEA 13)	20:19		21:08			21:37	1	05:31 (6B)
21	08:10		07:19		07:49 (WEA 12)	06:18		06:53 (WEA 13)	06:08		05:15			04:56		05:30 (6B)
	16:43	4	07:39	4	07:53 (WEA 12)	18:28	26	07:19 (WEA 13)	20:21		21:09			21:37	1	05:31 (6B)
22	08:09		07:17		07:45 (WEA 12)	06:15		06:53 (WEA 13)	06:06		05:14			04:56		05:31 (6B)
	16:45	12	07:41	12	07:57 (WEA 12)	18:30	26	07:19 (WEA 13)	20:23		21:10			21:38	1	05:32 (6B)
23	08:08		07:15		07:43 (WEA 12)	06:13		06:53 (WEA 13)	06:04		05:13			04:56		05:31 (6B)
	16:46	16	07:43	16	07:59 (WEA 12)	18:32	26	07:19 (WEA 13)	20:24		21:12			21:38	2	05:33 (6B)
24	08:07		07:13		07:42 (WEA 12)	06:11		06:53 (WEA 13)	06:02		05:11			04:57		05:30 (6B)
	16:48	18	07:45	18	08:00 (WEA 12)	18:34	24	07:17 (WEA 13)	20:26		21:13			21:38	3	05:33 (6B)
25	08:05		07:11		07:41 (WEA 12)	06:08		06:53 (WEA 13)	06:00		05:10			04:57		05:31 (6B)
	16:50	20	07:46	20	08:01 (WEA 12)	18:35	24	07:17 (WEA 13)	20:28		21:15			21:38	3	05:34 (6B)
26	08:04		07:09		07:41 (WEA 12)	06:06		06:54 (WEA 13)	05:58		05:09			04:57		05:30 (6B)
	16:51	21	07:48	21	08:02 (WEA 12)	18:37	22	07:16 (WEA 13)	20:29		21:16			21:38	4	05:34 (6B)
27	08:03		07:07		07:39 (WEA 12)	06:04		06:54 (WEA 13)	05:56		05:08			04:58		05:30 (6B)
	16:53	22	07:50	22	08:01 (WEA 12)	18:39	19	07:13 (WEA 13)	20:31		21:17			21:38	4	05:34 (6B)
28	08:02		07:05		07:39 (WEA 12)	06:02		06:56 (WEA 13)	05:54		05:07			04:58		05:30 (6B)
	16:55	23	07:52	23	08:02 (WEA 12)	18:40	16	07:12 (WEA 13)	20:33		21:18			21:38	5	05:35 (6B)
29	08:00					06:59		07:58 (WEA 13)	05:52		05:06			04:59		05:30 (6B)
	16:57					19:42	11	08:09 (WEA 13)	20:34		21:20			21:38	5	05:35 (6B)
30	07:59					06:57			05:50		05:05			04:59		05:30 (6B)
	16:59					19:44			20:36		21:21			21:37	6	05:36 (6B)
31	07:57					06:55					05:04					
	17:00					19:45					21:22					
Sonnenscheinstunden	260		278			367			416		484			498		
astr.max.mögl.Beschattung				136			453			93			326			107
Red.Sonnenscheinwahrsch.				0,32			0,27			0,36			0,43			0,35
Reduktion Betriebsdauer				0,96			0,96			0,96			0,96			0,96
Reduktion Windrichtung				0,68			0,70			0,72			0,72			0,69
Gesamte Reduktion				0,21			0,18			0,25			0,29			0,23
Met.wahrsch.Beschattung				28			82			23			96			25

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 34 - Reinstedt - Schielestraße 6

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00		05:31 (6B)	05:36		06:19 (14B)	06:26		07:02 (19B)	07:14			07:08	07:58
	21:37	6	05:37 (6B)	21:06	27	06:46 (18B)	20:04	13	07:15 (19B)	18:55			16:49	16:09
2	05:01		05:31 (6B)	05:38		06:18 (14B)	06:27		07:02 (19B)	07:16			07:09	08:00
	21:37	6	05:37 (6B)	21:04	27	06:45 (18B)	20:02	11	07:13 (19B)	18:53			16:47	16:08
3	05:01		05:32 (6B)	05:39		06:19 (14B)	06:29		07:03 (19B)	07:18			07:11	08:01
	21:36	5	05:37 (6B)	21:02	27	06:46 (18B)	19:59	9	07:12 (19B)	18:50			16:45	16:08
4	05:02		05:33 (6B)	05:41		06:18 (14B)	06:31		07:05 (19B)	07:19			07:13	08:03
	21:36	5	05:38 (6B)	21:01	27	06:45 (18B)	19:57	4	07:09 (19B)	18:48			16:44	16:07
5	05:03		05:34 (6B)	05:42		06:19 (14B)	06:32			07:21			07:15	08:04
	21:36	5	05:39 (6B)	20:59	26	06:45 (18B)	19:55			18:46			16:42	16:07
6	05:04		05:34 (6B)	05:44		06:19 (14B)	06:34			07:23		08:23 (WEA 12)	07:17	08:05
	21:35	4	05:38 (6B)	20:57	25	06:44 (18B)	19:53			18:43	5	08:28 (WEA 12)	16:40	16:06
7	05:05		05:35 (6B)	05:46		06:21 (14B)	06:35			07:24		08:20 (WEA 12)	07:18	08:06
	21:34	4	05:39 (6B)	20:55	22	06:43 (18B)	19:50			18:41	11	08:31 (WEA 12)	16:38	16:06
8	05:06		05:36 (6B)	05:47		06:22 (14B)	06:37			07:26		08:17 (WEA 12)	07:20	08:08
	21:34	3	05:39 (6B)	20:53	16	06:41 (18B)	19:48			18:39	15	08:32 (WEA 12)	16:37	16:06
9	05:07		05:37 (6B)	05:49		06:34 (18B)	06:39			07:28		08:15 (WEA 12)	07:22	08:09
	21:33	2	05:39 (6B)	20:52	6	06:40 (18B)	19:46			18:37	19	08:34 (WEA 12)	16:35	16:05
10	05:08		05:38 (6B)	05:50			06:40			07:29		08:14 (WEA 12)	07:24	08:10
	21:32	1	05:39 (6B)	20:50			19:43			18:34	21	08:35 (WEA 12)	16:34	16:05
11	05:09			05:52			06:42			07:31		08:13 (WEA 12)	07:25	08:11
	21:32			20:48			19:41			18:32	21	08:34 (WEA 12)	16:32	16:05
12	05:10			05:53			06:43			07:33		08:12 (WEA 12)	07:27	08:12
	21:31			20:46			19:39			18:30	23	08:35 (WEA 12)	16:30	16:05
13	05:11			05:55			06:45			07:34		08:12 (WEA 12)	07:29	08:13
	21:30			20:44			19:37			18:28	23	08:35 (WEA 12)	16:29	16:05
14	05:12			05:57			06:47		07:49 (WEA 13)	07:36		08:12 (WEA 12)	07:31	08:14
	21:29			20:42			19:34	10	07:59 (WEA 13)	18:26	23	08:35 (WEA 12)	16:28	16:05
15	05:13			05:58			06:48		07:45 (WEA 13)	07:38		08:13 (WEA 12)	07:33	08:15
	21:28			20:40			19:32	16	08:01 (WEA 13)	18:23	21	08:34 (WEA 12)	16:26	16:05
16	05:14			06:00			06:50		07:44 (WEA 13)	07:40		08:12 (WEA 12)	07:34	08:16
	21:27			20:38			19:30	19	08:03 (WEA 13)	18:21	21	08:33 (WEA 12)	16:25	16:05
17	05:15			06:01			06:51		07:43 (WEA 13)	07:41		08:13 (WEA 12)	07:36	08:17
	21:26			20:36			19:27	21	08:04 (WEA 13)	18:19	19	08:32 (WEA 12)	16:23	16:05
18	05:17			06:03			06:53		07:41 (WEA 13)	07:43		08:14 (WEA 12)	07:38	08:17
	21:25			20:34			19:25	23	08:04 (WEA 13)	18:17	17	08:31 (WEA 12)	16:22	16:05
19	05:18			06:05			06:55		07:40 (WEA 13)	07:45		08:15 (WEA 12)	07:39	08:18
	21:24			20:32			19:23	25	08:05 (WEA 13)	18:15	15	08:30 (WEA 12)	16:21	16:06
20	05:19			06:06			06:56		07:39 (WEA 13)	07:46		08:18 (WEA 12)	07:41	08:19
	21:23			20:30			19:20	25	08:04 (WEA 13)	18:13	9	08:27 (WEA 12)	16:20	16:06
21	05:21			06:08			06:58		07:39 (WEA 13)	07:48			07:43	08:19
	21:21			20:28			19:18	25	08:04 (WEA 13)	18:11			16:18	16:06
22	05:22			06:10			07:00		07:39 (WEA 13)	07:50			07:44	08:20
	21:20			20:26			19:16	25	08:04 (WEA 13)	18:09			16:17	16:07
23	05:23			06:11			07:01		07:38 (WEA 13)	07:52			07:46	08:20
	21:19			20:24			19:13	25	08:03 (WEA 13)	18:07			16:16	16:07
24	05:25		06:35 (18B)	06:13			07:03		07:38 (WEA 13)	07:53			07:48	08:21
	21:18	3	06:38 (18B)	20:21			19:11	25	08:03 (WEA 13)	18:05			16:15	16:08
25	05:26		06:32 (18B)	06:14			07:04		07:38 (WEA 13)	06:55			07:49	08:21
	21:16	9	06:41 (18B)	20:19			19:09	23	08:01 (WEA 13)	17:03			16:14	16:09
26	05:27		06:32 (18B)	06:16			07:06		07:39 (WEA 13)	06:57			07:51	08:21
	21:15	11	06:43 (18B)	20:17			19:06	21	08:00 (WEA 13)	17:01			16:13	16:09
27	05:29		06:30 (18B)	06:18		07:06 (19B)	07:08		07:40 (WEA 13)	06:59			07:52	08:22
	21:13	13	06:43 (18B)	20:15	8	07:14 (19B)	19:04	19	07:59 (WEA 13)	16:59			16:12	16:10
28	05:30		06:22 (14B)	06:19		07:03 (19B)	07:09		07:41 (WEA 13)	07:01			07:54	08:22
	21:12	21	06:44 (18B)	20:13	11	07:14 (19B)	19:02	16	07:57 (WEA 13)	16:57			16:11	16:11
29	05:32		06:21 (14B)	06:21		07:03 (19B)	07:11		07:43 (WEA 13)	07:02			07:55	08:22
	21:10	24	06:45 (18B)	20:11	12	07:15 (19B)	18:59	11	07:54 (WEA 13)	16:55			16:10	16:12
30	05:33		06:20 (14B)	06:22		07:03 (19B)	07:13			07:04			07:57	08:22
	21:09	25	06:45 (18B)	20:08	13	07:16 (19B)	18:57			16:53			16:10	16:13
31	05:35		06:20 (14B)	06:24		07:02 (19B)				07:06				08:22
	21:07	26	06:46 (18B)	20:06	13	07:15 (19B)				16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		173			260			366			263			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,71			0,68			
Gesamte Reduktion		0,27			0,30			0,23			0,18			
Met.wahrsch.Beschattung		47			77			85			48			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 35 - Reinstedt - Wiedemann

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56			07:03			07:34 (WEA 13)	06:52		07:34 (19B)	05:48		06:26 (WEA 02)	05:03		05:33 (13B)
	16:15			17:02			17:54	15		07:49 (WEA 13)	19:47	13	07:47 (19B)	20:38	20	06:46 (14B)	21:23	4	05:37 (13B)
2	08:22			07:54			07:00			07:32 (WEA 13)	06:50		07:35 (19B)	05:46		06:26 (WEA 02)	05:02		05:32 (13B)
	16:16			17:04			17:55	19		07:51 (WEA 13)	19:49	11	07:46 (19B)	20:39	18	06:44 (14B)	21:24	7	05:39 (13B)
3	08:22			07:53			06:58			07:31 (WEA 13)	06:48		07:36 (19B)	05:44		06:29 (WEA 02)	05:01		05:31 (13B)
	16:17			17:06			17:57	21		07:52 (WEA 13)	19:51	7	07:43 (19B)	20:41	10	06:39 (WEA 02)	21:25	9	05:40 (13B)
4	08:22			07:51			06:56			07:29 (WEA 13)	06:46			05:42		06:31 (WEA 02)	05:01		05:30 (13B)
	16:18			17:08			17:59	23		07:52 (WEA 13)	19:52			20:43	5	06:36 (WEA 02)	21:26	10	05:40 (13B)
5	08:22			07:49			06:54			07:28 (WEA 13)	06:43			05:40			05:00		05:30 (13B)
	16:19			17:10			18:01	25		07:53 (WEA 13)	19:54			20:44			21:27	11	05:41 (13B)
6	08:21			07:48			06:52			07:28 (WEA 13)	06:41			05:39			04:59		05:29 (13B)
	16:20			17:11			18:02	25		07:53 (WEA 13)	19:56			20:46			21:28	12	05:41 (13B)
7	08:21			07:46			06:49			07:26 (WEA 13)	06:39			05:37			04:59		05:30 (13B)
	16:22			17:13			18:04	27		07:53 (WEA 13)	19:57			20:48			21:29	12	05:42 (13B)
8	08:20			07:44		08:14 (WEA 12)	06:47			07:26 (WEA 13)	06:37			05:35			04:58		05:30 (13B)
	16:23			17:15	7	08:21 (WEA 12)	18:06	27		07:53 (WEA 13)	19:59			20:49			21:30	13	05:43 (13B)
9	08:20			07:42		08:12 (WEA 12)	06:45			07:26 (WEA 13)	06:34			05:33			04:58		05:29 (13B)
	16:24			17:17	12	08:24 (WEA 12)	18:08	27		07:53 (WEA 13)	20:01			20:51			21:31	14	05:43 (13B)
10	08:19			07:41		08:11 (WEA 12)	06:43			07:27 (WEA 13)	06:32			05:32			04:57		05:30 (13B)
	16:26			17:19	16	08:27 (WEA 12)	18:09	25		07:52 (WEA 13)	20:02			20:52			21:32	14	05:44 (13B)
11	08:19			07:39		08:10 (WEA 12)	06:41			07:26 (WEA 13)	06:30			05:30			04:57		05:30 (13B)
	16:27			17:21	18	08:28 (WEA 12)	18:11	25		07:51 (WEA 13)	20:04			20:54			21:33	14	05:44 (13B)
12	08:18			07:37		08:09 (WEA 12)	06:38			07:27 (WEA 13)	06:28			05:28			04:57		05:29 (13B)
	16:29			17:23	20	08:29 (WEA 12)	18:13	23		07:50 (WEA 13)	20:06			20:56			21:33	15	05:44 (13B)
13	08:18			07:35		08:08 (WEA 12)	06:36			07:28 (WEA 13)	06:25			05:27			04:56		05:30 (13B)
	16:30			17:24	21	08:29 (WEA 12)	18:15	21		07:49 (WEA 13)	20:07			20:57			21:34	14	05:44 (13B)
14	08:17			07:33		08:08 (WEA 12)	06:34			07:28 (WEA 13)	06:23			05:25			04:56		05:30 (13B)
	16:32			17:26	22	08:30 (WEA 12)	18:16	19		07:47 (WEA 13)	20:09			20:59			21:34	15	05:45 (13B)
15	08:16			07:31		08:07 (WEA 12)	06:31			06:54 (WEA 11)	06:21			05:24			04:56		05:30 (13B)
	16:33			17:28	23	08:30 (WEA 12)	18:18	20		07:45 (WEA 13)	20:11			21:00			21:35	15	05:45 (13B)
16	08:15			07:29		08:07 (WEA 12)	06:29			06:52 (WEA 11)	06:19			05:22			04:56		05:30 (13B)
	16:35			17:30	23	08:30 (WEA 12)	18:20	18		07:42 (WEA 13)	20:13			21:02			21:36	16	05:46 (13B)
17	08:14			07:27		08:07 (WEA 12)	06:27			06:49 (WEA 11)	06:17		07:01 (18B)	05:21			04:56		05:31 (13B)
	16:36			17:32	23	08:30 (WEA 12)	18:22	13		07:02 (WEA 11)	20:14	8	07:09 (18B)	21:03			21:36	15	05:46 (13B)
18	08:13			07:26		08:08 (WEA 12)	06:25			06:47 (WEA 11)	06:15		06:59 (18B)	05:19			04:56		05:31 (13B)
	16:38			17:34	22	08:30 (WEA 12)	18:23	16		07:03 (WEA 11)	20:16	12	07:11 (18B)	21:05			21:36	15	05:46 (13B)
19	08:12			07:24		08:08 (WEA 12)	06:22			06:46 (WEA 11)	06:12		06:57 (18B)	05:18			04:56		05:31 (13B)
	16:39			17:35	21	08:29 (WEA 12)	18:25	17		07:03 (WEA 11)	20:18	16	07:13 (18B)	21:06			21:37	15	05:46 (13B)
20	08:11			07:22		08:08 (WEA 12)	06:20			06:46 (WEA 11)	06:10		06:33 (WEA 02)	05:16		05:43 (6B)	04:56		05:31 (13B)
	16:41			17:37	19	08:27 (WEA 12)	18:27	18		07:04 (WEA 11)	20:19	24	07:12 (18B)	21:08	1	05:44 (6B)	21:37	15	05:46 (13B)
21	08:10			07:19		08:09 (WEA 12)	06:18			06:45 (WEA 11)	06:08		06:31 (WEA 02)	05:15		05:42 (6B)	04:56		05:31 (13B)
	16:43			17:39	17	08:26 (WEA 12)	18:28	18		07:03 (WEA 11)	20:21	30	07:13 (18B)	21:09	3	05:45 (6B)	21:37	15	05:46 (13B)
22	08:09			07:17		08:11 (WEA 12)	06:15			06:45 (WEA 11)	06:06		06:29 (WEA 02)	05:14		05:41 (6B)	04:56		05:32 (13B)
	16:45			17:41	14	08:25 (WEA 12)	18:30	17		07:02 (WEA 11)	20:23	35	07:13 (18B)	21:10	4	05:45 (6B)	21:38	15	05:47 (13B)
23	08:08			07:15		08:13 (WEA 12)	06:13			06:45 (WEA 11)	06:04		06:27 (WEA 02)	05:12		05:40 (6B)	04:56		05:32 (13B)
	16:46			17:43	9	08:22 (WEA 12)	18:32	17		07:02 (WEA 11)	20:24	40	07:13 (18B)	21:12	5	05:45 (6B)	21:38	15	05:47 (13B)
24	08:07			07:13			06:11			06:45 (WEA 11)	06:02		06:25 (WEA 02)	05:11		05:39 (6B)	04:57		05:32 (13B)
	16:48			17:45			18:34	15		07:00 (WEA 11)	20:26	43	07:13 (18B)	21:13	6	05:45 (6B)	21:38	15	05:47 (13B)
25	08:05			07:11			06:08			06:47 (WEA 11)	06:00		06:25 (WEA 02)	05:10		05:38 (6B)	04:57		05:33 (13B)
	16:50			17:46			18:35	11		06:58 (WEA 11)	20:28	42	07:12 (18B)	21:15	7	05:45 (6B)	21:38	15	05:48 (13B)
26	08:04			07:09			06:06			06:39 (19B)	05:58		06:25 (WEA 02)	05:09		05:37 (6B)	04:57		05:32 (13B)
	16:51			17:48			18:37	13		06:55 (WEA 11)	20:29	42	07:12 (18B)	21:16	8	05:45 (6B)	21:38	16	05:48 (13B)
27	08:03			07:07			06:04			06:36 (19B)	05:56		06:25 (WEA 02)	05:08		05:37 (6B)	04:58		05:32 (13B)
	16:53			17:50			18:39	11		06:47 (19B)	20:31	40	07:11 (18B)	21:17	8	05:45 (6B)	21:38	15	05:47 (13B)
28	08:02			07:05		07:37 (WEA 13)	06:02			06:35 (19B)	05:54		06:25 (WEA 02)	05:07		05:38 (6B)	04:58		05:33 (13B)
	16:55			17:52	9	07:46 (WEA 13)	18:40	13		06:48 (19B)	20:33	39	07:10 (18B)	21:18	6	05:44 (6B)	21:38	15	05:48 (13B)
29	08:00						06:59			07:35 (19B)	05:52		06:25 (WEA 02)	05:06		05:40 (6B)	04:59		05:33 (13B)
	16:57						19:42	14		07:49 (19B)	20:34	36	07:09 (18B)	21:20	2	05:42 (6B)	21:38	15	05:48 (13B)
30	07:59						06:57			07:34 (19B)	05:50		06:25 (WEA 02)	05:05			04:59		05:33 (13B)
	16:59						19:44	14		07:48 (19B)	20:36	30	07:06 (18B)	21:21			21:37	15	05:48 (13B)
31	07:57						06:55			07:34 (19B)				05:04					
	17:00						19:45	14		07:48 (19B)				21:22					
Sonnenscheinstunden		260			278			367			416			484				498	
astr.max.mögl.Beschattung						296			581			468			103				406
Red.Sonnenscheinwahrsch.						0,32			0,27			0,36			0,43				0,35
Reduktion Betriebsdauer						0,96			0,96			0,96			0,96				0,96
Reduktion Windrichtung						0,67			0,69			0,72			0,71				0,70
Gesamte Reduktion						0,20			0,18			0,24			0,29				0,23
Met.wahrsch.Beschattung						60			104			115			30				94

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 35 - Reinstedt - Wiedemann

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember
1	05:00		05:34 (13B)	05:36	06:26		07:14		08:06 (WEA 13)	07:08	07:40 (WEA 12)	07:58
	21:37	15	05:49 (13B)	21:06	20:04		18:55	23	08:29 (WEA 13)	16:49	15 07:55 (WEA 12)	16:09
2	05:01		05:34 (13B)	05:38	06:27		07:16		08:05 (WEA 13)	07:09	07:42 (WEA 12)	08:00
	21:37	14	05:48 (13B)	21:04	20:02		18:53	25	08:30 (WEA 13)	16:47	11 07:53 (WEA 12)	16:08
3	05:01		05:35 (13B)	05:39	06:29		07:18		08:05 (WEA 13)	07:11	07:45 (WEA 12)	08:01
	21:36	13	05:48 (13B)	21:02	19:59		18:50	25	08:30 (WEA 13)	16:45	5 07:50 (WEA 12)	16:08
4	05:02		05:35 (13B)	05:41	06:30		07:19		08:03 (WEA 13)	07:13		08:03
	21:36	14	05:49 (13B)	21:01	19:57		18:48	27	08:30 (WEA 13)	16:44		16:07
5	05:03		05:35 (13B)	05:42	06:32		07:21		08:03 (WEA 13)	07:15		08:04
	21:36	13	05:48 (13B)	20:59	19:55		18:46	27	08:30 (WEA 13)	16:42		16:07
6	05:04		05:36 (13B)	05:44	06:34		07:23		08:03 (WEA 13)	07:17		08:05
	21:35	12	05:48 (13B)	20:57	19:53		18:43	27	08:30 (WEA 13)	16:40		16:06
7	05:05		05:36 (13B)	05:46	06:35		07:24		08:03 (WEA 13)	07:18		08:06
	21:34	12	05:48 (13B)	20:55	19:50		18:41	26	08:29 (WEA 13)	16:38		16:06
8	05:06		05:37 (13B)	05:47	06:37		07:26		08:03 (WEA 13)	07:20		08:08
	21:34	11	05:48 (13B)	20:53	19:48		18:39	25	08:28 (WEA 13)	16:37		16:06
9	05:07		05:38 (13B)	05:49	06:39 (WEA 02)	06:39	07:31 (19B)	07:28	08:03 (WEA 13)	07:22		08:09
	21:33	9	05:47 (13B)	20:52	7 06:46 (WEA 02)	19:46	6 07:37 (19B)	18:37	24 08:27 (WEA 13)	16:35		16:05
10	05:08		05:39 (13B)	05:50	06:37 (WEA 02)	06:40	07:29 (19B)	07:29	08:04 (WEA 13)	07:24		08:10
	21:32	8	05:47 (13B)	20:50	13 06:50 (14B)	19:43	10 07:39 (19B)	18:34	23 08:27 (WEA 13)	16:34		16:05
11	05:09		05:40 (13B)	05:52	06:36 (WEA 02)	06:42	07:27 (19B)	07:31	08:04 (WEA 13)	07:25		08:11
	21:32	6	05:46 (13B)	20:48	18 06:54 (14B)	19:41	12 07:39 (19B)	18:32	20 08:24 (WEA 13)	16:32		16:05
12	05:10			05:53	06:34 (WEA 02)	06:43	07:26 (19B)	07:33	08:06 (WEA 13)	07:27		08:12
	21:31			20:46	23 07:11 (18B)	19:39	14 07:40 (19B)	18:30	17 08:23 (WEA 13)	16:30		16:05
13	05:11			05:55	06:34 (WEA 02)	06:45	07:25 (19B)	07:34	08:08 (WEA 13)	07:29		08:13
	21:30			20:44	31 07:15 (18B)	19:37	14 07:39 (19B)	18:28	13 08:21 (WEA 13)	16:29		16:05
14	05:12			05:57	06:32 (WEA 02)	06:47	07:25 (19B)	07:36	08:12 (WEA 13)	07:31		08:14
	21:29			20:42	38 07:17 (18B)	19:34	14 07:39 (19B)	18:26	4 08:16 (WEA 13)	16:27		16:05
15	05:13		05:47 (6B)	05:58	06:32 (WEA 02)	06:48	07:25 (19B)	07:38		07:33		08:15
	21:28	5	05:52 (6B)	20:40	39 07:18 (18B)	19:32	13 07:38 (19B)	18:23		16:26		16:05
16	05:14		05:46 (6B)	06:00	06:32 (WEA 02)	06:50	07:26 (19B)	07:40		07:34		08:16
	21:27	7	05:53 (6B)	20:38	41 07:18 (18B)	19:30	11 07:37 (19B)	18:21		16:25		16:05
17	05:15		05:46 (6B)	06:01	06:32 (WEA 02)	06:51	07:27 (19B)	07:41		07:36		08:17
	21:26	7	05:53 (6B)	20:36	42 07:19 (18B)	19:27	11 07:42 (WEA 11)	18:19		16:23		16:05
18	05:17		05:47 (6B)	06:03	06:31 (WEA 02)	06:53	07:35 (WEA 11)	07:43		07:38		08:17
	21:25	8	05:55 (6B)	20:34	43 07:19 (18B)	19:25	10 07:45 (WEA 11)	18:17		16:22		16:05
19	05:18		05:48 (6B)	06:05	06:32 (WEA 02)	06:55	07:33 (WEA 11)	07:45	08:43 (WEA 12)	07:39		08:18
	21:24	7	05:55 (6B)	20:32	41 07:19 (18B)	19:23	14 07:47 (WEA 11)	18:15	12 08:55 (WEA 12)	16:21		16:06
20	05:19		05:49 (6B)	06:06	06:33 (WEA 02)	06:56	07:31 (WEA 11)	07:46	08:41 (WEA 12)	07:41		08:19
	21:23	6	05:55 (6B)	20:30	39 07:19 (18B)	19:20	16 07:47 (WEA 11)	18:13	16 08:57 (WEA 12)	16:20		16:06
21	05:21		05:50 (6B)	06:08	06:35 (WEA 02)	06:58	07:31 (WEA 11)	07:48	08:40 (WEA 12)	07:43		08:19
	21:21	5	05:55 (6B)	20:28	35 07:19 (18B)	19:18	17 07:48 (WEA 11)	18:11	18 08:58 (WEA 12)	16:18		16:06
22	05:22		05:51 (6B)	06:09	06:36 (WEA 02)	07:00	07:30 (WEA 11)	07:50	08:38 (WEA 12)	07:44		08:20
	21:20	3	05:54 (6B)	20:26	28 07:17 (18B)	19:16	18 07:48 (WEA 11)	18:09	20 08:58 (WEA 12)	16:17		16:07
23	05:23		05:53 (6B)	06:11	06:38 (WEA 02)	07:01	07:29 (WEA 11)	07:52	08:37 (WEA 12)	07:46		08:20
	21:19	2	05:55 (6B)	20:24	23 07:17 (18B)	19:13	18 07:47 (WEA 11)	18:07	22 08:59 (WEA 12)	16:16		16:07
24	05:25			06:13	07:00 (18B)	07:03	07:29 (WEA 11)	07:53	08:37 (WEA 12)	07:48		08:21
	21:18			20:21	15 07:15 (18B)	19:11	18 07:47 (WEA 11)	18:05	22 08:59 (WEA 12)	16:15		16:08
25	05:26			06:14	07:02 (18B)	07:04	07:29 (WEA 11)	06:55	08:37 (WEA 12)	07:49		08:21
	21:16			20:19	12 07:14 (18B)	19:09	17 07:46 (WEA 11)	17:03	22 07:59 (WEA 12)	16:14		16:09
26	05:27			06:16	07:03 (18B)	07:06	07:31 (WEA 11)	06:57	07:37 (WEA 12)	07:51		08:21
	21:15			20:17	8 07:11 (18B)	19:06	14 07:45 (WEA 11)	17:01	23 08:00 (WEA 12)	16:13		16:09
27	05:29			06:18		07:08	07:33 (WEA 11)	06:59	07:37 (WEA 12)	07:52		08:22
	21:13			20:15		19:04	15 08:21 (WEA 13)	16:59	22 07:59 (WEA 12)	16:12		16:10
28	05:30			06:19		07:09	07:34 (WEA 11)	07:01	07:37 (WEA 12)	07:54		08:22
	21:12			20:13		19:02	20 08:25 (WEA 13)	16:57	22 07:59 (WEA 12)	16:11		16:11
29	05:32			06:21		07:11	08:10 (WEA 13)	07:02	07:38 (WEA 12)	07:55		08:22
	21:10			20:11		18:59	17 08:27 (WEA 13)	16:55	21 07:59 (WEA 12)	16:10		16:12
30	05:33			06:22		07:13	08:08 (WEA 13)	07:04	07:38 (WEA 12)	07:57		08:22
	21:09			20:08		18:57	21 08:29 (WEA 13)	16:53	20 07:58 (WEA 12)	16:10		16:13
31	05:35			06:24				07:06	07:38 (WEA 12)			08:22
	21:07			20:06				16:51	18 07:56 (WEA 12)			16:13
Sonnenscheinstunden	501			453		381		332		267		245
astr.max.mögl.Beschattung		177		496		320		564		31		
Red.Sonnenscheinwahrsch.		0,40		0,43		0,34		0,28		0,22		
Reduktion Betriebsdauer		0,96		0,96		0,96		0,96		0,96		
Reduktion Windrichtung		0,70		0,72		0,71		0,67		0,67		
Gesamte Reduktion		0,27		0,29		0,23		0,18		0,14		
Met.wahrsch.Beschattung		47		146		74		102		4		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 36 - Reinstedt - Solarpark

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56		08:23 (WEA 09)	07:03		07:45 (WEA 08)	06:52		07:15 (WEA 10)	05:48		06:12 (WEA 03)	05:03		05:31 (6B)
	16:15			17:02	36	08:59 (WEA 12)	17:54	41	08:26 (WEA 13)	19:47	14	07:29 (WEA 10)	20:38	60	07:31 (18B)	21:23	11	05:42 (6B)
2	08:22			07:54		08:22 (WEA 09)	07:00		07:48 (WEA 08)	06:50		07:13 (WEA 10)	05:46		06:10 (WEA 03)	05:02		05:32 (6B)
	16:16			17:04	37	08:59 (WEA 12)	17:55	34	08:26 (WEA 13)	19:49	17	07:30 (WEA 10)	20:39	57	07:28 (18B)	21:24	11	05:43 (6B)
3	08:22			07:53		08:21 (WEA 09)	06:58		07:57 (WEA 13)	06:48		07:11 (WEA 10)	05:44		06:09 (WEA 03)	05:01		05:31 (6B)
	16:17			17:06	38	08:59 (WEA 12)	17:57	28	08:25 (WEA 13)	19:51	19	07:30 (WEA 10)	20:41	50	07:26 (18B)	21:25	11	05:42 (6B)
4	08:22			07:51		08:22 (WEA 09)	06:56		07:57 (WEA 13)	06:46		07:11 (WEA 10)	05:42		06:08 (WEA 03)	05:01		05:31 (6B)
	16:18			17:08	38	09:00 (WEA 12)	17:59	26	08:23 (WEA 13)	19:52	19	07:30 (WEA 10)	20:43	43	06:55 (14B)	21:26	11	05:42 (6B)
5	08:22			07:49		08:21 (WEA 09)	06:54		07:58 (WEA 13)	06:43		07:11 (WEA 10)	05:40		06:08 (WEA 03)	05:00		05:32 (6B)
	16:19			17:10	39	09:00 (WEA 12)	18:01	24	08:22 (WEA 13)	19:54	19	07:30 (WEA 10)	20:44	36	06:52 (14B)	21:27	10	05:42 (6B)
6	08:21			07:48		08:21 (WEA 09)	06:52		08:00 (WEA 13)	06:41		07:11 (WEA 10)	05:39		06:03 (11B)	04:59		05:32 (6B)
	16:20			17:11	39	09:00 (WEA 12)	18:02	20	08:20 (WEA 13)	19:56	19	07:30 (WEA 10)	20:46	28	06:40 (WEA 02)	21:28	10	05:42 (6B)
7	08:21			07:46		08:21 (WEA 09)	06:49		08:01 (WEA 13)	06:39		07:10 (WEA 10)	05:37		06:02 (11B)	04:59		05:33 (6B)
	16:22			17:13	39	09:00 (WEA 12)	18:04	16	08:17 (WEA 13)	19:57	19	07:29 (WEA 10)	20:48	25	06:27 (WEA 03)	21:29	9	05:42 (6B)
8	08:20			07:44		08:21 (WEA 09)	06:47		08:04 (WEA 13)	06:37		07:07 (15B)	05:35		06:01 (11B)	04:58		05:34 (6B)
	16:23			17:15	38	08:59 (WEA 12)	18:06	10	08:14 (WEA 13)	19:59	21	07:28 (WEA 10)	20:49	25	06:26 (WEA 03)	21:30	8	05:42 (6B)
9	08:20			07:42		08:22 (WEA 09)	06:45			06:34		07:05 (15B)	05:33		06:01 (11B)	04:58		05:34 (6B)
	16:24			17:17	37	08:59 (WEA 12)	18:08			20:01	22	07:27 (WEA 10)	20:51	25	06:26 (WEA 03)	21:31	7	05:41 (6B)
10	08:19			07:41		08:23 (WEA 09)	06:43		07:06 (WEA 11)	06:32		07:04 (15B)	05:32		06:00 (11B)	04:57		05:35 (6B)
	16:26			17:19	36	08:59 (WEA 12)	18:09	11	07:17 (WEA 11)	20:02	21	07:25 (WEA 10)	20:52	25	06:25 (WEA 03)	21:32	6	05:41 (6B)
11	08:19			07:39		08:24 (WEA 09)	06:41		07:03 (WEA 11)	06:30		07:03 (15B)	05:30		05:59 (11B)	04:57		05:36 (6B)
	16:27			17:21	34	08:58 (WEA 12)	18:11	15	07:18 (WEA 11)	20:04	20	07:23 (WEA 10)	20:54	24	06:23 (WEA 03)	21:33	5	05:41 (6B)
12	08:18			07:37		08:25 (WEA 09)	06:38		07:02 (WEA 11)	06:28		07:02 (15B)	05:28		06:00 (11B)	04:57		05:36 (6B)
	16:29			17:23	29	08:56 (WEA 12)	18:13	17	07:19 (WEA 11)	20:06	14	07:16 (15B)	20:56	23	06:23 (WEA 03)	21:33	4	05:40 (6B)
13	08:18			07:35		08:27 (WEA 09)	06:36		07:01 (WEA 11)	06:25		07:02 (15B)	05:27		05:59 (11B)	04:56		05:38 (6B)
	16:30			17:24	21	08:54 (WEA 12)	18:15	19	07:20 (WEA 11)	20:07	13	07:15 (15B)	20:57	22	06:21 (WEA 03)	21:34	2	05:40 (6B)
14	08:17			07:33		08:46 (WEA 12)	06:34		07:00 (WEA 11)	06:23		07:02 (15B)	05:25		06:00 (11B)	04:56		
	16:32			17:26	3	08:49 (WEA 12)	18:16	20	07:20 (WEA 11)	20:09	21	07:31 (18B)	20:59	13	06:13 (11B)	21:34		
15	08:16			07:31			06:31		06:59 (WEA 11)	06:21		07:03 (15B)	05:24		06:01 (11B)	04:56		
	16:33			17:28			18:18	21	07:20 (WEA 11)	20:11	25	07:34 (18B)	21:00	12	06:13 (11B)	21:35		
16	08:15			07:29		07:54 (29B)	06:29		06:59 (WEA 11)	06:19		07:05 (15B)	05:22		06:01 (11B)	04:56		
	16:35			17:30	10	08:16 (WEA 13)	18:20	21	07:20 (WEA 11)	20:13	24	07:35 (18B)	21:02	11	06:12 (11B)	21:36		
17	08:14			07:27		07:52 (29B)	06:27		06:59 (WEA 11)	06:17		07:16 (18B)	05:21		06:02 (11B)	04:56		
	16:36			17:32	21	08:20 (WEA 13)	18:22	20	07:19 (WEA 11)	20:14	21	07:37 (18B)	21:03	9	06:11 (11B)	21:36		
18	08:13			07:25		07:50 (WEA 08)	06:25		06:59 (WEA 11)	06:14		07:15 (18B)	05:19		06:04 (11B)	04:56		
	16:38			17:34	28	08:22 (WEA 13)	18:23	19	07:18 (WEA 11)	20:16	23	07:38 (18B)	21:05	6	06:10 (11B)	21:36		
19	08:12			07:24		07:48 (WEA 08)	06:22		07:00 (WEA 11)	06:12		06:38 (WEA 02)	05:18			04:56		
	16:39			17:35	35	08:24 (WEA 13)	18:25	18	07:18 (WEA 11)	20:18	30	07:38 (18B)	21:06			21:37		
20	08:11			07:21		07:45 (WEA 08)	06:20		06:51 (20B)	06:10		06:34 (WEA 02)	05:16			04:56		
	16:41			17:37	39	08:24 (WEA 13)	18:27	21	07:16 (WEA 11)	20:19	38	07:38 (18B)	21:08			21:37		
21	08:10			07:19		07:43 (WEA 08)	06:18		06:47 (20B)	06:08		06:32 (WEA 02)	05:15			04:56		
	16:43			17:39	42	08:25 (WEA 13)	18:28	26	07:14 (WEA 11)	20:21	42	07:38 (18B)	21:09			21:37		
22	08:09			07:17		07:42 (WEA 08)	06:15		06:46 (20B)	06:06		06:30 (WEA 02)	05:14			04:56		
	16:45			17:41	44	08:26 (WEA 13)	18:30	28	07:14 (19B)	20:23	52	07:38 (18B)	21:10			21:38		
23	08:08			07:15		07:42 (WEA 08)	06:13		06:46 (20B)	06:04		06:29 (WEA 02)	05:12			04:56		
	16:46			17:43	45	08:27 (WEA 13)	18:32	28	07:14 (19B)	20:24	54	07:37 (18B)	21:12			21:38		
24	08:07			07:13		07:42 (WEA 08)	06:11		06:45 (20B)	06:02		06:28 (WEA 02)	05:11			04:57		
	16:48			17:45	45	08:27 (WEA 13)	18:34	28	07:13 (19B)	20:26	56	07:37 (18B)	21:13			21:38		
25	08:05		08:42 (WEA 12)	07:11		07:42 (WEA 08)	06:08		06:45 (20B)	06:00		06:28 (WEA 02)	05:10		05:38 (6B)	04:57		
	16:50	8	08:50 (WEA 12)	17:46	45	08:27 (WEA 13)	18:35	28	07:13 (19B)	20:28	57	07:37 (18B)	21:15	2	05:40 (6B)	21:38		
26	08:04		08:39 (WEA 12)	07:09		07:42 (WEA 08)	06:06		06:46 (20B)	05:58		06:28 (WEA 02)	05:09		05:37 (6B)	04:57		
	16:51	13	08:52 (WEA 12)	17:48	45	08:27 (WEA 13)	18:37	26	07:12 (19B)	20:29	57	07:37 (18B)	21:16	4	05:41 (6B)	21:38		
27	08:03		08:38 (WEA 12)	07:07		07:42 (WEA 08)	06:04		06:46 (20B)	05:56		06:28 (WEA 02)	05:08		05:36 (6B)	04:58		
	16:53	16	08:54 (WEA 12)	17:50	44	08:26 (WEA 13)	18:39	24	07:11 (19B)	20:31	56	07:36 (18B)	21:17	5	05:41 (6B)	21:38		
28	08:02		08:37 (WEA 12)	07:05		07:43 (WEA 08)	06:02		06:57 (19B)	05:54		06:18 (WEA 03)	05:07		05:35 (6B)	04:58		
	16:55	18	08:55 (WEA 12)	17:52	43	08:26 (WEA 13)	18:40	12	07:09 (19B)	20:33	58	07:35 (18B)	21:18	7	05:42 (6B)	21:38		
29	08:00		08:37 (WEA 12)				06:59		07:59 (19B)	05:52		06:16 (WEA 03)	05:06		05:34 (6B)	04:59		
	16:57	20	08:57 (WEA 12)				19:42	8	08:07 (19B)	20:34	60	07:34 (18B)	21:20	8	05:42 (6B)	21:38		
30	07:59		08:26 (WEA 09)				06:57		07:19 (WEA 10)	05:50		06:14 (WEA 03)	05:05		05:33 (6B)	04:59		05:41 (6B)
	16:59	29	08:57 (WEA 12)				19:44	6	07:25 (WEA 10)	20:36	61	07:33 (18B)	21:21	9	05:42 (6B)	21:37	3	05:44 (6B)
31	07:57		08:24 (WEA 09)				06:55		07:17 (WEA 10)				05:04		05:32 (6B)			
	17:00	34	08:58 (WEA 12)				19:45	11	07:28 (WEA 10)				21:22	10	05:42 (6B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		138			950			626			972			539			108	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,64			0,66			0,70			0,72			0,71			0,70	
Gesamte Reduktion		0,13			0,20			0,18			0,25			0,29			0,23	
Met.wahrsch.Beschattung		18			189			112			238			157			25	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 36 - Reinstedt - Solarpark

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Juli			August			September			Oktober			November			Dezember
1	05:00		05:41 (6B)	05:36		06:10 (11B)	06:26		07:02 (15B)	07:14		07:40 (WEA 11)	07:08		07:52 (WEA 09)	07:58
	21:37	4	05:45 (6B)	21:06	24	06:34 (WEA 03)	20:04	20	07:22 (WEA 10)	18:55	18	07:58 (WEA 11)	16:49	36	08:28 (WEA 12)	16:09
2	05:01		05:40 (6B)	05:38		06:10 (11B)	06:27		07:02 (15B)	07:16		07:41 (WEA 11)	07:09		07:51 (WEA 09)	08:00
	21:37	5	05:45 (6B)	21:04	24	06:34 (WEA 03)	20:02	21	07:23 (WEA 10)	18:53	16	07:57 (WEA 11)	16:47	37	08:28 (WEA 12)	16:08
3	05:01		05:40 (6B)	05:39		06:10 (11B)	06:29		07:03 (15B)	07:18		07:43 (WEA 11)	07:11		07:51 (WEA 09)	08:01
	21:36	6	05:46 (6B)	21:02	26	06:36 (WEA 03)	19:59	22	07:25 (WEA 10)	18:50	13	07:56 (WEA 11)	16:45	38	08:29 (WEA 12)	16:08
4	05:02		05:40 (6B)	05:41		06:10 (11B)	06:30		07:04 (15B)	07:19		07:45 (WEA 11)	07:13		07:51 (WEA 09)	08:03
	21:36	7	05:47 (6B)	21:01	26	06:36 (WEA 03)	19:57	21	07:25 (WEA 10)	18:48	7	07:52 (WEA 11)	16:44	39	08:30 (WEA 12)	16:07
5	05:03		05:39 (6B)	05:42		06:11 (11B)	06:32		07:07 (WEA 10)	07:21		08:45 (WEA 13)	07:15		07:51 (WEA 09)	08:04
	21:36	8	05:47 (6B)	20:59	25	06:36 (WEA 03)	19:55	19	07:26 (WEA 10)	18:46	1	08:46 (WEA 13)	16:42	39	08:30 (WEA 12)	16:07
6	05:04		05:39 (6B)	05:44		06:12 (11B)	06:34		07:06 (WEA 10)	07:23		08:39 (WEA 13)	07:17		07:51 (WEA 09)	08:05
	21:35	9	05:48 (6B)	20:57	24	06:36 (WEA 03)	19:53	19	07:25 (WEA 10)	18:43	14	08:53 (WEA 13)	16:40	39	08:30 (WEA 12)	16:06
7	05:05		05:39 (6B)	05:46		06:14 (11B)	06:35		07:06 (WEA 10)	07:24		08:36 (WEA 13)	07:18		07:52 (WEA 09)	08:06
	21:34	9	05:48 (6B)	20:55	30	06:51 (WEA 02)	19:50	19	07:25 (WEA 10)	18:41	18	08:54 (WEA 13)	16:38	38	08:30 (WEA 12)	16:06
8	05:06		05:39 (6B)	05:47		06:17 (WEA 03)	06:37		07:05 (WEA 10)	07:26		08:34 (WEA 13)	07:20		07:52 (WEA 09)	08:08
	21:34	10	05:49 (6B)	20:53	39	07:02 (14B)	19:48	19	07:24 (WEA 10)	18:39	22	08:56 (WEA 13)	16:37	38	08:30 (WEA 12)	16:05
9	05:07		05:39 (6B)	05:49		06:18 (WEA 03)	06:39		07:05 (WEA 10)	07:28		08:33 (WEA 13)	07:22		07:53 (WEA 09)	08:09
	21:33	10	05:49 (6B)	20:52	43	07:05 (14B)	19:46	19	07:24 (WEA 10)	18:37	24	08:57 (WEA 13)	16:35	37	08:30 (WEA 12)	16:05
10	05:08		05:39 (6B)	05:50		06:18 (WEA 03)	06:40		07:06 (WEA 10)	07:29		08:32 (WEA 13)	07:24		07:54 (WEA 09)	08:10
	21:32	11	05:50 (6B)	20:50	53	07:36 (18B)	19:43	18	07:24 (WEA 10)	18:34	26	08:58 (WEA 13)	16:34	36	08:30 (WEA 12)	16:05
11	05:09		05:39 (6B)	05:52		06:20 (WEA 03)	06:42		07:07 (WEA 10)	07:31		08:30 (WEA 13)	07:25		07:56 (WEA 09)	08:11
	21:32	11	05:50 (6B)	20:48	58	07:39 (18B)	19:41	15	07:22 (WEA 10)	18:32	28	08:58 (WEA 13)	16:32	34	08:30 (WEA 12)	16:05
12	05:10		05:40 (6B)	05:53		06:21 (WEA 03)	06:43		07:09 (WEA 10)	07:33		08:19 (WEA 08)	07:27		07:58 (WEA 09)	08:12
	21:31	10	05:50 (6B)	20:46	61	07:40 (18B)	19:39	11	07:20 (WEA 10)	18:30	38	08:59 (WEA 13)	16:30	30	08:29 (WEA 12)	16:05
13	05:11		05:41 (6B)	05:55		06:23 (WEA 03)	06:45		07:10 (WEA 10)	07:34		08:17 (WEA 08)	07:29		08:08 (WEA 12)	08:13
	21:30	9	05:50 (6B)	20:44	60	07:41 (18B)	19:37	7	07:17 (WEA 10)	18:28	42	08:59 (WEA 13)	16:29	21	08:29 (WEA 12)	16:05
14	05:12		05:42 (6B)	05:57		06:24 (WEA 03)	06:47		07:50 (19B)	07:36		08:16 (WEA 08)	07:31		08:09 (WEA 12)	08:14
	21:29	8	05:50 (6B)	20:42	61	07:42 (18B)	19:34	7	07:57 (19B)	18:26	44	09:00 (WEA 13)	16:27	18	08:27 (WEA 12)	16:05
15	05:13		05:43 (6B)	05:58		06:26 (WEA 03)	06:48		07:47 (19B)	07:38		08:15 (WEA 08)	07:32		08:10 (WEA 12)	08:15
	21:28	7	05:50 (6B)	20:40	57	07:43 (18B)	19:32	11	07:58 (19B)	18:23	45	09:00 (WEA 13)	16:26	16	08:26 (WEA 12)	16:05
16	05:14		05:44 (6B)	06:00		06:34 (WEA 02)	06:50		07:36 (20B)	07:40		08:13 (WEA 08)	07:34		08:12 (WEA 12)	08:16
	21:27	6	05:50 (6B)	20:38	57	07:43 (18B)	19:30	23	08:00 (19B)	18:21	46	08:59 (WEA 13)	16:25	13	08:25 (WEA 12)	16:05
17	05:15		05:45 (6B)	06:01		06:35 (WEA 02)	06:51		07:34 (20B)	07:41		08:13 (WEA 08)	07:36		08:15 (WEA 12)	08:17
	21:26	4	05:49 (6B)	20:36	57	07:44 (18B)	19:27	27	08:01 (19B)	18:19	45	08:58 (WEA 13)	16:23	8	08:23 (WEA 12)	16:05
18	05:17		05:46 (6B)	06:03		06:34 (WEA 02)	06:53		07:33 (20B)	07:43		08:13 (WEA 08)	07:38			08:17
	21:25	3	05:49 (6B)	20:34	57	07:43 (18B)	19:25	27	08:00 (19B)	18:17	45	08:58 (WEA 13)	16:22			16:05
19	05:18		05:48 (6B)	06:05		06:35 (WEA 02)	06:55		07:32 (20B)	07:45		08:13 (WEA 08)	07:39			08:18
	21:24	1	05:49 (6B)	20:32	56	07:44 (18B)	19:23	29	08:01 (19B)	18:15	45	08:58 (WEA 13)	16:21			16:06
20	05:19			06:06		06:35 (WEA 02)	06:56		07:31 (20B)	07:46		08:14 (WEA 08)	07:41			08:19
	21:23			20:30	54	07:43 (18B)	19:20	29	08:00 (19B)	18:13	43	08:57 (WEA 13)	16:19			16:06
21	05:21			06:08		06:36 (WEA 02)	06:58		07:32 (20B)	07:48		08:15 (WEA 08)	07:43			08:19
	21:21			20:28	51	07:43 (18B)	19:18	27	07:59 (19B)	18:11	41	08:56 (WEA 13)	16:18			16:06
22	05:22			06:09		06:37 (WEA 02)	07:00		07:33 (20B)	07:50		08:16 (WEA 08)	07:44			08:20
	21:20			20:26	41	07:42 (18B)	19:16	26	07:59 (19B)	18:09	37	08:54 (WEA 13)	16:17			16:07
23	05:23			06:11		06:39 (WEA 02)	07:01		07:33 (20B)	07:52		08:18 (WEA 08)	07:46			08:20
	21:19			20:24	36	07:42 (18B)	19:13	25	08:00 (WEA 11)	18:07	33	08:53 (WEA 13)	16:16			16:07
24	05:25			06:13		06:42 (WEA 02)	07:03		07:44 (WEA 11)	07:53		08:20 (29B)	07:48			08:21
	21:18			20:21	28	07:41 (18B)	19:11	17	08:01 (WEA 11)	18:05	27	08:51 (WEA 13)	16:15			16:08
25	05:26		06:15 (11B)	06:14		07:18 (18B)	07:04		07:42 (WEA 11)	06:55		07:22 (29B)	07:49			08:21
	21:16	3	06:18 (11B)	20:19	22	07:40 (18B)	19:09	19	08:01 (WEA 11)	17:03	18	07:48 (WEA 13)	16:14			16:09
26	05:27		06:14 (11B)	06:16		07:18 (18B)	07:06		07:41 (WEA 11)	06:57		07:24 (29B)	07:51			08:21
	21:15	7	06:21 (11B)	20:17	20	07:38 (18B)	19:06	20	08:01 (WEA 11)	17:01	1	07:25 (29B)	16:13			16:09
27	05:29		06:12 (11B)	06:18		07:06 (15B)	07:08		07:41 (WEA 11)	06:59			07:52			08:22
	21:13	10	06:22 (11B)	20:15	25	07:37 (18B)	19:04	21	08:02 (WEA 11)	16:59			16:12			16:10
28	05:30		06:11 (11B)	06:19		07:04 (15B)	07:09		07:40 (WEA 11)	07:01		08:14 (WEA 12)	07:54			08:22
	21:12	12	06:23 (11B)	20:13	24	07:34 (18B)	19:02	21	08:01 (WEA 11)	16:57	7	08:21 (WEA 12)	16:11			16:11
29	05:32		06:11 (11B)	06:21		07:03 (15B)	07:11		07:40 (WEA 11)	07:02		07:56 (WEA 09)	07:55			08:22
	21:10	13	06:24 (11B)	20:11	20	07:31 (18B)	18:59	21	08:01 (WEA 11)	16:55	23	08:24 (WEA 12)	16:10			16:12
30	05:33		06:10 (11B)	06:22		07:03 (15B)	07:13		07:41 (WEA 11)	07:04		07:55 (WEA 09)	07:57			08:22
	21:09	19	06:30 (WEA 03)	20:08	13	07:16 (15B)	18:57	19	08:00 (WEA 11)	16:53	30	08:26 (WEA 12)	16:10			16:12
31	05:35		06:11 (11B)	06:24		07:02 (15B)				07:06		07:52 (WEA 09)				08:22
	21:07	22	06:33 (WEA 03)	20:06	14	07:16 (15B)				16:51	34	08:26 (WEA 12)				16:13
Sonnenscheinstunden		501		453			381			332			267			245
astr.max.mögl.Beschattung		224		1186			599			831			517			
Red.Sonnenscheinwahrsch.		0,40		0,43			0,34			0,28			0,22			
Reduktion Betriebsdauer		0,96		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71		0,72			0,71			0,67			0,65			
Gesamte Reduktion		0,27		0,29			0,23			0,18			0,14			
Met.wahrsch.Beschattung		60		349			139			150			70			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 37 - Reinstedt - Fußballplatz

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56		08:30 (WEA 09)	07:03		08:18 (WEA 13)	06:52		07:20 (WEA 10)	05:48		06:13 (11B)	05:03		05:44 (6B)
	16:15			17:02	40	09:10 (WEA 12)	17:54	13	08:31 (WEA 13)	19:47	20	07:40 (WEA 10)	20:38	22	06:35 (WEA 03)	21:23	1	05:45 (6B)
2	08:22			07:54		08:29 (WEA 09)	07:00			06:50		07:20 (WEA 10)	05:46		06:12 (11B)	05:02		
	16:16			17:04	41	09:10 (WEA 12)	17:55			19:49	20	07:40 (WEA 10)	20:39	22	06:34 (WEA 03)	21:24		
3	08:22			07:53		08:29 (WEA 09)	06:58			06:48		07:18 (15B)	05:44		06:12 (11B)	05:01		
	16:17			17:06	40	09:09 (WEA 12)	17:57			19:51	31	07:59 (18B)	20:41	23	06:35 (WEA 03)	21:25		
4	08:22			07:51		08:31 (WEA 09)	06:56			06:46		07:17 (15B)	05:42		06:11 (11B)	05:01		
	16:18			17:08	38	09:09 (WEA 12)	17:59			19:52	37	08:01 (18B)	20:43	23	06:34 (WEA 03)	21:26		
5	08:22			07:49		08:31 (WEA 09)	06:54		07:17 (WEA 11)	06:43		07:16 (15B)	05:40		06:11 (11B)	05:00		
	16:19			17:10	37	09:08 (WEA 12)	18:01	9	07:26 (WEA 11)	19:54	40	08:03 (18B)	20:44	22	06:33 (WEA 03)	21:27		
6	08:21			07:48		08:32 (WEA 09)	06:52		07:15 (WEA 11)	06:41		07:16 (15B)	05:39		06:10 (11B)	04:59		
	16:20			17:11	33	09:07 (WEA 12)	18:02	13	07:28 (WEA 11)	19:56	41	08:04 (18B)	20:46	22	06:32 (WEA 03)	21:28		
7	08:21			07:46		08:33 (WEA 09)	06:49		07:13 (WEA 11)	06:39		07:15 (15B)	05:37		06:11 (11B)	04:59		05:39 (13B)
	16:22			17:13	28	09:05 (WEA 12)	18:04	16	07:29 (WEA 11)	19:57	40	08:04 (18B)	20:48	20	06:31 (WEA 03)	21:29	3	05:42 (13B)
8	08:20			07:44		08:34 (WEA 09)	06:47		07:12 (WEA 11)	06:37		07:15 (15B)	05:35		06:11 (11B)	04:58		05:38 (13B)
	16:23			17:15	19	09:02 (WEA 12)	18:06	18	07:30 (WEA 11)	19:59	39	08:05 (18B)	20:49	18	06:29 (WEA 03)	21:30	6	05:44 (13B)
9	08:20			07:42		08:21 (WEA 13)	06:45		07:11 (WEA 11)	06:34		07:16 (15B)	05:33		06:12 (11B)	04:58		05:36 (13B)
	16:24			17:17	14	08:42 (WEA 09)	18:08	20	07:31 (WEA 11)	20:01	38	08:05 (18B)	20:51	16	06:28 (WEA 03)	21:31	9	05:45 (13B)
10	08:19			07:41		08:19 (WEA 13)	06:43		07:11 (WEA 11)	06:32		07:18 (15B)	05:32		06:13 (11B)	04:57		05:36 (13B)
	16:26			17:19	15	08:34 (WEA 13)	18:09	20	07:31 (WEA 11)	20:02	35	08:05 (18B)	20:52	10	06:23 (11B)	21:32	10	05:46 (13B)
11	08:19			07:39		08:04 (29B)	06:41		07:09 (WEA 11)	06:30		07:38 (18B)	05:30		06:14 (11B)	04:57		05:36 (13B)
	16:27			17:21	24	08:36 (WEA 13)	18:11	21	07:30 (WEA 11)	20:04	27	08:05 (18B)	20:54	6	06:20 (11B)	21:33	11	05:47 (13B)
12	08:18			07:37		08:02 (29B)	06:38		07:10 (WEA 11)	06:28		07:37 (18B)	05:28			04:57		05:35 (13B)
	16:29			17:23	31	08:38 (WEA 13)	18:13	20	07:30 (WEA 11)	20:06	27	08:04 (18B)	20:56			21:33	12	05:47 (13B)
13	08:18			07:35		08:00 (29B)	06:36		07:10 (WEA 11)	06:25		07:37 (18B)	05:27			04:56		05:35 (13B)
	16:30			17:24	35	08:39 (WEA 13)	18:15	21	07:31 (19B)	20:07	27	08:04 (18B)	20:57			21:34	13	05:48 (13B)
14	08:17			07:33		08:00 (29B)	06:34		07:05 (20B)	06:23		06:50 (WEA 02)	05:25			04:56		05:35 (13B)
	16:32			17:26	38	08:40 (WEA 13)	18:16	23	07:31 (19B)	20:09	36	08:03 (18B)	20:59			21:34	13	05:48 (13B)
15	08:16			07:31		08:00 (29B)	06:31		07:01 (20B)	06:21		06:45 (WEA 02)	05:24			04:56		05:35 (13B)
	16:33			17:28	39	08:41 (WEA 13)	18:18	29	07:31 (19B)	20:11	49	08:02 (18B)	21:00			21:35	14	05:49 (13B)
16	08:15			07:29		08:01 (29B)	06:29		07:00 (20B)	06:19		06:43 (WEA 02)	05:22			04:56		05:35 (13B)
	16:35			17:30	38	08:41 (WEA 13)	18:20	32	07:32 (19B)	20:13	54	08:01 (18B)	21:02			21:36	14	05:49 (13B)
17	08:14		08:52 (WEA 12)	07:27		08:02 (29B)	06:27		06:58 (20B)	06:17		06:42 (WEA 02)	05:21			04:56		05:35 (13B)
	16:36	5	08:57 (WEA 12)	17:32	37	08:42 (WEA 13)	18:22	31	07:31 (19B)	20:14	56	08:00 (18B)	21:03			21:36	15	05:50 (13B)
18	08:13		08:50 (WEA 12)	07:25		08:11 (WEA 13)	06:25		06:58 (20B)	06:14		06:40 (WEA 02)	05:19		05:46 (6B)	04:56		05:35 (13B)
	16:38	10	09:00 (WEA 12)	17:34	31	08:42 (WEA 13)	18:23	31	07:30 (19B)	20:16	55	07:58 (18B)	21:05	1	05:47 (6B)	21:36	15	05:50 (13B)
19	08:12		08:47 (WEA 12)	07:24		08:11 (WEA 13)	06:22		06:58 (20B)	06:12		06:39 (WEA 02)	05:18		05:44 (6B)	04:56		05:35 (13B)
	16:39	14	09:01 (WEA 12)	17:35	31	08:42 (WEA 13)	18:25	29	07:30 (19B)	20:18	51	07:55 (18B)	21:06	4	05:48 (6B)	21:37	15	05:50 (13B)
20	08:11		08:47 (WEA 12)	07:21		08:10 (WEA 13)	06:20		06:59 (20B)	06:10		06:38 (WEA 02)	05:16		05:43 (6B)	04:56		05:35 (13B)
	16:41	16	09:03 (WEA 12)	17:37	31	08:41 (WEA 13)	18:27	26	07:29 (19B)	20:19	47	07:52 (18B)	21:08	6	05:49 (6B)	21:37	15	05:50 (13B)
21	08:10		08:46 (WEA 12)	07:19		08:10 (WEA 13)	06:18		06:59 (20B)	06:08		06:37 (WEA 02)	05:15		05:42 (6B)	04:56		05:35 (13B)
	16:43	18	09:04 (WEA 12)	17:39	31	08:41 (WEA 13)	18:28	20	07:26 (19B)	20:21	39	07:16 (14B)	21:09	7	05:49 (6B)	21:37	15	05:50 (13B)
22	08:09		08:46 (WEA 12)	07:17		08:10 (WEA 13)	06:15		07:01 (20B)	06:06		06:37 (WEA 02)	05:14		05:41 (6B)	04:56		05:36 (13B)
	16:44	20	09:06 (WEA 12)	17:41	31	08:41 (WEA 13)	18:30	10	07:23 (19B)	20:23	38	07:15 (14B)	21:10	9	05:50 (6B)	21:38	15	05:51 (13B)
23	08:08		08:45 (WEA 12)	07:15		08:11 (WEA 13)	06:13			06:04		06:37 (WEA 02)	05:12		05:40 (6B)	04:56		05:36 (13B)
	16:46	21	09:06 (WEA 12)	17:43	29	08:40 (WEA 13)	18:32			20:24	38	07:15 (14B)	21:12	10	05:50 (6B)	21:38	15	05:51 (13B)
24	08:07		08:35 (WEA 09)	07:13		08:12 (WEA 13)	06:11			06:02		06:25 (WEA 03)	05:11		05:39 (6B)	04:57		05:36 (13B)
	16:48	27	09:07 (WEA 12)	17:45	28	08:40 (WEA 13)	18:34			20:26	40	07:13 (14B)	21:13	11	05:50 (6B)	21:38	15	05:51 (13B)
25	08:05		08:33 (WEA 09)	07:11		08:12 (WEA 13)	06:08			06:00		06:23 (WEA 03)	05:10		05:39 (6B)	04:57		05:37 (13B)
	16:50	33	09:08 (WEA 12)	17:46	27	08:39 (WEA 13)	18:35			20:28	43	07:12 (14B)	21:15	12	05:51 (6B)	21:38	15	05:52 (13B)
26	08:04		08:31 (WEA 09)	07:09		08:13 (WEA 13)	06:06		06:29 (WEA 10)	05:58		06:22 (WEA 03)	05:09		05:39 (6B)	04:57		05:37 (13B)
	16:51	38	09:09 (WEA 12)	17:48	25	08:38 (WEA 13)	18:37	8	06:37 (WEA 10)	20:29	43	07:11 (14B)	21:16	11	05:50 (6B)	21:38	14	05:51 (13B)
27	08:03		08:31 (WEA 09)	07:07		08:14 (WEA 13)	06:04		06:26 (WEA 10)	05:56		06:20 (WEA 03)	05:08		05:40 (6B)	04:58		05:37 (13B)
	16:53	39	09:10 (WEA 12)	17:50	21	08:35 (WEA 13)	18:39	12	06:38 (WEA 10)	20:31	33	06:58 (WEA 02)	21:17	10	05:50 (6B)	21:38	14	05:51 (13B)
28	08:02		08:30 (WEA 09)	07:05		08:16 (WEA 13)	06:02		06:24 (WEA 10)	05:54		06:18 (WEA 03)	05:07		05:40 (6B)	04:58		05:38 (13B)
	16:55	39	09:09 (WEA 12)	17:52	18	08:34 (WEA 13)	18:40	15	06:39 (WEA 10)	20:33	34	06:57 (WEA 02)	21:18	10	05:50 (6B)	21:38	13	05:51 (13B)
29	08:00		08:30 (WEA 09)				06:59		07:22 (WEA 10)	05:52		06:16 (WEA 03)	05:06		05:41 (6B)	04:59		05:38 (13B)
	16:57	40	09:10 (WEA 12)				19:42	18	07:40 (WEA 10)	20:34	33	06:55 (WEA 02)	21:20	8	05:49 (6B)	21:38	13	05:51 (13B)
30	07:59		08:29 (WEA 09)				06:57		07:21 (WEA 10)	05:50		06:14 (11B)	05:05		05:41 (6B)	04:59		05:39 (13B)
	16:59	41	09:10 (WEA 12)				19:44	19	07:40 (WEA 10)	20:36	32	06:53 (WEA 02)	21:21	7	05:48 (6B)	21:37	12	05:51 (13B)
31	07:57		08:29 (WEA 09)				06:55		07:20 (WEA 10)				05:04		05:42 (6B)			
	17:00	41	09:10 (WEA 12)				19:45	20	07:40 (WEA 10)				21:22	5	05:47 (6B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		402			850			494			1143			315			307	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,63			0,66			0,70			0,72			0,71			0,70	
Gesamte Reduktion		0,13			0,20			0,18			0,24			0,29			0,23	
Met.wahrsch.Beschattung		52			168			89			279			92			71	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM) Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 37 - Reinstedt - Fußballplatz

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember
1	05:00		05:40 (13B)	05:36		06:26	07:37 (18B)	07:14	07:49 (WEA 11)	07:08	07:48 (WEA 13)	07:58
	21:37	11	05:51 (13B)	21:06		20:04	08:04 (18B)	18:55	08:09 (19B)	16:49	08:03 (WEA 13)	16:09
2	05:01		05:40 (13B)	05:38	06:24 (11B)	06:27	07:16 (15B)	07:16	07:48 (WEA 11)	07:09	07:52 (WEA 13)	08:00
	21:37	10	05:50 (13B)	21:04	7 06:31 (11B)	20:02	35 08:03 (18B)	18:53	21 08:09 (WEA 11)	16:47	14 08:13 (WEA 09)	16:08
3	05:01		05:41 (13B)	05:39	06:23 (11B)	06:29	07:14 (15B)	07:18	07:48 (WEA 11)	07:11	08:03 (WEA 09)	08:01
	21:36	9	05:50 (13B)	21:02	10 06:33 (11B)	19:59	37 08:03 (18B)	18:50	21 08:09 (WEA 11)	16:45	22 08:33 (WEA 12)	16:08
4	05:02		05:42 (13B)	05:41	06:22 (11B)	06:30	07:12 (15B)	07:19	07:48 (WEA 11)	07:13	08:02 (WEA 09)	08:03
	21:36	8	05:50 (13B)	21:01	16 06:38 (WEA 03)	19:57	39 08:02 (18B)	18:48	20 08:08 (WEA 11)	16:44	29 08:35 (WEA 12)	16:07
5	05:03		05:43 (13B)	05:42	06:21 (11B)	06:32	07:12 (15B)	07:21	07:48 (WEA 11)	07:15	08:01 (WEA 09)	08:04
	21:36	5	05:48 (13B)	20:59	20 06:41 (WEA 03)	19:55	40 08:01 (18B)	18:46	19 08:07 (WEA 11)	16:42	35 08:37 (WEA 12)	16:07
6	05:04			05:44	06:20 (11B)	06:34	07:11 (15B)	07:23	07:49 (WEA 11)	07:17	08:01 (WEA 09)	08:05
	21:35			20:57	21 06:41 (WEA 03)	19:53	41 07:59 (18B)	18:43	17 08:06 (WEA 11)	16:40	37 08:38 (WEA 12)	16:06
7	05:05			05:46	06:21 (11B)	06:35	07:11 (15B)	07:24	07:49 (WEA 11)	07:18	08:00 (WEA 09)	08:06
	21:34			20:55	22 06:43 (WEA 03)	19:50	41 07:58 (18B)	18:41	15 08:04 (WEA 11)	16:38	39 08:39 (WEA 12)	16:06
8	05:06			05:47	06:20 (11B)	06:37	07:11 (15B)	07:26	07:51 (WEA 11)	07:20	08:00 (WEA 09)	08:08
	21:34			20:53	23 06:43 (WEA 03)	19:48	38 07:56 (18B)	18:39	11 08:02 (WEA 11)	16:37	40 08:40 (WEA 12)	16:05
9	05:07			05:49	06:21 (11B)	06:39	07:12 (15B)	07:28	07:55 (WEA 11)	07:22	08:00 (WEA 09)	08:09
	21:33			20:52	23 06:44 (WEA 03)	19:46	32 07:53 (18B)	18:37	3 07:58 (WEA 11)	16:35	41 08:41 (WEA 12)	16:05
10	05:08			05:50	06:20 (11B)	06:40	07:14 (WEA 10)	07:29		07:24	08:00 (WEA 09)	08:10
	21:32			20:50	23 06:43 (WEA 03)	19:43	19 07:33 (WEA 10)	18:34		16:34	41 08:41 (WEA 12)	16:05
11	05:09			05:52	06:21 (11B)	06:42	07:12 (WEA 10)	07:31		07:25	08:01 (WEA 09)	08:11
	21:32			20:48	23 06:44 (WEA 03)	19:41	20 07:32 (WEA 10)	18:32		16:32	41 08:42 (WEA 12)	16:05
12	05:10		05:51 (6B)	05:53	06:22 (11B)	06:43	07:13 (WEA 10)	07:33	08:54 (WEA 13)	07:27	08:01 (WEA 09)	08:12
	21:31	4	05:55 (6B)	20:46	26 06:58 (WEA 02)	19:39	19 07:32 (WEA 10)	18:30	7 09:01 (WEA 13)	16:30	41 08:42 (WEA 12)	16:05
13	05:11		05:50 (6B)	05:55	06:24 (11B)	06:45	07:12 (WEA 10)	07:34	08:50 (WEA 13)	07:29	08:02 (WEA 09)	08:13
	21:30	6	05:56 (6B)	20:44	32 07:02 (WEA 02)	19:37	19 07:31 (WEA 10)	18:28	15 09:05 (WEA 13)	16:29	40 08:42 (WEA 12)	16:05
14	05:12		05:49 (6B)	05:57	06:24 (WEA 03)	06:47	07:13 (WEA 10)	07:36	08:48 (WEA 13)	07:31	08:02 (WEA 09)	08:14
	21:29	8	05:57 (6B)	20:42	34 07:03 (WEA 02)	19:34	18 07:31 (WEA 10)	18:26	20 09:08 (WEA 13)	16:27	39 08:41 (WEA 12)	16:05
15	05:13		05:49 (6B)	05:58	06:26 (WEA 03)	06:48	07:13 (WEA 10)	07:38	08:46 (WEA 13)	07:32	08:03 (WEA 09)	08:15
	21:28	9	05:58 (6B)	20:40	34 07:05 (WEA 02)	19:32	16 07:29 (WEA 10)	18:23	23 09:09 (WEA 13)	16:26	38 08:41 (WEA 12)	16:05
16	05:14		05:48 (6B)	06:00	06:27 (WEA 03)	06:50	07:15 (WEA 10)	07:40	08:44 (WEA 13)	07:34	08:04 (WEA 09)	08:16
	21:27	10	05:58 (6B)	20:38	39 07:15 (14B)	19:30	13 07:28 (WEA 10)	18:21	25 09:09 (WEA 13)	16:25	37 08:41 (WEA 12)	16:05
17	05:15		05:48 (6B)	06:01	06:29 (WEA 03)	06:51	07:17 (WEA 10)	07:41	08:43 (WEA 13)	07:36	08:06 (WEA 09)	08:17
	21:26	11	05:59 (6B)	20:36	42 07:18 (14B)	19:27	9 07:26 (WEA 10)	18:19	27 09:10 (WEA 13)	16:23	33 08:41 (WEA 12)	16:05
18	05:17		05:48 (6B)	06:03	06:30 (WEA 03)	06:53		07:43	08:43 (WEA 13)	07:38	08:09 (WEA 09)	08:17
	21:25	11	05:59 (6B)	20:34	43 07:19 (14B)	19:25		18:17	28 09:11 (WEA 13)	16:22	27 08:41 (WEA 12)	16:05
19	05:18		05:48 (6B)	06:05	06:32 (WEA 03)	06:55		07:45	08:42 (WEA 13)	07:39	08:20 (WEA 12)	08:18
	21:24	12	06:00 (6B)	20:32	39 07:20 (14B)	19:23		18:15	30 09:12 (WEA 13)	16:21	21 08:41 (WEA 12)	16:06
20	05:19		05:49 (6B)	06:06	06:43 (WEA 02)	06:56		07:46	08:42 (WEA 13)	07:41	08:21 (WEA 12)	08:19
	21:23	11	06:00 (6B)	20:30	37 07:20 (14B)	19:20		18:13	30 09:12 (WEA 13)	16:19	20 08:41 (WEA 12)	16:06
21	05:21		05:50 (6B)	06:08	06:43 (WEA 02)	06:58	07:48 (20B)	07:48	08:42 (WEA 13)	07:43	08:21 (WEA 12)	08:19
	21:21	10	06:00 (6B)	20:28	38 07:21 (14B)	19:18	3 07:51 (20B)	18:11	30 09:12 (WEA 13)	16:18	18 08:39 (WEA 12)	16:06
22	05:22		05:51 (6B)	06:09	06:42 (WEA 02)	07:00	07:45 (20B)	07:50	08:40 (WEA 13)	07:44	08:23 (WEA 12)	08:20
	21:20	8	05:59 (6B)	20:26	39 07:21 (14B)	19:16	18 08:11 (19B)	18:09	31 09:11 (WEA 13)	16:17	16 08:39 (WEA 12)	16:07
23	05:23		05:53 (6B)	06:11	06:43 (WEA 02)	07:01	07:43 (20B)	07:52	08:40 (WEA 13)	07:46	08:24 (WEA 12)	08:20
	21:19	7	06:00 (6B)	20:24	49 07:58 (18B)	19:13	24 08:12 (19B)	18:07	31 09:11 (WEA 13)	16:16	14 08:38 (WEA 12)	16:07
24	05:25		05:54 (6B)	06:13	06:42 (WEA 02)	07:03	07:42 (20B)	07:53	08:41 (WEA 13)	07:48	08:27 (WEA 12)	08:21
	21:18	5	05:59 (6B)	20:21	54 08:00 (18B)	19:11	28 08:13 (19B)	18:05	30 09:11 (WEA 13)	16:15	10 08:37 (WEA 12)	16:08
25	05:26		05:55 (6B)	06:14	06:43 (WEA 02)	07:04	07:41 (20B)	06:55	07:31 (29B)	07:49	08:30 (WEA 12)	08:21
	21:16	3	05:58 (6B)	20:19	55 08:01 (18B)	19:09	30 08:13 (19B)	17:03	37 08:11 (WEA 13)	16:14	5 08:35 (WEA 12)	16:09
26	05:27			06:16	06:44 (WEA 02)	07:06	07:41 (20B)	06:57	07:30 (29B)	07:51		08:21
	21:15			20:17	55 08:02 (18B)	19:06	30 08:13 (19B)	17:01	38 08:11 (WEA 13)	16:13		16:09
27	05:29			06:18	06:45 (WEA 02)	07:08	07:42 (20B)	06:59	07:30 (29B)	07:52		08:22
	21:13			20:15	53 08:03 (18B)	19:04	31 08:13 (19B)	16:59	38 08:10 (WEA 13)	16:12		16:10
28	05:30			06:19	06:46 (WEA 02)	07:09	07:42 (20B)	07:01	07:29 (29B)	07:54		08:22
	21:12			20:13	48 08:03 (18B)	19:02	30 08:12 (19B)	16:57	37 08:09 (WEA 13)	16:11		16:11
29	05:32			06:21	07:06 (14B)	07:11	07:44 (20B)	07:02	07:30 (29B)	07:55		08:22
	21:10			20:11	33 08:04 (18B)	18:59	27 08:12 (19B)	16:55	34 08:08 (WEA 13)	16:10		16:12
30	05:33			06:22	07:38 (18B)	07:13	07:50 (WEA 11)	07:04	07:32 (29B)	07:57		08:22
	21:09			20:08	27 08:05 (18B)	18:57	21 08:11 (19B)	16:53	29 08:07 (WEA 13)	16:10		16:12
31	05:35			06:24	07:37 (18B)			07:06	07:33 (29B)			08:22
	21:07			20:06	27 08:04 (18B)			16:51	23 08:05 (WEA 13)			16:13
Sonnenscheinstunden	501			453		381		332		267		245
astr.max.mögl.Beschattung		158		992		705		710		713		
Red.Sonnenscheinwahrsch.		0,40		0,43		0,34		0,28		0,22		
Reduktion Betriebsdauer		0,96		0,96		0,96		0,96		0,96		
Reduktion Windrichtung		0,70		0,72		0,71		0,67		0,63		
Gesamte Reduktion		0,27		0,29		0,23		0,18		0,13		
Met.wahrsch.Beschattung		42		291		163		128		95		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 38 - Reinstedt - Neu-Seeland Agrar

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56		08:29 (WEA 12)	07:03		07:59 (WEA 13)	06:52		07:40 (18B)	05:48			05:03		05:31 (10B)
	16:15			17:02	21	08:50 (WEA 12)	17:54	18	08:17 (WEA 13)	19:47	19	07:59 (18B)	20:38			21:23	10	05:41 (10B)
2	08:22			07:54		08:29 (WEA 12)	07:00		08:00 (WEA 13)	06:50		07:40 (18B)	05:46			05:02		05:31 (10B)
	16:16			17:04	21	08:50 (WEA 12)	17:55	15	08:15 (WEA 13)	19:49	20	08:00 (18B)	20:39			21:24	12	05:43 (10B)
3	08:22			07:53		08:28 (WEA 12)	06:58		08:04 (WEA 13)	06:48		07:38 (18B)	05:44			05:01		05:30 (10B)
	16:17			17:06	22	08:50 (WEA 12)	17:57	8	08:12 (WEA 13)	19:51	21	07:59 (18B)	20:41			21:25	13	05:43 (10B)
4	08:22			07:51		08:29 (WEA 12)	06:56			06:46		07:39 (18B)	05:42			05:01		05:30 (10B)
	16:18			17:08	22	08:51 (WEA 12)	17:59			19:52	19	07:58 (18B)	20:43			21:26	13	05:43 (10B)
5	08:22			07:49		08:29 (WEA 12)	06:54			06:43		07:39 (18B)	05:40			05:00		05:30 (10B)
	16:19			17:10	22	08:51 (WEA 12)	18:01			19:54	19	07:58 (18B)	20:44			21:27	14	05:44 (10B)
6	08:21			07:48		08:29 (WEA 12)	06:52			06:41		07:39 (18B)	05:39			04:59		05:30 (10B)
	16:20			17:11	22	08:51 (WEA 12)	18:02			19:56	18	07:57 (18B)	20:46			21:28	14	05:44 (10B)
7	08:21			07:46		08:29 (WEA 12)	06:49			06:39		07:13 (14B)	05:37		06:02 (6B)	04:59		05:30 (10B)
	16:22			17:13	21	08:50 (WEA 12)	18:04			19:57	21	07:55 (18B)	20:48	1	06:03 (6B)	21:29	14	05:44 (10B)
8	08:20			07:44		08:30 (WEA 12)	06:47			06:37		07:10 (14B)	05:35		06:00 (6B)	04:58		05:31 (10B)
	16:23			17:15	20	08:50 (WEA 12)	18:06			19:59	22	07:53 (18B)	20:49	4	06:04 (6B)	21:30	14	05:45 (10B)
9	08:20			07:42		08:30 (WEA 12)	06:45			06:34		07:09 (14B)	05:33		05:59 (6B)	04:58		05:30 (10B)
	16:24			17:17	19	08:49 (WEA 12)	18:08			20:01	20	07:51 (18B)	20:51	6	06:05 (6B)	21:31	15	05:45 (10B)
10	08:19			07:41		08:32 (WEA 12)	06:43			06:32		06:55 (WEA 02)	05:32		05:57 (6B)	04:57		05:31 (10B)
	16:26			17:19	17	08:49 (WEA 12)	18:09			20:02	22	07:22 (14B)	20:52	7	06:04 (6B)	21:32	14	05:45 (10B)
11	08:19			07:39		08:34 (WEA 12)	06:41			06:30		06:53 (WEA 02)	05:30		05:55 (6B)	04:57		05:31 (10B)
	16:27			17:21	13	08:47 (WEA 12)	18:11			20:04	27	07:22 (14B)	20:54	9	06:04 (6B)	21:33	15	05:46 (10B)
12	08:18			07:37		08:36 (WEA 12)	06:38		07:12 (19B)	06:28		06:50 (WEA 02)	05:28		05:55 (6B)	04:57		05:31 (10B)
	16:29			17:23	9	08:45 (WEA 12)	18:13	8	07:20 (19B)	20:06	30	07:21 (14B)	20:56	12	06:07 (13B)	21:33	14	05:45 (10B)
13	08:18			07:35			06:36		07:10 (19B)	06:25		06:48 (WEA 02)	05:27		05:55 (6B)	04:56		05:31 (10B)
	16:30			17:24			18:15	12	07:22 (19B)	20:07	33	07:21 (14B)	20:57	12	06:07 (13B)	21:34	15	05:46 (10B)
14	08:17			07:33		08:08 (WEA 13)	06:34		07:08 (19B)	06:23		06:47 (WEA 02)	05:25		05:55 (13B)	04:56		05:32 (10B)
	16:32			17:26	3	08:11 (WEA 13)	18:16	14	07:22 (19B)	20:09	32	07:20 (14B)	20:59	14	06:09 (13B)	21:34	14	05:46 (10B)
15	08:16			07:31		08:03 (WEA 13)	06:31		07:08 (19B)	06:21		06:47 (WEA 02)	05:24		05:55 (13B)	04:56		05:32 (10B)
	16:33			17:28	12	08:15 (WEA 13)	18:18	14	07:22 (19B)	20:11	32	07:19 (14B)	21:00	15	06:10 (13B)	21:35	14	05:46 (10B)
16	08:15			07:29		08:01 (WEA 13)	06:29		07:08 (19B)	06:19		06:46 (WEA 02)	05:22		05:54 (13B)	04:56		05:32 (10B)
	16:35			17:30	17	08:18 (WEA 13)	18:20	14	07:22 (19B)	20:13	29	07:17 (14B)	21:02	15	06:09 (13B)	21:36	14	05:46 (10B)
17	08:14			07:27		08:00 (WEA 13)	06:27		07:07 (19B)	06:17		06:46 (WEA 02)	05:21		05:54 (13B)	04:56		05:32 (10B)
	16:36			17:32	19	08:19 (WEA 13)	18:22	14	07:21 (19B)	20:14	20	07:06 (WEA 02)	21:03	16	06:10 (13B)	21:36	15	05:47 (10B)
18	08:13			07:26		07:59 (WEA 13)	06:25		07:08 (19B)	06:15		06:46 (WEA 02)	05:19		05:54 (13B)	04:56		05:33 (10B)
	16:38			17:34	21	08:20 (WEA 13)	18:23	12	07:20 (19B)	20:16	20	07:06 (WEA 02)	21:05	17	06:11 (13B)	21:36	14	05:47 (10B)
19	08:12			07:24		07:58 (WEA 13)	06:22		07:09 (19B)	06:12		06:47 (WEA 02)	05:18		05:53 (13B)	04:56		05:33 (10B)
	16:39			17:35	23	08:21 (WEA 13)	18:25	10	07:19 (19B)	20:18	18	07:05 (WEA 02)	21:06	17	06:10 (13B)	21:37	14	05:47 (10B)
20	08:11			07:22		07:56 (WEA 13)	06:20		07:12 (19B)	06:10		06:46 (WEA 02)	05:16		05:53 (13B)	04:56		05:33 (10B)
	16:41			17:37	25	08:21 (WEA 13)	18:27	4	07:16 (19B)	20:19	17	07:03 (WEA 02)	21:08	17	06:10 (13B)	21:37	14	05:47 (10B)
21	08:10			07:19		07:56 (WEA 13)	06:18			06:08		06:47 (WEA 02)	05:15		05:54 (13B)	04:56		05:33 (10B)
	16:43			17:39	25	08:21 (WEA 13)	18:28			20:21	15	07:02 (WEA 02)	21:09	16	06:10 (13B)	21:37	14	05:47 (10B)
22	08:09			07:17		07:56 (WEA 13)	06:15			06:06		06:49 (WEA 02)	05:14		05:54 (13B)	04:56		05:34 (10B)
	16:45			17:41	25	08:21 (WEA 13)	18:30			20:23	11	07:00 (WEA 02)	21:10	16	06:10 (13B)	21:38	14	05:48 (10B)
23	08:08			07:15		07:56 (WEA 13)	06:13			06:04		06:51 (WEA 02)	05:12		05:55 (13B)	04:56		05:34 (10B)
	16:46			17:43	26	08:22 (WEA 13)	18:32			20:24	6	06:57 (WEA 02)	21:12	15	06:10 (13B)	21:38	14	05:48 (10B)
24	08:07			07:13		07:56 (WEA 13)	06:11			06:02			05:11		05:55 (13B)	04:57		05:34 (10B)
	16:48			17:45	26	08:22 (WEA 13)	18:34			20:26			21:13	15	06:10 (13B)	21:38	14	05:48 (10B)
25	08:06			07:11		07:56 (WEA 13)	06:08			06:00			05:10		05:56 (13B)	04:57		05:34 (10B)
	16:50			17:46	25	08:21 (WEA 13)	18:35			20:28			21:15	14	06:10 (13B)	21:38	15	05:49 (10B)
26	08:04		08:37 (WEA 12)	07:09		07:57 (WEA 13)	06:06			05:58			05:09		05:57 (13B)	04:57		05:34 (10B)
	16:51	2	08:39 (WEA 12)	17:48	24	08:21 (WEA 13)	18:37			20:29			21:16	12	06:09 (13B)	21:38	14	05:48 (10B)
27	08:03		08:34 (WEA 12)	07:07		07:56 (WEA 13)	06:04			05:56			05:08		05:57 (13B)	04:58		05:34 (10B)
	16:53	9	08:43 (WEA 12)	17:50	23	08:19 (WEA 13)	18:39			20:31			21:17	11	06:08 (13B)	21:38	14	05:48 (10B)
28	08:02		08:32 (WEA 12)	07:05		07:57 (WEA 13)	06:02		06:47 (18B)	05:54			05:07		05:35 (10B)	04:58		05:35 (10B)
	16:55	13	08:45 (WEA 12)	17:52	21	08:18 (WEA 13)	18:40	8	06:55 (18B)	20:33			21:18	13	06:08 (13B)	21:38	14	05:49 (10B)
29	08:00		08:31 (WEA 12)				06:59		07:44 (18B)	05:52			05:06		05:34 (10B)	04:59		05:34 (10B)
	16:57	16	08:47 (WEA 12)				19:42	13	07:57 (18B)	20:34			21:20	11	06:06 (13B)	21:38	15	05:49 (10B)
30	07:59		08:30 (WEA 12)				06:57		07:42 (18B)	05:50			05:05		05:33 (10B)	04:59		05:35 (10B)
	16:59	18	08:48 (WEA 12)				19:44	16	07:58 (18B)	20:36			21:21	9	06:04 (13B)	21:37	14	05:49 (10B)
31	07:57		08:29 (WEA 12)				06:55		07:41 (18B)				05:04		05:32 (10B)			
	17:00	19	08:48 (WEA 12)				19:45	18	07:59 (18B)				21:22	9	05:41 (10B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		77			544			198			491			303			418	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,65			0,66			0,70			0,72			0,71			0,70	
Gesamte Reduktion		0,13			0,20			0,18			0,25			0,29			0,23	
Met.wahrsch.Beschattung		10			109			36			121			88			97	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 38 - Reinstedt - Neu-Seeland Agrar

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember
1	05:00		05:35 (10B)	05:36		06:05 (6B)	06:26	06:52 (WEA 02)	07:14	07:50 (19B)	07:08	08:01 (WEA 12)	07:58
	21:37	15	05:50 (10B)	21:06	11	06:16 (13B)	20:04	27 07:21 (14B)	18:55	10 08:00 (19B)	16:49	17 08:18 (WEA 12)	16:09
2	05:01		05:35 (10B)	05:38		06:06 (6B)	06:27	06:53 (WEA 02)	07:16	07:52 (19B)	07:09	08:00 (WEA 12)	08:00
	21:37	14	05:49 (10B)	21:04	8	06:14 (6B)	20:02	21 07:20 (14B)	18:53	5 07:57 (19B)	16:47	19 08:19 (WEA 12)	16:08
3	05:01		05:36 (10B)	05:39		06:08 (6B)	06:29	07:07 (14B)	07:18		07:11	07:59 (WEA 12)	08:01
	21:36	14	05:50 (10B)	21:02	7	06:15 (6B)	19:59	20 07:49 (18B)	18:50		16:45	20 08:19 (WEA 12)	16:08
4	05:02		05:36 (10B)	05:41		06:09 (6B)	06:30	07:07 (14B)	07:19		07:13	07:59 (WEA 12)	08:03
	21:36	14	05:50 (10B)	21:01	5	06:14 (6B)	19:57	22 07:50 (18B)	18:48		16:44	21 08:20 (WEA 12)	16:07
5	05:03		05:36 (10B)	05:42		06:11 (6B)	06:32	07:09 (14B)	07:21		07:15	07:59 (WEA 12)	08:04
	21:36	14	05:50 (10B)	20:59	3	06:14 (6B)	19:55	22 07:52 (18B)	18:46		16:42	21 08:20 (WEA 12)	16:07
6	05:04		05:36 (10B)	05:44			06:34	07:35 (18B)	07:23		07:17	07:59 (WEA 12)	08:05
	21:35	14	05:50 (10B)	20:57			19:53	17 07:52 (18B)	18:43		16:40	22 08:21 (WEA 12)	16:06
7	05:05		05:36 (10B)	05:46			06:35	07:34 (18B)	07:24		07:18	07:59 (WEA 12)	08:06
	21:34	14	05:50 (10B)	20:55			19:50	19 07:53 (18B)	18:41		16:38	22 08:21 (WEA 12)	16:06
8	05:06		05:37 (10B)	05:47			06:37	07:33 (18B)	07:26		07:20	07:59 (WEA 12)	08:08
	21:34	13	05:50 (10B)	20:53			19:48	19 07:52 (18B)	18:39		16:37	22 08:21 (WEA 12)	16:05
9	05:07		05:37 (10B)	05:49			06:39	07:33 (18B)	07:28		07:22	08:00 (WEA 12)	08:09
	21:33	13	05:50 (10B)	20:52			19:46	20 07:53 (18B)	18:37		16:35	21 08:21 (WEA 12)	16:05
10	05:08		05:38 (10B)	05:50			06:40	07:33 (18B)	07:29		07:24	08:00 (WEA 12)	08:10
	21:32	12	05:50 (10B)	20:50			19:43	20 07:53 (18B)	18:34		16:34	20 08:20 (WEA 12)	16:05
11	05:09		05:39 (10B)	05:52			06:42	07:32 (18B)	07:31	08:35 (WEA 13)	07:25	08:01 (WEA 12)	08:11
	21:32	11	05:50 (10B)	20:48			19:41	20 07:52 (18B)	18:32	12 08:47 (WEA 13)	16:32	19 08:20 (WEA 12)	16:05
12	05:10		05:40 (10B)	05:53			06:43	07:33 (18B)	07:33	08:33 (WEA 13)	07:27	08:02 (WEA 12)	08:12
	21:31	10	05:50 (10B)	20:46			19:39	18 07:51 (18B)	18:30	16 08:49 (WEA 13)	16:30	17 08:19 (WEA 12)	16:05
13	05:11		05:41 (10B)	05:55			06:45	07:33 (18B)	07:34	08:31 (WEA 13)	07:29	08:03 (WEA 12)	08:13
	21:30	8	05:49 (10B)	20:44			19:37	16 07:49 (18B)	18:28	20 08:51 (WEA 13)	16:29	16 08:19 (WEA 12)	16:05
14	05:12		05:42 (10B)	05:57			06:47	07:34 (18B)	07:36	08:30 (WEA 13)	07:31	08:04 (WEA 12)	08:14
	21:29	11	06:14 (13B)	20:42			19:34	14 07:48 (18B)	18:26	22 08:52 (WEA 13)	16:27	13 08:17 (WEA 12)	16:05
15	05:13		05:43 (10B)	05:58			06:48	07:36 (18B)	07:38	08:29 (WEA 13)	07:33	08:06 (WEA 12)	08:15
	21:28	12	06:15 (13B)	20:40			19:32	9 07:45 (18B)	18:23	24 08:53 (WEA 13)	16:26	9 08:15 (WEA 12)	16:05
16	05:14		06:06 (13B)	06:00			06:50		07:40	08:28 (WEA 13)	07:34	08:10 (WEA 12)	08:16
	21:27	10	06:16 (13B)	20:38			19:30		18:21	24 08:52 (WEA 13)	16:25	1 08:11 (WEA 12)	16:05
17	05:15		06:05 (13B)	06:01			06:51		07:41	08:27 (WEA 13)	07:36		08:17
	21:26	12	06:17 (13B)	20:36			19:27		18:19	26 08:53 (WEA 13)	16:23		16:05
18	05:17		06:06 (13B)	06:03			06:53		07:43	08:27 (WEA 13)	07:38		08:17
	21:25	13	06:19 (13B)	20:34			19:25		18:17	26 08:53 (WEA 13)	16:22		16:05
19	05:18		06:05 (13B)	06:05			06:55		07:45	08:27 (WEA 13)	07:39		08:18
	21:24	14	06:19 (13B)	20:32			19:23		18:15	26 08:53 (WEA 13)	16:21		16:06
20	05:19		06:05 (13B)	06:06		06:56 (WEA 02)	06:56		07:46	08:27 (WEA 13)	07:41		08:19
	21:23	15	06:20 (13B)	20:30	8	07:04 (WEA 02)	19:20		18:13	26 08:53 (WEA 13)	16:20		16:06
21	05:21		06:04 (13B)	06:08		06:54 (WEA 02)	06:58		07:48	08:27 (WEA 13)	07:43		08:19
	21:21	16	06:20 (13B)	20:28	12	07:06 (WEA 02)	19:18		18:11	25 08:52 (WEA 13)	16:18		16:06
22	05:22		06:04 (13B)	06:09		06:52 (WEA 02)	07:00		07:50	08:27 (WEA 13)	07:44		08:20
	21:20	16	06:20 (13B)	20:26	15	07:07 (WEA 02)	19:16		18:09	24 08:51 (WEA 13)	16:17		16:07
23	05:23		06:04 (13B)	06:11		06:51 (WEA 02)	07:01		07:52	08:27 (WEA 13)	07:46		08:20
	21:19	17	06:21 (13B)	20:24	17	07:08 (WEA 02)	19:13		18:07	23 08:50 (WEA 13)	16:16		16:07
24	05:25		06:04 (13B)	06:13		06:50 (WEA 02)	07:03	07:53 (19B)	07:53	08:28 (WEA 13)	07:48		08:21
	21:18	17	06:21 (13B)	20:21	18	07:08 (WEA 02)	19:11	9 08:02 (19B)	18:05	21 08:49 (WEA 13)	16:15		16:08
25	05:26		06:04 (13B)	06:14		06:49 (WEA 02)	07:04	07:51 (19B)	06:55	07:30 (WEA 13)	07:49		08:21
	21:16	16	06:20 (13B)	20:19	20	07:09 (WEA 02)	19:09	12 08:03 (19B)	17:03	18 07:48 (WEA 13)	16:14		16:09
26	05:27		06:04 (13B)	06:16		06:48 (WEA 02)	07:06	07:50 (19B)	06:57	07:31 (WEA 13)	07:51		08:21
	21:15	17	06:21 (13B)	20:17	22	07:16 (14B)	19:06	13 08:03 (19B)	17:01	16 07:47 (WEA 13)	16:13		16:09
27	05:29		06:04 (13B)	06:18		06:48 (WEA 02)	07:08	07:50 (19B)	06:59	07:34 (WEA 13)	07:52		08:22
	21:13	16	06:20 (13B)	20:15	28	07:19 (14B)	19:04	14 08:04 (19B)	16:59	10 07:44 (WEA 13)	16:12		16:10
28	05:30		06:04 (13B)	06:19		06:48 (WEA 02)	07:09	07:49 (19B)	07:01		07:54		08:22
	21:12	16	06:20 (13B)	20:13	31	07:20 (14B)	19:02	14 08:03 (19B)	16:57		16:11		16:11
29	05:32		06:05 (13B)	06:21		06:48 (WEA 02)	07:11	07:49 (19B)	07:02		07:55		08:22
	21:10	15	06:20 (13B)	20:11	32	07:21 (14B)	18:59	14 08:03 (19B)	16:55		16:10		16:12
30	05:33		06:06 (6B)	06:22		06:49 (WEA 02)	07:13	07:49 (19B)	07:04	08:05 (WEA 12)	07:57		08:22
	21:09	13	06:19 (13B)	20:08	33	07:22 (14B)	18:57	13 08:02 (19B)	16:53	10 08:15 (WEA 12)	16:10		16:12
31	05:35		06:06 (6B)	06:24		06:50 (WEA 02)			07:06	08:02 (WEA 12)			08:22
	21:07	12	06:18 (13B)	20:06	30	07:21 (14B)			16:51	14 08:16 (WEA 12)			16:13
Sonnenscheinstunden	501			453			381		332		267		245
astr.max.mögl.Beschattung		424			300			373		398		280	
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34		0,28		0,22	
Reduktion Betriebsdauer		0,96			0,96			0,96		0,96		0,96	
Reduktion Windrichtung		0,71			0,72			0,72		0,67		0,65	
Gesamte Reduktion		0,27			0,29			0,23		0,18		0,14	
Met.wahrsch.Beschattung		115			88			87		72		38	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 39 - Reinstedt - Unterdorf 66a

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56		08:26 (WEA 12)	07:03		07:52 (WEA 13)	06:52		07:36 (18B)	05:48			05:03		05:31 (10B)
	16:15			17:02	17	08:43 (WEA 12)	17:54	22	08:14 (WEA 13)	19:47	17	07:53 (18B)	20:38			21:23	12	05:43 (10B)
2	08:22			07:54		08:25 (WEA 12)	07:00		07:53 (WEA 13)	06:50		07:36 (18B)	05:46			05:02		05:31 (10B)
	16:16			17:04	18	08:43 (WEA 12)	17:55	19	08:12 (WEA 13)	19:49	18	07:54 (18B)	20:39			21:24	13	05:44 (10B)
3	08:22			07:53		08:24 (WEA 12)	06:58		07:54 (WEA 13)	06:48		07:34 (18B)	05:44			05:01		05:31 (10B)
	16:17			17:06	20	08:44 (WEA 12)	17:57	17	08:11 (WEA 13)	19:51	19	07:53 (18B)	20:41			21:25	13	05:44 (10B)
4	08:22			07:51		08:25 (WEA 12)	06:56		07:55 (WEA 13)	06:46		07:34 (18B)	05:42			05:01		05:30 (10B)
	16:18			17:08	20	08:45 (WEA 12)	17:59	13	08:08 (WEA 13)	19:52	19	07:53 (18B)	20:43			21:26	14	05:44 (10B)
5	08:22			07:49		08:24 (WEA 12)	06:54		08:00 (WEA 13)	06:43		07:34 (18B)	05:40			05:00		05:31 (10B)
	16:19			17:10	22	08:46 (WEA 12)	18:01	3	08:03 (WEA 13)	19:54	19	07:53 (18B)	20:44			21:27	14	05:45 (10B)
6	08:21			07:48		08:24 (WEA 12)	06:52			06:41		07:34 (18B)	05:39			04:59		05:30 (10B)
	16:20			17:11	22	08:46 (WEA 12)	18:02			19:56	19	07:53 (18B)	20:46			21:28	14	05:44 (10B)
7	08:21			07:46		08:24 (WEA 12)	06:49			06:39		07:34 (18B)	05:37		06:02 (6B)	04:59		05:31 (10B)
	16:22			17:13	21	08:45 (WEA 12)	18:04			19:57	17	07:51 (18B)	20:48	1	06:03 (6B)	21:29	14	05:45 (10B)
8	08:20			07:44		08:24 (WEA 12)	06:47			06:37		07:09 (14B)	05:35		06:00 (6B)	04:58		05:32 (10B)
	16:23			17:15	21	08:45 (WEA 12)	18:06			19:59	22	07:50 (18B)	20:49	4	06:04 (6B)	21:30	14	05:46 (10B)
9	08:20			07:42		08:24 (WEA 12)	06:45			06:34		07:07 (14B)	05:33		05:59 (6B)	04:58		05:31 (10B)
	16:24			17:17	21	08:45 (WEA 12)	18:08			20:01	23	07:48 (18B)	20:51	5	06:04 (6B)	21:31	14	05:45 (10B)
10	08:19			07:41		08:26 (WEA 12)	06:43			06:32		06:55 (WEA 02)	05:32		05:57 (6B)	04:57		05:32 (10B)
	16:26			17:19	19	08:45 (WEA 12)	18:09			20:02	25	07:46 (18B)	20:52	7	06:04 (6B)	21:32	14	05:46 (10B)
11	08:19			07:39		08:26 (WEA 12)	06:41			06:30		06:53 (WEA 02)	05:30		05:55 (6B)	04:57		05:32 (10B)
	16:27			17:21	18	08:44 (WEA 12)	18:11			20:04	23	07:19 (14B)	20:54	10	06:05 (13B)	21:33	14	05:46 (10B)
12	08:18			07:37		08:27 (WEA 12)	06:38			06:28		06:50 (WEA 02)	05:28		05:55 (6B)	04:57		05:32 (10B)
	16:29			17:23	16	08:43 (WEA 12)	18:13			20:06	27	07:18 (14B)	20:56	12	06:07 (13B)	21:33	13	05:45 (10B)
13	08:18			07:35		08:29 (WEA 12)	06:36		07:09 (19B)	06:25		06:48 (WEA 02)	05:27		05:55 (6B)	04:56		05:32 (10B)
	16:30			17:24	13	08:42 (WEA 12)	18:15	5	07:14 (19B)	20:07	30	07:18 (14B)	20:57	12	06:07 (13B)	21:34	14	05:46 (10B)
14	08:17			07:33		08:31 (WEA 12)	06:34		07:06 (19B)	06:23		06:46 (WEA 02)	05:25		05:55 (13B)	04:56		05:33 (10B)
	16:32			17:26	8	08:39 (WEA 12)	18:16	10	07:16 (19B)	20:09	32	07:18 (14B)	20:59	13	06:08 (13B)	21:34	13	05:46 (10B)
15	08:16			07:31			06:31		07:05 (19B)	06:21		06:46 (WEA 02)	05:24		05:54 (13B)	04:56		05:33 (10B)
	16:33			17:28			18:18	12	07:17 (19B)	20:11	31	07:17 (14B)	21:00	15	06:09 (13B)	21:35	13	05:46 (10B)
16	08:15			07:29			06:29		07:04 (19B)	06:19		06:45 (WEA 02)	05:22		05:53 (13B)	04:56		05:33 (10B)
	16:35			17:30			18:20	14	07:18 (19B)	20:13	31	07:16 (14B)	21:02	16	06:09 (13B)	21:36	13	05:46 (10B)
17	08:14			07:27		07:59 (WEA 13)	06:27		07:03 (19B)	06:17		06:45 (WEA 02)	05:21		05:54 (13B)	04:56		05:34 (10B)
	16:36			17:32	11	08:10 (WEA 13)	18:22	14	07:17 (19B)	20:14	26	07:13 (14B)	21:03	16	06:10 (13B)	21:36	13	05:47 (10B)
18	08:13			07:26		07:57 (WEA 13)	06:25		07:03 (19B)	06:15		06:45 (WEA 02)	05:19		05:54 (13B)	04:56		05:34 (10B)
	16:38			17:34	15	08:12 (WEA 13)	18:23	14	07:17 (19B)	20:16	19	07:04 (WEA 02)	21:05	16	06:10 (13B)	21:36	13	05:47 (10B)
19	08:12			07:24		07:55 (WEA 13)	06:22		07:03 (19B)	06:12		06:45 (WEA 02)	05:18		05:53 (13B)	04:56		05:34 (10B)
	16:39			17:35	19	08:14 (WEA 13)	18:25	13	07:16 (19B)	20:18	19	07:04 (WEA 02)	21:06	16	06:09 (13B)	21:37	13	05:47 (10B)
20	08:11			07:22		07:53 (WEA 13)	06:20		07:05 (19B)	06:10		06:45 (WEA 02)	05:16		05:54 (13B)	04:56		05:34 (10B)
	16:41			17:37	21	08:14 (WEA 13)	18:27	10	07:15 (19B)	20:19	17	07:02 (WEA 02)	21:08	15	06:09 (13B)	21:37	13	05:47 (10B)
21	08:10			07:19		07:52 (WEA 13)	06:18		07:05 (19B)	06:08		06:46 (WEA 02)	05:15		05:54 (13B)	04:56		05:34 (10B)
	16:43			17:39	23	08:15 (WEA 13)	18:28	7	07:12 (19B)	20:21	15	07:01 (WEA 02)	21:09	15	06:09 (13B)	21:37	13	05:47 (10B)
22	08:09			07:17		07:51 (WEA 13)	06:15			06:06		06:47 (WEA 02)	05:14		05:55 (13B)	04:56		05:35 (10B)
	16:45			17:41	24	08:15 (WEA 13)	18:30			20:23	12	06:59 (WEA 02)	21:11	14	06:09 (13B)	21:38	13	05:48 (10B)
23	08:08			07:15		07:51 (WEA 13)	06:13			06:04		06:49 (WEA 02)	05:12		05:55 (13B)	04:56		05:35 (10B)
	16:46			17:43	25	08:16 (WEA 13)	18:32			20:24	8	06:57 (WEA 02)	21:12	14	06:09 (13B)	21:38	13	05:48 (10B)
24	08:07			07:13		07:51 (WEA 13)	06:11			06:02			05:11		05:56 (13B)	04:57		05:35 (10B)
	16:48			17:45	25	08:16 (WEA 13)	18:34			20:26			21:13	13	06:09 (13B)	21:38	13	05:48 (10B)
25	08:06			07:11		07:51 (WEA 13)	06:08			06:00			05:10		05:57 (13B)	04:57		05:36 (10B)
	16:50			17:46	25	08:16 (WEA 13)	18:35			20:28			21:15	11	06:08 (13B)	21:38	13	05:49 (10B)
26	08:04			07:09		07:51 (WEA 13)	06:06			05:58			05:09		05:58 (13B)	04:57		05:35 (10B)
	16:51			17:48	25	08:16 (WEA 13)	18:37			20:29			21:16	9	06:07 (13B)	21:38	14	05:49 (10B)
27	08:03			07:07		07:50 (WEA 13)	06:04			05:56			05:08		05:36 (10B)	04:58		05:35 (10B)
	16:53			17:50	25	08:15 (WEA 13)	18:39			20:31			21:17	10	06:06 (13B)	21:38	13	05:48 (10B)
28	08:02			07:05		07:51 (WEA 13)	06:02			05:54			05:07		05:35 (10B)	04:58		05:36 (10B)
	16:55			17:52	23	08:14 (WEA 13)	18:40			20:33			21:18	9	06:04 (13B)	21:38	13	05:49 (10B)
29	08:00		08:31 (WEA 12)				06:59		07:45 (18B)	05:52			05:06		05:34 (10B)	04:59		05:35 (10B)
	16:57	6	08:37 (WEA 12)				19:42	1	07:46 (18B)	20:34			21:20	7	05:41 (10B)	21:38	14	05:49 (10B)
30	07:59		08:28 (WEA 12)				06:57		07:40 (18B)	05:50			05:05		05:33 (10B)	04:59		05:36 (10B)
	16:59	11	08:39 (WEA 12)				19:44	10	07:50 (18B)	20:36			21:21	9	05:42 (10B)	21:37	14	05:50 (10B)
31	07:57		08:26 (WEA 12)				06:55		07:38 (18B)				05:04		05:32 (10B)			
	17:00	15	08:41 (WEA 12)				19:45	14	07:52 (18B)				21:22	10	05:42 (10B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		32			517			198			488			279			401	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,65			0,66			0,70			0,72			0,71			0,70	
Gesamte Reduktion		0,13			0,20			0,18			0,25			0,29			0,23	
Met.wahrsch.Beschattung		4			104			35			120			81			93	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 39 - Reinstedt - Unterdorf 66a

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember
1	05:00		05:37 (10B)	05:36		06:05 (6B)	06:26	06:52 (WEA 02)	07:14		07:08		07:54 (WEA 12)	07:58
	21:37	13	05:50 (10B)	21:06	12	06:17 (13B)	20:04	23 07:18 (14B)	18:55		16:49	20	08:14 (WEA 12)	16:09
2	05:01		05:36 (10B)	05:38		06:06 (6B)	06:27	06:53 (WEA 02)	07:16		07:09		07:54 (WEA 12)	08:00
	21:37	14	05:50 (10B)	21:04	8	06:14 (6B)	20:02	25 07:44 (18B)	18:53		16:47	21	08:15 (WEA 12)	16:08
3	05:01		05:36 (10B)	05:39		06:08 (6B)	06:29	07:05 (14B)	07:18		07:11		07:54 (WEA 12)	08:01
	21:36	14	05:50 (10B)	21:02	6	06:14 (6B)	19:59	23 07:46 (18B)	18:50		16:45	21	08:15 (WEA 12)	16:08
4	05:02		05:37 (10B)	05:41		06:09 (6B)	06:30	07:06 (14B)	07:19		07:13		07:54 (WEA 12)	08:03
	21:36	14	05:51 (10B)	21:01	5	06:14 (6B)	19:57	22 07:47 (18B)	18:48		16:44	21	08:15 (WEA 12)	16:07
5	05:03		05:36 (10B)	05:42		06:11 (6B)	06:32	07:31 (18B)	07:21		07:15		07:54 (WEA 12)	08:04
	21:36	14	05:50 (10B)	20:59	3	06:14 (6B)	19:55	17 07:48 (18B)	18:46		16:42	21	08:15 (WEA 12)	16:07
6	05:04		05:37 (10B)	05:44			06:34	07:29 (18B)	07:23		07:17		07:54 (WEA 12)	08:05
	21:35	14	05:51 (10B)	20:57			19:53	19 07:48 (18B)	18:43		16:40	21	08:15 (WEA 12)	16:06
7	05:05		05:37 (10B)	05:46			06:35	07:29 (18B)	07:24		07:18		07:54 (WEA 12)	08:06
	21:34	14	05:51 (10B)	20:55			19:50	19 07:48 (18B)	18:41		16:38	21	08:15 (WEA 12)	16:06
8	05:06		05:37 (10B)	05:47			06:37	07:28 (18B)	07:26		07:20		07:55 (WEA 12)	08:08
	21:34	14	05:51 (10B)	20:53			19:48	19 07:47 (18B)	18:39		16:37	20	08:15 (WEA 12)	16:05
9	05:07		05:38 (10B)	05:49			06:39	07:28 (18B)	07:28	08:32 (WEA 13)	07:22		07:56 (WEA 12)	08:09
	21:33	13	05:51 (10B)	20:52			19:46	19 07:47 (18B)	18:37	9 08:41 (WEA 13)	16:35	18	08:14 (WEA 12)	16:05
10	05:08		05:38 (10B)	05:50			06:40	07:29 (18B)	07:29	08:29 (WEA 13)	07:24		07:57 (WEA 12)	08:10
	21:32	13	05:51 (10B)	20:50			19:43	18 07:47 (18B)	18:34	15 08:44 (WEA 13)	16:34	17	08:14 (WEA 12)	16:05
11	05:09		05:39 (10B)	05:52			06:42	07:29 (18B)	07:31	08:27 (WEA 13)	07:26		07:58 (WEA 12)	08:11
	21:32	12	05:51 (10B)	20:48			19:41	16 07:45 (18B)	18:32	18 08:45 (WEA 13)	16:32	15	08:13 (WEA 12)	16:05
12	05:10		05:40 (10B)	05:53			06:43	07:30 (18B)	07:33	08:25 (WEA 13)	07:27		08:00 (WEA 12)	08:12
	21:31	11	05:51 (10B)	20:46			19:39	14 07:44 (18B)	18:30	21 08:46 (WEA 13)	16:30	11	08:11 (WEA 12)	16:05
13	05:11		05:41 (10B)	05:55			06:45	07:30 (18B)	07:34	08:24 (WEA 13)	07:29		08:03 (WEA 12)	08:13
	21:30	10	05:51 (10B)	20:44			19:37	12 07:42 (18B)	18:28	23 08:47 (WEA 13)	16:29	6	08:09 (WEA 12)	16:05
14	05:12		05:42 (10B)	05:57			06:47	07:34 (18B)	07:36	08:24 (WEA 13)	07:31			08:14
	21:29	8	05:50 (10B)	20:42			19:34	4 07:38 (18B)	18:26	24 08:48 (WEA 13)	16:27			16:05
15	05:13		05:43 (10B)	05:58			06:48		07:38	08:23 (WEA 13)	07:33			08:15
	21:28	6	05:49 (10B)	20:40			19:32		18:23	25 08:48 (WEA 13)	16:26			16:05
16	05:14		05:44 (10B)	06:00			06:50		07:40	08:22 (WEA 13)	07:34			08:16
	21:27	10	06:14 (13B)	20:38			19:30		18:21	25 08:47 (WEA 13)	16:25			16:05
17	05:15		05:45 (10B)	06:01			06:51		07:41	08:22 (WEA 13)	07:36			08:17
	21:26	9	06:15 (13B)	20:36			19:27		18:19	25 08:47 (WEA 13)	16:23			16:05
18	05:17		06:07 (13B)	06:03			06:53		07:43	08:22 (WEA 13)	07:38			08:17
	21:25	10	06:17 (13B)	20:34			19:25		18:17	25 08:47 (WEA 13)	16:22			16:05
19	05:18		06:06 (13B)	06:05			06:55		07:45	08:22 (WEA 13)	07:39			08:18
	21:24	12	06:18 (13B)	20:32			19:23		18:15	25 08:47 (WEA 13)	16:21			16:06
20	05:19		06:05 (13B)	06:06		06:54 (WEA 02)	06:56		07:46	08:23 (WEA 13)	07:41			08:19
	21:23	13	06:18 (13B)	20:30	9	07:03 (WEA 02)	19:20		18:13	23 08:46 (WEA 13)	16:20			16:06
21	05:21		06:04 (13B)	06:08		06:52 (WEA 02)	06:58		07:48	08:24 (WEA 13)	07:43			08:19
	21:21	15	06:19 (13B)	20:28	13	07:05 (WEA 02)	19:18		18:11	22 08:46 (WEA 13)	16:18			16:06
22	05:22		06:04 (13B)	06:09		06:50 (WEA 02)	07:00	07:52 (19B)	07:50	08:24 (WEA 13)	07:44			08:20
	21:20	15	06:19 (13B)	20:26	16	07:06 (WEA 02)	19:16	5 07:57 (19B)	18:09	20 08:44 (WEA 13)	16:17			16:07
23	05:23		06:04 (13B)	06:11		06:50 (WEA 02)	07:01	07:49 (19B)	07:52	08:25 (WEA 13)	07:46			08:20
	21:19	16	06:20 (13B)	20:24	17	07:07 (WEA 02)	19:13	9 07:58 (19B)	18:07	18 08:43 (WEA 13)	16:16			16:07
24	05:25		06:04 (13B)	06:13		06:48 (WEA 02)	07:03	07:47 (19B)	07:53	08:27 (WEA 13)	07:48			08:21
	21:18	16	06:20 (13B)	20:21	19	07:07 (WEA 02)	19:11	13 08:00 (19B)	18:05	14 08:41 (WEA 13)	16:15			16:08
25	05:26		06:04 (13B)	06:14		06:48 (WEA 02)	07:04	07:46 (19B)	06:55	07:29 (WEA 13)	07:49			08:21
	21:16	16	06:20 (13B)	20:19	19	07:07 (WEA 02)	19:09	13 07:59 (19B)	17:03	9 07:38 (WEA 13)	16:14			16:09
26	05:27		06:04 (13B)	06:16		06:47 (WEA 02)	07:06	07:45 (19B)	06:57		07:51			08:21
	21:15	16	06:20 (13B)	20:17	26	07:15 (14B)	19:06	14 07:59 (19B)	17:01		16:13			16:09
27	05:29		06:04 (13B)	06:18		06:47 (WEA 02)	07:08	07:46 (19B)	06:59		07:52			08:22
	21:13	16	06:20 (13B)	20:15	30	07:17 (14B)	19:04	13 07:59 (19B)	16:59		16:12			16:10
28	05:30		06:04 (13B)	06:19		06:47 (WEA 02)	07:09	07:45 (19B)	07:01	08:00 (WEA 12)	07:54			08:22
	21:12	15	06:19 (13B)	20:13	31	07:18 (14B)	19:02	13 07:58 (19B)	16:57	9 08:09 (WEA 12)	16:11			16:11
29	05:32		06:05 (13B)	06:21		06:47 (WEA 02)	07:11	07:46 (19B)	07:02	07:58 (WEA 12)	07:55			08:22
	21:10	15	06:20 (13B)	20:11	32	07:19 (14B)	18:59	11 07:57 (19B)	16:55	14 08:12 (WEA 12)	16:10			16:12
30	05:33		06:05 (13B)	06:22		06:49 (WEA 02)	07:13	07:48 (19B)	07:04	07:57 (WEA 12)	07:57			08:22
	21:09	14	06:19 (13B)	20:08	30	07:19 (14B)	18:57	7 07:55 (19B)	16:53	16 08:13 (WEA 12)	16:10			16:12
31	05:35		06:06 (6B)	06:24		06:50 (WEA 02)			07:06	07:55 (WEA 12)				08:22
	21:07	12	06:18 (13B)	20:06	27	07:18 (14B)			16:51	18 08:13 (WEA 12)				16:13
Sonnenscheinstunden	501			453			381		332		267			245
astr.max.mögl.Beschattung		404			303			348		398		233		
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34		0,28		0,22		
Reduktion Betriebsdauer		0,96			0,96			0,96		0,96		0,96		
Reduktion Windrichtung		0,71			0,72			0,72		0,67		0,65		
Gesamte Reduktion		0,27			0,30			0,23		0,18		0,14		
Met.wahrsch.Beschattung		109			89			81		72		32		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 40 - Reinstedt - Schielestraße

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56		08:25 (WEA 12)	07:03		07:55 (WEA 13)	06:52		07:42 (18B)	05:48			05:03		05:40 (10B)
	16:15			17:02	17	08:42 (WEA 12)	17:54	17	08:12 (WEA 13)	19:47	17	07:59 (18B)	20:38			21:23	11	05:51 (10B)
2	08:22			07:54		08:25 (WEA 12)	07:00		07:57 (WEA 13)	06:50		07:42 (18B)	05:46			05:02		05:41 (10B)
	16:16			17:04	18	08:43 (WEA 12)	17:55	13	08:10 (WEA 13)	19:49	16	07:58 (18B)	20:39			21:24	11	05:52 (10B)
3	08:22			07:53		08:24 (WEA 12)	06:58		08:00 (WEA 13)	06:48		07:42 (18B)	05:44		06:09 (6B)	05:01		05:41 (10B)
	16:17			17:06	19	08:43 (WEA 12)	17:57	7	08:07 (WEA 13)	19:51	15	07:57 (18B)	20:41	1	06:10 (6B)	21:25	10	05:51 (10B)
4	08:22			07:51		08:24 (WEA 12)	06:56			06:46		07:18 (14B)	05:42		06:07 (6B)	05:01		05:41 (10B)
	16:18			17:08	21	08:45 (WEA 12)	17:59			19:52	16	07:55 (18B)	20:43	6	06:13 (13B)	21:26	9	05:50 (10B)
5	08:22			07:49		08:24 (WEA 12)	06:54			06:43		07:15 (14B)	05:40		06:05 (6B)	05:00		05:43 (10B)
	16:19			17:10	21	08:45 (WEA 12)	18:01			19:54	15	07:52 (18B)	20:44	11	06:16 (13B)	21:27	7	05:50 (10B)
6	08:21			07:48		08:24 (WEA 12)	06:52			06:41		07:13 (14B)	05:39		06:03 (6B)	04:59		05:43 (10B)
	16:20			17:11	21	08:45 (WEA 12)	18:02			19:56	12	07:25 (14B)	20:46	14	06:17 (13B)	21:28	6	05:49 (10B)
7	08:21			07:46		08:24 (WEA 12)	06:49			06:39		07:12 (14B)	05:37		06:02 (6B)	04:59		05:45 (10B)
	16:22			17:13	21	08:45 (WEA 12)	18:04			19:57	13	07:25 (14B)	20:48	16	06:18 (13B)	21:29	4	05:49 (10B)
8	08:20			07:44		08:24 (WEA 12)	06:47			06:37		06:59 (WEA 02)	05:35		06:02 (6B)	04:58		
	16:23			17:15	20	08:44 (WEA 12)	18:06			19:59	21	07:25 (14B)	20:49	16	06:18 (13B)	21:30		
9	08:20			07:42		08:25 (WEA 12)	06:45			06:34		06:57 (WEA 02)	05:33		06:04 (6B)	04:58		
	16:24			17:17	19	08:44 (WEA 12)	18:08			20:01	25	07:25 (14B)	20:51	15	06:19 (13B)	21:31		
10	08:19			07:41		08:26 (WEA 12)	06:43			06:32		06:55 (WEA 02)	05:32		06:03 (13B)	04:57		
	16:26			17:19	18	08:44 (WEA 12)	18:09			20:02	28	07:25 (14B)	20:52	16	06:19 (13B)	21:32		
11	08:19			07:39		08:27 (WEA 12)	06:41		07:12 (19B)	06:30		06:53 (WEA 02)	05:30		06:03 (13B)	04:57		
	16:27			17:21	16	08:43 (WEA 12)	18:11	6	07:18 (19B)	20:04	29	07:24 (14B)	20:54	15	06:18 (13B)	21:33		
12	08:18			07:37		08:29 (WEA 12)	06:38		07:10 (19B)	06:28		06:51 (WEA 02)	05:28		06:03 (13B)	04:57		
	16:29			17:23	12	08:41 (WEA 12)	18:13	10	07:20 (19B)	20:06	27	07:21 (14B)	20:56	16	06:19 (13B)	21:33		
13	08:18			07:35		08:31 (WEA 12)	06:36		07:09 (19B)	06:25		06:51 (WEA 02)	05:27		06:03 (13B)	04:56		
	16:30			17:24	8	08:39 (WEA 12)	18:15	12	07:21 (19B)	20:07	21	07:18 (14B)	20:57	15	06:18 (13B)	21:34		
14	08:17			07:33			06:34		07:07 (19B)	06:23		06:50 (WEA 02)	05:25		06:04 (13B)	04:56		
	16:32			17:26			18:16	14	07:21 (19B)	20:09	19	07:09 (WEA 02)	20:59	14	06:18 (13B)	21:34		
15	08:16			07:31			06:31		07:07 (19B)	06:21		06:50 (WEA 02)	05:24		06:05 (13B)	04:56		
	16:33			17:28			18:18	14	07:21 (19B)	20:11	19	07:09 (WEA 02)	21:00	12	06:17 (13B)	21:35		
16	08:15			07:29		08:00 (WEA 13)	06:29		07:08 (19B)	06:19		06:51 (WEA 02)	05:22		06:05 (13B)	04:56		
	16:35			17:30	11	08:11 (WEA 13)	18:20	12	07:20 (19B)	20:13	17	07:08 (WEA 02)	21:02	11	06:16 (13B)	21:36		
17	08:14			07:27		07:57 (WEA 13)	06:27		07:08 (19B)	06:17		06:51 (WEA 02)	05:21		06:07 (13B)	04:56		
	16:36			17:32	16	08:13 (WEA 13)	18:22	11	07:19 (19B)	20:14	17	07:08 (WEA 02)	21:03	8	06:15 (13B)	21:36		
18	08:13			07:26		07:56 (WEA 13)	06:25		07:09 (19B)	06:15		06:52 (WEA 02)	05:19		06:09 (13B)	04:56		
	16:38			17:34	18	08:14 (WEA 13)	18:23	8	07:17 (19B)	20:16	14	07:06 (WEA 02)	21:05	4	06:13 (13B)	21:36		
19	08:12			07:24		07:55 (WEA 13)	06:22			06:12		06:53 (WEA 02)	05:18		05:44 (10B)	04:56		
	16:39			17:35	20	08:15 (WEA 13)	18:25			20:18	12	07:05 (WEA 02)	21:06	2	05:46 (10B)	21:37		
20	08:11			07:22		07:53 (WEA 13)	06:20			06:10		06:55 (WEA 02)	05:16		05:43 (10B)	04:56		
	16:41			17:37	22	08:15 (WEA 13)	18:27			20:19	6	07:01 (WEA 02)	21:08	5	05:48 (10B)	21:37		
21	08:10			07:19		07:53 (WEA 13)	06:18			06:08			05:15		05:42 (10B)	04:56		
	16:43			17:39	23	08:16 (WEA 13)	18:28			20:21			21:09	8	05:50 (10B)	21:37		
22	08:09			07:17		07:52 (WEA 13)	06:15			06:06			05:14		05:41 (10B)	04:56		
	16:45			17:41	24	08:16 (WEA 13)	18:30			20:23			21:11	10	05:51 (10B)	21:38		
23	08:08			07:15		07:52 (WEA 13)	06:13			06:04			05:12		05:40 (10B)	04:56		
	16:46			17:43	24	08:16 (WEA 13)	18:32			20:24			21:12	11	05:51 (10B)	21:38		
24	08:07			07:13		07:52 (WEA 13)	06:11			06:02			05:11		05:39 (10B)	04:57		
	16:48			17:45	24	08:16 (WEA 13)	18:34			20:26			21:13	13	05:52 (10B)	21:38		
25	08:06			07:11		07:52 (WEA 13)	06:08		06:51 (18B)	06:00			05:10		05:39 (10B)	04:57		
	16:50			17:46	24	08:16 (WEA 13)	18:35	4	06:55 (18B)	20:28			21:15	13	05:52 (10B)	21:38		
26	08:04			07:09		07:53 (WEA 13)	06:06		06:47 (18B)	05:58			05:09		05:39 (10B)	04:57		
	16:51			17:48	23	08:16 (WEA 13)	18:37	11	06:58 (18B)	20:29			21:16	13	05:52 (10B)	21:38		
27	08:03			07:07		07:53 (WEA 13)	06:04		06:45 (18B)	05:56			05:08		05:39 (10B)	04:58		
	16:53			17:50	21	08:14 (WEA 13)	18:39	13	06:58 (18B)	20:31			21:17	13	05:52 (10B)	21:38		
28	08:02			07:05		07:54 (WEA 13)	06:02		06:43 (18B)	05:54			05:07		05:39 (10B)	04:58		
	16:55			17:52	19	08:13 (WEA 13)	18:40	17	07:00 (18B)	20:33			21:18	13	05:52 (10B)	21:38		
29	08:00		08:29 (WEA 12)				06:59		07:43 (18B)	05:52			05:06		05:39 (10B)	04:59		
	16:57	9	08:38 (WEA 12)				19:42	17	08:00 (18B)	20:34			21:20	13	05:52 (10B)	21:38		
30	07:59		08:27 (WEA 12)				06:57		07:41 (18B)	05:50			05:05		05:39 (10B)	04:59		
	16:59	12	08:39 (WEA 12)				19:44	18	07:59 (18B)	20:36			21:21	13	05:52 (10B)	21:37		
31	07:57		08:26 (WEA 12)				06:55		07:41 (18B)				05:04		05:39 (10B)			
	17:00	15	08:41 (WEA 12)				19:45	18	07:59 (18B)				21:22	13	05:52 (10B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		36			500			222			359			330			58	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,65			0,66			0,70			0,72			0,71			0,71	
Gesamte Reduktion		0,13			0,20			0,18			0,25			0,29			0,23	
Met.wahrsch.Beschattung		5			100			40			88			96			14	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 40 - Reinstedt - Schielestraße

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November			Dezember
1	05:00			05:36		06:14 (13B)	06:26		06:52 (WEA 02)	07:14		07:48 (19B)	07:08		07:55 (WEA 12)	07:58
	21:37			21:06	15	06:29 (13B)	20:04	29	07:23 (14B)	18:55	11	07:59 (19B)	16:49	18	08:13 (WEA 12)	16:09
2	05:01			05:38		06:13 (13B)	06:27		06:53 (WEA 02)	07:16		07:49 (19B)	07:09		07:54 (WEA 12)	08:00
	21:37			21:04	16	06:29 (13B)	20:02	28	07:23 (14B)	18:53	9	07:58 (19B)	16:47	19	08:13 (WEA 12)	16:08
3	05:01			05:39		06:14 (13B)	06:29		06:55 (WEA 02)	07:18		07:53 (19B)	07:11		07:54 (WEA 12)	08:01
	21:36			21:02	15	06:29 (13B)	19:59	25	07:23 (14B)	18:50	1	07:54 (19B)	16:45	20	08:14 (WEA 12)	16:08
4	05:02			05:41		06:13 (6B)	06:30		06:56 (WEA 02)	07:19			07:13		07:54 (WEA 12)	08:03
	21:36			21:01	15	06:28 (13B)	19:57	21	07:22 (14B)	18:48			16:44	20	08:14 (WEA 12)	16:07
5	05:03		05:51 (10B)	05:42		06:12 (6B)	06:32		07:09 (14B)	07:21			07:15		07:54 (WEA 12)	08:04
	21:36	3	05:54 (10B)	20:59	16	06:28 (13B)	19:55	13	07:22 (14B)	18:46			16:42	20	08:14 (WEA 12)	16:07
6	05:04		05:50 (10B)	05:44		06:12 (6B)	06:34		07:08 (14B)	07:23			07:17		07:54 (WEA 12)	08:05
	21:35	5	05:55 (10B)	20:57	15	06:27 (13B)	19:53	12	07:20 (14B)	18:43			16:40	20	08:14 (WEA 12)	16:06
7	05:05		05:49 (10B)	05:46		06:14 (6B)	06:35		07:10 (14B)	07:24			07:18		07:54 (WEA 12)	08:06
	21:34	7	05:56 (10B)	20:55	13	06:27 (13B)	19:50	15	07:47 (18B)	18:41			16:38	20	08:14 (WEA 12)	16:06
8	05:06		05:49 (10B)	05:47		06:15 (6B)	06:37		07:11 (14B)	07:26			07:20		07:55 (WEA 12)	08:08
	21:34	8	05:57 (10B)	20:53	10	06:25 (13B)	19:48	17	07:49 (18B)	18:39			16:37	19	08:14 (WEA 12)	16:05
9	05:07		05:49 (10B)	05:49		06:17 (6B)	06:39		07:36 (18B)	07:28			07:22		07:55 (WEA 12)	08:09
	21:33	9	05:58 (10B)	20:52	3	06:20 (6B)	19:46	15	07:51 (18B)	18:37			16:35	19	08:14 (WEA 12)	16:05
10	05:08		05:48 (10B)	05:50		06:18 (6B)	06:40		07:35 (18B)	07:29			07:24		07:56 (WEA 12)	08:10
	21:32	11	05:59 (10B)	20:50	1	06:19 (6B)	19:43	17	07:52 (18B)	18:34			16:34	17	08:13 (WEA 12)	16:05
11	05:09		05:48 (10B)	05:52			06:42		07:34 (18B)	07:31		08:31 (WEA 13)	07:26		07:58 (WEA 12)	08:11
	21:32	12	06:00 (10B)	20:48			19:41	17	07:51 (18B)	18:32	11	08:42 (WEA 13)	16:32	14	08:12 (WEA 12)	16:05
12	05:10		05:48 (10B)	05:53			06:43		07:34 (18B)	07:33		08:29 (WEA 13)	07:27		07:59 (WEA 12)	08:12
	21:31	12	06:00 (10B)	20:46			19:39	18	07:52 (18B)	18:30	15	08:44 (WEA 13)	16:30	12	08:11 (WEA 12)	16:05
13	05:11		05:48 (10B)	05:55			06:45		07:33 (18B)	07:34		08:27 (WEA 13)	07:29		08:01 (WEA 12)	08:13
	21:30	12	06:00 (10B)	20:44			19:37	18	07:51 (18B)	18:28	19	08:46 (WEA 13)	16:29	8	08:09 (WEA 12)	16:05
14	05:12		05:48 (10B)	05:57			06:47		07:33 (18B)	07:36		08:26 (WEA 13)	07:31			08:14
	21:29	13	06:01 (10B)	20:42			19:34	18	07:51 (18B)	18:26	21	08:47 (WEA 13)	16:27			16:05
15	05:13		05:48 (10B)	05:58			06:48		07:33 (18B)	07:38		08:26 (WEA 13)	07:33			08:15
	21:28	13	06:01 (10B)	20:40			19:32	16	07:49 (18B)	18:23	22	08:48 (WEA 13)	16:26			16:05
16	05:14		05:47 (10B)	06:00			06:50		07:34 (18B)	07:40		08:24 (WEA 13)	07:34			08:16
	21:27	14	06:01 (10B)	20:38			19:30	14	07:48 (18B)	18:21	23	08:47 (WEA 13)	16:25			16:05
17	05:15		05:47 (10B)	06:01			06:51		07:35 (18B)	07:41		08:24 (WEA 13)	07:36			08:17
	21:26	14	06:01 (10B)	20:36			19:27	12	07:47 (18B)	18:19	24	08:48 (WEA 13)	16:23			16:05
18	05:17		05:48 (10B)	06:03			06:53		07:37 (18B)	07:43		08:23 (WEA 13)	07:38			08:17
	21:25	14	06:02 (10B)	20:34			19:25	6	07:43 (18B)	18:17	25	08:48 (WEA 13)	16:22			16:05
19	05:18		05:48 (10B)	06:05			06:55			07:45		08:24 (WEA 13)	07:39			08:18
	21:24	13	06:01 (10B)	20:32			19:23			18:15	24	08:48 (WEA 13)	16:21			16:06
20	05:19		05:49 (10B)	06:06			06:56			07:46		08:24 (WEA 13)	07:41			08:19
	21:23	12	06:01 (10B)	20:30			19:20			18:13	23	08:47 (WEA 13)	16:20			16:06
21	05:21		05:50 (10B)	06:08			06:58			07:48		08:24 (WEA 13)	07:43			08:19
	21:21	11	06:01 (10B)	20:28			19:18			18:11	23	08:47 (WEA 13)	16:18			16:06
22	05:22		05:51 (10B)	06:09			07:00			07:50		08:24 (WEA 13)	07:44			08:20
	21:20	9	06:00 (10B)	20:26			19:16			18:09	21	08:45 (WEA 13)	16:17			16:07
23	05:23		05:53 (10B)	06:11		06:59 (WEA 02)	07:01			07:52		08:25 (WEA 13)	07:46			08:20
	21:19	7	06:00 (10B)	20:24	7	07:06 (WEA 02)	19:13			18:07	20	08:45 (WEA 13)	16:16			16:07
24	05:25		05:54 (10B)	06:13		06:56 (WEA 02)	07:03			07:53		08:26 (WEA 13)	07:48			08:21
	21:18	4	05:58 (10B)	20:21	12	07:08 (WEA 02)	19:11			18:05	17	08:43 (WEA 13)	16:15			16:08
25	05:26			06:14		06:55 (WEA 02)	07:04		07:52 (19B)	06:55		07:27 (WEA 13)	07:49			08:21
	21:16			20:19	14	07:09 (WEA 02)	19:09	7	07:59 (19B)	17:03	15	07:42 (WEA 13)	16:14			16:09
26	05:27		06:19 (13B)	06:16		06:53 (WEA 02)	07:06		07:51 (19B)	06:57		07:30 (WEA 13)	07:51			08:21
	21:15	6	06:25 (13B)	20:17	16	07:09 (WEA 02)	19:06	10	08:01 (19B)	17:01	9	07:39 (WEA 13)	16:13			16:09
27	05:29		06:17 (13B)	06:18		06:52 (WEA 02)	07:08		07:50 (19B)	06:59			07:52			08:22
	21:13	9	06:26 (13B)	20:15	18	07:10 (WEA 02)	19:04	12	08:02 (19B)	16:59			16:12			16:10
28	05:30		06:15 (13B)	06:19		06:51 (WEA 02)	07:09		07:48 (19B)	07:01			07:54			08:22
	21:12	12	06:27 (13B)	20:13	19	07:10 (WEA 02)	19:02	13	08:01 (19B)	16:57			16:11			16:11
29	05:32		06:15 (13B)	06:21		06:51 (WEA 02)	07:11		07:48 (19B)	07:02		08:00 (WEA 12)	07:55			08:22
	21:10	13	06:28 (13B)	20:11	19	07:10 (WEA 02)	18:59	13	08:01 (19B)	16:55	9	08:09 (WEA 12)	16:10			16:12
30	05:33		06:14 (13B)	06:22		06:51 (WEA 02)	07:13		07:48 (19B)	07:04		07:58 (WEA 12)	07:57			08:22
	21:09	14	06:28 (13B)	20:08	22	07:19 (14B)	18:57	13	08:01 (19B)	16:53	13	08:11 (WEA 12)	16:10			16:12
31	05:35		06:14 (13B)	06:24		06:51 (WEA 02)				07:06		07:56 (WEA 12)				08:22
	21:07	15	06:29 (13B)	20:06	27	07:21 (14B)				16:51	16	08:12 (WEA 12)				16:13
Sonnenscheinstunden	501			453			381			332			267			245
astr.max.mögl.Beschattung		272			273			379			371			226		
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22		
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96		
Reduktion Windrichtung		0,71			0,72			0,72			0,67			0,65		
Gesamte Reduktion		0,27			0,29			0,23			0,18			0,14		
Met.wahrsch.Beschattung		74			80			88			67			31		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 41 - Reinstedt - Siedlung 15

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni
1	08:22		07:56	08:37 (WEA 12)	07:03		06:52		07:28 (14B)	05:48	06:12 (6B)	05:03
	16:15		17:02	20 08:57 (WEA 12)	17:54		19:47	15	07:43 (14B)	20:38	21 06:33 (13B)	21:23
2	08:22		07:54	08:37 (WEA 12)	07:00		06:50		07:28 (14B)	05:46	06:11 (6B)	05:02
	16:16		17:04	19 08:56 (WEA 12)	17:55		19:49	15	07:43 (14B)	20:39	22 06:33 (13B)	21:24
3	08:22		07:53	08:37 (WEA 12)	06:58		06:48		07:10 (WEA 02)	05:44	06:12 (6B)	05:01
	16:17		17:06	19 08:56 (WEA 12)	17:57		19:51	19	07:41 (14B)	20:41	22 06:34 (13B)	21:25
4	08:22		07:51	08:39 (WEA 12)	06:56	07:28 (19B)	06:46		07:08 (WEA 02)	05:42	06:13 (6B)	05:01
	16:18		17:08	17 08:56 (WEA 12)	17:59	8 07:36 (19B)	19:52	24	07:41 (14B)	20:43	20 06:33 (13B)	21:26
5	08:22		07:49	08:39 (WEA 12)	06:54	07:27 (19B)	06:43		07:06 (WEA 02)	05:40	06:17 (13B)	05:00
	16:19		17:10	16 08:55 (WEA 12)	18:01	11 07:38 (19B)	19:54	23	07:39 (14B)	20:44	16 06:33 (13B)	21:27
6	08:21		07:48	08:41 (WEA 12)	06:52	07:26 (19B)	06:41		07:04 (WEA 02)	05:39	06:17 (13B)	04:59
	16:20		17:11	12 08:53 (WEA 12)	18:02	13 07:39 (19B)	19:56	21	07:36 (14B)	20:46	15 06:32 (13B)	21:28
7	08:21		07:46	08:43 (WEA 12)	06:49	07:24 (19B)	06:39		07:02 (WEA 02)	05:37	06:18 (13B)	04:59
	16:22		17:13	8 08:51 (WEA 12)	18:04	14 07:38 (19B)	19:57	19	07:21 (WEA 02)	20:48	14 06:32 (13B)	21:29
8	08:20		07:44	08:15 (WEA 13)	06:47	07:24 (19B)	06:37		07:02 (WEA 02)	05:35	06:19 (13B)	04:58
	16:23		17:15	8 08:23 (WEA 13)	18:06	14 07:38 (19B)	19:59	19	07:21 (WEA 02)	20:49	12 06:31 (13B)	21:30
9	08:20		07:42	08:13 (WEA 13)	06:45	07:25 (19B)	06:34		07:01 (WEA 02)	05:33	06:20 (13B)	04:58
	16:24		17:17	13 08:26 (WEA 13)	18:08	13 07:38 (19B)	20:01	20	07:21 (WEA 02)	20:51	10 06:30 (13B)	21:31
10	08:19		07:41	08:12 (WEA 13)	06:43	07:26 (19B)	06:32		07:01 (WEA 02)	05:32	06:22 (13B)	04:57
	16:26		17:19	16 08:28 (WEA 13)	18:09	11 07:37 (19B)	20:02	20	07:21 (WEA 02)	20:52	5 06:27 (13B)	21:32
11	08:19		07:39	08:10 (WEA 13)	06:41	07:26 (19B)	06:30		07:02 (WEA 02)	05:30		04:57
	16:27		17:21	20 08:30 (WEA 13)	18:11	8 07:34 (19B)	20:04	18	07:20 (WEA 02)	20:54		21:33
12	08:18		07:37	08:09 (WEA 13)	06:38		06:28		07:01 (WEA 02)	05:28		04:57
	16:29		17:23	22 08:31 (WEA 13)	18:13		20:06	18	07:19 (WEA 02)	20:56		21:33
13	08:18		07:35	08:09 (WEA 13)	06:36		06:25		07:02 (WEA 02)	05:27	05:52 (10B)	04:56
	16:30		17:24	22 08:31 (WEA 13)	18:15		20:07	15	07:17 (WEA 02)	20:57	6 05:58 (10B)	21:34
14	08:17		07:33	08:08 (WEA 13)	06:34		06:23		07:03 (WEA 02)	05:25	05:51 (10B)	04:56
	16:32		17:26	24 08:32 (WEA 13)	18:16		20:09	13	07:16 (WEA 02)	20:59	9 06:00 (10B)	21:34
15	08:16		07:31	08:08 (WEA 13)	06:31		06:21		07:05 (WEA 02)	05:24	05:50 (10B)	04:56
	16:33		17:28	24 08:32 (WEA 13)	18:18		20:11	9	07:14 (WEA 02)	21:00	11 06:01 (10B)	21:35
16	08:15		07:29	08:08 (WEA 13)	06:29	07:12 (18B)	06:19			05:22	05:48 (10B)	04:56
	16:35		17:30	24 08:32 (WEA 13)	18:20	8 07:20 (18B)	20:13			21:02	13 06:01 (10B)	21:36
17	08:14		07:27	08:08 (WEA 13)	06:27	07:09 (18B)	06:17			05:21	05:48 (10B)	04:56
	16:36		17:32	24 08:32 (WEA 13)	18:22	12 07:21 (18B)	20:14			21:03	14 06:02 (10B)	21:36
18	08:13		07:26	08:08 (WEA 13)	06:25	07:07 (18B)	06:15			05:19	05:48 (10B)	04:56
	16:38		17:34	24 08:32 (WEA 13)	18:23	16 07:23 (18B)	20:16			21:05	14 06:02 (10B)	21:36
19	08:12		07:24	08:08 (WEA 13)	06:22	07:07 (18B)	06:12			05:18	05:48 (10B)	04:56
	16:39		17:35	24 08:32 (WEA 13)	18:25	17 07:24 (18B)	20:18			21:06	14 06:02 (10B)	21:37
20	08:11		07:22	08:08 (WEA 13)	06:20	07:06 (18B)	06:10			05:16	05:48 (10B)	04:56
	16:41		17:37	22 08:30 (WEA 13)	18:27	18 07:24 (18B)	20:19			21:08	14 06:02 (10B)	21:37
21	08:10	08:40 (WEA 12)	07:19	08:09 (WEA 13)	06:18	07:05 (18B)	06:08			05:15	05:48 (10B)	04:56
	16:43	7 08:47 (WEA 12)	17:39	20 08:29 (WEA 13)	18:28	18 07:23 (18B)	20:21			21:09	14 06:02 (10B)	21:37
22	08:09	08:39 (WEA 12)	07:17	08:10 (WEA 13)	06:15	07:05 (18B)	06:06			05:14	05:49 (10B)	04:56
	16:45	11 08:50 (WEA 12)	17:41	18 08:28 (WEA 13)	18:30	18 07:23 (18B)	20:23			21:11	13 06:02 (10B)	21:38
23	08:08	08:37 (WEA 12)	07:15	08:12 (WEA 13)	06:13	07:05 (18B)	06:04			05:12	05:49 (10B)	04:56
	16:46	14 08:51 (WEA 12)	17:43	14 08:26 (WEA 13)	18:32	18 07:23 (18B)	20:24			21:12	13 06:02 (10B)	21:38
24	08:07	08:37 (WEA 12)	07:13	08:14 (WEA 13)	06:11	07:05 (18B)	06:02			05:11	05:50 (10B)	04:57
	16:48	16 08:53 (WEA 12)	17:45	10 08:24 (WEA 13)	18:34	16 07:21 (18B)	20:26			21:13	12 06:02 (10B)	21:38
25	08:06	08:37 (WEA 12)	07:11		06:08	07:06 (18B)	06:00			05:10	05:50 (10B)	04:57
	16:50	17 08:54 (WEA 12)	17:46		18:35	14 07:20 (18B)	20:28			21:15	11 06:01 (10B)	21:38
26	08:04	08:36 (WEA 12)	07:09		06:06	07:07 (18B)	05:58			05:09	05:51 (10B)	04:57
	16:51	18 08:54 (WEA 12)	17:48		18:37	12 07:19 (18B)	20:29			21:16	10 06:01 (10B)	21:38
27	08:03	08:36 (WEA 12)	07:07		06:04	07:09 (18B)	05:56		06:24 (13B)	05:08	05:52 (10B)	04:58
	16:53	19 08:55 (WEA 12)	17:50		18:39	6 07:15 (18B)	20:31	5	06:29 (13B)	21:17	8 06:00 (10B)	21:38
28	08:02	08:35 (WEA 12)	07:05		06:02	06:35 (14B)	05:54		06:18 (6B)	05:07	05:54 (10B)	04:58
	16:55	21 08:56 (WEA 12)	17:52		18:40	4 06:39 (14B)	20:33	12	06:31 (13B)	21:18	4 05:58 (10B)	21:38
29	08:00	08:36 (WEA 12)			06:59	07:32 (14B)	05:52		06:16 (6B)	05:06		04:59
	16:57	21 08:57 (WEA 12)			19:42	10 07:42 (14B)	20:34	16	06:32 (13B)	21:20		21:38
30	07:59	08:36 (WEA 12)			06:57	07:30 (14B)	05:50		06:14 (6B)	05:05		04:59
	16:59	20 08:56 (WEA 12)			19:44	12 07:42 (14B)	20:36	19	06:33 (13B)	21:21		21:37
31	07:57	08:36 (WEA 12)			06:55	07:29 (14B)				05:04		
	17:00	20 08:56 (WEA 12)			19:45	14 07:43 (14B)				21:22		
Sonnenscheinstunden	260		278		367		416		484		498	
astr.max.mögl.Beschattung		184		440		305		320		337		
Red.Sonnenscheinwahrsch.		0,21		0,32		0,27		0,36		0,43		
Reduktion Betriebsdauer		0,96		0,96		0,96		0,96		0,96		
Reduktion Windrichtung		0,64		0,66		0,70		0,72		0,71		
Gesamte Reduktion		0,13		0,20		0,18		0,25		0,29		
Met.wahrsch.Beschattung		24		87		55		79		98		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 41 - Reinstedt - Siedlung 15

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November			Dezember
1	05:00			05:36			06:26		07:01 (WEA 02)	07:14			07:08		07:41 (WEA 13)	07:58
	21:37			21:06			20:04	18	07:19 (WEA 02)	18:55			16:49	16	07:57 (WEA 13)	16:09
2	05:01			05:38			06:27		06:59 (WEA 02)	07:16		08:06 (19B)	07:09		07:43 (WEA 13)	08:00
	21:37			21:04			20:02	20	07:19 (WEA 02)	18:53	6	08:12 (19B)	16:47	12	07:55 (WEA 13)	16:08
3	05:01			05:39		06:32 (13B)	06:29		06:59 (WEA 02)	07:18		08:04 (19B)	07:11		07:46 (WEA 13)	08:01
	21:36			21:02	6	06:38 (13B)	19:59	20	07:19 (WEA 02)	18:50	10	08:14 (19B)	16:45	6	07:52 (WEA 13)	16:08
4	05:02			05:41		06:29 (13B)	06:30		06:59 (WEA 02)	07:19		08:02 (19B)	07:13		08:12 (WEA 12)	08:03
	21:36			21:01	11	06:40 (13B)	19:57	19	07:18 (WEA 02)	18:48	12	08:14 (19B)	16:44	9	08:21 (WEA 12)	16:07
5	05:03			05:42		06:29 (13B)	06:32		06:59 (WEA 02)	07:21		08:02 (19B)	07:15		08:10 (WEA 12)	08:04
	21:36			20:59	12	06:41 (13B)	19:55	19	07:18 (WEA 02)	18:46	13	08:15 (19B)	16:42	13	08:23 (WEA 12)	16:07
6	05:04			05:44		06:27 (13B)	06:34		06:59 (WEA 02)	07:23		08:01 (19B)	07:17		08:09 (WEA 12)	08:05
	21:35			20:57	15	06:42 (13B)	19:53	20	07:31 (14B)	18:43	14	08:15 (19B)	16:40	16	08:25 (WEA 12)	16:06
7	05:05			05:46		06:27 (13B)	06:35		07:01 (WEA 02)	07:24		08:02 (19B)	07:18		08:08 (WEA 12)	08:06
	21:34			20:55	16	06:43 (13B)	19:50	23	07:34 (14B)	18:41	13	08:15 (19B)	16:38	18	08:26 (WEA 12)	16:06
8	05:06			05:47		06:26 (13B)	06:37		07:02 (WEA 02)	07:26		08:01 (19B)	07:20		08:08 (WEA 12)	08:08
	21:34			20:53	16	06:42 (13B)	19:48	23	07:35 (14B)	18:39	12	08:13 (19B)	16:37	19	08:27 (WEA 12)	16:05
9	05:07			05:49		06:22 (6B)	06:39		07:04 (WEA 02)	07:28		08:02 (19B)	07:22		08:07 (WEA 12)	08:09
	21:33			20:52	21	06:43 (13B)	19:46	21	07:36 (14B)	18:37	10	08:12 (19B)	16:35	20	08:27 (WEA 12)	16:05
10	05:08			05:50		06:20 (6B)	06:40		07:22 (14B)	07:29		08:04 (19B)	07:24		08:07 (WEA 12)	08:10
	21:32			20:50	22	06:42 (13B)	19:43	14	07:36 (14B)	18:34	6	08:10 (19B)	16:34	21	08:28 (WEA 12)	16:05
11	05:09			05:52		06:20 (6B)	06:42		07:21 (14B)	07:31			07:26		08:07 (WEA 12)	08:11
	21:32			20:48	23	06:43 (13B)	19:41	14	07:35 (14B)	18:32			16:32	21	08:28 (WEA 12)	16:05
12	05:10			05:53		06:21 (6B)	06:43		07:21 (14B)	07:33			07:27		08:08 (WEA 12)	08:12
	21:31			20:46	21	06:42 (13B)	19:39	14	07:35 (14B)	18:30			16:30	20	08:28 (WEA 12)	16:05
13	05:11			05:55		06:23 (6B)	06:45		07:21 (14B)	07:34			07:29		08:08 (WEA 12)	08:13
	21:30			20:44	18	06:41 (13B)	19:37	12	07:33 (14B)	18:28			16:29	20	08:28 (WEA 12)	16:05
14	05:12			05:57		06:24 (6B)	06:47		07:22 (14B)	07:36			07:31		08:07 (WEA 12)	08:14
	21:29			20:42	16	06:40 (13B)	19:34	10	07:32 (14B)	18:26			16:27	20	08:27 (WEA 12)	16:05
15	05:13		06:03 (10B)	05:58		06:26 (6B)	06:48		07:23 (14B)	07:38			07:33		08:08 (WEA 12)	08:15
	21:28	3	06:06 (10B)	20:40	10	06:38 (13B)	19:32	6	07:29 (14B)	18:23			16:26	19	08:27 (WEA 12)	16:05
16	05:14		06:01 (10B)	06:00		06:32 (13B)	06:50		08:00 (18B)	07:40			07:34		08:09 (WEA 12)	08:16
	21:27	7	06:08 (10B)	20:38	2	06:34 (13B)	19:30	2	08:02 (18B)	18:21			16:25	18	08:27 (WEA 12)	16:05
17	05:15		06:00 (10B)	06:01			06:51		07:56 (18B)	07:41		08:49 (WEA 13)	07:36		08:10 (WEA 12)	08:17
	21:26	9	06:09 (10B)	20:36			19:27	11	08:07 (18B)	18:19	3	08:52 (WEA 13)	16:23	17	08:27 (WEA 12)	16:05
18	05:17		06:00 (10B)	06:03			06:53		07:54 (18B)	07:43		08:44 (WEA 13)	07:38		08:11 (WEA 12)	08:17
	21:25	11	06:11 (10B)	20:34			19:25	13	08:07 (18B)	18:17	12	08:56 (WEA 13)	16:22	16	08:27 (WEA 12)	16:05
19	05:18		06:00 (10B)	06:05			06:55		07:53 (18B)	07:45		08:42 (WEA 13)	07:39		08:12 (WEA 12)	08:18
	21:24	11	06:11 (10B)	20:32			19:23	16	08:09 (18B)	18:15	16	08:58 (WEA 13)	16:21	14	08:26 (WEA 12)	16:06
20	05:19		05:59 (10B)	06:06			06:56		07:51 (18B)	07:46		08:41 (WEA 13)	07:41		08:14 (WEA 12)	08:19
	21:23	12	06:11 (10B)	20:30			19:20	17	08:08 (18B)	18:13	19	09:00 (WEA 13)	16:20	11	08:25 (WEA 12)	16:06
21	05:21		05:58 (10B)	06:08			06:58		07:50 (18B)	07:48		08:40 (WEA 13)	07:43		08:15 (WEA 12)	08:19
	21:21	14	06:12 (10B)	20:28			19:18	19	08:09 (18B)	18:11	21	09:01 (WEA 13)	16:18	8	08:23 (WEA 12)	16:06
22	05:22		05:58 (10B)	06:09			07:00		07:50 (18B)	07:50		08:38 (WEA 13)	07:44			08:20
	21:20	14	06:12 (10B)	20:26			19:16	19	08:09 (18B)	18:09	23	09:01 (WEA 13)	16:17			16:07
23	05:23		05:59 (10B)	06:11			07:01		07:50 (18B)	07:52		08:38 (WEA 13)	07:46			08:20
	21:19	14	06:13 (10B)	20:24			19:13	18	08:08 (18B)	18:07	23	09:01 (WEA 13)	16:16			16:07
24	05:25		05:58 (10B)	06:13			07:03		07:50 (18B)	07:53		08:37 (WEA 13)	07:48			08:21
	21:18	15	06:13 (10B)	20:21			19:11	18	08:08 (18B)	18:05	24	09:01 (WEA 13)	16:15			16:08
25	05:26		05:58 (10B)	06:14			07:04		07:50 (18B)	06:55		07:37 (WEA 13)	07:49			08:21
	21:16	14	06:12 (10B)	20:19			19:09	16	08:06 (18B)	17:03	25	08:02 (WEA 13)	16:14			16:09
26	05:27		05:59 (10B)	06:16			07:06		07:51 (18B)	06:57		07:37 (WEA 13)	07:51			08:21
	21:15	14	06:13 (10B)	20:17			19:06	14	08:05 (18B)	17:01	25	08:02 (WEA 13)	16:13			16:09
27	05:29		05:59 (10B)	06:18			07:08		07:53 (18B)	06:59		07:38 (WEA 13)	07:52			08:22
	21:13	13	06:12 (10B)	20:15			19:04	10	08:03 (18B)	16:59	23	08:01 (WEA 13)	16:12			16:10
28	05:30		05:59 (10B)	06:19		07:06 (WEA 02)	07:09			07:01		07:38 (WEA 13)	07:54			08:22
	21:12	12	06:11 (10B)	20:13	9	07:15 (WEA 02)	19:02			16:57	23	08:01 (WEA 13)	16:11			16:11
29	05:32		06:01 (10B)	06:21		07:04 (WEA 02)	07:11			07:02		07:38 (WEA 13)	07:55			08:22
	21:10	10	06:11 (10B)	20:11	13	07:17 (WEA 02)	18:59			16:55	23	08:01 (WEA 13)	16:10			16:12
30	05:33		06:02 (10B)	06:22		07:03 (WEA 02)	07:13			07:04		07:39 (WEA 13)	07:57			08:22
	21:09	8	06:10 (10B)	20:08	15	07:18 (WEA 02)	18:57			16:53	21	08:00 (WEA 13)	16:10			16:12
31	05:35		06:04 (10B)	06:24		07:01 (WEA 02)				07:06		07:39 (WEA 13)				08:22
	21:07	4	06:08 (10B)	20:06	18	07:19 (WEA 02)				16:51	19	07:58 (WEA 13)				16:13
Sonnenscheinstunden	501			453			381			332			267			245
astr.max.mögl.Beschattung		185			264			426			396			334		
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22		
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96		
Reduktion Windrichtung		0,71			0,72			0,72			0,67			0,64		
Gesamte Reduktion		0,27			0,29			0,23			0,18			0,13		
Met.wahrsch.Beschattung		50			78			99			71			45		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 42 - Reinstedt - Hotel Harz-Ring

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22		09:07 (WEA 12)	07:56		08:31 (29B)	07:03		07:36 (20B)	06:52		07:47 (14B)	05:48			05:03		06:05 (13B)
	16:15	23	09:30 (WEA 12)	17:02	39	09:20 (WEA 13)	17:54	37	08:18 (19B)	19:47	21	08:08 (14B)	20:38			21:23	24	06:29 (13B)
2	08:22		09:08 (WEA 12)	07:54		08:32 (29B)	07:00		07:36 (20B)	06:50		07:48 (14B)	05:46			05:02		06:06 (13B)
	16:16	23	09:31 (WEA 12)	17:04	36	09:20 (WEA 13)	17:55	33	08:16 (19B)	19:49	20	08:08 (14B)	20:39			21:24	24	06:30 (13B)
3	08:22		09:08 (WEA 12)	07:53		08:50 (WEA 13)	06:58		07:34 (20B)	06:48		07:14 (WEA 02)	05:44			05:01		06:06 (13B)
	16:17	24	09:32 (WEA 12)	17:06	30	09:20 (WEA 13)	17:57	23	07:57 (WEA 11)	19:51	31	08:06 (14B)	20:41			21:25	24	06:30 (13B)
4	08:22		09:08 (WEA 12)	07:51		08:51 (WEA 13)	06:56		07:34 (20B)	06:46		07:12 (WEA 02)	05:42			05:01		06:06 (13B)
	16:18	24	09:32 (WEA 12)	17:08	30	09:21 (WEA 13)	17:59	34	08:18 (18B)	19:52	33	08:05 (14B)	20:43			21:26	23	06:29 (13B)
5	08:22		09:09 (WEA 12)	07:49		08:51 (WEA 13)	06:54		07:35 (20B)	06:43		07:10 (WEA 02)	05:40		06:05 (6B)	05:00		06:07 (13B)
	16:19	24	09:33 (WEA 12)	17:10	29	09:20 (WEA 13)	18:01	37	08:21 (18B)	19:54	33	08:03 (14B)	20:44	5	06:10 (6B)	21:27	22	06:29 (13B)
6	08:21		09:09 (WEA 12)	07:48		08:51 (WEA 13)	06:52		07:36 (20B)	06:41		07:09 (WEA 02)	05:39		06:03 (6B)	04:59		06:07 (13B)
	16:20	25	09:34 (WEA 12)	17:11	29	09:20 (WEA 13)	18:02	36	08:23 (18B)	19:56	32	08:01 (14B)	20:46	8	06:11 (6B)	21:28	22	06:29 (13B)
7	08:21		09:09 (WEA 12)	07:46		08:52 (WEA 13)	06:49		07:36 (20B)	06:39		07:07 (WEA 02)	05:37		06:02 (6B)	04:59		06:08 (13B)
	16:22	25	09:34 (WEA 12)	17:13	27	09:19 (WEA 13)	18:04	33	08:23 (18B)	19:57	23	07:30 (WEA 02)	20:48	11	06:13 (6B)	21:29	21	06:29 (13B)
8	08:20		09:09 (WEA 12)	07:44		08:52 (WEA 13)	06:47		07:58 (18B)	06:36		07:07 (WEA 02)	05:35		06:01 (6B)	04:58		06:08 (13B)
	16:23	25	09:34 (WEA 12)	17:15	26	09:18 (WEA 13)	18:06	26	08:24 (18B)	19:59	24	07:31 (WEA 02)	20:49	12	06:13 (6B)	21:30	20	06:28 (13B)
9	08:20		09:10 (WEA 12)	07:42		08:53 (WEA 13)	06:45		07:58 (18B)	06:34		07:06 (WEA 02)	05:33		06:01 (6B)	04:58		06:09 (13B)
	16:24	25	09:35 (WEA 12)	17:17	24	09:17 (WEA 13)	18:08	27	08:25 (18B)	20:01	25	07:31 (WEA 02)	20:51	13	06:14 (6B)	21:31	20	06:29 (13B)
10	08:19		09:10 (WEA 12)	07:41		08:56 (WEA 13)	06:43		07:57 (18B)	06:32		07:06 (WEA 02)	05:32		06:00 (6B)	04:57		06:10 (13B)
	16:26	25	09:35 (WEA 12)	17:19	20	09:16 (WEA 13)	18:09	28	08:25 (18B)	20:02	25	07:31 (WEA 02)	20:52	13	06:13 (6B)	21:32	19	06:29 (13B)
11	08:19		09:11 (WEA 12)	07:39		08:57 (WEA 13)	06:40		07:56 (18B)	06:30		07:05 (WEA 02)	05:30		06:00 (6B)	04:57		06:11 (13B)
	16:27	24	09:35 (WEA 12)	17:21	18	09:15 (WEA 13)	18:11	29	08:25 (18B)	20:04	25	07:30 (WEA 02)	20:54	13	06:13 (6B)	21:33	18	06:29 (13B)
12	08:18		09:12 (WEA 12)	07:37		09:00 (WEA 13)	06:38		07:56 (18B)	06:28		07:05 (WEA 02)	05:28		06:01 (6B)	04:57		05:36 (10B)
	16:29	24	09:36 (WEA 12)	17:23	12	09:12 (WEA 13)	18:13	29	08:25 (18B)	20:06	25	07:30 (WEA 02)	20:56	19	06:20 (13B)	21:33	23	06:28 (13B)
13	08:18		09:12 (WEA 12)	07:35			06:36		07:56 (18B)	06:25		07:05 (WEA 02)	05:27		06:00 (6B)	04:56		05:35 (10B)
	16:30	24	09:36 (WEA 12)	17:24			18:15	29	08:25 (18B)	20:07	24	07:29 (WEA 02)	20:57	22	06:22 (13B)	21:34	24	06:28 (13B)
14	08:17		09:13 (WEA 12)	07:33			06:34		07:55 (18B)	06:23		07:06 (WEA 02)	05:25		06:02 (6B)	04:56		05:35 (10B)
	16:32	23	09:36 (WEA 12)	17:26			18:16	29	08:24 (18B)	20:09	22	07:28 (WEA 02)	20:59	22	06:24 (13B)	21:34	24	06:28 (13B)
15	08:16		09:13 (WEA 12)	07:31			06:31		06:55 (WEA 10)	06:21		06:44 (WEA 03)	05:24		06:03 (6B)	04:56		05:35 (10B)
	16:33	24	09:37 (WEA 12)	17:28			18:18	36	08:23 (18B)	20:11	33	07:27 (WEA 02)	21:00	23	06:26 (13B)	21:35	25	06:28 (13B)
16	08:15		09:14 (WEA 12)	07:29			06:29		06:52 (WEA 10)	06:19		06:42 (WEA 03)	05:22		06:04 (6B)	04:56		05:35 (10B)
	16:35	23	09:37 (WEA 12)	17:30			18:20	41	08:23 (18B)	20:13	35	07:26 (WEA 02)	21:02	22	06:26 (13B)	21:36	24	06:28 (13B)
17	08:14		09:15 (WEA 12)	07:27			06:27		06:50 (WEA 10)	06:17		06:40 (WEA 03)	05:21		06:06 (13B)	04:56		05:35 (10B)
	16:36	22	09:37 (WEA 12)	17:32			18:22	42	08:21 (18B)	20:14	34	07:24 (WEA 02)	21:03	21	06:27 (13B)	21:36	25	06:28 (13B)
18	08:13		08:58 (WEA 13)	07:25			06:25		06:49 (WEA 10)	06:14		06:39 (WEA 03)	05:19		06:06 (13B)	04:56		05:35 (10B)
	16:38	30	09:37 (WEA 12)	17:34			18:23	41	08:20 (18B)	20:16	32	07:22 (WEA 02)	21:05	22	06:28 (13B)	21:36	26	06:29 (13B)
19	08:12		08:55 (WEA 13)	07:24		08:10 (19B)	06:22		06:48 (WEA 10)	06:12		06:37 (WEA 03)	05:18		06:05 (13B)	04:56		05:35 (10B)
	16:39	34	09:36 (WEA 12)	17:35	6	08:16 (19B)	18:25	40	08:18 (18B)	20:18	22	06:59 (11B)	21:06	23	06:28 (13B)	21:37	25	06:29 (13B)
20	08:11		08:54 (WEA 13)	07:21		08:06 (19B)	06:20		06:48 (WEA 10)	06:10		06:37 (WEA 03)	05:16		06:04 (13B)	04:56		05:35 (10B)
	16:41	34	09:35 (WEA 12)	17:37	11	08:17 (19B)	18:27	37	08:16 (18B)	20:19	22	06:59 (11B)	21:08	25	06:29 (13B)	21:37	26	06:29 (13B)
21	08:10		08:53 (WEA 13)	07:19		07:44 (WEA 11)	06:18		06:47 (WEA 10)	06:08		06:36 (WEA 03)	05:15		06:04 (13B)	04:56		05:35 (10B)
	16:43	36	09:35 (WEA 12)	17:39	25	08:19 (19B)	18:28	31	08:12 (18B)	20:21	23	06:59 (11B)	21:09	25	06:29 (13B)	21:37	26	06:29 (13B)
22	08:09		08:52 (WEA 13)	07:17		07:42 (WEA 11)	06:15		06:47 (WEA 10)	06:06		06:36 (WEA 03)	05:14		06:04 (13B)	04:56		05:36 (10B)
	16:44	35	09:34 (WEA 12)	17:41	31	08:20 (19B)	18:30	21	07:08 (WEA 10)	20:23	22	06:58 (11B)	21:10	26	06:30 (13B)	21:38	26	06:30 (13B)
23	08:08		08:51 (WEA 13)	07:15		07:41 (WEA 11)	06:13		06:47 (WEA 10)	06:04		06:36 (WEA 03)	05:12		06:04 (13B)	04:56		05:36 (10B)
	16:46	34	09:32 (WEA 12)	17:43	35	08:21 (19B)	18:32	21	07:08 (15B)	20:24	22	06:58 (11B)	21:12	26	06:30 (13B)	21:38	25	06:30 (13B)
24	08:07		08:51 (WEA 13)	07:13		07:40 (WEA 11)	06:11		06:47 (WEA 10)	06:02		06:36 (WEA 03)	05:11		06:04 (13B)	04:57		05:36 (10B)
	16:48	30	09:30 (WEA 12)	17:45	37	08:21 (19B)	18:34	20	07:07 (15B)	20:26	20	06:56 (11B)	21:13	26	06:30 (13B)	21:38	26	06:30 (13B)
25	08:05		08:33 (29B)	07:11		07:39 (WEA 11)	06:08		06:48 (WEA 10)	06:00		06:36 (WEA 03)	05:10		06:04 (13B)	04:57		05:36 (10B)
	16:50	30	09:17 (WEA 13)	17:46	39	08:21 (19B)	18:35	18	07:06 (15B)	20:28	19	06:55 (11B)	21:15	25	06:29 (13B)	21:38	25	06:29 (13B)
26	08:04		08:31 (29B)	07:09		07:39 (WEA 11)	06:06		06:49 (WEA 10)	05:58		06:38 (WEA 03)	05:09		06:04 (13B)	04:57		05:37 (10B)
	16:51	34	09:17 (WEA 13)	17:48	39	08:21 (19B)	18:37	18	07:07 (14B)	20:29	17	06:55 (WEA 03)	21:16	25	06:29 (13B)	21:38	24	06:30 (13B)
27	08:03		08:30 (29B)	07:07		07:38 (WEA 11)	06:04		06:50 (WEA 10)	05:56		06:39 (WEA 03)	05:08		06:05 (13B)	04:58		05:37 (10B)
	16:53	37	09:18 (WEA 13)	17:50	39	08:20 (19B)	18:39	17	07:07 (14B)	20:31	15	06:54 (WEA 03)	21:17	25	06:30 (13B)	21:38	25	06:30 (13B)
28	08:02		08:29 (29B)	07:05		07:38 (20B)	06:02		06:50 (14B)	05:54		06:40 (WEA 03)	05:07		06:05 (13B)	04:58		05:38 (10B)
	16:55	39	09:18 (WEA 13)	17:52	37	08:19 (19B)	18:40	18	07:08 (14B)	20:33	12	06:52 (WEA 03)	21:18	25	06:30 (13B)	21:38	24	06:31 (13B)
29	08:00		08:30 (29B)				06:59		07:49 (14B)	05:52		06:42 (WEA 03)	05:06		06:05 (13B)	04:59		05:38 (10B)
	16:57	40	09:20 (WEA 13)				19:42	20	08:09 (14B)	20:34	7	06:49 (WEA 03)	21:20	25	06:30 (13B)	21:38	24	06:31 (13B)
30	07:59		08:29 (29B)				06:57		07:47 (14B)	05:50			05:05		06:05 (13B)	04:59		05:40 (10B)
	16:59	42	09:20 (WEA 13)				19:44	21	08:08 (14B)	20:36			21:21	25	06:30 (13B)	21:37	22	06:32 (13B)
31	07:57		08:30 (29B)				06:55		07:47 (14B)				05:04		06:05 (13B)			
	17:00	40	09:20 (WEA 13)				19:45	21	08:08 (14B)				21:22	25	06:30 (13B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		902			619			893			698			552			706	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,61			0,65			0,69			0,72			0,72			0,71	
Gesamte Reduktion		0,12			0,19			0,18			0,24			0,29			0,23	
Met.wahrsch.Beschattung		110			120			156			169			160			164	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 42 - Reinstedt - Hotel Harz-Ring

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember	
1	05:00	05:42 (108)	05:36	06:11 (6B)	06:26	07:05 (WEA 02)	07:14	08:34 (18B)	07:08	08:24 (WEA 13)	07:58	08:53 (WEA 12)
	21:37	21 06:33 (13B)	21:06	16 06:29 (13B)	20:04	25 07:30 (WEA 02)	18:55	30 09:04 (18B)	16:49	21 08:45 (WEA 13)	16:09	24 09:17 (WEA 12)
2	05:01	06:14 (13B)	05:38	06:10 (6B)	06:27	07:04 (WEA 02)	07:16	08:35 (18B)	07:09	08:23 (WEA 13)	08:00	08:53 (WEA 12)
	21:37	19 06:33 (13B)	21:04	13 06:23 (6B)	20:02	25 07:29 (WEA 02)	18:52	29 09:04 (18B)	16:47	24 08:47 (WEA 13)	16:08	25 09:18 (WEA 12)
3	05:01	06:14 (13B)	05:39	06:11 (6B)	06:29	07:04 (WEA 02)	07:18	08:35 (18B)	07:11	08:22 (WEA 13)	08:01	08:53 (WEA 12)
	21:36	20 06:34 (13B)	21:02	13 06:24 (6B)	19:59	25 07:29 (WEA 02)	18:50	28 09:03 (18B)	16:45	26 08:48 (WEA 13)	16:08	25 09:18 (WEA 12)
4	05:02	06:15 (13B)	05:41	06:10 (6B)	06:30	07:04 (WEA 02)	07:19	08:34 (18B)	07:13	08:21 (WEA 13)	08:03	08:54 (WEA 12)
	21:36	20 06:35 (13B)	21:01	13 06:23 (6B)	19:57	24 07:28 (WEA 02)	18:48	28 09:02 (18B)	16:44	28 08:49 (WEA 13)	16:07	25 09:19 (WEA 12)
5	05:03	06:14 (13B)	05:42	06:11 (6B)	06:32	07:04 (WEA 02)	07:21	08:35 (18B)	07:15	08:21 (WEA 13)	08:04	08:54 (WEA 12)
	21:36	20 06:34 (13B)	20:59	12 06:23 (6B)	19:55	23 07:27 (WEA 02)	18:46	26 09:01 (18B)	16:42	28 08:49 (WEA 13)	16:07	25 09:19 (WEA 12)
6	05:04	06:14 (13B)	05:44	06:12 (6B)	06:34	07:04 (WEA 02)	07:23	08:14 (20B)	07:17	08:21 (WEA 13)	08:05	08:56 (WEA 12)
	21:35	21 06:35 (13B)	20:57	10 06:22 (6B)	19:53	32 07:56 (14B)	18:43	31 09:00 (18B)	16:40	29 08:50 (WEA 13)	16:06	24 09:20 (WEA 12)
7	05:05	06:14 (13B)	05:46	06:14 (6B)	06:35	07:05 (WEA 02)	07:24	08:11 (20B)	07:18	08:20 (WEA 13)	08:06	08:56 (WEA 12)
	21:34	22 06:36 (13B)	20:55	7 06:21 (6B)	19:50	35 07:59 (14B)	18:41	33 08:58 (18B)	16:38	30 08:50 (WEA 13)	16:06	24 09:20 (WEA 12)
8	05:06	06:14 (13B)	05:47	06:15 (6B)	06:37	07:06 (WEA 02)	07:26	08:10 (20B)	07:20	08:20 (WEA 13)	08:08	08:56 (WEA 12)
	21:34	22 06:36 (13B)	20:53	3 06:18 (6B)	19:48	33 07:59 (14B)	18:39	38 08:57 (18B)	16:37	31 08:51 (WEA 13)	16:05	24 09:20 (WEA 12)
9	05:07	06:14 (13B)	05:49		06:39	07:08 (WEA 02)	07:28	08:10 (20B)	07:22	08:03 (29B)	08:09	08:56 (WEA 12)
	21:33	23 06:37 (13B)	20:52		19:46	31 08:00 (14B)	18:37	35 08:55 (18B)	16:35	37 08:51 (WEA 13)	16:05	24 09:20 (WEA 12)
10	05:08	06:14 (13B)	05:50		06:40	07:14 (WEA 02)	07:29	08:09 (20B)	07:24	08:02 (29B)	08:10	08:57 (WEA 12)
	21:32	23 06:37 (13B)	20:50		19:43	21 08:01 (14B)	18:34	30 08:51 (18B)	16:34	38 08:51 (WEA 13)	16:05	23 09:20 (WEA 12)
11	05:09	06:14 (13B)	05:52		06:42	07:40 (14B)	07:31	08:09 (20B)	07:25	08:01 (29B)	08:11	08:58 (WEA 12)
	21:32	24 06:38 (13B)	20:48		19:41	20 08:00 (14B)	18:32	28 08:47 (19B)	16:32	40 08:51 (WEA 13)	16:05	23 09:21 (WEA 12)
12	05:10	06:14 (13B)	05:53		06:43	07:39 (14B)	07:33	08:09 (20B)	07:27	08:01 (29B)	08:12	08:59 (WEA 12)
	21:31	24 06:38 (13B)	20:46		19:39	21 08:00 (14B)	18:30	35 08:50 (19B)	16:30	41 08:51 (WEA 13)	16:05	22 09:21 (WEA 12)
13	05:11	06:14 (13B)	05:55		06:45	07:39 (14B)	07:34	08:10 (20B)	07:29	08:01 (29B)	08:13	08:59 (WEA 12)
	21:30	24 06:38 (13B)	20:44		19:37	20 07:59 (14B)	18:28	37 08:52 (19B)	16:29	40 08:51 (WEA 13)	16:05	23 09:22 (WEA 12)
14	05:12	06:13 (13B)	05:57	06:49 (WEA 03)	06:47	07:39 (14B)	07:36	08:11 (WEA 11)	07:31	08:01 (29B)	08:14	09:00 (WEA 12)
	21:29	26 06:39 (13B)	20:42	8 06:57 (WEA 03)	19:34	20 07:59 (14B)	18:26	38 08:52 (19B)	16:27	39 08:50 (WEA 13)	16:05	22 09:22 (WEA 12)
15	05:13	06:13 (13B)	05:58	06:47 (WEA 03)	06:48	07:39 (14B)	07:38	08:11 (WEA 11)	07:32	08:02 (29B)	08:15	09:00 (WEA 12)
	21:28	26 06:39 (13B)	20:40	13 07:00 (WEA 03)	19:32	19 07:58 (14B)	18:23	40 08:53 (19B)	16:26	37 08:50 (WEA 13)	16:05	21 09:21 (WEA 12)
16	05:14	06:13 (13B)	06:00	06:45 (WEA 03)	06:50	07:40 (14B)	07:40	08:10 (WEA 11)	07:34	08:04 (29B)	08:16	09:00 (WEA 12)
	21:27	26 06:39 (13B)	20:38	15 07:00 (WEA 03)	19:30	17 07:57 (14B)	18:21	39 08:52 (19B)	16:25	34 08:50 (WEA 13)	16:05	22 09:22 (WEA 12)
17	05:15	06:13 (13B)	06:01	06:44 (WEA 03)	06:51	07:38 (WEA 10)	07:41	08:11 (WEA 11)	07:36	08:06 (29B)	08:17	09:01 (WEA 12)
	21:26	26 06:39 (13B)	20:36	18 07:02 (WEA 03)	19:27	17 07:55 (14B)	18:19	38 08:52 (19B)	16:23	30 08:50 (WEA 13)	16:05	22 09:23 (WEA 12)
18	05:17	06:13 (13B)	06:03	06:43 (WEA 03)	06:53	07:35 (WEA 10)	07:43	08:12 (WEA 11)	07:38	08:25 (WEA 13)	08:17	09:02 (WEA 12)
	21:25	26 06:39 (13B)	20:34	19 07:02 (11B)	19:25	18 07:53 (15B)	18:17	36 08:52 (19B)	16:22	30 09:04 (WEA 12)	16:05	21 09:23 (WEA 12)
19	05:18	06:14 (13B)	06:05	06:43 (WEA 03)	06:55	07:34 (WEA 10)	07:45	08:13 (WEA 11)	07:39	08:26 (WEA 13)	08:18	09:03 (WEA 12)
	21:24	26 06:40 (13B)	20:32	20 07:03 (11B)	19:23	20 07:54 (15B)	18:15	33 08:52 (19B)	16:21	34 09:07 (WEA 12)	16:06	21 09:24 (WEA 12)
20	05:19	06:14 (13B)	06:06	06:42 (WEA 03)	06:56	07:33 (WEA 10)	07:46	08:14 (WEA 11)	07:41	08:27 (WEA 13)	08:19	09:03 (WEA 12)
	21:23	26 06:40 (13B)	20:30	21 07:03 (11B)	19:20	20 07:53 (WEA 10)	18:13	30 08:51 (19B)	16:19	35 09:09 (WEA 12)	16:06	21 09:24 (WEA 12)
21	05:21	06:14 (13B)	06:08	06:42 (WEA 03)	06:58	07:32 (WEA 10)	07:48	08:17 (WEA 11)	07:43	08:28 (WEA 13)	08:19	09:04 (WEA 12)
	21:21	25 06:39 (13B)	20:28	22 07:04 (11B)	19:18	21 07:53 (WEA 10)	18:11	21 08:50 (19B)	16:18	36 09:10 (WEA 12)	16:06	21 09:25 (WEA 12)
22	05:22	06:14 (13B)	06:09	06:41 (WEA 03)	07:00	07:32 (WEA 10)	07:50	08:37 (19B)	07:44	08:30 (WEA 13)	08:20	09:04 (WEA 12)
	21:20	25 06:39 (13B)	20:26	23 07:04 (11B)	19:16	29 08:56 (18B)	18:09	10 08:47 (19B)	16:17	34 09:11 (WEA 12)	16:07	21 09:25 (WEA 12)
23	05:23	06:15 (13B)	06:11	06:41 (WEA 03)	07:01	07:31 (WEA 10)	07:52	08:41 (19B)	07:46	08:32 (WEA 13)	08:20	09:05 (WEA 12)
	21:19	24 06:39 (13B)	20:24	23 07:04 (11B)	19:13	36 08:59 (18B)	18:07	2 08:43 (19B)	16:16	33 09:13 (WEA 12)	16:07	21 09:26 (WEA 12)
24	05:25	06:15 (13B)	06:13	06:41 (WEA 03)	07:03	07:32 (WEA 10)	07:53		07:48	08:35 (WEA 13)	08:21	09:05 (WEA 12)
	21:18	24 06:39 (13B)	20:21	24 07:20 (WEA 02)	19:11	39 09:01 (18B)	18:05		16:15	29 09:14 (WEA 12)	16:08	21 09:26 (WEA 12)
25	05:26	06:15 (13B)	06:14	06:42 (WEA 03)	07:04	07:31 (WEA 10)	06:55		07:49	08:53 (WEA 12)	08:21	09:05 (WEA 12)
	21:16	23 06:38 (13B)	20:19	33 07:25 (WEA 02)	19:09	41 09:02 (18B)	17:03		16:14	22 09:15 (WEA 12)	16:09	21 09:26 (WEA 12)
26	05:27	06:16 (13B)	06:16	06:42 (WEA 03)	07:06	07:32 (WEA 10)	06:57		07:51	08:52 (WEA 12)	08:21	09:05 (WEA 12)
	21:15	22 06:38 (13B)	20:17	35 07:26 (WEA 02)	19:06	42 09:03 (18B)	17:01		16:13	23 09:15 (WEA 12)	16:09	21 09:26 (WEA 12)
27	05:29	06:17 (13B)	06:18	06:44 (WEA 03)	07:08	07:34 (WEA 10)	06:59		07:52	08:52 (WEA 12)	08:22	09:06 (WEA 12)
	21:13	20 06:37 (13B)	20:15	35 07:28 (WEA 02)	19:04	40 09:04 (18B)	16:59		16:12	24 09:16 (WEA 12)	16:10	22 09:28 (WEA 12)
28	05:30	06:14 (6B)	06:19	06:45 (WEA 03)	07:09	07:35 (WEA 10)	07:01		07:54	08:53 (WEA 12)	08:22	09:06 (WEA 12)
	21:12	22 06:36 (13B)	20:13	33 07:28 (WEA 02)	19:02	38 09:04 (18B)	16:57		16:11	24 09:17 (WEA 12)	16:11	22 09:28 (WEA 12)
29	05:32	06:13 (6B)	06:21	07:07 (WEA 02)	07:11	08:36 (18B)	07:02	08:32 (WEA 13)	07:55	08:52 (WEA 12)	08:22	09:07 (WEA 12)
	21:10	23 06:36 (13B)	20:11	22 07:29 (WEA 02)	18:59	28 09:04 (18B)	16:55	6 08:38 (WEA 13)	16:10	24 09:16 (WEA 12)	16:12	22 09:29 (WEA 12)
30	05:33	06:12 (6B)	06:22	07:06 (WEA 02)	07:13	08:35 (18B)	07:04	08:29 (WEA 13)	07:57	08:53 (WEA 12)	08:22	09:07 (WEA 12)
	21:09	22 06:34 (13B)	20:08	24 07:30 (WEA 02)	18:57	30 09:05 (18B)	16:53	13 08:42 (WEA 13)	16:10	24 09:17 (WEA 12)	16:12	22 09:29 (WEA 12)
31	05:35	06:11 (6B)	06:24	07:05 (WEA 02)			07:06	08:25 (WEA 13)			08:22	09:08 (WEA 12)
	21:07	21 06:32 (13B)	20:06	24 07:29 (WEA 02)			16:51	19 08:44 (WEA 13)			16:13	22 09:30 (WEA 12)
Sonnenscheinstunden	501		453		381		332		267		245	
astr.max.mögl.Beschattung		716		499		810		733		925		697
Red.Sonnenscheinwahrsch.		0,40		0,43		0,34		0,28		0,22		0,18
Reduktion Betriebsdauer		0,96		0,96		0,96		0,96		0,96		0,96
Reduktion Windrichtung		0,71		0,72		0,71		0,67		0,62		0,60
Gesamte Reduktion		0,27		0,29		0,23		0,18		0,13		0,10
Met.wahrsch.Beschattung		194		145		184		131		119		69

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 43 - Reinstedt - Bauschuttrecycling

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22		09:00 (WEA 09)	07:56		08:27 (WEA 08)	07:03		07:55 (20B)	06:52		07:21 (WEA 02)	05:48			05:03		06:06 (13B)
	16:15	52	09:52 (WEA 12)	17:02	41	09:42 (WEA 13)	17:54	45	09:16 (18B)	19:47	28	08:24 (14B)	20:38			21:23	32	06:38 (13B)
2	08:22		09:01 (WEA 09)	07:54		08:27 (WEA 08)	07:00		08:42 (18B)	06:50		07:19 (WEA 02)	05:46			05:02		06:07 (13B)
	16:16	52	09:53 (WEA 12)	17:04	38	09:40 (WEA 13)	17:55	34	09:16 (18B)	19:49	21	07:40 (WEA 02)	20:39			21:24	32	06:39 (13B)
3	08:22		09:01 (WEA 09)	07:53		08:27 (WEA 08)	06:58		08:41 (18B)	06:48		07:17 (WEA 02)	05:44			05:01		06:06 (13B)
	16:17	52	09:53 (WEA 12)	17:06	33	09:38 (WEA 13)	17:57	33	09:14 (18B)	19:51	23	07:40 (WEA 02)	20:41			21:25	33	06:39 (13B)
4	08:22		09:01 (WEA 09)	07:51		08:28 (WEA 08)	06:56		08:42 (18B)	06:46		07:16 (WEA 02)	05:42			05:01		06:06 (13B)
	16:18	52	09:53 (WEA 12)	17:08	25	09:35 (WEA 13)	17:59	32	09:14 (18B)	19:52	25	07:41 (WEA 02)	20:43			21:26	33	06:39 (13B)
5	08:22		09:02 (WEA 09)	07:49		08:28 (WEA 08)	06:54		08:43 (18B)	06:43		07:06 (WEA 04)	05:40			05:00		06:07 (13B)
	16:19	51	09:53 (WEA 12)	17:10	19	08:47 (WEA 08)	18:01	30	09:13 (18B)	19:54	31	07:41 (WEA 02)	20:44			21:27	32	06:39 (13B)
6	08:21		09:03 (WEA 09)	07:48		08:29 (WEA 08)	06:52		08:44 (18B)	06:41		07:04 (WEA 04)	05:39		06:04 (6B)	04:59		06:06 (13B)
	16:20	51	09:54 (WEA 12)	17:11	17	08:46 (WEA 08)	18:02	28	09:12 (18B)	19:56	36	07:42 (WEA 02)	20:46	8	06:12 (6B)	21:28	33	06:39 (13B)
7	08:21		09:03 (WEA 09)	07:46		08:29 (WEA 08)	06:49		08:44 (18B)	06:39		07:01 (WEA 04)	05:37		06:03 (6B)	04:59		06:07 (13B)
	16:22	50	09:53 (WEA 12)	17:13	16	08:45 (WEA 08)	18:04	25	09:09 (18B)	19:57	40	07:41 (WEA 02)	20:48	11	06:14 (6B)	21:29	33	06:40 (13B)
8	08:20		09:03 (WEA 09)	07:44		08:30 (WEA 08)	06:47		08:45 (18B)	06:36		06:59 (WEA 04)	05:35		06:01 (6B)	04:58		06:07 (13B)
	16:23	50	09:53 (WEA 12)	17:15	14	08:44 (WEA 08)	18:06	23	09:08 (18B)	19:59	42	07:41 (WEA 02)	20:49	13	06:14 (6B)	21:30	32	06:39 (13B)
9	08:20		09:04 (WEA 09)	07:42		08:32 (WEA 08)	06:45		08:47 (18B)	06:34		06:57 (WEA 04)	05:33		06:01 (6B)	04:58		06:07 (13B)
	16:24	49	09:53 (WEA 12)	17:17	13	08:45 (19B)	18:08	18	09:05 (18B)	20:01	44	07:41 (WEA 02)	20:51	14	06:15 (6B)	21:31	33	06:40 (13B)
10	08:19		09:04 (WEA 09)	07:41		08:32 (19B)	06:43		08:51 (18B)	06:32		06:57 (WEA 04)	05:32		06:01 (6B)	04:57		06:08 (13B)
	16:26	49	09:53 (WEA 12)	17:19	15	08:47 (19B)	18:09	11	09:02 (18B)	20:02	43	07:40 (WEA 02)	20:52	14	06:15 (6B)	21:32	32	06:40 (13B)
11	08:19		08:48 (29B)	07:39		08:31 (19B)	06:40		07:05 (WEA 10)	06:30		06:55 (WEA 04)	05:30		06:00 (6B)	04:57		06:07 (13B)
	16:27	49	09:52 (WEA 12)	17:21	17	08:48 (19B)	18:11	10	07:15 (WEA 10)	20:04	44	07:39 (WEA 02)	20:54	15	06:15 (6B)	21:33	33	06:40 (13B)
12	08:18		08:48 (29B)	07:37		08:30 (19B)	06:38		07:02 (WEA 10)	06:28		06:56 (WEA 04)	05:28		06:00 (6B)	04:57		06:08 (13B)
	16:29	50	09:52 (WEA 12)	17:23	19	08:49 (19B)	18:13	15	07:17 (WEA 10)	20:06	42	07:38 (WEA 02)	20:56	15	06:15 (6B)	21:33	32	06:40 (13B)
13	08:18		08:47 (29B)	07:35		08:30 (19B)	06:36		07:01 (WEA 10)	06:25		06:50 (WEA 03)	05:27		06:00 (6B)	04:56		06:08 (13B)
	16:30	50	09:51 (WEA 12)	17:24	19	08:49 (19B)	18:15	21	07:22 (15B)	20:07	46	07:37 (WEA 02)	20:57	14	06:14 (6B)	21:34	32	06:40 (13B)
14	08:17		08:46 (29B)	07:33		08:01 (WEA 11)	06:34		06:59 (WEA 10)	06:23		06:47 (WEA 03)	05:25		06:01 (6B)	04:56		06:09 (13B)
	16:32	46	09:48 (WEA 12)	17:26	27	08:50 (19B)	18:16	24	07:23 (15B)	20:09	46	07:36 (WEA 02)	20:59	14	06:15 (6B)	21:34	32	06:41 (13B)
15	08:16		08:45 (29B)	07:31		07:58 (WEA 11)	06:31		06:58 (WEA 10)	06:21		06:45 (WEA 03)	05:24		06:02 (6B)	04:56		06:09 (13B)
	16:33	45	09:43 (WEA 13)	17:28	33	08:50 (19B)	18:18	26	07:24 (15B)	20:11	44	07:34 (WEA 02)	21:00	19	06:25 (13B)	21:35	32	06:41 (13B)
16	08:15		08:45 (29B)	07:29		07:56 (WEA 11)	06:29		06:58 (WEA 10)	06:19		06:43 (WEA 03)	05:22		06:02 (6B)	04:56		06:09 (13B)
	16:35	45	09:43 (WEA 13)	17:30	37	08:50 (19B)	18:20	27	07:25 (15B)	20:13	40	07:32 (WEA 02)	21:02	25	06:28 (13B)	21:36	32	06:41 (13B)
17	08:14		08:45 (29B)	07:27		07:55 (WEA 11)	06:27		06:57 (WEA 10)	06:17		06:42 (WEA 03)	05:21		06:03 (6B)	04:56		06:10 (13B)
	16:36	45	09:44 (WEA 13)	17:32	50	09:07 (18B)	18:22	27	07:24 (15B)	20:14	35	07:29 (WEA 02)	21:03	27	06:30 (13B)	21:36	31	06:41 (13B)
18	08:13		08:45 (29B)	07:25		07:54 (WEA 11)	06:25		06:57 (WEA 10)	06:14		06:42 (WEA 03)	05:19		06:05 (6B)	04:56		06:10 (13B)
	16:38	45	09:44 (WEA 13)	17:34	58	09:10 (18B)	18:23	31	07:28 (14B)	20:16	27	07:09 (11B)	21:05	27	06:32 (13B)	21:36	31	06:41 (13B)
19	08:12		08:45 (29B)	07:23		07:53 (WEA 11)	06:22		06:57 (WEA 10)	06:12		06:40 (WEA 03)	05:18		06:10 (13B)	04:56		06:10 (13B)
	16:39	44	09:44 (WEA 13)	17:35	62	09:12 (18B)	18:25	34	07:31 (14B)	20:18	28	07:08 (11B)	21:06	22	06:32 (13B)	21:37	32	06:42 (13B)
20	08:11		08:45 (29B)	07:21		07:52 (WEA 11)	06:20		06:57 (WEA 10)	06:10		06:40 (WEA 03)	05:16		06:09 (13B)	04:56		06:10 (13B)
	16:41	44	09:45 (WEA 13)	17:37	63	09:13 (18B)	18:27	36	07:33 (14B)	20:19	28	07:08 (11B)	21:08	24	06:33 (13B)	21:37	32	06:42 (13B)
21	08:10		08:46 (29B)	07:19		07:52 (WEA 11)	06:18		06:57 (WEA 10)	06:08		06:39 (WEA 03)	05:15		06:09 (13B)	04:56		06:10 (13B)
	16:43	44	09:45 (WEA 13)	17:39	62	09:14 (18B)	18:28	36	07:33 (14B)	20:21	28	07:07 (11B)	21:09	25	06:34 (13B)	21:37	32	06:42 (13B)
22	08:09		08:47 (29B)	07:17		07:52 (WEA 11)	06:15		06:58 (WEA 10)	06:06		06:39 (WEA 03)	05:14		06:08 (13B)	04:56		06:11 (13B)
	16:44	43	09:46 (WEA 13)	17:41	57	09:15 (18B)	18:30	36	07:34 (14B)	20:23	27	07:06 (11B)	21:10	27	06:35 (13B)	21:38	32	06:43 (13B)
23	08:08		08:48 (29B)	07:15		07:52 (WEA 11)	06:13		07:00 (WEA 10)	06:04		06:39 (WEA 03)	05:12		06:08 (13B)	04:56		06:11 (13B)
	16:46	39	09:45 (WEA 13)	17:43	55	09:16 (18B)	18:32	34	07:34 (14B)	20:24	26	07:05 (11B)	21:12	28	06:36 (13B)	21:38	32	06:43 (13B)
24	08:07		08:50 (29B)	07:13		07:52 (WEA 11)	06:11		07:01 (WEA 10)	06:02		06:40 (WEA 03)	05:11		06:08 (13B)	04:57		06:11 (13B)
	16:48	36	09:45 (WEA 13)	17:45	55	09:16 (18B)	18:34	32	07:33 (14B)	20:26	23	07:03 (11B)	21:13	28	06:36 (13B)	21:38	32	06:43 (13B)
25	08:05		08:33 (WEA 08)	07:11		07:52 (20B)	06:08		07:09 (14B)	06:00		06:40 (WEA 03)	05:10		06:06 (13B)	04:57		06:11 (13B)
	16:50	38	09:46 (WEA 13)	17:46	56	09:17 (18B)	18:35	24	07:33 (14B)	20:28	21	07:01 (11B)	21:15	30	06:36 (13B)	21:38	31	06:42 (13B)
26	08:04		08:31 (WEA 08)	07:09		07:53 (20B)	06:06		07:09 (14B)	05:58		06:42 (WEA 03)	05:09		06:06 (13B)	04:57		06:11 (13B)
	16:51	41	09:45 (WEA 13)	17:48	54	09:17 (18B)	18:37	24	07:33 (14B)	20:29	17	06:59 (WEA 03)	21:16	30	06:36 (13B)	21:38	32	06:43 (13B)
27	08:03		08:30 (WEA 08)	07:07		07:52 (20B)	06:04		07:08 (14B)	05:56		06:43 (WEA 03)	05:08		06:07 (13B)	04:58		06:11 (13B)
	16:53	42	09:45 (WEA 13)	17:50	54	09:16 (18B)	18:39	24	07:32 (14B)	20:31	15	06:58 (WEA 03)	21:17	31	06:38 (13B)	21:38	32	06:43 (13B)
28	08:02		08:28 (WEA 08)	07:05		07:53 (20B)	06:02		07:09 (14B)	05:54		06:44 (WEA 03)	05:07		06:07 (13B)	04:58		06:12 (13B)
	16:55	44	09:45 (WEA 13)	17:52	51	09:16 (18B)	18:40	22	07:31 (14B)	20:33	12	06:56 (WEA 03)	21:18	31	06:38 (13B)	21:38	32	06:44 (13B)
29	08:00		08:28 (WEA 08)				06:59		08:09 (14B)	05:52		06:48 (WEA 03)	05:06		06:06 (13B)	04:59		06:12 (13B)
	16:57	45	09:45 (WEA 13)				19:42	22	08:31 (14B)	20:34	4	06:52 (WEA 03)	21:20	32	06:38 (13B)	21:38	32	06:44 (13B)
30	07:59		08:27 (WEA 08)				06:57		07:28 (WEA 02)	05:50			05:05		06:06 (13B)	04:59		06:12 (13B)
	16:59	44	09:44 (WEA 13)				19:44	21	08:28 (14B)	20:36			21:21	32	06:38 (13B)	21:37	32	06:44 (13B)
31	07:57		08:26 (WEA 08)				06:55		07:23 (WEA 02)				05:04		06:06 (13B)			
	17:00	43	09:42 (WEA 13)				19:45	29	08:27 (14B)				21:22	32	06:38 (13B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		1430			1060			834			886			588			963	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,60			0,65			0,69			0,72			0,72			0,71	
Gesamte Reduktion		0,12			0,19			0,17			0,24			0,29			0,23	
Met.wahrsch.Beschattung		172			207			144			215			169			225	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM) Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 43 - Reinstedt - Bauschuttrecycling

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember	
1	05:00		06:13 (13B) | 05:36		06:11 (6B) | 06:26		06:55 (WEA 04) | 07:14		07:40 (WEA 10) | 07:08		08:01 (19B) | 07:58		08:30 (29B)	
	21:37	32	06:45 (13B) | 21:06	15	06:26 (6B) | 20:04	44	07:39 (WEA 02) | 18:55	19	07:59 (15B) | 16:49	14	08:15 (19B) | 16:09	49	09:34 (WEA 12)	
2	05:01		06:12 (13B) | 05:38		06:10 (6B) | 06:27		06:54 (WEA 04) | 07:16		07:42 (WEA 10) | 07:09		08:01 (WEA 08) | 08:00		08:47 (WEA 09)	
	21:37	32	06:44 (13B) | 21:04	15	06:25 (6B) | 20:02	44	07:38 (WEA 02) | 18:52	13	07:55 (WEA 10) | 16:47	13	08:14 (19B) | 16:08	49	09:36 (WEA 12)	
3	05:01		06:13 (13B) | 05:39		06:11 (6B) | 06:29		06:55 (WEA 04) | 07:18		07:46 (WEA 10) | 07:11		08:00 (WEA 08) | 08:01		08:47 (WEA 09)	
	21:36	32	06:45 (13B) | 21:02	14	06:25 (6B) | 19:59	44	07:39 (WEA 02) | 18:50	11	09:37 (18B) | 16:45	14	08:14 (WEA 08) | 16:08	49	09:36 (WEA 12)	
4	05:02		06:13 (13B) | 05:41		06:11 (6B) | 06:30		06:56 (WEA 04) | 07:19		09:26 (18B) | 07:13		07:59 (WEA 08) | 08:03		08:48 (WEA 09)	
	21:36	32	06:45 (13B) | 21:01	13	06:24 (6B) | 19:57	42	07:38 (WEA 02) | 18:48	15	09:41 (18B) | 16:44	16	08:15 (WEA 08) | 16:07	50	09:38 (WEA 12)	
5	05:03		06:12 (13B) | 05:42		06:12 (6B) | 06:32		06:58 (WEA 04) | 07:21		09:23 (18B) | 07:15		07:58 (WEA 08) | 08:04		08:48 (WEA 09)	
	21:36	33	06:45 (13B) | 20:59	12	06:24 (6B) | 19:55	40	07:38 (WEA 02) | 18:46	21	09:44 (18B) | 16:42	18	08:16 (WEA 08) | 16:07	50	09:38 (WEA 12)	
6	05:04		06:13 (13B) | 05:44		06:13 (6B) | 06:34		06:59 (WEA 04) | 07:23		09:21 (18B) | 07:17		07:58 (WEA 08) | 08:05		08:49 (WEA 09)	
	21:35	32	06:45 (13B) | 20:57	10	06:23 (6B) | 19:53	36	07:37 (WEA 02) | 18:43	25	09:46 (18B) | 16:40	18	08:16 (WEA 08) | 16:06	51	09:40 (WEA 12)	
7	05:05		06:13 (13B) | 05:46		06:15 (6B) | 06:35		07:01 (WEA 04) | 07:24		09:19 (18B) | 07:18		07:58 (WEA 08) | 08:06		08:49 (WEA 09)	
	21:34	33	06:46 (13B) | 20:55	6	06:21 (6B) | 19:50	32	07:37 (WEA 02) | 18:41	27	09:46 (18B) | 16:38	26	09:05 (WEA 13) | 16:06	51	09:40 (WEA 12)	
8	05:06		06:13 (13B) | 05:47				07:10 (WEA 02) | 07:26		09:18 (18B) | 07:20		07:57 (WEA 08) | 08:08		08:49 (WEA 09)	
	21:34	33	06:46 (13B) | 20:53				07:35 (WEA 02) | 18:39	29	09:47 (18B) | 16:37	35	09:09 (WEA 13) | 16:05	52	09:41 (WEA 12)	
9	05:07		06:14 (13B) | 05:49				07:11 (WEA 02) | 07:28		09:17 (18B) | 07:22		07:58 (WEA 08) | 08:09		08:49 (WEA 09)	
	21:33	32	06:46 (13B) | 20:52				07:34 (WEA 02) | 18:37	31	09:48 (18B) | 16:35	37	09:11 (WEA 13) | 16:05	52	09:41 (WEA 12)	
10	05:08		06:14 (13B) | 05:50				07:12 (WEA 02) | 07:29		09:17 (18B) | 07:24		07:58 (WEA 08) | 08:10		08:50 (WEA 09)	
	21:32	32	06:46 (13B) | 20:50				07:33 (WEA 02) | 18:34	32	09:49 (18B) | 16:34	41	09:13 (WEA 13) | 16:05	52	09:42 (WEA 12)	
11	05:09		06:14 (13B) | 05:52				07:13 (WEA 02) | 07:31		09:15 (18B) | 07:25		07:58 (WEA 08) | 08:11		08:51 (WEA 09)	
	21:32	33	06:47 (13B) | 20:48				08:16 (14B) | 18:32	34	09:49 (18B) | 16:32	43	09:14 (WEA 13) | 16:05	52	09:43 (WEA 12)	
12	05:10		06:14 (13B) | 05:53				07:15 (WEA 02) | 07:33		08:30 (20B) | 07:27		07:59 (WEA 08) | 08:12		08:52 (WEA 09)	
	21:31	33	06:47 (13B) | 20:46				08:19 (14B) | 18:30	39	09:49 (18B) | 16:30	44	09:16 (WEA 13) | 16:05	52	09:44 (WEA 12)	
13	05:11		06:15 (13B) | 05:55				07:18 (WEA 02) | 07:34		08:27 (20B) | 07:29		08:00 (WEA 08) | 08:13		08:52 (WEA 09)	
	21:30	32	06:47 (13B) | 20:44				08:19 (14B) | 18:28	48	09:49 (18B) | 16:29	45	09:17 (WEA 13) | 16:05	52	09:44 (WEA 12)	
14	05:12		06:15 (13B) | 05:57		06:54 (WEA 03) | 06:47		08:00 (14B) | 07:36		08:26 (20B) | 07:31		08:00 (WEA 08) | 08:14		08:53 (WEA 09)	
	21:29	32	06:47 (13B) | 20:42	7	07:01 (WEA 03) | 19:34	21	08:21 (14B) | 18:26	51	09:49 (18B) | 16:27	44	09:17 (WEA 13) | 16:05	52	09:45 (WEA 12)	
15	05:13		06:15 (13B) | 05:58		06:52 (WEA 03) | 06:48		07:58 (14B) | 07:38		08:25 (20B) | 07:32		08:02 (WEA 08) | 08:15		08:52 (WEA 09)	
	21:28	31	06:46 (13B) | 20:40	12	07:04 (WEA 03) | 19:32	23	08:21 (14B) | 18:23	53	09:49 (18B) | 16:26	43	09:17 (WEA 13) | 16:05	53	09:45 (WEA 12)	
16	05:14		06:15 (13B) | 06:00		06:49 (WEA 03) | 06:50		07:58 (14B) | 07:40		08:24 (20B) | 07:34		08:04 (WEA 08) | 08:16		08:53 (WEA 09)	
	21:27	31	06:46 (13B) | 20:38	16	07:05 (WEA 03) | 19:30	23	08:21 (14B) | 18:21	54	09:48 (18B) | 16:25	41	09:18 (WEA 13) | 16:05	52	09:45 (WEA 12)	
17	05:15		06:15 (13B) | 06:01		06:48 (WEA 03) | 06:51		07:57 (14B) | 07:41		08:24 (20B) | 07:36		08:06 (WEA 08) | 08:17		08:54 (WEA 09)	
	21:26	31	06:46 (13B) | 20:36	18	07:06 (WEA 03) | 19:27	25	08:22 (14B) | 18:19	55	09:48 (18B) | 16:23	38	09:19 (WEA 13) | 16:05	52	09:46 (WEA 12)	
18	05:17		06:16 (13B) | 06:03		06:47 (WEA 03) | 06:53		07:56 (14B) | 07:43		08:23 (WEA 11) | 07:38		08:24 (29B) | 08:17		08:55 (WEA 09)	
	21:25	30	06:46 (13B) | 20:34	21	07:08 (11B) | 19:25	25	08:21 (14B) | 18:17	55	09:47 (18B) | 16:22	36	09:19 (WEA 13) | 16:05	52	09:47 (WEA 12)	
19	05:18		06:17 (13B) | 06:05		06:46 (WEA 03) | 06:55		07:50 (WEA 10) | 07:45		08:23 (WEA 11) | 07:39		08:23 (29B) | 08:18		08:54 (WEA 09)	
	21:24	29	06:46 (13B) | 20:32	24	07:10 (11B) | 19:23	31	08:21 (14B) | 18:15	55	09:47 (18B) | 16:21	39	09:20 (WEA 13) | 16:06	53	09:47 (WEA 12)	
20	05:19		06:17 (13B) | 06:06		06:45 (WEA 03) | 06:56		07:46 (WEA 10) | 07:46		08:23 (WEA 11) | 07:41		08:22 (29B) | 08:19		08:55 (WEA 09)	
	21:23	29	06:46 (13B) | 20:30	26	07:11 (11B) | 19:20	34	08:20 (14B) | 18:13	60	09:46 (18B) | 16:19	43	09:21 (WEA 13) | 16:06	51	09:47 (WEA 12)	
21	05:21		06:18 (13B) | 06:08		06:45 (WEA 03) | 06:58		07:44 (WEA 10) | 07:48		08:23 (WEA 11) | 07:43		08:21 (29B) | 08:19		08:56 (WEA 09)	
	21:21	27	06:45 (13B) | 20:28	27	07:12 (11B) | 19:18	35	08:19 (14B) | 18:11	63	09:45 (18B) | 16:18	44	09:20 (WEA 13) | 16:06	51	09:48 (WEA 12)	
22	05:22		06:18 (13B) | 06:09		06:44 (WEA 03) | 07:00		07:43 (WEA 10) | 07:50		08:22 (WEA 11) | 07:44		08:21 (29B) | 08:20		08:56 (WEA 09)	
	21:20	26	06:44 (13B) | 20:26	28	07:12 (11B) | 19:16	36	08:19 (14B) | 18:09	64	09:43 (18B) | 16:17	44	09:21 (WEA 13) | 16:07	51	09:48 (WEA 12)	
23	05:23		06:19 (13B) | 06:11		06:44 (WEA 03) | 07:01		07:41 (WEA 10) | 07:52		08:23 (WEA 11) | 07:46		08:22 (29B) | 08:20		08:57 (WEA 09)	
	21:19	25	06:44 (13B) | 20:24	29	07:13 (11B) | 19:13	36	08:17 (14B) | 18:07	61	09:41 (18B) | 16:16	44	09:21 (WEA 13) | 16:07	51	09:49 (WEA 12)	
24	05:25		06:20 (13B) | 06:13		06:44 (WEA 03) | 07:03		07:41 (WEA 10) | 07:53		08:24 (WEA 11) | 07:48		08:22 (29B) | 08:21		08:57 (WEA 09)	
	21:18	23	06:43 (13B) | 20:21	28	07:12 (11B) | 19:11	34	08:15 (14B) | 18:05	56	09:39 (18B) | 16:15	45	09:21 (WEA 13) | 16:08	53	09:50 (WEA 12)	
25	05:26		06:15 (6B) | 06:14		06:44 (WEA 03) | 07:04		07:39 (WEA 10) | 06:55		07:25 (WEA 11) | 07:49		08:23 (29B) | 08:21		08:57 (WEA 09)	
	21:16	26	06:42 (13B) | 20:19	28	07:12 (11B) | 19:09	33	08:12 (14B) | 17:02	49	08:36 (18B) | 16:14	45	09:22 (WEA 13) | 16:08	53	09:50 (WEA 12)	
26	05:27		06:14 (6B) | 06:16		06:44 (WEA 03) | 07:06		07:39 (WEA 10) | 06:57		07:26 (WEA 11) | 07:51		08:23 (29B) | 08:21		08:58 (WEA 09)	
	21:15	27	06:41 (13B) | 20:17	36	07:31 (WEA 02) | 19:06	28	08:07 (14B) | 17:01	35	08:19 (19B) | 16:13	45	09:21 (WEA 13) | 16:09	52	09:50 (WEA 12)	
27	05:29		06:13 (6B) | 06:18		06:45 (WEA 03) | 07:08		07:39 (WEA 10) | 06:59		07:28 (WEA 11) | 07:52		08:24 (29B) | 08:22		08:59 (WEA 09)	
	21:13	26	06:40 (13B) | 20:15	41	07:34 (WEA 02) | 19:04	28	08:07 (15B) | 16:59	31	08:19 (19B) | 16:12	45	09:22 (WEA 13) | 16:10	52	09:51 (WEA 12)	
28	05:30		06:12 (6B) | 06:19		06:46 (WEA 03) | 07:09		07:39 (WEA 10) | 07:01		07:59 (19B) | 07:54		08:26 (29B) | 08:22		08:59 (WEA 09)	
	21:12	23	06:37 (13B) | 20:13	44	07:35 (WEA 02) | 19:02	26	08:05 (15B) | 16:57	20	08:19 (19B) | 16:11	45	09:27 (WEA 12) | 16:11	52	09:51 (WEA 12)	
29	05:32		06:12 (6B) | 06:21		06:48 (WEA 03) | 07:11		07:39 (WEA 10) | 07:02		07:59 (19B) | 07:55		08:27 (29B) | 08:22		09:00 (WEA 09)	
	21:10	15	06:33 (13B) | 20:11	46	07:37 (WEA 02) | 18:59	25	08:04 (15B) | 16:55	20	08:19 (19B) | 16:10	51	09:31 (WEA 12) | 16:12	52	09:52 (WEA 12)	
30	05:33		06:11 (6B) | 06:22		06:51 (WEA 03) | 07:13		07:40 (WEA 10) | 07:04		08:00 (19B) | 07:57		08:29 (29B) | 08:22		09:00 (WEA 09)	
	21:09	14	06:25 (6B) | 20:08	46	07:38 (WEA 02) | 18:57	23	08:03 (15B) | 16:53	18	08:18 (19B) | 16:10	50	09:33 (WEA 12) | 16:12	52	09:52 (WEA 12)	
31	05:35		06:10 (6B) | 06:24		06:55 (WEA 04) |		07:06		08:00 (19B) |			08:22		09:00 (WEA 09)	
	21:07	15	06:25 (6B) | 20:06	43	07:38 (WEA 02) |		16:51	17	08:17 (19B) |			16:13	53	09:53 (WEA 12)	
Sonnenscheinstunden	501		453		381		332		267		245					
astr.max.mögl.Beschattung		881		605		919		1161		1106		1598				
Red.Sonnenscheinwahrsch.		0,40		0,43		0,34		0,28		0,22		0,18				
Reduktion Betriebsdauer		0,96		0,96		0,96		0,96		0,96		0,96				
Reduktion Windrichtung		0,71		0,72		0,71		0,66		0,61		0,59				
Gesamte Reduktion		0,27		0,29		0,23		0,17		0,13		0,10				
Met.wahrsch.Beschattung		238		176		209		202		140		157				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 44 - Reinstedt - Bauschuttrecycling 2

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22		08:53 (29B)	07:56		08:35 (WEA 08)	07:03		07:29 (WEA 07)	06:52		07:22 (WEA 02)	05:48			05:03		05:31 (2B)
	16:15	57	10:00 (WEA 12)	17:02	26	09:01 (19B)	17:54	37	09:39 (18B)	19:47	24	07:46 (WEA 02)	20:38			21:23	40	06:41 (13B)
2	08:22		08:53 (29B)	07:54		08:35 (WEA 08)	07:00		07:29 (WEA 07)	06:50		07:21 (WEA 02)	05:46			05:02		05:31 (2B)
	16:16	57	10:00 (WEA 12)	17:04	27	09:02 (19B)	17:55	31	09:36 (18B)	19:49	26	07:47 (WEA 02)	20:39			21:24	42	06:42 (13B)
3	08:22		08:53 (29B)	07:53		08:36 (WEA 08)	06:58		07:28 (WEA 07)	06:48		07:19 (WEA 02)	05:44			05:01		05:30 (2B)
	16:17	57	10:00 (WEA 12)	17:06	27	09:03 (19B)	17:57	18	07:46 (WEA 07)	19:51	28	07:47 (WEA 02)	20:41			21:25	43	06:42 (13B)
4	08:22		08:52 (29B)	07:51		08:38 (WEA 08)	06:56		07:29 (WEA 07)	06:46		07:08 (WEA 04)	05:42			05:01		05:29 (2B)
	16:18	57	09:59 (WEA 12)	17:08	27	09:05 (19B)	17:59	16	07:45 (WEA 07)	19:52	34	07:47 (WEA 02)	20:43			21:26	44	06:42 (13B)
5	08:22		08:52 (29B)	07:49		08:39 (WEA 08)	06:54		07:30 (WEA 07)	06:43		07:06 (WEA 04)	05:40			05:00		05:29 (2B)
	16:19	56	09:58 (WEA 12)	17:10	36	09:36 (18B)	18:01	14	07:44 (WEA 07)	19:54	39	07:47 (WEA 02)	20:44			21:27	46	06:43 (13B)
6	08:21		08:52 (29B)	07:48		08:42 (WEA 08)	06:52		07:32 (WEA 07)	06:41		07:04 (WEA 04)	05:39		06:04 (6B)	04:59		05:28 (2B)
	16:20	54	09:56 (WEA 13)	17:11	41	09:40 (18B)	18:02	10	07:42 (WEA 07)	19:56	43	07:48 (WEA 02)	20:46	7	06:11 (6B)	21:28	47	06:43 (13B)
7	08:21		08:52 (29B)	07:46		08:45 (19B)	06:49			06:39		07:01 (WEA 04)	05:37		06:02 (6B)	04:59		05:28 (2B)
	16:22	54	09:56 (WEA 13)	17:13	42	09:42 (18B)	18:04			19:57	45	07:46 (WEA 02)	20:48	11	06:13 (6B)	21:29	49	06:44 (13B)
8	08:20		08:51 (29B)	07:44		08:44 (19B)	06:47		07:12 (WEA 10)	06:36		06:59 (WEA 04)	05:35		06:01 (6B)	04:58		05:27 (2B)
	16:23	55	09:56 (WEA 13)	17:15	47	09:44 (18B)	18:06	8	07:20 (WEA 10)	19:59	47	07:46 (WEA 02)	20:49	13	06:14 (6B)	21:30	49	06:43 (13B)
9	08:20		08:52 (29B)	07:42		08:44 (19B)	06:45		07:09 (WEA 10)	06:34		06:58 (WEA 04)	05:33		06:01 (6B)	04:58		05:27 (2B)
	16:24	54	09:57 (WEA 13)	17:17	49	09:45 (18B)	18:08	22	07:31 (15B)	20:01	48	07:46 (WEA 02)	20:51	14	06:15 (6B)	21:31	50	06:44 (13B)
10	08:19		08:53 (29B)	07:41		08:09 (WEA 11)	06:43		07:07 (WEA 10)	06:32		06:58 (WEA 04)	05:32		06:00 (6B)	04:57		05:27 (2B)
	16:26	54	09:57 (WEA 13)	17:19	58	09:47 (18B)	18:09	27	07:34 (15B)	20:02	46	07:45 (WEA 02)	20:52	15	06:15 (6B)	21:32	50	06:44 (13B)
11	08:19		08:53 (29B)	07:39		08:06 (WEA 11)	06:40		07:05 (WEA 10)	06:30		06:57 (WEA 04)	05:30		05:59 (6B)	04:57		05:26 (2B)
	16:27	53	09:57 (WEA 13)	17:21	64	09:48 (18B)	18:11	29	07:34 (15B)	20:04	45	07:43 (WEA 02)	20:54	16	06:15 (6B)	21:33	51	06:44 (13B)
12	08:18		08:54 (29B)	07:37		08:04 (WEA 11)	06:38		07:04 (WEA 10)	06:28		06:52 (WEA 03)	05:28		05:59 (6B)	04:57		05:26 (2B)
	16:29	53	09:59 (WEA 13)	17:23	70	09:49 (18B)	18:13	31	07:35 (15B)	20:06	48	07:42 (WEA 02)	20:56	16	06:15 (6B)	21:33	51	06:44 (13B)
13	08:18		08:55 (29B)	07:35		08:02 (WEA 11)	06:36		07:04 (WEA 10)	06:25		06:49 (WEA 03)	05:27		05:59 (6B)	04:56		05:27 (2B)
	16:30	51	09:59 (WEA 13)	17:24	72	09:50 (18B)	18:15	41	07:45 (14B)	20:07	48	07:41 (WEA 02)	20:57	16	06:15 (6B)	21:34	51	06:45 (13B)
14	08:17		08:55 (29B)	07:33		08:01 (WEA 11)	06:34		07:02 (WEA 10)	06:23		06:47 (WEA 03)	05:25		05:59 (6B)	04:56		05:27 (2B)
	16:32	49	09:59 (WEA 13)	17:26	73	09:50 (18B)	18:16	45	07:47 (14B)	20:09	46	07:39 (WEA 02)	20:59	16	06:15 (6B)	21:34	51	06:45 (13B)
15	08:16		08:56 (29B)	07:31		08:01 (WEA 11)	06:31		07:02 (WEA 10)	06:21		06:45 (WEA 03)	05:24		06:00 (6B)	04:56		05:27 (2B)
	16:33	42	09:59 (WEA 13)	17:28	71	09:51 (18B)	18:18	46	07:48 (14B)	20:11	44	07:37 (WEA 02)	21:00	15	06:15 (6B)	21:35	52	06:46 (13B)
16	08:15		08:58 (29B)	07:29		08:00 (WEA 11)	06:29		07:02 (WEA 10)	06:19		06:44 (WEA 03)	05:22		06:00 (6B)	04:56		05:28 (2B)
	16:35	40	09:59 (WEA 13)	17:30	66	09:51 (18B)	18:20	48	07:50 (14B)	20:13	38	07:33 (WEA 02)	21:02	14	06:14 (6B)	21:36	51	06:46 (13B)
17	08:14		08:59 (29B)	07:27		08:00 (WEA 11)	06:27		07:02 (WEA 10)	06:17		06:43 (WEA 03)	05:21		06:01 (6B)	04:56		05:28 (2B)
	16:36	38	10:00 (WEA 13)	17:32	62	09:51 (18B)	18:22	47	07:49 (14B)	20:14	32	07:15 (11B)	21:03	15	06:24 (13B)	21:36	51	06:46 (13B)
18	08:13		09:28 (WEA 13)	07:25		08:00 (WEA 11)	06:25		07:02 (WEA 10)	06:14		06:43 (WEA 03)	05:19		06:02 (6B)	04:56		05:28 (2B)
	16:38	32	10:00 (WEA 13)	17:34	62	09:51 (18B)	18:23	48	07:50 (14B)	20:16	31	07:14 (11B)	21:05	23	06:29 (13B)	21:36	51	06:46 (13B)
19	08:12		09:27 (WEA 13)	07:23		08:00 (WEA 11)	06:22		07:03 (WEA 10)	06:12		06:41 (WEA 03)	05:18		06:02 (6B)	04:56		05:28 (2B)
	16:39	32	09:59 (WEA 13)	17:35	62	09:51 (18B)	18:25	47	07:50 (14B)	20:18	32	07:13 (11B)	21:06	27	06:31 (13B)	21:37	51	06:46 (13B)
20	08:11		08:39 (WEA 08)	07:21		07:59 (WEA 11)	06:20		07:03 (WEA 10)	06:10		06:41 (WEA 03)	05:16		06:04 (6B)	04:56		05:28 (2B)
	16:41	38	09:59 (WEA 13)	17:37	62	09:50 (18B)	18:27	45	07:50 (14B)	20:19	31	07:12 (11B)	21:08	26	06:33 (13B)	21:37	51	06:46 (13B)
21	08:10		08:38 (WEA 08)	07:19		08:00 (WEA 11)	06:18		07:05 (WEA 10)	06:08		06:41 (WEA 03)	05:15		06:12 (13B)	04:56		05:28 (2B)
	16:43	40	09:59 (WEA 13)	17:39	60	09:50 (18B)	18:28	42	07:50 (14B)	20:21	30	07:11 (11B)	21:09	22	06:34 (13B)	21:37	52	06:47 (13B)
22	08:09		08:37 (WEA 08)	07:17		08:00 (WEA 11)	06:15		07:07 (WEA 10)	06:06		06:41 (WEA 03)	05:14		06:11 (13B)	04:56		05:29 (2B)
	16:44	41	09:59 (WEA 13)	17:41	58	09:49 (18B)	18:30	36	07:49 (14B)	20:23	29	07:10 (11B)	21:10	25	06:36 (13B)	21:38	51	06:47 (13B)
23	08:08		08:35 (WEA 08)	07:15		07:39 (WEA 07)	06:13		07:23 (14B)	06:04		06:41 (WEA 03)	05:12		06:10 (13B)	04:56		05:29 (2B)
	16:46	42	09:58 (WEA 13)	17:43	58	09:49 (18B)	18:32	26	07:49 (14B)	20:24	28	07:09 (11B)	21:12	27	06:37 (13B)	21:38	51	06:47 (13B)
24	08:07		08:34 (WEA 08)	07:13		07:37 (WEA 07)	06:11		07:23 (14B)	06:02		06:41 (WEA 03)	05:11		06:09 (13B)	04:57		05:29 (2B)
	16:48	43	09:58 (WEA 13)	17:45	57	09:48 (18B)	18:34	24	07:47 (14B)	20:26	25	07:06 (11B)	21:13	29	06:38 (13B)	21:38	51	06:47 (13B)
25	08:05		08:34 (WEA 08)	07:11		07:35 (WEA 07)	06:08		07:23 (14B)	06:00		06:42 (WEA 03)	05:10		06:08 (13B)	04:57		05:29 (2B)
	16:50	43	09:58 (WEA 13)	17:46	57	09:47 (18B)	18:35	24	07:47 (14B)	20:28	20	07:02 (WEA 03)	21:15	29	06:37 (13B)	21:38	51	06:47 (13B)
26	08:04		08:33 (WEA 08)	07:09		07:33 (WEA 07)	06:06		07:24 (14B)	05:58		06:43 (WEA 03)	05:09		06:07 (13B)	04:57		05:30 (2B)
	16:51	42	09:56 (WEA 13)	17:48	50	09:46 (18B)	18:37	21	07:45 (14B)	20:29	18	07:01 (WEA 03)	21:16	31	06:38 (13B)	21:38	51	06:48 (13B)
27	08:03		08:34 (WEA 08)	07:07		07:30 (WEA 07)	06:04		07:25 (14B)	05:56		06:45 (WEA 03)	05:08		06:08 (13B)	04:58		05:29 (2B)
	16:53	38	09:55 (WEA 13)	17:50	44	09:43 (18B)	18:39	18	07:43 (14B)	20:31	15	07:00 (WEA 03)	21:17	32	06:40 (13B)	21:38	52	06:48 (13B)
28	08:01		08:33 (WEA 08)	07:05		07:29 (WEA 07)	06:02		06:32 (WEA 02)	05:54		06:47 (WEA 03)	05:07		06:07 (13B)	04:58		05:30 (2B)
	16:55	36	09:53 (WEA 13)	17:52	41	09:41 (18B)	18:40	20	07:41 (14B)	20:33	10	06:57 (WEA 03)	21:18	33	06:40 (13B)	21:38	52	06:48 (13B)
29	08:00		08:34 (WEA 08)				06:59		07:28 (WEA 02)	05:52			05:06		06:07 (13B)	04:59		05:30 (2B)
	16:57	29	09:51 (WEA 13)				19:42	20	08:37 (14B)	20:34			21:20	33	06:40 (13B)	21:38	51	06:48 (13B)
30	07:59		08:34 (WEA 08)				06:57		07:25 (WEA 02)	05:50			05:05		05:33 (2B)	04:59		05:30 (2B)
	16:59	20	08:54 (WEA 08)				19:44	19	07:44 (WEA 02)	20:36			21:21	35	06:41 (13B)	21:37	52	06:49 (13B)
31	07:57		08:34 (WEA 08)				06:55		07:23 (WEA 02)				05:04		05:32 (2B)			
	17:00	24	08:58 (19B)				19:45	22	07:45 (WEA 02)				21:22	38	06:41 (13B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		1381			1469			882			950			578			1485	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,60			0,63			0,69			0,72			0,71			0,71	
Gesamte Reduktion		0,12			0,19			0,17			0,24			0,29			0,23	
Met.wahrsch.Beschattung		167			278			154			231			167			345	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 44 - Reinstedt - Bauschuttrecycling 2

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember	
1	05:00		05:31 (2B) | 05:36		06:10 (6B) | 06:26		06:57 (WEA 04) | 07:14		07:43 (WEA 10) | 07:08		07:38 (WEA 11) | 07:58		08:35 (29B)
	21:37	51	06:49 (13B) | 21:06	16	06:26 (6B) | 20:04	45	07:43 (WEA 02) | 18:55	39	08:22 (14B) | 16:49	57	09:16 (18B) | 16:09	54	09:40 (WEA 13)
2	05:01		05:31 (2B) | 05:38		06:10 (6B) | 06:27		06:56 (WEA 04) | 07:16		07:44 (WEA 10) | 07:09		08:14 (19B) | 08:00		08:36 (29B)
	21:37	51	06:49 (13B) | 21:04	15	06:25 (6B) | 20:02	46	07:43 (WEA 02) | 18:52	29	08:13 (15B) | 16:47	50	09:15 (18B) | 16:08	54	09:40 (WEA 13)
3	05:01		05:32 (2B) | 05:39		06:10 (6B) | 06:29		06:56 (WEA 04) | 07:18		07:45 (WEA 10) | 07:11		08:14 (19B) | 08:01		08:36 (29B)
	21:36	49	06:49 (13B) | 21:02	15	06:25 (6B) | 19:59	48	07:44 (WEA 02) | 18:50	27	08:12 (15B) | 16:45	46	09:13 (18B) | 16:08	54	09:40 (WEA 13)
4	05:02		05:33 (2B) | 05:41		06:10 (6B) | 06:30		06:56 (WEA 04) | 07:19		07:45 (WEA 10) | 07:13		08:14 (19B) | 08:03		08:37 (29B)
	21:36	50	06:50 (13B) | 21:01	14	06:24 (6B) | 19:57	47	07:43 (WEA 02) | 18:48	24	08:09 (15B) | 16:44	42	09:11 (18B) | 16:07	54	09:41 (WEA 13)
5	05:03		05:33 (2B) | 05:42		06:12 (6B) | 06:32		06:58 (WEA 04) | 07:21		07:47 (WEA 10) | 07:15		08:11 (WEA 08) | 08:04		08:37 (29B)
	21:36	48	06:49 (13B) | 20:59	12	06:24 (6B) | 19:55	45	07:43 (WEA 02) | 18:46	15	08:06 (15B) | 16:42	40	09:09 (18B) | 16:07	54	09:41 (WEA 13)
6	05:04		05:34 (2B) | 05:44		06:12 (6B) | 06:34		06:59 (WEA 04) | 07:23		| 07:17		08:09 (WEA 08) | 08:05		08:37 (29B)
	21:35	47	06:49 (13B) | 20:57	10	06:22 (6B) | 19:53	43	07:43 (WEA 02) | 18:43		| 16:40	35	09:06 (18B) | 16:06	54	09:41 (WEA 13)
7	05:05		05:35 (2B) | 05:45		06:15 (6B) | 06:35		07:01 (WEA 04) | 07:24		08:08 (WEA 07) | 07:18		08:08 (WEA 08) | 08:06		08:39 (29B)
	21:34	47	06:49 (13B) | 20:55	5	06:20 (6B) | 19:50	40	07:43 (WEA 02) | 18:41	8	08:16 (WEA 07) | 16:38	27	08:35 (19B) | 16:06	56	09:45 (WEA 12)
8	05:06		05:36 (2B) | 05:47		| 06:37		07:02 (WEA 04) | 07:26		08:06 (WEA 07) | 07:20		08:07 (WEA 08) | 08:08		08:40 (29B)
	21:34	46	06:50 (13B) | 20:53		| 19:48	34	07:41 (WEA 02) | 18:39	12	08:18 (WEA 07) | 16:37	27	08:34 (19B) | 16:05	57	09:47 (WEA 12)
9	05:07		05:37 (2B) | 05:49		| 06:39		07:13 (WEA 02) | 07:28		08:05 (WEA 07) | 07:22		08:06 (WEA 08) | 08:09		08:41 (29B)
	21:33	45	06:50 (13B) | 20:52		| 19:46	28	07:41 (WEA 02) | 18:37	15	08:20 (WEA 07) | 16:35	27	08:33 (19B) | 16:05	57	09:48 (WEA 12)
10	05:08		05:38 (2B) | 05:50		| 06:40		07:14 (WEA 02) | 07:29		08:04 (WEA 07) | 07:24		08:06 (WEA 08) | 08:10		08:42 (29B)
	21:32	43	06:50 (13B) | 20:50		| 19:43	26	07:40 (WEA 02) | 18:34	16	08:20 (WEA 07) | 16:34	26	08:32 (19B) | 16:05	57	09:49 (WEA 12)
11	05:09		05:39 (2B) | 05:52		| 06:42		07:14 (WEA 02) | 07:31		08:02 (WEA 07) | 07:25		08:06 (WEA 08) | 08:11		08:44 (29B)
	21:32	41	06:50 (13B) | 20:48		| 19:41	25	07:39 (WEA 02) | 18:32	23	10:05 (18B) | 16:32	23	08:29 (19B) | 16:05	57	09:51 (WEA 12)
12	05:10		05:40 (2B) | 05:53		| 06:43		07:15 (WEA 02) | 07:33		08:02 (WEA 07) | 07:27		08:06 (WEA 08) | 08:12		08:45 (29B)
	21:31	39	06:50 (13B) | 20:46		| 19:39	23	07:38 (WEA 02) | 18:30	33	10:10 (18B) | 16:30	20	08:26 (WEA 08) | 16:05	57	09:52 (WEA 12)
13	05:11		05:41 (2B) | 05:55		| 06:45		07:16 (WEA 02) | 07:34		08:02 (WEA 07) | 07:29		08:06 (WEA 08) | 08:13		08:46 (29B)
	21:30	36	06:49 (13B) | 20:44		| 19:37	19	07:35 (WEA 02) | 18:28	39	10:13 (18B) | 16:29	29	09:23 (WEA 13) | 16:05	56	09:53 (WEA 12)
14	05:12		06:15 (13B) | 05:57		06:57 (WEA 03) | 06:47		07:18 (WEA 02) | 07:36		08:02 (WEA 07) | 07:31		08:05 (WEA 08) | 08:14		08:47 (29B)
	21:29	34	06:49 (13B) | 20:42	5	07:02 (WEA 03) | 19:34	17	08:25 (14B) | 18:26	43	10:15 (18B) | 16:27	36	09:25 (WEA 13) | 16:05	56	09:54 (WEA 12)
15	05:13		06:16 (13B) | 05:58		06:54 (WEA 03) | 06:48		07:21 (WEA 02) | 07:38		08:04 (WEA 07) | 07:32		08:06 (WEA 08) | 08:15		08:47 (29B)
	21:28	33	06:49 (13B) | 20:40	12	07:06 (WEA 03) | 19:32	20	08:29 (14B) | 18:23	44	10:17 (18B) | 16:26	39	09:27 (WEA 13) | 16:05	55	09:54 (WEA 12)
16	05:14		06:16 (13B) | 06:00		06:51 (WEA 03) | 06:50		08:15 (14B) | 07:40		08:05 (WEA 07) | 07:34		08:06 (WEA 08) | 08:16		08:48 (29B)
	21:27	32	06:48 (13B) | 20:38	16	07:07 (WEA 03) | 19:30	17	08:32 (14B) | 18:21	53	10:17 (18B) | 16:25	42	09:29 (WEA 13) | 16:05	54	09:54 (WEA 12)
17	05:15		06:17 (13B) | 06:01		06:50 (WEA 03) | 06:51		08:13 (14B) | 07:41		08:07 (WEA 07) | 07:36		08:07 (WEA 08) | 08:17		08:49 (29B)
	21:26	31	06:48 (13B) | 20:36	18	07:08 (WEA 03) | 19:27	20	08:33 (14B) | 18:19	57	10:19 (18B) | 16:23	43	09:31 (WEA 13) | 16:05	54	09:55 (WEA 12)
18	05:17		06:17 (13B) | 06:03		06:49 (WEA 03) | 06:53		08:11 (14B) | 07:43		08:09 (WEA 07) | 07:38		08:08 (WEA 08) | 08:17		09:03 (WEA 09)
	21:25	30	06:47 (13B) | 20:34	20	07:09 (11B) | 19:25	23	08:34 (14B) | 18:17	57	10:19 (18B) | 16:22	43	09:32 (WEA 13) | 16:05	53	09:56 (WEA 12)
19	05:18		06:19 (13B) | 06:05		06:48 (WEA 03) | 06:55		08:10 (14B) | 07:45		08:32 (WEA 11) | 07:39		08:10 (WEA 08) | 08:18		09:02 (WEA 09)
	21:24	28	06:47 (13B) | 20:32	25	07:13 (11B) | 19:23	25	08:35 (14B) | 18:15	56	10:20 (18B) | 16:21	42	09:33 (WEA 13) | 16:06	54	09:56 (WEA 12)
20	05:19		06:19 (13B) | 06:06		06:47 (WEA 03) | 06:56		08:09 (14B) | 07:46		08:31 (WEA 11) | 07:41		08:12 (WEA 08) | 08:19		09:03 (WEA 09)
	21:23	28	06:47 (13B) | 20:30	28	07:15 (11B) | 19:20	25	08:34 (14B) | 18:13	59	10:21 (18B) | 16:19	41	09:34 (WEA 13) | 16:06	54	09:57 (WEA 12)
21	05:21		06:20 (13B) | 06:08		06:47 (WEA 03) | 06:58		07:54 (WEA 10) | 07:48		08:31 (WEA 11) | 07:43		08:13 (WEA 08) | 08:19		09:04 (WEA 09)
	21:21	26	06:46 (13B) | 20:28	29	07:16 (11B) | 19:18	34	08:35 (14B) | 18:11	60	10:21 (18B) | 16:18	40	09:34 (WEA 13) | 16:06	54	09:58 (WEA 12)
22	05:22		06:21 (13B) | 06:09		06:46 (WEA 03) | 06:59		07:51 (WEA 10) | 07:50		08:30 (WEA 11) | 07:44		08:15 (WEA 08) | 08:20		09:04 (WEA 09)
	21:20	23	06:44 (13B) | 20:26	30	07:16 (11B) | 19:16	41	08:35 (14B) | 18:09	61	10:20 (18B) | 16:17	38	09:35 (WEA 13) | 16:07	54	09:58 (WEA 12)
23	05:23		06:16 (6B) | 06:11		06:46 (WEA 03) | 07:01		07:48 (WEA 10) | 07:52		08:29 (WEA 11) | 07:46		08:17 (WEA 08) | 08:20		09:05 (WEA 09)
	21:19	24	06:44 (13B) | 20:24	31	07:17 (11B) | 19:13	44	08:34 (14B) | 18:07	63	10:21 (18B) | 16:16	33	09:36 (WEA 13) | 16:07	54	09:59 (WEA 12)
24	05:25		06:14 (6B) | 06:13		06:45 (WEA 03) | 07:03		07:47 (WEA 10) | 07:53		08:29 (WEA 11) | 07:48		09:05 (WEA 13) | 08:21		09:05 (WEA 09)
	21:18	26	06:42 (13B) | 20:21	32	07:17 (11B) | 19:11	47	08:34 (14B) | 18:05	63	10:21 (18B) | 16:15	32	09:37 (WEA 13) | 16:08	54	09:59 (WEA 12)
25	05:26		06:12 (6B) | 06:14		06:46 (WEA 03) | 07:04		07:45 (WEA 10) | 06:55		07:30 (WEA 11) | 07:49		08:38 (29B) | 08:21		09:06 (WEA 09)
	21:16	25	06:40 (13B) | 20:19	31	07:17 (11B) | 19:09	48	08:33 (14B) | 17:02	60	09:20 (18B) | 16:14	37	09:38 (WEA 13) | 16:08	53	09:59 (WEA 12)
26	05:27		06:12 (6B) | 06:16		06:45 (WEA 03) | 07:06		07:45 (WEA 10) | 06:57		07:30 (WEA 11) | 07:51		08:38 (29B) | 08:21		09:06 (WEA 09)
	21:15	21	06:38 (13B) | 20:17	31	07:16 (11B) | 19:06	47	08:32 (14B) | 17:00	67	09:20 (18B) | 16:13	41	09:38 (WEA 13) | 16:09	53	09:59 (WEA 12)
27	05:29		06:11 (6B) | 06:18		06:46 (WEA 03) | 07:08		07:44 (WEA 10) | 06:59		07:30 (WEA 11) | 07:52		08:35 (29B) | 08:22		08:54 (29B)
	21:13	14	06:25 (6B) | 20:15	38	07:35 (WEA 02) | 19:04	48	08:32 (14B) | 16:59	72	09:20 (18B) | 16:12	42	09:38 (WEA 13) | 16:10	54	10:00 (WEA 12)
28	05:30		06:10 (6B) | 06:19		06:46 (WEA 03) | 07:09		07:43 (WEA 10) | 07:01		07:31 (WEA 11) | 07:54		08:36 (29B) | 08:22		08:54 (29B)
	21:12	15	06:25 (6B) | 20:13	44	07:38 (WEA 02) | 19:02	47	08:30 (14B) | 16:57	72	09:20 (18B) | 16:11	48	09:39 (WEA 13) | 16:11	55	10:01 (WEA 12)
29	05:32		06:10 (6B) | 06:21		06:48 (WEA 03) | 07:11		07:43 (WEA 10) | 07:02		07:32 (WEA 11) | 07:55		08:35 (29B) | 08:22		08:54 (29B)
	21:10	16	06:26 (6B) | 20:11	46	07:40 (WEA 02) | 18:59	45	08:28 (14B) | 16:55	72	09:19 (18B) | 16:10	50	09:39 (WEA 13) | 16:12	56	10:01 (WEA 12)
30	05:33		06:10 (6B) | 06:22		06:50 (WEA 03) | 07:13		07:43 (WEA 10) | 07:04		07:34 (WEA 11) | 07:57		08:35 (29B) | 08:22		08:54 (29B)
	21:09	16	06:26 (6B) | 20:08	48	07:42 (WEA 02) | 18:57	43	08:26 (14B) | 16:53	68	09:18 (18B) | 16:10	53	09:40 (WEA 13) | 16:12	57	10:01 (WEA 12)
31	05:35		06:09 (6B) | 06:24		06:52 (WEA 03) |		| 07:06		07:35 (WEA 11) |			| 08:22		08:54 (29B)
	21:07	16	06:25 (6B) | 20:06	48	07:42 (WEA 02) |		| 16:51	64	09:17 (18B) |			| 16:13	57	10:01 (WEA 12)
Sonnenscheinstunden	501		453		381		332		267		245	
astr.max.mögl.Beschattung		1031		619		1060		1371		1149		1702
Red.Sonnenscheinwahrsch.		0,40		0,43		0,34		0,28		0,22		0,18
Reduktion Betriebsdauer		0,96		0,96		0,96		0,96		0,96		0,96
Reduktion Windrichtung		0,71		0,72		0,71		0,64		0,61		0,60
Gesamte Reduktion		0,27		0,29		0,23		0,17		0,13		0,10
Met.wahrsch.Beschattung		278		180		240		234		147		168

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 46 - Reinstedt - Solarpark

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22		08:53 (WEA 11)	07:56		08:22 (WEA 07)	07:03		07:40 (WEA 02)	06:52		07:25 (6B)	05:48		06:13 (2B)	05:03		05:52 (5B)
	16:15	42	09:50 (14B)	17:02	28	09:08 (15B)	17:53	87	09:38 (13B)	19:47	37	08:03 (WEA 03)	20:38	54	07:55 (10B)	21:23	16	06:08 (5B)
2	08:22		08:53 (WEA 11)	07:54		08:20 (WEA 07)	07:00		07:40 (WEA 02)	06:50		07:25 (6B)	05:46		06:11 (2B)	05:02		05:52 (5B)
	16:16	44	09:51 (14B)	17:04	30	09:07 (15B)	17:55	86	09:38 (13B)	19:49	34	08:01 (WEA 03)	20:39	57	07:54 (10B)	21:24	18	06:10 (5B)
3	08:22		08:54 (WEA 11)	07:53		08:18 (WEA 07)	06:58		07:39 (WEA 02)	06:48		07:24 (6B)	05:44		06:10 (2B)	05:01		05:51 (5B)
	16:17	47	09:53 (14B)	17:06	33	09:07 (15B)	17:57	84	09:36 (13B)	19:51	24	07:55 (WEA 03)	20:41	59	07:55 (10B)	21:25	19	06:10 (5B)
4	08:22		08:53 (WEA 11)	07:51		08:17 (WEA 07)	06:56		07:39 (WEA 02)	06:46		07:24 (6B)	05:42		06:09 (2B)	05:01		05:50 (5B)
	16:18	49	09:53 (14B)	17:08	34	09:07 (15B)	17:59	84	09:36 (13B)	19:52	21	07:45 (6B)	20:43	60	07:54 (10B)	21:26	21	06:11 (5B)
5	08:22		08:53 (WEA 11)	07:49		08:16 (WEA 07)	06:54		07:39 (WEA 02)	06:43		07:24 (6B)	05:40		06:08 (2B)	05:00		05:50 (5B)
	16:19	52	09:54 (14B)	17:10	33	09:06 (15B)	18:01	81	09:35 (13B)	19:54	20	07:44 (6B)	20:44	60	07:53 (10B)	21:27	22	06:12 (5B)
6	08:21		08:53 (WEA 11)	07:48		08:15 (WEA 07)	06:52		07:39 (WEA 02)	06:41		07:25 (6B)	05:39		06:08 (2B)	04:59		05:49 (5B)
	16:20	54	09:56 (14B)	17:11	32	09:05 (15B)	18:02	78	09:34 (13B)	19:56	19	07:44 (6B)	20:46	59	07:52 (10B)	21:28	23	06:12 (5B)
7	08:21		08:53 (WEA 11)	07:46		08:13 (WEA 10)	06:49		07:38 (WEA 02)	06:39		07:25 (6B)	05:37		06:08 (2B)	04:59		05:49 (5B)
	16:22	55	09:56 (14B)	17:13	30	09:03 (15B)	18:04	77	09:32 (13B)	19:57	17	07:42 (6B)	20:48	58	07:52 (10B)	21:29	24	06:13 (5B)
8	08:20		08:53 (WEA 11)	07:44		08:11 (WEA 10)	06:47		07:39 (WEA 02)	06:36		07:26 (6B)	05:35		06:08 (2B)	04:58		05:49 (5B)
	16:23	56	09:56 (14B)	17:15	23	08:34 (WEA 07)	18:06	74	09:31 (13B)	19:59	14	07:40 (6B)	20:49	57	07:51 (10B)	21:30	24	06:13 (5B)
9	08:20		08:53 (WEA 11)	07:42		08:09 (WEA 10)	06:45		07:39 (WEA 02)	06:34		07:28 (6B)	05:33		06:08 (2B)	04:58		05:49 (5B)
	16:24	59	09:58 (14B)	17:17	25	08:34 (WEA 07)	18:08	71	09:30 (13B)	20:01	10	07:38 (6B)	20:51	56	07:51 (10B)	21:31	25	06:14 (5B)
10	08:19		08:53 (WEA 11)	07:41		08:09 (WEA 10)	06:43		07:40 (WEA 02)	06:32			05:32		06:08 (2B)	04:57		05:49 (5B)
	16:26	59	09:58 (14B)	17:19	40	09:22 (13B)	18:09	66	09:29 (13B)	20:02			20:52	54	07:50 (10B)	21:32	26	06:15 (5B)
11	08:19		08:53 (WEA 11)	07:39		08:08 (WEA 10)	06:40		07:41 (WEA 02)	06:30			05:30		06:08 (2B)	04:57		05:48 (5B)
	16:27	59	09:59 (14B)	17:21	48	09:26 (13B)	18:11	60	09:26 (13B)	20:04			20:54	51	07:48 (10B)	21:33	27	06:15 (5B)
12	08:18		08:54 (WEA 11)	07:37		08:07 (WEA 10)	06:38		07:42 (WEA 02)	06:28			05:28		06:09 (2B)	04:57		05:48 (5B)
	16:29	59	10:00 (14B)	17:22	52	09:28 (13B)	18:13	53	09:24 (13B)	20:06			20:56	48	07:48 (10B)	21:33	27	06:15 (5B)
13	08:18		08:54 (WEA 11)	07:35		08:07 (WEA 10)	06:36		07:44 (WEA 02)	06:25		07:30 (10B)	05:27		06:10 (2B)	04:56		05:49 (5B)
	16:30	60	10:01 (14B)	17:24	56	09:30 (13B)	18:15	44	09:21 (13B)	20:07	12	07:42 (10B)	20:57	44	07:46 (10B)	21:34	27	06:16 (5B)
14	08:17		08:54 (WEA 11)	07:33		08:06 (WEA 10)	06:34		06:56 (WEA 04)	06:23		07:26 (10B)	05:25		06:12 (2B)	04:56		05:49 (5B)
	16:31	60	10:01 (14B)	17:26	60	09:32 (13B)	18:16	40	09:16 (13B)	20:09	20	07:46 (10B)	20:59	39	07:45 (10B)	21:34	27	06:16 (5B)
15	08:16		08:54 (WEA 11)	07:31		07:56 (WEA 06)	06:31		06:54 (WEA 04)	06:21		07:23 (10B)	05:24		06:14 (2B)	04:56		05:49 (5B)
	16:33	61	10:02 (14B)	17:28	66	09:33 (13B)	18:18	20	09:10 (13B)	20:11	26	07:49 (10B)	21:00	32	07:44 (10B)	21:35	28	06:17 (5B)
16	08:15		08:54 (WEA 11)	07:29		07:54 (WEA 06)	06:29		06:52 (WEA 04)	06:19		07:21 (10B)	05:22		07:18 (10B)	04:56		05:49 (5B)
	16:35	60	10:02 (14B)	17:30	72	09:34 (13B)	18:20	16	07:08 (WEA 04)	20:13	29	07:50 (10B)	21:02	24	07:42 (10B)	21:36	28	06:17 (5B)
17	08:14		08:54 (WEA 11)	07:27		07:52 (WEA 06)	06:27		06:49 (WEA 04)	06:17		07:19 (10B)	05:21		07:20 (10B)	04:56		05:49 (5B)
	16:36	58	10:03 (14B)	17:32	78	09:35 (13B)	18:22	19	07:08 (WEA 04)	20:14	33	07:52 (10B)	21:03	21	07:41 (10B)	21:36	29	06:18 (5B)
18	08:13		08:55 (WEA 11)	07:25		07:50 (WEA 06)	06:25		06:49 (WEA 04)	06:14		07:18 (10B)	05:19		07:22 (10B)	04:56		05:49 (5B)
	16:38	53	10:03 (14B)	17:34	82	09:36 (13B)	18:23	20	07:09 (WEA 04)	20:16	35	07:53 (10B)	21:05	17	07:39 (10B)	21:36	29	06:18 (5B)
19	08:12		08:54 (WEA 11)	07:23		07:48 (WEA 06)	06:22		06:48 (WEA 04)	06:12		07:16 (10B)	05:18		07:23 (10B)	04:56		05:49 (5B)
	16:39	51	10:03 (14B)	17:35	86	09:37 (13B)	18:25	21	07:09 (WEA 04)	20:18	37	07:53 (10B)	21:06	13	07:36 (10B)	21:37	29	06:18 (5B)
20	08:11		08:55 (WEA 11)	07:21		07:45 (WEA 06)	06:20		06:47 (WEA 04)	06:10		07:14 (10B)	05:16		07:29 (10B)	04:56		05:50 (5B)
	16:41	49	10:03 (14B)	17:37	88	09:37 (13B)	18:27	22	07:09 (WEA 04)	20:19	40	07:54 (10B)	21:08	2	07:31 (10B)	21:37	28	06:18 (5B)
21	08:10		08:56 (WEA 11)	07:19		07:45 (WEA 06)	06:18		06:46 (WEA 03)	06:08		07:13 (10B)	05:15			04:56		05:50 (5B)
	16:43	49	10:04 (14B)	17:39	91	09:38 (13B)	18:28	24	07:10 (WEA 03)	20:21	41	07:54 (10B)	21:09			21:37	28	06:18 (5B)
22	08:09		08:57 (WEA 11)	07:17		07:45 (WEA 06)	06:15		06:45 (WEA 03)	06:06		07:12 (10B)	05:14			04:56		05:50 (5B)
	16:44	47	10:04 (14B)	17:41	91	09:38 (13B)	18:30	26	07:11 (WEA 03)	20:23	43	07:55 (10B)	21:10			21:38	28	06:18 (5B)
23	08:08		08:57 (WEA 11)	07:15		07:46 (WEA 06)	06:13		06:44 (WEA 03)	06:04		07:12 (10B)	05:12			04:56		05:51 (5B)
	16:46	45	10:03 (14B)	17:43	89	09:39 (13B)	18:32	27	07:11 (WEA 03)	20:24	43	07:55 (10B)	21:12			21:38	28	06:19 (5B)
24	08:07		08:52 (15B)	07:13		07:46 (WEA 02)	06:11		06:43 (WEA 03)	06:02		07:11 (10B)	05:11			04:57		05:50 (5B)
	16:48	49	10:03 (14B)	17:44	85	09:39 (13B)	18:34	28	07:11 (WEA 03)	20:26	44	07:55 (10B)	21:13			21:38	29	06:19 (5B)
25	08:05		08:51 (15B)	07:11		07:45 (WEA 02)	06:08		06:43 (WEA 03)	06:00		07:10 (10B)	05:10			04:57		05:50 (5B)
	16:50	50	10:04 (14B)	17:46	82	09:39 (13B)	18:35	28	07:11 (WEA 03)	20:28	46	07:56 (10B)	21:15			21:38	29	06:19 (5B)
26	08:04		08:50 (15B)	07:09		07:43 (WEA 02)	06:06		06:43 (WEA 03)	05:58		07:10 (10B)	05:09			04:57		05:51 (5B)
	16:51	49	10:03 (14B)	17:48	84	09:39 (13B)	18:37	28	07:11 (WEA 03)	20:29	45	07:55 (10B)	21:16			21:38	28	06:19 (5B)
27	08:03		08:50 (15B)	07:07		07:41 (WEA 02)	06:04		06:42 (WEA 03)	05:56		07:10 (10B)	05:08			04:58		05:51 (5B)
	16:53	46	10:02 (14B)	17:50	86	09:38 (13B)	18:39	27	07:09 (WEA 03)	20:31	46	07:56 (10B)	21:17			21:38	28	06:19 (5B)
28	08:01		08:49 (15B)	07:05		07:41 (WEA 02)	06:02		06:32 (6B)	05:54		07:10 (10B)	05:07			04:58		05:52 (5B)
	16:55	44	10:01 (14B)	17:52	86	09:38 (13B)	18:40	35	07:09 (WEA 03)	20:33	46	07:56 (10B)	21:18			21:38	28	06:20 (5B)
29	08:00		08:49 (15B)				06:59		07:30 (6B)	05:52		07:10 (10B)	05:06		05:57 (5B)	04:59		05:52 (5B)
	16:57	38	10:00 (14B)				19:42	38	08:08 (WEA 03)	20:34	46	07:56 (10B)	21:20	6	06:03 (5B)	21:38	27	06:19 (5B)
30	07:59		08:25 (WEA 07)				06:57		07:27 (6B)	05:50		07:09 (10B)	05:05		05:55 (5B)	04:59		05:53 (5B)
	16:59	30	09:58 (14B)				19:44	39	08:06 (WEA 03)	20:36	46	07:55 (10B)	21:21	10	06:05 (5B)	21:37	27	06:20 (5B)
31	07:57		08:23 (WEA 07)				06:55		07:26 (6B)				05:04		05:53 (5B)			
	17:00	25	09:07 (15B)				19:45	39	08:05 (WEA 03)				21:22	14	06:07 (5B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		1559			1690			1442			874			895			777	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,60			0,65			0,67			0,72			0,72			0,71	
Gesamte Reduktion		0,12			0,19			0,17			0,24			0,29			0,23	
Met.wahrsch.Beschattung		189			329			246			213			261			180	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 46 - Reinstedt - Solarpark

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Juli			August			September			Oktober			November			Dezember		
1	05:00		05:53 (5B)	05:36		06:20 (2B)	06:26			07:14		08:22 (WEA 02)	07:08		07:38 (WEA 10)	07:58		08:35 (WEA 11)
	21:37	27	06:20 (5B)	21:06	49	07:59 (10B)	20:04			18:55	48	10:01 (13B)	16:49	39	08:50 (13B)	16:09	60	09:41 (14B)
2	05:01		05:53 (5B)	05:38		06:19 (2B)	06:27			07:16		08:20 (WEA 02)	07:09		07:39 (WEA 10)	08:00		08:36 (WEA 11)
	21:37	26	06:19 (5B)	21:04	52	07:59 (10B)	20:02			18:52	57	10:04 (13B)	16:47	24	08:03 (WEA 07)	16:08	59	09:41 (14B)
3	05:01		05:54 (5B)	05:39		06:19 (2B)	06:29		07:26 (6B)	07:18		08:19 (WEA 02)	07:11		07:41 (WEA 10)	08:01		08:36 (WEA 11)
	21:36	26	06:20 (5B)	21:02	54	08:00 (10B)	19:59	10	07:36 (6B)	18:50	63	10:06 (13B)	16:45	27	08:30 (15B)	16:08	58	09:41 (14B)
4	05:02		05:55 (5B)	05:41		06:18 (2B)	06:30		07:23 (6B)	07:19		08:17 (WEA 02)	07:13		07:44 (WEA 10)	08:03		08:38 (WEA 11)
	21:36	25	06:20 (5B)	21:01	57	08:01 (10B)	19:57	14	07:37 (6B)	18:48	67	10:06 (13B)	16:44	30	08:33 (15B)	16:07	57	09:42 (14B)
5	05:03		05:54 (5B)	05:42		06:18 (2B)	06:32		07:22 (6B)	07:21		08:16 (WEA 02)	07:15		07:45 (WEA 07)	08:04		08:38 (WEA 11)
	21:36	25	06:19 (5B)	20:59	58	08:02 (10B)	19:55	17	07:39 (6B)	18:46	72	10:08 (13B)	16:42	32	08:35 (15B)	16:07	55	09:41 (14B)
6	05:04		05:55 (5B)	05:44		06:18 (2B)	06:34		07:20 (6B)	07:23		08:15 (WEA 02)	07:17		07:45 (WEA 07)	08:05		08:40 (WEA 11)
	21:35	24	06:19 (5B)	20:57	59	08:02 (10B)	19:53	19	07:39 (6B)	18:43	76	10:09 (13B)	16:40	34	08:36 (15B)	16:06	53	09:42 (14B)
7	05:05		05:56 (5B)	05:45		06:18 (2B)	06:35		07:19 (6B)	07:24		08:14 (WEA 02)	07:18		07:47 (WEA 07)	08:06		08:40 (WEA 11)
	21:34	23	06:19 (5B)	20:55	60	08:03 (10B)	19:50	20	07:39 (6B)	18:41	78	10:09 (13B)	16:38	34	08:37 (15B)	16:06	52	09:41 (14B)
8	05:06		05:57 (5B)	05:47		06:18 (2B)	06:37		07:18 (6B)	07:26		08:14 (WEA 02)	07:20		07:49 (WEA 07)	08:08		08:41 (WEA 11)
	21:34	21	06:18 (5B)	20:53	60	08:03 (10B)	19:48	21	07:39 (6B)	18:39	80	10:10 (13B)	16:37	32	08:38 (15B)	16:05	49	09:41 (14B)
9	05:07		05:58 (5B)	05:49		06:19 (2B)	06:38		07:18 (6B)	07:28		08:14 (WEA 02)	07:22		07:51 (WEA 07)	08:09		08:42 (WEA 11)
	21:33	20	06:18 (5B)	20:52	60	08:04 (10B)	19:46	21	07:39 (6B)	18:37	82	10:11 (13B)	16:35	30	08:38 (15B)	16:05	46	09:41 (14B)
10	05:08		05:59 (5B)	05:50		06:19 (2B)	06:40		07:18 (6B)	07:29		08:14 (WEA 02)	07:24		07:53 (WEA 07)	08:10		08:42 (WEA 11)
	21:32	19	06:18 (5B)	20:50	59	08:03 (10B)	19:43	34	07:54 (WEA 03)	18:34	84	10:11 (13B)	16:33	27	08:38 (15B)	16:05	44	09:40 (14B)
11	05:09		06:00 (5B)	05:52		06:21 (2B)	06:42		07:18 (6B)	07:31		08:13 (WEA 02)	07:25		07:55 (WEA 07)	08:11		08:44 (WEA 11)
	21:32	17	06:17 (5B)	20:48	57	08:04 (10B)	19:41	37	07:55 (WEA 03)	18:32	86	10:11 (13B)	16:32	24	08:39 (15B)	16:05	42	09:41 (14B)
12	05:10		06:01 (5B)	05:53		06:22 (2B)	06:43		07:18 (6B)	07:33		08:13 (WEA 02)	07:27		07:57 (WEA 07)	08:12		08:45 (WEA 11)
	21:31	15	06:16 (5B)	20:46	53	08:04 (10B)	19:39	39	07:57 (WEA 03)	18:30	86	10:11 (13B)	16:30	31	09:30 (14B)	16:05	39	09:41 (14B)
13	05:11		06:02 (5B)	05:55		07:18 (10B)	06:45		07:18 (6B)	07:34		08:14 (WEA 02)	07:29		08:21 (15B)	08:13		08:46 (WEA 11)
	21:30	13	06:15 (5B)	20:44	46	08:04 (10B)	19:37	39	07:57 (WEA 03)	18:28	86	10:11 (13B)	16:29	39	09:32 (14B)	16:05	38	09:41 (14B)
14	05:12		06:04 (5B)	05:57		07:17 (10B)	06:47		07:20 (6B)	07:36		08:14 (WEA 02)	07:31		08:21 (15B)	08:14		08:48 (WEA 11)
	21:29	9	06:13 (5B)	20:42	46	08:03 (10B)	19:34	38	07:58 (WEA 03)	18:26	86	10:11 (13B)	16:27	44	09:33 (14B)	16:05	34	09:41 (14B)
15	05:13			05:58		07:18 (10B)	06:48		07:21 (6B)	07:38		08:15 (WEA 02)	07:32		08:22 (15B)	08:15		08:48 (WEA 11)
	21:28			20:40	46	08:04 (10B)	19:32	36	07:58 (WEA 03)	18:23	85	10:11 (13B)	16:26	46	09:34 (14B)	16:05	30	09:40 (14B)
16	05:14			06:00		07:17 (10B)	06:50		07:32 (WEA 03)	07:40		08:15 (WEA 02)	07:34		08:23 (15B)	08:16		08:49 (WEA 11)
	21:27			20:38	46	08:03 (10B)	19:30	27	07:59 (WEA 03)	18:21	83	10:10 (13B)	16:25	49	09:36 (14B)	16:05	27	09:40 (14B)
17	05:15			06:01		07:17 (10B)	06:51		07:31 (WEA 03)	07:41		08:16 (WEA 02)	07:36		08:24 (15B)	08:17		08:51 (WEA 11)
	21:26			20:36	46	08:03 (10B)	19:27	28	07:59 (WEA 03)	18:19	81	10:10 (13B)	16:23	50	09:37 (14B)	16:05	24	09:40 (14B)
18	05:17			06:03		07:17 (10B)	06:53		07:30 (WEA 03)	07:43		08:17 (WEA 06)	07:38		08:26 (15B)	08:17		09:04 (20B)
	21:25			20:34	45	08:02 (10B)	19:25	28	07:58 (WEA 03)	18:17	88	10:10 (13B)	16:22	49	09:37 (14B)	16:05	21	09:41 (14B)
19	05:18			06:05		07:18 (10B)	06:55		07:31 (WEA 03)	07:45		08:17 (WEA 06)	07:39		08:32 (WEA 11)	08:18		09:05 (20B)
	21:24			20:32	44	08:02 (10B)	19:23	27	07:58 (WEA 03)	18:15	90	10:10 (13B)	16:21	45	09:38 (14B)	16:05	20	09:41 (14B)
20	05:19			06:06		07:17 (10B)	06:56		07:30 (WEA 03)	07:46		08:17 (WEA 06)	07:41		08:32 (WEA 11)	08:19		09:05 (20B)
	21:23			20:30	44	08:01 (10B)	19:20	27	07:57 (WEA 03)	18:13	90	10:09 (13B)	16:19	47	09:39 (14B)	16:06	20	09:41 (14B)
21	05:20			06:08		07:18 (10B)	06:58		07:30 (WEA 03)	07:48		08:17 (WEA 06)	07:43		08:31 (WEA 11)	08:19		09:06 (20B)
	21:21			20:28	42	08:00 (10B)	19:18	27	07:57 (WEA 03)	18:11	91	10:09 (13B)	16:18	49	09:39 (14B)	16:06	19	09:41 (14B)
22	05:22			06:09		07:18 (10B)	06:59		07:31 (WEA 03)	07:50		08:16 (WEA 06)	07:44		08:31 (WEA 11)	08:20		09:06 (20B)
	21:20			20:26	41	07:59 (10B)	19:16	25	07:56 (WEA 03)	18:09	87	10:07 (13B)	16:17	50	09:39 (14B)	16:07	18	09:41 (14B)
23	05:23			06:11		07:19 (10B)	07:01		07:31 (WEA 03)	07:52		08:18 (WEA 06)	07:46		08:31 (WEA 11)	08:20		09:07 (20B)
	21:19			20:24	39	07:58 (10B)	19:13	23	07:54 (WEA 03)	18:07	85	10:06 (13B)	16:16	50	09:40 (14B)	16:07	20	09:43 (14B)
24	05:25		07:36 (10B)	06:13		07:19 (10B)	07:03		07:32 (WEA 04)	07:53		08:20 (WEA 06)	07:48		08:32 (WEA 11)	08:21		09:07 (20B)
	21:18	9	07:45 (10B)	20:21	38	07:57 (10B)	19:11	21	07:53 (WEA 04)	18:04	81	10:06 (13B)	16:15	53	09:40 (14B)	16:08	20	09:43 (14B)
25	05:26		07:33 (10B)	06:14		07:21 (10B)	07:04		07:31 (WEA 04)	06:55		07:22 (WEA 06)	07:49		08:32 (WEA 11)	08:21		09:07 (20B)
	21:16	15	07:48 (10B)	20:19	35	07:56 (10B)	19:09	21	07:52 (WEA 04)	17:02	77	09:05 (13B)	16:14	58	09:41 (14B)	16:08	20	09:43 (14B)
26	05:27		07:31 (10B)	06:16		07:21 (10B)	07:06		07:32 (WEA 04)	06:57		07:24 (WEA 06)	07:51		08:32 (WEA 11)	08:21		08:56 (WEA 11)
	21:15	20	07:51 (10B)	20:17	33	07:54 (10B)	19:06	19	07:51 (WEA 04)	17:00	71	09:04 (13B)	16:13	60	09:40 (14B)	16:09	22	09:44 (14B)
27	05:29		07:29 (10B)	06:18		07:23 (10B)	07:08		07:33 (WEA 04)	06:59		07:26 (WEA 06)	07:52		08:33 (WEA 11)	08:22		08:56 (WEA 11)
	21:13	23	07:52 (10B)	20:15	29	07:52 (10B)	19:04	18	07:51 (WEA 04)	16:59	63	09:02 (13B)	16:12	61	09:41 (14B)	16:10	27	09:46 (14B)
28	05:30		07:27 (10B)	06:19		07:24 (10B)	07:09		07:34 (WEA 04)	07:01		07:36 (WEA 10)	07:54		08:34 (WEA 11)	08:22		08:55 (WEA 11)
	21:12	26	07:53 (10B)	20:13	25	07:49 (10B)	19:02	14	07:48 (WEA 04)	16:57	58	09:01 (13B)	16:11	60	09:41 (14B)	16:11	30	09:47 (14B)
29	05:32		06:23 (2B)	06:21		07:27 (10B)	07:11		07:36 (WEA 04)	07:02		07:36 (WEA 10)	07:55		08:34 (WEA 11)	08:22		08:55 (WEA 11)
	21:10	36	07:55 (10B)	20:11	20	07:47 (10B)	18:59	34	09:55 (13B)	16:55	55	08:59 (13B)	16:10	60	09:41 (14B)	16:12	33	09:48 (14B)
30	05:33		06:21 (2B)	06:22		07:31 (10B)	07:13		07:38 (WEA 04)	07:04		07:37 (WEA 10)	07:57		08:35 (WEA 11)	08:22		08:54 (WEA 11)
	21:09	42	07:56 (10B)	20:08	12	07:43 (10B)	18:57	44	09:59 (13B)	16:53	51	08:57 (13B)	16:10	59	09:41 (14B)	16:12	36	09:49 (14B)
31	05:35		06:20 (2B)	06:24						07:06		07:37 (WEA 10)				08:22		08:54 (WEA 11)
	21:07	46	07:57 (10B)	20:06						16:51	47	08:54 (13B)				16:13	39	09:50 (14B)
Sonnenscheinstunden	501			453			381			332			267			245		
astr.max.mögl.Beschattung		507			1355			728			2334			1293			1112	
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22			0,18	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,71			0,72			0,71			0,65			0,61			0,60	
Gesamte Reduktion		0,27			0,29			0,23			0,17			0,13			0,10	
Met.wahrsch.Beschattung		137			397			166			406			166			110	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 47 - Reinstedt - Metallbau Klug

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22		09:03 (WEA 11)	07:56		08:25 (WEA 10)	07:03		08:02 (WEA 02)	06:52		08:12 (10B)	05:48		06:21 (2B)	05:03		06:06 (5B)
	16:15	54	10:28 (14B)	17:02	73	10:45 (13B)	17:53	30	08:32 (WEA 02)	19:47	50	09:02 (10B)	20:38	19	06:40 (2B)	21:23	38	06:44 (5B)
2	08:22		09:04 (WEA 11)	07:54		08:24 (WEA 10)	07:00		08:03 (WEA 02)	06:50		08:11 (10B)	05:46		06:21 (2B)	05:02		06:07 (5B)
	16:16	51	10:28 (14B)	17:04	73	10:45 (13B)	17:55	27	08:30 (WEA 02)	19:49	51	09:02 (10B)	20:39	19	06:40 (2B)	21:24	38	06:45 (5B)
3	08:22		09:05 (WEA 11)	07:53		08:23 (WEA 10)	06:58		08:04 (WEA 02)	06:48		08:09 (10B)	05:44		06:22 (2B)	05:01		06:07 (5B)
	16:17	47	10:29 (14B)	17:06	73	10:44 (13B)	17:57	24	08:28 (WEA 02)	19:51	52	09:01 (10B)	20:41	18	06:40 (2B)	21:25	38	06:45 (5B)
4	08:22		09:04 (WEA 11)	07:51		08:23 (WEA 10)	06:56		08:05 (WEA 02)	06:45		08:09 (10B)	05:42		06:22 (2B)	05:01		06:06 (5B)
	16:18	48	10:28 (14B)	17:08	73	10:45 (13B)	17:59	21	08:26 (WEA 02)	19:52	53	09:02 (10B)	20:43	17	06:39 (2B)	21:26	39	06:45 (5B)
5	08:22		09:05 (WEA 11)	07:49		08:22 (WEA 10)	06:54		08:08 (WEA 02)	06:43		08:09 (10B)	05:40		06:22 (2B)	05:00		06:07 (5B)
	16:19	50	10:29 (14B)	17:10	75	10:45 (13B)	18:01	16	08:24 (WEA 02)	19:54	53	09:02 (10B)	20:44	16	06:38 (2B)	21:27	39	06:46 (5B)
6	08:21		09:06 (WEA 11)	07:48		08:22 (WEA 10)	06:52		08:12 (WEA 02)	06:41		08:08 (10B)	05:39		06:23 (2B)	04:59		06:07 (5B)
	16:20	51	10:29 (14B)	17:11	74	10:44 (13B)	18:02	8	08:20 (WEA 02)	19:56	54	09:02 (10B)	20:46	14	06:37 (2B)	21:28	38	06:45 (5B)
7	08:21		09:06 (WEA 11)	07:46		08:22 (WEA 10)	06:49			06:39		08:07 (10B)	05:37		06:25 (2B)	04:59		06:07 (5B)
	16:22	52	10:29 (14B)	17:13	73	10:44 (13B)	18:04			19:57	54	09:01 (10B)	20:48	11	06:36 (2B)	21:29	39	06:46 (5B)
8	08:20		09:06 (WEA 11)	07:44		08:21 (WEA 10)	06:47		07:10 (WEA 04)	06:36		08:07 (10B)	05:35		06:26 (2B)	04:58		06:07 (5B)
	16:23	53	10:29 (14B)	17:15	73	10:43 (13B)	18:06	8	07:18 (WEA 04)	19:59	53	09:00 (10B)	20:49	8	06:34 (2B)	21:30	39	06:46 (5B)
9	08:20		09:07 (WEA 11)	07:42		08:07 (WEA 06)	06:45		07:08 (WEA 04)	06:34		08:07 (10B)	05:33			04:58		06:07 (5B)
	16:24	53	10:29 (14B)	17:17	74	10:42 (13B)	18:08	12	07:20 (WEA 04)	20:01	53	09:00 (10B)	20:51			21:31	39	06:46 (5B)
10	08:19		09:08 (WEA 11)	07:41		08:06 (WEA 06)	06:43		07:06 (WEA 04)	06:32		08:07 (10B)	05:32			04:57		06:08 (5B)
	16:26	53	10:29 (14B)	17:19	77	10:43 (13B)	18:09	18	07:24 (WEA 03)	20:02	53	09:00 (10B)	20:52			21:32	39	06:47 (5B)
11	08:19		09:08 (WEA 11)	07:39		08:04 (WEA 06)	06:40		07:03 (WEA 04)	06:30		08:06 (10B)	05:30			04:57		06:07 (5B)
	16:27	53	10:28 (14B)	17:21	80	10:42 (13B)	18:11	22	07:25 (WEA 03)	20:04	52	08:58 (10B)	20:54			21:33	39	06:46 (5B)
12	08:18		09:09 (WEA 11)	07:37		08:02 (WEA 06)	06:38		07:03 (WEA 04)	06:28		08:06 (10B)	05:28			04:57		06:08 (5B)
	16:28	55	10:30 (13B)	17:22	88	10:41 (13B)	18:13	24	07:27 (WEA 03)	20:06	52	08:58 (10B)	20:56			21:33	39	06:47 (5B)
13	08:18		09:09 (15B)	07:35		08:00 (WEA 06)	06:36		07:02 (WEA 04)	06:25		08:07 (10B)	05:27			04:56		06:08 (5B)
	16:30	56	10:31 (13B)	17:24	87	10:39 (13B)	18:15	26	07:28 (WEA 03)	20:07	50	08:57 (10B)	20:57			21:34	39	06:47 (5B)
14	08:17		09:09 (15B)	07:33		07:58 (WEA 06)	06:34		07:01 (WEA 04)	06:23		08:07 (10B)	05:25			04:56		06:08 (5B)
	16:31	58	10:32 (13B)	17:26	87	10:38 (13B)	18:16	27	07:28 (WEA 03)	20:09	49	08:56 (10B)	20:59			21:34	40	06:48 (5B)
15	08:16		09:09 (15B)	07:31		07:58 (WEA 06)	06:31		07:01 (WEA 04)	06:21		08:08 (10B)	05:24			04:56		06:09 (5B)
	16:33	58	10:33 (13B)	17:28	84	10:36 (13B)	18:18	28	07:29 (WEA 03)	20:11	47	08:55 (10B)	21:00			21:35	39	06:48 (5B)
16	08:15		09:09 (15B)	07:29		07:58 (WEA 06)	06:29		07:01 (WEA 04)	06:19		08:08 (10B)	05:22		06:19 (5B)	04:56		06:09 (5B)
	16:35	61	10:35 (13B)	17:30	80	10:34 (13B)	18:20	29	07:30 (WEA 03)	20:13	46	08:54 (10B)	21:02	11	06:30 (5B)	21:36	39	06:48 (5B)
17	08:14		09:09 (15B)	07:27		07:58 (WEA 06)	06:27		06:59 (6B)	06:17		08:09 (10B)	05:21		06:16 (5B)	04:56		06:09 (5B)
	16:36	62	10:36 (13B)	17:32	76	10:32 (13B)	18:22	30	07:29 (WEA 03)	20:14	44	08:53 (10B)	21:03	17	06:33 (5B)	21:36	39	06:48 (5B)
18	08:13		09:10 (15B)	07:25		07:59 (WEA 06)	06:25		06:58 (6B)	06:14		08:10 (10B)	05:19		06:15 (5B)	04:56		06:09 (5B)
	16:38	62	10:37 (13B)	17:34	67	10:28 (13B)	18:23	31	07:29 (WEA 03)	20:16	41	08:51 (10B)	21:05	20	06:35 (5B)	21:36	40	06:49 (5B)
19	08:12		09:09 (15B)	07:23		07:59 (WEA 06)	06:22		06:56 (6B)	06:12		08:09 (10B)	05:18		06:13 (5B)	04:56		06:09 (5B)
	16:39	62	10:37 (13B)	17:35	55	10:22 (13B)	18:25	33	07:29 (WEA 03)	20:18	40	08:49 (10B)	21:06	22	06:35 (5B)	21:37	40	06:49 (5B)
20	08:11		09:10 (15B)	07:21		07:59 (WEA 06)	06:20		06:55 (6B)	06:10		08:10 (10B)	05:16		06:12 (5B)	04:56		06:09 (5B)
	16:41	61	10:38 (13B)	17:37	47	08:46 (11B)	18:27	33	07:28 (WEA 03)	20:19	37	08:47 (10B)	21:08	25	06:37 (5B)	21:37	40	06:49 (5B)
21	08:10		09:11 (15B)	07:19		08:01 (WEA 02)	06:18		06:54 (6B)	06:08		08:12 (10B)	05:15		06:11 (5B)	04:56		06:09 (5B)
	16:43	62	10:39 (13B)	17:39	43	08:44 (11B)	18:28	34	07:28 (WEA 03)	20:21	33	08:45 (10B)	21:09	27	06:38 (5B)	21:37	40	06:49 (5B)
22	08:09		09:11 (15B)	07:17		08:01 (WEA 02)	06:15		06:54 (6B)	06:06		08:13 (10B)	05:14		06:10 (5B)	04:56		06:09 (5B)
	16:44	63	10:40 (13B)	17:41	41	08:42 (11B)	18:30	49	07:48 (10B)	20:23	30	08:43 (10B)	21:10	29	06:39 (5B)	21:38	40	06:49 (5B)
23	08:08		08:35 (WEA 07)	07:15		08:01 (WEA 02)	06:13		06:54 (6B)	06:04		08:15 (10B)	05:12		06:10 (5B)	04:56		06:10 (5B)
	16:46	66	10:40 (13B)	17:43	38	08:39 (11B)	18:32	56	07:52 (10B)	20:24	26	08:41 (10B)	21:12	30	06:40 (5B)	21:38	40	06:50 (5B)
24	08:07		08:34 (WEA 07)	07:13		08:01 (WEA 02)	06:11		06:53 (6B)	06:02		06:29 (2B)	05:11		06:08 (5B)	04:57		06:10 (5B)
	16:48	68	10:41 (13B)	17:44	34	08:35 (WEA 02)	18:34	61	07:54 (10B)	20:26	27	08:38 (10B)	21:13	32	06:40 (5B)	21:38	40	06:50 (5B)
25	08:05		08:33 (WEA 07)	07:11		08:01 (WEA 02)	06:08		06:53 (6B)	06:00		06:26 (2B)	05:10		06:08 (5B)	04:57		06:10 (5B)
	16:50	71	10:42 (13B)	17:46	34	08:35 (WEA 02)	18:35	63	07:56 (10B)	20:28	25	08:34 (10B)	21:15	33	06:41 (5B)	21:38	40	06:50 (5B)
26	08:04		08:31 (WEA 07)	07:09		08:01 (WEA 02)	06:06		06:54 (6B)	05:58		06:24 (2B)	05:09		06:08 (5B)	04:57		06:11 (5B)
	16:51	72	10:42 (13B)	17:48	33	08:34 (WEA 02)	18:37	64	07:58 (10B)	20:29	14	06:38 (2B)	21:16	33	06:41 (5B)	21:38	39	06:50 (5B)
27	08:03		08:30 (WEA 07)	07:07		08:01 (WEA 02)	06:04		06:54 (6B)	05:56		06:24 (2B)	05:08		06:07 (5B)	04:58		06:11 (5B)
	16:53	72	10:43 (13B)	17:50	32	08:33 (WEA 02)	18:39	62	07:58 (10B)	20:31	16	06:40 (2B)	21:17	35	06:42 (5B)	21:38	39	06:50 (5B)
28	08:01		08:28 (WEA 07)	07:05		08:02 (WEA 02)	06:02		06:55 (6B)	05:54		06:23 (2B)	05:07		06:08 (5B)	04:58		06:11 (5B)
	16:55	66	10:43 (13B)	17:52	30	08:32 (WEA 02)	18:40	59	07:59 (10B)	20:33	17	06:40 (2B)	21:18	35	06:43 (5B)	21:38	40	06:51 (5B)
29	08:00		08:27 (WEA 07)				06:59		07:57 (6B)	05:52		06:22 (2B)	05:06		06:07 (5B)	04:59		06:11 (5B)
	16:57	69	10:44 (13B)				19:42	57	09:00 (10B)	20:34	18	06:40 (2B)	21:20	36	06:43 (5B)	21:38	39	06:50 (5B)
30	07:59		08:27 (WEA 07)				06:57		08:00 (6B)	05:50		06:22 (2B)	05:05		06:07 (5B)	04:59		06:12 (5B)
	16:59	69	10:44 (13B)				19:44	50	09:00 (10B)	20:36	18	06:40 (2B)	21:21	37	06:44 (5B)	21:37	39	06:51 (5B)
31	07:57		08:25 (WEA 10)				06:55		08:12 (10B)				05:04		06:07 (5B)			
	17:00	71	10:44 (13B)				19:45	49	09:01 (10B)				21:22	37	06:44 (5B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		1849			1774			1051			1208			581			1176	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,59			0,64			0,70			0,70			0,72			0,71	
Gesamte Reduktion		0,12			0,19			0,18			0,24			0,29			0,23	
Met.wahrsch.Beschattung		221			337			186			286			168			275	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 47 - Reinstedt - Metallbau Klug

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November			Dezember		
1	05:00		06:12 (SB)	05:36			06:26		08:06 (10B)	07:14		07:41 (WEA 04)	07:08		07:35 (WEA 06)	07:58		08:50 (WEA 11)
	21:37	40	06:52 (SB)	21:06			20:04	52	08:58 (10B)	18:55	26	08:07 (WEA 03)	16:49	75	10:11 (13B)	16:09	53	10:10 (14B)
2	05:01		06:12 (SB)	05:38			06:27		08:05 (10B)	07:16		07:42 (WEA 04)	07:09		07:37 (WEA 06)	08:00		08:51 (WEA 11)
	21:37	39	06:51 (SB)	21:04			20:02	53	08:58 (10B)	18:52	23	08:05 (WEA 03)	16:47	73	10:12 (13B)	16:08	53	10:12 (14B)
3	05:01		06:12 (SB)	05:39			06:29		08:05 (10B)	07:18		07:43 (WEA 04)	07:11		07:51 (WEA 10)	08:01		08:50 (WEA 11)
	21:36	40	06:52 (SB)	21:02			19:59	53	08:58 (10B)	18:50	20	08:03 (WEA 03)	16:45	73	10:13 (13B)	16:08	53	10:12 (14B)
4	05:02		06:13 (SB)	05:41		06:38 (2B)	06:30		08:04 (10B)	07:19		07:44 (WEA 04)	07:13		07:51 (WEA 10)	08:03		08:51 (WEA 11)
	21:36	39	06:52 (SB)	21:01	3	06:41 (2B)	19:57	53	08:57 (10B)	18:48	14	07:58 (WEA 04)	16:44	75	10:14 (13B)	16:07	53	10:14 (14B)
5	05:03		06:12 (SB)	05:42		06:36 (2B)	06:32		08:04 (10B)	07:21		07:46 (WEA 04)	07:15		07:52 (WEA 10)	08:04		08:51 (WEA 11)
	21:36	39	06:51 (SB)	20:59	9	06:45 (2B)	19:55	54	08:58 (10B)	18:46	10	07:56 (WEA 04)	16:42	74	10:14 (13B)	16:07	52	10:14 (14B)
6	05:04		06:13 (SB)	05:44		06:34 (2B)	06:34		08:03 (10B)	07:23			07:17		07:52 (WEA 10)	08:05		08:52 (WEA 11)
	21:35	39	06:52 (SB)	20:57	12	06:46 (2B)	19:53	54	08:57 (10B)	18:43			16:40	73	10:14 (13B)	16:06	52	10:16 (14B)
7	05:05		06:13 (SB)	05:45		06:33 (2B)	06:35		08:04 (10B)	07:24			07:18		07:53 (WEA 10)	08:06		08:52 (WEA 11)
	21:34	39	06:52 (SB)	20:55	15	06:48 (2B)	19:50	53	08:57 (10B)	18:41			16:38	73	10:15 (13B)	16:06	50	10:16 (14B)
8	05:06		06:14 (SB)	05:47		06:32 (2B)	06:37		08:03 (10B)	07:26		08:44 (WEA 02)	07:20		07:54 (WEA 10)	08:08		08:52 (WEA 11)
	21:34	38	06:52 (SB)	20:53	16	06:48 (2B)	19:48	53	08:56 (10B)	18:39	13	08:57 (WEA 02)	16:37	73	10:15 (13B)	16:05	49	10:16 (14B)
9	05:07		06:14 (SB)	05:49		06:31 (2B)	06:38		08:04 (10B)	07:28		08:42 (WEA 02)	07:22		07:54 (WEA 10)	08:09		08:53 (WEA 11)
	21:33	38	06:52 (SB)	20:52	18	06:49 (2B)	19:46	52	08:56 (10B)	18:37	18	09:00 (WEA 02)	16:35	73	10:15 (13B)	16:05	47	10:17 (14B)
10	05:08		06:14 (SB)	05:50		06:30 (2B)	06:40		08:04 (10B)	07:29		08:40 (WEA 02)	07:24		07:56 (WEA 10)	08:10		08:53 (WEA 11)
	21:32	38	06:52 (SB)	20:50	19	06:49 (2B)	19:43	51	08:55 (10B)	18:34	22	09:02 (WEA 02)	16:33	73	10:16 (13B)	16:05	50	10:17 (14B)
11	05:09		06:15 (SB)	05:52		06:30 (2B)	06:42		08:04 (10B)	07:31		08:37 (WEA 02)	07:25		07:57 (WEA 10)	08:11		08:54 (WEA 11)
	21:32	37	06:52 (SB)	20:48	19	06:49 (2B)	19:41	50	08:54 (10B)	18:32	26	09:03 (WEA 02)	16:32	72	10:16 (13B)	16:05	54	10:19 (14B)
12	05:10		06:15 (SB)	05:53		06:30 (2B)	06:43		08:04 (10B)	07:33		08:36 (WEA 02)	07:27		07:59 (WEA 07)	08:12		08:55 (WEA 11)
	21:31	37	06:52 (SB)	20:46	19	06:49 (2B)	19:39	49	08:53 (10B)	18:30	28	09:04 (WEA 02)	16:30	69	10:16 (13B)	16:05	54	10:19 (14B)
13	05:11		06:15 (SB)	05:55		06:30 (2B)	06:45		08:04 (10B)	07:34		08:35 (WEA 02)	07:29		07:59 (WEA 07)	08:13		08:55 (WEA 11)
	21:30	37	06:52 (SB)	20:44	19	06:49 (2B)	19:36	48	08:52 (10B)	18:28	30	09:05 (WEA 02)	16:29	69	10:16 (13B)	16:05	57	10:20 (14B)
14	05:12		06:16 (SB)	05:57		06:30 (2B)	06:47		07:48 (6B)	07:36		08:34 (WEA 02)	07:31		08:00 (WEA 07)	08:14		08:56 (WEA 11)
	21:29	36	06:52 (SB)	20:42	18	06:48 (2B)	19:34	57	08:51 (10B)	18:26	32	09:06 (WEA 02)	16:27	66	10:15 (13B)	16:05	56	10:20 (14B)
15	05:13		06:16 (SB)	05:58		06:31 (2B)	06:48		07:45 (6B)	07:38		08:34 (WEA 02)	07:32		08:02 (WEA 07)	08:15		08:55 (WEA 11)
	21:28	36	06:52 (SB)	20:40	17	06:48 (2B)	19:32	59	08:49 (10B)	18:23	32	09:06 (WEA 02)	16:26	72	10:15 (13B)	16:05	59	10:20 (14B)
16	05:14		06:16 (SB)	06:00		06:31 (2B)	06:50		07:43 (6B)	07:40		08:32 (WEA 02)	07:34		08:04 (WEA 07)	08:16		08:56 (WEA 11)
	21:27	35	06:51 (SB)	20:38	15	06:46 (2B)	19:30	63	08:48 (10B)	18:21	34	09:06 (WEA 02)	16:25	72	10:15 (13B)	16:05	59	10:21 (14B)
17	05:15		06:17 (SB)	06:01		06:32 (2B)	06:51		07:42 (6B)	07:41		08:32 (WEA 02)	07:36		08:06 (WEA 07)	08:17		08:57 (WEA 11)
	21:26	34	06:51 (SB)	20:36	13	06:45 (2B)	19:27	64	08:46 (10B)	18:19	34	09:06 (WEA 02)	16:23	71	10:15 (13B)	16:05	59	10:21 (14B)
18	05:17		06:17 (SB)	06:03		06:33 (2B)	06:53		07:41 (6B)	07:43		08:32 (WEA 02)	07:38		08:08 (WEA 07)	08:17		08:58 (WEA 11)
	21:25	33	06:50 (SB)	20:34	25	08:41 (10B)	19:25	63	08:44 (10B)	18:17	34	09:06 (WEA 02)	16:22	68	10:15 (13B)	16:05	57	10:22 (14B)
19	05:18		06:19 (SB)	06:05		06:36 (2B)	06:55		07:40 (6B)	07:45		08:32 (WEA 02)	07:39		08:10 (WEA 07)	08:18		08:58 (WEA 11)
	21:24	32	06:51 (SB)	20:32	26	08:45 (10B)	19:23	62	08:42 (10B)	18:15	40	09:12 (11B)	16:21	66	10:15 (13B)	16:05	59	10:23 (14B)
20	05:19		06:19 (SB)	06:06		08:20 (10B)	06:56		07:39 (6B)	07:46		08:32 (WEA 02)	07:41		08:46 (15B)	08:19		08:58 (WEA 11)
	21:23	31	06:50 (SB)	20:30	27	08:47 (10B)	19:20	57	08:38 (10B)	18:13	42	09:14 (11B)	16:19	63	10:15 (13B)	16:06	59	10:23 (14B)
21	05:20		06:20 (SB)	06:08		08:18 (10B)	06:58		07:39 (6B)	07:48		08:32 (WEA 06)	07:43		08:46 (15B)	08:19		08:59 (WEA 11)
	21:21	29	06:49 (SB)	20:28	31	08:49 (10B)	19:18	52	08:35 (10B)	18:11	44	09:16 (11B)	16:18	62	10:14 (13B)	16:06	59	10:24 (14B)
22	05:22		06:20 (SB)	06:09		08:16 (10B)	06:59		07:39 (6B)	07:50		08:29 (WEA 06)	07:44		08:46 (15B)	08:20		08:59 (WEA 11)
	21:20	28	06:48 (SB)	20:26	34	08:50 (10B)	19:16	39	08:28 (10B)	18:09	47	09:16 (11B)	16:17	61	10:14 (13B)	16:07	59	10:24 (14B)
23	05:23		06:22 (SB)	06:11		08:15 (10B)	07:01		07:39 (6B)	07:52		08:28 (WEA 06)	07:46		08:46 (15B)	08:20		09:00 (WEA 11)
	21:19	26	06:48 (SB)	20:24	37	08:52 (10B)	19:13	34	08:13 (WEA 03)	18:07	60	10:54 (13B)	16:16	62	10:14 (13B)	16:07	59	10:25 (14B)
24	05:25		06:23 (SB)	06:13		08:13 (10B)	07:03		07:40 (6B)	07:53		08:28 (WEA 06)	07:48		08:47 (15B)	08:21		09:00 (WEA 11)
	21:18	24	06:47 (SB)	20:21	40	08:53 (10B)	19:11	33	08:13 (WEA 03)	18:04	70	10:59 (13B)	16:15	62	10:14 (13B)	16:08	59	10:25 (14B)
25	05:26		06:24 (SB)	06:14		08:12 (10B)	07:04		07:40 (6B)	06:55		07:28 (WEA 06)	07:49		08:47 (15B)	08:21		09:01 (WEA 11)
	21:16	21	06:45 (SB)	20:19	42	08:54 (10B)	19:09	32	08:12 (WEA 03)	17:02	76	10:02 (13B)	16:14	62	10:14 (13B)	16:08	58	10:25 (14B)
26	05:27		06:26 (SB)	06:16		08:10 (10B)	07:06		07:41 (6B)	06:57		07:27 (WEA 06)	07:51		08:47 (15B)	08:21		09:01 (WEA 11)
	21:15	18	06:44 (SB)	20:17	45	08:55 (10B)	19:06	31	08:12 (WEA 03)	17:00	82	10:04 (13B)	16:13	61	10:13 (13B)	16:09	59	10:25 (14B)
27	05:29		06:28 (SB)	06:18		08:10 (10B)	07:08		07:43 (WEA 04)	06:59		07:28 (WEA 06)	07:52		08:48 (15B)	08:22		09:02 (WEA 11)
	21:13	14	06:42 (SB)	20:15	46	08:56 (10B)	19:04	29	08:12 (WEA 03)	16:58	85	10:06 (13B)	16:12	59	10:13 (13B)	16:10	58	10:26 (14B)
28	05:30		06:31 (SB)	06:19		08:08 (10B)	07:09		07:42 (WEA 04)	07:01		07:28 (WEA 06)	07:54		08:49 (15B)	08:22		09:02 (WEA 11)
	21:12	7	06:38 (SB)	20:13	48	08:56 (10B)	19:02	28	08:10 (WEA 03)	16:57	88	10:08 (13B)	16:11	58	10:12 (13B)	16:11	58	10:27 (14B)
29	05:32			06:21		08:08 (10B)	07:11		07:42 (WEA 04)	07:02		07:30 (WEA 06)	07:55		08:49 (15B)	08:22		09:03 (WEA 11)
	21:10			20:11	49	08:57 (10B)	18:59	28	08:10 (WEA 03)	16:55	88	10:09 (13B)	16:10	56	10:11 (13B)	16:12	57	10:27 (14B)
30	05:33			06:22		08:07 (10B)	07:13		07:42 (WEA 04)	07:04		07:32 (WEA 06)	07:57		08:50 (WEA 11)	08:22		09:03 (WEA 11)
	21:09			20:08	50	08:57 (10B)	18:57	27	08:09 (WEA 03)	16:53	88	10:11 (13B)	16:10	55	10:11 (13B)	16:12	57	10:28 (14B)
31	05:35			06:24		08:06 (10B)				07:06		07:33 (WEA 06)				08:22		09:04 (WEA 11)
	21:07			20:06	51	08:57 (10B)				16:51	80	10:11 (13B)				16:13	55	10:28 (14B)
Sonnenscheinstunden	501			453			381			332			267			245		
astr.max.mögl.Beschattung		904			763			1433			1286			2021			1723	
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22			0,18	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,71			0,71			0,70			0,66			0,61			0,59	
Gesamte Reduktion		0,27			0,29			0,23			0,17			0,13			0,10	
Met.wahrsch.Beschattung		244			218			323			224			255			168	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 48 - Reinstedt - ACZ Transport

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22		09:04 (WEA 11)	07:56		08:26 (WEA 10)	07:03		08:16 (WEA 02)	06:52		08:46 (10B)	05:48		06:39 (5B)	05:03		05:43 (1B)
	16:15	56	10:19 (14B)	17:02	59	10:29 (13B)	17:53	11	08:27 (WEA 02)	19:47	17	09:03 (10B)	20:38	32	07:11 (5B)	21:23	17	06:00 (1B)
2	08:22		09:05 (WEA 11)	07:54		08:25 (WEA 10)	07:00			06:50		08:51 (10B)	05:46		06:38 (5B)	05:02		05:43 (1B)
	16:16	55	10:19 (14B)	17:04	59	10:28 (13B)	17:55			19:49	7	08:58 (10B)	20:39	33	07:11 (5B)	21:24	19	06:02 (1B)
3	08:22		09:05 (WEA 11)	07:53		08:25 (WEA 10)	06:58			06:48			05:44		06:38 (5B)	05:01		05:42 (1B)
	16:17	57	10:20 (14B)	17:06	58	10:27 (13B)	17:57			19:51			20:41	34	07:12 (5B)	21:25	20	06:02 (1B)
4	08:22		09:05 (WEA 11)	07:51		08:25 (WEA 10)	06:56			06:46			05:42		06:38 (5B)	05:01		05:42 (1B)
	16:18	56	10:19 (14B)	17:08	56	10:26 (13B)	17:59			19:52			20:43	34	07:12 (5B)	21:26	20	06:02 (1B)
5	08:22		09:06 (WEA 11)	07:49		08:25 (WEA 10)	06:54		07:17 (WEA 04)	06:43			05:40		06:37 (5B)	05:00		05:42 (1B)
	16:19	57	10:20 (14B)	17:10	55	10:25 (13B)	18:01	12	07:29 (WEA 03)	19:54			20:44	35	07:12 (5B)	21:27	21	06:03 (1B)
6	08:21		09:07 (WEA 11)	07:48		08:25 (WEA 10)	06:52		07:15 (WEA 04)	06:41			05:39		06:36 (5B)	04:59		05:41 (1B)
	16:20	55	10:20 (14B)	17:11	52	10:23 (13B)	18:02	32	08:11 (10B)	19:56			20:46	36	07:12 (5B)	21:28	22	06:03 (1B)
7	08:21		09:07 (WEA 11)	07:46		08:25 (WEA 10)	06:49		07:12 (WEA 04)	06:39			05:37		06:37 (5B)	04:59		05:42 (1B)
	16:22	55	10:19 (14B)	17:13	49	10:21 (13B)	18:04	43	08:13 (10B)	19:57			20:48	36	07:13 (5B)	21:29	22	06:04 (1B)
8	08:20		09:07 (WEA 11)	07:44		08:19 (WEA 02)	06:47		07:10 (WEA 04)	06:36			05:35		06:36 (5B)	04:58		05:41 (1B)
	16:23	56	10:20 (13B)	17:15	49	10:18 (13B)	18:06	52	08:16 (10B)	19:59			20:49	36	07:12 (5B)	21:30	23	06:04 (1B)
9	08:20		09:08 (WEA 11)	07:42		08:15 (WEA 02)	06:45		07:09 (WEA 04)	06:34			05:33		06:36 (5B)	04:58		05:41 (1B)
	16:24	57	10:21 (13B)	17:17	42	10:12 (13B)	18:08	58	08:18 (10B)	20:01			20:51	36	07:12 (5B)	21:31	24	06:05 (1B)
10	08:19		09:08 (15B)	07:41		08:14 (WEA 02)	06:43		07:09 (WEA 04)	06:32			05:32		06:36 (5B)	04:57		05:42 (1B)
	16:26	58	10:22 (13B)	17:19	40	08:54 (11B)	18:09	62	08:19 (10B)	20:02			20:52	36	07:12 (5B)	21:32	24	06:06 (1B)
11	08:19		09:08 (15B)	07:39		08:13 (WEA 02)	06:40		07:08 (WEA 04)	06:30			05:30		06:36 (5B)	04:57		05:41 (1B)
	16:27	58	10:22 (13B)	17:21	40	08:53 (11B)	18:11	65	08:20 (10B)	20:04			20:54	35	07:11 (5B)	21:33	24	06:05 (1B)
12	08:18		09:09 (15B)	07:37		08:11 (WEA 02)	06:38		07:08 (WEA 04)	06:28			05:28		06:37 (5B)	04:57		05:41 (1B)
	16:28	59	10:24 (13B)	17:22	42	08:53 (11B)	18:13	68	08:21 (10B)	20:06			20:56	34	07:11 (5B)	21:33	25	06:06 (1B)
13	08:18		09:09 (15B)	07:35		08:10 (WEA 02)	06:36		07:09 (WEA 04)	06:25			05:27		06:37 (5B)	04:56		05:42 (1B)
	16:30	59	10:25 (13B)	17:24	42	08:52 (11B)	18:15	69	08:22 (10B)	20:07			20:57	34	07:11 (5B)	21:34	24	06:06 (1B)
14	08:17		09:09 (15B)	07:33		08:09 (WEA 02)	06:34		07:08 (WEA 04)	06:23			05:25		06:37 (5B)	04:56		05:42 (1B)
	16:31	59	10:25 (13B)	17:26	42	08:51 (11B)	18:16	70	08:21 (10B)	20:09			20:59	34	07:11 (5B)	21:34	25	06:07 (1B)
15	08:16		09:10 (15B)	07:31		08:09 (WEA 02)	06:31		07:09 (WEA 04)	06:21			05:24		06:38 (5B)	04:56		05:42 (1B)
	16:33	59	10:26 (13B)	17:28	41	08:50 (11B)	18:18	70	08:22 (10B)	20:11			21:00	32	07:10 (5B)	21:35	25	06:07 (1B)
16	08:15		09:10 (15B)	07:29		08:08 (WEA 02)	06:29		07:10 (6B)	06:19		06:44 (2B)	05:22		06:38 (5B)	04:56		05:42 (1B)
	16:35	58	10:26 (13B)	17:30	40	08:48 (11B)	18:20	70	08:23 (10B)	20:13	9	06:53 (2B)	21:02	31	07:09 (5B)	21:36	25	06:07 (1B)
17	08:14		09:11 (15B)	07:27		08:08 (WEA 02)	06:27		07:10 (6B)	06:17		06:42 (2B)	05:21		06:39 (5B)	04:56		05:43 (1B)
	16:36	57	10:27 (13B)	17:32	37	08:45 (11B)	18:22	69	08:22 (10B)	20:14	13	06:55 (2B)	21:03	30	07:09 (5B)	21:36	25	06:08 (1B)
18	08:13		09:11 (15B)	07:25		08:08 (WEA 02)	06:25		07:10 (WEA 03)	06:14		06:41 (2B)	05:19		06:40 (5B)	04:56		05:43 (1B)
	16:38	58	10:28 (13B)	17:34	31	08:39 (WEA 02)	18:23	68	08:22 (10B)	20:16	15	06:56 (2B)	21:05	29	07:09 (5B)	21:36	25	06:08 (1B)
19	08:12		09:11 (15B)	07:23		08:08 (WEA 02)	06:22		07:12 (6B)	06:12		06:39 (2B)	05:18		06:40 (5B)	04:56		05:43 (1B)
	16:39	57	10:27 (13B)	17:35	32	08:40 (WEA 02)	18:25	65	08:22 (10B)	20:18	17	06:56 (2B)	21:06	27	07:07 (5B)	21:37	25	06:08 (1B)
20	08:11		09:12 (15B)	07:21		08:07 (WEA 02)	06:20		07:12 (WEA 03)	06:10		06:38 (2B)	05:16		06:41 (5B)	04:56		05:43 (1B)
	16:41	56	10:28 (13B)	17:37	31	08:38 (WEA 02)	18:27	62	08:21 (10B)	20:19	18	06:56 (2B)	21:08	26	07:07 (5B)	21:37	25	06:08 (1B)
21	08:10		09:13 (15B)	07:19		08:07 (WEA 02)	06:18		07:14 (WEA 03)	06:08		06:38 (2B)	05:15		06:42 (5B)	04:56		05:43 (1B)
	16:43	56	10:29 (13B)	17:39	31	08:38 (WEA 02)	18:28	58	08:21 (10B)	20:21	18	06:56 (2B)	21:09	24	07:06 (5B)	21:37	25	06:08 (1B)
22	08:09		09:15 (15B)	07:17		08:07 (WEA 02)	06:15		07:18 (WEA 03)	06:06		06:38 (2B)	05:14		06:43 (5B)	04:56		05:43 (1B)
	16:44	53	10:29 (13B)	17:41	31	08:38 (WEA 02)	18:30	49	08:20 (10B)	20:23	18	06:56 (2B)	21:10	22	07:05 (5B)	21:38	25	06:08 (1B)
23	08:08		09:16 (15B)	07:15		08:08 (WEA 02)	06:13		07:37 (10B)	06:04		06:38 (2B)	05:12		06:44 (5B)	04:56		05:44 (1B)
	16:46	51	10:29 (13B)	17:43	29	08:37 (WEA 02)	18:32	43	08:20 (10B)	20:24	17	06:55 (2B)	21:12	20	07:04 (5B)	21:38	25	06:09 (1B)
24	08:07		09:18 (15B)	07:13		08:09 (WEA 02)	06:11		07:37 (10B)	06:02		06:38 (2B)	05:11		06:45 (5B)	04:57		05:44 (1B)
	16:48	48	10:30 (13B)	17:44	28	08:37 (WEA 02)	18:34	41	08:18 (10B)	20:26	22	07:00 (5B)	21:13	17	07:02 (5B)	21:38	25	06:09 (1B)
25	08:05		09:49 (13B)	07:11		08:10 (WEA 02)	06:08		07:38 (10B)	06:00		06:38 (2B)	05:10		06:47 (5B)	04:57		05:44 (1B)
	16:50	41	10:30 (13B)	17:46	26	08:36 (WEA 02)	18:35	40	08:18 (10B)	20:28	25	07:03 (5B)	21:15	13	07:00 (5B)	21:38	25	06:09 (1B)
26	08:04		09:49 (13B)	07:09		08:11 (WEA 02)	06:06		07:38 (10B)	05:58		06:39 (2B)	05:09		06:49 (5B)	04:57		05:44 (1B)
	16:51	41	10:30 (13B)	17:48	24	08:35 (WEA 02)	18:37	39	08:17 (10B)	20:29	27	07:06 (5B)	21:16	9	06:58 (5B)	21:38	26	06:10 (1B)
27	08:03		08:31 (WEA 10)	07:07		08:11 (WEA 02)	06:04		07:38 (10B)	05:56		06:42 (2B)	05:08		05:50 (1B)	04:58		05:44 (1B)
	16:53	51	10:30 (13B)	17:50	21	08:32 (WEA 02)	18:39	36	08:14 (10B)	20:31	26	07:08 (5B)	21:17	2	05:52 (1B)	21:38	25	06:09 (1B)
28	08:02		08:29 (WEA 10)	07:05		08:13 (WEA 02)	06:02		07:39 (10B)	05:54		06:43 (5B)	05:07		05:47 (1B)	04:58		05:45 (1B)
	16:55	55	10:30 (13B)	17:52	17	08:30 (WEA 02)	18:40	34	08:13 (10B)	20:33	26	07:09 (5B)	21:18	9	05:56 (1B)	21:38	25	06:10 (1B)
29	08:00		08:28 (WEA 10)				06:59		08:41 (10B)	05:52		06:41 (5B)	05:06		05:46 (1B)	04:59		05:45 (1B)
	16:57	56	10:30 (13B)				19:42	31	09:12 (10B)	20:34	29	07:10 (5B)	21:20	12	05:58 (1B)	21:38	25	06:10 (1B)
30	07:59		08:27 (WEA 10)				06:57		08:41 (10B)	05:50		06:40 (5B)	05:05		05:45 (1B)	04:59		05:46 (1B)
	16:59	57	10:29 (13B)				19:44	28	09:09 (10B)	20:36	30	07:10 (5B)	21:21	14	05:59 (1B)	21:37	24	06:10 (1B)
31	07:57		08:26 (WEA 10)				06:55		08:43 (10B)				05:04		05:44 (1B)			
	17:00	57	10:28 (13B)				19:45	23	09:06 (10B)				21:22	16	06:00 (1B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		1708			1104			1368			334			818			710	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,59			0,65			0,69			0,71			0,71			0,70	
Gesamte Reduktion		0,12			0,19			0,17			0,24			0,29			0,23	
Met.wahrsch.Beschattung		204			213			237			80			235			163	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
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4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 48 - Reinstedt - ACZ Transport

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November			Dezember		
1	05:00		05:46 (1B)	05:36		06:47 (5B)	06:26			07:14		07:47 (WEA 04)	07:08		07:43 (WEA 02)	07:58		08:50 (15B)
	21:37	25	06:11 (1B)	21:06	35	07:22 (5B)	20:04			18:55	69	09:00 (10B)	16:49	39	08:22 (11B)	16:09	58	10:04 (13B)
2	05:01		05:46 (1B)	05:38		06:46 (5B)	06:27			07:16		07:47 (WEA 04)	07:09		07:46 (WEA 02)	08:00		08:51 (15B)
	21:37	24	06:10 (1B)	21:04	36	07:22 (5B)	20:02			18:52	66	08:59 (10B)	16:47	43	09:43 (13B)	16:08	58	10:05 (13B)
3	05:01		05:47 (1B)	05:39		06:47 (5B)	06:29			07:18		07:47 (WEA 04)	07:11		07:50 (WEA 02)	08:01		08:52 (WEA 11)
	21:36	23	06:10 (1B)	21:02	35	07:22 (5B)	19:59			18:50	63	08:58 (10B)	16:45	48	09:48 (13B)	16:08	56	10:04 (13B)
4	05:02		05:47 (1B)	05:41		06:46 (5B)	06:30			07:19		07:46 (WEA 04)	07:13		07:55 (WEA 10)	08:03		08:52 (WEA 11)
	21:36	24	06:11 (1B)	21:01	36	07:22 (5B)	19:57			18:48	60	08:56 (10B)	16:44	49	09:51 (13B)	16:07	56	10:05 (13B)
5	05:03		05:47 (1B)	05:42		06:47 (5B)	06:32			07:21		07:47 (WEA 04)	07:15		07:55 (WEA 10)	08:04		08:52 (WEA 11)
	21:36	23	06:10 (1B)	20:59	36	07:23 (5B)	19:55			18:46	54	08:54 (10B)	16:42	52	09:53 (13B)	16:07	56	10:05 (13B)
6	05:04		05:48 (1B)	05:44		06:46 (5B)	06:34			07:23		07:48 (WEA 04)	07:17		07:55 (WEA 10)	08:05		08:53 (WEA 11)
	21:35	22	06:10 (1B)	20:57	36	07:22 (5B)	19:53			18:43	48	08:52 (10B)	16:40	56	09:55 (13B)	16:06	55	10:06 (14B)
7	05:05		05:48 (1B)	05:45		06:47 (5B)	06:35			07:24		07:49 (WEA 04)	07:18		07:55 (WEA 10)	08:06		08:53 (WEA 11)
	21:34	22	06:10 (1B)	20:55	35	07:22 (5B)	19:50			18:41	38	08:48 (10B)	16:38	57	09:56 (13B)	16:06	57	10:07 (14B)
8	05:06		05:49 (1B)	05:47		06:46 (5B)	06:37			07:26		07:51 (WEA 04)	07:20		07:56 (WEA 10)	08:08		08:53 (WEA 11)
	21:34	21	06:10 (1B)	20:53	36	07:22 (5B)	19:48			18:39	24	08:43 (10B)	16:37	57	09:57 (13B)	16:05	56	10:07 (14B)
9	05:07		05:49 (1B)	05:49		06:47 (5B)	06:38			07:28		07:53 (WEA 04)	07:22		07:56 (WEA 10)	08:09		08:53 (WEA 11)
	21:33	21	06:10 (1B)	20:52	35	07:22 (5B)	19:46			18:37	6	07:59 (WEA 04)	16:35	58	09:59 (13B)	16:05	57	10:08 (14B)
10	05:08		05:50 (1B)	05:50		06:47 (5B)	06:40		08:45 (10B)	07:29			07:24		07:57 (WEA 10)	08:10		08:54 (WEA 11)
	21:32	19	06:09 (1B)	20:50	34	07:21 (5B)	19:43	5	08:50 (10B)	18:34			16:33	59	10:00 (13B)	16:05	56	10:09 (14B)
11	05:09		05:51 (1B)	05:52		06:48 (5B)	06:42		08:39 (10B)	07:31			07:25		07:58 (WEA 10)	08:11		08:55 (WEA 11)
	21:32	18	06:09 (1B)	20:48	32	07:20 (5B)	19:41	16	08:55 (10B)	18:32			16:32	57	10:00 (13B)	16:05	56	10:10 (14B)
12	05:10		05:52 (1B)	05:53		06:48 (5B)	06:43		08:36 (10B)	07:33		08:54 (WEA 02)	07:27		07:59 (WEA 10)	08:12		08:55 (WEA 11)
	21:31	16	06:08 (1B)	20:46	31	07:19 (5B)	19:39	22	08:58 (10B)	18:30	2	08:56 (WEA 02)	16:30	56	10:01 (13B)	16:05	56	10:11 (14B)
13	05:11		05:53 (1B)	05:55		06:49 (5B)	06:45		08:33 (10B)	07:34		08:48 (WEA 02)	07:29		08:00 (WEA 10)	08:13		08:56 (WEA 11)
	21:30	15	06:08 (1B)	20:44	30	07:19 (5B)	19:37	27	09:00 (10B)	18:28	14	09:02 (WEA 02)	16:29	57	10:02 (13B)	16:05	55	10:11 (14B)
14	05:12		05:54 (1B)	05:57		06:49 (5B)	06:47		08:31 (10B)	07:36		08:46 (WEA 02)	07:31		08:01 (WEA 10)	08:14		08:56 (WEA 11)
	21:29	13	06:07 (1B)	20:42	28	07:17 (5B)	19:34	31	09:02 (10B)	18:26	18	09:04 (WEA 02)	16:27	53	10:01 (13B)	16:05	56	10:12 (14B)
15	05:13		05:55 (1B)	05:58		06:51 (5B)	06:48		08:29 (10B)	07:38		08:44 (WEA 02)	07:32		08:03 (WEA 10)	08:15		08:57 (WEA 11)
	21:28	11	06:06 (1B)	20:40	25	07:16 (5B)	19:32	33	09:02 (10B)	18:23	22	09:06 (WEA 02)	16:26	51	10:02 (13B)	16:05	55	10:13 (14B)
16	05:14		05:57 (1B)	06:00		06:48 (2B)	06:50		08:28 (10B)	07:40		08:42 (WEA 02)	07:34		09:21 (13B)	08:16		08:57 (WEA 11)
	21:27	6	06:03 (1B)	20:38	26	07:14 (5B)	19:30	36	09:04 (10B)	18:21	24	09:06 (WEA 02)	16:25	42	10:03 (13B)	16:05	56	10:13 (14B)
17	05:15		07:00 (5B)	06:01		06:47 (2B)	06:51		08:27 (10B)	07:41		08:41 (WEA 02)	07:36		09:22 (13B)	08:17		08:57 (WEA 11)
	21:26	6	07:06 (5B)	20:36	26	07:13 (5B)	19:27	38	09:05 (10B)	18:19	27	09:08 (WEA 02)	16:23	41	10:03 (13B)	16:05	59	10:13 (14B)
18	05:17		06:57 (5B)	06:03		06:45 (2B)	06:53		08:25 (10B)	07:43		08:40 (WEA 02)	07:38		08:52 (15B)	08:17		08:58 (WEA 11)
	21:25	12	07:09 (5B)	20:34	25	07:10 (5B)	19:25	40	09:05 (10B)	18:17	28	09:08 (WEA 02)	16:22	47	10:03 (13B)	16:05	58	10:14 (14B)
19	05:18		06:56 (5B)	06:05		06:45 (2B)	06:55		08:25 (10B)	07:45		08:39 (WEA 02)	07:39		08:51 (15B)	08:18		08:59 (WEA 11)
	21:24	16	07:12 (5B)	20:32	20	07:05 (5B)	19:23	41	09:06 (10B)	18:15	30	09:09 (WEA 02)	16:21	51	10:04 (13B)	16:05	59	10:15 (14B)
20	05:19		06:55 (5B)	06:06		06:43 (2B)	06:56		08:23 (10B)	07:46		08:39 (WEA 02)	07:41		08:50 (15B)	08:19		08:59 (WEA 11)
	21:23	18	07:13 (5B)	20:30	18	07:01 (2B)	19:20	42	09:05 (10B)	18:13	30	09:09 (WEA 02)	16:19	53	10:04 (13B)	16:06	59	10:15 (14B)
21	05:20		06:53 (5B)	06:08		06:43 (2B)	06:58		08:23 (10B)	07:48		08:38 (WEA 02)	07:43		08:48 (15B)	08:19		09:00 (WEA 11)
	21:21	21	07:14 (5B)	20:28	18	07:01 (2B)	19:18	43	09:06 (10B)	18:11	32	09:10 (WEA 02)	16:18	56	10:04 (13B)	16:06	59	10:16 (14B)
22	05:22		06:52 (5B)	06:09		06:43 (2B)	06:59		08:01 (WEA 03)	07:50		08:37 (WEA 02)	07:44		08:48 (15B)	08:20		09:00 (WEA 11)
	21:20	23	07:15 (5B)	20:26	18	07:01 (2B)	19:16	56	09:06 (10B)	18:09	32	09:09 (WEA 02)	16:17	56	10:04 (13B)	16:07	60	10:16 (14B)
23	05:23		06:52 (5B)	06:11		06:43 (2B)	07:01		07:57 (WEA 03)	07:52		08:37 (WEA 02)	07:46		08:48 (15B)	08:20		09:01 (WEA 11)
	21:19	25	07:17 (5B)	20:24	18	07:01 (2B)	19:13	61	09:05 (10B)	18:07	32	09:09 (WEA 02)	16:16	57	10:04 (13B)	16:07	59	10:17 (14B)
24	05:25		06:51 (5B)	06:13		06:43 (2B)	07:03		07:56 (6B)	07:53		08:37 (WEA 02)	07:48		08:48 (15B)	08:21		09:01 (WEA 11)
	21:18	26	07:17 (5B)	20:21	16	06:59 (2B)	19:11	65	09:06 (10B)	18:04	32	09:09 (WEA 02)	16:15	58	10:05 (13B)	16:08	59	10:17 (14B)
25	05:26		06:50 (5B)	06:14		06:44 (2B)	07:04		07:53 (WEA 03)	06:55		07:38 (WEA 02)	07:49		08:49 (15B)	08:21		09:01 (WEA 11)
	21:16	28	07:18 (5B)	20:19	15	06:59 (2B)	19:09	68	09:05 (10B)	17:02	37	08:15 (11B)	16:14	57	10:05 (13B)	16:08	59	10:17 (14B)
26	05:27		06:50 (5B)	06:16		06:44 (2B)	07:06		07:53 (6B)	06:57		07:38 (WEA 02)	07:51		08:48 (15B)	08:21		09:01 (WEA 11)
	21:15	29	07:19 (5B)	20:17	13	06:57 (2B)	19:06	68	09:05 (10B)	17:00	40	08:18 (11B)	16:13	58	10:04 (13B)	16:09	59	10:17 (14B)
27	05:29		06:49 (5B)	06:18		06:46 (2B)	07:08		07:52 (6B)	06:59		07:39 (WEA 02)	07:52		08:49 (15B)	08:22		09:02 (WEA 11)
	21:13	31	07:20 (5B)	20:15	9	06:55 (2B)	19:04	69	09:04 (10B)	16:58	41	08:20 (11B)	16:12	59	10:05 (13B)	16:10	58	10:18 (14B)
28	05:30		06:48 (5B)	06:19			07:09		07:50 (WEA 04)	07:01		07:39 (WEA 02)	07:54		08:50 (15B)	08:22		09:03 (WEA 11)
	21:12	32	07:20 (5B)	20:13			19:02	70	09:03 (10B)	16:57	42	08:21 (11B)	16:11	58	10:05 (13B)	16:11	55	10:19 (14B)
29	05:32		06:48 (5B)	06:21			07:11		07:49 (WEA 04)	07:02		07:40 (WEA 02)	07:55		08:49 (15B)	08:22		09:03 (WEA 11)
	21:10	33	07:21 (5B)	20:11			18:59	70	09:02 (10B)	16:55	42	08:22 (11B)	16:10	59	10:05 (13B)	16:12	56	10:19 (14B)
30	05:33		06:48 (5B)	06:22			07:13		07:49 (WEA 04)	07:04		07:41 (WEA 02)	07:57		08:50 (15B)	08:22		09:04 (WEA 11)
	21:09	33	07:21 (5B)	20:08			18:57	69	09:02 (10B)	16:53	42	08:23 (11B)	16:10	59	10:05 (13B)	16:12	55	10:19 (14B)
31	05:35		06:47 (5B)	06:24						07:06		07:42 (WEA 02)				08:22		09:04 (WEA 11)
	21:07	34	07:21 (5B)	20:06						16:51	40	08:22 (11B)				16:13	57	10:20 (14B)
Sonnenscheinstunden		501			453			381			332			267			245	
astr.max.mögl.Beschattung		670			722			970			1035			1603			1770	
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22			0,18	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,71			0,71			0,68			0,67			0,61			0,59	
Gesamte Reduktion		0,27			0,29			0,22			0,18			0,13			0,10	
Met.wahrsch.Beschattung		179			208			213			185			202			173	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 49 - Reinstedt - Danpower Energie Service

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar		März	April	Mai	Juni	Juli	August	September	Oktober		November	Dezember
1	08:22	07:56		07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14		07:08	07:58
	16:15	17:02		17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55		16:49	16:09
2	08:22	07:54		07:01	06:50	05:46	05:02	05:01	05:38	06:27	07:16		07:10	08:00
	16:16	17:04		17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53		16:47	16:08
3	08:22	07:53		06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18		07:11	08:01
	16:17	17:06		17:57	19:51	20:41	21:25	21:37	21:02	19:59	18:50		16:45	16:08
4	08:22	07:51		06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19		07:13	08:03
	16:18	17:08		17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48		16:44	16:07
5	08:22	07:49		06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21		07:15	08:04
	16:19	17:10		18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46		16:42	16:07
6	08:21	07:48		06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23		07:17	08:05
	16:20	17:11		18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43		16:40	16:06
7	08:21	07:46		06:50	06:39	05:37	04:59	05:05	05:45	06:35	07:24		07:18	08:06
	16:22	17:13		18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41		16:38	16:06
8	08:21	07:44		06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26		07:20	08:08
	16:23	17:15		18:06	19:59	20:49	21:30	21:34	20:54	19:48	18:39		16:37	16:05
9	08:20	07:43		06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28		07:22	08:09
	16:24	17:17		18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37		16:35	16:05
10	08:20	07:41		06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29		07:24	08:10
	16:26	17:19		18:09	20:02	20:52	21:32	21:33	20:50	19:43	18:34		16:34	16:05
11	08:19	07:39		06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31		07:26	08:11
	16:27	17:21		18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32		16:32	16:05
12	08:18	07:37		06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33		07:27	08:12
	16:29	17:23		18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30		16:30	16:05
13	08:18	07:35	08:00 (6B)	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34		07:29	08:13
	16:30	17:24	2 08:02 (6B)	18:15	20:08	20:57	21:34	21:30	20:44	19:37	18:28		16:29	16:05
14	08:17	07:33	07:58 (6B)	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36		07:31	08:14
	16:32	17:26	4 08:02 (6B)	18:16	20:09	20:59	21:35	21:29	20:42	19:34	18:26		16:27	16:05
15	08:16	07:31	07:56 (6B)	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38		07:33	08:15
	16:33	17:28	6 08:02 (6B)	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23		16:26	16:05
16	08:15	07:29	07:55 (6B)	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40		07:34	08:16
	16:35	17:30	6 08:01 (6B)	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21		16:25	16:05
17	08:14	07:28		06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41		07:36	08:17
	16:36	17:32		18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19		16:23	16:05
18	08:13	07:26		06:25	06:14	05:19	04:56	05:17	06:03	06:53	07:43		07:38	08:17
	16:38	17:34		18:23	20:16	21:05	21:37	21:25	20:34	19:25	18:17		16:22	16:05
19	08:12	07:24		06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45		07:39	08:18
	16:39	17:35		18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15		16:21	16:06
20	08:11	07:22		06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:47		07:41	08:19
	16:41	17:37		18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13		16:19	16:06
21	08:10	07:20		06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48		07:43	08:19
	16:43	17:39		18:28	20:21	21:09	21:37	21:22	20:28	19:18	18:11		16:18	16:06
22	08:09	07:17		06:15	06:06	05:14	04:56	05:22	06:09	07:00	07:50		07:44	08:20
	16:44	17:41		18:30	20:23	21:11	21:38	21:20	20:26	19:16	18:09		16:17	16:07
23	08:08	07:15		06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52		07:46	08:20
	16:46	17:43		18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07		16:16	16:07
24	08:07	07:13		06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:54		07:48	08:21
	16:48	17:45		18:34	20:26	21:13	21:38	21:18	20:22	19:11	18:05		16:15	16:08
25	08:06	07:11		06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:27 (6B)	07:49	08:21
	16:50	17:46		18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03 1	07:28 (6B)	16:14	16:08
26	08:04	07:09		06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:24 (6B)	07:51	08:22
	16:51	17:48		18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01 6	07:30 (6B)	16:13	16:09
27	08:03	07:07		06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:26 (6B)	07:52	08:22
	16:53	17:50		18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59 5	07:31 (6B)	16:12	16:10
28	08:02	07:05		06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:28 (6B)	07:54	08:22
	16:55	17:52		18:40	20:33	21:19	21:38	21:12	20:13	19:02	16:57 4	07:32 (6B)	16:11	16:11
29	08:00			06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:30 (6B)	07:55	08:22
	16:57			19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55 1	07:31 (6B)	16:10	16:12
30	07:59			06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04		07:57	08:22
	16:59			19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53		16:10	16:12
31	07:57			06:55		05:04		05:35	06:24		07:06			08:22
	17:00			19:45		21:22		21:07	20:06		16:51			16:13
Sonnenscheinstunden	260	278		367	416	485	498	501	453	381	332		267	244
astr.max.mögl.Beschattung			18									17		
Red.Sonnenscheinwahrsch.			0,32									0,28		
Reduktion Betriebsdauer			0,96									0,96		
Reduktion Windrichtung			0,67									0,67		
Gesamte Reduktion			0,20									0,18		
Met.wahrsch.Beschattung			4									3		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 50 - Reinstedt - Mitteldeutsche Baumschulen

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22		10:00 (WEA 07)	07:56		10:04 (WEA 07)	07:03		08:21 (WEA 06)	06:52		07:51 (SAB W3)	05:48		06:51 (9B)	05:03		05:42 (SAB W1)
	16:15	132	15:00 (WEA 12)	17:02	144	16:10 (WEA 13)	17:53	162	17:01 (19B)	19:47	276	19:00 (14B)	20:38	121	19:58 (13B)	21:23	86	20:46 (10B)
2	08:22		10:00 (WEA 07)	07:54		10:04 (WEA 07)	07:00		08:20 (WEA 06)	06:50		07:51 (SAB W3)	05:46		06:51 (9B)	05:02		05:41 (SAB W1)
	16:16	134	15:01 (WEA 12)	17:04	141	16:10 (WEA 13)	17:55	167	17:00 (19B)	19:49	269	18:59 (14B)	20:39	117	19:59 (11B)	21:24	90	20:47 (10B)
3	08:22		10:01 (WEA 07)	07:52		10:04 (WEA 07)	06:58		08:18 (WEA 06)	06:48		07:52 (SAB W3)	05:44		06:52 (9B)	05:01		05:40 (SAB W1)
	16:17	134	15:02 (WEA 12)	17:06	139	16:10 (WEA 13)	17:57	170	16:58 (19B)	19:50	259	18:59 (14B)	20:41	111	20:00 (11B)	21:25	94	20:47 (10B)
4	08:22		10:00 (WEA 07)	07:51		10:04 (WEA 07)	06:56		08:17 (WEA 06)	06:45		07:52 (SAB W3)	05:42		06:54 (9B)	05:01		05:39 (SAB W1)
	16:18	135	15:01 (WEA 12)	17:08	136	16:10 (WEA 13)	17:59	172	16:56 (19B)	19:52	249	18:58 (14B)	20:43	106	20:03 (11B)	21:26	97	20:47 (10B)
5	08:21		10:01 (WEA 07)	07:49		10:05 (WEA 07)	06:54		08:16 (WEA 06)	06:43		07:53 (SAB W3)	05:40		06:55 (9B)	05:00		05:39 (SAB W1)
	16:19	134	15:02 (WEA 12)	17:09	133	16:11 (WEA 13)	18:01	171	16:53 (19B)	19:54	236	18:57 (14B)	20:44	101	20:03 (11B)	21:27	100	20:47 (10B)
6	08:21		10:00 (WEA 07)	07:48		10:06 (WEA 07)	06:52		08:15 (WEA 06)	06:41		07:54 (SAB W3)	05:39		06:56 (9B)	04:59		05:38 (SAB W1)
	16:20	135	15:01 (WEA 12)	17:11	127	16:10 (WEA 13)	18:02	172	14:59 (WEA 10)	19:55	217	18:55 (14B)	20:46	94	20:04 (11B)	21:28	102	20:47 (10B)
7	08:21		10:01 (WEA 07)	07:46		10:06 (WEA 07)	06:49		08:13 (WEA 06)	06:39		07:55 (SAB W3)	05:37		06:59 (9B)	04:59		05:38 (SAB W1)
	16:22	135	15:02 (WEA 12)	17:13	121	16:10 (WEA 13)	18:04	175	14:59 (WEA 10)	19:57	195	18:53 (14B)	20:47	86	20:05 (11B)	21:29	104	20:48 (10B)
8	08:20		10:00 (WEA 07)	07:44		10:06 (WEA 07)	06:47		08:13 (WEA 06)	06:36		07:57 (SAB W3)	05:35		14:55 (WEA 10)	04:58		05:37 (SAB W1)
	16:23	134	15:01 (WEA 12)	17:15	116	16:09 (WEA 13)	18:06	179	15:00 (WEA 10)	19:59	168	16:07 (WEA 10)	20:49	71	20:05 (11B)	21:30	106	20:47 (10B)
9	08:20		10:01 (WEA 07)	07:42		10:07 (WEA 07)	06:45		08:12 (WEA 06)	06:34		08:00 (SAB W3)	05:33		14:58 (WEA 10)	04:58		05:37 (SAB W1)
	16:24	135	15:02 (WEA 12)	17:17	108	16:10 (20B)	18:08	182	15:01 (WEA 10)	20:01	151	16:07 (WEA 10)	20:51	67	20:05 (11B)	21:31	107	20:48 (10B)
10	08:19		10:01 (WEA 07)	07:41		10:08 (WEA 07)	06:43		08:12 (WEA 06)	06:32		07:04 (SAB W2)	05:32		15:02 (WEA 10)	04:57		05:37 (SAB W1)
	16:26	135	15:02 (WEA 12)	17:19	99	16:14 (20B)	18:09	186	15:03 (WEA 10)	20:02	149	16:06 (WEA 10)	20:52	63	20:06 (11B)	21:32	108	20:48 (10B)
11	08:19		10:01 (WEA 07)	07:39		10:10 (WEA 07)	06:40		08:11 (WEA 06)	06:30		07:00 (SAB W2)	05:30		15:06 (WEA 10)	04:57		05:36 (SAB W1)
	16:27	134	15:01 (WEA 12)	17:21	85	16:17 (20B)	18:11	188	15:03 (WEA 10)	20:04	150	16:05 (WEA 10)	20:54	56	20:05 (11B)	21:32	110	20:47 (10B)
12	08:18		10:01 (WEA 07)	07:37		10:10 (WEA 07)	06:38		07:05 (SAB W4)	06:27		06:58 (SAB W2)	05:28		15:11 (WEA 10)	04:56		05:37 (SAB W1)
	16:28	132	15:00 (WEA 12)	17:22	83	16:18 (20B)	18:13	202	15:04 (WEA 10)	20:06	153	16:05 (WEA 10)	20:55	49	20:06 (11B)	21:33	111	20:48 (10B)
13	08:17		10:01 (WEA 07)	07:35		10:12 (WEA 07)	06:36		07:02 (SAB W4)	06:25		06:56 (SAB W2)	05:27		15:17 (WEA 10)	04:56		05:37 (SAB W1)
	16:30	132	15:00 (WEA 12)	17:24	78	16:19 (20B)	18:15	210	15:05 (WEA 10)	20:07	155	16:05 (WEA 10)	20:57	37	20:05 (11B)	21:34	111	20:48 (10B)
14	08:17		10:01 (WEA 07)	07:33		10:13 (WEA 07)	06:34		07:00 (SAB W4)	06:23		06:54 (SAB W2)	05:25		19:41 (11B)	04:56		05:37 (SAB W1)
	16:31	131	14:59 (WEA 12)	17:26	73	16:20 (20B)	18:16	220	17:42 (18B)	20:09	156	16:04 (WEA 10)	20:59	25	20:06 (11B)	21:34	112	20:48 (10B)
15	08:16		10:01 (WEA 07)	07:31		10:14 (WEA 07)	06:31		06:58 (SAB W4)	06:21		06:53 (SAB W2)	05:23		19:41 (11B)	04:56		05:37 (SAB W1)
	16:33	126	14:57 (WEA 12)	17:28	68	16:21 (20B)	18:18	230	17:44 (18B)	20:11	156	16:04 (WEA 10)	21:00	24	20:05 (11B)	21:35	113	20:48 (10B)
16	08:15		10:01 (WEA 07)	07:29		10:16 (WEA 07)	06:29		06:57 (SAB W4)	06:19		06:52 (SAB W2)	05:22		19:41 (11B)	04:56		05:37 (SAB W1)
	16:35	121	14:26 (WEA 11)	17:30	65	16:21 (20B)	18:20	238	17:46 (18B)	20:12	157	16:04 (WEA 10)	21:02	24	20:05 (11B)	21:35	114	20:49 (10B)
17	08:14		10:01 (WEA 07)	07:27		10:18 (WEA 07)	06:27		06:56 (SAB W4)	06:17		06:52 (SAB W2)	05:20		19:42 (11B)	04:56		05:37 (SAB W1)
	16:36	122	14:26 (WEA 11)	17:32	62	16:22 (20B)	18:21	243	17:45 (18B)	20:14	155	16:03 (WEA 10)	21:03	23	20:05 (11B)	21:36	113	20:49 (10B)
18	08:13		10:01 (WEA 07)	07:25		10:21 (WEA 07)	06:24		06:55 (SAB W4)	06:14		06:50 (SAB W2)	05:19		19:42 (11B)	04:56		05:37 (SAB W1)
	16:38	120	14:25 (WEA 11)	17:33	56	16:22 (20B)	18:23	249	17:46 (18B)	20:16	155	16:02 (WEA 10)	21:05	22	20:04 (11B)	21:36	114	20:49 (10B)
19	08:12		10:01 (WEA 07)	07:23		10:23 (WEA 07)	06:22		06:55 (SAB W4)	06:12		06:50 (SAB W2)	05:18		19:43 (11B)	04:56		05:37 (SAB W1)
	16:39	126	15:53 (WEA 13)	17:35	63	16:21 (20B)	18:25	257	17:46 (18B)	20:17	152	16:01 (WEA 10)	21:06	21	20:04 (11B)	21:37	115	20:49 (10B)
20	08:11		10:01 (WEA 07)	07:21		08:46 (WEA 06)	06:20		06:54 (SAB W4)	06:10		06:49 (SAB W2)	05:16		19:18 (WEA 02)	04:56		05:37 (SAB W1)
	16:41	133	15:57 (WEA 13)	17:37	76	16:21 (20B)	18:27	267	17:44 (18B)	20:19	151	16:01 (WEA 10)	21:08	23	20:03 (11B)	21:37	115	20:49 (10B)
21	08:10		10:01 (WEA 07)	07:19		08:39 (WEA 06)	06:18		06:54 (SAB W4)	06:08		06:49 (SAB W2)	05:15		19:11 (WEA 02)	04:56		05:37 (SAB W1)
	16:43	139	16:00 (WEA 13)	17:39	89	16:20 (20B)	18:28	271	17:43 (18B)	20:21	147	16:00 (WEA 10)	21:09	37	20:03 (11B)	21:37	115	20:49 (10B)
22	08:09		10:02 (WEA 07)	07:17		08:35 (WEA 06)	06:15		06:54 (SAB W4)	06:06		06:49 (SAB W2)	05:14		19:07 (WEA 02)	04:56		05:37 (SAB W1)
	16:44	141	16:02 (WEA 13)	17:41	114	16:57 (19B)	18:30	272	17:42 (18B)	20:23	144	15:59 (WEA 10)	21:10	42	20:02 (11B)	21:37	115	20:49 (10B)
23	08:08		10:01 (WEA 07)	07:15		08:33 (WEA 06)	06:13		06:54 (SAB W3)	06:04		06:49 (SAB W2)	05:12		19:04 (WEA 02)	04:56		05:38 (SAB W1)
	16:46	144	16:03 (WEA 13)	17:43	129	16:59 (19B)	18:32	266	17:28 (15B)	20:24	149	19:56 (13B)	21:12	52	20:40 (10B)	21:38	115	20:50 (10B)
24	08:07		10:02 (WEA 07)	07:13		08:30 (WEA 06)	06:11		06:54 (SAB W3)	06:02		06:49 (SAB W2)	05:11		19:02 (WEA 02)	04:57		05:38 (SAB W1)
	16:48	145	16:04 (WEA 13)	17:44	141	17:00 (19B)	18:33	268	17:29 (15B)	20:26	150	19:58 (13B)	21:13	56	20:41 (10B)	21:38	115	20:50 (10B)
25	08:05		10:01 (WEA 07)	07:11		08:28 (WEA 06)	06:08		06:53 (SAB W3)	06:00		06:49 (SAB W2)	05:10		19:00 (WEA 02)	04:57		05:38 (SAB W1)
	16:50	147	16:05 (WEA 13)	17:46	149	17:01 (19B)	18:35	271	17:30 (15B)	20:28	148	19:59 (13B)	21:14	58	20:42 (10B)	21:38	113	20:50 (10B)
26	08:04		10:02 (WEA 07)	07:09		08:25 (WEA 06)	06:06		06:53 (SAB W3)	05:58		06:50 (SAB W2)	05:09		18:58 (WEA 02)	04:57		05:39 (SAB W1)
	16:51	148	16:06 (WEA 13)	17:48	155	17:01 (19B)	18:37	271	17:31 (15B)	20:29	145	19:59 (13B)	21:16	56	20:43 (10B)	21:38	114	20:51 (10B)
27	08:03		10:02 (WEA 07)	07:07		08:24 (WEA 06)	06:04		06:52 (SAB W3)	05:56		06:50 (SAB W2)	05:08		18:57 (WEA 02)	04:58		05:39 (SAB W1)
	16:53	149	16:08 (WEA 13)	17:50	156	17:01 (19B)	18:39	280	17:56 (14B)	20:31	141	19:59 (13B)	21:17	60	20:44 (10B)	21:38	113	20:50 (10B)
28	08:01		10:02 (WEA 07)	07:05		08:22 (WEA 06)	06:01		06:52 (SAB W3)	05:54		06:51 (9B)	05:07		18:57 (WEA 02)	04:58		05:40 (SAB W1)
	16:55	148	16:08 (WEA 13)	17:52	156	17:01 (19B)	18:40	282	17:58 (14B)	20:33	137	20:00 (13B)	21:18	63	20:45 (10B)	21:38	112	20:51 (10B)
29	08:00		10:02 (WEA 07)				06:59		07:52 (SAB W3)	05:52		06:51 (9B)	05:06		18:56 (WEA 02)	04:59		05:40 (SAB W1)
	16:57	148	16:08 (WEA 13)				19:42	283	19:00 (14B)	20:34	132	20:00 (13B)	21:20	66	20:46 (10B)	21:37	113	20:51 (10B)
30	07:59		10:03 (WEA 07)				06:57		07:51 (SAB W3)	05:50		06:51 (9B)	05:05		18:55 (WEA 02)	04:59		05:41 (SAB W1)
	16:58	147	16:09 (WEA 13)				19:44	282	19:00 (14B)	20:36	126	19:59 (13B)	21:21	68	20:46 (10B)	21:37	111	20:52 (10B)
31	07:57		10:03 (WEA 07)				06:55		07:51 (SAB W3)				05:04		05:44 (SAB W1)			
	17:00	145	16:09 (WEA 13)				19:45	279	19:00 (14B)				21:22	80	20:46 (10B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		4221			3062			7065			5128			1879			3258	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,59			0,63			0,66			0,66			0,67			0,68	
Gesamte Reduktion		0,12			0,19			0,17			0,22			0,27			0,23	
Met.wahrsch.Beschattung		508			580			1185			1144			510			733	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **Schattenrezeptor:** IO 50 - Reinstedt - Mitteldeutsche Baumschulen

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November			Dezember		
1	05:00		05:40 (SAB W1)	05:36		15:20 (WEA 10)	06:26		07:00 (SAB W2)	07:14		07:43 (SAB W4)	07:08		09:37 (WEA 07)	07:58		09:43 (WEA 07)
	21:37	110	20:51 (10B)	21:05	51	20:16 (11B)	20:04	150	16:05 (WEA 10)	18:55	204	15:43 (WEA 10)	16:49	102	15:43 (20B)	16:09	134	14:43 (WEA 12)
2	05:01		05:41 (SAB W1)	05:38		15:15 (WEA 10)	06:27		07:02 (SAB W2)	07:16		08:49 (WEA 06)	07:09		09:37 (WEA 07)	08:00		09:44 (WEA 07)
	21:37	109	20:52 (10B)	21:04	59	20:16 (11B)	20:02	149	16:04 (WEA 10)	18:52	190	15:42 (WEA 10)	16:47	109	15:39 (20B)	16:08	135	14:45 (WEA 12)
3	05:01		05:42 (SAB W1)	05:39		15:11 (WEA 10)	06:29		07:58 (SAB W3)	07:17		08:50 (WEA 06)	07:11		09:36 (WEA 07)	08:01		09:44 (WEA 07)
	21:36	109	20:53 (10B)	21:02	64	20:16 (11B)	19:59	151	16:05 (WEA 10)	18:50	187	15:41 (WEA 10)	16:45	117	15:39 (WEA 13)	16:08	136	14:45 (WEA 12)
4	05:02		05:43 (SAB W1)	05:41		15:07 (WEA 10)	06:30		07:54 (SAB W3)	07:19		08:49 (WEA 06)	07:13		09:36 (WEA 07)	08:02		09:46 (WEA 07)
	21:36	106	20:53 (10B)	21:00	69	20:15 (11B)	19:57	168	16:04 (WEA 10)	18:48	185	15:39 (WEA 10)	16:43	123	15:40 (WEA 13)	16:07	133	14:46 (WEA 12)
5	05:03		05:43 (SAB W1)	05:42		07:11 (9B)	06:32		07:52 (SAB W3)	07:21		08:50 (WEA 06)	07:15		09:35 (WEA 07)	08:04		09:46 (WEA 07)
	21:35	106	20:53 (10B)	20:59	79	20:15 (11B)	19:55	195	18:50 (14B)	18:46	180	15:38 (WEA 10)	16:42	129	15:40 (WEA 13)	16:07	135	14:47 (WEA 12)
6	05:04		05:44 (SAB W1)	05:44		07:07 (9B)	06:34		07:50 (SAB W3)	07:22		08:50 (WEA 06)	07:16		09:35 (WEA 07)	08:05		09:46 (WEA 07)
	21:35	103	20:53 (10B)	20:57	90	20:14 (11B)	19:53	216	18:51 (14B)	18:43	177	15:36 (WEA 10)	16:40	132	15:40 (WEA 13)	16:06	135	14:47 (WEA 12)
7	05:05		05:45 (SAB W1)	05:45		07:06 (9B)	06:35		07:49 (SAB W3)	07:24		08:50 (WEA 06)	07:18		09:35 (WEA 07)	08:06		09:48 (WEA 07)
	21:34	101	20:54 (10B)	20:55	97	20:14 (11B)	19:50	236	18:53 (14B)	18:41	173	15:34 (WEA 10)	16:38	137	15:41 (WEA 13)	16:06	135	14:49 (WEA 12)
8	05:06		05:46 (SAB W1)	05:47		07:04 (9B)	06:37		07:47 (SAB W3)	07:26		08:50 (WEA 06)	07:20		09:35 (WEA 07)	08:07		09:48 (WEA 07)
	21:34	98	20:54 (10B)	20:53	103	20:13 (11B)	19:48	249	18:53 (14B)	18:39	169	15:33 (WEA 10)	16:37	140	15:41 (WEA 13)	16:05	134	14:49 (WEA 12)
9	05:06		05:47 (SAB W1)	05:49		07:02 (9B)	06:38		07:46 (SAB W3)	07:27		08:51 (WEA 06)	07:22		09:35 (WEA 07)	08:09		09:49 (WEA 07)
	21:33	96	20:54 (10B)	20:51	107	20:11 (11B)	19:46	257	18:53 (14B)	18:37	172	17:30 (19B)	16:35	142	15:41 (WEA 13)	16:05	134	14:50 (WEA 12)
10	05:07		05:48 (SAB W1)	05:50		07:01 (9B)	06:40		07:44 (SAB W3)	07:29		08:52 (WEA 06)	07:24		09:34 (WEA 07)	08:10		09:49 (WEA 07)
	21:32	92	20:54 (10B)	20:50	112	20:09 (11B)	19:43	268	18:52 (14B)	18:34	171	17:32 (19B)	16:33	146	15:41 (WEA 13)	16:05	133	14:50 (WEA 12)
11	05:08		05:49 (SAB W1)	05:52		07:00 (9B)	06:42		07:44 (SAB W3)	07:31		08:52 (WEA 06)	07:25		09:35 (WEA 07)	08:11		09:50 (WEA 07)
	21:32	89	20:54 (10B)	20:48	117	20:06 (11B)	19:41	274	18:53 (14B)	18:32	169	17:33 (19B)	16:32	145	15:41 (WEA 13)	16:05	133	14:51 (WEA 12)
12	05:10		05:51 (SAB W1)	05:53		06:59 (9B)	06:43		07:43 (SAB W3)	07:33		08:53 (WEA 06)	07:27		09:35 (WEA 07)	08:12		09:52 (WEA 07)
	21:31	82	20:54 (10B)	20:46	124	20:07 (13B)	19:39	277	18:52 (14B)	18:30	165	17:33 (19B)	16:30	147	15:41 (WEA 13)	16:05	132	14:52 (WEA 12)
13	05:11		05:54 (SAB W1)	05:55		06:58 (9B)	06:45		07:42 (SAB W3)	07:34		08:55 (WEA 06)	07:29		09:34 (WEA 07)	08:13		09:52 (WEA 07)
	21:30	75	20:54 (10B)	20:44	130	20:07 (13B)	19:36	283	18:51 (14B)	18:28	160	17:34 (19B)	16:29	148	15:40 (WEA 13)	16:05	132	14:53 (WEA 12)
14	05:12		19:04 (WEA 02)	05:56		06:58 (9B)	06:46		07:42 (SAB W3)	07:36		08:56 (WEA 06)	07:31		09:34 (WEA 07)	08:14		09:52 (WEA 07)
	21:29	67	20:54 (10B)	20:42	135	20:07 (13B)	19:34	283	18:50 (14B)	18:25	154	17:34 (19B)	16:27	148	15:40 (WEA 13)	16:05	132	14:52 (WEA 12)
15	05:13		19:05 (WEA 02)	05:58		06:57 (9B)	06:48		07:41 (SAB W3)	07:38		08:56 (WEA 06)	07:32		09:34 (WEA 07)	08:15		09:53 (WEA 07)
	21:28	64	20:54 (10B)	20:40	139	20:07 (13B)	19:32	282	18:48 (14B)	18:23	156	17:33 (19B)	16:26	149	15:40 (WEA 13)	16:05	131	14:53 (WEA 12)
16	05:14		19:06 (WEA 02)	06:00		06:57 (SAB W2)	06:50		07:41 (SAB W3)	07:39		08:58 (WEA 06)	07:34		09:35 (WEA 07)	08:16		09:54 (WEA 07)
	21:27	62	20:54 (10B)	20:38	143	20:07 (13B)	19:29	280	18:46 (14B)	18:21	152	17:33 (19B)	16:25	147	15:39 (WEA 13)	16:05	130	14:53 (WEA 12)
17	05:15		19:07 (WEA 02)	06:01		06:57 (SAB W2)	06:51		07:40 (SAB W3)	07:41		09:00 (WEA 06)	07:36		09:35 (WEA 07)	08:16		09:54 (WEA 07)
	21:26	59	20:53 (10B)	20:36	145	20:06 (13B)	19:27	271	18:18 (15B)	18:19	145	17:32 (19B)	16:23	147	15:39 (WEA 13)	16:05	131	14:54 (WEA 12)
18	05:17		19:09 (WEA 02)	06:03		06:56 (SAB W2)	06:53		07:41 (SAB W3)	07:43		09:02 (WEA 06)	07:38		09:36 (WEA 07)	08:17		09:55 (WEA 07)
	21:25	56	20:52 (10B)	20:34	147	20:05 (13B)	19:25	269	18:18 (15B)	18:17	138	17:31 (19B)	16:22	145	15:38 (WEA 13)	16:05	130	14:55 (WEA 12)
19	05:18		19:11 (WEA 02)	06:05		06:56 (SAB W2)	06:55		07:41 (SAB W3)	07:45		09:05 (WEA 06)	07:39		09:36 (WEA 07)	08:18		09:55 (WEA 07)
	21:24	57	20:52 (10B)	20:32	150	20:04 (13B)	19:22	270	18:17 (15B)	18:15	126	17:30 (19B)	16:21	144	15:38 (WEA 13)	16:05	130	14:55 (WEA 12)
20	05:19		19:13 (WEA 02)	06:06		06:55 (SAB W2)	06:56		07:41 (SAB W3)	07:46		09:08 (WEA 06)	07:41		09:37 (WEA 07)	08:19		09:56 (WEA 07)
	21:23	54	20:51 (10B)	20:30	148	20:01 (13B)	19:20	265	18:15 (15B)	18:13	107	17:27 (19B)	16:19	141	15:37 (WEA 13)	16:06	129	14:56 (WEA 12)
21	05:20		19:15 (WEA 02)	06:08		06:55 (SAB W2)	06:58		07:40 (SAB W4)	07:48		09:11 (WEA 06)	07:43		09:36 (WEA 07)	08:19		09:57 (WEA 07)
	21:21	49	20:49 (10B)	20:28	145	16:05 (WEA 10)	19:18	273	18:27 (18B)	18:11	85	16:51 (20B)	16:18	139	15:35 (WEA 13)	16:06	130	14:57 (WEA 12)
22	05:22		19:18 (WEA 02)	06:09		06:54 (SAB W2)	06:59		07:39 (SAB W4)	07:50		10:57 (WEA 07)	07:44		09:37 (WEA 07)	08:20		09:57 (WEA 07)
	21:20	40	20:12 (11B)	20:26	148	16:05 (WEA 10)	19:16	273	18:28 (18B)	18:08	67	16:51 (20B)	16:17	133	15:33 (WEA 13)	16:07	130	14:57 (WEA 12)
23	05:23		19:23 (WEA 02)	06:11		06:54 (SAB W2)	07:01		07:39 (SAB W4)	07:52		10:52 (WEA 07)	07:46		09:38 (WEA 07)	08:20		09:57 (WEA 07)
	21:19	33	20:13 (11B)	20:23	150	16:05 (WEA 10)	19:13	268	18:29 (18B)	18:06	51	16:51 (20B)	16:16	126	15:30 (WEA 13)	16:07	130	14:57 (WEA 12)
24	05:24		19:54 (11B)	06:13		06:53 (SAB W2)	07:03		07:39 (SAB W4)	07:53		10:49 (WEA 07)	07:48		09:39 (WEA 07)	08:21		09:58 (WEA 07)
	21:17	20	20:14 (11B)	20:21	153	16:05 (WEA 10)	19:11	261	18:29 (18B)	18:04	58	16:51 (20B)	16:15	120	14:03 (WEA 11)	16:08	129	14:58 (WEA 12)
25	05:26		19:53 (11B)	06:14		06:54 (SAB W2)	07:04		07:38 (SAB W4)	06:55		09:47 (WEA 07)	07:49		09:39 (WEA 07)	08:21		09:58 (WEA 07)
	21:16	21	20:14 (11B)	20:19	154	16:06 (WEA 10)	19:09	250	18:28 (18B)	17:02	62	15:51 (20B)	16:14	121	14:03 (WEA 11)	16:08	130	14:58 (WEA 12)
26	05:27		19:53 (11B)	06:16		06:54 (SAB W2)	07:06		07:38 (SAB W4)	06:57		09:45 (WEA 07)	07:51		09:39 (WEA 07)	08:21		09:58 (WEA 07)
	21:15	22	20:15 (11B)	20:17	155	16:05 (WEA 10)	19:06	246	18:28 (18B)	17:00	66	15:51 (20B)	16:13	121	14:04 (WEA 11)	16:09	131	14:58 (WEA 12)
27	05:29		19:52 (11B)	06:17		06:54 (SAB W2)	07:08		07:39 (SAB W4)	06:59		09:43 (WEA 07)	07:52		09:40 (WEA 07)	08:22		09:59 (WEA 07)
	21:13	24	20:16 (11B)	20:15	157	16:06 (WEA 10)	19:04	240	18:28 (18B)	16:58	69	15:50 (20B)	16:12	126	14:36 (WEA 12)	16:10	130	14:58 (WEA 12)
28	05:30		19:52 (11B)	06:19		06:54 (SAB W2)	07:09		07:39 (SAB W4)	07:00		09:42 (WEA 07)	07:54		09:40 (WEA 07)	08:22		10:00 (WEA 07)
	21:12	23	20:15 (11B)	20:13	157	16:05 (WEA 10)	19:02	233	18:26 (18B)	16:56	75	15:49 (20B)	16:11	131	14:38 (WEA 12)	16:11	131	15:00 (WEA 12)
29	05:32		19:52 (11B)	06:21		06:55 (SAB W2)	07:11		07:40 (SAB W4)	07:02		09:40 (WEA 07)	07:55		09:41 (WEA 07)	08:22		10:00 (WEA 07)
	21:10	24	20:16 (11B)	20:10	156	16:05 (WEA 10)	18:59	225	18:24 (18B)	16:55	80	15:48 (20B)	16:10	133	14:40 (WEA 12)	16:11	131	15:00 (WEA 12)
30	05:33		19:51 (11B)	06:22		06:56 (SAB W2)	07:12		07:41 (SAB W4)	07:04		09:39 (WEA 07)	07:57		09:43 (WEA 07)	08:22		10:00 (WEA 07)
	21:09	25	20:16 (11B)	20:08	155	16:05 (WEA 10)	18:57	212	15:45 (WEA 10)	16:53	82	15:46 (20B)	16:10	132	14:42 (WEA 12)	16:12	132	15:00 (WEA 12)
31	05:35		15:25 (WEA 10)	06:24		06:58 (SAB W2)				07:06		09:38 (WEA 07)				08:22		10:00 (WEA 07)
	21:07	42	20:16 (11B)	20:06	153	16:05 (WEA 10)				16:51	86	15:45 (20B)				16:13	132	15:00 (WEA 12)
Sonnenscheinstunden	501			453			381			332			267			245		
astr.max.mögl.Beschattung		2018			3892			7274			4061			4020			4090	
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22			0,18	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,68			0,66			0,66			0,65			0,60			0,59	
Gesamte Reduktion		0,26			0,27			0,21			0,17			0,13			0,10	
Met.wahrsch.Beschattung		522			1048			1551			703			504			406	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
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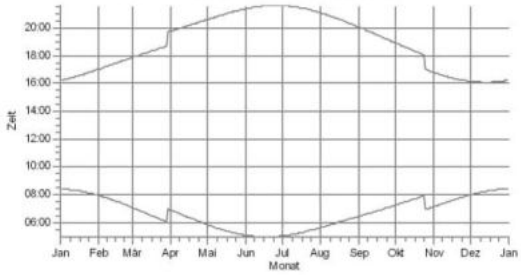
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

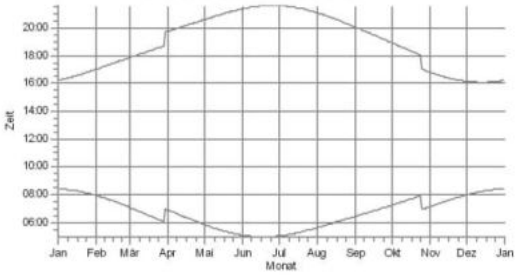
SHADOW - Grafischer Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem

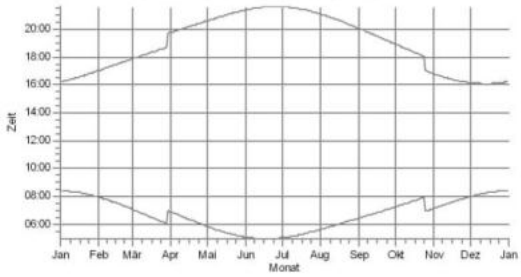
IO 01: Frose - Reinstedter Str. - Industrie



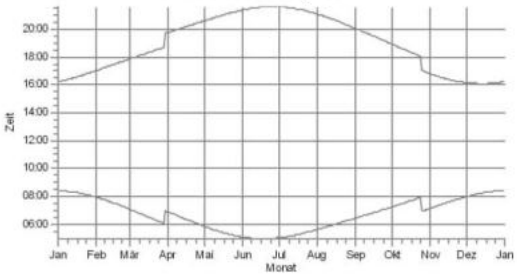
IO 02: Frose - Reinstedter Str. 1



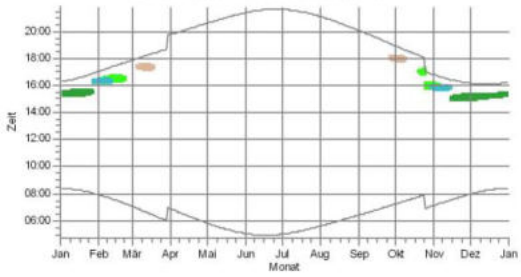
IO 03: Frose - Vor dem Bahnhof 274E



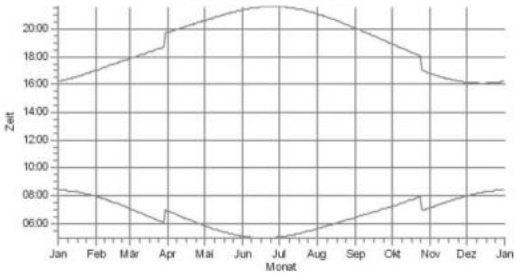
IO 04: Frose - Wohngebiet



IO 05: Aschersleben - Außenbereich



IO 06: Aschersleben - MAWEA



Projekt:
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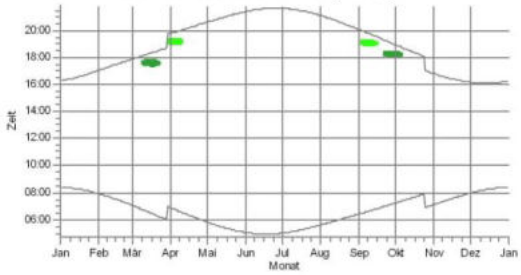
Berechnet:
16.02.2024 15:21/3.6.366

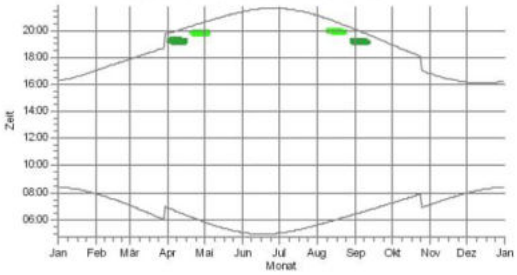
SHADOW - Grafischer Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem

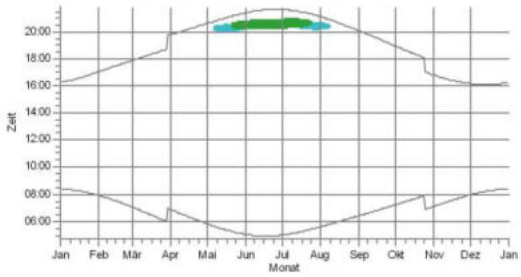
IO 07: Aschersleben - Am Hangelsberg



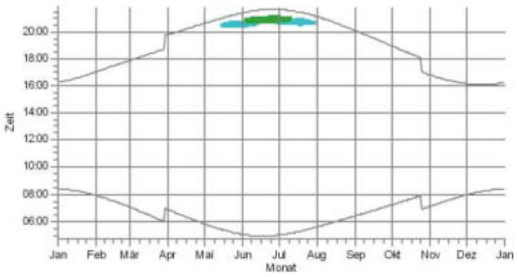
IO 08: Aschersleben - Am Chausee 23



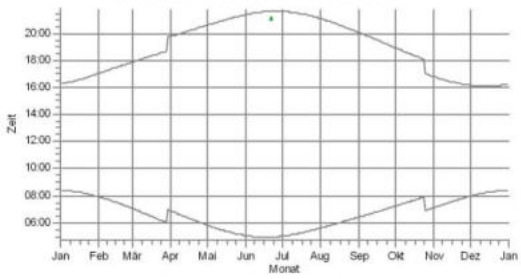
IO 09: Aschersleben - Am Harzblick 49



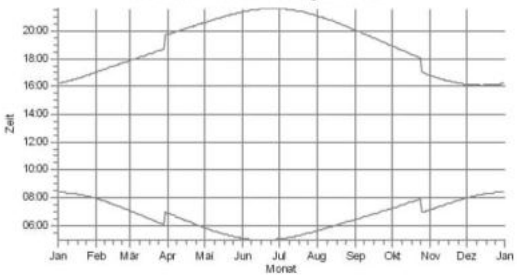
IO 10: Aschersleben - Am Harzblick 45



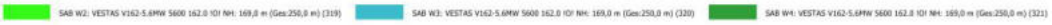
IO 11: Aschersleben - Über der Eine 18A



IO 12: Westdorf - Am Landgraben 1A



WEA



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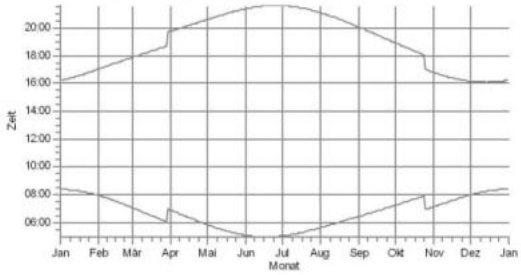
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

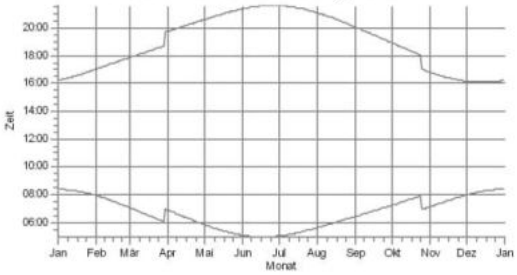
SHADOW - Grafischer Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem

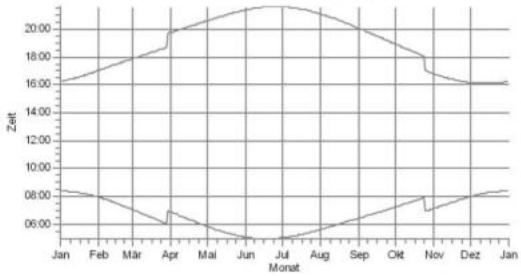
IO 13: Westdorf - Ascherslebener Str. 2A



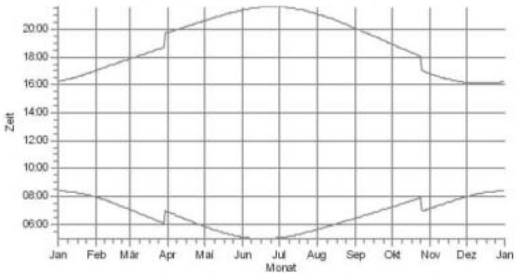
IO 14: Westdorf - Autoverwertung Lorenz



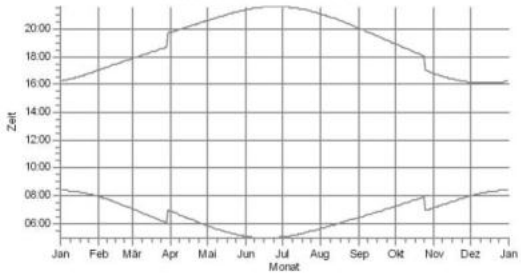
IO 15: Welbsleben - Außenbereich



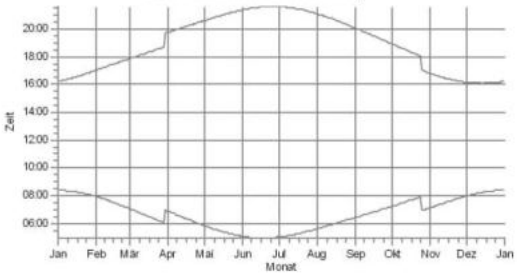
IO 16: Ermsleben - KFZ Werkstatt



IO 17: Ermsleben - Neue Str.



IO 18: Ermsleben - Am Mittelweg



WEA

Projekt:
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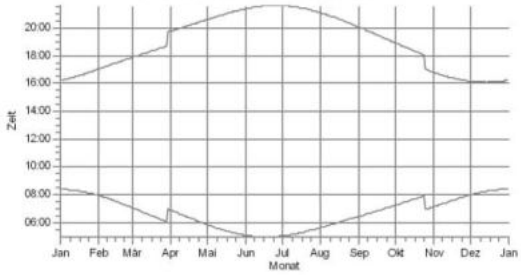
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

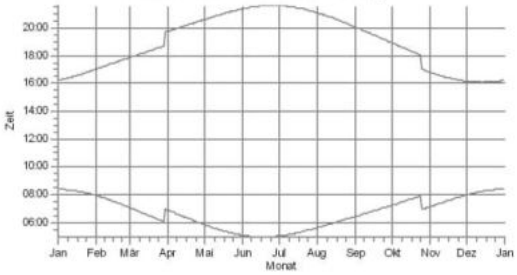
SHADOW - Grafischer Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem

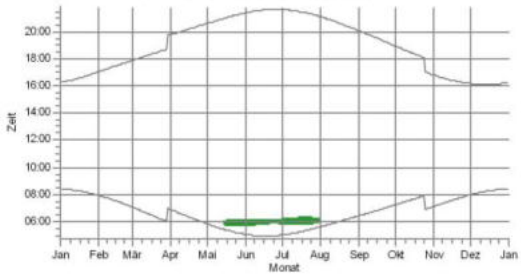
IO 19: Ermsleben - Mühlenstraße



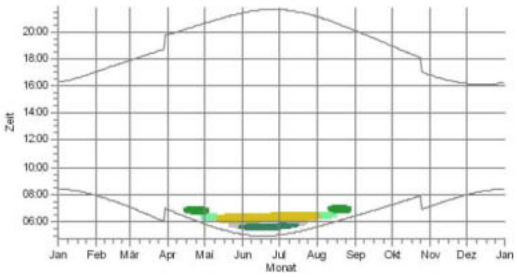
IO 20: Ermsleben - Radislebener Weg



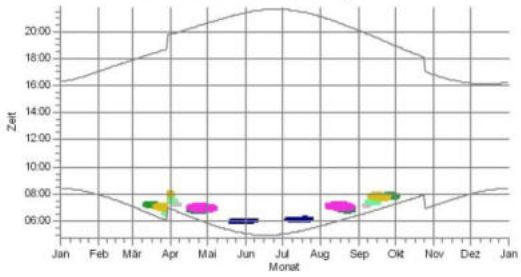
IO 21: Falkenstein - Mühlenstraße



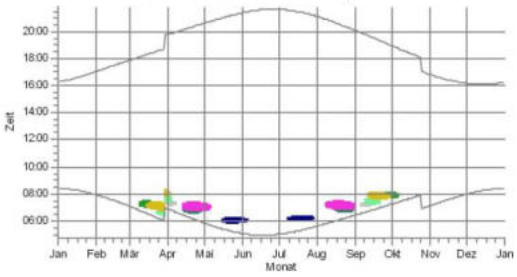
IO 22: Strommühle



IO 23: Reinstedt - Forellenw eg 10



IO 24: Reinstedt - Forellenw eg 8



Projekt:
Reinstedt

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Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Grafischer Kalender

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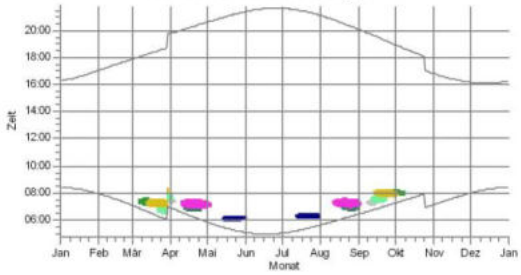
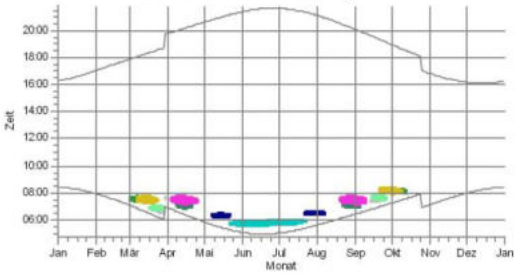
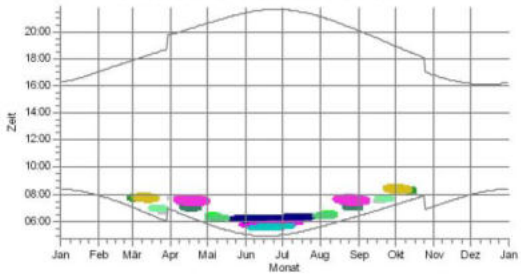
IO 25: Reinstedt - Forellenw eg 6



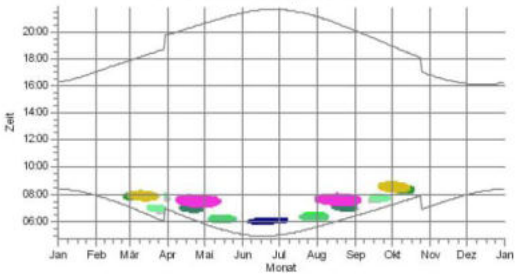
IO 26: Reinstedt - Forellenw eg 1



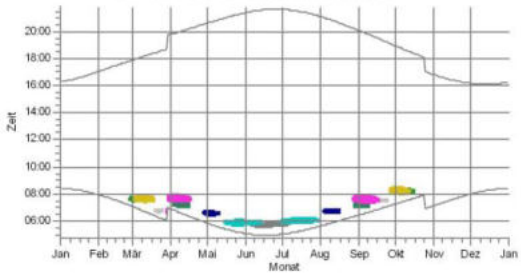
IO 27: Reinstedt - Ermslebener Straße 1



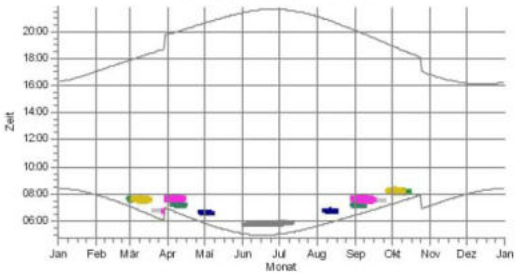
IO 28: Reinstedt - Alphabillard

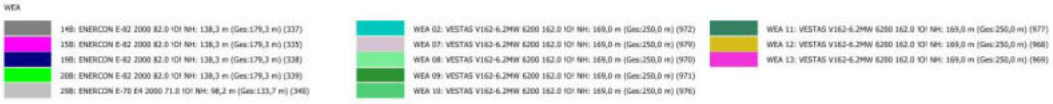


IO 29: Reinstedt - Ermslebener Straße 11



IO 30: Reinstedt - Ermslebener Straße 8





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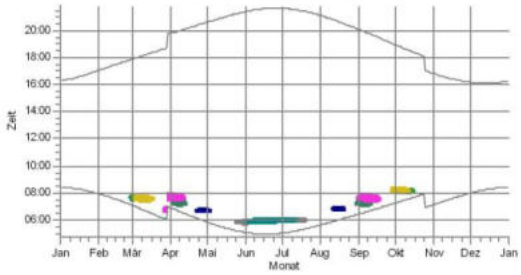
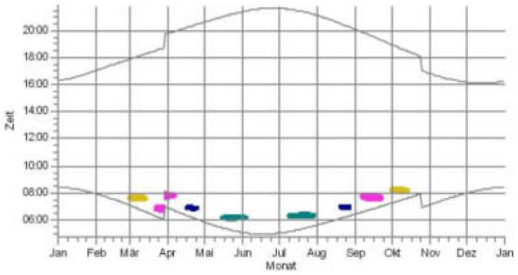
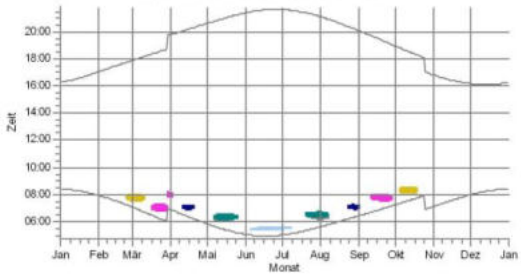
IO 31: Reinstedt - Ermslebener Straße 5B



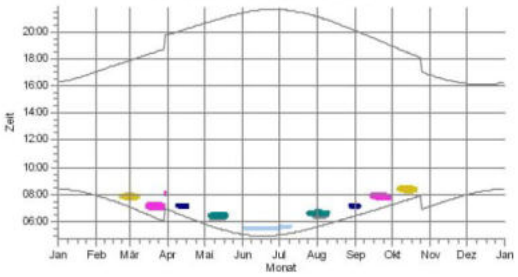
IO 32: Reinstedt - Schielestraße 1



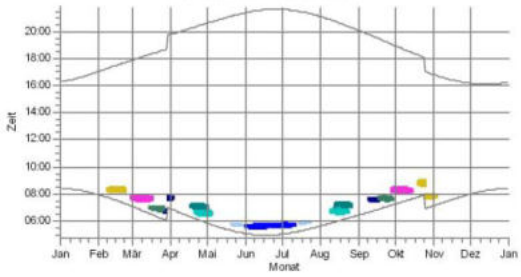
IO 33: Reinstedt - Schielestraße 4a



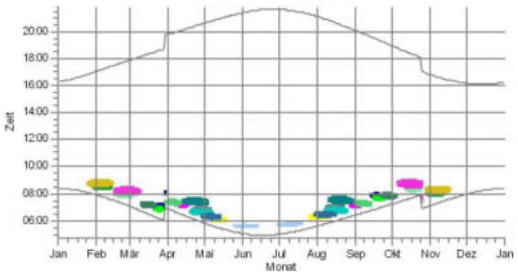
IO 34: Reinstedt - Schielestraße 6



IO 35: Reinstedt - Wiedemann



IO 36: Reinstedt - Solarpark



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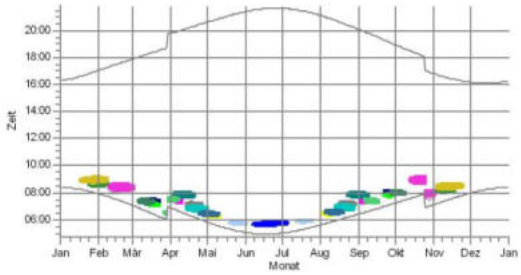
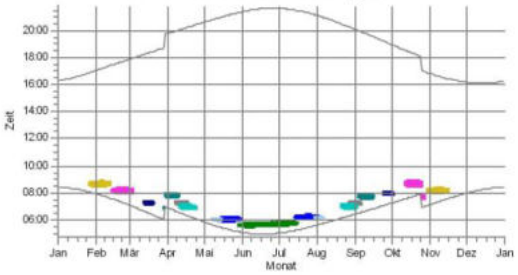
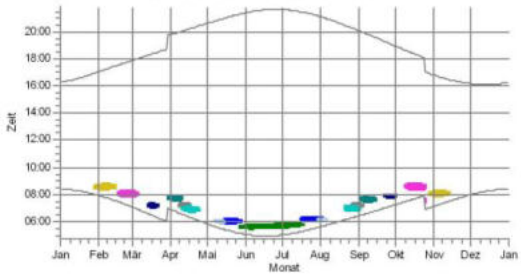
IO 37: Reinstedt - Fußballplatz



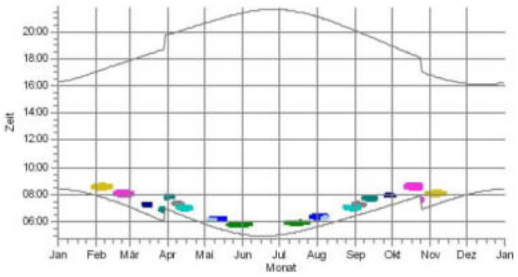
IO 38: Reinstedt - Neu-Seeland Agrar



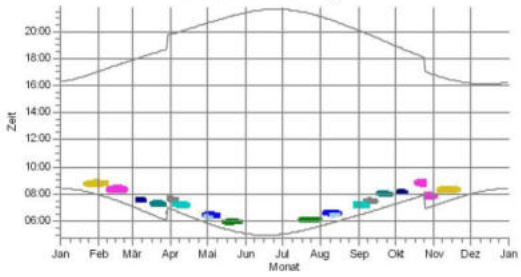
IO 39: Reinstedt - Unterdorf 66a



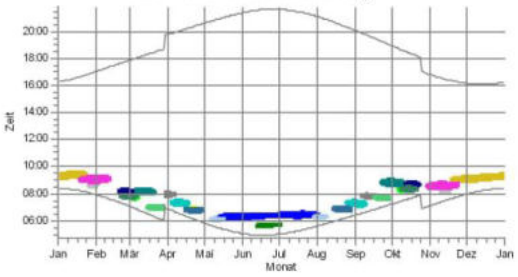
IO 40: Reinstedt - Schielestraße



IO 41: Reinstedt - Siedlung 15



IO 42: Reinstedt - Hotel Harz-Ring



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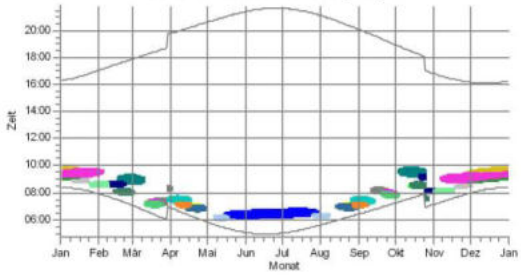
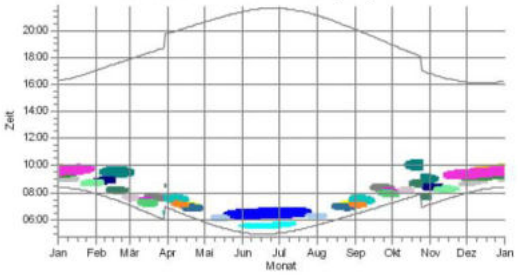
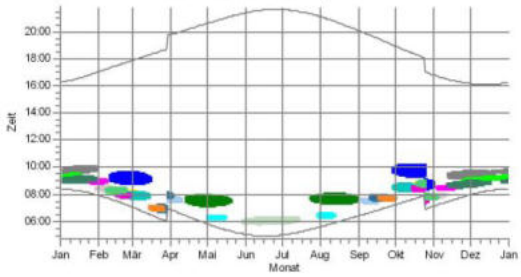
IO 43: Reinstedt - Bauschuttrecycling



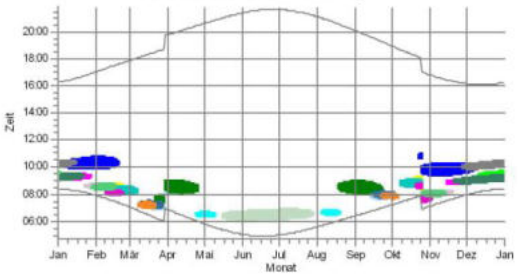
IO 44: Reinstedt - Bauschuttrecycling 2



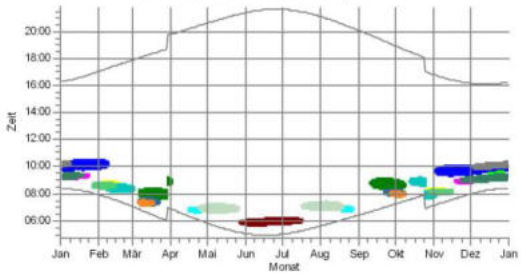
IO 46: Reinstedt - Solarpark



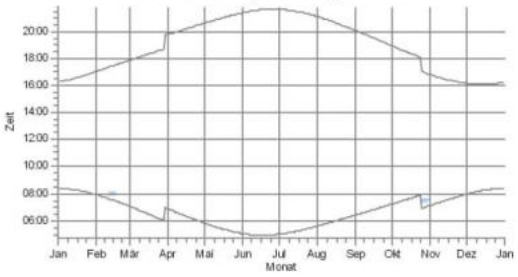
IO 47: Reinstedt - Metallbau Klug

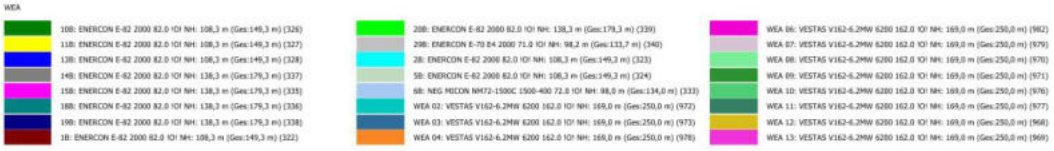


IO 48: Reinstedt - ACZ Transport



IO 49: Reinstedt - Danpower Energie Service





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SHADOW - Grafischer Kalender

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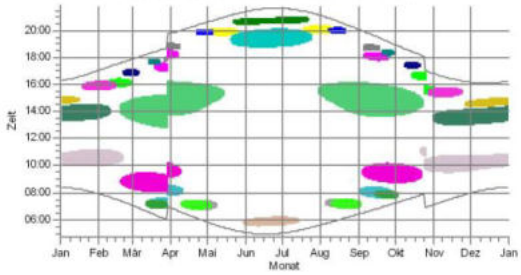
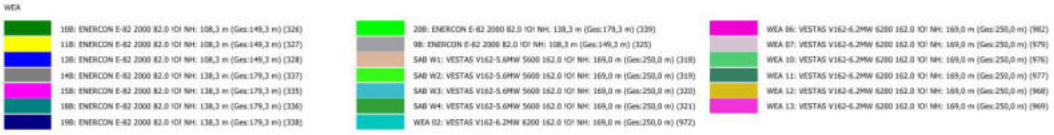
IO 50: Reinstedt - Mitteldeutsche Baumschulen





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SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 10B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (326)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22	07:56	07:03	06:52 08:12-09:03/51	05:48 07:09-07:55/46	05:03 20:29-20:46/17
	16:15	17:02	17:53	19:47	20:38	21:23 05:31-05:51/20
2	08:22	07:54	07:00	06:50 08:11-09:02/51	05:46 07:09-07:54/45	05:02 20:30-20:47/17
	16:16	17:04	17:55	19:49	20:39	21:24 05:31-05:52/21
3	08:22	07:53	06:58	06:48 08:09-09:01/52	05:44 07:10-07:55/45	05:01 20:30-20:47/17
	16:17	17:06	17:57	19:50	20:41	21:25 05:30-05:51/21
4	08:22	07:51	06:56	06:45 08:09-09:02/53	05:42 07:10-07:54/44	05:01 20:29-20:47/18
	16:18	17:08	17:59	19:52	20:43	21:26 05:30-05:50/20
5	08:22	07:49	06:54	06:43 08:09-09:02/53	05:40 07:10-07:53/43	05:00 20:30-20:47/17
	16:19	17:09	18:01	19:54	20:44	21:27 05:30-05:50/20
6	08:21	07:48	06:52 07:57-08:11/14	06:41 08:08-09:02/54	05:39 07:10-07:52/42	04:59 20:30-20:47/17
	16:20	17:11	18:02	19:56	20:46	21:28 05:30-05:49/19
7	08:21	07:46	06:49 07:52-08:13/21	06:39 08:07-09:01/54	05:37 07:11-07:52/41	04:59 20:31-20:48/17
	16:22	17:13	18:04	19:57	20:48	21:29 05:30-05:49/19
8	08:20	07:44	06:47 07:50-08:16/26	06:36 08:07-09:00/53	05:35 07:11-07:51/40	04:58 20:30-20:47/17
	16:23	17:15	18:06	19:59	20:49	21:30 05:31-05:46/15
9	08:20	07:42	06:45 07:48-08:18/30	06:34 08:07-09:00/53	05:33 07:12-07:51/39	04:58 20:31-20:48/17
	16:24	17:17	18:08	20:01	20:51	21:31 05:30-05:45/15
10	08:19	07:41	06:43 07:46-08:19/33	06:32 08:07-09:00/53	05:32 07:12-07:50/38	04:57 20:32-20:48/16
	16:26	17:19	18:09	20:02	20:52	21:32 05:31-05:46/15
11	08:19	07:39	06:40 07:44-08:20/36	06:30 08:06-08:58/52	05:30 07:12-07:48/36	04:57 20:31-20:47/16
	16:27	17:21	18:11	20:04	20:54	21:32 05:31-05:46/15
12	08:18	07:37	06:38 07:43-08:21/38	06:28 08:06-08:58/52	05:28 07:14-07:48/34	04:57 20:32-20:48/16
	16:28	17:22	18:13	20:06	20:56	21:33 05:31-05:45/14
13	08:17	07:35	06:36 07:42-08:22/40	06:25 08:07-08:57/50	05:27 07:14-07:46/32	04:56 20:32-20:48/16
	16:30	17:24	18:15	20:07 07:30-07:42/12	20:57 05:52-05:58/6	21:34 05:31-05:46/15
14	08:17	07:33	06:34 07:40-08:21/41	06:23 08:07-08:56/49	05:25 07:15-07:45/30	04:56 20:33-20:48/15
	16:31	17:26	18:16	20:09 07:26-07:46/20	20:59 05:51-06:00/9	21:34 05:32-05:46/14
15	08:16	07:31	06:31 07:40-08:22/42	06:21 08:08-08:55/47	05:24 07:17-07:44/27	04:56 20:33-20:48/15
	16:33	17:28	18:18	20:11 07:23-07:49/26	21:00 05:50-06:01/11	21:35 05:32-05:46/14
16	08:15	07:29	06:29 07:39-08:23/44	06:19 08:08-08:54/46	05:22 07:18-07:42/24	04:56 20:33-20:49/16
	16:35	17:30	18:20	20:12 07:21-07:50/29	21:02 05:48-06:01/13	21:36 05:32-05:46/14
17	08:14	07:27	06:27 07:38-08:22/44	06:17 08:09-08:53/44	05:21 07:20-07:41/21	04:56 20:34-20:49/15
	16:36	17:32	18:22	20:14 07:19-07:52/33	21:03 05:48-06:02/14	21:36 05:32-05:47/15
18	08:13	07:25	06:25 07:38-08:22/44	06:14 08:10-08:51/41	05:19 07:22-07:39/17	04:56 20:34-20:49/15
	16:38	17:34	18:23	20:16 07:18-07:53/35	21:05 05:48-06:02/14	21:36 05:33-05:47/14
19	08:12	07:23	06:22 07:38-08:22/44	06:12 08:09-08:49/40	05:18 07:23-07:36/13 05:44-05:46/2	04:56 20:34-20:49/15
	16:39	17:35	18:25	20:18 07:16-07:53/37	21:06 05:48-06:02/14	21:37 05:33-05:47/14
20	08:11	07:21	06:20 07:37-08:21/44	06:10 08:10-08:47/37	05:16 07:29-07:31/2	04:56 20:34-20:49/15
	16:41	17:37	18:27	20:19 07:14-07:54/40	21:08 05:43-06:02/19	21:37 05:33-05:47/14
21	08:10	07:19	06:18 07:37-08:21/44	06:08 08:12-08:45/33	05:15 05:42-06:02/20	04:56 20:34-20:49/15
	16:43	17:39	18:28	20:21 07:13-07:54/41	21:09	21:37 05:33-05:47/14
22	08:09	07:17	06:15 07:32-08:20/48	06:06 08:13-08:43/30	05:14 05:41-06:02/21	04:56 20:34-20:49/15
	16:44	17:41	18:30	20:23 07:12-07:55/43	21:10	21:38 05:34-05:48/14
23	08:08	07:15	06:13 07:28-08:20/52	06:04 08:15-08:41/26	05:12 20:33-20:40/7	04:56 20:35-20:50/15
	16:46	17:43	18:32	20:24 07:12-07:55/43	21:12 05:40-06:02/22	21:38 05:34-05:48/14
24	08:07	07:13	06:11 07:24-08:18/54	06:02 08:17-08:38/21	05:11 20:32-20:41/9	04:57 20:35-20:50/15
	16:48	17:44	18:34	20:26 07:11-07:55/44	21:13 05:39-06:02/23	21:38 05:34-05:48/14
25	08:05	07:11	06:08 07:22-08:18/56	06:00 08:20-08:34/14	05:10 20:31-20:42/11	04:57 20:35-20:50/15
	16:50	17:46	18:35	20:28 07:10-07:56/46	21:15 05:39-06:01/22	21:38 05:34-05:49/15
26	08:04	07:09	06:06 07:20-08:17/57	05:58 07:10-07:55/45	05:09 20:30-20:43/13	04:57 20:35-20:51/16
	16:51	17:48	18:37	20:29	21:16 05:39-06:01/22	21:38 05:34-05:49/15
27	08:03	07:07	06:04 07:18-08:14/56	05:56 07:10-07:56/46	05:08 20:30-20:44/14	04:58 20:35-20:50/15
	16:53	17:50	18:39	20:31	21:17 05:36-06:00/24	21:38 05:34-05:48/14
28	08:01	07:05	06:02 07:16-08:13/57	05:54 07:10-07:56/46	05:07 20:30-20:45/15 05:35-05:52/17	04:58 20:36-20:51/15
	16:55	17:52	18:40	20:33	21:18 05:54-05:58/4	21:38 05:35-05:49/14
29	08:00		06:59 08:15-09:12/57	05:52 07:10-07:56/46	05:06 20:30-20:46/16	04:59 20:35-20:51/16
	16:57		19:42	20:34	21:20 05:34-05:52/18	21:38 05:34-05:49/15
30	07:59		06:57 08:13-09:09/56	05:50 07:09-07:55/46	05:05 20:30-20:46/16	04:59 20:36-20:52/16
	16:59		19:44	20:36	21:21 05:33-05:52/19	21:37 05:35-05:50/15
31	07:57		06:55 08:12-09:06/54		05:04 20:29-20:46/17	
	17:00		19:45		21:22 05:32-05:52/20	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	0	0	1132	1787	1111	949

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 10B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (326)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November	Dezember
1	05:00	20:35-20:51/16	05:36	07:24-07:59/35	06:26	08:06-08:58/52	07:14	08:21-09:00/39	07:08	07:58
	21:37	05:35-05:50/15	21:06		20:04		18:55		16:49	16:09
2	05:01	20:36-20:52/16	05:38	07:22-07:59/37	06:27	08:05-08:58/53	07:16	08:22-08:59/37	07:09	08:00
	21:37	05:35-05:50/15	21:04		20:02		18:52		16:47	16:08
3	05:01	20:36-20:53/17	05:39	07:22-08:00/38	06:29	08:05-08:58/53	07:18	08:24-08:58/34	07:11	08:01
	21:36	05:36-05:50/14	21:02		19:59		18:50		16:45	16:08
4	05:02	20:37-20:53/16	05:41	07:21-08:01/40	06:30	08:04-08:57/53	07:19	08:24-08:56/32	07:13	08:02
	21:36	05:36-05:51/15	21:01		19:57		18:48		16:44	16:07
5	05:03	20:36-20:53/17 05:36-05:50/14	05:42	07:21-08:02/41	06:32	08:04-08:58/54	07:21	08:26-08:54/28	07:15	08:04
	21:36	05:51-05:54/3	20:59		19:55		18:46		16:42	16:07
6	05:04	20:36-20:53/17	05:44	07:20-08:02/42	06:34	08:03-08:57/54	07:23	08:28-08:52/24	07:17	08:05
	21:35	05:36-05:55/19	20:57		19:53		18:43		16:40	16:06
7	05:05	20:36-20:54/18	05:45	07:20-08:03/43	06:35	08:04-08:57/53	07:24	08:30-08:48/18	07:18	08:06
	21:34	05:36-05:56/20	20:55		19:50		18:41		16:38	16:06
8	05:06	20:37-20:54/17	05:47	07:19-08:03/44	06:37	08:03-08:56/53	07:26	08:34-08:43/9	07:20	08:08
	21:34	05:37-05:57/20	20:53		19:48		18:39		16:37	16:05
9	05:06	20:37-20:54/17	05:49	07:19-08:04/45	06:38	08:04-08:56/52	07:28		07:22	08:09
	21:33	05:37-05:58/21	20:52		19:46		18:37		16:35	16:05
10	05:07	20:37-20:54/17	05:50	07:18-08:03/45	06:40	08:04-08:55/51	07:29		07:24	08:10
	21:32	05:38-05:59/21	20:50		19:43		18:34		16:33	16:05
11	05:09	20:37-20:54/17	05:52	07:18-08:04/46	06:42	08:04-08:55/51	07:31		07:25	08:11
	21:32	05:39-06:00/21	20:48		19:41		18:32		16:32	16:05
12	05:10	20:38-20:54/16	05:53	07:18-08:04/46	06:43	08:04-08:58/54	07:33		07:27	08:12
	21:31	05:40-06:00/20	20:46		19:39		18:30		16:30	16:05
13	05:11	20:38-20:54/16	05:55	07:18-08:04/46	06:45	08:04-09:00/56	07:34		07:29	08:13
	21:30	05:41-06:00/19	20:44		19:36		18:28		16:29	16:05
14	05:12	20:38-20:54/16	05:57	07:17-08:03/46	06:47	08:05-09:02/57	07:36		07:31	08:14
	21:29	05:42-06:01/19	20:42		19:34		18:26		16:27	16:05
15	05:13	20:39-20:54/15 05:43-06:01/18	05:58	07:18-08:04/46	06:48	08:05-09:02/57	07:38		07:32	08:15
	21:28	06:03-06:06/3	20:40		19:32		18:23		16:26	16:05
16	05:14	20:39-20:54/15	06:00	07:17-08:03/46	06:50	08:07-09:04/57	07:39		07:34	08:16
	21:27	05:44-06:08/24	20:38		19:30		18:21		16:25	16:05
17	05:15	20:39-20:53/14 05:45-05:46/1	06:01	07:17-08:03/46	06:51	08:08-09:05/57	07:41		07:36	08:16
	21:26	05:47-06:09/22	20:36		19:27		18:19		16:23	16:05
18	05:17	20:40-20:52/12	06:03	08:26-08:41/15	06:53	08:09-09:05/56	07:43		07:38	08:17
	21:25	05:48-06:11/23	20:34	07:17-08:02/45	19:25		18:17		16:22	16:05
19	05:18	20:42-20:52/10	06:05	08:23-08:45/22	06:55	08:11-09:06/55	07:45		07:39	08:18
	21:24	05:48-06:11/23	20:32	07:18-08:02/44	19:23		18:15		16:21	16:05
20	05:19	20:43-20:51/8	06:06	08:20-08:47/27	06:56	08:13-09:05/52	07:46		07:41	08:19
	21:23	05:49-06:11/22	20:30	07:17-08:01/44	19:20		18:13		16:19	16:06
21	05:20	20:45-20:49/4	06:08	08:18-08:49/31	06:58	08:16-09:06/50	07:48		07:43	08:19
	21:21	05:50-06:12/22	20:28	07:18-08:00/42	19:18		18:11		16:18	16:06
22	05:22	05:51-06:12/21	06:09	08:16-08:50/34	06:59	08:22-09:06/44	07:50		07:44	08:20
	21:20		20:26	07:18-07:59/41	19:16		18:09		16:17	16:07
23	05:23	05:53-06:13/20	06:11	08:15-08:52/37	07:01	08:21-09:05/44	07:52		07:46	08:20
	21:19		20:24	07:19-07:58/39	19:13		18:06		16:16	16:07
24	05:25	07:36-07:45/9	06:13	08:13-08:53/40	07:03	08:21-09:06/45	07:53		07:48	08:21
	21:18	05:54-06:13/19	20:21	07:19-07:57/38	19:11		18:04		16:15	16:08
25	05:26	07:33-07:48/15	06:14	08:12-08:54/42	07:04	08:20-09:05/45	06:55		07:49	08:21
	21:16	05:58-06:12/14	20:19	07:21-07:56/35	19:09		17:02		16:14	16:08
26	05:27	07:31-07:51/20	06:16	08:10-08:55/45	07:06	08:21-09:05/44	06:57		07:51	08:21
	21:15	05:59-06:13/14	20:17	07:21-07:54/33	19:06		17:00		16:13	16:09
27	05:29	07:29-07:52/23	06:17	08:10-08:56/46	07:08	08:21-09:04/43	06:59		07:52	08:22
	21:13	05:59-06:12/13	20:15	07:23-07:52/29	19:04		16:58		16:12	16:10
28	05:30	07:27-07:53/26	06:19	08:08-08:56/48	07:09	08:20-09:03/43	07:01		07:54	08:22
	21:12	05:59-06:11/12	20:13	07:24-07:49/25	19:02		16:57		16:11	16:11
29	05:32	07:27-07:55/28	06:21	08:08-08:57/49	07:11	08:21-09:02/41	07:02		07:55	08:22
	21:10	06:01-06:11/10	20:11	07:27-07:47/20	18:59		16:55		16:10	16:11
30	05:33	07:25-07:56/31	06:22	08:07-08:57/50	07:13	08:22-09:02/40	07:04		07:57	08:22
	21:09	06:02-06:10/8	20:08	07:31-07:43/12	18:57		16:53		16:10	16:12
31	05:35	07:24-07:57/33	06:24	08:06-08:57/51			07:06			08:22
	21:07	06:04-06:08/4	20:06				16:51			16:13
Sonnenscheinstunden	501		453		381		332		267	245
Anzahl Minuten mit Schatten	1045		1716		1519		221		0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 11B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (327)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22		07:56	08:34-08:47/13	07:03	07:50-08:15/25	06:52		05:48	06:13-06:24/11	05:03	
	16:15		17:02		17:53		19:47		20:38		21:23	
2	08:22		07:54	08:32-08:49/17	07:00	07:50-08:15/25	06:50		05:46	19:49-19:59/10	05:02	
	16:16		17:04		17:55		19:49		20:39	06:12-06:25/13	21:24	
3	08:22		07:52	08:31-08:50/19	06:58	07:49-08:13/24	06:48		05:44	19:46-20:00/14	05:01	
	16:17		17:06		17:57		19:50		20:41	06:12-06:26/14	21:25	
4	08:22		07:51	08:31-08:51/20	06:56	07:50-08:13/23	06:45		05:42	19:45-20:03/18	05:01	
	16:18		17:08		17:59		19:52		20:43	06:11-06:26/15	21:26	
5	08:21		07:49	08:30-08:52/22	06:54	07:51-08:12/21	06:43		05:40	19:44-20:03/19	05:00	
	16:19		17:09		18:01		19:54		20:44	06:11-06:25/14	21:27	
6	08:21		07:48	08:29-08:52/23	06:52	07:52-08:10/18	06:41		05:39	19:43-20:04/21	04:59	
	16:20		17:11		18:02		19:56		20:46	06:03-06:25/22	21:28	
7	08:21		07:46	08:27-08:53/26	06:49	07:53-08:08/15	06:39		05:37	19:43-20:05/22	04:59	
	16:22		17:13		18:04		19:57		20:48	06:02-06:25/23	21:29	
8	08:20		07:44	08:26-08:53/27	06:47	07:56-08:05/9	06:36		05:35	19:42-20:05/23	04:58	
	16:23		17:15		18:06		19:59		20:49	06:01-06:24/23	21:30	
9	08:20		07:42	08:25-08:53/28	06:45		06:34		05:33	19:41-20:05/24	04:58	
	16:24		17:17		18:08		20:01		20:51	06:01-06:24/23	21:31	
10	08:19		07:41	08:25-08:54/29	06:43		06:32		05:32	19:41-20:06/25	04:57	
	16:26		17:19		18:09		20:02		20:52	06:00-06:23/23	21:32	
11	08:19		07:39	08:24-08:53/29	06:40		06:30	07:00-07:10/10	05:30	19:40-20:05/25	04:57	
	16:27		17:21		18:11		20:04		20:54	05:59-06:20/21	21:32	
12	08:18		07:37	08:24-08:53/29	06:38		06:27	06:58-07:12/14	05:28	19:41-20:06/25	04:57	
	16:28		17:22		18:13		20:06		20:56	06:00-06:14/14	21:33	
13	08:17		07:35	08:23-08:52/29	06:36		06:25	06:55-07:13/18	05:27	19:40-20:05/25	04:56	
	16:30		17:24		18:15		20:07		20:57	05:59-06:13/14	21:34	
14	08:17		07:33	08:23-08:51/28	06:34		06:23	06:53-07:14/21	05:25	19:41-20:06/25	04:56	
	16:31		17:26		18:16		20:09		20:59	06:00-06:13/13	21:34	
15	08:16		07:31	08:23-08:50/27	06:31		06:21	06:49-07:14/25	05:24	19:41-20:05/24	04:56	
	16:33		17:28		18:18		20:11		21:00	06:01-06:13/12	21:35	
16	08:15		07:29	08:23-08:49/26	06:29		06:19	06:47-07:15/28	05:22	19:41-20:05/24	04:56	
	16:35		17:30		18:20		20:12		21:02	06:01-06:12/11	21:35	
17	08:14		07:27	08:24-08:49/25	06:27		06:17	06:45-07:15/30	05:21	19:42-20:05/23	04:56	
	16:36		17:32		18:22		20:14		21:03	06:02-06:11/9	21:36	
18	08:13		07:25	08:24-08:48/24	06:24		06:14	06:44-07:14/30	05:19	19:42-20:04/22	04:56	
	16:38		17:34		18:23		20:16		21:05	06:04-06:10/6	21:36	
19	08:12		07:23	08:25-08:48/23	06:22		06:12	06:43-07:13/30	05:18	19:43-20:04/21	04:56	
	16:39		17:35		18:25		20:18		21:06		21:37	
20	08:11		07:21	08:25-08:46/21	06:20		06:10	06:42-07:12/30	05:16	19:44-20:03/19	04:56	
	16:41		17:37	08:02-08:04/2	18:27		20:19		21:08		21:37	
21	08:10		07:19	08:26-08:44/18	06:18		06:08	06:42-07:11/29	05:15	19:45-20:03/18	04:56	
	16:43		17:39	07:57-08:09/12	18:28		20:21		21:09		21:37	
22	08:09		07:17	08:28-08:42/14	06:15		06:06	06:42-07:10/28	05:14	19:46-20:02/16	04:56	
	16:44		17:41	07:55-08:11/16	18:30		20:23		21:10		21:38	
23	08:08		07:15	08:31-08:39/8	06:13		06:04	06:43-07:09/26	05:12	19:46-20:00/14	04:56	
	16:46		17:43	07:53-08:13/20	18:32		20:24		21:12		21:38	
24	08:07		07:13	07:52-08:14/22	06:11		06:02	06:43-07:06/23	05:11	19:48-19:59/11	04:57	
	16:48		17:44		18:33		20:26		21:13		21:38	
25	08:05		07:11	07:51-08:15/24	06:08		06:00	06:44-07:01/17	05:10	19:50-19:57/7	04:57	
	16:50		17:46		18:35		20:28		21:15		21:38	
26	08:04		07:09	07:51-08:15/24	06:06		05:58	06:47-06:53/6	05:09		04:57	
	16:51		17:48		18:37		20:29		21:16		21:38	
27	08:03		07:07	07:50-08:15/25	06:04		05:56		05:08		04:58	
	16:53		17:50		18:39		20:31		21:17		21:38	
28	08:01		07:05	07:49-08:15/26	06:01		05:54		05:07		04:58	
	16:55		17:52		18:40		20:33		21:18		21:38	
29	08:00				06:59		05:52	06:18-06:20/2	05:06		04:59	
	16:57				19:42		20:34		21:20		21:38	
30	07:59				06:57		05:50	06:14-06:23/9	05:05		04:59	
	16:59				19:44		20:36		21:21		21:37	
31	07:57	08:36-08:44/8			06:55				05:04			
	17:00				19:45				21:22			
Sonnenscheinstunden	260		278		367		416		484		498	
Anzahl Minuten mit Schatten	8		696		160		376		756		0	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 11B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (327)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember	
1	05:00		05:36	19:51-20:16/25	06:26	07:00-07:10/10	07:14		07:08	07:53-08:22/29	07:58	
	21:37		21:06	06:10-06:25/15	20:04		18:55		16:49		16:09	
2	05:01		05:38	19:51-20:16/25	06:27		07:16		07:09	07:54-08:22/28	08:00	
	21:37		21:04	06:10-06:31/21	20:02		18:52		16:47		16:08	
3	05:01		05:39	19:52-20:16/24	06:29		07:18		07:11	07:56-08:22/26	08:01	
	21:36		21:02	06:10-06:33/23	19:59		18:50		16:45		16:08	
4	05:02		05:41	19:51-20:15/24	06:30		07:19		07:13	07:57-08:22/25	08:02	
	21:36		21:00	06:10-06:34/24	19:57		18:48		16:44		16:07	
5	05:03		05:42	19:52-20:15/23	06:32		07:21	08:35-08:39/4	07:15	07:59-08:22/23	08:04	
	21:35		20:59	06:11-06:35/24	19:55		18:46		16:42		16:07	
6	05:04		05:44	19:52-20:14/22	06:34		07:23	08:31-08:43/12	07:17	08:00-08:22/22	08:05	
	21:35		20:57	06:12-06:35/23	19:53		18:43		16:40		16:06	
7	05:05		05:45	19:53-20:14/21	06:14-06:20/6		07:24	08:28-08:45/17	07:18	08:01-08:21/20	08:06	
	21:34		20:55	06:21-06:36/15	19:50		18:41		16:38		16:06	
8	05:06		05:47	19:54-20:13/19	06:37		07:26	08:26-08:46/20	07:20	08:02-08:20/18	08:08	
	21:34		20:53	06:20-06:35/15	19:48		18:39		16:37		16:05	
9	05:06		05:49	19:54-20:11/17	06:38		07:28	08:25-08:47/22	07:22	08:03-08:19/16	08:09	
	21:33		20:52	06:21-06:35/14	19:46		18:37		16:35		16:05	
10	05:07		05:50	19:56-20:09/13	06:40		07:29	08:25-08:48/23	07:24	08:05-08:18/13	08:10	
	21:32		20:50	06:20-06:34/14	19:43		18:34		16:33		16:05	
11	05:09		05:52	19:58-20:06/8	06:42		07:31	08:23-08:48/25	07:25	08:08-08:16/8	08:11	
	21:32		20:48	06:21-06:34/13	19:41		18:32		16:32		16:05	
12	05:10		05:53	06:22-06:32/10	06:43		07:33	08:23-08:48/25	07:27		08:12	
	21:31		20:46		19:39		18:30		16:30		16:05	
13	05:11		05:55	06:24-06:31/7	06:45		07:34	08:23-08:48/25	07:29		08:13	
	21:30		20:44		19:36		18:28		16:29		16:05	
14	05:12		05:57		06:47		07:36	08:23-08:48/25	07:31		08:14	
	21:29		20:42		19:34		18:26		16:27		16:05	
15	05:13		05:58		06:48		07:38	08:23-08:48/25	07:32		08:15	
	21:28		20:40		19:32		18:23		16:26		16:05	
16	05:14		06:00		06:50		07:39	08:22-08:46/24	07:34		08:16	
	21:27		20:38		19:30		18:21		16:25		16:05	
17	05:15		06:01	06:53-07:01/8	06:51		07:41	08:23-08:46/23	07:36		08:16	
	21:26		20:36		19:27		18:19		16:23		16:05	
18	05:17	20:02-20:05/3	06:03	06:51-07:09/18	06:53		07:43	08:24-08:45/21	07:38		08:17	
	21:25		20:34		19:25		18:17		16:22		16:05	
19	05:18	19:59-20:08/9	06:05	06:50-07:13/23	06:55		07:45	09:01-09:12/11	07:39		08:18	
	21:24		20:32		19:23		18:15	08:25-08:43/18	16:21		16:05	
20	05:19	19:58-20:10/12	06:06	06:48-07:15/27	06:56		07:46	08:59-09:14/15	07:41		08:19	
	21:23		20:30		19:20		18:13	08:27-08:42/15	16:19		16:06	
21	05:20	19:56-20:11/15	06:08	06:48-07:16/28	06:58		07:48	08:57-09:16/19	07:43		08:19	
	21:21		20:28		19:18		18:11	08:29-08:39/10	16:18		16:06	
22	05:22	19:55-20:12/17	06:09	06:47-07:16/29	06:59		07:50	08:55-09:16/21	07:44		08:20	
	21:20		20:26		19:16		18:09		16:17		16:07	
23	05:23	19:55-20:13/18	06:11	06:47-07:17/30	07:01		07:52	08:54-09:17/23	07:46		08:20	
	21:19		20:24		19:13		18:06		16:16		16:07	
24	05:25	19:54-20:14/20	06:13	06:47-07:17/30	07:03		07:53	08:53-09:18/25	07:48		08:21	
	21:17		20:21		19:11		18:04		16:15		16:08	
25	05:26	19:53-20:14/21	06:14	06:47-07:17/30	07:04		06:55	07:53-08:18/25	07:49		08:21	
	21:16	06:15-06:18/3	20:19		19:09		17:02		16:14		16:08	
26	05:27	19:53-20:15/22	06:16	06:47-07:16/29	07:06		06:57	07:53-08:19/26	07:51		08:21	
	21:15	06:14-06:21/7	20:17		19:06		17:00		16:13		16:09	
27	05:29	19:52-20:16/24	06:17	06:49-07:16/27	07:08		06:59	07:53-08:20/27	07:52		08:22	
	21:13	06:12-06:22/10	20:15		19:04		16:58		16:12		16:10	
28	05:30	19:52-20:15/23	06:19	06:50-07:15/25	07:09		07:00	07:53-08:21/28	07:54		08:22	
	21:12	06:11-06:23/12	20:13		19:02		16:57		16:11		16:11	
29	05:32	19:52-20:16/24	06:21	06:54-07:15/21	07:11		07:02	07:53-08:22/29	07:55		08:22	
	21:10	06:11-06:24/13	20:11		18:59		16:55		16:10		16:11	
30	05:33	19:51-20:16/25	06:22	06:56-07:14/18	07:13		07:04	07:53-08:23/30	07:57		08:22	
	21:09	06:10-06:24/14	20:08		18:57		16:53		16:10		16:12	
31	05:35	19:51-20:16/25	06:24	06:57-07:12/15			07:06	07:53-08:22/29			08:22	
	21:07	06:11-06:25/14	20:06				16:51				16:13	
Sonnenscheinstunden	501		453		381		332		267		245	
Anzahl Minuten mit Schatten	331		803		10		642		228		0	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 13B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (328)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22	09:46-10:14/28	07:56	09:52-10:45/53	07:03	08:46-09:38/52	06:52		05:48	19:44-19:58/14	05:03	06:05-06:41/36
	16:15		17:02		17:53		19:47		20:38	06:18-06:33/15	21:23	05:33-05:37/4
2	08:22	09:46-10:15/29	07:54	09:53-10:45/52	07:00	08:47-09:38/51	06:50		05:46	19:44-19:57/13	05:02	06:06-06:42/36
	16:16		17:04		17:55		19:49		20:39	06:17-06:33/16	21:24	05:32-05:39/7
3	08:22	09:46-10:16/30	07:53	09:54-10:44/50	06:58	08:46-09:36/50	06:48		05:44	19:45-19:56/11	05:01	06:06-06:42/36
	16:17		17:06		17:57		19:50		20:41	06:17-06:34/17	21:25	05:31-05:40/9
4	08:22	09:46-10:17/31	07:51	09:55-10:45/50	06:56	08:46-09:36/50	06:45		05:42	19:47-19:55/8 06:10-06:13/3	05:01	06:06-06:42/36
	16:18		17:08		17:59		19:52		20:43	06:17-06:33/16	21:26	05:30-05:40/10
5	08:22	09:46-10:19/33	07:49	09:55-10:45/50	06:54	08:47-09:35/48	06:43		05:40	06:17-06:33/16	05:00	06:06-06:43/37
	16:19		17:10		18:01		19:54		20:44	06:07-06:16/9	21:27	05:30-05:41/11
6	08:21	09:47-10:21/34	07:48	09:55-10:44/49	06:52	08:48-09:34/46	06:41		05:39	06:05-06:32/27	04:59	06:06-06:43/37
	16:20		17:11		18:02		19:56		20:46		21:28	05:29-05:41/12
7	08:21	09:46-10:23/37	07:46	09:56-10:44/48	06:49	08:47-09:32/45	06:39		05:37	06:05-06:32/27	04:59	06:06-06:44/38
	16:22		17:13		18:04		19:57		20:48		21:29	05:30-05:42/12
8	08:20	09:46-10:24/38	07:44	09:56-10:43/47	06:47	08:48-09:31/43	06:36		05:35	06:19-06:31/12	04:58	06:06-06:43/37
	16:23		17:15		18:06		19:59		20:49	06:04-06:18/14	21:30	05:30-05:44/14
9	08:20	09:46-10:26/40	07:42	09:56-10:42/46	06:45	08:49-09:30/41	06:34		05:33	06:20-06:30/10	04:58	06:06-06:44/38
	16:24		17:17		18:08		20:01		20:51	06:04-06:19/15	21:31	05:29-05:45/16
10	08:19	09:46-10:27/41	07:41	09:58-10:43/45	06:43	08:51-09:29/38	06:32		05:32	06:22-06:27/5	04:57	06:07-06:44/37
	16:26		17:19	09:07-09:22/15	18:09		20:02		20:52	06:03-06:19/16	21:32	05:30-05:46/16
11	08:19	09:46-10:28/42	07:39	09:59-10:42/43	06:40	08:51-09:26/35	06:30		05:30	05:58-06:18/20	04:57	06:06-06:44/38
	16:27		17:21	09:03-09:26/23	18:11		20:04		20:54		21:32	05:30-05:47/17
12	08:18	09:47-10:30/43	07:37	10:00-10:41/41	06:38	08:53-09:24/31	06:28		05:28	05:56-06:20/24	04:57	06:07-06:44/37
	16:28		17:22	09:01-09:28/27	18:13		20:06		20:56		21:33	05:29-05:47/18
13	08:17	09:47-10:31/44	07:35	10:01-10:39/38	06:36	08:55-09:21/26	06:25		05:27	05:55-06:22/27	04:56	06:07-06:45/38
	16:30		17:24	08:58-09:30/32	18:15		20:07		20:57		21:34	05:30-05:48/18
14	08:17	09:47-10:32/45	07:33	10:02-10:38/36	06:34	08:57-09:16/19	06:23		05:25	05:55-06:24/29	04:56	06:07-06:45/38
	16:31		17:26	08:57-09:32/35	18:16		20:09		20:59		21:34	05:30-05:48/18
15	08:16	09:47-10:33/46	07:31	10:03-10:36/33	06:31	09:03-09:10/7	06:21		05:24	05:54-06:26/32	04:56	06:08-06:46/38
	16:33		17:28	08:55-09:33/38	18:18		20:11		21:00		21:35	05:30-05:49/19
16	08:15	09:47-10:35/48	07:29	10:05-10:34/29	06:29		06:19		05:22	05:53-06:28/35	04:56	06:08-06:46/38
	16:35		17:30	08:54-09:34/40	18:20		20:12		21:02		21:36	05:30-05:49/19
17	08:14	09:47-10:36/49	07:27	10:07-10:32/25	06:27		06:17		05:21	05:54-06:30/36	04:56	06:08-06:46/38
	16:36		17:32	08:53-09:35/42	18:22		20:14		21:03		21:36	05:31-05:50/19
18	08:13	09:47-10:37/50	07:25	10:10-10:28/18	06:25		06:14		05:19	05:54-06:32/38	04:56	06:08-06:46/38
	16:38		17:34	08:52-09:36/44	18:23		20:16		21:05		21:36	05:31-05:50/19
19	08:12	09:46-10:37/51	07:23	10:16-10:22/6	06:22		06:12		05:18	05:53-06:32/39	04:56	06:08-06:46/38
	16:39		17:35	08:51-09:37/46	18:25		20:18		21:06		21:37	05:31-05:50/19
20	08:11	09:47-10:38/51	07:21	08:49-09:37/48	06:20		06:10		05:16	05:53-06:33/40	04:56	06:08-06:46/38
	16:41		17:37		18:27		20:19		21:08		21:37	05:31-05:50/19
21	08:10	09:47-10:39/52	07:19	08:49-09:38/49	06:18		06:08		05:15	05:54-06:34/40	04:56	06:08-06:47/39
	16:43		17:39		18:28		20:21		21:09		21:37	05:31-05:50/19
22	08:09	09:48-10:40/52	07:17	08:48-09:38/50	06:15		06:06		05:14	05:54-06:36/42	04:56	06:09-06:47/38
	16:44		17:41		18:30		20:23		21:10		21:38	05:32-05:51/19
23	08:08	09:47-10:40/53	07:15	08:48-09:39/51	06:13		06:04	19:48-19:56/8	05:12	05:55-06:37/42	04:56	06:09-06:47/38
	16:46		17:43		18:32		20:24		21:12		21:38	05:32-05:51/19
24	08:07	09:48-10:41/53	07:13	08:48-09:39/51	06:11		06:02	19:46-19:58/12	05:11	05:55-06:38/43	04:57	06:09-06:47/38
	16:48		17:44		18:34		20:26		21:13		21:38	05:32-05:51/19
25	08:05	09:49-10:42/53	07:11	08:47-09:39/52	06:08		06:00	19:45-19:59/14	05:10	05:56-06:37/41	04:57	06:09-06:47/38
	16:50		17:46		18:35		20:28		21:15		21:38	05:33-05:52/19
26	08:04	09:49-10:42/53	07:09	08:47-09:39/52	06:06		05:58	19:44-19:59/15	05:09	05:57-06:38/41	04:57	06:10-06:48/38
	16:51		17:48		18:37		20:29		21:16		21:38	05:32-05:51/19
27	08:03	09:49-10:43/54	07:07	08:46-09:38/52	06:04		05:56	19:43-19:59/16	05:08	05:57-06:40/43	04:58	06:10-06:48/38
	16:53		17:50		18:39		20:31	06:24-06:29/5	21:17		21:38	05:32-05:51/19
28	08:01	09:49-10:43/54	07:05	08:46-09:38/52	06:02		05:54	19:44-20:00/16	05:07	05:58-06:40/42	04:58	06:10-06:48/38
	16:55		17:52		18:40		20:33	06:21-06:31/10	21:18		21:38	05:33-05:51/18
29	08:00	09:51-10:44/53			06:59		05:52	19:44-20:00/16	05:06	06:00-06:40/40	04:59	06:10-06:48/38
	16:57				19:42		20:34	06:20-06:32/12	21:20		21:38	05:33-05:51/18
30	07:59	09:51-10:44/53			06:57		05:50	19:44-19:59/15	05:05	06:05-06:41/36	04:59	06:11-06:49/38
	16:59				19:44		20:36	06:18-06:33/15	21:21	06:02-06:04/2	21:37	05:33-05:51/18
31	07:57	09:51-10:44/53			06:55				05:04	06:05-06:41/36		
	17:00				19:45				21:22			
Sonnenscheinstunden	260		278		367		416		484		498	
Anzahl Minuten mit Schatten	1393		1558		582		154		1032		1611	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 13B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (328)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 06:11-06:49/38	05:36 06:07-06:29/22	06:26	07:14 09:33-10:01/28	07:08 09:27-10:11/44	07:58 09:28-10:10/42
	21:37 05:34-05:51/17	21:06	20:04	18:55	16:49 08:36-08:50/14	16:09
2	05:01 06:11-06:49/38	05:38 06:09-06:29/20	06:27	07:16 09:31-10:04/33	07:09 09:26-10:12/46	08:00 09:29-10:10/41
	21:37 05:34-05:50/16	21:04	20:02	18:52	16:47	16:08
3	05:01 06:12-06:49/37	05:39 06:32-06:38/6	06:29	07:18 09:29-10:06/37	07:11 09:26-10:13/47	08:01 09:29-10:09/40
	21:36 05:35-05:50/15	21:02 06:14-06:29/15	19:59	18:50	16:45	16:08
4	05:02 06:12-06:50/38	05:41 06:29-06:40/11	06:30	07:19 09:27-10:06/39	07:13 09:25-10:14/49	08:02 09:31-10:09/38
	21:36 05:35-05:50/15	21:01 06:13-06:28/15	19:57	18:48	16:44	16:07
5	05:03 06:12-06:49/37	05:42 06:29-06:41/12	06:32	07:21 09:26-10:08/42	07:15 09:25-10:14/49	08:04 09:31-10:08/37
	21:36 05:35-05:48/13	20:59 06:14-06:28/14	19:55	18:46	16:42	16:07
6	05:04 06:12-06:49/37	05:44 06:14-06:42/28	06:34	07:23 09:25-10:09/44	07:17 09:25-10:14/49	08:05 09:33-10:08/35
	21:35 05:36-05:48/12	20:57	19:53	18:43	16:40	16:06
7	05:05 06:12-06:49/37	05:45 06:16-06:43/27	06:35	07:24 09:23-10:09/46	07:18 09:25-10:15/50	08:06 09:33-10:06/33
	21:34 05:36-05:48/12	20:55	19:50	18:41	16:38	16:06
8	05:06 06:13-06:50/37	05:47 19:59-20:01/2 06:17-06:25/8	06:37	07:26 09:22-10:10/48	07:20 09:24-10:15/51	08:08 09:34-10:05/31
	21:34 05:37-05:48/11	20:53 06:26-06:42/16	19:48	18:39	16:37	16:05
9	05:07 06:13-06:50/37	05:49 19:55-20:04/9	06:38	07:28 09:22-10:11/49	07:22 09:24-10:15/51	08:09 09:34-10:04/30
	21:33 05:38-05:47/9	20:52 06:27-06:43/16	19:46	18:37	16:35	16:05
10	05:08 06:14-06:50/36	05:50 19:54-20:06/12	06:40	07:29 09:21-10:11/50	07:24 09:23-10:16/53	08:10 09:35-10:04/29
	21:32 05:39-05:47/8	20:50 06:26-06:42/16	19:43	18:34	16:33	16:05
11	05:09 06:14-06:50/36	05:52 19:52-20:06/14	06:42	07:31 09:20-10:11/51	07:25 09:23-10:16/53	08:11 09:37-10:05/28
	21:32 05:40-05:46/6	20:48 06:26-06:43/17	19:41	18:32	16:32	16:05
12	05:10 06:14-06:50/36	05:53 19:52-20:07/15	06:43	07:33 09:20-10:11/51	07:27 09:23-10:16/53	08:12 09:38-10:05/27
	21:31	20:46 06:26-06:42/16	19:39	18:30	16:30	16:05
13	05:11 06:14-06:49/35	05:55 19:51-20:07/16	06:45	07:34 09:19-10:11/52	07:29 09:22-10:16/54	08:13 09:38-10:05/27
	21:30	20:44 06:27-06:41/14	19:36	18:28	16:29	16:05
14	05:12 06:09-06:49/40	05:57 19:51-20:07/16	06:47	07:36 09:19-10:11/52	07:31 09:21-10:15/54	08:14 09:39-10:05/26
	21:29	20:42 06:27-06:40/13	19:34	18:26	16:27	16:05
15	05:13 06:07-06:49/42	05:58 19:50-20:07/17	06:48	07:38 09:19-10:11/52	07:32 09:21-10:15/54	08:15 09:40-10:06/26
	21:28	20:40 06:29-06:38/9	19:32	18:23	16:26	16:05
16	05:14 06:06-06:48/42	06:00 19:51-20:07/16	06:50	07:39 09:18-10:10/52	07:34 09:21-10:15/54	08:16 09:40-10:05/25
	21:27	20:38 06:32-06:34/2	19:30	18:21	16:25	16:05
17	05:15 06:05-06:48/43	06:01 19:52-20:06/14	06:51	07:41 09:19-10:10/51	07:36 09:22-10:15/53	08:16 09:41-10:05/24
	21:26	20:36	19:27	18:19	16:23	16:05
18	05:17 06:06-06:47/41	06:03 19:52-20:05/13	06:53	07:43 09:19-10:10/51	07:38 09:22-10:15/53	08:17 09:42-10:06/24
	21:25	20:34	19:25	18:17	16:22	16:05
19	05:18 06:05-06:47/42	06:05 19:53-20:04/11	06:55	07:45 09:19-10:10/51	07:39 09:22-10:15/53	08:18 09:43-10:07/24
	21:24	20:32	19:23	18:15	16:21	16:05
20	05:19 06:05-06:47/42	06:06 19:54-20:01/7	06:56	07:46 09:20-10:09/49	07:41 09:23-10:15/52	08:19 09:43-10:06/23
	21:23	20:30	19:20	18:13	16:19	16:06
21	05:20 06:04-06:46/42	06:08	06:58	07:48 09:20-10:09/49	07:43 09:22-10:14/52	08:19 09:44-10:07/23
	21:21	20:28	19:18	18:11	16:18	16:06
22	05:22 06:04-06:44/40	06:09	06:59	07:50 09:20-10:07/47	07:44 09:23-10:14/51	08:20 09:44-10:07/23
	21:20	20:26	19:16	18:09	16:17	16:07
23	05:23 06:04-06:44/40	06:11	07:01	07:52 10:43-10:54/11	07:46 09:23-10:14/51	08:20 09:45-10:08/23
	21:19	20:24	19:13	18:07 09:21-10:06/45	16:16	16:07
24	05:25 06:04-06:43/39	06:13	07:03	07:53 10:39-10:59/20	07:48 09:24-10:14/50	08:21 09:45-10:09/24
	21:18	20:21	19:11	18:04 09:22-10:06/44	16:15	16:08
25	05:26 06:04-06:42/38	06:14	07:04	06:55 09:36-10:02/26	07:49 09:25-10:14/49	08:21 09:45-10:09/24
	21:16	20:19	19:09	17:02 08:23-09:05/42	16:14	16:08
26	05:27 06:04-06:41/37	06:16	07:06	06:57 09:34-10:04/30	07:51 09:25-10:13/48	08:21 09:45-10:09/24
	21:15	20:17	19:06	17:00 08:24-09:04/40	16:13	16:09
27	05:29 06:04-06:40/36	06:17	07:08	06:59 09:32-10:06/34	07:52 09:26-10:13/47	08:22 09:46-10:11/25
	21:13	20:15	19:04	16:58 08:25-09:02/37	16:12	16:10
28	05:30 06:04-06:37/33	06:19	07:09	07:01 09:31-10:08/37	07:54 09:27-10:12/45	08:22 09:46-10:11/25
	21:12	20:13	19:02	16:57 08:27-09:01/34	16:11	16:11
29	05:32 06:05-06:36/31	06:21	07:11 09:40-09:55/15	07:02 09:30-10:09/39	07:55 09:27-10:11/44	08:22 09:46-10:12/26
	21:10	20:11	18:59	16:55 08:28-08:59/31	16:10	16:12
30	05:33 06:05-06:34/29	06:22	07:13 09:36-09:59/23	07:04 09:29-10:11/42	07:57 09:28-10:11/43	08:22 09:46-10:13/27
	21:09	20:08	18:57	16:53 08:31-08:57/26	16:10	16:12
31	05:35 06:07-06:32/25	06:24		07:06 09:27-10:11/44		08:22 09:46-10:14/28
	21:07	20:06		16:51 08:32-08:54/22		16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	1295	459	38	1628	1516	882

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 14B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (337)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar	März		April		Mai		Juni	
1	08:22	10:01-10:28/27	07:56	07:03		06:52	18:41-19:00/19 07:47-08:08/21	05:48	06:35-06:58/23	05:03	05:39-05:56/17
	16:15	09:35-09:50/15	17:02	17:53		19:47	08:13-08:24/11 07:28-07:43/15	20:38		21:23	
2	08:22	10:02-10:28/26	07:54	07:00		06:50	18:40-18:59/19 07:28-07:43/15	05:46	06:37-06:57/20	05:02	05:39-05:57/18
	16:16	09:35-09:51/16	17:04	17:55		19:49	07:48-08:08/20	20:39		21:24	
3	08:22	10:03-10:29/26	07:52	06:58		06:48	18:40-18:59/19 07:28-07:41/13	05:44	06:43-06:56/13	05:01	05:38-05:56/18
	16:17	09:36-09:53/17	17:06	17:57		19:50	07:47-08:06/19	20:41		21:25	
4	08:22	10:03-10:28/25	07:51	06:56		06:45	18:41-18:58/17 07:28-07:41/13	05:42	06:44-06:55/11	05:01	05:38-05:57/19
	16:18	09:35-09:53/18	17:08	17:59		19:52	07:48-08:05/17 07:18-07:22/4	20:43		21:26	
5	08:21	10:05-10:29/24	07:49	06:54		06:43	18:42-18:57/15 07:30-07:39/9	05:40	06:46-06:52/6	05:00	05:38-05:57/19
	16:19	09:35-09:54/19	17:10	18:01		19:54	07:49-08:03/14 07:15-07:24/9	20:44	06:12-06:19/7	21:27	
6	08:21	10:06-10:29/23	07:48	06:52		06:41	18:42-18:55/13 07:32-07:36/4	05:39	06:10-06:20/10	04:59	05:37-05:56/19
	16:20	09:36-09:56/20	17:11	18:02		19:56	07:51-08:01/10 07:13-07:25/12	20:46		21:28	
7	08:21	10:07-10:29/22	07:46	06:49		06:39	18:44-18:53/9	05:37	06:09-06:21/12	04:59	05:37-05:57/20
	16:22	09:35-09:56/21	17:13	18:04		19:57	07:12-07:25/13	20:48		21:29	
8	08:20	10:08-10:29/21	07:44	06:47		06:36	07:09-07:25/16	05:35	06:06-06:21/15	04:58	05:37-05:57/20
	16:23	09:35-09:56/21	17:15	18:06		19:59		20:49		21:30	
9	08:20	10:10-10:29/19	07:42	06:45		06:34	07:07-07:25/18	05:33	06:06-06:22/16	04:58	05:36-05:57/21
	16:24	09:35-09:58/23	17:17	18:08		20:01		20:51		21:31	
10	08:19	10:10-10:29/19	07:41	06:43		06:32	07:06-07:25/19	05:32	06:05-06:22/17	04:57	05:36-05:57/21
	16:26	09:35-09:58/23	17:19	18:09		20:02		20:52		21:32	
11	08:19	10:11-10:28/17	07:39	06:40		06:30	07:05-07:24/19	05:30	06:04-06:21/17	04:57	05:36-05:57/21
	16:27	09:35-09:59/24	17:21	18:11		20:04		20:54		21:32	
12	08:18	10:13-10:28/15	07:37	06:38		06:28	07:04-07:21/17	05:28	06:04-06:21/17	04:57	05:35-05:57/22
	16:28	09:36-10:00/24	17:22	18:13		20:06		20:56		21:33	
13	08:17	10:15-10:27/12	07:35	06:36	07:33-07:45/12	06:25	07:04-07:21/17	05:27	06:03-06:20/17	04:56	05:35-05:57/22
	16:30	09:36-10:01/25	17:24	18:15		20:07		20:57		21:34	
14	08:17	10:17-10:26/9	07:33	06:34	07:30-07:47/17	06:23	07:04-07:20/16	05:25	06:04-06:20/16	04:56	05:36-05:57/21
	16:31	09:36-10:01/25	17:26	18:16		20:09		20:59		21:34	
15	08:16	10:20-10:23/3	07:31	06:31	07:28-07:48/20	06:21	07:02-07:19/17	05:24	06:05-06:19/14	04:56	05:36-05:57/21
	16:33	09:36-10:02/26	17:28	18:18		20:11		21:00		21:35	
16	08:15	09:36-10:02/26	07:29	06:29	07:27-07:50/23	06:19	07:01-07:17/16	05:22	06:05-06:17/12	04:56	05:36-05:57/21
	16:35		17:30	18:20		20:12		21:02		21:35	
17	08:14	09:37-10:03/26	07:27	06:27	07:25-07:49/24	06:17	07:00-07:17/17	05:21	06:06-06:15/9	04:56	05:36-05:57/21
	16:36		17:32	18:22		20:14		21:03		21:36	
18	08:13	09:37-10:03/26	07:25	06:25	07:18-07:50/32	06:14	06:59-07:17/18	05:19	06:07-06:15/8	04:56	05:36-05:57/21
	16:38		17:34	18:23		20:16		21:05		21:36	
19	08:12	09:36-10:03/27	07:23	06:22	07:16-07:50/34	06:12	06:57-07:16/19	05:18	06:08-06:12/4	04:56	05:36-05:57/21
	16:39		17:35	18:25		20:18		21:06		21:37	
20	08:11	09:37-10:03/26	07:21	06:20	07:14-07:50/36	06:10	06:57-07:16/19	05:16		04:56	05:36-05:57/21
	16:41		17:37	18:27		20:19		21:08		21:37	
21	08:10	09:38-10:04/26	07:19	06:18	07:12-07:50/38	06:08	06:57-07:16/19	05:15		04:56	05:36-05:57/21
	16:43		17:39	18:28		20:21		21:09		21:37	
22	08:09	09:39-10:04/25	07:17	06:15	07:11-07:49/38	06:06	06:57-07:15/18 06:39-06:45/6	05:14		04:56	05:37-05:58/21
	16:44		17:41	18:30		20:23	06:46-06:55/9	21:10		21:38	
23	08:08	09:39-10:03/24	07:15	06:13	07:10-07:49/39	06:04	06:37-07:15/38	05:12		04:56	05:37-05:58/21
	16:46		17:43	18:32		20:24		21:12		21:38	
24	08:07	09:40-10:03/23	07:13	06:11	07:09-07:47/38	06:02	06:35-07:13/38	05:11	05:46-05:52/6	04:57	05:37-05:58/21
	16:48		17:44	18:34		20:26		21:13		21:38	
25	08:05	09:41-10:04/23	07:11	06:08	07:09-07:47/38	06:00	06:34-07:12/38	05:10	05:45-05:53/8	04:57	05:38-05:59/21
	16:50		17:46	18:35	06:56-07:04/8	20:28		21:15		21:38	
26	08:04	09:41-10:03/22	07:09	06:06	07:09-07:45/36	05:58	07:01-07:11/10	05:09	05:44-05:54/10	04:57	05:38-05:59/21
	16:51		17:48	18:37	06:53-07:07/14	20:29	06:35-07:00/25	21:16		21:38	
27	08:03	09:43-10:02/19	07:07	06:04	17:47-17:56/9 06:51-07:07/16	05:56	06:34-07:00/26	05:08	05:44-05:55/11	04:58	05:38-05:59/21
	16:53		17:50	18:39	07:08-07:43/35	20:31		21:17		21:38	
28	08:01	09:43-10:01/18	07:05	06:02	17:45-17:58/13 06:50-07:08/18	05:54	06:34-07:00/26	05:07	05:43-05:55/12	04:58	05:39-06:00/21
	16:55		17:52	18:40	07:09-07:41/32 06:35-06:39/4	20:33		21:18		21:38	
29	08:00	09:46-10:00/14		06:59	18:44-19:00/16 07:32-07:42/10	05:52	06:34-06:59/25	05:06	05:43-05:56/13	04:59	05:39-06:00/21
	16:57			19:42	07:49-08:37/48	20:34		21:20		21:38	
30	07:59	09:48-09:58/10		06:57	18:42-19:00/18 07:47-08:08/21	05:50	06:35-06:59/24	05:05	05:42-05:56/14	04:59	05:39-06:01/22
	16:59			19:44	08:10-08:28/18 07:30-07:42/12	20:36		21:21		21:37	
31	07:57			06:55	18:41-19:00/19 07:47-08:08/21			05:04	05:42-05:56/14		
	17:00			19:45	08:11-08:27/16 07:29-07:43/14			21:22			
Sonnenscheinstunden	260		278	367		416		484		498	
Anzahl Minuten mit Schatten	940		0	787		860		352		615	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 14B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (337)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 05:40-06:02/22 21:37	05:36 06:14-06:32/18 21:06	06:26 07:04-07:23/19 20:04	07:14 08:14-08:22/8 18:55	07:08 16:49	07:58 09:53-10:10/17 16:09 09:17-09:41/24
2	05:01 05:40-06:01/21 21:37	05:38 06:14-06:32/18 21:04	06:27 07:04-07:23/19 20:02	07:16 18:52	07:09 16:47	08:00 09:54-10:12/18 16:08 09:18-09:41/23
3	05:01 05:41-06:02/21 21:36	05:39 06:15-06:32/17 21:02	06:29 07:05-07:23/18 19:59	07:18 18:50	07:11 16:45	08:01 09:53-10:12/19 16:08 09:19-09:41/22
4	05:02 05:42-06:03/21 21:36	05:41 06:15-06:32/17 21:00	06:30 07:06-07:22/16 19:57	07:19 18:48	07:13 16:44	08:02 09:53-10:14/21 16:07 09:20-09:42/22
5	05:03 05:43-06:03/20 21:35	05:42 06:17-06:32/15 20:59	06:32 18:41-18:50/9 19:55 07:09-07:22/13	07:21 18:46	07:15 16:42	08:04 09:52-10:14/22 16:07 09:20-09:41/21
6	05:04 05:43-06:03/20 21:35	05:44 06:19-06:31/12 20:57	06:34 18:38-18:51/13 07:28-07:31/3 19:53 07:46-07:56/10 07:08-07:20/12	07:23 18:43	07:17 16:40	08:05 09:52-10:16/24 16:06 09:22-09:42/20
7	05:05 05:44-06:03/19 21:34	05:45 06:21-06:30/9 20:55	06:35 18:37-18:53/16 07:25-07:34/9 19:50 07:44-07:59/15 07:10-07:19/9	07:24 18:41	07:18 16:38	08:06 09:52-10:16/24 16:06 09:22-09:41/19
8	05:06 05:45-06:04/19 21:34	05:47 06:54-07:02/8 20:53 06:22-06:28/6	06:37 18:35-18:53/18 07:23-07:35/12 19:48 07:42-07:59/17 07:11-07:16/5	07:26 18:39	07:20 16:37	08:08 09:51-10:16/25 16:05 09:23-09:41/18
9	05:07 05:45-06:04/19 21:33	05:49 06:53-07:05/12 20:52	06:38 18:35-18:53/18 07:22-07:36/14 19:46 07:41-08:00/19	07:28 18:37	07:22 16:35	08:09 09:51-10:17/26 16:05 09:24-09:41/17
10	05:08 05:46-06:04/18 21:32	05:50 06:51-07:05/14 20:50 06:48-06:50/2	06:40 18:33-18:52/19 07:22-07:36/14 19:43 07:41-08:01/20	07:29 18:34	07:24 16:33	08:10 09:51-10:17/26 16:05 09:25-09:40/15
11	05:09 05:47-06:04/17 21:32	05:52 06:46-07:07/21 20:48	06:42 18:33-18:53/20 07:40-08:00/20 19:41 08:06-08:16/10 07:21-07:35/14	07:31 18:32	07:25 16:32	08:11 09:52-10:19/27 16:05 09:26-09:41/15
12	05:10 05:49-06:04/15 21:31	05:53 06:44-07:07/23 20:46	06:43 18:34-18:52/18 07:39-08:00/21 19:39 08:03-08:19/16 07:21-07:35/14	07:33 18:30	07:27 09:19-09:30/11 16:30	08:12 09:52-10:19/27 16:05 09:27-09:41/14
13	05:11 05:51-06:04/13 21:30	05:55 06:43-07:07/24 20:44	06:45 18:33-18:51/18 07:39-07:59/20 19:36 08:01-08:19/18 07:21-07:33/12	07:34 18:28	07:29 09:17-09:32/15 16:29	08:13 09:52-10:20/28 16:05 09:28-09:41/13
14	05:12 05:51-06:04/13 21:29	05:57 06:42-07:07/25 20:42	06:47 18:34-18:50/16 08:00-08:21/21 07:22-07:32/10 19:34 08:23-08:25/2 07:39-07:59/20	07:36 18:26	07:31 09:15-09:33/18 16:27	08:14 09:53-10:20/27 16:05 09:29-09:41/12
15	05:13 05:51-06:04/13 21:28	05:58 06:42-07:07/25 20:40	06:48 18:34-18:48/14 07:23-07:29/6 19:32 07:39-08:29/50	07:38 18:23	07:32 09:15-09:34/19 16:26	08:15 09:53-10:20/27 16:05 09:29-09:40/11
16	05:14 05:52-06:03/11 21:27	06:00 07:10-07:15/5 20:38 06:41-07:06/25	06:50 18:36-18:46/10 07:40-07:57/17 19:30 07:58-08:32/34	07:39 18:21	07:34 09:14-09:36/22 16:25	08:16 09:53-10:21/28 16:05 09:31-09:40/9
17	05:15 05:52-06:03/11 21:26	06:01 07:08-07:18/10 20:36 06:41-07:06/25	06:51 07:57-08:33/36 19:27 07:41-07:55/14	07:41 18:19	07:36 09:14-09:37/23 16:23	08:16 09:53-10:21/28 16:05 09:32-09:40/8
18	05:17 05:54-06:03/9 21:25	06:03 06:41-07:19/38 20:34	06:53 07:56-08:34/38 19:25 07:42-07:52/10	07:43 18:17	07:38 09:14-09:37/23 16:22	08:17 09:54-10:22/28 16:05 09:33-09:41/8
19	05:18 05:55-06:02/7 21:24	06:05 07:05-07:20/15 20:32 06:42-07:04/22	06:55 07:56-08:35/39 19:23	07:45 18:15	07:39 09:14-09:38/24 16:21	08:18 09:55-10:23/28 16:05 09:34-09:41/7
20	05:19 05:57-06:00/3 21:23	06:06 07:03-07:20/17 20:30 06:43-07:02/19	06:56 07:56-08:34/38 19:20	07:46 18:13	07:41 09:14-09:39/25 16:19	08:19 09:54-10:23/29 16:06 09:34-09:41/7
21	05:20 21:21	06:08 07:03-07:21/18 06:45-06:50/5 20:28 06:53-07:01/8	06:58 07:56-08:35/39 19:18	07:48 18:11	07:43 09:13-09:39/26 16:18	08:19 09:55-10:24/29 16:06 09:35-09:41/6
22	05:22 21:20	06:09 07:02-07:21/19 20:26	06:59 07:57-08:35/38 19:16	07:50 18:09	07:44 09:13-09:39/26 16:17	08:20 09:55-10:24/29 16:07 09:35-09:41/6
23	05:23 21:19	06:11 07:02-07:21/19 20:24	07:01 07:57-08:34/37 19:13	07:52 18:06	07:46 09:14-09:40/26 16:16	08:20 09:56-10:25/29 16:07 09:36-09:43/7
24	05:25 21:17	06:13 07:01-07:20/19 20:21	07:03 07:59-08:34/35 19:11	07:53 18:04	07:48 09:14-09:40/26 16:15	08:21 09:56-10:25/29 16:08 09:36-09:43/7
25	05:26 06:18-06:24/6 21:16	06:14 07:02-07:20/18 20:19	07:04 08:00-08:33/33 19:09	06:55 17:02	07:49 09:15-09:41/26 16:14	08:21 09:57-10:25/28 16:08 09:36-09:43/7
26	05:27 06:17-06:26/9 21:15	06:16 07:02-07:18/16 20:17	07:06 08:05-08:32/27 19:06	06:57 17:00	07:51 09:14-09:40/26 16:13	08:21 09:57-10:25/28 16:09 09:36-09:44/8
27	05:29 06:16-06:26/10 21:13	06:17 07:03-07:19/16 20:15	07:08 08:08-08:32/24 19:04	06:59 16:58	07:52 09:59-10:02/3 16:12 09:15-09:41/26	08:22 09:58-10:26/28 16:10 09:37-09:46/9
28	05:30 06:15-06:28/13 21:12	06:19 07:03-07:20/17 20:13	07:09 08:08-08:30/22 19:02	07:00 16:57	07:54 09:57-10:06/9 16:11 09:16-09:41/25	08:22 09:59-10:27/28 16:11 09:36-09:47/11
29	05:32 06:15-06:30/15 21:10	06:21 07:05-07:21/16 20:11	07:11 08:10-08:28/18 18:59	07:02 16:55	07:55 09:55-10:07/12 16:10 09:16-09:41/25	08:22 09:59-10:27/28 16:12 09:36-09:48/12
30	05:33 06:14-06:31/17 21:09	06:22 07:05-07:22/17 20:08	07:13 08:12-08:26/14 18:57	07:04 16:53	07:57 09:55-10:09/14 16:10 09:17-09:41/24	08:22 10:00-10:28/28 16:12 09:36-09:49/13
31	05:35 06:15-06:32/17 21:07	06:24 07:04-07:21/17 20:06		07:06 16:51		08:22 10:01-10:28/27 16:13 09:36-09:50/14
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	399	647	1200	8	474	1215

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 15B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (335)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 09:09-09:15/6 16:15	07:56 08:49-09:08/19 17:02	07:03 17:53	06:52 18:01-18:27/26 19:47	05:48 20:38	05:03 05:40-05:52/12 21:23
2	08:22 09:09-09:17/8 16:16	07:54 08:49-09:07/18 17:04	07:00 17:55	06:50 18:01-18:26/25 19:49 07:22-07:27/5	05:46 20:39	05:02 05:40-05:53/13 21:24
3	08:22 09:09-09:18/9 16:17	07:52 08:49-09:07/18 17:06	06:58 17:57	06:48 18:02-18:24/22 19:50 07:18-07:28/10	05:44 20:41	05:01 05:40-05:53/13 21:25
4	08:22 09:08-09:19/11 16:18	07:51 08:50-09:07/17 17:08	06:56 17:59	06:45 18:04-18:23/19 19:52 07:17-07:29/12	05:42 20:43	05:01 05:39-05:53/14 21:26
5	08:21 09:08-09:20/12 16:19	07:49 08:51-09:06/15 17:09	06:54 18:01	06:43 18:06-18:21/15 19:54 07:16-07:30/14	05:40 20:44	05:00 05:40-05:54/14 21:27
6	08:21 09:09-09:21/12 16:20	07:48 08:52-09:05/13 17:11	06:52 18:02	06:41 18:08-18:16/8 19:56 07:16-07:30/14	05:39 20:46	04:59 05:40-05:54/14 21:28
7	08:21 09:08-09:22/14 16:22	07:46 08:54-09:03/9 17:13	06:49 18:04	06:39 07:15-07:29/14 19:57	05:37 20:47	04:59 05:40-05:55/15 21:29
8	08:20 09:08-09:22/14 16:23	07:44 17:15	06:47 18:06	06:36 07:15-07:28/13 19:59 07:07-07:14/7	05:35 20:49	04:58 05:41-05:55/14 21:30
9	08:20 09:09-09:24/15 16:24	07:42 17:17	06:45 07:23-07:31/8 18:08	06:34 07:16-07:27/11 20:01 07:05-07:15/10	05:33 20:51	04:58 05:40-05:55/15 21:31
10	08:19 09:08-09:24/16 16:26	07:41 17:19	06:43 07:21-07:34/13 18:09	06:32 07:18-07:26/8 20:02 07:04-07:16/12	05:32 20:52	04:57 05:41-05:55/14 21:32
11	08:19 09:08-09:25/17 16:27	07:39 17:21	06:40 07:19-07:34/15 18:11	06:30 07:03-07:17/14 20:04	05:30 20:54	04:57 05:41-05:56/15 21:32
12	08:18 09:09-09:26/17 16:28	07:37 17:22	06:38 07:18-07:35/17 18:13	06:27 07:02-07:16/14 20:06	05:28 20:55	04:57 05:41-05:55/14 21:33
13	08:17 09:09-09:26/17 16:30	07:35 17:24	06:36 07:13-07:35/22 18:15	06:25 07:02-07:15/13 20:07	05:27 20:57	04:56 05:41-05:55/14 21:34
14	08:17 09:09-09:27/18 16:31	07:33 17:26	06:34 07:11-07:34/23 18:16	06:23 07:02-07:15/13 20:09	05:25 20:59	04:56 05:42-05:56/14 21:34
15	08:16 09:09-09:27/18 16:33	07:31 17:28	06:31 07:09-07:34/25 18:18	06:21 07:03-07:14/11 20:11	05:24 21:00	04:56 05:42-05:56/14 21:35
16	08:15 09:09-09:27/18 16:35	07:29 17:30	06:29 07:09-07:34/25 18:20	06:19 07:05-07:12/7 20:12	05:22 21:02	04:56 05:42-05:56/14 21:35
17	08:14 09:09-09:28/19 16:36	07:27 17:32	06:27 07:08-07:32/24 18:22	06:17 20:14	05:21 21:03	04:56 05:43-05:56/13 21:36
18	08:13 09:10-09:28/18 16:38	07:25 17:34	06:24 07:08-07:31/23 18:23 07:00-07:03/3	06:14 20:16	05:19 21:05	04:56 05:43-05:57/14 21:36
19	08:12 09:09-09:28/19 16:39	07:23 17:35	06:22 17:15-17:21/6 06:57-07:06/9 18:25 07:08-07:29/21	06:12 20:18	05:18 21:06	04:56 05:43-05:57/14 21:37
20	08:11 09:10-09:28/18 16:41	07:21 17:37	06:20 17:10-17:24/14 06:55-07:08/13 18:27 07:09-07:23/14	06:10 20:19	05:16 21:08	04:56 05:43-05:57/14 21:37
21	08:10 09:11-09:29/18 16:43	07:19 17:39	06:18 17:08-17:27/19 06:53-07:08/15 18:28 07:09-07:21/12	06:08 20:21	05:15 21:09	04:56 05:43-05:57/14 21:37
22	08:09 09:11-09:29/18 16:44	07:17 17:41	06:15 17:06-17:28/22 06:53-07:08/15 18:30 07:10-07:19/9	06:06 20:23	05:14 21:10	04:56 05:44-05:58/14 21:37
23	08:08 09:11-09:28/17 16:46	07:15 17:43	06:13 17:04-17:28/24 18:32 06:53-07:08/15	06:04 20:24	05:12 21:12	04:56 05:44-05:58/14 21:38
24	08:07 09:13-09:28/15 16:48 08:52-09:00/8	07:13 17:44	06:11 17:03-17:29/26 18:33 06:52-07:07/15	06:02 20:26	05:11 21:13	04:57 05:44-05:58/14 21:38
25	08:05 09:14-09:28/14 16:50 08:51-09:03/12	07:11 17:46	06:08 17:02-17:30/28 18:35 06:53-07:06/13	06:00 20:28	05:10 21:14	04:57 05:45-05:58/13 21:38
26	08:04 09:15-09:27/12 16:51 08:50-09:03/13	07:09 17:48	06:06 17:02-17:31/29 18:37 06:54-07:05/11	05:58 20:29	05:09 21:16	04:57 05:45-05:58/13 21:38
27	08:03 09:17-09:26/9 16:53 08:50-09:05/15	07:07 17:50	06:04 17:01-17:30/29 18:39 06:56-07:01/5	05:56 20:31	05:08 05:44-05:48/4 21:17	04:58 05:44-05:58/14 21:38
28	08:01 08:49-09:05/16 16:55	07:05 17:52	06:01 17:01-17:30/29 18:40	05:54 20:33	05:07 05:43-05:50/7 21:18	04:58 05:45-05:59/14 21:38
29	08:00 08:49-09:07/18 16:57		06:59 18:01-18:30/29 19:42	05:52 20:34	05:06 05:42-05:51/9 21:20	04:59 05:45-05:59/14 21:38
30	07:59 08:48-09:07/19 16:59		06:57 18:00-18:29/29 19:44	05:50 20:36	05:05 05:41-05:51/10 21:21	04:59 05:45-05:59/14 21:37
31	07:57 08:48-09:07/19 17:00		06:55 18:01-18:28/27 19:45		05:04 05:40-05:52/12 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	519	109	676	317	42	416

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 15B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (335)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 05:46-06:00/14 21:37	05:36 21:05	06:26 07:02-07:16/14 20:04	07:14 07:54-08:14/20 18:55	07:08 16:49	07:58 08:50-09:07/17 16:09
2	05:01 05:45-05:59/14 21:37	05:38 21:04	06:27 07:16-07:24/8 20:02 07:02-07:14/12	07:16 07:57-08:13/16 18:52	07:09 16:47	08:00 08:51-09:07/16 16:08
3	05:01 05:46-06:00/14 21:36	05:39 21:02	06:29 07:14-07:25/11 19:59 07:03-07:13/10	07:17 07:58-08:12/14 18:50	07:11 08:26-08:30/4 16:45	08:01 08:52-09:07/15 16:08
4	05:02 05:46-06:00/14 21:36	05:41 21:00	06:30 07:12-07:25/13 19:57 07:04-07:11/7	07:19 07:59-08:09/10 18:48	07:13 08:23-08:33/10 16:44	08:02 08:53-09:07/14 16:07
5	05:03 05:46-06:00/14 21:35	05:42 20:59	06:32 07:12-07:26/14 19:55	07:21 08:03-08:06/3 18:46	07:15 08:22-08:35/13 16:42	08:04 08:53-09:07/14 16:07
6	05:04 05:46-06:00/14 21:35	05:44 20:57	06:34 18:05-18:12/7 19:53 07:11-07:25/14	07:22 18:43	07:17 08:21-08:36/15 16:40	08:05 08:55-09:08/13 16:06
7	05:05 05:46-06:00/14 21:34	05:45 20:55	06:35 18:01-18:16/15 19:50 07:11-07:25/14	07:24 18:41	07:18 08:20-08:37/17 16:38	08:06 08:55-09:07/12 16:06
8	05:06 05:47-06:01/14 21:34	05:47 20:53	06:37 17:58-18:17/19 19:48 07:11-07:23/12	07:26 18:39	07:20 08:20-08:38/18 16:37	08:07 08:56-09:07/11 16:05
9	05:07 05:47-06:01/14 21:33	05:49 20:52	06:38 17:57-18:18/21 19:46 07:12-07:22/10	07:28 18:37	07:22 08:20-08:38/18 16:35	08:09 08:57-09:06/9 16:05
10	05:07 05:48-06:01/13 21:32	05:50 20:50	06:40 17:54-18:19/25 19:43 07:15-07:20/5	07:29 18:34	07:24 08:20-08:38/18 16:33	08:10 08:58-09:06/8 16:05
11	05:09 05:48-06:01/13 21:32	05:52 20:48	06:42 17:54-18:20/26 19:41	07:31 18:32	07:25 08:20-08:39/19 16:32	08:11 09:00-09:06/6 16:05
12	05:10 05:49-06:00/11 21:31	05:53 20:46	06:43 17:53-18:20/27 19:39	07:33 18:30	07:27 08:20-08:39/19 16:30	08:12 09:02-09:06/4 16:05
13	05:11 05:49-06:00/11 21:30	05:55 20:44	06:45 17:51-18:20/29 19:36	07:34 18:28	07:29 08:21-08:38/17 16:29	08:13 16:05
14	05:12 05:50-06:00/10 21:29	05:57 20:42	06:47 17:51-18:20/29 19:34	07:36 18:26	07:31 08:21-08:37/16 16:27	08:14 16:05
15	05:13 05:51-05:59/8 21:28	05:58 20:40	06:48 17:50-18:19/29 19:32	07:38 18:23	07:32 08:49-08:58/9 16:26 08:22-08:37/15	08:15 16:05
16	05:14 05:52-05:58/6 21:27	06:00 20:38	06:50 17:50-18:19/29 19:29 07:46-07:49/3	07:39 18:21	07:34 08:48-09:00/12 16:25 08:23-08:36/13	08:16 16:05
17	05:15 21:26	06:01 20:36	06:51 17:49-18:18/29 19:27 07:43-07:53/10	07:41 18:19	07:36 08:47-09:01/14 16:23 08:24-08:36/12	08:16 16:05
18	05:17 21:25	06:03 20:34	06:53 17:50-18:18/28 19:25 07:41-07:53/12	07:43 18:17	07:38 08:47-09:02/15 16:22 08:26-08:34/8	08:17 16:05
19	05:18 21:24	06:05 20:32	06:55 17:50-18:17/27 19:23 07:40-07:54/14	07:45 18:15	07:39 08:46-09:03/17 16:21	08:18 16:05
20	05:19 21:23	06:06 20:30	06:56 17:50-18:15/25 19:20 07:39-07:53/14	07:46 18:13	07:41 08:46-09:04/18 16:19	08:19 16:06
21	05:20 21:21	06:08 20:28	06:58 17:51-18:14/23 07:39-07:53/14 19:18 07:57-08:04/7	07:48 18:11	07:43 08:46-09:04/18 16:18	08:19 16:06
22	05:22 21:20	06:09 20:26	06:59 17:52-18:12/20 07:39-07:53/14 19:16 07:55-08:06/11	07:50 18:09	07:44 08:46-09:04/18 16:17	08:20 16:07
23	05:23 21:19	06:11 20:24	07:01 17:54-18:10/16 19:13 07:38-08:07/29	07:52 18:06	07:46 08:46-09:05/19 16:16	08:20 16:07
24	05:25 21:17	06:13 20:21	07:03 17:57-18:07/10 07:40-07:50/10 19:11 07:52-08:11/19	07:53 18:04	07:48 08:47-09:05/18 16:15	08:21 16:08
25	05:26 21:16	06:14 20:19	07:04 07:50-08:13/23 19:09 07:41-07:47/6	06:55 17:02	07:49 08:47-09:06/19 16:14	08:21 16:08
26	05:27 21:15	06:16 20:17	07:06 07:50-08:14/24 19:06	06:57 17:00	07:51 08:47-09:05/18 16:13	08:21 16:09
27	05:29 21:13	06:17 07:06-07:14/8 20:15	07:08 07:50-08:15/25 19:04	06:59 16:58	07:52 08:48-09:06/18 16:12	08:22 16:10
28	05:30 21:12	06:19 07:04-07:15/11 20:13	07:09 07:50-08:15/25 19:02	07:00 16:57	07:54 08:49-09:07/18 16:11	08:22 16:11
29	05:32 21:10	06:21 07:03-07:16/13 20:10	07:11 07:51-08:15/24 18:59	07:02 16:55	07:55 08:49-09:06/17 16:10	08:22 16:12
30	05:33 21:09	06:22 07:03-07:16/13 20:08	07:13 07:52-08:15/23 18:57	07:04 16:53	07:57 08:50-09:07/17 16:10	08:22 16:12
31	05:35 21:07	06:24 07:02-07:16/14 20:06		07:06 16:51		08:22 09:11-09:14/3 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	198	59	885	63	497	142

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 18B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (336)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 16:15	07:56 17:02	07:03 09:20-09:39/19 17:53 08:42-09:16/34	06:52 07:36-07:59/23 19:47	05:48 07:15-07:31/16 20:38	05:03 06:04-06:15/11 21:23 05:49-05:55/6
2	08:22 16:16	07:54 17:04	07:00 09:23-09:36/13 17:55 08:42-09:16/34	06:50 07:36-08:00/24 19:49	05:46 07:16-07:28/12 20:39	05:02 06:05-06:15/10 21:24 05:49-05:57/8
3	08:22 16:17	07:53 17:06	06:58 08:41-09:14/33 17:57	06:48 07:34-07:59/25 19:50	05:44 07:20-07:26/6 20:41	05:01 06:06-06:14/8 21:25 05:48-05:58/10
4	08:22 16:18	07:51 17:08	06:56 08:42-09:14/32 17:59 08:06-08:18/12	06:46 07:34-08:01/27 19:52	05:42 06:23-06:31/8 20:43	05:01 06:08-06:13/5 21:26 05:48-05:59/11
5	08:21 16:19	07:49 09:27-09:36/9 17:10	06:54 08:43-09:13/30 18:01 08:03-08:21/18	06:43 07:34-08:03/29 19:54	05:40 06:21-06:32/11 20:44	05:00 05:47-06:00/13 21:27
6	08:21 16:20	07:48 09:23-09:40/17 17:11	06:52 08:44-09:12/28 18:02 08:02-08:23/21	06:41 07:34-08:04/30 19:56	05:39 06:20-06:33/13 20:46	04:59 05:46-06:00/14 21:28
7	08:21 16:22	07:46 09:21-09:42/21 17:13	06:49 08:44-09:09/25 18:04 07:59-08:23/24	06:39 07:34-08:04/30 19:57	05:37 06:18-06:35/17 20:48	04:59 05:46-06:01/15 21:29
8	08:20 16:23	07:44 09:19-09:44/25 17:15	06:47 08:45-09:08/23 18:06 07:58-08:24/26	06:36 07:35-08:05/30 19:59	05:35 06:15-06:35/20 20:49	04:58 05:47-06:02/15 21:30
9	08:20 16:24	07:42 09:18-09:45/27 17:17	06:45 08:47-09:05/18 18:08 07:58-08:25/27	06:34 07:36-08:05/29 20:01	05:33 06:15-06:36/21 20:51	04:58 05:46-06:01/15 21:31
10	08:19 16:26	07:41 09:17-09:47/30 17:19	06:43 08:51-09:02/11 18:09 07:57-08:25/28	06:32 07:38-08:05/27 20:02	05:32 06:13-06:35/22 20:52	04:57 05:46-06:02/16 21:32
11	08:19 16:27	07:39 09:16-09:48/32 17:21	06:40 07:56-08:25/29 18:11	06:30 07:38-08:05/27 20:04	05:30 06:12-06:35/23 20:54	04:57 05:47-06:03/16 21:32
12	08:18 16:29	07:37 09:15-09:49/34 17:22	06:38 07:56-08:25/29 18:13	06:28 07:37-08:04/27 20:06	05:28 06:12-06:35/23 20:56	04:57 05:46-06:02/16 21:33
13	08:17 16:30	07:35 09:15-09:50/35 17:24	06:36 07:56-08:25/29 18:15	06:25 07:37-08:04/27 20:07	05:27 06:11-06:34/23 20:57	04:56 05:46-06:03/17 21:34
14	08:17 16:32	07:33 09:14-09:50/36 17:26	06:34 17:37-17:42/5 18:16 07:55-08:24/29	06:23 07:37-08:03/26 20:09 07:23-07:31/8	05:25 06:12-06:34/22 20:59 06:07-06:10/3	04:56 05:46-06:03/17 21:34
15	08:16 16:33	07:31 09:14-09:51/37 17:28	06:31 17:34-17:44/10 18:18 07:55-08:23/28	06:21 07:38-08:02/24 20:11 07:20-07:34/14	05:24 06:05-06:34/29 21:00	04:56 05:47-06:04/17 21:35
16	08:15 16:35	07:29 09:13-09:51/38 17:30	06:29 17:33-17:46/13 07:12-07:20/8 18:20 07:56-08:23/27	06:19 07:38-08:01/23 20:12 07:18-07:35/17	05:22 06:03-06:33/30 21:02	04:56 05:47-06:04/17 21:35
17	08:14 16:36	07:27 09:13-09:51/38 17:32 08:54-09:07/13	06:27 17:32-17:45/13 07:09-07:21/12 18:22 07:55-08:21/26	06:17 07:39-08:00/21 07:01-07:09/8 20:14 07:16-07:37/21	05:21 06:02-06:33/31 21:03	04:56 05:47-06:04/17 21:36
18	08:13 16:38	07:25 09:13-09:51/38 17:34 08:51-09:10/19	06:25 17:31-17:46/15 07:07-07:23/16 18:23 07:57-08:20/23	06:14 07:40-07:58/18 06:59-07:11/12 20:16 07:15-07:38/23	05:19 06:02-06:32/30 21:05	04:56 05:47-06:05/18 21:36
19	08:12 16:39	07:23 09:13-09:51/38 17:35 08:49-09:12/23	06:22 17:32-17:46/14 07:07-07:24/17 18:25 07:58-08:18/20	06:12 07:41-07:55/14 06:57-07:13/16 20:18 07:14-07:38/24	05:18 06:00-06:29/29 21:06	04:56 05:47-06:05/18 21:37
20	08:11 16:41	07:21 08:47-09:50/63 17:37	06:20 17:31-17:44/13 07:06-07:24/18 18:27 08:00-08:16/16	06:10 07:43-07:52/9 20:19 06:55-07:38/43	05:16 06:00-06:27/27 21:08	04:56 05:47-06:05/18 21:37
21	08:10 16:43	07:19 08:46-09:50/64 17:39	06:18 17:32-17:43/11 07:05-07:23/18 18:28 08:02-08:12/10	06:08 06:54-07:38/44 20:21	05:15 06:00-06:27/27 21:09	04:56 05:47-06:05/18 21:37
22	08:09 16:44	07:17 08:45-09:49/64 17:41	06:15 17:34-17:42/8 18:30 07:05-07:23/18	06:06 06:54-07:38/44 20:23	05:14 06:01-06:26/25 21:10	04:56 05:48-06:06/18 21:38
23	08:08 16:46	07:15 08:44-09:49/65 17:43	06:13 07:05-07:23/18 18:32	06:04 06:53-07:37/44 20:24	05:12 06:01-06:25/24 21:12	04:56 05:48-06:06/18 21:38
24	08:07 16:48	07:13 08:43-09:48/65 17:44	06:11 07:05-07:21/16 18:34	06:02 06:53-07:37/44 20:26	05:11 06:20-06:22/2 21:13 06:01-06:18/17	04:57 05:48-06:06/18 21:38
25	08:05 16:50	07:11 08:43-09:47/64 17:46	06:08 07:06-07:20/14 18:35 06:51-06:55/4	06:00 06:53-07:37/44 20:28	05:10 06:01-06:18/17 21:15	04:57 05:49-06:06/17 21:38
26	08:04 16:51	07:09 08:43-09:46/63 17:48	06:06 07:07-07:19/12 18:37 06:47-06:58/11	05:58 06:54-07:37/43 20:29	05:09 06:01-06:18/17 21:16	04:57 05:49-06:06/17 21:38
27	08:03 16:53	07:07 08:41-09:43/62 17:50	06:04 07:09-07:15/6 18:39 06:45-06:58/13	05:56 07:12-07:36/24 20:31 06:55-07:11/16	05:08 06:02-06:17/15 21:17	04:58 05:49-06:06/17 21:38
28	08:01 16:55	07:05 09:18-09:41/23 17:52 08:41-09:16/35	06:02 06:43-07:00/17 18:40	05:54 07:12-07:35/23 20:33 06:55-07:10/15	05:07 06:02-06:17/15 21:18	04:58 05:49-06:07/18 21:38
29	08:00 16:57		06:59 07:43-08:00/17 19:42	05:52 07:13-07:34/21 20:34 06:56-07:09/13	05:06 06:02-06:17/15 21:20	04:59 05:49-06:06/17 21:38
30	07:59 16:59		06:57 07:40-07:59/19 19:44	05:50 07:14-07:33/19 20:36 06:58-07:06/8	05:05 06:03-06:16/13 21:21	04:59 05:50-06:07/17 21:37
31	07:57 17:00		06:55 07:38-07:59/21 19:45		05:04 06:03-06:15/12 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	0	1078	1099	1078	615	503

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 18B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (336)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 05:51-06:07/16 21:37	05:36 06:23-06:46/23 21:06	06:26 07:37-08:04/27 20:04	07:14 08:34-09:04/30 18:55	07:08 08:46-09:16/30 16:49	07:58 16:09
2	05:01 05:50-06:07/17 21:37	05:38 06:23-06:45/22 21:04	06:27 07:36-08:03/27 20:02	07:16 08:35-09:04/29 18:52	07:09 08:47-09:15/28 16:47	08:00 16:08
3	05:01 05:51-06:07/16 21:36	05:39 06:24-06:46/22 21:02	06:29 07:34-08:03/29 19:59	07:18 09:31-09:37/6 18:50 08:35-09:03/28	07:11 08:49-09:13/24 16:45	08:01 16:08
4	05:02 05:52-06:07/15 21:36	05:41 06:25-06:45/20 21:01	06:30 07:32-08:02/30 19:57	07:19 09:26-09:41/15 18:48 08:34-09:02/28	07:13 08:51-09:11/20 16:44	08:02 16:07
5	05:03 05:52-06:07/15 21:36	05:42 06:27-06:45/18 20:59	06:32 07:31-08:01/30 19:55	07:21 09:23-09:44/21 18:46 08:35-09:01/26	07:15 08:54-09:09/15 16:42	08:04 16:07
6	05:04 05:52-06:06/14 21:35	05:44 06:29-06:44/15 20:57	06:34 07:29-07:59/30 19:53	07:23 09:21-09:46/25 18:43 08:36-09:00/24	07:17 08:57-09:06/9 16:40	08:05 16:06
7	05:05 05:53-06:06/13 21:34	05:45 06:30-06:43/13 20:55	06:35 07:29-07:58/29 19:50	07:24 09:19-09:46/27 18:41 08:36-08:58/22	07:18 16:38	08:06 16:06
8	05:06 06:15-06:19/4 21:34 05:54-06:06/12	05:47 06:31-06:41/10 20:53	06:37 07:28-07:56/28 19:48	07:26 09:18-09:47/29 18:39 08:37-08:57/20	07:20 16:37	08:08 16:05
9	05:07 06:14-06:21/7 21:33 05:55-06:06/11	05:49 06:34-06:40/6 20:52	06:38 07:28-07:53/25 19:46	07:28 09:17-09:48/31 18:37 08:40-08:55/15	07:22 16:35	08:09 16:05
10	05:08 06:13-06:22/9 21:32 05:56-06:05/9	05:50 07:27-07:36/9 20:50	06:40 07:29-07:53/24 19:43	07:29 09:17-09:49/32 18:34 08:43-08:51/8	07:24 16:33	08:10 16:05
11	05:09 06:12-06:23/11 21:32 05:57-06:04/7	05:52 07:25-07:39/14 20:48	06:42 07:29-07:52/23 19:41	07:31 10:00-10:05/5 18:32 09:15-09:49/34	07:25 16:32	08:11 16:05
12	05:10 06:12-06:24/12 21:31 05:59-06:02/3	05:53 07:23-07:40/17 20:46 07:09-07:11/2	06:43 07:30-07:52/22 19:39	07:33 09:55-10:10/15 18:30 09:15-09:49/34	07:27 16:30	08:12 16:05
13	05:11 06:12-06:24/12 21:30	05:55 07:22-07:41/19 20:44 07:06-07:15/9	06:45 07:30-07:51/21 19:36	07:34 09:52-10:13/21 18:28 09:15-09:49/34	07:29 16:29	08:13 16:05
14	05:12 06:11-06:25/14 21:29	05:57 07:20-07:42/22 20:42 07:03-07:17/14	06:47 07:33-07:51/18 19:34	07:36 09:50-10:15/25 18:26 09:15-09:49/34	07:31 16:27	08:14 16:05
15	05:13 06:11-06:25/14 21:28	05:58 07:20-07:43/23 20:40 07:03-07:18/15	06:48 07:33-07:49/16 19:32	07:38 09:15-10:17/62 18:23	07:32 16:26	08:15 16:05
16	05:14 06:10-06:26/16 21:27	06:00 07:01-07:43/42 20:38	06:50 08:00-08:02/2 19:30 07:34-07:48/14	07:39 09:14-10:17/63 18:21	07:34 16:25	08:16 16:05
17	05:15 06:10-06:26/16 21:26	06:01 07:01-07:44/43 20:36	06:51 07:56-08:07/11 19:27 07:35-07:47/12	07:41 09:14-10:19/65 18:19	07:36 16:23	08:16 16:05
18	05:17 06:11-06:27/16 21:25	06:03 07:00-07:43/43 20:34	06:53 07:54-08:07/13 19:25 07:37-07:43/6	07:43 09:15-10:19/64 18:17	07:38 16:22	08:17 16:05
19	05:18 06:10-06:27/17 21:24	06:05 07:00-07:44/44 20:32	06:55 07:53-08:09/16 19:23	07:45 09:15-10:20/65 18:15	07:39 16:21	08:18 16:06
20	05:19 06:28-06:33/5 21:23 06:10-06:27/17	06:06 06:59-07:43/44 20:30	06:56 07:51-08:08/17 19:20	07:46 09:16-10:21/65 18:13	07:41 16:19	08:19 16:06
21	05:21 06:10-06:35/25 21:21	06:08 06:59-07:43/44 20:28	06:58 18:20-18:27/7 19:18 07:50-08:09/19	07:48 09:17-10:21/64 18:11	07:43 16:18	08:19 16:06
22	05:22 06:10-06:36/26 21:20	06:09 06:59-07:42/43 20:26	06:59 18:17-18:28/11 07:50-08:09/19 19:16 08:48-08:56/8	07:50 09:18-10:20/62 18:09	07:44 16:17	08:20 16:07
23	05:23 06:11-06:37/26 21:19	06:11 07:47-07:58/11 20:24 07:00-07:42/42	07:01 18:16-18:29/13 07:50-08:08/18 19:13 08:44-08:59/15	07:52 09:42-10:21/39 18:07 09:19-09:41/22	07:46 16:16	08:20 16:07
24	05:25 06:11-06:38/27 21:18	06:13 07:44-08:00/16 07:00-07:15/15 20:21 07:17-07:41/24	07:03 18:15-18:29/14 07:50-08:08/18 19:11 08:42-09:01/19	07:53 09:42-10:21/39 18:04 09:21-09:39/18	07:48 16:15	08:21 16:08
25	05:26 06:11-06:41/30 21:16	06:14 07:43-08:01/18 07:02-07:14/12 20:19 07:18-07:40/22	07:04 18:14-18:28/14 07:50-08:06/16 19:09 08:40-09:02/22	06:55 08:43-09:20/37 17:02 08:24-08:36/12	07:49 16:14	08:21 16:08
26	05:27 06:12-06:43/31 21:15	06:16 07:41-08:02/21 07:03-07:11/8 20:17 07:18-07:38/20	07:06 18:14-18:28/14 07:51-08:05/14 19:06 08:38-09:03/25	06:57 08:43-09:20/37 17:00	07:51 16:13	08:21 16:09
27	05:29 06:13-06:43/30 21:13	06:18 07:40-08:03/23 20:15 07:20-07:37/17	07:08 18:15-18:28/13 07:53-08:03/10 19:04 08:38-09:04/26	06:59 08:43-09:20/37 16:59	07:52 16:12	08:22 16:10
28	05:30 06:14-06:44/30 21:12	06:19 07:38-08:03/25 20:13 07:21-07:34/13	07:09 18:15-18:26/11 19:02 08:36-09:04/28	07:00 08:44-09:20/36 16:57	07:54 16:11	08:22 16:11
29	05:32 06:16-06:45/29 21:10	06:21 07:38-08:04/26 20:11 07:24-07:31/7	07:11 18:16-18:24/8 18:59 08:36-09:04/28	07:02 08:44-09:19/35 16:55	07:55 16:10	08:22 16:12
30	05:33 06:22-06:45/23 21:09	06:22 07:38-08:05/27 20:08	07:13 08:35-09:05/30 18:57	07:04 08:45-09:18/33 16:53	07:57 16:10	08:22 16:12
31	05:35 06:23-06:46/23 21:07	06:24 07:37-08:04/27 20:06		07:06 08:45-09:17/32 16:51		08:22 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	618	970	890	1505	126	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 19B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (338)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 16:15	07:56 08:49-09:01/12 17:02	07:03 16:43-17:01/18 17:53 08:04-08:18/14	06:52 07:34-07:47/13 19:47	05:48 06:26-06:45/19 20:38	05:03 05:51-06:21/30 21:23
2	08:22 16:16	07:54 08:48-09:02/14 17:04	07:00 16:44-17:00/16 17:55 08:06-08:16/10	06:50 07:35-07:46/11 19:49	05:46 06:25-06:43/18 20:39	05:02 05:53-06:22/29 21:24
3	08:22 16:17	07:52 08:46-09:03/17 17:06	06:58 16:44-16:58/14 17:57	06:48 07:36-07:43/7 19:50	05:44 06:26-06:42/16 20:41	05:01 05:53-06:22/29 21:25
4	08:22 16:18	07:51 08:46-09:05/19 17:08	06:56 16:46-16:56/10 17:59 07:28-07:36/8	06:45 19:52	05:42 06:25-06:42/17 20:43	05:01 05:54-06:21/27 21:26
5	08:21 16:19	07:49 08:45-09:06/21 17:10	06:54 16:49-16:53/4 18:01 07:27-07:38/11	06:43 19:54	05:40 06:25-06:40/15 20:44	05:00 05:54-06:22/28 21:27
6	08:21 16:20	07:48 08:45-09:06/21 17:11	06:52 07:26-07:39/13 18:02	06:41 19:56	05:39 06:25-06:39/14 20:46 06:17-06:20/3	04:59 05:54-06:22/28 21:28
7	08:21 16:22	07:46 08:45-09:06/21 17:13	06:49 07:24-07:38/14 18:04	06:39 19:57	05:37 06:27-06:39/12 20:48 06:15-06:23/8	04:59 05:56-06:22/26 21:29
8	08:20 16:23	07:44 08:44-09:06/22 17:15 08:35-08:42/7	06:47 07:24-07:38/14 18:06	06:36 07:08-07:12/4 19:59	05:35 06:27-06:37/10 20:49 06:13-06:24/11	04:58 05:56-06:22/26 21:30
9	08:20 16:24	07:42 08:33-09:06/33 17:17	06:45 07:25-07:38/13 18:08	06:34 07:05-07:14/9 20:01	05:33 06:29-06:36/7 20:51 06:12-06:26/14	04:58 05:55-06:22/27 21:31
10	08:19 16:26	07:41 08:32-09:07/35 17:19	06:43 07:26-07:37/11 18:09	06:32 07:04-07:15/11 20:02	05:32 06:11-06:26/15 20:52	04:57 05:55-06:22/27 21:32
11	08:19 16:27	07:39 08:31-09:06/35 17:21	06:40 07:26-07:34/8 07:22-07:25/3 18:11 07:12-07:18/6	06:30 07:01-07:16/15 20:04	05:30 06:10-06:26/16 20:54	04:57 05:55-06:22/27 21:32
12	08:18 16:29	07:37 08:30-09:06/36 17:22	06:38 07:10-07:29/19 18:13	06:28 06:58-07:15/17 20:06	05:28 06:11-06:27/16 20:55	04:57 05:54-06:21/27 21:33
13	08:17 16:30	07:35 08:30-09:05/35 17:24	06:36 07:09-07:31/22 18:15	06:25 06:57-07:15/18 20:07	05:27 06:10-06:26/16 20:57 06:04-06:07/3	04:56 05:54-06:22/28 21:34
14	08:17 16:31	07:33 08:29-09:04/35 17:26	06:34 07:06-07:31/25 18:16	06:23 06:56-07:14/18 20:09	05:25 06:02-06:27/25 20:59	04:56 05:54-06:22/28 21:34
15	08:16 16:33	07:31 08:29-09:02/33 17:28	06:31 07:05-07:31/26 18:18	06:21 06:56-07:13/17 20:11	05:24 06:01-06:27/26 21:00	04:56 05:54-06:22/28 21:35
16	08:15 16:35	07:29 08:53-08:58/5 17:30 08:29-08:50/21	06:29 07:04-07:32/28 18:20	06:19 06:49-07:12/23 20:12	05:22 05:58-06:26/28 21:02	04:56 05:54-06:22/28 21:35
17	08:14 16:36	07:27 08:30-08:49/19 17:32	06:27 07:03-07:31/28 18:22	06:17 06:48-07:08/20 20:14	05:21 05:57-06:26/29 21:03	04:56 05:54-06:22/28 21:36
18	08:13 16:38	07:25 08:30-08:49/19 17:34	06:25 07:03-07:30/27 18:23	06:14 06:47-07:07/20 20:16	05:19 05:56-06:26/30 21:05	04:56 05:54-06:22/28 21:36
19	08:12 16:39	07:23 08:31-08:48/17 17:35 08:10-08:16/6	06:22 07:03-07:30/27 18:25	06:12 06:46-07:05/19 20:18	05:18 05:54-06:24/30 21:06	04:56 05:54-06:22/28 21:37
20	08:11 16:41	07:21 08:31-08:46/15 17:37 08:06-08:17/11	06:20 07:00-07:29/29 18:27	06:10 06:45-06:58/13 20:19	05:16 05:53-06:23/30 21:08	04:56 05:54-06:22/28 21:37
21	08:10 16:43	07:19 08:33-08:44/11 17:39 08:05-08:19/14	06:18 06:58-07:13/15 18:28 07:16-07:26/10	06:08 06:45-06:57/12 20:21	05:15 05:52-06:22/30 21:09	04:56 05:54-06:22/28 21:37
22	08:09 16:44	07:17 16:48-16:57/9 08:04-08:20/16 17:41 08:36-08:40/4	06:15 07:19-07:23/4 18:30 06:57-07:14/17	06:06 06:45-06:57/12 20:23 06:39-06:42/3	05:14 05:52-06:19/27 21:10	04:56 05:55-06:23/28 21:37
23	08:08 16:46	07:15 16:46-16:59/13 17:43 08:03-08:21/18	06:13 06:57-07:14/17 18:32	06:04 06:46-06:56/10 20:24 06:36-06:45/9	05:12 05:51-06:20/29 21:12	04:56 05:55-06:23/28 21:38
24	08:07 16:48	07:13 16:45-17:00/15 17:44 08:03-08:21/18	06:11 06:55-07:13/18 18:34	06:02 06:47-06:54/7 20:26 06:35-06:46/11	05:11 05:51-06:21/30 21:13	04:57 05:55-06:23/28 21:38
25	08:05 16:50	07:11 16:44-17:01/17 17:46 08:03-08:21/18	06:08 06:56-07:13/17 18:35	06:00 06:34-06:47/13 20:28	05:10 05:51-06:21/30 21:15	04:57 05:56-06:24/28 21:38
26	08:04 16:51	07:09 16:43-17:01/18 17:48 08:03-08:21/18	06:06 06:56-07:12/16 18:37 06:39-06:47/8	05:58 06:33-06:48/15 20:29	05:09 05:51-06:21/30 21:16	04:57 05:56-06:24/28 21:38
27	08:03 16:53	07:07 16:42-17:01/19 17:50 08:02-08:20/18	06:04 06:56-07:11/15 18:39 06:36-06:47/11	05:56 06:31-06:48/17 20:31	05:08 05:51-06:22/31 21:17	04:58 05:56-06:24/28 21:38
28	08:01 16:55	07:05 16:43-17:01/18 17:52 08:03-08:19/16	06:02 06:57-07:09/12 18:40 06:35-06:48/13	05:54 06:30-06:47/17 20:33	05:07 05:51-06:22/31 21:18	04:58 05:57-06:25/28 21:38
29	08:00 16:57		06:59 07:59-08:07/8 19:42 07:35-07:49/14	05:52 06:28-06:47/19 20:34	05:06 05:51-06:22/31 21:20	04:59 05:57-06:25/28 21:38
30	07:59 16:59		06:57 07:34-07:48/14 19:44	05:50 06:27-06:46/19 20:36	05:05 05:51-06:22/31 21:21	04:59 05:58-06:26/28 21:37
31	07:57 08:51-08:58/7 17:00		06:55 07:34-07:48/14 19:45		05:04 05:51-06:22/31 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	7	769	641	399	759	835

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem
Annahmen für Schattenwurfberechnung

WEA: 19B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (338)

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 05:59-06:26/27 21:37	05:36 06:21-06:37/16 21:06	06:26 07:00-07:15/15 20:04	07:14 07:48-08:09/21 18:55	07:08 08:01-08:36/35 16:49	07:58 16:09
2	05:01 05:59-06:26/27 21:37	05:38 06:21-06:36/15 21:04	06:27 07:02-07:13/11 20:02	07:16 07:59-08:12/13 18:52 07:49-07:58/9	07:09 08:03-08:36/33 16:47	08:00 16:08
3	05:01 06:00-06:27/27 21:36	05:39 06:41-06:44/3 21:02 06:22-06:36/14	06:29 07:03-07:12/9 19:59	07:18 08:04-08:14/10 18:50 07:53-07:54/1	07:11 08:14-08:36/22 16:45 08:06-08:11/5	08:01 16:08
4	05:02 06:01-06:28/27 21:36	05:41 06:38-06:47/9 21:00 06:22-06:35/13	06:30 07:05-07:09/4 19:57	07:19 08:02-08:14/12 18:48	07:13 08:14-08:36/22 16:44	08:02 16:07
5	05:03 06:01-06:27/26 21:35	05:42 06:37-06:48/11 20:59 06:24-06:34/10	06:32 19:55	07:21 08:02-08:15/13 18:46	07:15 08:15-08:36/21 16:42	08:04 16:07
6	05:04 06:01-06:28/27 21:35	05:44 06:36-06:49/13 20:57 06:25-06:32/7	06:34 19:53	07:23 08:01-08:15/14 18:43	07:17 08:15-08:35/20 16:40	08:05 16:06
7	05:05 06:01-06:28/27 21:34	05:45 06:36-06:50/14 20:55	06:35 19:50	07:24 08:02-08:15/13 18:41	07:18 08:16-08:35/19 16:38	08:06 16:06
8	05:06 06:00-06:29/29 21:34	05:47 06:35-06:50/15 20:53	06:37 19:48	07:26 08:01-08:13/12 18:39	07:20 08:17-08:34/17 16:37	08:08 16:05
9	05:07 06:00-06:29/29 21:33	05:49 06:35-06:51/16 20:52	06:38 07:31-07:37/6 19:46	07:28 17:22-17:30/8 18:37 08:02-08:12/10	07:22 08:18-08:33/15 16:35	08:09 16:05
10	05:08 06:00-06:30/30 21:32	05:50 06:34-06:51/17 20:50	06:40 07:29-07:39/10 19:43	07:29 17:20-17:32/12 18:34 08:04-08:10/6	07:24 08:20-08:32/12 16:33	08:10 16:05
11	05:09 06:00-06:30/30 21:32	05:52 06:35-06:53/18 20:48	06:42 07:27-07:39/12 19:41	07:31 17:17-17:33/16 18:32 08:41-08:47/6	07:25 08:23-08:29/6 16:32	08:11 16:05
12	05:10 06:00-06:30/30 21:31	05:53 06:34-06:53/19 20:46	06:43 07:26-07:40/14 19:39	07:33 17:17-17:33/16 18:30 08:38-08:50/12	07:27 16:30	08:12 16:05
13	05:11 06:00-06:30/30 21:30	05:55 06:35-06:55/20 20:44	06:45 07:25-07:39/14 19:36	07:34 17:16-17:34/18 18:28 08:37-08:52/15	07:29 16:29	08:13 16:05
14	05:12 06:00-06:30/30 21:29	05:57 06:36-06:54/18 20:42	06:47 07:50-07:57/7 19:34 07:25-07:39/14	07:36 17:16-17:34/18 18:26 08:36-08:52/16	07:31 16:27	08:14 16:05
15	05:13 06:00-06:30/30 21:28	05:58 06:37-06:55/18 20:40	06:48 07:47-07:58/11 19:32 07:25-07:38/13	07:38 17:15-17:33/18 18:23 08:35-08:53/18	07:32 16:26	08:15 16:05
16	05:14 05:59-06:30/31 21:27	06:00 06:38-06:54/16 20:38	06:50 07:45-08:00/15 19:30 07:26-07:37/11	07:39 17:15-17:33/18 18:21 08:34-08:52/18	07:34 16:25	08:16 16:05
17	05:15 05:59-06:30/31 21:26	06:01 06:40-06:54/14 20:36	06:51 07:45-08:01/16 19:27 07:27-07:36/9	07:41 17:16-17:32/16 18:19 08:34-08:52/18	07:36 16:23	08:16 16:05
18	05:17 06:00-06:31/31 21:25	06:03 06:40-06:53/13 20:34	06:53 07:43-08:00/17 19:25	07:43 17:16-17:31/15 18:17 08:34-08:52/18	07:38 16:22	08:17 16:05
19	05:18 06:01-06:30/29 21:24	06:05 06:53-07:01/8 20:32 06:41-06:52/11	06:55 07:43-08:01/18 19:23	07:45 17:18-17:30/12 18:15 08:35-08:52/17	07:39 16:21	08:18 16:06
20	05:19 06:01-06:30/29 21:23	06:06 06:51-07:01/10 20:30 06:42-06:50/8	06:56 07:42-08:00/18 19:20	07:46 17:20-17:27/7 08:35-08:51/16 18:13 09:06-09:13/7	07:41 16:19	08:19 16:06
21	05:20 06:01-06:29/28 21:21	06:08 06:51-07:03/12 20:28	06:58 07:42-07:59/17 19:18	07:48 09:04-09:16/12 18:11 08:37-08:50/13	07:43 16:18	08:19 16:06
22	05:22 06:01-06:31/30 21:20	06:09 06:49-07:02/13 20:26	06:59 07:43-07:59/16 19:16 08:02-08:11/9	07:50 09:01-09:17/16 18:09 08:37-08:47/10	07:44 16:17	08:20 16:07
23	05:23 06:03-06:33/30 21:19	06:11 06:49-07:03/14 20:24	07:01 07:43-07:58/15 19:13 07:59-08:12/13	07:52 09:00-09:18/18 18:07 08:41-08:43/2	07:46 16:16	08:20 16:07
24	05:25 06:04-06:34/30 21:17	06:13 06:49-07:08/19 20:21	07:03 07:45-08:13/28 19:11	07:53 08:59-09:18/19 18:04	07:48 16:15	08:21 16:08
25	05:26 06:05-06:35/30 21:16	06:14 06:49-07:10/21 20:19	07:04 07:46-08:13/27 19:09	06:55 07:59-08:19/20 17:02	07:49 16:14	08:21 16:08
26	05:27 06:07-06:36/29 21:15	06:16 06:50-07:10/20 20:17	07:06 07:45-08:13/28 19:06	06:57 08:22-08:29/7 17:00 07:59-08:19/20	07:51 16:13	08:21 16:09
27	05:29 06:08-06:36/28 21:13	06:17 06:51-07:14/23 20:15	07:08 07:46-08:13/27 19:04	06:59 07:59-08:32/33 16:58	07:52 16:12	08:22 16:10
28	05:30 06:10-06:36/26 21:12	06:19 06:57-07:14/17 20:13	07:09 07:45-08:12/27 19:02	07:00 07:59-08:33/34 16:57	07:54 16:11	08:22 16:11
29	05:32 06:12-06:37/25 21:10	06:21 06:57-07:15/18 20:11	07:11 07:46-08:12/26 18:59	07:02 07:59-08:35/36 16:55	07:55 16:10	08:22 16:12
30	05:33 06:21-06:37/16 21:09 06:13-06:20/7	06:22 06:58-07:16/18 20:08	07:13 07:48-08:11/23 18:57	07:04 08:00-08:36/36 16:53	07:57 16:10	08:22 16:12
31	05:35 06:21-06:38/17 21:07	06:24 06:58-07:15/17 20:06		07:06 08:00-08:35/35 16:51		08:22 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	873	538	500	780	227	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 1B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (322)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03 05:43-06:00/17	05:00 05:46-06:11/25	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02 05:43-06:02/19	05:01 05:46-06:10/24	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01 05:42-06:02/20	05:01 05:47-06:10/23	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42	05:01 05:42-06:02/20	05:02 05:47-06:11/24	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00 05:42-06:03/21	05:03 05:47-06:10/23	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59 05:41-06:03/22	05:04 05:48-06:10/22	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59 05:42-06:04/22	05:05 05:48-06:10/22	05:45	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58 05:41-06:04/23	05:05 05:49-06:10/21	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58 05:41-06:05/24	05:06 05:49-06:10/21	05:49	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57 05:42-06:06/24	05:07 05:50-06:09/19	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57 05:41-06:05/24	05:08 05:51-06:09/18	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56 05:41-06:06/25	05:10 05:52-06:08/16	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56 05:42-06:06/24	05:11 05:53-06:08/15	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56 05:42-06:07/25	05:12 05:54-06:07/13	05:57	06:47	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:23	04:56 05:42-06:07/25	05:13 05:55-06:06/11	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56 05:42-06:07/25	05:14 05:57-06:03/6	06:00	06:50	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:20	04:56 05:43-06:08/25	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:56 05:43-06:08/25	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56 05:43-06:08/25	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56 05:43-06:08/25	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56 05:43-06:08/25	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56 05:43-06:08/25	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56 05:44-06:09/25	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57 05:44-06:09/25	05:24	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:33	20:26	21:13	21:38	21:18	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57 05:44-06:09/25	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57 05:44-06:10/26	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08 05:50-05:52/2	04:58 05:44-06:09/25	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07 05:47-05:56/9	04:58 05:45-06:10/25	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06 05:46-05:58/12	04:59 05:45-06:10/25	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05 05:45-05:59/14	04:59 05:46-06:10/24	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04 05:44-06:00/16		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	0	53	710	303	0	0	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 20B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (339)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 09:34-09:40/6	07:56	07:03 07:55-08:03/8	06:52	05:48 06:21-06:31/10	05:03
	16:15 09:09-09:24/15	17:02	17:53 07:36-07:48/12	19:47	20:38	21:23
2	08:22 09:36-09:39/3	07:54	07:00 07:36-07:49/13	06:50	05:46 06:20-06:32/12	05:02
	16:16 09:10-09:25/15	17:04	17:55	19:49	20:39	21:24
3	08:22 09:10-09:26/16	07:52	06:58 07:34-07:48/14	06:48	05:44 06:20-06:33/13	05:01
	16:17	17:06	17:57	19:50	20:41	21:25
4	08:22 09:10-09:26/16	07:51	06:56 07:34-07:48/14	06:45	05:42 06:19-06:33/14	05:01
	16:18	17:08	17:59	19:52	20:43	21:26
5	08:21 09:11-09:27/16	07:49	06:54 07:35-07:48/13	06:43	05:40 06:18-06:33/15	05:00
	16:19	17:10	18:01	19:54	20:44	21:27
6	08:21 09:12-09:28/16	07:48	06:52 07:36-07:47/11	06:41	05:39 06:17-06:32/15	04:59
	16:20	17:11	18:02	19:56	20:46	21:28
7	08:21 09:12-09:28/16	07:46	06:49 07:36-07:45/9	06:39	05:37 06:14-06:33/19	04:59
	16:22	17:13	18:04	19:57	20:47	21:29
8	08:20 09:12-09:28/16	07:44	06:47	06:36	05:35 06:12-06:32/20	04:58
	16:23	17:15	18:06	19:59	20:49	21:30
9	08:20 09:13-09:29/16	07:42 16:04-16:10/6	06:45	06:34	05:33 06:12-06:32/20	04:58
	16:24	17:17	18:08	20:01	20:51	21:31
10	08:19 09:13-09:29/16	07:41 16:01-16:14/13	06:43	06:32	05:32 06:11-06:30/19	04:57
	16:26	17:19	18:09	20:02	20:52	21:32
11	08:19 09:13-09:28/15	07:39 16:00-16:17/17	06:40	06:30	05:30 06:10-06:28/18	04:57
	16:27	17:21	18:11	20:04	20:54	21:32
12	08:18 09:15-09:29/14	07:37 15:58-16:18/20	06:38	06:27	05:28 06:10-06:26/16	04:57
	16:28	17:22	18:13	20:06	20:55	21:33
13	08:17 09:15-09:29/14	07:35 15:57-16:19/22	06:36	06:25	05:27 06:09-06:25/16	04:56
	16:30	17:24	18:15	20:07	20:57	21:34
14	08:17 09:16-09:29/13	07:33 15:56-16:20/24	06:34 07:05-07:07/2	06:23	05:25 06:10-06:26/16	04:56
	16:31	17:26	18:16	20:09	20:59	21:34
15	08:16 09:17-09:29/12	07:31 15:56-16:21/25	06:31 07:01-07:10/9	06:21	05:24 06:10-06:26/16	04:56
	16:33	17:28 08:09-08:13/4	18:18	20:11	21:00	21:35
16	08:15 09:18-09:28/10	07:29 15:55-16:21/26	06:29 07:00-07:12/12	06:19	05:22 06:10-06:25/15	04:56
	16:35	17:30 08:06-08:16/10	18:20	20:12	21:02	21:35
17	08:14 09:20-09:28/8	07:27 15:55-16:22/27	06:27 06:58-07:11/13	06:17	05:21 06:11-06:25/14	04:56
	16:36	17:32 08:05-08:17/12	18:22	20:14	21:03	21:36
18	08:13 09:23-09:26/3	07:25 15:55-16:22/27	06:24 06:58-07:12/14	06:14	05:19 06:12-06:25/13	04:56
	16:38	17:34 08:04-08:18/14	18:23	20:16	21:05	21:36
19	08:12	07:23 15:54-16:21/27	06:22 06:58-07:11/13	06:12	05:18 06:12-06:23/11	04:56
	16:39	17:35 08:03-08:19/16	18:25	20:17	21:06	21:37
20	08:11	07:21 15:54-16:21/27	06:20 06:59-07:11/12	06:10	05:16 06:13-06:23/10	04:56
	16:41	17:37 07:57-08:18/21	18:27 06:51-06:56/5	20:19	21:08	21:37
21	08:10	07:19 15:55-16:20/25	06:18 06:59-07:09/10	06:08	05:15 06:15-06:21/6	04:56
	16:43	17:39 07:55-08:18/23	18:28 06:47-06:57/10	20:21	21:09	21:37
22	08:09	07:17 15:55-16:20/25	06:15 07:01-07:07/6	06:06	05:14	04:56
	16:44	17:41 07:54-08:18/24	18:30 06:46-06:58/12	20:23	21:10	21:37
23	08:08	07:15 15:56-16:19/23	06:13 06:46-06:59/13	06:04	05:12	04:56
	16:46	17:43 07:53-08:17/24	18:32	20:24	21:12	21:38
24	08:07	07:13 15:57-16:18/21	06:11 06:45-06:58/13	06:02	05:11	04:57
	16:48	17:44 07:53-08:16/23	18:33	20:26	21:13	21:38
25	08:05	07:11 15:59-16:17/18	06:08 06:45-06:58/13	06:00	05:10	04:57
	16:50	17:46 07:52-08:14/22	18:35	20:28	21:14	21:38
26	08:04	07:09 16:00-16:14/14	06:06 06:46-06:57/11	05:58	05:09	04:57
	16:51	17:48 07:53-08:08/15	18:37	20:29	21:16	21:38
27	08:03	07:07 16:04-16:10/6 07:41-07:43/2	06:04 06:46-06:55/9	05:56	05:08	04:58
	16:53	17:50 07:52-08:06/14	18:39	20:31	21:17	21:38
28	08:01	07:05 07:53-08:05/12	06:01	05:54	05:07	04:58
	16:55	17:52 07:38-07:47/9	18:40	20:33	21:18	21:38
29	08:00		06:59	05:52	05:06	04:59
	16:57		19:42	20:34	21:20	21:37
30	07:59		06:57	05:50 06:23-06:30/7	05:05	04:59
	16:59		19:44	20:36	21:21	21:37
31	07:57		06:55		05:04	
	17:00		19:45		21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	256	638	271	7	308	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 20B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (339)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 21:37	05:36 06:20-06:37/17 21:05	06:26 20:04	07:14 18:55	07:08 15:31-15:43/12 16:49	07:58 08:55-09:11/16 16:09
2	05:01 21:37	05:38 06:20-06:39/19 21:04	06:27 20:02	07:16 18:52	07:09 15:35-15:39/4 16:47	08:00 08:56-09:12/16 16:08
3	05:01 21:36	05:39 06:21-06:41/20 21:02	06:29 19:59	07:17 18:50	07:11 16:45	08:01 08:56-09:12/16 16:08
4	05:02 21:36	05:41 06:22-06:41/19 21:00	06:30 19:57	07:19 18:48	07:13 16:44	08:02 08:57-09:13/16 16:07
5	05:03 21:35	05:42 06:23-06:43/20 20:59	06:32 19:55	07:21 18:46	07:15 16:42	08:04 08:57-09:13/16 16:07
6	05:04 21:35	05:44 06:24-06:42/18 20:57	06:34 19:53	07:22 08:14-08:21/7 18:43	07:17 16:40	08:05 08:58-09:14/16 16:06
7	05:05 21:34	05:45 06:28-06:43/15 20:55	06:35 19:50	07:24 08:11-08:22/11 18:41	07:18 16:38	08:06 08:58-09:14/16 16:06
8	05:06 21:34	05:47 06:28-06:42/14 20:53	06:37 19:48	07:26 08:10-08:23/13 18:39	07:20 16:37	08:07 08:58-09:14/16 16:05
9	05:07 21:33	05:49 06:28-06:43/15 20:52	06:38 19:46	07:28 08:10-08:23/13 18:37	07:22 16:35	08:09 08:59-09:14/15 16:05
10	05:08 21:32	05:50 06:28-06:41/13 20:50	06:40 19:43	07:29 08:09-08:23/14 18:34	07:24 16:33	08:10 09:25-09:28/3 16:05 08:59-09:14/15
11	05:09 21:32	05:52 06:29-06:41/12 20:48	06:42 19:41	07:31 08:09-08:22/13 18:32	07:25 16:32	08:11 09:25-09:31/6 16:05 09:00-09:15/15
12	05:10 21:31	05:53 06:30-06:39/9 20:46	06:43 19:39	07:33 08:30-08:35/5 18:30 08:09-08:22/13	07:27 16:30	08:12 09:25-09:32/7 16:05 09:01-09:15/14
13	05:11 21:30	05:55 06:32-06:37/5 20:44	06:45 19:36	07:34 08:27-08:37/10 18:28 08:10-08:21/11	07:29 16:29	08:13 09:25-09:33/8 16:05 09:01-09:16/15
14	05:12 21:29	05:57 20:42	06:47 19:34	07:36 08:26-08:39/13 18:26 08:12-08:19/7	07:31 16:27	08:14 09:25-09:34/9 16:05 09:02-09:16/14
15	05:13 21:28	05:58 20:40	06:48 19:32	07:38 16:34-16:44/10 18:23 08:25-08:40/15	07:32 16:26	08:15 09:24-09:34/10 16:05 09:02-09:15/13
16	05:14 21:27	06:00 20:38	06:50 07:36-07:44/8 19:29	07:39 16:32-16:47/15 18:21 08:24-08:43/19	07:34 16:25	08:16 09:24-09:35/11 16:05 09:03-09:16/13
17	05:15 21:26	06:01 20:36	06:51 07:34-07:45/11 19:27	07:41 16:30-16:48/18 18:19 08:24-08:46/22	07:36 16:23	08:16 09:25-09:36/11 16:05 09:03-09:16/13
18	05:17 21:25	06:03 20:34	06:53 07:33-07:45/12 19:25	07:43 16:28-16:50/22 18:17 08:24-08:48/24	07:38 16:22	08:17 09:26-09:36/10 16:05 09:04-09:17/13
19	05:18 21:24	06:05 20:32	06:55 07:32-07:45/13 19:23	07:45 16:27-16:51/24 18:15 08:24-08:49/25	07:39 16:21	08:18 09:26-09:37/11 16:05 09:05-09:18/13
20	05:19 21:23	06:06 20:30	06:56 07:31-07:44/13 19:20	07:46 16:26-16:51/25 18:13 08:25-08:49/24	07:41 16:19	08:19 09:26-09:37/11 16:06 09:05-09:18/13
21	05:20 21:21	06:08 20:28	06:58 07:48-07:51/3 19:18 07:32-07:44/12	07:48 16:25-16:51/26 18:11 08:27-08:50/23	07:43 16:18	08:19 09:27-09:38/11 16:06 09:06-09:19/13
22	05:22 06:26-06:30/4 21:20	06:09 20:26	06:59 07:45-07:54/9 19:16 07:33-07:43/10	07:50 16:25-16:51/26 08:30-08:31/1 18:09 08:32-08:49/17	07:44 16:17	08:20 09:27-09:38/11 16:07 09:06-09:18/12
23	05:23 06:24-06:33/9 21:19	06:11 20:23	07:01 07:43-07:54/11 19:13 07:33-07:41/8	07:52 16:24-16:51/27 18:06 08:33-08:48/15	07:46 16:16	08:20 09:28-09:39/11 16:07 09:07-09:20/13
24	05:25 06:23-06:34/11 21:17	06:13 20:21	07:03 07:42-07:55/13 19:11	07:53 16:24-16:51/27 18:04 08:33-08:48/15	07:48 09:00-09:03/3 16:15	08:21 09:28-09:39/11 16:08 09:07-09:20/13
25	05:26 06:22-06:34/12 21:16	06:14 20:19	07:04 07:41-07:54/13 19:09	06:55 15:25-15:51/26 17:02 07:34-07:47/13	07:49 08:58-09:06/8 16:14	08:21 09:28-09:39/11 16:08 09:07-09:20/13
26	05:27 06:22-06:36/14 21:15	06:16 20:17	07:06 07:41-07:54/13 19:06	06:57 15:25-15:51/26 17:00 07:36-07:45/9	07:51 08:56-09:06/10 16:13	08:21 09:29-09:40/11 16:09 09:07-09:20/13
27	05:29 06:21-06:36/15 21:13	06:17 20:15	07:08 07:42-07:54/12 19:04	06:59 15:25-15:50/25 16:58	07:52 08:56-09:08/12 16:12	08:22 09:30-09:41/11 16:10 09:08-09:22/14
28	05:30 06:20-06:36/16 21:12	06:19 20:13	07:09 07:42-07:52/10 19:02	07:00 15:26-15:49/23 16:57	07:54 08:56-09:09/13 16:11	08:22 09:31-09:41/10 16:11 09:09-09:22/13
29	05:32 06:21-06:37/16 21:10	06:21 20:10	07:11 07:44-07:50/6 18:59	07:02 15:26-15:48/22 16:55	07:55 08:56-09:09/13 16:10	08:22 09:32-09:41/9 16:12 09:09-09:23/14
30	05:33 06:20-06:36/16 21:09	06:22 20:08	07:13 18:57	07:04 15:27-15:46/19 16:53	07:57 08:56-09:10/14 16:10	08:22 09:32-09:41/9 16:12 09:09-09:23/14
31	05:35 06:21-06:37/16 21:07	06:24 20:06		07:06 15:29-15:45/16 16:51		08:22 09:33-09:41/8 16:13 09:10-09:24/14
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	129	196	177	729	89	650

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 27B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (334)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:02	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:47	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:45	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:49	06:38	07:27	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:51	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:07	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:46	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:25	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:29	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:27	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:26	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:47	08:21
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	0	0	0	0	0	0	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 28B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (329)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:47	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:45	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:49	06:38	07:27	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:51	19:46	18:37	16:35	16:05
10	08:19	07:40	06:43	06:32	05:32	04:57	05:07	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:31	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:10	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:56	06:46	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:25	16:27	16:05
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:29	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:20	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:27	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:26	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:47	08:21
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:21
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	0	0	0	0	0	0	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem
Annahmen für Schattenwurfberechnung

WEA: 29B - ENERCON E-70 E4 2000 71.0 !O! NH: 98,2 m (Ges:133,7 m) (340)

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22	08:53-08:59/6	07:56	08:31-08:40/9	07:03		06:52	07:39-07:40/1	05:48		05:03	05:36-05:46/10
	16:15		17:02		17:53		19:47	07:15-07:27/12	20:38		21:23	
2	08:22	08:53-09:00/7	07:54	08:32-08:38/6	07:00		06:50	07:13-07:27/14	05:46		05:02	05:37-05:46/9
	16:16		17:04		17:55		19:49		20:39		21:24	
3	08:22	08:53-09:01/8	07:52		06:58		06:48	07:10-07:25/15	05:44		05:01	05:38-05:45/7
	16:17		17:06		17:57		19:50		20:41		21:25	
4	08:22	08:52-09:01/9	07:51		06:56		06:45	07:08-07:22/14	05:42		05:01	05:39-05:45/6
	16:18		17:08		17:59		19:52		20:43		21:26	
5	08:21	08:52-09:02/10	07:49		06:54		06:43	07:06-07:20/14	05:40		05:00	05:40-05:44/4
	16:19		17:10		18:01		19:54		20:44		21:27	
6	08:21	08:52-09:03/11	07:48		06:52		06:41	07:07-07:18/11	05:39		04:59	
	16:20		17:11		18:02		19:56		20:46		21:28	
7	08:21	08:52-09:03/11	07:46		06:49		06:39	07:06-07:15/9	05:37		04:59	
	16:22		17:13		18:04		19:57		20:47		21:29	
8	08:20	08:51-09:03/12	07:44		06:47		06:36	07:08-07:13/5	05:35		04:58	
	16:23		17:15		18:06		19:59		20:49		21:30	
9	08:20	08:52-09:04/12	07:42		06:45		06:34		05:33		04:58	
	16:24		17:17		18:08		20:01		20:51		21:31	
10	08:19	08:53-09:05/12	07:41		06:43		06:32		05:32		04:57	
	16:26		17:19		18:09		20:02		20:52		21:32	
11	08:19	08:53-09:05/12	07:39	08:04-08:09/5	06:40		06:30		05:30		04:57	
	16:27	08:48-08:49/1	17:21		18:11		20:04		20:54		21:32	
12	08:18	08:54-09:06/12	07:37	08:02-08:10/8	06:38		06:28		05:28		04:57	
	16:29	08:48-08:52/4	17:22		18:13		20:06		20:55		21:33	
13	08:17	08:55-09:06/11	07:35	08:00-08:10/10	06:36		06:25		05:27		04:56	
	16:30	08:47-08:53/6	17:24		18:15		20:07		20:57		21:34	
14	08:17	08:55-09:06/11	07:33	08:00-08:11/11	06:34		06:23		05:25		04:56	
	16:31	08:46-08:54/8	17:26		18:16		20:09		20:59		21:34	
15	08:16	08:56-09:05/9	07:31	08:00-08:10/10	06:31		06:21		05:24		04:56	
	16:33	08:45-08:55/10	17:28		18:18		20:11		21:00		21:35	
16	08:15	08:58-09:05/7	07:29	08:01-08:10/9	06:29		06:19		05:22		04:56	
	16:35	08:45-08:55/10	17:30	07:54-07:57/3	18:20		20:12		21:02		21:35	
17	08:14	08:59-09:04/5	07:27	08:02-08:08/6	06:27		06:17		05:21		04:56	
	16:36	08:45-08:56/11	17:32	07:52-07:58/6	18:22		20:14		21:03		21:36	
18	08:13	08:45-08:57/12	07:25	07:50-07:59/9	06:24		06:14		05:19		04:56	
	16:38		17:34		18:23		20:16		21:05		21:36	
19	08:12	08:45-08:56/11	07:23	07:49-08:00/11	06:22	06:45-06:49/4	06:12		05:18		04:56	
	16:39		17:35		18:25		20:17		21:06		21:37	
20	08:11	08:45-08:56/11	07:21	07:48-07:59/11	06:20	06:43-06:50/7	06:10		05:16		04:56	
	16:41		17:37		18:27		20:19		21:08		21:37	
21	08:10	08:46-08:57/11	07:19	07:49-07:58/9	06:18	06:40-06:50/10	06:08		05:15	05:42-05:43/1	04:56	
	16:43		17:39		18:28		20:21		21:09		21:37	
22	08:09	08:47-08:57/10	07:17	07:50-07:57/7	06:15	06:39-06:50/11	06:06		05:14	05:41-05:45/4	04:56	
	16:44		17:41		18:30		20:23		21:10		21:37	
23	08:08	08:48-08:55/7	07:15	07:52-07:54/2	06:13	06:36-06:49/13	06:04		05:12	05:40-05:45/5	04:56	
	16:46		17:43		18:32		20:24		21:12		21:38	
24	08:07	08:50-08:54/4	07:13		06:11	06:33-06:47/14	06:02		05:11	05:39-05:46/7	04:57	
	16:48		17:44		18:33		20:26		21:13		21:38	
25	08:05	08:33-08:37/4	07:11		06:08	06:31-06:48/17	06:00		05:10	05:38-05:46/8	04:57	
	16:50		17:46		18:35		20:28		21:14		21:38	
26	08:04	08:31-08:38/7	07:09		06:06	06:30-06:48/18	05:58		05:09	05:37-05:47/10	04:57	
	16:51		17:48		18:37		20:29		21:16		21:38	
27	08:03	08:30-08:39/9	07:07		06:04	06:29-06:48/19	05:56		05:08	05:36-05:47/11	04:58	
	16:53		17:50		18:39		20:31		21:17		21:38	
28	08:01	08:29-08:39/10	07:05		06:01	06:30-06:48/18	05:54		05:07	05:35-05:47/12	04:58	
	16:55		17:52		18:40		20:33		21:18		21:38	
29	08:00	08:30-08:40/10			06:59	07:31-07:47/16	05:52		05:06	05:36-05:47/11	04:59	
	16:57				19:42	07:22-07:26/4	20:34		21:20		21:37	
30	07:59	08:29-08:40/11			06:57	07:34-07:45/11	05:50		05:05	05:36-05:46/10	04:59	
	16:59				19:44	07:19-07:26/7	20:36		21:21		21:37	
31	07:57	08:30-08:39/9			06:55	07:35-07:44/9			05:04	05:36-05:46/10		
	17:00				19:45	07:17-07:27/10			21:22			
Sonnenscheinstunden	260		278		367		416		484		498	
Anzahl Minuten mit Schatten	341		132		188		95		89		36	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 29B - ENERCON E-70 E4 2000 71.0 !O! NH: 98,2 m (Ges:133,7 m) (340)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00	05:36	06:26	07:14	07:08	07:58 08:35-08:47/12
	21:37	21:05	20:04	18:55	16:49	16:09 08:30-08:31/1
2	05:01	05:38	06:27	07:16	07:09	08:00 08:36-08:48/12
	21:37	21:04	20:02	18:52	16:47	16:08
3	05:01	05:39	06:29	07:17	07:11	08:01 08:36-08:48/12
	21:36	21:02	19:59	18:50	16:45	16:08
4	05:02	05:41	06:30 07:05-07:10/5	07:19	07:13	08:02 08:37-08:48/11
	21:36	21:00	19:57	18:48	16:44	16:07
5	05:03	05:42	06:32 07:04-07:12/8	07:21	07:15	08:04 08:37-08:48/11
	21:35	20:59	19:55	18:46	16:42	16:07
6	05:04	05:44	06:34 07:02-07:13/11	07:22	07:17	08:05 08:37-08:48/11
	21:35	20:57	19:53	18:43	16:40	16:06
7	05:05 05:47-05:50/3	05:45	06:35 07:02-07:15/13	07:24	07:18	08:06 08:39-08:49/10
	21:34	20:55	19:50	18:41	16:38	16:06
8	05:06 05:46-05:51/5	05:47	06:37 07:02-07:16/14	07:26	07:20	08:07 08:40-08:49/9
	21:34	20:53	19:48	18:39	16:37	16:05
9	05:07 05:45-05:52/7	05:49	06:38 07:04-07:19/15	07:28	07:22 08:03-08:09/6	08:09 08:41-08:49/8
	21:33	20:52	19:46	18:37	16:35	16:05
10	05:08 05:45-05:53/8	05:50	06:40 07:06-07:20/14	07:29	07:24 08:02-08:10/8	08:10 08:42-08:49/7
	21:32	20:50	19:43	18:34	16:33	16:05
11	05:09 05:45-05:54/9	05:52	06:42 07:07-07:19/12	07:31	07:25 08:01-08:11/10	08:11 08:44-08:50/6
	21:32	20:48	19:41	18:32	16:32	16:05
12	05:10 05:44-05:54/10	05:53	06:43 07:27-07:36/9	07:33	07:27 08:01-08:12/11	08:12 08:45-08:50/5
	21:31	20:46	19:39 07:09-07:19/10	18:30	16:30	16:05
13	05:11 05:44-05:55/11	05:55	06:45 07:25-07:36/11	07:34	07:29 08:01-08:12/11	08:13 08:46-08:50/4
	21:30	20:44	19:36 07:10-07:18/8	18:28	16:29	16:05
14	05:12 05:44-05:55/11	05:57	06:47 07:22-07:37/15	07:36	07:31 08:01-08:11/10	08:14 08:47-08:50/3
	21:29	20:42	19:34 07:12-07:17/5	18:26	16:27	16:05
15	05:13 05:44-05:55/11	05:58	06:48 07:19-07:37/18	07:38	07:32 08:02-08:11/9	08:15 08:47-08:49/2
	21:28	20:40	19:32	18:23	16:26	16:05
16	05:14 05:44-05:55/11	06:00	06:50 07:18-07:37/19	07:39	07:34 08:04-08:11/7	08:16 08:48-08:49/1
	21:27	20:38	19:29	18:21	16:25	16:05
17	05:15 05:45-05:55/10	06:01	06:51 07:18-07:37/19	07:41	07:36 08:06-08:10/4	08:16 08:49-08:50/1
	21:26	20:36	19:27	18:19	16:23	16:05
18	05:17 05:47-05:56/9	06:03	06:53 07:18-07:35/17	07:43	07:38 08:24-08:28/4	08:17
	21:25	20:34	19:25	18:17	16:22	16:05
19	05:18 05:48-05:56/8	06:05	06:55 07:20-07:35/15	07:45 08:22-08:27/5	07:39 08:23-08:30/7	08:18
	21:24	20:32	19:23	18:15	16:21	16:06
20	05:19 05:49-05:55/6	06:06	06:56 07:21-07:35/14	07:46 08:21-08:29/8	07:41 08:22-08:32/10	08:19
	21:23	20:30	19:20	18:13	16:19	16:06
21	05:20 05:50-05:55/5	06:08	06:58 07:24-07:35/11	07:48 08:20-08:30/10	07:43 08:21-08:32/11	08:19
	21:21	20:28	19:18	18:11	16:18	16:06
22	05:22 05:51-05:54/3	06:09	06:59 07:25-07:35/10	07:50 08:18-08:29/11	07:44 08:21-08:32/11	08:20
	21:20	20:26	19:16	18:09	16:17	16:07
23	05:23	06:11	07:01 07:26-07:34/8	07:52 08:18-08:29/11	07:46 08:22-08:33/11	08:20
	21:19	20:23	19:13	18:06	16:16	16:07
24	05:25	06:13	07:03 07:28-07:33/5	07:53 08:20-08:29/9	07:48 08:22-08:34/12	08:21
	21:17	20:21	19:11	18:04	16:15	16:08
25	05:26	06:14	07:04 07:29-07:30/1	06:55 07:31-07:38/7	07:49 08:38-08:42/4	08:21
	21:16	20:19	19:09	17:02 07:22-07:28/6	16:14 08:23-08:34/11	16:08
26	05:27	06:16	07:06	06:57 07:30-07:39/9	07:51 08:36-08:43/7	08:21
	21:15	20:17	19:06	17:00 07:24-07:25/1	16:13 08:23-08:34/11	16:09
27	05:29	06:17	07:08	06:59 07:30-07:40/10	07:52 08:35-08:44/9	08:22 08:54-08:55/1
	21:13	20:15	19:04	16:58	16:12 08:24-08:34/10	16:10
28	05:30	06:19	07:09	07:00 07:29-07:40/11	07:54 08:36-08:46/10	08:22 08:54-08:56/2
	21:12	20:13	19:02	16:57	16:11 08:26-08:34/8	16:11
29	05:32	06:21	07:11	07:02 07:30-07:40/10	07:55 08:35-08:46/11	08:22 08:54-08:57/3
	21:10	20:10	18:59	16:55	16:10 08:27-08:33/6	16:12
30	05:33	06:22	07:13	07:04 07:32-07:39/7	07:57 08:35-08:47/12	08:22 08:54-08:58/4
	21:09	20:08	18:57	16:53	16:10 08:29-08:33/4	16:12
31	05:35	06:24		07:06 07:33-07:37/4		08:22 08:54-08:59/5
	21:07	20:06		16:51		16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	127	0	287	119	245	141

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 2B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (323)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48 06:13-06:40/27	05:03 05:31-05:36/5	05:00 05:31-05:44/13	05:36 06:20-06:34/14	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46 06:11-06:40/29	05:02 05:31-05:37/6	05:01 05:31-05:44/13	05:38 06:19-06:34/15	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44 06:10-06:40/30	05:01 05:30-05:37/7	05:01 05:32-05:44/12	05:39 06:19-06:35/16	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42 06:09-06:39/30	05:01 05:29-05:37/8	05:02 05:33-05:45/12	05:41 06:38-06:41/3	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00 06:18-06:35/17	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40 06:08-06:38/30	05:00 05:29-05:38/9	05:03 05:33-05:44/11	05:42 06:36-06:45/9	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59 06:18-06:35/17	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39 06:08-06:37/29	04:59 05:28-05:38/10	05:04 05:34-05:44/10	05:44 06:18-06:46/28	06:34	07:22	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37 06:08-06:36/28	04:59 05:28-05:39/11	05:05 05:35-05:45/10	05:45 06:18-06:48/30	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35 06:26-06:34/8	04:58 05:27-05:39/12	05:05 05:36-05:45/9	05:47 06:18-06:48/30	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49 06:08-06:25/17	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33 06:08-06:25/17	04:58 05:27-05:39/12	05:06 05:37-05:45/8	05:49 06:19-06:49/30	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32 06:08-06:24/16	04:57 05:27-05:40/13	05:07 05:38-05:45/7	05:50 06:19-06:49/30	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30 06:08-06:23/15	04:57 05:26-05:39/13	05:08 05:39-05:44/5	05:52 06:21-06:49/28	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28 06:09-06:23/14	04:56 05:26-05:40/14	05:10 05:40-05:44/4	05:53 06:30-06:49/19	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46 06:22-06:29/7	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27 06:10-06:22/12	04:56 05:27-05:40/13	05:11 05:41-05:43/2	05:55 06:30-06:49/19	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25 06:12-06:21/9	04:56 05:27-05:40/13	05:12	05:56 06:30-06:48/18	06:46	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:25	16:27	16:05
15	08:16	07:31	06:31	06:21	05:23 06:14-06:19/5	04:56 05:27-05:41/14	05:13	05:58 06:51-06:57/6	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40 06:31-06:48/17	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19 06:44-06:53/9	05:22	04:56 05:28-05:41/13	05:14	06:00 06:48-06:58/10	06:50	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:36	21:27	20:38 06:31-06:46/15	19:29	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17 06:42-06:55/13	05:20	04:56 05:28-05:41/13	05:15	06:01 06:47-07:00/13	06:51	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36 06:32-06:45/13	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14 06:41-06:56/15	05:19	04:56 05:28-05:41/13	05:17	06:03 06:45-07:00/15	06:53	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34 06:33-06:43/10	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12 06:39-06:56/17	05:18	04:56 05:28-05:41/13	05:18	06:05 06:45-07:01/16	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32 06:36-06:40/4	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10 06:38-06:56/18	05:16	04:56 05:28-05:41/13	05:19	06:06 06:43-07:01/18	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08 06:38-06:56/18	05:15	04:56 05:28-05:41/13	05:20	06:08 06:43-07:01/18	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06 06:38-06:56/18	05:14	04:56 05:29-05:42/13	05:22	06:09 06:43-07:01/18	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04 06:38-06:55/17	05:12	04:56 05:29-05:42/13	05:23	06:11 06:43-07:01/18	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02 06:38-06:55/17	05:11	04:57 05:29-05:42/13	05:24	06:13 06:43-06:59/16	07:03	07:53	07:48	08:21
	16:48	17:44	18:33	20:26 06:29-06:35/6	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00 06:38-06:54/16	05:10	04:57 05:29-05:42/13	05:26	06:14 06:44-06:59/15	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28 06:26-06:37/11	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58 06:39-06:52/13	05:09	04:57 05:30-05:43/13	05:27	06:16 06:44-06:57/13	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29 06:24-06:38/14	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56 06:42-06:51/9	05:08	04:58 05:29-05:43/14	05:29	06:17 06:46-06:55/9	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31 06:24-06:40/16	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54 06:44-06:48/4	05:07	04:58 05:30-05:44/14	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33 06:23-06:40/17	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52 06:22-06:40/18	05:06	04:59 05:30-05:43/13	05:32 06:23-06:31/8	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50 06:22-06:40/18	05:05 05:33-05:34/1	04:59 05:30-05:44/14	05:33 06:21-06:32/11	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04 05:32-05:35/3		05:35 06:20-06:33/13	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	284	320	358	148	574	0	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 5B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (324)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48 06:39-07:11/32	05:03 05:52-06:44/52	05:00 05:53-06:52/59	05:36 06:47-07:22/35	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46 06:38-07:11/33	05:02 05:52-06:45/53	05:01 05:53-06:51/58	05:38 06:46-07:22/36	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44 06:38-07:12/34	05:01 05:51-06:45/54	05:01 05:54-06:52/58	05:39 06:47-07:22/35	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42 06:38-07:12/34	05:01 05:50-06:45/55	05:02 05:55-06:52/57	05:41 06:46-07:22/36	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40 06:37-07:12/35	05:00 05:50-06:46/56	05:03 05:54-06:51/57	05:42 06:47-07:23/36	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39 06:36-07:12/36	04:59 05:49-06:45/56	05:04 05:55-06:52/57	05:44 06:46-07:22/36	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37 06:37-07:13/36	04:59 05:49-06:46/57	05:05 05:56-06:52/56	05:45 06:47-07:22/35	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35 06:36-07:12/36	04:58 05:49-06:46/57	05:06 05:57-06:52/55	05:47 06:46-07:22/36	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33 06:36-07:12/36	04:58 05:49-06:46/57	05:06 05:58-06:52/54	05:49 06:47-07:22/35	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32 06:36-07:12/36	04:57 05:49-06:47/58	05:07 05:59-06:52/53	05:50 06:47-07:21/34	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30 06:36-07:11/35	04:57 05:48-06:46/58	05:08 06:00-06:52/52	05:52 06:48-07:20/32	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28 06:37-07:11/34	04:56 05:48-06:47/59	05:10 06:01-06:52/51	05:53 06:48-07:19/31	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27 06:37-07:11/34	04:56 05:49-06:47/58	05:11 06:02-06:52/50	05:55 06:49-07:19/30	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25 06:37-07:11/34	04:56 05:49-06:48/59	05:12 06:16-06:52/36	05:57 06:49-07:17/28	06:47	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29 06:04-06:13/9	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24 06:38-07:10/32	04:56 05:49-06:48/59	05:13 06:16-06:52/36	05:58 06:51-07:16/25	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22 06:38-07:09/31	04:56 05:49-06:48/59	05:14 06:16-06:51/35	06:00 06:51-07:14/23	06:50	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02 06:19-06:30/11	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21 06:39-07:09/30	04:56 05:49-06:48/59	05:15 07:00-07:06/6	06:01 06:53-07:13/20	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03 06:16-06:33/17	21:36	21:26 06:17-06:51/34	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19 06:40-07:09/29	04:56 05:49-06:49/60	05:17 06:57-07:09/12	06:03 06:55-07:10/15	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05 06:15-06:35/20	21:36	21:25 06:17-06:50/33	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18 06:40-07:07/27	04:56 05:49-06:49/60	05:18 06:56-07:12/16	06:05 07:00-07:05/5	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06 06:13-06:35/22	21:37	21:24 06:19-06:51/32	20:32	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16 06:41-07:07/26	04:56 05:50-06:49/59	05:19 06:55-07:13/18	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08 06:12-06:37/25	21:37	21:23 06:19-06:50/31	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15 06:42-07:06/24	04:56 05:50-06:49/59	05:20 06:53-07:14/21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09 06:11-06:38/27	21:37	21:21 06:20-06:49/29	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14 06:43-07:05/22	04:56 05:50-06:49/59	05:21 06:52-07:15/23	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10 06:10-06:39/29	21:38	21:20 06:20-06:48/28	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12 06:44-07:04/20	04:56 05:51-06:50/59	05:23 06:52-07:17/25	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12 06:10-06:40/30	21:38	21:19 06:22-06:48/26	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02 06:52-07:00/8	05:11 06:45-07:02/17	04:57 05:50-06:50/60	05:25 06:51-07:17/26	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:34	20:26	21:13 06:08-06:40/32	21:38	21:18 06:23-06:47/24	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00 06:48-07:03/15	05:10 06:47-07:00/13	04:57 05:50-06:50/60	05:26 06:50-07:18/28	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15 06:08-06:41/33	21:38	21:16 06:24-06:45/21	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58 06:45-07:06/21	05:09 06:49-06:58/9	04:57 05:51-06:50/59	05:27 06:50-07:19/29	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16 06:08-06:41/33	21:38	21:15 06:26-06:44/18	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56 06:44-07:08/24	05:08 06:07-06:42/35	04:58 05:51-06:50/59	05:29 06:49-07:20/31	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13 06:28-06:42/14	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54 06:43-07:09/26	05:07 06:08-06:43/35	04:58 05:52-06:51/59	05:30 06:48-07:20/32	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12 06:31-06:38/7	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52 06:41-07:10/29	05:06 06:07-06:43/36	04:59 05:52-06:50/58	05:32 06:48-07:21/33	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20 05:57-06:03/6	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50 06:40-07:10/30	05:05 06:07-06:44/37	04:59 05:53-06:51/58	05:33 06:48-07:21/33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21 05:55-06:05/10	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04 05:53-06:44/51		05:35 06:47-07:21/34	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	153	1254	1735	1497	563	0	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 6B - NEG MICON NM72-1500C 1500-400 72.0 !O! NH: 98,0 m (Ges:134,0 m) (333)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar		März		April		Mai		Juni	
1	08:22	07:56		07:03		06:52	07:25-07:45/20	05:48	06:12-06:20/8	05:03	05:44-05:45/1
	16:15	17:02		17:53		19:47		20:38		21:23	05:31-05:42/11
2	08:22	07:54		07:00		06:50	07:25-07:46/21	05:46	06:11-06:19/8	05:02	05:31-05:43/12
	16:16	17:04		17:55		19:49		20:39		21:24	
3	08:22	07:52		06:58		06:48	07:24-07:45/21	05:44	06:12-06:19/7	05:01	05:30-05:42/12
	16:17	17:06		17:57		19:50		20:41	06:09-06:10/1	21:25	
4	08:22	07:51		06:56		06:45	07:24-07:45/21	05:42	06:13-06:17/4	05:01	05:30-05:42/12
	16:18	17:08		17:59		19:52		20:43	06:07-06:11/4	21:26	
5	08:21	07:49		06:54		06:43	07:24-07:44/20	05:40	06:05-06:11/6	05:00	05:29-05:42/13
	16:19	17:09		18:01		19:54		20:44		21:27	
6	08:21	07:48		06:52		06:41	07:25-07:44/19	05:39	06:03-06:12/9	04:59	05:28-05:42/14
	16:20	17:11		18:02		19:56		20:46		21:28	
7	08:21	07:46		06:49		06:39	07:25-07:42/17	05:37	06:02-06:14/12	04:59	05:33-05:42/9
	16:22	17:13		18:04		19:57		20:48		21:29	05:28-05:32/4
8	08:20	07:44		06:47	07:19-07:25/6	06:36	07:26-07:40/14	05:35	06:00-06:14/14	04:58	05:34-05:42/8
	16:23	17:15		18:06		19:59		20:49		21:30	05:28-05:33/5
9	08:20	07:42		06:45	07:16-07:28/12	06:34	07:28-07:38/10	05:33	05:59-06:15/16	04:58	05:34-05:41/7
	16:24	17:17		18:08		20:01		20:51		21:31	05:27-05:32/5
10	08:19	07:41		06:43	07:14-07:30/16	06:32		05:32	05:57-06:15/18	04:57	05:35-05:41/6
	16:26	17:19		18:09		20:02		20:52		21:32	05:27-05:33/6
11	08:19	07:39		06:40	07:12-07:30/18	06:30		05:30	05:55-06:15/20	04:57	05:36-05:41/5
	16:27	17:21		18:11		20:04		20:54		21:32	05:27-05:33/6
12	08:18	07:37		06:38	07:11-07:31/20	06:27		05:28	05:55-06:15/20	04:56	05:36-05:40/4
	16:28	17:22		18:13		20:06		20:56		21:33	05:26-05:32/6
13	08:17	07:35	08:00-08:02/2	06:36	07:11-07:31/20	06:25		05:27	05:55-06:15/20	04:56	05:38-05:40/2
	16:30	17:24		18:15		20:07		20:57		21:34	05:26-05:32/6
14	08:17	07:33	07:58-08:02/4	06:34	07:10-07:31/21	06:23		05:25	05:57-06:15/18	04:56	05:26-05:32/6
	16:31	17:26		18:16		20:09		20:59		21:34	
15	08:16	07:31	07:56-08:02/6	06:31	07:10-07:31/21	06:21		05:24	06:00-06:15/15	04:56	05:26-05:32/6
	16:33	17:28		18:18		20:11		21:00		21:35	
16	08:15	07:29	07:55-08:01/6	06:29	07:03-07:30/27	06:19		05:22	06:00-06:14/14	04:56	05:26-05:32/6
	16:35	17:30		18:20		20:12		21:02		21:36	
17	08:14	07:27		06:27	06:59-07:29/30	06:17		05:21	06:01-06:14/13	04:56	05:26-05:32/6
	16:36	17:32		18:22		20:14		21:03		21:36	
18	08:13	07:25		06:24	06:58-07:28/30	06:14		05:19	06:02-06:13/11	04:56	05:26-05:32/6
	16:38	17:33		18:23		20:16		21:05	05:46-05:47/1	21:36	
19	08:12	07:23		06:22	06:56-07:26/30	06:12		05:18	06:02-06:12/10	04:56	05:26-05:32/6
	16:39	17:35		18:25		20:18		21:06	05:44-05:48/4	21:37	
20	08:11	07:21		06:20	06:55-07:23/28	06:10		05:16	06:04-06:10/6	04:56	05:26-05:31/5
	16:41	17:37		18:27		20:19		21:08	05:43-05:49/6	21:37	
21	08:10	07:19		06:18	06:54-07:16/22	06:08		05:15	05:42-05:49/7	04:56	05:26-05:31/5
	16:43	17:39		18:28		20:21		21:09		21:37	
22	08:09	07:17		06:15	06:54-07:16/22	06:06		05:14	05:41-05:50/9	04:56	05:27-05:32/5
	16:44	17:41		18:30		20:23		21:10		21:38	
23	08:08	07:15		06:13	06:54-07:16/22	06:04		05:12	05:40-05:50/10	04:56	05:27-05:33/6
	16:46	17:43		18:32		20:24		21:12		21:38	
24	08:07	07:13		06:11	06:53-07:15/22	06:02		05:11	05:39-05:50/11	04:57	05:27-05:33/6
	16:48	17:44		18:33		20:26		21:13		21:38	
25	08:05	07:11		06:08	06:53-07:15/22	06:00		05:10	05:38-05:51/13	04:57	05:28-05:34/6
	16:50	17:46		18:35		20:28		21:15		21:38	
26	08:04	07:09		06:06	06:54-07:14/20	05:58		05:09	05:37-05:50/13	04:57	05:28-05:34/6
	16:51	17:48		18:37		20:29		21:16		21:38	
27	08:03	07:07		06:04	06:54-07:12/18	05:56		05:08	05:36-05:50/14	04:58	05:28-05:34/6
	16:53	17:50		18:39		20:31		21:17		21:38	
28	08:01	07:05		06:01	06:55-07:11/16	05:54	06:18-06:20/2	05:07	05:35-05:50/15	04:58	05:29-05:35/6
	16:55	17:52		18:40	06:32-06:41/9	20:33		21:18		21:38	
29	08:00			06:59	07:57-08:09/12	05:52	06:16-06:21/5	05:06	05:34-05:49/15	04:59	05:29-05:35/6
	16:57			19:42	07:30-07:43/13	20:34		21:20		21:38	
30	07:59			06:57	08:00-08:03/3	05:50	06:14-06:21/7	05:05	05:33-05:48/15	04:59	05:41-05:44/3
	16:58			19:44	07:27-07:44/17	20:36		21:21		21:37	05:30-05:36/6
31	07:57			06:55	07:26-07:45/19			05:04	05:32-05:47/15		
	17:00			19:45				21:22			
Sonnenscheinstunden	260	278		367		416		484		498	
Anzahl Minuten mit Schatten		0	18		516		177		402		256

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 6B - NEG MICON NM72-1500C 1500-400 72.0 !O! NH: 98,0 m (Ges:134,0 m) (333)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November	Dezember
1	05:00	05:41-05:45/4	05:36	06:05-06:26/21	06:26		07:14	07:50-08:10/20	07:08	07:58
	21:37	05:31-05:37/6	21:06		20:04		18:55		16:49	16:09
2	05:01	05:40-05:45/5	05:38	06:06-06:25/19	06:27		07:16	07:51-08:09/18	07:09	08:00
	21:37	05:31-05:37/6	21:04		20:02		18:52		16:47	16:08
3	05:01	05:40-05:46/6	05:39	06:08-06:25/17	06:29	07:26-07:36/10	07:18	07:52-08:08/16	07:11	08:01
	21:36	05:32-05:37/5	21:02		19:59		18:50		16:45	16:08
4	05:02	05:40-05:47/7	05:41	06:09-06:24/15	06:30	07:23-07:37/14	07:19	07:52-08:06/14	07:13	08:02
	21:36	05:33-05:38/5	21:00		19:57		18:48		16:44	16:07
5	05:03	05:34-05:47/13	05:42	06:11-06:24/13	06:32	07:22-07:39/17	07:21	07:54-08:04/10	07:15	08:04
	21:36		20:59		19:55		18:46		16:42	16:07
6	05:04	05:39-05:48/9	05:44	06:12-06:23/11	06:34	07:20-07:39/19	07:23		07:17	08:05
	21:35	05:34-05:38/4	20:57		19:53		18:43		16:40	16:06
7	05:05	05:35-05:48/13	05:45	06:14-06:21/7	06:35	07:19-07:39/20	07:24		07:18	08:06
	21:34		20:55		19:50		18:41		16:38	16:06
8	05:06	05:36-05:49/13	05:47	06:15-06:20/5	06:37	07:18-07:39/21	07:26		07:20	08:08
	21:34		20:53		19:48		18:39		16:37	16:05
9	05:06	05:37-05:49/12	05:49	06:22-06:27/5	06:38	07:18-07:39/21	07:28		07:22	08:09
	21:33		20:52	06:17-06:20/3	19:46		18:37		16:35	16:05
10	05:07	05:38-05:50/12	05:50	06:20-06:28/8	06:40	07:18-07:39/21	07:29		07:24	08:10
	21:32		20:50	06:18-06:19/1	19:43		18:34		16:33	16:05
11	05:08	05:39-05:50/11	05:52	06:20-06:29/9	06:42	07:18-07:38/20	07:31		07:25	08:11
	21:32		20:48		19:41		18:32		16:32	16:05
12	05:10	05:51-05:55/4	05:53	06:21-06:29/8	06:43	07:18-07:37/19	07:33		07:27	08:12
	21:31	05:40-05:50/10	20:46		19:39		18:30		16:30	16:05
13	05:11	05:41-05:56/15	05:55	06:23-06:29/6	06:45	07:18-07:35/17	07:34		07:29	08:13
	21:30		20:44		19:36		18:28		16:29	16:05
14	05:12	05:42-05:57/15	05:57	06:24-06:28/4	06:47	07:48-07:59/11	07:36		07:31	08:14
	21:29		20:42		19:34	07:20-07:34/14	18:26		16:27	16:05
15	05:13	05:43-05:58/15	05:58	06:26-06:27/1	06:48	07:45-08:00/15	07:38		07:32	08:15
	21:28		20:40		19:32	07:21-07:31/10	18:23		16:26	16:05
16	05:14	05:44-05:58/14	06:00		06:50	07:43-08:01/18	07:39		07:34	08:16
	21:27		20:38		19:29		18:21		16:25	16:05
17	05:15	05:45-05:59/14	06:01		06:51	07:42-08:02/20	07:41		07:36	08:16
	21:26		20:36		19:27		18:19		16:23	16:05
18	05:17	05:46-05:59/13	06:03		06:53	07:41-08:02/21	07:43		07:38	08:17
	21:25		20:34		19:25		18:17		16:22	16:05
19	05:18	05:48-06:00/12	06:05		06:55	07:40-08:03/23	07:45		07:39	08:18
	21:24		20:32		19:23		18:15		16:21	16:05
20	05:19	05:49-06:00/11	06:06		06:56	07:39-08:02/23	07:46		07:41	08:19
	21:23		20:30		19:20		18:13		16:19	16:06
21	05:20	05:50-06:00/10	06:08		06:58	07:39-08:02/23	07:48		07:43	08:19
	21:21		20:28		19:18		18:11		16:18	16:06
22	05:22	05:51-05:59/8	06:09		06:59	07:39-08:02/23	07:50		07:44	08:20
	21:20		20:26		19:16		18:09		16:17	16:07
23	05:23	06:16-06:19/3	06:11		07:01	07:39-08:07/28	07:52		07:46	08:20
	21:19	05:53-06:00/7	20:24		19:13		18:06		16:16	16:07
24	05:25	06:14-06:22/8	06:13		07:03	07:40-08:10/30	07:53		07:48	08:21
	21:17	05:54-05:59/5	20:21		19:11		18:04		16:15	16:08
25	05:26	06:12-06:23/11	06:14		07:04	07:40-08:10/30	06:55	07:27-07:28/1	07:49	08:21
	21:16	05:55-05:58/3	20:19		19:09		17:02		16:14	16:08
26	05:27	06:12-06:24/12	06:16		07:06	07:41-08:11/30	06:57	07:24-07:30/6	07:51	08:21
	21:15		20:17		19:06		17:00		16:13	16:09
27	05:29	06:11-06:25/14	06:17		07:08	07:44-08:12/28	06:59	07:26-07:31/5	07:52	08:22
	21:13		20:15		19:04		16:58		16:12	16:10
28	05:30	06:10-06:25/15	06:19		07:09	07:51-08:11/20	07:00	07:28-07:32/4	07:54	08:22
	21:12		20:13		19:02		16:57		16:11	16:11
29	05:32	06:09-06:26/17	06:21		07:11	07:51-08:11/20	07:02	07:30-07:31/1	07:55	08:22
	21:10		20:11		18:59		16:55		16:10	16:11
30	05:33	06:06-06:26/20	06:22		07:13	07:51-08:11/20	07:04		07:57	08:22
	21:09		20:08		18:57		16:53		16:10	16:12
31	05:35	06:06-06:25/19	06:24				07:06			08:22
	21:07		20:06				16:51			16:13
Sonnenscheinstunden	501		453		381		332		267	245
Anzahl Minuten mit Schatten	406		153		606		95		0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** 9B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (325)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:02	06:52	05:48 06:51-07:18/27	05:03	05:00	05:36	06:25	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46 06:51-07:17/26	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44 06:52-07:16/24	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42 06:54-07:15/21	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40 06:55-07:14/19	05:00	05:03	05:42 07:11-07:17/6	06:32	07:21	07:15	08:04
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:06
6	08:21	07:47	06:52	06:41	05:38 06:56-07:11/15	04:59	05:04	05:44 07:07-07:20/13	06:34	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37 06:59-07:10/11	04:59	05:05	05:45 07:06-07:22/16	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47 07:04-07:23/19	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:49 07:02-07:24/22	06:38	07:27	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:51	19:46	18:36	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:07	05:50 07:01-07:26/25	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52 07:00-07:26/26	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:10	05:53 06:59-07:27/28	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55 06:58-07:27/29	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:56 06:58-07:28/30	06:46	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21 07:04-07:13/9	05:23	04:56	05:13	05:58 06:57-07:27/30	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19 07:01-07:16/15	05:22	04:56	05:14	06:00 06:57-07:28/31	06:50	07:39	07:34	08:16
	16:34	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:29	18:21	16:24	16:05
17	08:14	07:27	06:27	06:16 06:58-07:18/20	05:20	04:56	05:15	06:01 06:57-07:28/31	06:51	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14 06:56-07:18/22	05:19	04:56	05:17	06:03 06:57-07:27/30	06:53	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12 06:54-07:19/25	05:18	04:56	05:18	06:04 06:57-07:28/31	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10 06:53-07:20/27	05:16	04:56	05:19	06:06 06:57-07:27/30	06:56	07:46	07:41	08:18
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08 06:52-07:20/28	05:15	04:56	05:20	06:08 06:57-07:26/29	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06 06:52-07:21/29	05:14	04:56	05:22	06:09 06:57-07:25/28	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:26	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04 06:51-07:21/30	05:12	04:56	05:23	06:11 06:58-07:25/27	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02 06:50-07:21/31	05:11	04:57	05:24	06:13 06:58-07:23/25	07:03	07:53	07:47	08:21
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00 06:50-07:21/31	05:10	04:57	05:26	06:14 07:00-07:22/22	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58 06:50-07:21/31	05:09	04:57	05:27	06:16 07:00-07:19/19	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56 06:50-07:20/30	05:08	04:58	05:29	06:17 07:03-07:18/15	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54 06:51-07:21/30	05:07	04:58	05:30	06:19 07:05-07:13/8	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52 06:51-07:20/29	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50 06:51-07:19/28	05:05	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	415	143	0	0	570	0	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** SAB W1 - VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (318)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22 16:15	07:56 17:02	07:02 17:53	06:52 19:47	05:48 20:38	05:03 05:42-05:55/13 21:23	05:00 05:40-06:07/27 21:37	05:36 21:05	06:25 20:04	07:14 17:49-18:12/23 18:55	07:08 16:49	07:58 16:09
2	08:22 16:16	07:54 17:04	07:00 17:55	06:50 19:49	05:46 20:39	05:02 05:41-05:57/16 21:24	05:01 05:41-06:08/27 21:37	05:38 21:04	06:27 20:02	07:16 17:49-18:12/23 18:52	07:09 16:47	08:00 16:08
3	08:22 16:17	07:52 17:06	06:58 17:57	06:48 19:50	05:44 20:41	05:01 05:40-05:58/18 21:25	05:01 05:42-06:08/26 21:36	05:39 21:02	06:29 19:59	07:17 17:48-18:11/23 18:50	07:11 16:45	08:01 16:08
4	08:22 16:18	07:51 17:08	06:56 17:20-17:27/7 17:59	06:45 19:52	05:42 20:43	05:00 05:39-05:58/19 21:26	05:02 05:43-06:08/25 21:36	05:41 21:00	06:30 19:57	07:19 17:48-18:11/23 18:48	07:13 16:43	08:02 16:07
5	08:21 16:19	07:49 17:09	06:54 17:17-17:30/13 18:00	06:43 19:54	05:40 20:44	05:00 05:39-06:00/21 21:27	05:03 05:43-06:07/24 21:35	05:42 20:59	06:32 19:55	07:21 17:49-18:10/21 18:45	07:15 16:42	08:04 16:06
6	08:21 16:20	07:47 17:11	06:52 17:14-17:31/17 18:02	06:41 19:55	05:38 20:46	04:59 05:38-06:00/22 21:28	05:04 05:44-06:07/23 21:35	05:44 20:57	06:34 19:52	07:22 17:49-18:09/20 18:43	07:16 16:40	08:05 16:06
7	08:21 16:21	07:46 17:13	06:49 17:13-17:32/19 18:04	06:39 19:57	05:37 20:47	04:59 05:38-06:01/23 21:29	05:05 05:45-06:06/21 21:34	05:45 20:55	06:35 19:50	07:24 17:49-18:07/18 18:41	07:18 16:38	08:06 16:06
8	08:20 16:23	07:44 17:15	06:47 17:12-17:33/21 18:06	06:36 19:59	05:35 20:49	04:58 05:37-06:01/24 21:30	05:05 05:46-06:06/20 21:34	05:47 20:53	06:37 19:48	07:26 17:51-18:06/15 18:39	07:20 16:37	08:07 16:05
9	08:20 16:24	07:42 17:17	06:45 17:12-17:34/22 18:08	06:34 20:01	05:33 20:51	04:58 05:37-06:02/25 21:31	05:06 05:47-06:06/19 21:33	05:48 20:51	06:38 19:46	07:27 17:53-18:04/11 18:36	07:22 16:35	08:09 16:05
10	08:19 16:26	07:41 17:19	06:43 17:10-17:33/23 18:09	06:32 20:02	05:31 20:52	04:57 05:37-06:03/26 21:32	05:07 05:48-06:05/17 21:32	05:50 20:50	06:40 19:43	07:29 18:34	07:24 16:33	08:10 16:05
11	08:19 16:27	07:39 17:20	06:40 17:10-17:33/23 18:11	06:30 20:04	05:30 20:54	04:57 05:36-06:03/27 21:32	05:08 05:49-06:04/15 21:32	05:52 20:48	06:42 19:41	07:31 18:32	07:25 16:32	08:11 16:05
12	08:18 16:28	07:37 17:22	06:38 17:10-17:33/23 18:13	06:27 20:06	05:28 20:55	04:56 05:37-06:04/27 21:33	05:09 05:51-06:02/11 21:31	05:53 20:46	06:43 19:39	07:33 18:30	07:27 16:30	08:12 16:04
13	08:17 16:30	07:35 17:24	06:36 17:10-17:32/22 18:15	06:25 20:07	05:27 20:57	04:56 05:37-06:04/27 21:34	05:11 05:54-06:00/6 21:33	05:55 20:44	06:45 19:36	07:34 18:28	07:29 16:29	08:13 16:04
14	08:17 16:31	07:33 17:26	06:34 17:10-17:31/21 18:16	06:23 20:09	05:25 20:59	04:56 05:37-06:05/28 21:34	05:12 21:29	05:56 20:42	06:46 19:34	07:36 18:25	07:31 16:27	08:14 16:04
15	08:16 16:33	07:31 17:28	06:31 17:11-17:30/19 18:18	06:21 20:11	05:23 21:00	04:56 05:37-06:06/29 21:35	05:13 21:28	05:58 20:40	06:48 19:32	07:38 18:23	07:32 16:26	08:15 16:05
16	08:15 16:34	07:29 17:30	06:29 17:13-17:29/16 18:20	06:19 20:12	05:22 21:02	04:56 05:37-06:06/29 21:35	05:14 21:27	06:00 20:38	06:50 19:29	07:39 18:21	07:34 16:24	08:16 16:05
17	08:14 16:36	07:27 17:32	06:27 17:14-17:26/12 18:21	06:16 20:14	05:20 21:03	04:56 05:37-06:06/29 21:36	05:15 21:26	06:01 20:36	06:51 19:27	07:41 18:19	07:36 16:23	08:16 16:05
18	08:13 16:38	07:25 17:33	06:24 17:17-17:23/6 18:23	06:14 20:16	05:19 21:05	04:56 05:37-06:07/30 21:36	05:16 21:25	06:03 20:34	06:53 19:25	07:43 18:17	07:38 16:22	08:17 16:05
19	08:12 16:39	07:23 17:35	06:22 18:25	06:12 20:17	05:18 21:06	04:56 05:37-06:07/30 21:37	05:18 21:24	06:04 20:32	06:54 19:22	07:45 18:15	07:39 16:21	08:18 16:05
20	08:11 16:41	07:21 17:37	06:20 18:27	06:10 20:19	05:16 21:08	04:56 05:37-06:07/30 21:37	05:19 21:23	06:06 20:30	06:56 19:20	07:46 18:13	07:41 16:19	08:18 16:06
21	08:10 16:43	07:19 17:39	06:18 18:28	06:08 20:21	05:15 21:09	04:56 05:37-06:07/30 21:37	05:20 21:21	06:08 20:28	06:58 19:18	07:48 18:10	07:43 16:18	08:19 16:06
22	08:09 16:44	07:17 17:41	06:15 18:30	06:06 20:22	05:14 21:10	04:56 05:37-06:07/30 21:37	05:22 21:20	06:09 20:26	06:59 19:15	07:50 18:08	07:44 16:17	08:20 16:07
23	08:08 16:46	07:15 17:43	06:13 18:32	06:04 20:24	05:12 21:12	04:56 05:38-06:08/30 21:38	05:23 21:19	06:11 20:23	07:01 19:13	07:52 18:06	07:46 16:16	08:20 16:07
24	08:07 16:48	07:13 17:44	06:11 18:33	06:02 20:26	05:11 21:13	04:56 05:38-06:08/30 21:38	05:24 21:17	06:13 20:21	07:03 19:11	07:53 18:04	07:47 16:15	08:21 16:08
25	08:05 16:49	07:11 17:46	06:08 18:35	06:00 20:28	05:10 21:14	04:57 05:38-06:07/29 21:38	05:26 21:16	06:14 20:19	07:04 19:08	06:55 17:02	07:49 16:14	08:21 16:08
26	08:04 16:51	07:09 17:48	06:06 18:37	05:58 20:29	05:09 21:16	04:57 05:39-06:08/29 21:38	05:27 21:15	06:16 20:17	07:06 17:57-18:08/11 19:06	06:57 17:00	07:51 16:13	08:21 16:09
27	08:03 16:53	07:07 17:50	06:04 18:38	05:56 20:31	05:08 21:17	04:58 05:39-06:08/29 21:38	05:29 21:13	06:17 20:15	07:08 17:54-18:09/15 19:04	06:59 16:58	07:52 16:12	08:22 16:10
28	08:01 16:55	07:05 17:52	06:01 18:40	05:54 20:33	05:07 21:18	04:58 05:40-06:08/28 21:38	05:30 21:12	06:19 20:13	07:09 17:52-18:11/19 19:02	07:00 16:56	07:54 16:11	08:22 16:11
29	08:00 16:57		06:59 19:42	05:52 20:34	05:06 21:20	04:59 05:40-06:08/28 21:37	05:32 21:10	06:21 20:10	07:11 17:51-18:12/21 18:59	07:02 16:54	07:55 16:10	08:22 16:11
30	07:59 16:58		06:57 19:44	05:50 20:36	05:05 21:21	04:59 05:41-06:08/27 21:37	05:33 21:09	06:22 20:08	07:12 17:50-18:11/21 18:57	07:04 16:53	07:57 16:09	08:22 16:12
31	07:57 17:00		06:55 19:45		05:04 05:44-05:53/9 21:22		05:35 21:07	06:24 20:06		07:06 16:51		08:22 16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	264	0	9	783	261	0	87	177	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** SAB W2 - VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (319)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 16:15	07:56 17:02	07:02 17:53	06:52 19:03-19:21/18 19:47	05:48 06:55-07:12/17 20:38 19:39-19:56/17	05:03 21:23
2	08:22 16:16	07:54 17:04	07:00 17:55	06:50 19:02-19:21/19 19:49	05:46 06:57-07:09/12 20:39 19:40-19:55/15	05:02 21:24
3	08:22 16:17	07:52 17:06	06:58 17:57	06:48 19:01-19:21/20 19:50	05:44 07:01-07:05/4 20:41 19:41-19:53/12	05:01 21:25
4	08:22 16:18	07:51 17:08	06:56 17:59	06:45 19:01-19:21/20 19:52	05:42 19:44-19:51/7 20:42	05:00 21:26
5	08:21 16:19	07:49 17:09	06:54 18:00	06:43 19:01-19:20/19 19:54	05:40 20:44	05:00 21:27
6	08:21 16:20	07:47 16:27-16:34/7 17:11	06:52 18:02	06:41 19:01-19:19/18 19:55	05:38 20:46	04:59 21:28
7	08:21 16:21	07:46 16:24-16:37/13 17:13	06:49 18:04	06:39 19:02-19:18/16 19:57	05:37 20:47	04:59 21:29
8	08:20 16:23	07:44 16:22-16:39/17 17:15	06:47 18:06	06:36 19:03-19:17/14 19:59	05:35 20:49	04:58 21:30
9	08:20 16:24	07:42 16:21-16:40/19 17:17	06:45 18:08	06:34 19:05-19:15/10 20:01	05:33 20:51	04:58 21:31
10	08:19 16:26	07:40 16:20-16:41/21 17:19	06:43 18:09	06:32 07:04-07:13/9 20:02	05:31 20:52	04:57 21:32
11	08:19 16:27	07:39 16:19-16:41/22 17:20	06:40 18:11	06:30 07:00-07:16/16 20:04	05:30 20:54	04:57 21:32
12	08:18 16:28	07:37 16:19-16:42/23 17:22	06:38 18:13	06:27 06:58-07:18/20 20:06	05:28 20:55	04:56 21:33
13	08:17 16:30	07:35 16:19-16:43/24 17:24	06:36 18:14	06:25 06:56-07:19/23 20:07	05:27 20:57	04:56 21:34
14	08:17 16:31	07:33 16:19-16:43/24 17:26	06:34 18:16	06:23 06:54-07:20/26 20:09	05:25 20:59	04:56 21:34
15	08:16 16:33	07:31 16:19-16:43/24 17:28	06:31 18:18	06:21 06:53-07:21/28 20:11	05:23 21:00	04:56 21:35
16	08:15 16:34	07:29 16:18-16:42/24 17:30	06:29 18:20	06:19 06:52-07:22/30 20:12	05:22 21:02	04:56 21:35
17	08:14 16:36	07:27 16:19-16:42/23 17:32	06:27 18:21	06:16 06:52-07:22/30 20:14	05:20 21:03	04:56 21:36
18	08:13 16:38	07:25 16:19-16:41/22 17:33	06:24 18:23	06:14 06:50-07:22/32 20:16	05:19 21:05	04:56 21:36
19	08:12 16:39	07:23 16:20-16:41/21 17:35	06:22 18:25	06:12 06:50-07:22/32 20:17 19:48-19:50/2	05:18 21:06	04:56 21:37
20	08:11 16:41	07:21 16:21-16:40/19 17:37	06:20 18:27	06:10 06:49-07:22/33 20:19 19:44-19:52/8	05:16 21:07	04:56 21:37
21	08:10 16:43	07:19 16:23-16:38/15 17:39	06:17 18:28	06:08 06:49-07:21/32 20:21 19:42-19:53/11	05:15 21:09	04:56 21:37
22	08:09 16:44	07:17 16:25-16:36/11 17:41	06:15 18:30	06:06 06:49-07:21/32 20:22 19:41-19:55/14	05:14 21:10	04:56 21:37
23	08:08 16:46	07:15 17:43	06:13 18:32	06:04 06:49-07:21/32 20:24 19:40-19:57/17	05:12 21:12	04:56 21:38
24	08:07 16:48	07:13 17:44	06:11 18:33	06:02 06:49-07:20/31 20:26 19:39-19:58/19	05:11 21:13	04:56 21:38
25	08:05 16:49	07:11 17:46	06:08 18:35	06:00 06:49-07:19/30 20:28 19:38-19:58/20	05:10 21:14	04:57 21:38
26	08:04 16:51	07:09 17:48	06:06 18:37	05:58 06:50-07:19/29 20:29 19:38-19:58/20	05:09 21:16	04:57 21:38
27	08:03 16:53	07:07 17:50	06:04 18:38	05:56 06:50-07:17/27 20:31 19:38-19:58/20	05:08 21:17	04:58 21:38
28	08:01 16:55	07:05 17:52	06:01 18:40	05:54 06:52-07:17/25 20:33 19:38-19:58/20	05:07 21:18	04:58 21:38
29	08:00 16:57		06:59 19:07-19:16/9 19:42	05:52 06:52-07:16/24 20:34 19:39-19:58/19	05:06 21:20	04:59 21:37
30	07:58 16:58		06:57 19:05-19:18/13 19:44	05:50 06:53-07:14/21 20:36 19:39-19:57/18	05:05 21:21	04:59 21:37
31	07:57 17:00		06:54 19:04-19:20/16 19:45		05:04 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	0	329	38	904	84	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** SAB W2 - VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (319)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00	05:36	06:25 07:00-07:16/16	07:14	07:07 15:50-16:10/20	07:58
	21:37	21:05	20:04	18:55	16:49	16:09
2	05:01	05:38	06:27 07:02-07:11/9	07:16	07:09 15:51-16:09/18	08:00
	21:37	21:04	20:01	18:52	16:47	16:08
3	05:01	05:39	06:29 19:02-19:12/10	07:17	07:11 15:52-16:08/16	08:01
	21:36	21:02	19:59	18:50	16:45	16:08
4	05:02	05:41	06:30 19:00-19:14/14	07:19	07:13 15:54-16:06/12	08:02
	21:36	21:00	19:57	18:48	16:43	16:07
5	05:03	05:42	06:32 18:59-19:15/16	07:21	07:15 15:57-16:03/6	08:04
	21:35	20:59	19:55	18:45	16:42	16:06
6	05:04	05:44	06:34 18:57-19:15/18	07:22	07:16	08:05
	21:35	20:57	19:52	18:43	16:40	16:06
7	05:05	05:45	06:35 18:57-19:16/19	07:24	07:18	08:06
	21:34	20:55	19:50	18:41	16:38	16:06
8	05:05	05:47	06:37 18:55-19:15/20	07:26	07:20	08:07
	21:34	20:53	19:48	18:39	16:37	16:05
9	05:06	05:48 19:52-20:01/9	06:38 18:55-19:15/20	07:27	07:22	08:09
	21:33	20:51	19:46	18:36	16:35	16:05
10	05:07	05:50 07:08-07:16/8	06:40 18:55-19:14/19	07:29	07:24	08:10
	21:32	20:50 19:50-20:03/13	19:43	18:34	16:33	16:05
11	05:08	05:52 07:04-07:19/15	06:42 18:55-19:14/19	07:31	07:25	08:11
	21:32	20:48 19:48-20:04/16	19:41	18:32	16:32	16:05
12	05:09	05:53 07:03-07:21/18	06:43 18:55-19:11/16	07:33	07:27	08:12
	21:31	20:46 19:48-20:05/17	19:39	18:30	16:30	16:05
13	05:11	05:55 07:01-07:22/21	06:45 18:56-19:09/13	07:34	07:29	08:13
	21:30	20:44 19:46-20:05/19	19:36	18:28	16:29	16:04
14	05:12	05:56 07:00-07:24/24	06:46 18:58-19:08/10	07:36	07:31	08:14
	21:29	20:42 19:46-20:06/20	19:34	18:25	16:27	16:04
15	05:13	05:58 06:58-07:24/26	06:48 19:02-19:04/2	07:38	07:32	08:15
	21:28	20:40 19:45-20:05/20	19:32	18:23	16:26	16:05
16	05:14	06:00 06:57-07:25/28	06:50	07:39	07:34	08:16
	21:27	20:38 19:45-20:06/21	19:29	18:21	16:24	16:05
17	05:15	06:01 06:57-07:26/29	06:51	07:41	07:36	08:16
	21:26	20:36 19:45-20:05/20	19:27	18:19	16:23	16:05
18	05:16	06:03 06:56-07:26/30	06:53	07:43	07:37	08:17
	21:25	20:34 19:45-20:05/20	19:25	18:17	16:22	16:05
19	05:18	06:04 06:56-07:27/31	06:54	07:45 17:00-17:04/4	07:39	08:18
	21:24	20:32 19:45-20:03/18	19:22	18:15	16:21	16:05
20	05:19	06:06 06:55-07:26/31	06:56	07:46 16:55-17:07/12	07:41	08:18
	21:22	20:30 19:45-20:02/17	19:20	18:13	16:19	16:06
21	05:20	06:08 06:55-07:27/32	06:58	07:48 16:53-17:09/16	07:43	08:19
	21:21	20:28 19:46-19:59/13	19:18	18:10	16:18	16:06
22	05:22	06:09 06:54-07:26/32	06:59	07:50 16:51-17:10/19	07:44	08:20
	21:20	20:26 19:47-19:58/11	19:15	18:08	16:17	16:07
23	05:23	06:11 06:54-07:26/32	07:01	07:52 16:50-17:11/21	07:46	08:20
	21:19	20:23 19:49-19:56/7	19:13	18:06	16:16	16:07
24	05:24	06:13 06:53-07:25/32	07:03	07:53 16:50-17:12/22	07:47	08:21
	21:17	20:21	19:11	18:04	16:15	16:08
25	05:26	06:14 06:54-07:25/31	07:04	06:55 15:49-16:12/23	07:49	08:21
	21:16	20:19	19:08	17:02	16:14	16:08
26	05:27	06:16 06:54-07:24/30	07:06	06:57 15:49-16:13/24	07:51	08:21
	21:15	20:17	19:06	17:00	16:13	16:09
27	05:29	06:17 06:54-07:24/30	07:07	06:59 15:49-16:13/24	07:52	08:22
	21:13	20:15	19:04	16:58	16:12	16:10
28	05:30	06:19 06:54-07:22/28	07:09	07:00 15:48-16:12/24	07:54	08:22
	21:12	20:13	19:02	16:56	16:11	16:11
29	05:32	06:21 06:55-07:21/26	07:11	07:02 15:48-16:12/24	07:55	08:22
	21:10	20:10	18:59	16:54	16:10	16:11
30	05:33	06:22 06:56-07:19/23	07:12	07:04 15:48-16:11/23	07:57	08:22
	21:09	20:08	18:57	16:53	16:09	16:12
31	05:35	06:24 06:58-07:18/20		07:06 15:49-16:11/22		08:22
	21:07	20:06		16:51		16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	818	221	258	72	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** SAB W3 - VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (320)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 16:15	07:56 16:11-16:28/17 17:02	07:02 17:53	06:52 07:51-08:30/39 19:47	05:48 20:38	05:03 20:24-20:41/17 21:23
2	08:22 16:16	07:54 16:10-16:29/19 17:04	07:00 17:55	06:50 07:51-08:28/37 19:49	05:46 20:39	05:02 20:24-20:41/17 21:24
3	08:22 16:17	07:52 16:09-16:29/20 17:06	06:58 17:57	06:48 07:52-08:27/35 19:50	05:44 20:41	05:01 20:25-20:41/16 21:25
4	08:22 16:18	07:51 16:09-16:29/20 17:08	06:56 17:59	06:45 07:52-08:26/34 19:52	05:42 20:43	05:00 20:25-20:40/15 21:26
5	08:21 16:19	07:49 16:10-16:30/20 17:09	06:54 18:00	06:43 07:53-08:25/32 19:54	05:40 20:44	05:00 20:27-20:41/14 21:27
6	08:21 16:20	07:47 16:10-16:30/20 17:11	06:52 18:02	06:41 07:54-08:22/28 19:55	05:38 20:10-20:17/7 20:46	04:59 20:27-20:40/13 21:28
7	08:21 16:22	07:46 16:10-16:29/19 17:13	06:49 18:04	06:39 07:55-08:21/26 19:57	05:37 20:09-20:19/10 20:47	04:59 20:28-20:40/12 21:29
8	08:20 16:23	07:44 16:11-16:28/17 17:15	06:47 18:06	06:36 07:57-08:18/21 19:59	05:35 20:07-20:20/13 20:49	04:58 20:28-20:39/11 21:30
9	08:20 16:24	07:42 16:12-16:28/16 17:17	06:45 18:08	06:34 08:00-08:15/15 20:01	05:33 20:05-20:21/16 20:51	04:58 20:29-20:39/10 21:31
10	08:19 16:26	07:40 16:13-16:26/13 17:19	06:43 18:09	06:32 08:05-08:10/5 20:02	05:32 20:05-20:23/18 20:52	04:57 20:31-20:39/8 21:32
11	08:19 16:27	07:39 16:15-16:25/10 17:21	06:40 18:11	06:30 20:04	05:30 20:04-20:24/20 20:54	04:57 20:31-20:37/6 21:32
12	08:18 16:28	07:37 16:19-16:21/2 17:22	06:38 18:13	06:27 20:06	05:28 20:04-20:25/21 20:55	04:56 20:32-20:37/5 21:33
13	08:17 16:30	07:35 17:24	06:36 18:15	06:25 20:07	05:27 20:03-20:25/22 20:57	04:56 20:34-20:36/2 21:34
14	08:17 16:31	07:33 17:26	06:34 18:16	06:23 20:09	05:25 20:03-20:26/23 20:59	04:56 21:34
15	08:16 16:33	07:31 17:28	06:31 18:18	06:21 20:11	05:23 20:27-20:29/2 21:00 20:03-20:25/22	04:56 21:35
16	08:15 16:34	07:29 17:30	06:29 07:09-07:23/14 18:20	06:19 20:12	05:22 20:03-20:31/28 21:02	04:56 21:35
17	08:14 16:36	07:27 17:32	06:27 07:04-07:25/21 18:21	06:16 20:14	05:20 20:03-20:33/30 21:03	04:56 21:36
18	08:13 16:38	07:25 17:33	06:24 07:02-07:27/25 18:23	06:14 20:16	05:19 20:03-20:34/31 21:05	04:56 21:36
19	08:12 16:39	07:23 17:35	06:22 07:00-07:29/29 18:25	06:12 20:17	05:18 20:03-20:35/32 21:06	04:56 21:37
20	08:11 16:41	07:21 17:37	06:20 06:58-07:30/32 18:27	06:10 20:19	05:16 20:04-20:37/33 21:07	04:56 21:37
21	08:10 16:43	07:19 17:39	06:18 06:57-07:31/34 18:28	06:08 20:21	05:15 20:05-20:38/33 21:09	04:56 21:37
22	08:09 16:44	07:17 17:41	06:15 06:56-07:32/36 18:30	06:06 20:22	05:14 20:04-20:39/35 21:10	04:56 21:37
23	08:08 16:46	07:15 17:43	06:13 06:54-07:32/38 18:32	06:04 20:24	05:12 20:05-20:40/35 21:12	04:56 21:38
24	08:07 16:48	07:13 17:44	06:11 06:54-07:32/38 18:33	06:02 20:26	05:11 20:06-20:41/35 21:13	04:57 21:38
25	08:05 16:50	07:11 17:46	06:08 06:53-07:33/40 18:35	06:00 20:28	05:10 20:07-20:41/34 21:14	04:57 21:38
26	08:04 16:51	07:09 17:48	06:06 06:53-07:33/40 18:37	05:58 20:29	05:09 20:08-20:41/33 21:16	04:57 21:38
27	08:03 16:53	07:07 17:50	06:04 06:52-07:32/40 18:38	05:56 20:31	05:08 20:22-20:41/19 21:17 20:09-20:21/12	04:58 21:38
28	08:01 16:14-16:22/8 16:55	07:05 17:52	06:01 06:52-07:32/40 18:40	05:54 20:33	05:07 20:22-20:41/19 21:18 20:10-20:20/10	04:58 21:38
29	08:00 16:12-16:24/12 16:57		06:59 07:52-08:32/40 19:42	05:52 20:34	05:06 20:23-20:42/19 21:20 20:13-20:19/6	04:59 21:37
30	07:58 16:11-16:26/15 16:58		06:57 07:51-08:31/40 19:44	05:50 20:36	05:05 20:23-20:42/19 21:21	04:59 20:37-20:41/4 21:37
31	07:57 16:10-16:27/17 17:00		06:55 07:51-08:30/39 19:45		05:04 20:24-20:41/17 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	52	193	546	272	654	150

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** SAB W3 - VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (320)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember	
1	05:00	20:35-20:41/6	05:36	20:15-20:36/21	06:25		07:14		07:08	15:42-15:56/14	07:58	
	21:37		21:05		20:04		18:55		16:49		16:09	
2	05:01	20:35-20:43/8	05:38	20:15-20:34/19	06:27	08:03-08:08/5	07:16		07:09	15:41-15:57/16	08:00	
	21:37		21:04		20:02		18:52		16:47		16:08	
3	05:01	20:35-20:44/9	05:39	20:16-20:33/17	06:29	07:58-08:13/15	07:17		07:11	15:40-15:58/18	08:01	
	21:36		21:02		19:59		18:50		16:45		16:08	
4	05:02	20:34-20:44/10	05:41	20:16-20:31/15	06:30	07:54-08:15/21	07:19		07:13	15:40-15:59/19	08:02	
	21:36		21:00		19:57		18:48		16:43		16:07	
5	05:03	20:34-20:45/11	05:42	20:17-20:29/12	06:32	07:52-08:18/26	07:21		07:15	15:40-15:59/19	08:04	
	21:35		20:59		19:55		18:45		16:42		16:06	
6	05:04	20:33-20:46/13	05:44	20:19-20:28/9	06:34	07:50-08:18/28	07:22		07:16	15:40-16:00/20	08:05	
	21:35		20:57		19:52		18:43		16:40		16:06	
7	05:05	20:33-20:47/14	05:45	20:21-20:25/4	06:35	07:49-08:20/31	07:24		07:18	15:40-16:00/20	08:06	
	21:34		20:55		19:50		18:41		16:38		16:06	
8	05:05	20:33-20:47/14	05:47		06:37	07:47-08:20/33	07:26		07:20	15:40-16:00/20	08:07	
	21:34		20:53		19:48		18:39		16:37		16:05	
9	05:06	20:33-20:48/15	05:49		06:38	07:46-08:21/35	07:27		07:22	15:41-15:59/18	08:09	
	21:33		20:51		19:46		18:36		16:35		16:05	
10	05:07	20:33-20:49/16	05:50		06:40	07:44-08:21/37	07:29		07:24	15:41-15:59/18	08:10	
	21:32		20:50		19:43		18:34		16:33		16:05	
11	05:08	20:32-20:49/17	05:52		06:42	07:44-08:22/38	07:31		07:25	15:41-15:58/17	08:11	
	21:32		20:48		19:41		18:32		16:32		16:05	
12	05:09	20:32-20:50/18	05:53		06:43	07:43-08:22/39	07:33		07:27	15:42-15:57/15	08:12	
	21:31		20:46		19:39		18:30		16:30		16:05	
13	05:11	20:32-20:50/18	05:55		06:45	07:42-08:22/40	07:34		07:29	15:44-15:56/12	08:13	
	21:30		20:44		19:36		18:28		16:29		16:04	
14	05:12	20:32-20:50/18	05:56		06:46	07:42-08:22/40	07:36		07:31	15:46-15:54/8	08:14	
	21:29	20:24-20:25/1	20:42		19:34		18:25		16:27		16:04	
15	05:13	20:32-20:51/19	05:58		06:48	07:41-08:21/40	07:38		07:32		08:15	
	21:28	20:20-20:28/8	20:40		19:32		18:23		16:26		16:05	
16	05:14	20:32-20:51/19	06:00		06:50	07:41-08:21/40	07:39		07:34		08:16	
	21:27	20:19-20:30/11	20:38		19:29		18:21		16:24		16:05	
17	05:15	20:18-20:51/33	06:01		06:51	07:40-08:20/40	07:41		07:36		08:16	
	21:26		20:36		19:27		18:19		16:23		16:05	
18	05:17	20:17-20:51/34	06:03		06:53	07:41-08:20/39	07:43		07:37		08:17	
	21:25		20:34		19:25		18:17		16:22		16:05	
19	05:18	20:16-20:51/35	06:04		06:54	07:41-08:20/39	07:45		07:39		08:18	
	21:24		20:32		19:22		18:15		16:21		16:05	
20	05:19	20:16-20:51/35	06:06		06:56	07:41-08:18/37	07:46		07:41		08:18	
	21:22		20:30		19:20		18:13		16:19		16:06	
21	05:20	20:15-20:50/35	06:08		06:58	07:41-08:18/37	07:48		07:43		08:19	
	21:21		20:28		19:18		18:11		16:18		16:06	
22	05:22	20:15-20:49/34	06:09		06:59	07:41-08:16/35	07:50		07:44		08:20	
	21:20		20:26		19:15		18:08		16:17		16:07	
23	05:23	20:14-20:47/33	06:11		07:01	07:42-08:15/33	07:52		07:46		08:20	
	21:19		20:23		19:13		18:06		16:16		16:07	
24	05:24	20:14-20:47/33	06:13		07:03	07:44-08:13/29	07:53		07:47		08:21	
	21:17		20:21		19:11		18:04		16:15		16:08	
25	05:26	20:14-20:45/31	06:14		07:04	07:44-08:11/27	06:55		07:49		08:21	
	21:16		20:19		19:08		17:02		16:14		16:08	
26	05:27	20:13-20:43/30	06:16		07:06	07:46-08:09/23	06:57		07:51		08:21	
	21:15		20:17		19:06		17:00		16:13		16:09	
27	05:29	20:14-20:43/29	06:17		07:08	07:49-08:06/17	06:59		07:52		08:22	
	21:13		20:15		19:04		16:58		16:12		16:10	
28	05:30	20:37-20:41/4	06:19		07:09	07:53-08:00/7	07:00		07:54		08:22	
	21:12	20:13-20:36/23	20:13		19:02		16:56		16:11		16:11	
29	05:32	20:38-20:39/1	06:21		07:11		07:02		07:55		08:22	
	21:10	20:13-20:36/23	20:10		18:59		16:55		16:10		16:11	
30	05:33	20:14-20:36/22	06:22		07:12		07:04	15:47-15:52/5	07:57		08:22	
	21:09		20:08		18:57		16:53		16:10		16:12	
31	05:35	20:14-20:35/21	06:24				07:06	15:44-15:55/11			08:22	
	21:07		20:06				16:51				16:13	
Sonnenscheinstunden	501		453		381		332		267		245	
Anzahl Minuten mit Schatten	701		97		831		16		234		0	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** SAB W4 - VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (321)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar	März		April		Mai		Juni	
1	08:22	15:13-15:31/18	07:55	07:02		06:52	19:10-19:21/11	05:48		05:03	20:14-20:43/29
	16:15		17:02	17:53		19:47		20:38		21:23	
2	08:22	15:14-15:32/18	07:54	07:00		06:50	19:07-19:22/15	05:46		05:02	20:14-20:43/29
	16:16		17:04	17:55		19:49		20:39		21:24	
3	08:22	15:14-15:33/19	07:52	06:58		06:48	19:05-19:24/19	05:44		05:01	20:46-20:52/6
	16:17		17:06	17:57		19:50		20:41		21:25	20:14-20:44/30
4	08:22	15:14-15:33/19	07:51	06:56		06:45	19:04-19:25/21	05:42		05:00	20:14-20:53/39
	16:18		17:08	17:59		19:52		20:42		21:26	
5	08:21	15:14-15:34/20	07:49	06:54		06:43	19:03-19:25/22	05:40		05:00	20:14-20:55/41
	16:19		17:09	18:00		19:54		20:44		21:27	
6	08:21	15:14-15:34/20	07:47	06:51		06:41	19:02-19:25/23	05:38		04:59	20:14-20:55/41
	16:20		17:11	18:02		19:55		20:46		21:28	
7	08:21	15:14-15:36/22	07:46	06:49		06:39	19:01-19:25/24	05:37		04:59	20:14-20:56/42
	16:21		17:13	18:04		19:57		20:47		21:29	
8	08:20	15:14-15:36/22	07:44	06:47		06:36	19:01-19:25/24	05:35		04:58	20:14-20:57/43
	16:23		17:15	18:06		19:59		20:49		21:30	
9	08:20	15:15-15:37/22	07:42	06:45	17:32-17:41/9	06:34	19:01-19:25/24	05:33		04:58	20:14-20:58/44
	16:24		17:17	18:08		20:00		20:51		21:31	
10	08:19	15:15-15:38/23	07:40	06:43	17:28-17:42/14	06:32	19:01-19:23/22	05:31		04:57	20:15-20:59/44
	16:26		17:19	18:09		20:02		20:52		21:32	
11	08:19	15:15-15:38/23	07:39	06:40	17:27-17:44/17	06:30	19:01-19:23/22	05:30		04:57	20:14-20:59/45
	16:27		17:20	18:11		20:04		20:54		21:32	
12	08:18	15:15-15:38/23	07:37	06:38	07:05-07:15/10	06:27	19:02-19:22/20	05:28		04:56	20:15-21:00/45
	16:28		17:22	18:13	17:26-17:45/19	20:06		20:55		21:33	
13	08:17	15:15-15:39/24	07:35	06:36	07:02-07:18/16	06:25	19:03-19:21/18	05:27		04:56	20:15-21:00/45
	16:30		17:24	18:14	17:24-17:45/21	20:07		20:57		21:34	
14	08:17	15:16-15:40/24	07:33	06:34	07:00-07:19/19	06:23	19:04-19:19/15	05:25		04:56	20:15-21:01/46
	16:31		17:26	18:16	17:24-17:45/21	20:09		20:58		21:34	
15	08:16	15:16-15:40/24	07:31	06:31	06:58-07:20/22	06:21	19:06-19:17/11	05:23		04:56	20:16-21:02/46
	16:33		17:28	18:18	17:24-17:45/21	20:11		21:00		21:35	
16	08:15	15:17-15:41/24	07:29	06:29	06:57-07:21/24	06:19		05:22		04:56	20:16-21:02/46
	16:34		17:30	18:20	17:23-17:44/21	20:12		21:02		21:35	
17	08:14	15:16-15:40/24	07:27	06:27	06:56-07:21/25	06:16		05:20		04:56	20:16-21:02/46
	16:36		17:32	18:21	17:23-17:44/21	20:14		21:03		21:36	
18	08:13	15:17-15:40/23	07:25	06:24	06:55-07:21/26	06:14		05:19		04:56	20:16-21:03/47
	16:38		17:33	18:23	17:24-17:43/19	20:16		21:05		21:36	
19	08:12	15:17-15:41/24	07:23	06:22	06:55-07:22/27	06:12		05:18		04:56	20:16-21:03/47
	16:39		17:35	18:25	17:25-17:43/18	20:17		21:06		21:37	
20	08:11	15:18-15:41/23	07:21	06:20	06:54-07:21/27	06:10		05:16		04:56	20:16-21:03/47
	16:41		17:37	18:27	17:25-17:40/15	20:19		21:07		21:37	
21	08:10	15:19-15:41/22	07:19	06:17	06:54-07:20/26	06:08		05:15	20:24-20:32/8	04:56	20:16-21:04/48
	16:43		17:39	18:28	17:27-17:38/11	20:21		21:09		21:37	
22	08:09	15:19-15:40/21	07:17	06:15	06:54-07:20/26	06:06		05:14	20:20-20:33/13	04:56	20:16-21:03/47
	16:44		17:41	18:30	17:31-17:34/3	20:22		21:10		21:37	
23	08:08	15:21-15:40/19	07:15	06:13	06:54-07:19/25	06:04		05:12	20:19-20:35/16	04:56	20:17-21:04/47
	16:46		17:43	18:32		20:24		21:12		21:38	
24	08:07	15:22-15:40/18	07:13	06:11	06:55-07:18/23	06:02		05:11	20:18-20:37/19	04:56	20:17-21:04/47
	16:48		17:44	18:33		20:26		21:13		21:38	
25	08:05	15:23-15:39/16	07:11	06:08	06:56-07:17/21	06:00		05:10	20:17-20:38/21	04:57	20:17-21:03/46
	16:49		17:46	18:35		20:27		21:14		21:38	
26	08:04	15:25-15:38/13	07:09	06:06	06:57-07:15/18	05:58		05:09	20:16-20:39/23	04:57	20:18-21:04/46
	16:51		17:48	18:37		20:29		21:16		21:38	
27	08:03	15:27-15:36/9	07:07	06:04	06:58-07:12/14	05:56		05:08	20:16-20:39/23	04:58	20:18-21:04/46
	16:53		17:50	18:38		20:31		21:17		21:38	
28	08:01		07:05	06:01	07:02-07:09/7	05:54		05:07	20:15-20:40/25	04:58	20:19-21:04/45
	16:55		17:52	18:40		20:33		21:18		21:38	
29	08:00			06:59		05:52		05:06	20:16-20:42/26	04:59	20:18-21:04/46
	16:57			19:42		20:34		21:19		21:37	
30	07:58			06:57		05:50		05:05	20:15-20:42/27	04:59	20:19-21:04/45
	16:58			19:44		20:36		21:21		21:37	
31	07:57			06:54				05:04	20:15-20:42/27		
	17:00			19:45				21:22			
Sonnenscheinstunden	260		278	367		416		484		498	
Anzahl Minuten mit Schatten	557		0	586		291		228		1311	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** SAB W4 - VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (321)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 20:19-21:03/44 21:37	05:36 21:05	06:25 19:00-19:22/22 20:04	07:14 07:43-07:55/12 18:55 18:04-18:24/20	07:07 16:49	07:58 14:57-15:20/23 16:09
2	05:01 20:19-21:03/44 21:37	05:38 21:04	06:27 19:00-19:22/22 20:01	07:16 18:05-18:23/18 18:52	07:09 16:47	08:00 14:58-15:21/23 16:08
3	05:01 20:20-21:03/43 21:36	05:39 21:02	06:29 18:58-19:22/24 19:59	07:17 18:05-18:21/16 18:50	07:11 16:45	08:01 14:58-15:20/22 16:08
4	05:02 20:19-21:02/43 21:36	05:41 21:00	06:30 18:58-19:22/24 19:57	07:19 18:07-18:19/12 18:48	07:13 16:43	08:02 14:59-15:21/22 16:07
5	05:03 20:20-21:02/42 21:35	05:42 20:59	06:32 18:58-19:22/24 19:55	07:21 18:11-18:15/4 18:45	07:15 16:42	08:04 14:59-15:21/22 16:06
6	05:04 20:20-21:02/42 21:35	05:44 20:57	06:34 18:58-19:21/23 19:52	07:22 18:43	07:16 16:40	08:05 15:00-15:20/20 16:06
7	05:05 20:21-21:01/40 21:34	05:45 20:55	06:35 18:58-19:20/22 19:50	07:24 18:41	07:18 16:38	08:06 15:01-15:21/20 16:06
8	05:05 20:21-21:01/40 21:34	05:47 20:53	06:37 18:58-19:19/21 19:48	07:26 18:39	07:20 16:37	08:07 15:02-15:21/19 16:05
9	05:06 20:53-21:00/7 21:33 20:22-20:51/29	05:48 20:51	06:38 18:59-19:18/19 19:46	07:27 18:36	07:22 16:35	08:09 15:02-15:21/19 16:05
10	05:07 20:55-20:58/3 21:32 20:22-20:51/29	05:50 20:50	06:40 19:00-19:16/16 19:43	07:29 18:34	07:24 16:33	08:10 15:03-15:21/18 16:05
11	05:08 20:22-20:51/29 21:31	05:52 20:48	06:42 19:02-19:14/12 19:41	07:31 18:32	07:25 16:32	08:11 15:04-15:21/17 16:05
12	05:09 20:23-20:51/28 21:31	05:53 20:46	06:43 19:06-19:08/2 19:39	07:32 18:30	07:27 16:30	08:12 15:04-15:21/17 16:05
13	05:11 20:23-20:51/28 21:30	05:55 20:44	06:45 19:36	07:34 18:28	07:29 16:29	08:13 15:05-15:21/16 16:04
14	05:12 20:24-20:50/26 21:29	05:56 20:42	06:46 19:34	07:36 18:25	07:31 16:27	08:14 15:06-15:21/15 16:04
15	05:13 20:24-20:50/26 21:28	05:58 20:40	06:48 07:52-07:57/5 19:32	07:38 18:23	07:32 14:59-15:09/10 16:26	08:15 15:07-15:21/14 16:05
16	05:14 20:25-20:49/24 21:27	06:00 20:38	06:50 07:48-08:01/13 19:29	07:39 18:21	07:34 14:58-15:11/13 16:24	08:16 15:08-15:22/14 16:05
17	05:15 20:26-20:49/23 21:26	06:01 20:36	06:51 07:45-08:02/17 19:27	07:41 18:19	07:36 14:57-15:13/16 16:23	08:16 15:08-15:22/14 16:05
18	05:16 20:26-20:48/22 21:25	06:03 20:34	06:53 07:43-08:04/21 19:25	07:43 18:17	07:37 14:56-15:14/18 16:22	08:17 15:09-15:23/14 16:05
19	05:18 20:27-20:47/20 21:24	06:04 20:32	06:54 07:42-08:05/23 19:22	07:45 18:15	07:39 14:56-15:15/19 16:21	08:18 15:09-15:22/13 16:05
20	05:19 20:29-20:47/18 21:22	06:06 20:30	06:56 07:41-08:05/24 19:20	07:46 18:13	07:41 14:54-15:15/21 16:19	08:18 15:10-15:23/13 16:06
21	05:20 20:30-20:45/15 21:21	06:08 20:28	06:58 07:40-08:06/26 19:18	07:48 18:10	07:43 14:54-15:16/22 16:18	08:19 15:10-15:23/13 16:06
22	05:22 20:32-20:43/11 21:20	06:09 20:26	06:59 07:39-08:05/26 19:15 18:12-18:22/10	07:50 18:08	07:44 14:54-15:17/23 16:17	08:20 15:11-15:24/13 16:07
23	05:23 20:35-20:39/4 21:19	06:11 20:23	07:01 07:39-08:05/26 19:13 18:10-18:24/14	07:52 18:06	07:46 14:55-15:18/23 16:16	08:20 15:11-15:24/13 16:07
24	05:24 21:17	06:13 20:21	07:03 07:39-08:05/26 19:11 18:08-18:25/17	07:53 18:04	07:47 14:55-15:19/24 16:15	08:21 15:12-15:25/13 16:08
25	05:26 21:16	06:14 20:19	07:04 07:38-08:04/26 19:08 18:07-18:26/19	06:55 17:02	07:49 14:54-15:18/24 16:14	08:21 15:12-15:25/13 16:08
26	05:27 21:15	06:16 20:17	07:06 07:38-08:04/26 19:06 18:06-18:26/20	06:57 17:00	07:51 14:55-15:19/24 16:13	08:21 15:12-15:26/14 16:09
27	05:29 21:13	06:17 20:15	07:07 07:39-08:03/24 19:04 18:05-18:26/21	06:59 16:58	07:52 14:55-15:20/25 16:12	08:21 15:13-15:26/13 16:10
28	05:30 21:12	06:19 19:07-19:18/11 20:13	07:09 07:39-08:01/22 19:02 18:04-18:26/22	07:00 16:56	07:54 14:55-15:19/24 16:11	08:22 15:13-15:27/14 16:11
29	05:32 21:10	06:21 19:05-19:20/15 20:10	07:11 07:40-08:00/20 18:59 18:04-18:26/22	07:02 16:54	07:55 14:56-15:20/24 16:10	08:22 15:13-15:28/15 16:11
30	05:33 21:09	06:22 19:03-19:21/18 20:08	07:12 07:41-07:58/17 18:57 18:04-18:25/21	07:04 16:53	07:57 14:57-15:20/23 16:09	08:22 15:13-15:29/16 16:12
31	05:35 21:07	06:24 19:02-19:22/20 20:06		07:06 16:51		08:22 15:13-15:29/16 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	680	64	739	82	333	508

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 02 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (972)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 16:15	07:56 17:02	07:03 07:40-08:32/52 17:53	06:52 07:21-07:46/25 19:47	05:48 06:26-06:48/22 20:38	05:03 18:53-19:49/56 21:23 05:32-06:00/28
2	08:22 16:16	07:54 17:04	07:00 07:40-08:30/50 17:55	06:50 07:19-07:47/28 19:49	05:46 06:26-06:47/21 20:39	05:02 18:53-19:50/57 21:24 05:33-06:01/28
3	08:22 16:17	07:52 17:06	06:58 07:39-08:28/49 17:57	06:48 07:10-07:47/37 19:50	05:44 06:29-06:47/18 20:41	05:01 18:52-19:51/59 21:25 05:31-06:00/29
4	08:22 16:18	07:51 17:08	06:56 07:39-08:26/47 17:59	06:45 07:08-07:47/39 19:52	05:42 06:31-06:45/14 20:43	05:01 18:51-19:51/60 21:26 05:29-06:01/32
5	08:21 16:19	07:49 17:09	06:54 07:39-08:24/45 18:01	06:43 07:06-07:47/41 19:54	05:40 06:32-06:43/11 20:44	05:00 18:51-19:53/62 21:27 05:29-06:00/31
6	08:21 16:20	07:48 17:11	06:52 08:12-08:20/8 18:02 07:39-08:11/32	06:41 07:04-07:48/44 19:56	05:39 06:35-06:40/5 20:46	04:59 18:50-19:53/63 21:28 05:28-05:59/31
7	08:21 16:22	07:46 17:13	06:49 07:38-08:10/32 18:04	06:39 07:02-07:46/44 19:57	05:37 20:47	04:59 18:50-19:54/64 21:29 05:28-05:59/31
8	08:20 16:23	07:44 08:19-08:27/8 17:15	06:47 07:39-08:10/31 18:06	06:36 06:59-07:46/47 19:59	05:35 20:49	04:58 18:49-19:54/65 21:30 05:28-05:59/31
9	08:20 16:24	07:42 08:15-08:30/15 17:17	06:45 07:39-08:09/30 18:08	06:34 06:57-07:46/49 20:01	05:33 20:51	04:58 18:50-19:55/65 21:31 05:27-05:58/31
10	08:19 16:26	07:41 08:14-08:33/19 17:19	06:43 07:40-08:08/28 18:09	06:32 06:55-07:45/50 20:02	05:32 20:52	04:57 18:50-19:56/66 21:32 05:27-05:58/31
11	08:19 16:27	07:39 08:13-08:35/22 17:21	06:40 07:41-08:06/25 18:11	06:30 06:53-07:43/50 20:04	05:30 20:54	04:57 18:49-19:56/67 21:32 05:27-05:58/31
12	08:18 16:28	07:37 08:11-08:36/25 17:22	06:38 07:42-08:04/22 18:13	06:27 06:50-07:42/52 20:06	05:28 20:55	04:56 18:49-19:57/68 21:33 05:26-05:57/31
13	08:17 16:30	07:35 08:10-08:37/27 17:24	06:36 07:44-08:02/18 18:15	06:25 06:48-07:41/53 20:07	05:27 20:57	04:56 18:49-19:57/68 21:34 05:26-05:56/30
14	08:17 16:31	07:33 08:08-08:38/30 17:26	06:34 07:46-07:58/12 18:16	06:23 06:46-07:39/53 20:09	05:25 20:59	04:56 18:49-19:58/69 21:34 05:26-05:55/29
15	08:16 16:33	07:31 08:07-08:38/31 17:28	06:31 18:18	06:21 06:45-07:37/52 20:11	05:24 05:50-05:56/6 21:00	04:56 18:49-19:58/69 21:35 05:26-05:55/29
16	08:15 16:35	07:29 08:05-08:39/34 17:30	06:29 18:20	06:19 06:43-07:33/50 20:12	05:22 05:48-05:57/9 21:02	04:56 18:50-19:59/69 21:35 05:26-05:55/29
17	08:14 16:36	07:27 08:04-08:39/35 17:32	06:27 18:21	06:17 07:09-07:29/20 20:14 06:42-07:08/26	05:21 05:47-05:58/11 21:03	04:56 18:50-19:59/69 21:36 05:26-05:55/29
18	08:13 16:38	07:25 08:04-08:39/35 17:33	06:24 18:23	06:14 07:11-07:22/11 20:16 06:40-07:06/26	05:19 05:46-05:59/13 21:05	04:56 18:50-19:59/69 21:36 05:26-05:55/29
19	08:12 16:39	07:23 08:03-08:40/37 17:35	06:22 18:25	06:12 06:38-07:05/27 20:17	05:18 05:44-05:59/15 21:06	04:56 18:50-20:00/70 21:37 05:26-05:55/29
20	08:11 16:41	07:21 08:01-08:38/37 17:37	06:20 18:27	06:10 06:33-07:03/30 20:19	05:16 19:18-19:22/4 21:08 05:43-06:00/17	04:56 18:50-20:00/70 21:37 05:26-05:55/29
21	08:10 16:43	07:19 08:01-08:38/37 17:39	06:18 18:28	06:08 06:31-07:02/31 20:21	05:15 19:11-19:30/19 21:09 05:42-06:00/18	04:56 18:50-20:00/70 21:37 05:27-05:55/28
22	08:09 16:44	07:17 07:51-08:38/47 17:41	06:15 18:30	06:06 06:29-07:00/31 20:23	05:14 19:07-19:33/26 21:10 05:41-06:01/20	04:56 18:50-20:00/70 21:37 05:27-05:56/29
23	08:08 16:46	07:15 07:48-08:37/49 17:43	06:13 18:32	06:04 06:27-07:00/33 20:24	05:12 19:04-19:35/31 21:12 05:40-06:01/21	04:56 18:51-20:01/70 21:38 05:27-05:56/29
24	08:07 16:48	07:13 07:46-08:37/51 17:44	06:11 18:33	06:02 06:25-07:00/35 20:26	05:11 19:02-19:38/36 21:13 05:39-06:02/23	04:57 18:51-20:01/70 21:38 05:27-05:56/29
25	08:05 16:50	07:11 07:45-08:36/51 17:46	06:08 18:35	06:00 06:25-06:59/34 20:28	05:10 19:00-19:40/40 21:14 05:38-06:02/24	04:57 18:51-20:00/69 21:38 05:28-05:57/29
26	08:04 16:51	07:09 07:43-08:35/52 17:48	06:06 18:37	05:58 06:25-06:59/34 20:29	05:09 18:58-19:41/43 21:16 05:37-06:02/25	04:57 18:52-20:01/69 21:38 05:28-05:57/29
27	08:03 16:53	07:07 07:41-08:33/52 17:50	06:04 18:39	05:56 06:25-06:58/33 20:31	05:08 18:57-19:43/46 21:17 05:36-06:02/26	04:58 18:52-20:01/69 21:38 05:28-05:57/29
28	08:01 16:55	07:05 07:41-08:32/51 17:52	06:01 06:32-06:38/6 18:40	05:54 06:25-06:57/32 20:33	05:07 18:57-19:45/48 21:18 05:35-06:02/27	04:58 18:52-20:01/69 21:38 05:29-05:58/29
29	08:00 16:57		06:59 07:28-07:42/14 19:42	05:52 06:25-06:55/30 20:34	05:06 18:56-19:46/50 21:20 05:34-06:02/28	04:59 18:52-20:01/69 21:38 05:29-05:59/30
30	07:59 16:58		06:57 07:25-07:44/19 19:44	05:50 06:25-06:53/28 20:36	05:05 18:55-19:47/52 21:21 05:33-06:01/28	04:59 18:53-20:01/68 21:37 05:30-06:01/31
31	07:57 17:00		06:55 07:23-07:45/22 19:45		05:04 18:54-19:48/54 21:22 05:32-06:01/29	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	0	745	542	1175	880	2888

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 02 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (972)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember
1	05:00	18:53-20:00/67	05:36		06:26	06:52-07:43/51	07:14	08:22-08:42/20	07:08	07:43-08:02/19	07:58
	21:37	05:31-06:02/31	21:05		20:04		18:55		16:49		16:09
2	05:01	18:54-20:00/66	05:38		06:27	06:53-07:43/50	07:16	08:20-08:44/24	07:09	07:46-07:59/13	08:00
	21:37	05:31-06:02/31	21:04		20:02		18:52		16:47		16:08
3	05:01	18:55-20:01/66	05:39		06:29	06:55-07:44/49	07:17	08:19-08:45/26	07:11	07:50-07:56/6	08:01
	21:36	05:32-06:03/31	21:02		19:59		18:50		16:45		16:08
4	05:02	18:56-20:01/65	05:41		06:30	06:56-07:43/47	07:19	08:17-08:45/28	07:13		08:02
	21:36	05:33-06:04/31	21:00		19:57		18:48		16:44		16:07
5	05:03	18:55-20:00/65	05:42		06:32	06:59-07:43/44	07:21	08:16-08:46/30	07:15		08:04
	21:35	05:33-06:05/32	20:59		19:55		18:46		16:42		16:07
6	05:04	18:56-19:59/63	05:44		06:34	06:59-07:43/44	07:22	08:15-08:47/32	07:17		08:05
	21:35	05:34-06:05/31	20:57		19:53		18:43		16:40		16:06
7	05:05	18:57-19:59/62	05:45	06:44-06:51/7	06:35	07:01-07:43/42	07:24	08:14-08:46/32	07:18		08:06
	21:34	05:35-06:06/31	20:55		19:50		18:41		16:38		16:06
8	05:06	18:58-19:59/61	05:47	06:41-06:53/12	06:37	07:02-07:41/39	07:26	08:14-08:57/43	07:20		08:07
	21:34	05:36-06:07/31	20:53		19:48		18:39		16:37		16:05
9	05:06	18:59-19:59/60	05:49	06:39-06:55/16	06:38	07:04-07:41/37	07:28	08:14-09:00/46	07:22		08:09
	21:33	05:37-06:08/31	20:52		19:46		18:37		16:35		16:05
10	05:07	19:00-19:58/58	05:50	06:37-06:56/19	06:40	07:12-07:40/28	07:29	08:14-09:02/48	07:24		08:10
	21:32	05:40-06:08/28	20:50		19:43		18:34		16:33		16:05
11	05:08	19:01-19:58/57	05:52	06:36-06:57/21	06:42	07:13-07:39/26	07:31	08:13-09:03/50	07:25		08:11
	21:32	05:40-06:09/29	20:48		19:41		18:32		16:32		16:05
12	05:10	19:02-19:57/55	05:53	06:34-06:58/24	06:43	07:15-07:38/23	07:33	08:13-09:04/51	07:27		08:12
	21:31	05:41-06:09/28	20:46		19:39		18:30		16:30		16:05
13	05:11	19:03-19:56/53	05:55	06:34-07:02/28	06:45	07:16-07:35/19	07:34	08:14-09:05/51	07:29		08:13
	21:30	05:41-06:10/29	20:44		19:36		18:28		16:29		16:05
14	05:12	19:04-19:55/51	05:57	06:32-07:03/31	06:46	07:18-07:33/15	07:36	08:14-09:06/52	07:31		08:14
	21:29	05:42-06:10/28	20:42		19:34		18:25		16:27		16:05
15	05:13	19:05-19:54/49	05:58	06:32-07:05/33	06:48	07:21-07:29/8	07:38	08:15-09:06/51	07:32		08:15
	21:28	05:43-06:10/27	20:40		19:32		18:23		16:26		16:05
16	05:14	19:06-19:53/47	06:00	06:32-07:05/33	06:50		07:39	08:15-09:06/51	07:34		08:16
	21:27	05:44-06:10/26	20:38		19:29		18:21		16:25		16:05
17	05:15	19:07-19:52/45	06:01	06:32-07:06/34	06:51		07:41	08:16-09:08/52	07:36		08:16
	21:26	05:45-06:10/25	20:36		19:27		18:19		16:23		16:05
18	05:17	19:09-19:50/41	06:03	06:31-07:06/35	06:53		07:43	08:18-09:08/50	07:38		08:17
	21:25	05:47-06:11/24	20:34		19:25		18:17		16:22		16:05
19	05:18	19:11-19:49/38	06:05	06:32-07:06/34	06:55		07:45	08:20-09:09/49	07:39		08:18
	21:24	05:48-06:11/23	20:32		19:23		18:15		16:21		16:05
20	05:19	19:13-19:47/34	06:06	06:33-07:06/33	06:56		07:46	08:32-09:09/37	07:41		08:19
	21:23	05:49-06:11/22	20:30		19:20		18:13	08:25-08:31/6	16:19		16:06
21	05:20	19:15-19:45/30	06:08	06:35-07:06/31	06:58		07:48	08:33-09:10/37	07:43		08:19
	21:21	05:50-06:11/21	20:28		19:18		18:11		16:18		16:06
22	05:22	19:18-19:41/23	06:09	06:36-07:07/31	06:59		07:50	08:32-09:09/37	07:44		08:20
	21:20	05:51-06:10/19	20:26		19:16		18:09		16:17		16:07
23	05:23	19:23-19:38/15	06:11	06:38-07:08/30	07:01		07:52	08:33-09:09/36	07:46		08:20
	21:19	05:53-06:11/18	20:23		19:13		18:06		16:16		16:07
24	05:25	05:54-06:10/16	06:13	07:18-07:20/2	07:03		07:53	08:33-09:09/36	07:48		08:21
	21:17		20:21	06:42-07:08/26	19:11		18:04		16:15		16:08
25	05:26	05:55-06:09/14	06:14	07:13-07:25/12	07:04		06:55	07:34-08:09/35	07:49		08:21
	21:16		20:19	06:43-07:09/26	19:09		17:02		16:14		16:08
26	05:27	05:57-06:09/12	06:16	07:10-07:31/21	07:06		06:57	07:35-08:08/33	07:51		08:21
	21:15		20:17	06:44-07:09/25	19:06		17:00		16:13		16:09
27	05:29	05:58-06:08/10	06:17	06:45-07:35/50	07:08		06:59	07:37-08:08/31	07:52		08:22
	21:13		20:15		19:04		16:58		16:12		16:10
28	05:30	05:59-06:06/7	06:19	06:46-07:38/52	07:09		07:00	07:38-08:07/29	07:54		08:22
	21:12		20:13		19:02		16:57		16:11		16:11
29	05:32	06:01-06:05/4	06:21	06:47-07:40/53	07:11	08:29-08:37/8	07:02	07:40-08:06/26	07:55		08:22
	21:10		20:10		18:59		16:55		16:10		16:11
30	05:33		06:22	06:49-07:42/53	07:13	08:25-08:41/16	07:04	07:41-08:05/24	07:57		08:22
	21:09		20:08		18:57		16:53		16:10		16:12
31	05:35		06:24	06:50-07:42/52			07:06	07:42-08:03/21			08:22
	21:07		20:06				16:51				16:13
Sonnenscheinstunden	501		453		381		332		267		245
Anzahl Minuten mit Schatten	1861		824		546		1174		38		0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 03 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (973)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52 07:46-08:03/17	05:48 06:12-06:35/23	05:03	05:00	05:36 06:21-06:34/13	06:26	07:14 07:44-08:17/33	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50 07:48-08:01/13	05:46 06:10-06:34/24	05:02	05:01	05:38 06:19-06:34/15	06:27	07:16 07:46-08:16/30	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48 07:52-07:55/3	05:44 06:09-06:35/26	05:01	05:01	05:39 06:19-06:36/17	06:29	07:17 07:48-08:16/28	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42 06:08-06:34/26	05:01	05:02	05:41 06:18-06:38/20	06:30	07:19 07:50-08:14/24	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54 07:23-07:29/6	06:43	05:40 06:08-06:33/25	05:00	05:03	05:42 06:18-06:41/23	06:32	07:21 07:51-08:13/22	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52 07:19-07:33/14	06:41	05:39 06:07-06:32/25	04:59	05:04	05:44 06:17-06:41/24	06:34	07:22 07:52-08:12/20	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49 07:16-07:34/18	06:39	05:37 06:08-06:31/23	04:59	05:05	05:45 06:18-06:43/25	06:35	07:24 07:53-08:09/16	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47 07:14-07:36/22	06:36	05:35 06:08-06:29/21	04:58	05:05	05:47 06:17-06:43/26	06:37	07:26 07:55-08:06/11	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45 07:13-07:37/24	06:34	05:33 06:09-06:28/19	04:58	05:06	05:49 06:18-06:44/26	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43 07:12-07:38/26	06:32	05:32 06:09-06:25/16	04:57	05:07	05:50 06:18-06:43/25	06:40 07:41-07:54/13	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40 07:08-07:37/29	06:30	05:30 06:09-06:23/14	04:57	05:08	05:52 06:20-06:44/24	06:42 07:38-07:55/17	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38 07:06-07:38/32	06:27 06:52-06:59/7	05:28 06:11-06:23/12	04:56	05:10	05:53 06:21-06:43/22	06:43 07:37-07:57/20	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36 07:05-07:38/33	06:25 06:49-07:02/13	05:27 06:12-06:21/9	04:56	05:11	05:55 06:23-06:44/21	06:45 07:35-07:57/22	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33	06:34 07:03-07:37/34	06:23 06:47-07:04/17	05:25	04:56	05:12	05:56 06:49-07:02/13	06:46 07:34-07:58/24	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42 06:24-06:43/19	19:34	18:25	16:27	16:05
15	08:16	07:31	06:31 07:02-07:37/35	06:21 06:44-07:05/21	05:23	04:56	05:13	05:58 06:47-07:06/19	06:48 07:32-07:58/26	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40 06:26-06:42/16	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29 07:02-07:36/34	06:19 06:42-07:05/23	05:22	04:56	05:14	06:00 06:45-07:07/22	06:50 07:32-08:05/33	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38 06:27-06:41/14	19:29	18:21	16:25	16:05
17	08:14	07:27	06:27 06:54-07:35/41	06:17 06:40-07:06/26	05:20	04:56	05:15	06:01 06:44-07:08/24	06:51 07:31-08:08/37	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36 06:29-06:40/11	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24 06:51-07:34/43	06:14 06:39-07:06/27	05:19	04:56	05:17	06:03 06:43-07:09/26	06:53 07:30-08:10/40	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34 06:30-06:38/8	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22 06:49-07:33/44	06:12 06:37-07:05/28	05:18	04:56	05:18	06:05 06:43-07:10/27	06:55 07:31-08:11/40	07:45	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32 06:32-06:35/3	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20 06:47-07:30/43	06:10 06:37-07:05/28	05:16	04:56	05:19	06:06 06:42-07:10/28	06:56 07:30-08:11/41	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18 06:46-07:28/42	06:08 06:36-07:05/29	05:15	04:56	05:20	06:08 06:42-07:10/28	06:58 07:30-08:12/42	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15 06:45-07:27/42	06:06 06:36-07:04/28	05:14	04:56	05:22	06:09 06:41-07:10/29	06:59 07:31-08:13/42	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:16	18:08	16:17	16:07
23	08:08	07:15	06:13 06:44-07:26/42	06:04 06:36-07:04/28	05:12	04:56	05:23	06:11 06:41-07:10/29	07:01 07:31-08:14/43	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11 06:43-07:24/41	06:02 06:36-07:03/27	05:11	04:57	05:24	06:13 06:41-07:09/28	07:03 07:32-08:16/44	07:53	07:48	08:21
	16:48	17:44	18:33	20:26 06:25-06:29/4	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08 06:43-07:23/40	06:00 06:36-07:02/26	05:10	04:57	05:26	06:14 06:42-07:09/27	07:04 07:33-08:16/43	06:55	07:49	08:21
	16:50	17:46	18:35	20:28 06:23-06:31/8	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06 06:43-07:21/38	05:58 06:38-07:01/23	05:09	04:57	05:27	06:16 06:42-07:08/26	07:06 07:35-08:17/42	06:57	07:51	08:21
	16:51	17:48	18:37	20:29 06:22-06:34/12	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04 06:42-07:16/34	05:56 06:39-07:00/21	05:08	04:58	05:29	06:17 06:44-07:07/23	07:08 07:43-08:18/35	06:59	07:52	08:22
	16:53	17:50	18:39	20:31 06:20-06:34/14	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01 06:43-07:09/26	05:54 06:40-06:57/17	05:07	04:58	05:30	06:19 06:45-07:05/20	07:09 07:43-08:17/34	07:00	07:54	08:22
	16:55	17:52	18:40	20:33 06:18-06:35/17	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59 07:43-08:08/25	05:52 06:42-06:52/10	05:06	04:59	05:32	06:21 06:48-07:04/16	07:11 07:43-08:18/35	07:02	07:55	08:22
	16:57		19:42	20:34 06:16-06:35/19	21:20	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:59		06:57 07:43-08:06/23	05:50 06:14-06:35/21	05:05	04:59	05:33 06:25-06:30/5	06:22 06:50-07:03/13	07:13 07:44-08:18/34	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:12	16:12
31	07:57		06:55 07:44-08:05/21		05:04		05:35 06:23-06:33/10	06:24 06:52-06:59/7		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	490	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	852	527	263	0	15	757	707	184	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 04 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (978)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:25 06:55-07:16/21	07:14 07:41-08:08/27	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27 06:54-07:15/21	07:16 07:42-08:08/26	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29 06:55-07:16/21	07:17 07:43-08:08/25	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45 07:08-07:14/6	05:42	05:01	05:02	05:41	06:30 06:56-07:14/18	07:19 07:44-08:07/23	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54 07:17-07:25/8	06:43 07:06-07:16/10	05:40	05:00	05:03	05:42	06:32 06:58-07:14/16	07:21 07:46-08:06/20	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:06
6	08:21	07:48	06:52 07:15-07:28/13	06:41 07:04-07:17/13	05:39	04:59	05:04	05:44	06:34 06:59-07:12/13	07:22 07:48-08:06/18	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49 07:12-07:28/16	06:39 07:01-07:17/16	05:37	04:59	05:05	05:45	06:35 07:01-07:11/10	07:24 07:49-08:03/14	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47 07:10-07:29/19	06:36 06:59-07:17/18	05:35	04:58	05:05	05:47	06:37 07:02-07:08/6	07:26 07:51-08:02/11	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45 07:08-07:30/22	06:34 06:57-07:18/21	05:33	04:58	05:06	05:49	06:38	07:27 07:53-07:59/6	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:51	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43 07:06-07:30/24	06:32 06:57-07:17/20	05:32	04:57	05:07	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40 07:03-07:29/26	06:30 06:55-07:16/21	05:30	04:57	05:08	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38 07:03-07:29/26	06:27 06:56-07:16/20	05:28	04:56	05:10	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36 07:02-07:29/27	06:25 06:56-07:15/19	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34 06:56-07:27/31	06:23 06:57-07:13/16	05:25	04:56	05:12	05:56	06:46	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:25	16:27	16:05
15	08:16	07:31	06:31 06:54-07:26/32	06:21 06:58-07:12/14	05:23	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29 06:52-07:25/33	06:19 06:59-07:09/10	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:16
	16:34	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:29	18:21	16:25	16:05
17	08:14	07:27	06:27 06:49-07:22/33	06:16	05:20	04:56	05:15	06:01	06:51 07:41-07:49/8	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24 06:49-07:21/32	06:14	05:19	04:56	05:17	06:03	06:53 07:37-07:51/14	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22 06:48-07:20/32	06:12	05:18	04:56	05:18	06:04	06:55 07:36-07:53/17	07:45	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20 06:47-07:17/30	06:10	05:16	04:56	05:19	06:06	06:56 07:34-07:53/19	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18 06:47-07:14/27	06:08	05:15	04:56	05:20	06:08	06:58 07:33-07:53/20	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15 06:48-07:08/20	06:06	05:14	04:56	05:22	06:09	06:59 07:33-07:59/26	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13 06:48-07:07/19	06:04	05:12	04:56	05:23	06:11	07:01 07:32-08:01/29	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11 06:48-07:05/17	06:02	05:11	04:57	05:24	06:13	07:03 07:32-08:03/31	07:53	07:48	08:21
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08 06:50-07:04/14	06:00	05:10	04:57	05:26	06:14	07:04 07:31-08:03/32	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06 06:52-07:02/10	05:58	05:09	04:57	05:27	06:16	07:06 07:32-08:04/32	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17 07:01-07:11/10	07:08 07:33-08:06/33	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07	04:58	05:30	06:19 06:58-07:13/15	07:09 07:34-08:07/33	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21 06:57-07:14/17	07:11 07:36-08:08/32	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22 06:57-07:16/19	07:12 07:38-08:09/31	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24 06:55-07:16/21		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	511	204	0	0	0	82	483	170	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 06 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (982)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:02 08:21-09:19/58	06:52 09:12-10:05/53	05:48	05:03	05:00	05:36	06:25	07:14 08:49-10:03/74	07:08 07:35-07:41/6	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00 08:20-09:21/61	06:50 09:13-10:02/49	05:46	05:02	05:01	05:38	06:27	07:16 08:49-10:03/74	07:09 07:37-07:38/1	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58 08:18-09:21/63	06:48 09:14-09:59/45	05:44	05:01	05:01	05:39	06:29	07:17 08:50-10:03/73	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56 08:17-09:22/65	06:45 09:16-09:57/41	05:42	05:01	05:02	05:41	06:30 09:26-09:36/10	07:19 08:49-10:02/73	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54 08:16-09:23/67	06:43 09:18-09:54/36	05:40	05:00	05:03	05:42	06:32 09:20-09:43/23	07:21 08:50-10:01/71	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:47	06:52 08:15-09:24/69	06:41 09:20-09:50/30	05:39	04:59	05:04	05:44	06:34 09:16-09:46/30	07:22 08:50-10:01/71	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49 08:13-09:23/70	06:39 09:23-09:46/23	05:37	04:59	05:05	05:45	06:35 09:13-09:49/36	07:24 08:50-09:59/69	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47 08:13-09:24/71	06:36 09:29-09:39/10	05:35	04:58	05:05	05:47	06:37 09:10-09:51/41	07:26 08:50-09:58/68	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42 08:07-08:09/2	06:45 08:12-09:24/72	06:34	05:33	04:58	05:06	05:49	06:38 09:08-09:53/45	07:27 08:51-09:57/66	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:51	19:46	18:37	16:35	16:05
10	08:19	07:41 08:06-08:13/7	06:43 08:12-09:25/73	06:32	05:32	04:57	05:07	05:50	06:40 09:06-09:55/49	07:29 08:52-09:56/64	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39 08:04-08:15/11	06:40 08:11-09:24/73	06:30	05:30	04:57	05:08	05:52	06:42 09:05-09:57/52	07:31 08:52-09:54/62	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37 08:02-08:16/14	06:38 08:10-09:25/75	06:27	05:28	04:56	05:10	05:53	06:43 09:03-09:58/55	07:33 08:53-09:53/60	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35 08:00-08:16/16	06:36 08:10-09:25/75	06:25	05:27	04:56	05:11	05:55	06:45 09:01-09:59/58	07:34 08:55-09:52/57	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33 07:58-08:17/19	06:34 08:09-09:24/75	06:23	05:25	04:56	05:12	05:56	06:46 09:00-10:01/61	07:36 08:56-09:51/55	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:25	16:27	16:05
15	08:16	07:31 07:56-08:17/21	06:31 08:09-09:24/75	06:21	05:23	04:56	05:13	05:58	06:48 08:59-10:01/62	07:38 08:56-09:48/52	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23 08:22-08:32/10	16:26	16:05
16	08:15	07:29 07:54-08:17/23	06:29 08:09-09:24/75	06:19	05:22	04:56	05:14	06:00	06:50 08:58-10:02/64	07:39 08:58-09:46/48	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:29	18:21 08:19-08:33/14	16:25	16:05
17	08:14	07:27 07:52-08:17/25	06:27 08:08-09:23/75	06:17	05:20	04:56	05:15	06:01	06:51 08:56-10:02/66	07:41 09:00-09:44/44	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19 08:18-08:34/16	16:23	16:05
18	08:13	07:25 07:50-08:17/27	06:24 08:08-09:22/74	06:14	05:19	04:56	05:17	06:03	06:53 08:56-10:03/67	07:43 09:02-09:42/40	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17 08:17-08:35/18	16:22	16:05
19	08:12	07:23 07:48-08:16/28	06:22 08:08-09:22/74	06:12	05:18	04:56	05:18	06:05	06:55 08:55-10:04/69	07:45 09:05-09:40/35	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15 08:17-08:35/18	16:21	16:05
20	08:11	07:21 08:46-08:55/9	06:20 08:07-09:21/74	06:10	05:16	04:56	05:19	06:06	06:56 08:54-10:04/70	07:46 09:08-09:36/28	07:41	08:18
	16:41	17:37 07:45-08:14/29	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13 08:17-08:42/25	16:19	16:06
21	08:10	07:19 08:39-09:02/23	06:18 08:07-09:20/73	06:08	05:15	04:56	05:20	06:08	06:58 08:53-10:05/72	07:48 09:11-09:31/20	07:43	08:19
	16:43	17:39 07:45-08:12/27	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11 08:17-08:44/27	16:18	16:06
22	08:09	07:17 08:35-09:06/31	06:15 08:08-09:20/72	06:06	05:14	04:56	05:22	06:09	06:59 08:52-10:05/73	07:50 08:16-08:45/29	07:44	08:20
	16:44	17:41 07:45-08:10/25	18:30	20:22	21:10	21:37	21:20	20:26	19:15	18:08	16:17	16:07
23	08:08	07:15 08:33-09:09/36	06:13 08:07-09:18/71	06:04	05:12	04:56	05:23	06:11	07:01 08:52-10:05/73	07:52 08:18-08:46/28	07:46	08:20
	16:46	17:43 07:46-08:04/18	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13 08:30-09:12/42	06:11 08:07-09:17/70	06:02	05:11	04:57	05:24	06:13	07:03 08:52-10:06/74	07:53 08:20-08:46/26	07:47	08:21
	16:48	17:44 07:46-08:03/17	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11 08:28-09:14/46	06:08 08:06-09:16/68	06:00	05:10	04:57	05:26	06:14	07:04 08:50-10:05/75	06:55 07:22-07:47/25	07:49	08:21
	16:50	17:46 07:47-08:02/15	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09 08:25-09:15/50	06:06 08:09-09:15/66	05:58	05:09	04:57	05:27	06:16	07:06 08:50-10:05/75	06:57 07:24-07:47/23	07:51	08:21
	16:51	17:48 07:49-08:01/12	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07 08:24-09:17/53	06:04 08:08-09:13/65	05:56	05:08	04:58	05:29	06:17	07:08 08:50-10:05/75	06:59 07:28-07:47/19	07:52	08:22
	16:53	17:50 07:50-07:58/8	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58 07:26-07:27/1	16:12	16:10
28	08:01	07:05 08:22-09:18/56	06:01 08:09-09:12/63	05:54	05:07	04:58	05:30	06:19	07:09 08:49-10:05/76	07:00 07:28-07:46/18	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59 09:10-10:11/61	05:52	05:06	04:59	05:32	06:21	07:11 08:50-10:05/75	07:02 07:30-07:46/16	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:59		06:57 09:10-10:08/58	05:50	05:05	04:59	05:33	06:22	07:12 08:50-10:05/75	07:04 07:32-07:45/13	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55 09:11-10:06/55		05:04		05:35	06:24		07:06 07:33-07:43/10		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	690	2136	287	0	0	0	0	1601	1540	7	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 07 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (979)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 10:00-10:50/50	07:56 10:04-11:08/64	07:02 07:29-07:47/18	06:52	05:48	05:03
	16:15	17:02 08:22-08:47/25	17:53	19:47	20:38	21:23
2	08:22 10:00-10:51/51	07:54 10:04-11:07/63	07:00 07:29-07:47/18	06:50	05:46	05:02
	16:16	17:04 08:20-08:46/26	17:55	19:49	20:39	21:24
3	08:22 10:01-10:52/51	07:52 10:04-11:07/63	06:58 07:28-07:46/18	06:48	05:44	05:01
	16:17	17:06 08:18-08:46/28	17:57	19:50	20:41	21:25
4	08:22 10:00-10:52/52	07:51 10:04-11:06/62	06:56 07:29-07:45/16	06:45	05:42	05:01
	16:18	17:08 08:17-08:46/29	17:59	19:52	20:43	21:26
5	08:21 10:01-10:53/52	07:49 10:05-11:07/62	06:54 07:30-07:44/14	06:43	05:40	05:00
	16:19	17:09 08:16-08:45/29	18:01	19:54	20:44	21:27
6	08:21 10:00-10:54/54	07:47 10:06-11:06/60	06:52 07:32-07:42/10	06:41	05:39	04:59
	16:20	17:11 08:15-08:44/29	18:02	19:55	20:46	21:28
7	08:21 10:01-10:55/54	07:46 10:06-11:05/59	06:49	06:39	05:37	04:59
	16:22	17:13 08:15-08:42/27	18:04	19:57	20:47	21:29
8	08:20 10:00-10:55/55	07:44 10:06-11:05/59 08:15-08:34/19	06:47	06:36	05:35	04:58
	16:23	17:15 08:36-08:38/2	18:06	19:59	20:49	21:30
9	08:20 10:01-10:57/56	07:42 10:07-11:04/57	06:45	06:34	05:33	04:58
	16:24	17:17 08:16-08:34/18	18:08	20:01	20:51	21:31
10	08:19 10:01-10:57/56	07:41 10:08-11:03/55	06:43	06:32 06:55-07:02/7	05:32	04:57
	16:26	17:19 08:17-08:34/17	18:09	20:02	20:52	21:32
11	08:19 10:01-10:58/57	07:39 10:10-11:03/53	06:40	06:30 06:52-07:03/11	05:30	04:57
	16:27	17:21 08:18-08:33/15	18:11	20:04	20:54	21:32
12	08:18 10:01-10:58/57	07:37 10:10-11:02/52	06:38	06:27 06:50-07:04/14	05:28	04:56
	16:28	17:22 08:19-08:32/13	18:13	20:06	20:55	21:33
13	08:17 10:01-11:00/59	07:35 10:12-11:00/48	06:36	06:25 06:48-07:05/17	05:27	04:56
	16:30	17:24 08:21-08:30/9	18:15	20:07	20:57	21:34
14	08:17 10:01-11:01/60	07:33 10:13-10:59/46	06:34	06:23 06:47-07:05/18	05:25	04:56
	16:31	17:26	18:16	20:09	20:59	21:34
15	08:16 10:01-11:01/60	07:31 10:14-10:57/43	06:31	06:21 06:46-07:05/19	05:23	04:56
	16:33	17:28	18:18	20:11	21:00	21:35
16	08:15 10:01-11:02/61	07:29 10:16-10:55/39	06:29	06:19 06:46-07:05/19	05:22	04:56
	16:35	17:30	18:20	20:12	21:02	21:35
17	08:14 10:01-11:03/62	07:27 10:18-10:53/35	06:27	06:17 06:46-07:04/18	05:20	04:56
	16:36	17:32	18:21	20:14	21:03	21:36
18	08:13 10:01-11:02/61	07:25 10:21-10:50/29	06:24	06:14 06:47-07:04/17	05:19	04:56
	16:38	17:33	18:23	20:16	21:05	21:36
19	08:12 10:01-11:03/62	07:23 10:23-10:45/22	06:22	06:12 06:46-07:02/16	05:18	04:56
	16:39	17:35	18:25	20:17	21:06	21:37
20	08:11 10:01-11:04/63	07:21 10:29-10:38/9	06:20	06:10 06:47-07:00/13	05:16	04:56
	16:41	17:37	18:27	20:19	21:08	21:37
21	08:10 10:01-11:05/64	07:19	06:18	06:08 06:49-06:58/9	05:15	04:56
	16:43	17:39	18:28	20:21	21:09	21:37
22	08:09 10:02-11:05/63	07:17	06:15	06:06	05:14	04:56
	16:44	17:41	18:30	20:22	21:10	21:37
23	08:08 10:01-11:05/64	07:15 07:39-07:41/2	06:13	06:04	05:12	04:56
	16:46 08:35-08:38/3	17:43	18:32	20:24	21:12	21:38
24	08:07 10:02-11:06/64	07:13 07:37-07:44/7	06:11	06:02	05:11	04:57
	16:48 08:34-08:40/6	17:44	18:33	20:26	21:13	21:38
25	08:05 10:01-11:06/65	07:11 07:35-07:46/11	06:08	06:00	05:10	04:57
	16:50 08:33-08:42/9	17:46	18:35	20:28	21:14	21:38
26	08:04 10:02-11:07/65	07:09 07:33-07:47/14	06:06	05:58	05:09	04:57
	16:51 08:31-08:43/12	17:48	18:37	20:29	21:16	21:38
27	08:03 10:02-11:07/65	07:07 07:30-07:47/17	06:04	05:56	05:08	04:58
	16:53 08:30-08:44/14	17:50	18:39	20:31	21:17	21:38
28	08:01 10:02-11:07/65	07:05 07:29-07:47/18	06:01	05:54	05:07	04:58
	16:55 08:28-08:45/17	17:52	18:40	20:33	21:18	21:38
29	08:00 10:02-11:07/65		06:59	05:52	05:06	04:59
	16:57 08:27-08:46/19		19:42	20:34	21:20	21:37
30	07:59 10:03-11:07/64 08:25-08:26/1		06:57	05:50	05:05	04:59
	16:58 08:27-08:46/19		19:44	20:36	21:21	21:37
31	07:57 10:03-11:07/64		06:55		05:04	
	17:00 08:23-08:46/23		19:45		21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	1964	1335	94	178	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 07 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (979)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00	05:36	06:26 06:52-07:03/11	07:14	07:08 09:37-10:33/56	07:58 09:43-10:40/57
	21:37	21:05	20:04	18:55	16:49 07:46-08:03/17	16:09
2	05:01	05:38	06:27 06:53-07:00/7	07:16	07:09 09:37-10:34/57	08:00 09:44-10:40/56
	21:37	21:04	20:02	18:52	16:47 07:45-08:03/18	16:08
3	05:01	05:39	06:29 06:55-06:56/1	07:17	07:11 09:36-10:35/59 07:45-08:04/19	08:01 09:44-10:40/56
	21:36	21:02	19:59	18:50	16:45 08:05-08:09/4	16:08
4	05:02	05:41	06:30	07:19	07:13 09:36-10:35/59	08:02 09:46-10:40/54
	21:36	21:00	19:57	18:48	16:43 07:45-08:12/27	16:07
5	05:03	05:42	06:32	07:21	07:15 09:35-10:36/61	08:04 09:46-10:40/54
	21:35	20:59	19:55	18:46	16:42 07:45-08:14/29	16:07
6	05:04	05:44	06:34	07:22	07:16 09:35-10:37/62	08:05 09:46-10:40/54
	21:35	20:57	19:52	18:43	16:40 07:45-08:15/30	16:06
7	05:05	05:45	06:35	07:24 08:08-08:16/8	07:18 09:35-10:37/62	08:06 09:48-10:41/53
	21:34	20:55	19:50	18:41	16:38 07:47-08:16/29	16:06
8	05:06	05:47	06:37	07:26 08:06-08:18/12	07:20 09:35-10:38/63	08:07 09:48-10:40/52
	21:34	20:53	19:48	18:39	16:37 07:49-08:17/28	16:05
9	05:06	05:49	06:38	07:27 08:05-08:20/15	07:22 09:35-10:38/63	08:09 09:49-10:40/51
	21:33	20:51	19:46	18:37	16:35 07:51-08:17/26	16:05
10	05:07	05:50	06:40	07:29 08:04-08:20/16	07:24 09:34-10:39/65	08:10 09:49-10:40/51
	21:32	20:50	19:43	18:34	16:33 07:53-08:18/25	16:05
11	05:08	05:52	06:42	07:31 08:02-08:20/18	07:25 09:35-10:39/64	08:11 09:50-10:40/50
	21:32	20:48	19:41	18:32	16:32 07:55-08:18/23	16:05
12	05:10	05:53	06:43	07:33 08:02-08:20/18	07:27 09:35-10:39/64 07:57-07:58/1	08:12 09:52-10:41/49
	21:31	20:46	19:39	18:30	16:30 07:59-08:18/19	16:05
13	05:11	05:55	06:45	07:34 08:02-08:20/18	07:29 09:34-10:39/65	08:13 09:52-10:41/49
	21:30	20:44	19:36	18:28	16:29 07:59-08:18/19	16:05
14	05:12	05:56	06:46	07:36 08:02-08:20/18	07:31 09:34-10:39/65	08:14 09:52-10:41/49
	21:29	20:42	19:34	18:25	16:27 08:00-08:17/17	16:05
15	05:13	05:58	06:48	07:38 08:04-08:20/16	07:32 09:34-10:39/65	08:15 09:53-10:41/48
	21:28	20:40	19:32	18:23	16:26 08:02-08:16/14	16:05
16	05:14	06:00	06:50	07:39 08:05-08:18/13	07:34 09:35-10:39/64	08:16 09:54-10:41/47
	21:27	20:38	19:29	18:21	16:25 08:04-08:16/12	16:05
17	05:15	06:01	06:51	07:41 08:07-08:16/9	07:36 09:35-10:40/65	08:16 09:54-10:42/48
	21:26	20:36	19:27	18:19	16:23 08:06-08:15/9	16:05
18	05:17	06:03	06:53	07:43 08:09-08:14/5	07:38 09:36-10:40/64	08:17 09:55-10:42/47
	21:25	20:34	19:25	18:17	16:22 08:08-08:14/6	16:05
19	05:18	06:05	06:55	07:45	07:39 09:36-10:40/64	08:18 09:55-10:42/47
	21:24	20:32	19:22	18:15	16:21 08:10-08:13/3	16:05
20	05:19	06:06	06:56	07:46	07:41 09:37-10:40/63	08:18 09:56-10:43/47
	21:23	20:30	19:20	18:13	16:19	16:06
21	05:20	06:08 06:58-07:00/2	06:58	07:48	07:43 09:36-10:40/64	08:19 09:57-10:44/47
	21:21	20:28	19:18	18:11	16:18	16:06
22	05:22	06:09 06:53-07:03/10	06:59	07:50 10:57-11:11/14	07:44 09:37-10:40/63	08:20 09:57-10:44/47
	21:20	20:26	19:15	18:08	16:17	16:07
23	05:23	06:11 06:52-07:05/13	07:01	07:52 10:52-11:16/24	07:46 09:38-10:40/62	08:20 09:57-10:44/47
	21:19	20:23	19:13	18:06	16:16	16:07
24	05:25	06:13 06:50-07:06/16	07:03	07:53 10:49-11:20/31	07:47 09:39-10:40/61	08:21 09:58-10:45/47
	21:17	20:21	19:11	18:04	16:15	16:08
25	05:26	06:14 06:49-07:06/17	07:04	06:55 09:47-10:23/36	07:49 09:39-10:40/61	08:21 09:58-10:45/47
	21:16	20:19	19:09	17:02	16:14	16:08
26	05:27	06:16 06:48-07:06/18	07:06	06:57 09:45-10:25/40	07:51 09:39-10:40/61	08:21 09:58-10:46/48
	21:15	20:17	19:06	17:00	16:13	16:09
27	05:29	06:17 06:48-07:07/19	07:08	06:59 09:43-10:27/44	07:52 09:40-10:40/60	08:22 09:59-10:46/47
	21:13	20:15	19:04	16:58	16:12	16:10
28	05:30	06:19 06:47-07:06/19	07:09	07:00 09:42-10:29/47	07:54 09:40-10:40/60	08:22 10:00-10:48/48
	21:12	20:13	19:02	16:56	16:11	16:11
29	05:32	06:21 06:47-07:06/19	07:11	07:02 09:40-10:29/49	07:55 09:41-10:40/59	08:22 10:00-10:48/48
	21:10	20:10	18:59	16:55 07:50-08:00/10	16:10	16:11
30	05:33	06:22 06:49-07:05/16	07:12	07:04 09:39-10:30/51	07:57 09:43-10:40/57	08:22 10:00-10:49/49
	21:09	20:08	18:57	16:53 07:49-08:02/13	16:10	16:12
31	05:35	06:24 06:50-07:04/14		07:06 09:38-10:32/54		08:22 10:00-10:49/49
	21:07	20:06		16:51 07:46-08:02/16		16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	163	19	595	2233	1543

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 08 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (970)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni
1	08:22		07:56	08:27-08:54/27	07:03	07:45-07:56/11	06:52	07:22-07:43/21	05:48	06:12-06:28/16	05:03
	16:15		17:02		17:53		19:47		20:38		21:23
2	08:22		07:54	08:27-08:54/27	07:00	07:48-07:52/4	06:50	07:23-07:41/18	05:46	06:10-06:29/19	05:02
	16:16		17:04		17:55		19:49		20:39		21:24
3	08:22		07:52	08:27-08:53/26	06:58		06:48	07:23-07:37/14	05:44	06:10-06:30/20	05:01
	16:17		17:06		17:57		19:50		20:41		21:25
4	08:22		07:51	08:28-08:53/25	06:56		06:45	07:24-07:35/11	05:42	06:09-06:30/21	05:01
	16:18		17:08		17:59		19:52		20:43		21:26
5	08:21		07:49	08:28-08:51/23	06:54		06:43	07:28-07:32/4	05:40	06:09-06:29/20	05:00
	16:19		17:09		18:01		19:54		20:44		21:27
6	08:21		07:48	08:29-08:48/19	06:52		06:41		05:39	06:09-06:29/20	04:59
	16:20		17:11		18:02		19:55		20:46		21:28
7	08:21		07:46	08:29-08:45/16	06:49		06:39		05:37	06:09-06:29/20	04:59
	16:22		17:13		18:04		19:57		20:47		21:29
8	08:20		07:44	08:30-08:44/14	06:47		06:36		05:35	06:09-06:29/20	04:58
	16:23		17:15		18:06		19:59		20:49		21:30
9	08:20		07:42	08:32-08:42/10	06:45		06:34		05:33	06:10-06:29/19	04:58
	16:24		17:17		18:08		20:01		20:51		21:31
10	08:19		07:41		06:43		06:32		05:32	06:10-06:28/18	04:57
	16:26		17:19		18:09		20:02		20:52		21:32
11	08:19		07:39		06:40		06:30		05:30	06:11-06:26/15	04:57
	16:27		17:21		18:11		20:04		20:54		21:32
12	08:18		07:37		06:38		06:27		05:28	06:12-06:26/14	04:57
	16:28		17:22		18:13		20:06		20:55		21:33
13	08:17		07:35		06:36		06:25		05:27	06:13-06:24/11	04:56
	16:30		17:24		18:15		20:07		20:57		21:34
14	08:17		07:33		06:34		06:23		05:25	06:15-06:22/7	04:56
	16:31		17:26		18:16		20:09		20:59		21:34
15	08:16		07:31		06:31	06:57-07:00/3	06:21		05:24		04:56
	16:33		17:28		18:18		20:11		21:00		21:35
16	08:15		07:29		06:29	06:53-07:05/12	06:19		05:22		04:56
	16:35		17:30		18:20		20:12		21:02		21:35
17	08:14		07:27		06:27	06:49-07:06/17	06:17		05:21		04:56
	16:36		17:32		18:21		20:14		21:03		21:36
18	08:13		07:25	07:50-07:55/5	06:24	06:47-07:08/21	06:14		05:19		04:56
	16:38		17:33		18:23		20:16		21:05		21:36
19	08:12		07:23	07:48-07:57/9	06:22	06:45-07:09/24	06:12		05:18		04:56
	16:39		17:35		18:25		20:17		21:06		21:37
20	08:11	08:39-08:46/7	07:21	07:45-07:58/13	06:20	06:43-07:09/26	06:10		05:16		04:56
	16:41		17:37		18:27		20:19		21:08		21:37
21	08:10	08:38-08:48/10	07:19	07:43-07:59/16	06:18	06:41-07:09/28	06:08		05:15		04:56
	16:43		17:39		18:28		20:21		21:09		21:37
22	08:09	08:37-08:49/12	07:17	07:42-08:00/18	06:15	06:38-07:10/32	06:06		05:14		04:56
	16:44		17:41		18:30		20:23		21:10		21:37
23	08:08	08:35-08:50/15	07:15	07:42-08:00/18	06:13	06:36-07:10/34	06:04		05:12		04:56
	16:46		17:43		18:32		20:24		21:12		21:38
24	08:07	08:34-08:51/17	07:13	07:42-08:00/18	06:11	06:33-07:09/36	06:02		05:11		04:57
	16:48		17:44		18:33		20:26		21:13		21:38
25	08:05	08:33-08:53/20	07:11	07:42-08:00/18	06:08	06:31-07:08/37	06:00		05:10		04:57
	16:50		17:46		18:35		20:28		21:14		21:38
26	08:04	08:31-08:53/22	07:09	07:42-08:00/18	06:06	06:29-07:07/38	05:58		05:09		04:57
	16:51		17:48		18:37		20:29		21:16		21:38
27	08:03	08:30-08:54/24	07:07	07:42-07:58/16	06:04	06:26-07:05/39	05:56		05:08		04:58
	16:53		17:50		18:39		20:31		21:17		21:38
28	08:01	08:28-08:54/26	07:05	07:43-07:57/14	06:01	06:24-07:04/40	05:54	06:18-06:25/7	05:07		04:58
	16:55		17:52		18:40		20:33		21:18		21:38
29	08:00	08:28-08:54/26			06:59	07:50-08:02/12	05:52	06:16-06:27/11	05:06		04:59
	16:57				19:42	07:23-07:48/25	20:34		21:20		21:37
30	07:59	08:27-08:54/27			06:57	07:54-07:56/2	05:50	06:14-06:28/14	05:05		04:59
	16:59				19:44	07:22-07:46/24	20:36		21:21		21:37
31	07:57	08:26-08:54/28			06:55	07:22-07:45/23			05:04		
	17:00				19:45				21:22		
Sonnenscheinstunden	260		278		367		416		484		498
Anzahl Minuten mit Schatten		234		350		488		100		240	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 08 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (970)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 21:37	05:36 06:22-06:37/15 21:05	06:26 20:04	07:14 18:55	07:08 08:05-08:08/3 16:49	07:58 16:09
2	05:01 21:37	05:38 06:21-06:37/16 21:04	06:27 20:02	07:16 18:52	07:09 08:01-08:12/11 16:47	08:00 16:08
3	05:01 21:36	05:39 06:20-06:38/18 21:02	06:29 19:59	07:17 18:50	07:11 08:00-08:14/14 16:45	08:01 16:08
4	05:02 21:36	05:41 06:19-06:38/19 21:00	06:30 19:57	07:19 18:48	07:13 07:59-08:15/16 16:44	08:02 16:07
5	05:03 21:35	05:42 06:20-06:39/19 20:59	06:32 19:55	07:21 18:46	07:15 07:58-08:18/20 16:42	08:04 16:07
6	05:04 21:35	05:44 06:19-06:39/20 20:57	06:34 19:53	07:22 18:43	07:16 07:58-08:21/23 16:40	08:05 16:06
7	05:05 21:34	05:45 06:19-06:39/20 20:55	06:35 07:23-07:27/4 19:50	07:24 18:41	07:18 07:58-08:22/24 16:38	08:06 16:06
8	05:06 21:34	05:47 06:18-06:39/21 20:53	06:37 07:19-07:29/10 19:48	07:26 18:39	07:20 07:57-08:24/27 16:37	08:07 16:05
9	05:07 21:33	05:49 06:19-06:39/20 20:51	06:38 07:17-07:31/14 19:46	07:27 18:37	07:22 07:58-08:24/26 16:35	08:09 16:05
10	05:08 21:32	05:50 06:19-06:38/19 20:50	06:40 07:16-07:34/18 19:43	07:29 18:34	07:24 07:58-08:25/27 16:33	08:10 16:05
11	05:09 21:32	05:52 06:20-06:38/18 20:48	06:42 07:15-07:35/20 19:41	07:31 18:32	07:25 07:58-08:26/28 16:32	08:11 16:05
12	05:10 21:31	05:53 06:21-06:37/16 20:46	06:43 07:14-07:37/23 19:39	07:33 08:19-08:27/8 18:30	07:27 07:59-08:26/27 16:30	08:12 16:05
13	05:11 21:30	05:55 06:23-06:36/13 20:44	06:45 07:13-07:37/24 19:36	07:34 08:17-08:30/13 18:28	07:29 08:00-08:26/26 16:29	08:13 16:05
14	05:12 21:29	05:57 06:24-06:34/10 20:42	06:46 07:41-07:52/11 19:34 07:14-07:38/24	07:36 08:16-08:31/15 18:25	07:31 08:00-08:26/26 16:27	08:14 16:05
15	05:13 21:28	05:58 06:26-06:32/6 20:40	06:48 07:13-07:53/40 19:32	07:38 08:15-08:32/17 18:23	07:32 08:02-08:26/24 16:26	08:15 16:05
16	05:14 21:27	06:00 20:38	06:50 07:15-07:55/40 19:29	07:39 08:13-08:31/18 18:21	07:34 08:04-08:26/22 16:25	08:16 16:05
17	05:15 21:26	06:01 20:36	06:51 07:17-07:56/39 19:27	07:41 08:13-08:32/19 18:19	07:36 08:06-08:26/20 16:23	08:16 16:05
18	05:17 21:25	06:03 20:34	06:53 07:18-07:55/37 19:25	07:43 08:13-08:32/19 18:17	07:38 08:08-08:25/17 16:22	08:17 16:05
19	05:18 21:24	06:05 20:32	06:55 07:20-07:56/36 19:22	07:45 08:13-08:31/18 18:15	07:39 08:10-08:25/15 16:21	08:18 16:05
20	05:19 21:23	06:06 20:30	06:56 07:21-07:55/34 19:20	07:46 08:14-08:31/17 18:13	07:41 08:12-08:24/12 16:19	08:18 16:06
21	05:20 21:21	06:08 20:28	06:58 07:23-07:55/32 19:18	07:48 08:15-08:30/15 18:11	07:43 08:13-08:23/10 16:18	08:19 16:06
22	05:22 21:20	06:09 20:26	06:59 07:25-07:55/30 19:16	07:50 08:16-08:28/12 18:09	07:44 08:15-08:22/7 16:17	08:20 16:07
23	05:23 21:19	06:11 20:23	07:01 07:26-07:54/28 19:13	07:52 08:18-08:26/8 18:06	07:46 08:17-08:18/1 16:16	08:20 16:07
24	05:25 21:17	06:13 20:21	07:03 07:28-07:53/25 19:11	07:53 08:21-08:22/1 18:04	07:47 16:15	08:21 16:08
25	05:26 21:16	06:14 20:19	07:04 07:29-07:51/22 19:09	06:55 17:02	07:49 16:14	08:21 16:08
26	05:27 21:15	06:16 20:17	07:06 07:31-07:50/19 19:06	06:57 17:00	07:51 16:13	08:21 16:09
27	05:29 21:13	06:17 20:15	07:08 07:34-07:48/14 19:04	06:59 16:58	07:52 16:12	08:22 16:10
28	05:30 21:12	06:19 20:13	07:09 07:36-07:43/7 19:02	07:00 16:57	07:54 16:11	08:22 16:11
29	05:32 21:10	06:21 20:10	07:11 18:59	07:02 16:55	07:55 16:10	08:22 16:12
30	05:33 06:25-06:33/8 21:09	06:22 20:08	07:12 18:57	07:04 16:53	07:57 16:10	08:22 16:12
31	05:35 06:24-06:36/12 21:07	06:24 20:06		07:06 16:51		08:22 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	20	250	551	180	426	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 09 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (971)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22	09:00-09:29/29	07:56	08:23-08:49/26	07:03	07:27-08:02/35	06:52		05:48	06:40-06:55/15	05:03	05:45-06:05/20
	16:15		17:02		17:53		19:47		20:38		21:23	
2	08:22	09:01-09:30/29	07:54	08:22-08:49/27	07:00	07:26-08:03/37	06:50		05:46	06:42-06:53/11	05:02	05:46-06:06/20
	16:16		17:04		17:55		19:49		20:39		21:24	
3	08:22	09:01-09:30/29	07:52	08:21-08:49/28	06:58	07:23-08:02/39	06:48		05:44	06:46-06:49/3	05:01	05:46-06:05/19
	16:17		17:06		17:57		19:50		20:41		21:25	
4	08:22	09:01-09:30/29	07:51	08:22-08:49/27	06:56	07:22-08:02/40	06:45		05:42		05:01	05:48-06:06/18
	16:18		17:08		17:59		19:52		20:43		21:26	
5	08:21	09:02-09:31/29	07:49	08:21-08:49/28	06:54	07:22-08:02/40	06:43		05:40		05:00	05:48-06:05/17
	16:19		17:10		18:01		19:54		20:44		21:27	
6	08:21	09:03-09:31/28	07:48	08:21-08:48/27	06:52	07:18-08:02/44	06:41		05:39		04:59	05:48-06:04/16
	16:20		17:11		18:02		19:56		20:46		21:28	
7	08:21	09:03-09:31/28	07:46	08:21-08:47/26	06:49	07:14-08:00/46	06:39		05:37		04:59	05:49-06:05/16
	16:22		17:13		18:04		19:57		20:47		21:29	
8	08:20	09:03-09:31/28	07:44	08:21-08:45/24	06:47	07:12-07:59/47	06:36		05:35		04:58	05:50-06:05/15
	16:23		17:15		18:06		19:59		20:49		21:30	
9	08:20	09:04-09:31/27	07:42	08:22-08:42/20	06:45	07:10-07:58/48	06:34		05:33		04:58	05:50-06:04/14
	16:24		17:17		18:08		20:01		20:51		21:31	
10	08:19	09:04-09:31/27	07:41	08:23-08:40/17	06:43	07:08-07:57/49	06:32		05:32		04:57	05:50-06:04/14
	16:26		17:19		18:09		20:02		20:52		21:32	
11	08:19	09:04-09:31/27	07:39	08:24-08:39/15	06:40	07:05-07:54/49	06:30		05:30		04:57	05:51-06:04/13
	16:27		17:21		18:11		20:04		20:54		21:32	
12	08:18	09:06-09:31/25	07:37	08:25-08:38/13	06:38	07:47-07:48/1	06:28		05:28		04:57	05:51-06:03/12
	16:29		17:22		18:13	07:03-07:37/34	20:06		20:55		21:33	
13	08:17	09:06-09:30/24	07:35	08:27-08:36/9	06:36	07:02-07:36/34	06:25		05:27		04:56	05:52-06:03/11
	16:30		17:24		18:15		20:07		20:57		21:34	
14	08:17	09:07-09:29/22	07:33		06:34	07:00-07:31/31	06:23		05:25	05:51-05:57/6	04:56	05:53-06:03/10
	16:32		17:26		18:16		20:09		20:59		21:34	
15	08:16	09:08-09:25/17	07:31		06:31	07:00-07:28/28	06:21	06:50-06:52/2	05:24	05:50-06:00/10	04:56	05:53-06:03/10
	16:33		17:28		18:18		20:11		21:00		21:35	
16	08:15	09:08-09:24/16	07:29		06:29	07:00-07:27/27	06:19	06:45-06:57/12	05:22	05:48-06:01/13	04:56	05:54-06:03/9
	16:35		17:30		18:20		20:12		21:02		21:35	
17	08:14	09:10-09:24/14	07:27		06:27	06:59-07:25/26	06:17	06:43-06:59/16	05:21	05:47-06:02/15	04:56	05:55-06:03/8
	16:36		17:32		18:22		20:14		21:03		21:36	
18	08:13	09:11-09:24/13	07:25		06:24	06:59-07:23/24	06:14	06:41-07:00/19	05:19	05:46-06:03/17	04:56	05:55-06:03/8
	16:38		17:34		18:23		20:16		21:05		21:36	
19	08:12	09:12-09:22/10	07:23		06:22	07:00-07:20/20	06:12	06:40-07:01/21	05:18	05:45-06:03/18	04:56	05:55-06:03/8
	16:39		17:35		18:25		20:17		21:06		21:37	
20	08:11	09:15-09:20/5	07:21		06:20	07:00-07:18/18	06:10	06:38-07:01/23	05:16	05:45-06:04/19	04:56	05:56-06:03/7
	16:41		17:37		18:27		20:19		21:08		21:37	
21	08:10		07:19		06:18	07:01-07:15/14	06:08	06:38-07:01/23	05:15	05:44-06:05/21	04:56	05:56-06:03/7
	16:43		17:39		18:28		20:21		21:09		21:37	
22	08:09		07:17		06:15	07:03-07:13/10	06:06	06:37-07:01/24	05:14	05:44-06:05/21	04:56	05:57-06:04/7
	16:44		17:41		18:30		20:23		21:10		21:37	
23	08:08		07:15		06:13		06:04	06:37-07:01/24	05:12	05:44-06:06/22	04:56	05:56-06:04/8
	16:46		17:43		18:32		20:24		21:12		21:38	
24	08:07	08:35-08:40/5	07:13	07:45-07:57/12	06:11		06:02	06:36-07:01/25	05:11	05:44-06:06/22	04:57	05:56-06:04/8
	16:48		17:44		18:33		20:26		21:13		21:38	
25	08:05	08:33-08:43/10	07:11	07:41-07:59/18	06:08		06:00	06:36-07:00/24	05:10	05:44-06:06/22	04:57	05:57-06:05/8
	16:50		17:46		18:35		20:28		21:14		21:38	
26	08:04	08:31-08:44/13	07:09	07:35-08:01/26	06:06		05:58	06:37-07:01/24	05:09	05:45-06:06/21	04:57	05:56-06:05/9
	16:51		17:48		18:37		20:29		21:16		21:38	
27	08:03	08:31-08:46/15	07:07	07:30-08:01/31	06:04		05:56	06:37-07:00/23	05:08	05:45-06:06/21	04:58	05:56-06:05/9
	16:53		17:50		18:39		20:31		21:17		21:38	
28	08:01	08:30-08:46/16	07:05	07:28-08:02/34	06:01		05:54	06:38-06:59/21	05:07	05:45-06:06/21	04:58	05:56-06:06/10
	16:55		17:52		18:40		20:33		21:18		21:38	
29	08:00	08:30-08:48/18			06:59		05:52	06:38-06:58/20	05:06	05:45-06:06/21	04:59	05:55-06:06/11
	16:57				19:42		20:34		21:20		21:37	
30	07:59	08:26-08:48/22			06:57		05:50	06:39-06:57/18	05:05	05:45-06:06/21	04:59	05:56-06:07/11
	16:59				19:44		20:36		21:21		21:37	
31	07:57	08:24-08:48/24			06:55				05:04	05:45-06:06/21		
	17:00				19:45				21:22			
Sonnenscheinstunden	260		278		367		416		484		498	
Anzahl Minuten mit Schatten	579		408		741		319		361		353	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 09 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (971)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 05:56-06:08/12 21:37	05:36 21:05	06:26 20:04	07:14 07:41-08:16/35 18:55	07:08 07:52-08:09/17 16:49	07:58 08:46-09:13/27 16:09
2	05:01 05:55-06:08/13 21:37	05:38 21:04	06:27 20:02	07:16 07:43-08:31/48 18:52	07:09 07:51-08:13/22 16:47	08:00 08:47-09:14/27 16:08
3	05:01 05:55-06:09/14 21:36	05:39 21:02	06:29 19:59	07:17 07:45-08:34/49 18:50	07:11 07:51-08:15/24 16:45	08:01 08:47-09:14/27 16:08
4	05:02 05:55-06:10/15 21:36	05:41 21:00	06:30 19:57	07:19 07:46-08:35/49 18:48	07:13 07:51-08:17/26 16:44	08:02 08:48-09:16/28 16:07
5	05:03 05:55-06:11/16 21:35	05:42 20:59	06:32 19:55	07:21 07:48-08:36/48 18:46	07:15 07:51-08:18/27 16:42	08:04 08:48-09:16/28 16:07
6	05:04 05:54-06:11/17 21:35	05:44 20:57	06:34 19:53	07:22 07:50-08:37/47 18:43	07:16 07:51-08:19/28 16:40	08:05 08:49-09:17/28 16:06
7	05:05 05:54-06:11/17 21:34	05:45 20:55	06:35 19:50	07:24 07:51-08:37/46 18:41	07:18 07:52-08:19/27 16:38	08:06 08:49-09:18/29 16:06
8	05:06 05:54-06:12/18 21:34	05:47 20:53	06:37 19:48	07:26 07:56-08:37/41 18:39	07:20 07:52-08:20/28 16:37	08:07 08:49-09:18/29 16:05
9	05:07 05:54-06:12/18 21:33	05:49 20:51	06:38 19:46	07:28 07:57-08:37/40 18:37	07:22 07:53-08:20/27 16:35	08:09 08:49-09:19/30 16:05
10	05:08 05:54-06:13/19 21:32	05:50 06:53-07:00/7 20:50	06:40 19:43	07:29 07:58-08:37/39 18:34	07:24 07:54-08:20/26 16:33	08:10 08:50-09:19/29 16:05
11	05:09 05:54-06:13/19 21:32	05:52 06:51-07:03/12 20:48	06:42 19:41	07:31 07:58-08:36/38 18:32	07:25 07:56-08:20/24 16:32	08:11 08:51-09:20/29 16:05
12	05:10 05:54-06:14/20 21:31	05:53 06:48-07:04/16 20:46	06:43 19:39	07:33 08:00-08:36/36 18:30	07:27 07:58-08:20/22 16:30	08:12 08:52-09:21/29 16:05
13	05:11 05:54-06:14/20 21:30	05:55 06:47-07:06/19 20:44	06:45 19:36	07:34 08:01-08:35/34 18:28	07:29 08:02-08:20/18 16:29	08:13 08:52-09:21/29 16:05
14	05:12 05:53-06:14/21 21:29	05:57 06:46-07:06/20 20:42	06:47 19:34	07:36 08:02-08:35/33 18:26	07:31 08:02-08:18/16 16:27	08:14 08:53-09:22/29 16:05
15	05:13 05:53-06:15/22 21:28	05:58 06:45-07:07/22 20:40	06:48 19:32	07:38 08:04-08:34/30 18:23	07:32 08:03-08:18/15 16:26	08:15 08:52-09:21/29 16:05
16	05:14 05:53-06:15/22 21:27	06:00 06:44-07:07/23 20:38	06:50 19:29	07:39 08:10-08:31/21 18:21	07:34 08:04-08:17/13 16:25	08:16 08:53-09:22/29 16:05
17	05:15 05:53-06:15/22 21:26	06:01 06:44-07:08/24 20:36	06:51 19:27	07:41 08:14-08:30/16 18:19	07:36 08:06-08:16/10 16:23	08:16 08:54-09:23/29 16:05
18	05:17 05:54-06:16/22 21:25	06:03 06:43-07:07/24 20:34	06:53 19:25	07:43 08:18-08:27/9 18:17	07:38 08:09-08:14/5 16:22	08:17 08:55-09:23/28 16:05
19	05:18 05:54-06:16/22 21:24	06:05 06:43-07:07/24 20:32	06:55 19:22	07:45 18:15	07:39 16:21	08:18 08:54-09:23/29 16:06
20	05:19 05:54-06:15/21 21:23	06:06 06:42-07:07/25 20:30	06:56 19:20	07:46 18:13	07:41 16:19	08:18 08:55-09:24/29 16:06
21	05:21 05:54-06:15/21 21:21	06:08 06:43-07:07/24 20:28	06:58 07:49-07:57/8 19:18	07:48 18:11	07:43 16:18	08:19 08:56-09:25/29 16:06
22	05:22 05:54-06:15/21 21:20	06:09 06:42-07:06/24 20:26	06:59 07:47-08:00/13 19:16	07:50 18:09	07:44 08:51-08:56/5 16:17	08:20 08:56-09:25/29 16:07
23	05:23 05:55-06:15/20 21:19	06:11 06:43-07:05/22 20:23	07:01 07:44-08:01/17 19:13	07:52 18:06	07:46 08:49-08:59/10 16:16	08:20 08:57-09:26/29 16:07
24	05:25 05:55-06:14/19 21:17	06:13 06:43-07:04/21 20:21	07:03 07:43-08:03/20 19:11	07:53 18:04	07:47 08:48-09:01/13 16:15	08:21 08:57-09:26/29 16:08
25	05:26 05:55-06:14/19 21:16	06:14 06:44-07:03/19 20:19	07:04 07:42-08:04/22 19:09	06:55 17:02	07:49 08:48-09:02/14 16:14	08:21 08:57-09:26/29 16:08
26	05:27 05:57-06:14/17 21:15	06:16 06:45-07:00/15 20:17	07:06 07:41-08:07/26 19:06	06:57 17:00	07:51 08:47-09:02/15 16:13	08:21 08:58-09:27/29 16:09
27	05:29 05:58-06:12/14 21:13	06:17 06:47-06:59/12 20:15	07:08 07:41-08:08/27 19:04	06:59 16:58	07:52 08:47-09:04/17 16:12	08:22 08:59-09:28/29 16:10
28	05:30 05:59-06:11/12 21:12	06:19 20:13	07:09 07:40-08:08/28 19:02	07:00 16:57	07:54 08:47-09:09/22 16:11	08:22 08:59-09:28/29 16:11
29	05:32 06:01-06:10/9 21:10	06:21 20:10	07:11 07:41-08:09/28 18:59	07:02 07:56-08:06/10 16:55	07:55 08:46-09:10/24 16:10	08:22 09:00-09:29/29 16:12
30	05:33 06:04-06:05/1 21:09	06:22 20:08	07:13 07:41-08:14/33 18:57	07:04 07:55-08:08/13 16:53	07:57 08:47-09:12/25 16:10	08:22 09:00-09:29/29 16:12
31	05:35 21:07	06:24 20:06		07:06 07:52-08:08/16 16:51		08:22 09:00-09:30/30 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	523	353	222	698	520	891

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 10 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (976)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 16:15	07:56 08:25-08:48/23 17:02	07:03 13:25-14:51/86 17:53	06:52 13:50-16:09/139 19:47 07:15-07:40/25	05:48 14:32-15:52/80 20:38 06:12-06:23/11	05:03 21:23
2	08:22 16:16	07:54 08:24-08:48/24 17:04	07:00 13:23-14:53/90 17:55	06:50 13:49-16:08/139 19:49 07:13-07:40/27	05:46 14:35-15:51/76 20:39 06:10-06:24/14	05:02 21:24
3	08:22 16:17	07:52 08:23-08:48/25 17:06	06:58 13:21-14:54/93 17:57	06:48 13:50-16:08/138 19:50 07:11-07:38/27	05:44 14:38-15:50/72 20:41 06:09-06:26/17	05:01 21:25
4	08:22 16:18	07:51 08:23-08:49/26 17:08	06:56 13:19-14:56/97 17:59	06:45 13:50-16:08/138 19:52 07:11-07:38/27	05:42 14:42-15:49/67 20:43 06:07-06:26/19	05:01 21:26
5	08:21 16:19	07:49 08:22-08:49/27 17:09	06:54 13:17-14:57/100 18:01	06:43 13:50-16:08/138 19:54 07:11-07:36/25	05:40 14:45-15:48/63 20:44 06:05-06:26/21	05:00 21:27
6	08:21 16:20	07:48 08:22-08:49/27 17:11	06:52 13:16-14:59/103 18:02	06:41 13:49-16:07/138 19:56 07:11-07:35/24	05:39 14:48-15:46/58 20:46 06:03-06:26/23	04:59 21:28
7	08:21 16:22	07:46 08:13-08:49/36 17:13	06:49 13:14-14:59/105 18:04	06:39 13:50-16:07/137 19:57 07:10-07:31/21	05:37 14:52-15:45/53 20:47 06:02-06:27/25	04:59 21:29
8	08:20 16:23	07:44 08:11-08:49/38 17:15	06:47 13:12-15:00/108 18:06 07:12-07:20/8	06:36 13:50-16:07/137 19:59 07:10-07:28/18	05:35 14:55-15:43/48 20:49 06:01-06:26/25	04:58 21:30
9	08:20 16:24	07:42 08:09-08:48/39 17:17	06:45 13:11-15:01/110 18:08 07:09-07:23/14	06:34 13:51-16:07/136 20:01 07:11-07:27/16	05:33 14:58-15:41/43 20:51 06:01-06:27/26	04:58 21:31
10	08:19 16:26	07:41 08:09-08:48/39 17:19	06:43 13:10-15:03/113 18:09 07:07-07:25/18	06:32 13:51-16:06/135 20:02 07:13-07:25/12	05:32 15:02-15:40/38 20:52 06:00-06:26/26	04:57 21:32
11	08:19 16:27	07:39 08:08-08:47/39 17:21	06:40 13:08-15:03/115 18:11 07:05-07:25/20	06:30 13:51-16:05/134 20:04 07:15-07:23/8	05:30 15:06-15:37/31 20:54 05:59-06:25/26	04:57 21:32
12	08:18 16:28	07:37 08:07-08:47/40 17:22	06:38 13:07-15:04/117 18:13 07:02-07:26/24	06:27 13:52-16:05/133 20:06	05:28 15:11-15:35/24 20:55 05:59-06:25/26	04:56 21:33
13	08:17 16:30	07:35 08:07-08:46/39 17:24	06:36 13:06-15:05/119 18:15 07:01-07:27/26	06:25 13:53-16:05/132 20:07	05:27 15:17-15:29/12 20:57 05:58-06:24/26	04:56 21:34
14	08:17 16:31	07:33 08:06-08:45/39 17:26	06:34 13:04-15:05/121 18:16 06:59-07:26/27	06:23 13:54-16:04/130 20:09	05:25 05:59-06:24/25 20:59	04:56 21:34
15	08:16 16:33	07:31 08:06-08:43/37 17:28	06:31 13:03-15:06/123 18:18 06:55-07:26/31	06:21 13:56-16:04/128 20:11	05:24 05:59-06:23/24 21:00	04:56 21:35
16	08:15 16:35	07:29 08:06-08:42/36 17:30	06:29 13:02-15:06/124 18:20 06:52-07:26/34	06:19 13:57-16:04/127 20:12	05:22 05:59-06:21/22 21:02	04:56 21:35
17	08:14 16:36	07:27 08:06-08:38/32 17:32	06:27 13:00-15:06/126 18:21 06:50-07:25/35	06:17 13:58-16:03/125 20:14	05:21 05:59-06:21/22 21:03	04:56 21:36
18	08:13 16:38	07:25 08:07-08:31/24 17:33	06:24 12:59-15:07/128 18:23 06:49-07:24/35	06:14 13:59-16:02/123 20:16	05:19 06:00-06:21/21 21:05	04:56 21:36
19	08:12 16:39	07:23 14:02-14:16/14 17:35 08:07-08:30/23	06:22 12:59-15:08/129 18:25 06:48-07:23/35	06:12 14:01-16:01/120 20:17	05:18 06:00-06:20/20 21:06	04:56 21:37
20	08:11 16:41	07:21 13:54-14:25/31 17:37 08:07-08:28/21	06:20 12:57-15:07/130 18:27 06:48-07:21/33	06:10 14:03-16:01/118 20:19	05:16 06:01-06:19/18 21:08	04:56 21:37
21	08:10 16:43	07:19 13:49-14:30/41 17:39 08:08-08:27/19	06:18 12:57-15:08/131 18:28 06:47-07:20/33	06:08 14:05-16:00/115 20:21	05:15 06:01-06:19/18 21:09	04:56 21:37
22	08:09 16:44	07:17 13:45-14:34/49 17:41 08:09-08:26/17	06:15 12:56-15:08/132 18:30 06:47-07:17/30	06:06 14:07-15:59/112 20:23	05:14 06:02-06:18/16 21:10	04:56 21:37
23	08:08 16:46	07:15 13:41-14:38/57 17:43 08:11-08:24/13	06:13 12:55-15:08/133 18:32 06:47-07:14/27	06:04 14:10-15:59/109 20:24	05:12 06:03-06:18/15 21:12	04:56 21:38
24	08:07 16:48	07:13 13:38-14:41/63 17:44 08:15-08:21/6	06:11 12:54-15:08/134 18:33 06:47-07:10/23	06:02 14:12-15:58/106 20:26	05:11 06:05-06:17/12 21:13	04:57 21:38
25	08:05 16:50	07:11 13:35-14:43/68 17:46	06:08 12:54-15:09/135 18:35 06:48-07:05/17	06:00 14:15-15:57/102 20:28	05:10 06:06-06:16/10 21:14	04:57 21:38
26	08:04 16:51	07:09 13:32-14:45/73 17:48	06:06 12:53-15:09/136 06:29-06:37/8 18:37 06:49-07:03/14	05:58 14:17-15:56/99 20:29	05:09 06:08-06:13/5 21:16	04:57 21:38
27	08:03 08:31-08:41/10 16:53	07:07 13:29-14:47/78 17:50	06:04 12:52-15:09/137 06:26-06:38/12 18:39 06:50-07:00/10	05:56 14:20-15:55/95 20:31	05:08 21:17	04:58 21:38
28	08:01 08:29-08:43/14 16:55	07:05 13:27-14:49/82 17:52	06:01 12:52-15:09/137 18:40 06:24-06:39/15	05:54 14:24-15:55/91 20:33	05:07 21:18	04:58 21:38
29	08:00 08:28-08:45/17 16:57		06:59 13:52-16:09/137 19:42 07:22-07:40/18	05:52 14:27-15:54/87 20:34	05:06 21:20	04:59 21:37
30	07:59 08:27-08:46/19 16:58		06:57 13:51-16:08/137 19:44 07:19-07:40/21	05:50 14:30-15:53/83 20:36 06:14-06:21/7	05:05 21:21	04:59 21:37
31	07:57 08:25-08:46/21 17:00		06:55 13:50-16:09/139 19:45 07:17-07:40/23		05:04 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	81	1245	4316	3881	1178	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 10 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (976)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 21:37	05:36 15:20-15:46/26 21:05 06:10-06:36/26	06:26 13:51-16:05/134 20:04 07:14-07:22/8	07:14 13:45-15:43/118 18:55 07:40-08:05/25	07:08 07:38-08:17/39 16:49	07:58 16:09
2	05:01 21:37	05:38 15:15-15:49/34 21:04 06:09-06:36/27	06:27 13:49-16:04/135 20:02 07:11-07:23/12	07:16 13:46-15:42/116 18:52 07:42-08:04/22	07:09 07:39-08:18/39 16:47	08:00 16:08
3	05:01 21:36	05:39 15:11-15:51/40 21:02 06:10-06:37/27	06:29 13:49-16:05/136 19:59 07:09-07:25/16	07:17 13:47-15:41/114 18:50 07:45-08:03/18	07:11 07:41-08:18/37 16:45	08:01 16:08
4	05:02 21:36	05:41 15:07-15:52/45 21:00 06:10-06:36/26	06:30 13:47-16:04/137 19:57 07:08-07:25/17	07:19 13:47-15:39/112 18:48 07:45-08:01/16	07:13 07:44-08:19/35 16:44	08:02 16:07
5	05:03 21:35	05:42 15:04-15:54/50 20:59 06:11-06:37/26	06:32 13:47-16:04/137 19:55 07:07-07:28/21	07:21 13:49-15:38/109 18:46 07:47-07:59/12	07:15 07:52-08:19/27 16:42	08:04 16:07
6	05:04 21:35	05:44 15:00-15:55/55 20:57 06:12-06:36/24	06:34 13:45-16:03/138 19:53 07:06-07:30/24	07:22 13:50-15:36/106 18:43	07:16 07:52-08:19/27 16:40	08:05 16:06
7	05:05 21:34	05:45 14:57-15:57/60 20:55 06:14-06:36/22	06:35 13:45-16:03/138 19:50 07:06-07:32/26	07:24 13:50-15:34/104 18:41	07:18 07:53-08:19/26 16:38	08:06 16:06
8	05:06 21:34	05:47 14:53-15:58/65 20:53 06:15-06:35/20	06:37 13:44-16:02/138 19:48 07:05-07:32/27	07:26 13:52-15:33/101 18:39	07:20 07:54-08:19/25 16:37	08:07 16:05
9	05:06 21:33	05:49 14:50-15:58/68 20:51 06:17-06:35/18	06:38 13:44-16:02/138 19:46 07:05-07:33/28	07:28 13:53-15:31/98 18:37	07:22 07:54-08:19/25 16:35	08:09 16:05
10	05:07 21:32	05:50 14:47-15:59/72 20:50 06:18-06:34/16	06:40 13:43-16:01/138 19:43 07:06-07:33/27	07:29 13:55-15:30/95 18:34	07:24 07:56-08:19/23 16:33	08:10 16:05
11	05:08 21:32	05:52 14:43-16:00/77 20:48 06:20-06:33/13	06:42 13:43-16:01/138 19:41 07:07-07:32/25	07:31 13:56-15:27/91 18:32	07:25 07:57-08:18/21 16:32	08:11 16:05
12	05:10 21:31	05:53 14:40-16:01/81 20:46 06:21-06:31/10	06:43 13:43-16:01/138 19:39 07:09-07:32/23	07:33 13:57-15:26/89 18:30	07:27 07:59-08:17/18 16:30	08:12 16:05
13	05:11 21:30	05:55 14:36-16:01/85 20:44 06:23-06:29/6	06:45 13:42-16:00/138 19:36 07:10-07:31/21	07:34 13:59-15:24/85 18:28	07:29 08:00-08:17/17 16:29	08:13 16:05
14	05:12 21:29	05:57 14:33-16:02/89 20:42	06:46 13:42-15:59/137 19:34 07:13-07:31/18	07:36 14:01-15:22/81 18:25	07:31 08:01-08:14/13 16:27	08:14 16:05
15	05:13 21:28	05:58 14:30-16:02/92 20:40	06:48 13:41-15:58/137 19:32 07:13-07:29/16	07:38 14:03-15:19/76 18:23	07:32 08:03-08:13/10 16:26	08:15 16:05
16	05:14 21:27	06:00 14:27-16:03/96 20:38	06:50 13:41-15:58/137 07:15-07:28/13 19:29 07:40-07:49/9	07:39 14:05-15:16/71 18:21	07:34 16:25	08:16 16:05
17	05:15 21:26	06:01 14:24-16:04/100 20:36	06:51 13:41-15:57/136 07:17-07:26/9 19:27 07:38-07:51/13	07:41 14:07-15:14/67 18:19	07:36 16:23	08:16 16:05
18	05:17 06:16-06:23/7 21:25	06:03 14:21-16:04/103 20:34	06:53 13:41-15:56/135 19:25 07:35-07:52/17	07:43 14:10-15:11/61 18:17 08:44-08:54/10	07:38 16:22	08:17 16:05
19	05:18 06:15-06:26/11 21:24	06:05 14:18-16:05/107 20:32	06:55 13:41-15:56/135 19:22 07:34-07:57/23	07:45 14:13-15:08/55 18:15 08:42-08:56/14	07:39 16:21	08:18 16:05
20	05:19 06:14-06:27/13 21:23	06:06 14:15-16:04/109 20:30	06:56 13:41-15:54/133 19:20 07:33-07:59/26	07:46 14:17-15:04/47 18:13 08:40-08:58/18	07:41 16:19	08:19 16:06
21	05:20 06:12-06:28/16 21:21	06:08 14:12-16:05/113 20:28	06:58 13:41-15:54/133 19:18 07:32-08:01/29	07:48 14:20-14:59/39 18:11 08:39-08:59/20	07:43 16:18	08:19 16:06
22	05:22 06:11-06:28/17 21:20	06:09 14:09-16:05/116 20:26	06:59 13:41-15:53/132 19:16 07:32-08:05/33	07:50 14:26-14:53/27 18:08 08:37-08:59/22	07:44 16:17	08:20 16:07
23	05:23 06:12-06:30/18 21:19	06:11 14:07-16:05/118 20:23	07:01 13:42-15:52/130 19:13 07:31-08:05/34	07:52 08:36-09:00/24 18:06	07:46 16:16	08:20 16:07
24	05:25 06:11-06:30/19 21:17	06:13 14:04-16:05/121 20:21	07:03 13:42-15:51/129 19:11 07:32-08:07/35	07:53 08:36-09:00/24 18:04	07:48 16:15	08:21 16:08
25	05:26 06:10-06:30/20 21:16	06:14 14:03-16:06/123 20:19	07:04 13:42-15:50/128 19:09 07:31-08:07/36	06:55 07:36-08:09/33 17:02	07:49 16:14	08:21 16:08
26	05:27 06:10-06:31/21 21:15	06:16 14:00-16:05/125 20:17	07:06 13:43-15:49/126 19:06 07:32-08:07/35	06:57 07:36-08:12/36 17:00	07:51 16:13	08:21 16:09
27	05:29 06:10-06:31/21 21:13	06:17 13:59-16:06/127 20:15	07:08 13:43-15:48/125 19:04 07:34-08:08/34	06:59 07:36-08:13/37 16:58	07:52 16:12	08:22 16:10
28	05:30 06:09-06:32/23 21:12	06:19 13:56-16:05/129 20:13	07:09 13:43-15:47/124 19:02 07:35-08:07/32	07:00 07:36-08:15/39 16:56	07:54 16:11	08:22 16:11
29	05:32 06:10-06:34/24 21:10	06:21 13:55-16:05/130 20:10	07:11 13:44-15:46/122 18:59 07:39-08:07/28	07:02 07:36-08:16/40 16:55	07:55 16:10	08:22 16:11
30	05:33 06:09-06:35/26 21:09	06:22 13:53-16:05/132 20:08	07:13 13:45-15:45/120 18:57 07:40-08:07/27	07:04 07:37-08:16/39 16:53	07:57 16:10	08:22 16:12
31	05:35 15:25-15:42/17 21:07 06:10-06:36/26	06:24 13:52-16:05/133 20:06		07:06 07:37-08:16/39 16:51		08:22 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	279	3082	4744	2350	382	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 11 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (977)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 13:20-14:17/57	07:56 13:36-14:25/49	07:03 07:38-08:06/28	06:52	05:48	05:03 05:31-05:40/9
	16:15 08:53-09:27/34	17:02	17:53	19:47	20:38	21:23
2	08:22 13:21-14:18/57	07:54 13:37-14:24/47	07:00 07:39-07:59/20	06:50 07:13-07:20/7	05:46	05:02 05:31-05:41/10
	16:16 08:53-09:28/35	17:04	17:55	19:49	20:39	21:24
3	08:22 13:22-14:19/57	07:52 13:38-14:23/45	06:58 07:39-07:57/18	06:48 07:10-07:21/11	05:44	05:01 05:30-05:42/12
	16:17 08:54-09:28/34	17:06	17:57	19:50	20:41	21:25
4	08:22 13:21-14:19/58	07:51 13:39-14:22/43	06:56 07:40-07:56/16	06:45 07:08-07:22/14	05:42	05:01 05:30-05:43/13
	16:18 08:53-09:28/35	17:08	17:59	19:52	20:43	21:26
5	08:21 13:22-14:20/58	07:49 13:41-14:21/40	06:54 07:42-07:54/12	06:43 07:06-07:23/17	05:40	05:00 05:29-05:43/14
	16:19 08:53-09:29/36	17:09	18:01 07:17-07:26/9	19:54	20:44	21:27
6	08:21 13:22-14:20/58	07:48 13:43-14:20/37	06:52 07:45-07:51/6	06:41 07:04-07:23/19	05:39	04:59 05:28-05:43/15
	16:20 08:53-09:30/37	17:11	18:02 07:15-07:28/13	19:56	20:46	21:28
7	08:21 13:23-14:21/58	07:46 13:45-14:18/33	06:49 07:13-07:29/16	06:39 07:02-07:22/20	05:37	04:59 05:28-05:44/16
	16:22 08:53-09:30/37	17:13	18:04	19:57	20:47	21:29
8	08:20 13:23-14:21/58	07:44 13:47-14:16/29	06:47 07:12-07:30/18	06:36 06:59-07:22/23	05:35	04:58 05:28-05:45/17
	16:23 08:53-09:30/37	17:15	18:06	19:59	20:49	21:30
9	08:20 13:24-14:22/58	07:42 13:50-14:13/23	06:45 07:11-07:31/20	06:34 06:57-07:22/25	05:33	04:58 05:27-05:44/17
	16:24 08:53-09:31/38	17:17	18:08	20:01	20:51	21:31
10	08:19 13:24-14:23/59	07:41 13:55-14:08/13	06:43 07:06-07:31/25	06:32 06:55-07:21/26	05:32	04:57 05:27-05:45/18
	16:26 08:53-09:31/38	17:19 08:09-08:15/6	18:09	20:02	20:52	21:32
11	08:19 13:24-14:23/59	07:39 08:06-08:18/12	06:40 07:03-07:30/27	06:30 06:54-07:20/26	05:30	04:57 05:27-05:46/19
	16:27 08:53-09:31/38	17:21	18:11	20:04	20:54	21:32
12	08:18 13:24-14:23/59	07:37 08:04-08:20/16	06:38 07:02-07:30/28	06:27 06:50-07:18/28	05:28	04:57 05:26-05:45/19
	16:28 08:54-09:32/38	17:22	18:13	20:06	20:55	21:33
13	08:17 13:25-14:24/59	07:35 08:02-08:21/19	06:36 07:01-07:30/29	06:25 06:48-07:17/29	05:27	04:56 05:26-05:46/20
	16:30 08:54-09:32/38	17:24	18:15	20:07	20:57	21:34
14	08:17 13:25-14:25/60	07:33 08:01-08:22/21	06:34 07:00-07:28/28	06:23 06:46-07:16/30	05:25	04:56 05:26-05:46/20
	16:31 08:54-09:32/38	17:26	18:16	20:09	20:59	21:34
15	08:16 13:25-14:25/60	07:31 07:58-08:23/25	06:31 06:54-07:27/33	06:21 06:44-07:14/30	05:24	04:56 05:26-05:46/20
	16:33 08:54-09:31/37	17:28	18:18	20:11	21:00	21:35
16	08:15 13:26-14:26/60	07:29 07:56-08:23/27	06:29 06:52-07:26/34	06:19 06:42-07:14/32	05:22	04:56 05:27-05:47/20
	16:35 08:54-09:31/37	17:30	18:20	20:12	21:02	21:35
17	08:14 13:26-14:26/60	07:27 07:55-08:24/29	06:27 06:49-07:23/34	06:17 06:40-07:13/33	05:21	04:56 05:27-05:47/20
	16:36 08:54-09:31/37	17:32	18:21	20:14	21:03	21:36
18	08:13 13:26-14:25/59	07:25 07:54-08:24/30	06:24 06:47-07:18/31	06:14 06:38-07:13/35	05:19	04:56 05:27-05:47/20
	16:38 08:55-09:31/36	17:33	18:23	20:16	21:05	21:36
19	08:12 13:26-14:26/60	07:23 07:53-08:24/31	06:22 06:46-07:18/32	06:12 06:36-07:12/36	05:18	04:56 05:27-05:47/20
	16:39 08:54-09:29/35	17:35	18:25	20:17	21:06	21:37
20	08:11 13:27-14:26/59	07:21 07:52-08:23/31	06:20 06:46-07:16/30	06:10 06:34-07:10/36	05:16	04:56 05:27-05:47/20
	16:41 08:55-09:28/33	17:37	18:27	20:19	21:08	21:37
21	08:10 13:28-14:27/59 08:56-09:19/23	07:19 07:44-08:22/38	06:18 06:45-07:14/29	06:08 06:34-07:10/36	05:15	04:56 05:27-05:47/20
	16:43 09:20-09:26/6	17:39	18:28	20:21	21:09	21:37
22	08:09 13:28-14:27/59	07:17 07:42-08:22/40	06:15 07:05-07:10/5	06:06 06:34-07:09/35	05:14	04:56 05:28-05:48/20
	16:44 08:57-09:19/22	17:41	18:30 06:45-07:02/17	20:23	21:10	21:37
23	08:08 13:28-14:27/59	07:15 07:41-08:21/40	06:13 06:45-07:02/17	06:04 06:34-07:08/34	05:12	04:56 05:28-05:48/20
	16:46 08:57-09:18/21	17:43	18:32	20:24	21:12	21:38
24	08:07 13:29-14:27/58	07:13 07:40-08:19/39	06:11 06:45-07:00/15	06:02 06:34-07:08/34	05:11	04:57 05:28-05:48/20
	16:48 08:58-09:18/20	17:44	18:33	20:26	21:13	21:38
25	08:05 13:29-14:26/57	07:11 07:39-08:18/39	06:08 06:47-06:58/11	06:00 06:34-07:06/32	05:10	04:57 05:29-05:49/20
	16:50 08:59-09:18/19	17:46	18:35	20:28	21:14	21:38
26	08:04 13:30-14:27/57	07:09 07:39-08:14/35	06:06 06:50-06:55/5	05:58 06:36-07:06/30	05:09	04:57 05:29-05:49/20
	16:51 09:00-09:17/17	17:48	18:37	20:29	21:16	21:38
27	08:03 13:31-14:27/56	07:07 07:38-08:11/33	06:04	05:56 06:37-07:04/27	05:08	04:58 05:29-05:48/19
	16:53 09:01-09:17/16	17:50	18:39	20:31	21:17	21:38
28	08:01 13:32-14:26/54	07:05 07:38-08:09/31	06:01	05:54 06:51-07:02/11	05:07	04:58 05:29-05:49/20
	16:55 09:03-09:15/12	17:52	18:40	20:33 06:39-06:47/8	21:18	21:38
29	08:00 13:32-14:26/54		06:59	05:52	05:06 05:34-05:37/3	04:59 05:29-05:49/20
	16:57 09:06-09:13/7		19:42	20:34	21:20	21:37
30	07:59 13:33-14:26/53		06:57	05:50	05:05 05:33-05:38/5	04:59 05:30-05:49/19
	16:59		19:44	20:36	21:21	21:37
31	07:57 13:34-14:25/51		06:55		05:04 05:32-05:39/7	
	17:00		19:45		21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	2681	901	606	724	15	537

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 11 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (977)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 05:31-05:50/19 21:37	05:36 21:05	06:26 06:53-07:19/26 20:04	07:14 07:40-08:09/29 18:55	07:08 13:24-13:39/15 16:49 07:38-07:43/5	07:58 13:06-14:05/59 16:09 08:35-09:13/38
2	05:01 05:31-05:49/18 21:37	05:38 21:04	06:27 06:53-07:19/26 20:02	07:16 07:41-08:09/28 18:52	07:09 13:19-13:43/24 16:47	08:00 13:07-14:06/59 16:08 08:36-09:14/38
3	05:01 05:32-05:50/18 21:36	05:39 21:02	06:29 06:55-07:20/25 19:59	07:17 07:43-08:09/26 18:50	07:11 13:16-13:46/30 16:45	08:01 13:07-14:06/59 16:08 08:36-09:14/38
4	05:02 05:33-05:50/17 21:36	05:41 21:00	06:30 06:56-07:19/23 19:57	07:19 07:45-08:08/23 18:48	07:13 13:14-13:48/34 16:44	08:02 13:08-14:06/58 16:07 08:38-09:15/37
5	05:03 05:34-05:50/16 21:35	05:42 20:59	06:32 06:59-07:19/20 19:55	07:21 07:48-08:07/19 18:46	07:15 13:12-13:50/38 16:42	08:04 13:08-14:06/58 16:07 08:38-09:15/37
6	05:04 05:34-05:49/15 21:35	05:44 20:57	06:34 06:59-07:18/19 19:53	07:22 07:49-08:06/17 18:43	07:16 13:11-13:51/40 16:40	08:05 13:08-14:06/58 16:06 08:40-09:16/36
7	05:05 05:35-05:49/14 21:34	05:45 20:55	06:35 07:01-07:18/17 19:50	07:24 07:49-08:04/15 18:41	07:18 13:09-13:53/44 16:38	08:06 13:09-14:07/58 16:06 08:40-09:16/36
8	05:06 05:36-05:49/13 21:34	05:47 20:53	06:37 07:02-07:17/15 19:48	07:26 08:18-08:28/10 18:39 07:51-08:02/11	07:20 13:08-13:54/46 16:37	08:07 13:09-14:07/58 16:05 08:41-09:16/35
9	05:07 05:37-05:49/12 21:33	05:49 20:51	06:38 07:04-07:16/12 19:46	07:28 08:16-08:30/14 18:37 07:55-07:58/3	07:22 13:07-13:55/48 16:35	08:09 13:10-14:07/57 16:05 08:42-09:16/34
10	05:07 05:38-05:49/11 21:32	05:50 20:50	06:40 07:06-07:14/8 19:43	07:29 08:15-08:31/16 18:34	07:24 13:06-13:56/50 16:33	08:10 13:10-14:07/57 16:05 08:42-09:17/35
11	05:09 05:39-05:49/10 21:32	05:52 20:48	06:42 07:07-07:09/2 19:41	07:31 08:13-08:31/18 18:32	07:25 13:06-13:57/51 16:32	08:11 13:11-14:08/57 16:05 08:44-09:18/34
12	05:10 05:40-05:48/8 21:31	05:53 20:46	06:43 19:39	07:33 08:12-08:32/20 18:30	07:27 13:05-13:58/53 16:30	08:12 13:12-14:09/57 16:05 08:45-09:18/33
13	05:11 05:41-05:47/6 21:30	05:55 20:44	06:45 19:36	07:34 08:11-08:41/30 18:28	07:29 13:04-13:58/54 16:29 08:38-08:45/7	08:13 13:13-14:09/56 16:05 08:46-09:19/33
14	05:12 05:42-05:46/4 21:29	05:57 07:01-07:06/5 20:42	06:46 19:34	07:36 08:11-08:43/32 18:25	07:31 13:04-13:58/54 16:27 08:35-08:47/12	08:14 13:12-14:09/57 16:05 08:48-09:19/31
15	05:13 05:43-05:45/2 21:28	05:58 06:58-07:10/12 20:40 06:46-06:55/9	06:48 19:32	07:38 08:11-08:44/33 18:23	07:32 13:03-13:59/56 16:26 08:33-08:49/16	08:15 13:13-14:09/56 08:48-08:54/6 16:05 08:55-09:19/24
16	05:14 21:27	06:00 06:43-07:11/28 20:38	06:50 19:29	07:39 08:10-08:47/37 18:21	07:34 13:03-14:00/57 16:25 08:33-08:50/17	08:16 13:13-14:10/57 08:49-08:54/5 16:05 08:56-09:19/23
17	05:15 21:26	06:01 06:42-07:13/31 20:36	06:51 07:40-07:42/2 19:27	07:41 08:11-08:50/39 18:19	07:36 13:03-14:00/57 16:23 08:32-08:51/19	08:16 13:14-14:10/56 08:51-08:54/3 16:05 08:57-09:20/23
18	05:17 21:25	06:03 06:41-07:13/32 20:34	06:53 07:35-07:45/10 19:25	07:43 08:12-08:51/39 18:17	07:38 13:03-14:01/58 16:22 08:32-08:52/20	08:17 13:15-14:11/56 16:05 08:58-09:20/22
19	05:18 21:24	06:05 06:40-07:14/34 20:32	06:55 07:33-07:47/14 19:22	07:45 08:13-08:52/39 18:15	07:39 13:03-14:02/59 16:21 08:32-08:53/21	08:18 13:15-14:11/56 16:05 08:58-09:21/23
20	05:19 21:23	06:06 06:39-07:14/35 20:30	06:56 07:31-07:47/16 19:20	07:46 08:14-08:53/39 18:13	07:41 13:03-14:02/59 16:19 08:32-08:54/22	08:18 13:16-14:11/55 16:06 08:58-09:21/23
21	05:20 21:21	06:08 06:39-07:15/36 20:28	06:58 07:31-07:48/17 19:18	07:48 08:17-08:54/37 18:11	07:43 13:03-14:02/59 08:31-08:54/23 16:18 08:55-09:01/6	08:19 13:17-14:12/55 16:06 08:59-09:22/23
22	05:22 21:20	06:09 06:39-07:14/35 20:26	06:59 07:30-07:58/28 19:16	07:50 08:22-08:53/31 18:09	07:44 13:03-14:02/59 16:17 08:31-09:04/33	08:20 13:17-14:12/55 16:07 08:59-09:22/23
23	05:23 21:19	06:11 06:39-07:15/36 20:23	07:01 07:29-08:00/31 19:13	07:52 08:23-08:53/30 18:06	07:46 13:03-14:03/60 16:16 08:31-09:06/35	08:20 13:17-14:12/55 16:07 09:00-09:23/23
24	05:25 21:17	06:13 06:39-07:15/36 20:21	07:03 07:29-08:01/32 19:11	07:53 08:24-08:53/29 18:04	07:48 13:04-14:03/59 16:15 08:32-09:08/36	08:21 13:18-14:13/55 16:08 09:00-09:23/23
25	05:26 21:16	06:14 06:41-07:16/35 20:19	07:04 07:29-08:01/32 19:09	06:55 07:25-07:53/28 17:02	07:49 13:03-14:03/60 16:14 08:32-09:09/37	08:21 13:18-14:14/56 16:08 09:01-09:23/22
26	05:27 21:15	06:16 06:42-07:15/33 20:17	07:06 07:31-08:04/33 19:06	06:57 07:26-07:53/27 17:00	07:51 13:04-14:04/60 16:13 08:32-09:09/37	08:21 13:18-14:14/56 08:56-08:57/1 16:09 09:01-09:24/23
27	05:29 21:13	06:17 06:44-07:15/31 20:15	07:08 07:33-08:07/34 19:04	06:59 07:28-07:52/24 16:58	07:52 13:04-14:04/60 16:12 08:33-09:10/37	08:22 13:18-14:14/56 08:56-09:00/4 16:10 09:02-09:25/23
28	05:30 21:12	06:19 06:45-07:15/30 20:13	07:09 07:34-08:08/34 19:02	07:00 07:31-07:52/21 16:57	07:54 13:04-14:04/60 16:11 08:34-09:12/38	08:22 13:20-14:16/56 08:55-09:01/6 16:11 09:02-09:25/23
29	05:32 21:10	06:21 06:47-07:17/30 20:10	07:11 07:40-08:09/29 18:59	07:02 07:32-07:51/19 16:55	07:55 13:05-14:05/60 16:10 08:34-09:12/38	08:22 13:20-14:16/56 08:55-09:02/7 16:12 09:03-09:26/23
30	05:33 21:09	06:22 06:49-07:18/29 20:08	07:13 07:41-08:09/28 18:57	07:04 07:34-07:49/15 16:53	07:57 13:06-14:05/59 16:10 08:35-09:13/38	08:22 13:20-14:17/57 16:12 08:54-09:26/32
31	05:35 21:07	06:24 06:50-07:18/28 20:06		07:06 07:35-07:46/11 16:51		08:22 13:20-14:17/57 16:13 08:54-09:27/33
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	183	545	533	809	2020	2694

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 12 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (968)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 14:35-15:00/25 16:15 09:07-10:00/53	07:56 08:25-09:10/45 17:02	07:03 07:30-08:06/36 17:53	06:52 07:48-08:07/19 19:47	05:48 20:38	05:03 05:57-06:30/33 21:23
2	08:22 14:35-15:01/26 16:16 09:08-10:00/52	07:54 08:25-09:10/45 17:04	07:00 07:29-08:09/40 17:55	06:50 07:50-08:05/15 19:49	05:46 20:39	05:02 05:58-06:30/32 21:24
3	08:22 14:36-15:02/26 16:17 09:08-10:00/52	07:52 08:24-09:09/45 17:06	06:58 07:28-08:09/41 17:57	06:48 07:52-08:01/9 19:50	05:44 20:41	05:01 05:58-06:30/32 21:25
4	08:22 14:36-15:01/25 16:18 09:08-09:59/51	07:51 08:24-09:09/45 17:08	06:56 07:26-08:11/45 17:59	06:45 19:52	05:42 20:43	05:01 05:59-06:31/32 21:26
5	08:21 14:38-15:02/24 16:19 09:09-09:58/49	07:49 08:24-09:08/44 17:10	06:54 07:24-08:12/48 18:01	06:43 19:54	05:40 20:44	05:00 05:59-06:30/31 21:27
6	08:21 14:38-15:01/23 16:20 09:09-09:54/45	07:48 08:24-09:07/43 17:11	06:52 07:24-08:13/49 18:02	06:41 19:56	05:39 20:46	04:59 05:59-06:30/31 21:28
7	08:21 14:39-15:02/23 16:22 09:09-09:53/44	07:46 08:24-09:05/41 17:13	06:49 07:22-08:13/51 18:04	06:39 19:57	05:37 20:47	04:59 05:59-06:30/31 21:29
8	08:20 14:40-15:01/21 16:23 09:09-09:53/44	07:44 08:24-09:02/38 17:15 08:14-08:21/7	06:47 07:20-08:13/53 18:06	06:36 19:59	05:35 20:49	04:58 06:00-06:31/31 21:30
9	08:20 14:41-15:02/21 09:10-09:35/25 16:24 09:36-09:53/17	07:42 08:12-08:59/47 17:17	06:45 07:19-08:14/55 18:08	06:34 20:01	05:33 20:51	04:58 06:00-06:30/30 21:31
10	08:19 14:42-15:02/20 09:10-09:35/25 16:26 09:36-09:53/17	07:41 08:11-08:59/48 17:19	06:43 07:18-08:14/56 18:09	06:32 20:02	05:32 20:52	04:57 06:00-06:30/30 21:32
11	08:19 14:43-15:01/18 09:11-09:35/24 16:27 09:37-09:52/15	07:39 08:10-08:58/48 17:21	06:40 07:16-08:13/57 18:11	06:30 20:04	05:30 06:07-06:17/10 20:54	04:57 06:01-06:31/30 21:32
12	08:18 14:44-15:00/16 09:12-09:36/24 16:29 09:40-09:52/12	07:37 08:09-08:56/47 17:22	06:38 07:14-08:13/59 18:13	06:28 20:06	05:28 06:05-06:20/15 20:55	04:57 06:01-06:30/29 21:33
13	08:17 14:46-15:00/14 09:12-09:36/24 16:30 09:42-09:51/9	07:35 08:08-08:54/46 17:24	06:36 07:09-08:13/64 18:15	06:25 20:07	05:27 06:03-06:21/18 20:57	04:56 06:01-06:30/29 21:34
14	08:17 14:48-14:59/11 09:13-09:36/23 16:32 09:45-09:48/3	07:33 08:31-08:39/8 08:08-08:30/22 17:26 08:46-08:49/3	06:34 07:05-08:11/66 18:16	06:23 20:09	05:25 06:02-06:23/21 20:59	04:56 06:02-06:31/29 21:34
15	08:16 14:51-14:57/6 16:33 09:13-09:37/24	07:31 08:07-08:30/23 17:28	06:31 07:04-08:11/67 18:18	06:21 20:11	05:24 06:01-06:25/24 21:00	04:56 06:02-06:31/29 21:35
16	08:15 09:14-09:37/23 16:35	07:29 08:07-08:30/23 17:30	06:29 07:01-08:10/69 18:20	06:19 20:12	05:22 06:00-06:25/25 21:02	04:56 06:02-06:31/29 21:35
17	08:14 09:15-09:37/22 16:36 08:52-08:57/5	07:27 08:07-08:30/23 17:32	06:27 06:58-08:09/71 18:22	06:17 20:14	05:21 05:59-06:26/27 21:03	04:56 06:03-06:31/28 21:36
18	08:13 09:15-09:37/22 16:38 08:50-09:00/10	07:25 08:08-08:30/22 17:34	06:24 06:56-08:07/71 18:23	06:14 20:16	05:19 05:59-06:27/28 21:05	04:56 06:03-06:31/28 21:36
19	08:12 09:15-09:36/21 16:39 08:47-09:01/14	07:23 08:08-08:29/21 17:35	06:22 06:54-08:06/72 18:25	06:12 20:17	05:18 05:58-06:27/29 21:06	04:56 06:03-06:31/28 21:37
20	08:11 09:17-09:35/18 16:41 08:47-09:03/16	07:21 08:08-08:27/19 17:37	06:20 06:52-08:04/72 18:27	06:10 20:19	05:16 05:58-06:27/29 21:08	04:56 06:03-06:31/28 21:37
21	08:10 09:18-09:35/17 16:43 08:40-09:04/24	07:19 08:09-08:26/17 17:39 07:49-07:53/4	06:18 07:37-08:02/25 18:28 06:50-07:35/45	06:08 20:21	05:15 05:57-06:28/31 21:09	04:56 06:03-06:31/28 21:37
22	08:09 09:20-09:34/14 16:44 08:39-09:06/27	07:17 08:11-08:25/14 17:41 07:45-07:57/12	06:15 07:43-07:59/16 18:30 06:49-07:33/44	06:06 20:23	05:14 05:57-06:29/32 21:10	04:56 06:04-06:32/28 21:37
23	08:08 09:21-09:32/11 16:46 08:37-09:06/29	07:15 08:13-08:22/9 17:43 07:43-07:59/16	06:13 07:48-07:54/6 18:32 06:48-07:28/40	06:04 20:24	05:12 05:57-06:29/32 21:12	04:56 06:04-06:32/28 21:38
24	08:07 09:24-09:30/6 16:48 08:37-09:07/30	07:13 07:42-08:00/18 17:44	06:11 06:47-07:24/37 18:33	06:02 20:26	05:11 05:57-06:29/32 21:13	04:57 06:04-06:32/28 21:38
25	08:05 08:37-09:08/31 16:50	07:11 07:39-08:01/22 17:46	06:08 06:46-07:23/37 18:35	06:00 20:28	05:10 05:57-06:30/33 21:14	04:57 06:05-06:33/28 21:38
26	08:04 08:36-09:09/33 16:51	07:09 07:38-08:02/24 17:48	06:06 06:46-07:22/36 18:37	05:58 20:29	05:09 05:57-06:30/33 21:16	04:57 06:04-06:33/29 21:38
27	08:03 08:34-09:10/36 16:53	07:07 07:36-08:01/25 17:50	06:04 06:45-07:20/35 18:39	05:56 20:31	05:08 05:57-06:30/33 21:17	04:58 06:04-06:33/29 21:38
28	08:01 08:32-09:09/37 16:55	07:05 07:33-08:03/30 17:52	06:01 06:46-07:18/32 18:40	05:54 20:33	05:07 05:57-06:30/33 21:18	04:58 06:05-06:34/29 21:38
29	08:00 08:29-09:10/41 16:57		06:59 07:46-08:14/28 19:42	05:52 20:34	05:06 05:57-06:30/33 21:20	04:59 06:04-06:33/29 21:37
30	07:59 08:27-09:10/43 16:59		06:57 07:46-08:11/25 19:44	05:50 20:36	05:05 05:57-06:30/33 21:21	04:59 06:05-06:34/29 21:37
31	07:57 08:26-09:10/44 17:00		06:55 07:47-08:09/22 19:45		05:04 05:57-06:30/33 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	1505	944	1570	43	584	885

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 12 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (968)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 06:05-06:35/30 21:37	05:36 06:16-06:30/14 21:05	06:26 20:04	07:14 07:50-08:52/62 18:55	07:08 07:40-08:28/48 16:49	07:58 14:25-14:43/18 08:53-09:17/24 16:09 09:20-09:34/14
2	05:01 06:05-06:35/30 21:37	05:38 06:19-06:26/7 21:04	06:27 20:02	07:16 07:54-08:52/58 18:52	07:09 07:54-08:28/34 16:47 07:42-07:53/11	08:00 14:25-14:45/20 08:53-09:18/25 16:08 09:20-09:36/16
3	05:01 06:05-06:35/30 21:36	05:39 21:02	06:29 19:59	07:18 07:55-08:52/57 18:50	07:11 07:54-08:33/39 16:45 07:45-07:50/5	08:01 14:24-14:45/21 08:53-09:18/25 16:08 09:19-09:36/17
4	05:02 06:05-06:36/31 21:36	05:41 21:00	06:30 19:57	07:19 07:55-08:51/56 18:48	07:13 07:54-08:35/41 16:44	08:02 14:25-14:46/21 16:07 08:54-09:38/44
5	05:03 06:06-06:36/30 21:35	05:42 20:59	06:32 19:55	07:21 07:56-08:50/54 18:46	07:15 07:54-08:37/43 16:42	08:04 14:24-14:47/23 16:07 08:54-09:38/44
6	05:04 06:05-06:36/31 21:35	05:44 20:57	06:34 19:53	07:23 07:58-08:50/52 18:43	07:17 07:54-08:38/44 16:40	08:05 14:24-14:47/23 16:06 08:56-09:40/44
7	05:05 06:05-06:36/31 21:34	05:45 20:55	06:35 19:50	07:24 07:58-08:48/50 18:41	07:18 07:54-08:39/45 16:38	08:06 14:25-14:49/24 16:06 08:56-09:45/49
8	05:06 06:05-06:37/32 21:34	05:47 20:53	06:37 19:48	07:26 07:59-08:47/48 18:39	07:20 07:55-08:40/45 16:37	08:07 14:25-14:49/24 16:05 08:56-09:47/51
9	05:07 06:05-06:37/32 21:33	05:49 20:52	06:38 07:47-07:55/8 19:46	07:28 08:00-08:46/46 18:37	07:22 07:55-08:41/46 16:35	08:09 14:24-14:50/26 16:05 08:56-09:48/52
10	05:08 06:05-06:38/33 21:32	05:50 20:50	06:40 07:43-07:58/15 19:43	07:29 08:01-08:45/44 18:34	07:24 07:56-08:41/45 16:33	08:10 14:25-14:50/25 16:05 08:57-09:49/52
11	05:09 06:06-06:38/32 21:32	05:52 20:48	06:42 07:41-07:59/18 19:41	07:31 08:01-08:43/42 18:32	07:25 07:58-08:42/44 16:32	08:11 14:25-14:51/26 16:05 08:58-09:51/53
12	05:10 06:06-06:38/32 21:31	05:53 20:46	06:43 07:39-08:01/22 19:39	07:33 08:02-08:41/39 18:30	07:27 07:59-08:42/43 16:30	08:12 14:26-14:52/26 16:05 08:59-09:52/53
13	05:11 06:06-06:38/32 21:30	05:55 20:44	06:45 07:37-08:02/25 19:36	07:34 08:05-08:38/33 18:28	07:29 08:01-08:42/41 16:29	08:13 14:26-14:53/27 16:05 08:59-09:53/54
14	05:12 06:06-06:38/32 21:29	05:57 20:42	06:47 07:37-08:04/27 19:34	07:36 08:09-08:35/26 18:26	07:31 08:04-08:41/37 16:27	08:14 14:26-14:52/26 16:05 09:00-09:54/54
15	05:13 06:06-06:38/32 21:28	05:58 20:40	06:48 07:35-08:06/31 19:32	07:38 08:09-08:34/25 18:23	07:32 08:06-08:41/35 16:26	08:15 14:26-14:53/27 16:05 09:00-09:54/54
16	05:14 06:06-06:38/32 21:27	06:00 20:38	06:50 07:35-08:09/34 19:29	07:39 08:10-08:33/23 18:21	07:34 08:09-08:41/32 16:25	08:16 14:27-14:53/26 16:05 09:00-09:54/54
17	05:15 06:06-06:38/32 21:26	06:01 20:36	06:51 07:35-08:10/35 19:27	07:41 08:11-08:32/21 18:19	07:36 08:10-08:41/31 16:23	08:16 14:27-14:54/27 16:05 09:01-09:55/54
18	05:17 06:07-06:39/32 21:25	06:03 20:34	06:53 07:34-08:10/36 19:25	07:43 08:14-08:31/17 18:17	07:38 08:58-09:04/6 16:22 08:11-08:41/30	08:17 14:28-14:55/27 16:05 09:02-09:56/54
19	05:18 06:07-06:39/32 21:24	06:05 20:32	06:55 07:34-08:11/37 19:23	07:45 08:43-08:55/12 18:15 08:15-08:30/15	07:39 08:56-09:07/11 16:21 08:12-08:41/29	08:18 14:28-14:55/27 16:06 09:03-09:56/53
20	05:19 06:07-06:39/32 21:23	06:06 20:30	06:56 07:33-08:11/38 19:20	07:46 08:41-08:57/16 18:13 08:18-08:27/9	07:41 08:55-09:09/14 16:19 08:14-08:41/27	08:19 14:29-14:56/27 16:06 09:03-09:57/54
21	05:21 06:07-06:38/31 21:21	06:08 20:28	06:58 08:29-08:43/14 19:18 07:34-08:17/43	07:48 08:40-08:58/18 18:11	07:43 08:53-09:10/17 16:18 08:15-08:39/24	08:19 14:29-14:57/28 16:06 09:04-09:58/54
22	05:22 06:07-06:38/31 21:20	06:09 20:26	06:59 08:24-08:46/22 19:16 07:35-08:20/45	07:50 08:38-08:58/20 18:09	07:44 08:53-09:11/18 16:17 08:23-08:39/16	08:20 14:29-14:57/28 16:07 09:04-09:58/54
23	05:23 06:08-06:38/30 21:19	06:11 20:23	07:01 07:35-08:48/73 19:13	07:52 08:37-08:59/22 18:07	07:46 08:53-09:13/20 16:16 08:24-08:38/14	08:20 14:29-14:57/28 16:07 09:05-09:59/54
24	05:25 06:08-06:38/30 21:17	06:13 20:21	07:03 07:37-08:49/72 19:11	07:53 08:37-08:59/22 18:04	07:48 08:53-09:14/21 16:15 08:27-08:37/10	08:21 14:31-14:58/27 16:08 09:05-09:59/54
25	05:26 06:08-06:37/29 21:16	06:14 20:19	07:04 07:38-08:50/72 19:09	06:55 07:37-07:59/22 17:02	07:49 08:53-09:15/22 16:14 08:30-08:35/5	08:21 14:31-14:58/27 16:09 09:05-09:59/54
26	05:27 06:10-06:37/27 21:15	06:16 20:17	07:06 07:40-08:51/71 19:06	06:57 07:37-08:00/23 17:00	07:51 08:52-09:15/23 16:13	08:21 14:31-14:58/27 16:09 09:05-09:59/54
27	05:29 06:10-06:36/26 21:13	06:18 20:15	07:08 07:42-08:52/70 19:04	06:59 07:37-07:59/22 16:59	07:52 14:30-14:36/6 16:12 08:52-09:16/24	08:22 14:31-14:58/27 16:10 09:06-10:00/54
28	05:30 06:10-06:35/25 21:12	06:19 20:13	07:09 07:44-08:52/68 19:02	07:00 08:00-08:09/9 07:37-07:59/22 16:57 08:14-08:21/7	07:54 14:27-14:38/11 08:53-09:17/24 16:11 09:25-09:27/2	08:22 14:33-15:00/27 16:11 09:06-10:01/55
29	05:32 06:12-06:35/23 21:10	06:21 20:10	07:11 07:45-08:52/67 18:59	07:02 07:38-08:24/46 16:55	07:55 14:26-14:40/14 08:52-09:16/24 16:10 09:22-09:31/9	08:22 14:33-15:00/27 16:12 09:07-10:01/54
30	05:33 06:13-06:33/20 21:09	06:22 20:08	07:13 07:47-08:52/65 18:57	07:04 07:38-08:26/48 16:53	07:57 14:26-14:42/16 08:53-09:17/24 16:10 09:21-09:33/12	08:22 14:34-15:00/26 16:12 09:07-10:01/54
31	05:35 06:15-06:32/17 21:07	06:24 20:06	 	07:06 07:38-08:26/48 16:51	 	08:22 14:34-15:00/26 16:13 09:08-10:01/53
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	919	21	1008	1134	1182	2377

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 13 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (969)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 09:11-09:52/41 16:15	07:56 15:39-16:10/31 08:50-09:20/30 17:02 09:21-09:42/21	07:03 07:52-08:31/39 17:53 07:34-07:49/15	06:52 07:27-08:01/34 19:47	05:48 06:42-07:50/68 20:38	05:03 21:23
2	08:22 09:11-09:53/42 16:16	07:54 15:39-16:10/31 08:50-09:20/30 17:04 09:22-09:40/18	07:00 07:53-08:26/33 17:55 07:32-07:51/19	06:50 07:27-07:59/32 19:49	05:46 06:43-07:49/66 20:39	05:02 21:24
3	08:22 09:11-09:54/43 16:17	07:52 15:39-16:10/31 08:50-09:20/30 17:06 09:24-09:38/14	06:58 07:54-08:25/31 17:57 07:31-07:52/21	06:48 07:24-07:57/33 19:50	05:44 06:44-07:49/65 20:41	05:01 21:25
4	08:22 09:10-09:54/44 16:18	07:51 15:39-16:10/31 08:51-09:21/30 17:08 09:29-09:35/6	06:56 07:55-08:23/28 17:59 07:29-07:52/23	06:45 07:20-07:55/35 19:52	05:42 07:09-07:48/39 20:43 06:45-07:07/22	05:01 21:26
5	08:21 09:11-09:55/44 16:19	07:49 15:40-16:11/31 17:10 08:51-09:20/29	06:54 07:58-08:22/24 18:01 07:28-07:53/25	06:43 07:18-07:55/37 19:54	05:40 07:10-07:47/37 20:44 06:46-07:05/19	05:00 21:27
6	08:21 09:11-09:56/45 16:20	07:48 15:40-16:10/30 17:11 08:51-09:20/29	06:52 08:00-08:20/20 18:02 07:28-07:53/25	06:41 07:17-07:55/38 19:56	05:39 07:10-07:45/35 20:46 06:47-07:03/16	04:59 21:28
7	08:21 09:11-09:56/45 16:22	07:46 15:41-16:10/29 17:13 08:52-09:19/27	06:49 08:01-08:17/16 18:04 07:26-07:53/27	06:39 07:14-07:53/39 19:57	05:37 07:12-07:45/33 20:47 06:50-07:01/11	04:59 21:29
8	08:20 09:10-09:56/46 16:23	07:44 15:41-16:09/28 08:15-08:23/8 17:15 08:52-09:18/26	06:47 08:04-08:14/10 18:06 07:26-07:53/27	06:36 07:13-07:53/40 19:59	05:35 07:13-07:43/30 20:49	04:58 21:30
9	08:20 09:11-09:57/46 16:24	07:42 15:42-16:08/26 08:13-08:30/17 17:17 08:53-09:17/24	06:45 07:26-07:53/27 18:08	06:34 07:12-07:53/41 20:01	05:33 07:15-07:42/27 20:51	04:58 21:31
10	08:19 09:11-09:57/46 16:26	07:41 15:43-16:07/24 08:12-08:34/22 17:19 08:56-09:16/20	06:43 07:27-07:52/25 18:09	06:32 07:08-07:52/44 20:02	05:32 07:16-07:40/24 20:52	04:57 21:32
11	08:19 09:10-09:57/47 16:27	07:39 15:45-16:07/22 08:10-08:36/26 17:21 08:57-09:15/18	06:40 07:26-07:51/25 18:11	06:30 07:04-07:53/49 20:04	05:30 07:17-07:37/20 20:54	04:57 21:32
12	08:18 09:11-09:59/48 16:29	07:37 15:47-16:06/19 08:09-08:38/29 17:22 09:00-09:12/12	06:38 07:27-07:50/23 18:13	06:28 07:01-07:53/52 20:06	05:28 07:20-07:35/15 20:55	04:57 21:33
13	08:17 09:11-09:59/48 16:30	07:35 15:49-16:04/15 17:24 08:09-08:39/30	06:36 07:28-07:49/21 18:15	06:25 06:59-07:53/54 20:07	05:27 07:24-07:30/6 20:57	04:56 21:34
14	08:17 09:11-09:59/48 16:32	07:33 15:53-16:00/7 17:26 08:08-08:40/32	06:34 07:28-07:47/19 18:16 07:04-07:12/8	06:23 06:56-07:53/57 20:09	05:25 20:59	04:56 21:34
15	08:16 09:11-09:59/48 16:33	07:31 08:03-08:41/38 17:28	06:31 07:30-07:45/15 18:18 07:01-07:15/14	06:21 06:54-07:53/59 20:11	05:24 21:00	04:56 21:35
16	08:15 09:11-09:59/48 16:35	07:29 08:00-08:41/41 17:30	06:29 07:33-07:42/9 18:20 06:59-07:17/18	06:19 06:52-07:54/62 20:12	05:22 21:02	04:56 21:35
17	08:14 09:12-10:00/48 16:36	07:27 07:57-08:42/45 17:32	06:27 06:56-07:17/21 18:22	06:17 06:50-07:54/64 20:14	05:21 21:03	04:56 21:36
18	08:13 09:12-10:00/48 16:38 08:58-09:06/8	07:25 07:56-08:42/46 17:34	06:25 06:53-07:18/25 18:23	06:14 06:48-07:55/67 20:16	05:19 21:05	04:56 21:36
19	08:12 15:49-15:53/4 08:55-09:08/13 16:39 09:11-09:59/48	07:23 07:55-08:42/47 17:35	06:22 06:52-07:19/27 18:25	06:12 06:47-07:54/67 20:18	05:18 21:06	04:56 21:37
20	08:11 15:46-15:57/11 08:54-09:10/16 16:41 09:12-09:59/47	07:21 07:53-08:41/48 17:37	06:20 06:51-07:19/28 18:27	06:10 06:45-07:54/69 20:19	05:16 21:08	04:56 21:37
21	08:10 15:44-16:00/16 16:43 08:53-09:59/66	07:19 07:52-08:41/49 17:39	06:18 06:49-07:19/30 18:28	06:08 06:44-07:54/70 20:21	05:15 21:09	04:56 21:37
22	08:09 15:43-16:02/19 16:44 08:52-09:59/67	07:17 07:51-08:41/50 17:41	06:15 06:45-07:19/34 18:30	06:06 06:43-07:54/71 20:23	05:14 21:10	04:56 21:37
23	08:08 15:42-16:03/21 16:46 08:51-09:58/67	07:15 07:51-08:40/49 17:43	06:13 06:42-07:19/37 18:32	06:04 06:42-07:54/72 20:24	05:12 21:12	04:56 21:38
24	08:07 15:41-16:04/23 16:48 08:51-09:58/67	07:13 07:51-08:40/49 17:44	06:11 06:40-07:17/37 18:34	06:02 06:42-07:54/72 20:26	05:11 21:13	04:57 21:38
25	08:05 15:40-16:05/25 16:50 08:51-09:58/67	07:11 07:51-08:39/48 17:46	06:08 06:39-07:17/38 18:35	06:00 06:41-07:53/72 20:28	05:10 21:14	04:57 21:38
26	08:04 15:40-16:06/26 16:51 08:50-09:56/66	07:09 07:51-08:38/47 17:48	06:06 06:38-07:16/38 18:37	05:58 06:42-07:54/72 20:29	05:09 21:16	04:57 21:38
27	08:03 15:40-16:08/28 16:53 08:50-09:55/65	07:07 07:50-08:35/45 17:50	06:04 06:34-07:13/39 18:39	05:56 06:42-07:53/71 20:31	05:08 21:17	04:58 21:38
28	08:01 15:39-16:08/29 16:55 08:49-09:53/64	07:05 07:51-08:34/43 17:52 07:37-07:46/9	06:02 06:33-07:12/39 18:40	05:54 06:42-07:53/71 20:33	05:07 21:18	04:58 21:38
29	08:00 15:39-16:08/29 16:57 08:50-09:51/61		06:59 07:31-08:09/38 19:42	05:52 06:42-07:52/70 20:34	05:06 21:20	04:59 21:37
30	07:59 15:39-16:09/30 16:59 08:49-09:44/55		06:57 07:29-08:06/37 19:44	05:50 06:42-07:51/69 20:36	05:05 21:21	04:59 21:37
31	07:57 15:39-16:09/30 17:00 08:49-09:42/53		06:55 07:28-08:04/36 19:45		05:04 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	1946	1537	1091	1683	533	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem **WEA:** WEA 13 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (969)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
401	289	353	530	514	407	442	795	1.183	1.386	1.358	723	8.381

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 21:37	05:36 07:29-07:47/18 21:05	06:26 07:03-07:52/49 20:04	07:14 08:06-08:29/23 18:55	07:08 15:12-15:37/25 07:41-08:03/22 16:49 08:24-08:45/21	07:58 08:52-09:40/48 16:09
2	05:01 21:37	05:38 07:27-07:49/22 21:04	06:27 07:06-07:50/44 20:02	07:16 08:05-08:30/25 18:52	07:09 15:11-15:38/27 07:43-07:59/16 16:47 08:23-08:47/24	08:00 08:54-09:40/46 16:08
3	05:01 21:36	05:39 07:26-07:51/25 21:02	06:29 07:10-07:51/41 19:59	07:18 08:05-08:30/25 18:50	07:11 15:11-15:39/28 07:46-07:52/6 16:45 08:22-08:48/26	08:01 08:54-09:40/46 16:08
4	05:02 21:36	05:41 07:24-07:52/28 21:00	06:30 07:10-07:50/40 19:57	07:19 08:03-08:30/27 18:48	07:13 15:10-15:40/30 16:44 08:21-08:49/28	08:02 08:55-09:41/46 16:07
5	05:03 21:35	05:42 07:23-07:54/31 20:59 07:03-07:08/5	06:32 07:11-07:50/39 19:55	07:21 08:45-08:46/1 18:46 08:03-08:30/27	07:15 15:10-15:40/30 16:42 08:21-08:49/28	08:04 08:56-09:41/45 16:07
6	05:04 21:35	05:44 07:21-07:55/34 20:57 06:58-07:11/13	06:34 07:12-07:50/38 19:53	07:23 08:39-08:53/14 18:43 08:03-08:30/27	07:17 15:10-15:40/30 16:40 08:21-08:50/29	08:05 08:57-09:41/44 16:06
7	05:05 21:34	05:45 07:21-07:56/35 20:55 06:57-07:14/17	06:35 07:13-07:50/37 19:50	07:24 08:36-08:54/18 18:41 08:03-08:29/26	07:18 15:10-15:41/31 08:20-08:50/30 16:38 08:58-09:05/7	08:06 08:58-09:42/44 16:06
8	05:06 21:34	05:47 07:19-07:57/38 20:53 06:55-07:15/20	06:37 07:14-07:49/35 19:48	07:26 08:34-08:56/22 18:39 08:03-08:28/25	07:20 15:10-15:41/31 08:20-08:51/31 16:37 08:54-09:09/15	08:07 08:58-09:42/44 16:05
9	05:07 21:33	05:49 07:19-07:58/39 20:52 06:54-07:17/23	06:38 07:18-07:51/33 19:46	07:28 08:32-08:57/25 18:37 08:03-08:27/24	07:22 15:10-15:41/31 08:20-08:51/31 16:35 08:53-09:11/18	08:09 08:59-09:42/43 16:05
10	05:08 21:32	05:50 06:52-07:58/66 20:50	06:40 07:20-07:52/32 19:43	07:29 08:29-08:58/29 18:34 08:04-08:27/23	07:24 15:10-15:41/31 16:33 08:21-09:13/52	08:10 09:00-09:42/42 16:05
11	05:09 21:32	05:52 06:52-07:59/67 20:48	06:42 07:19-07:52/33 19:41	07:31 08:27-08:58/31 18:32 08:04-08:24/20	07:25 15:11-15:41/30 16:32 08:21-09:14/53	08:11 09:02-09:43/41 16:05
12	05:10 21:31	05:53 06:51-07:59/68 20:46	06:43 07:20-07:56/36 19:39	07:33 08:25-09:01/36 18:30 08:06-08:23/17	07:27 15:11-15:41/30 16:30 08:21-09:16/55	08:12 09:02-09:44/42 16:05
13	05:11 21:30	05:55 06:50-08:00/70 20:44	06:45 07:20-07:57/37 19:36	07:34 08:24-09:05/41 18:28 08:08-08:21/13	07:29 15:11-15:40/29 16:29 08:22-09:23/61	08:13 09:03-09:44/41 16:05
14	05:12 21:29	05:57 06:49-08:00/71 20:42	06:47 07:21-07:59/38 19:34	07:36 08:24-09:08/44 18:26 08:12-08:16/4	07:31 15:11-15:40/29 16:27 08:21-09:25/64	08:14 09:04-09:44/40 16:05
15	05:13 21:28	05:58 06:49-08:00/71 20:40	06:48 07:22-08:01/39 19:32	07:38 08:23-09:09/46 18:23	07:32 15:12-15:40/28 16:26 08:22-09:27/65	08:15 09:04-09:44/40 16:05
16	05:14 21:27	06:00 06:49-08:00/71 20:38	06:50 07:23-08:03/40 19:30	07:39 08:22-09:09/47 18:21	07:34 15:13-15:39/26 16:25 08:23-09:29/66	08:16 09:05-09:44/39 16:05
17	05:15 21:26	06:01 06:49-08:01/72 20:36	06:51 07:25-08:04/39 19:27	07:41 08:22-09:10/48 18:19	07:36 15:14-15:39/25 16:23 08:24-09:31/67	08:16 09:06-09:45/39 16:05
18	05:17 21:25	06:03 06:48-08:00/72 20:34	06:53 07:26-08:04/38 19:25	07:43 08:22-09:11/49 18:17	07:38 15:15-15:38/23 16:22 08:25-09:32/67	08:17 09:07-09:46/39 16:05
19	05:18 21:24	06:05 06:48-08:00/72 20:32	06:55 07:27-08:05/38 19:23	07:45 08:22-09:12/50 18:15	07:39 15:17-15:38/21 16:21 08:26-09:33/67	08:18 09:07-09:45/38 16:06
20	05:19 21:23	06:06 06:48-08:00/72 20:30	06:56 07:27-08:04/37 19:20	07:46 08:23-09:12/49 18:13	07:41 15:18-15:37/19 16:19 08:27-09:34/67	08:19 09:08-09:46/38 16:06
21	05:21 21:21	06:08 06:49-08:00/71 20:28	06:58 07:29-08:04/35 19:18	07:48 08:24-09:12/48 18:11	07:43 15:19-15:35/16 16:18 08:28-09:34/66	08:19 09:09-09:47/38 16:06
22	05:22 21:20	06:09 06:48-07:59/71 20:26	06:59 07:33-08:04/31 19:16	07:50 08:24-09:11/47 18:09	07:44 15:22-15:33/11 08:30-08:46/16 16:17 08:48-09:35/47	08:20 09:09-09:47/38 16:07
23	05:23 21:19	06:11 06:49-07:59/70 20:24	07:01 07:34-08:03/29 19:13	07:52 08:25-09:11/46 18:07	07:46 15:26-15:30/4 08:32-08:45/13 16:16 08:48-09:36/48	08:20 09:10-09:48/38 16:07
24	05:25 21:17	06:13 06:50-07:58/68 20:21	07:03 07:35-08:03/28 19:11	07:53 08:26-09:11/45 18:04	07:48 08:49-09:37/48 16:15 08:35-08:43/8	08:21 09:10-09:48/38 16:08
25	05:26 21:16	06:14 06:51-07:57/66 20:19	07:04 07:35-08:01/26 19:09	06:55 07:27-08:11/44 17:02	07:49 08:50-09:38/48 16:14	08:21 09:10-09:48/38 16:08
26	05:27 21:15	06:16 06:52-07:56/64 20:17	07:06 07:37-08:00/23 19:06	06:57 07:30-08:11/41 17:00	07:51 08:49-09:38/49 16:13	08:21 09:10-09:49/39 16:09
27	05:29 21:13	06:18 06:54-07:55/61 20:15	07:08 08:17-08:21/4 19:04 07:40-07:59/19	06:59 07:34-08:10/36 16:59	07:52 08:50-09:38/48 16:12	08:22 09:11-09:50/39 16:10
28	05:30 21:12	06:19 06:55-07:54/59 20:13	07:09 08:12-08:25/13 19:02 07:41-07:57/16	07:00 15:21-15:31/10 16:57 07:38-08:09/31	07:54 08:51-09:39/48 16:11	08:22 09:11-09:51/40 16:11
29	05:32 21:10	06:21 06:57-07:54/57 20:11	07:11 08:10-08:27/17 18:59 07:43-07:54/11	07:02 15:17-15:33/16 07:38-08:08/30 16:55 08:32-08:38/6	07:55 08:51-09:39/48 16:10	08:22 09:11-09:51/40 16:12
30	05:33 21:09	06:22 07:00-07:54/54 20:08	07:13 08:08-08:29/21 18:57	07:04 15:15-15:35/20 07:39-08:07/28 16:53 08:29-08:42/13	07:57 08:52-09:40/48 16:10	08:22 09:11-09:52/41 16:12
31	05:35 07:33-07:44/11 21:07	06:24 07:01-07:52/51 20:06		07:06 15:13-15:36/23 07:39-08:05/26 16:51 08:25-08:44/19		08:22 09:11-09:52/41 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	11	1812	1036	1385	2136	1275

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

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Lizenzierter Anwender:
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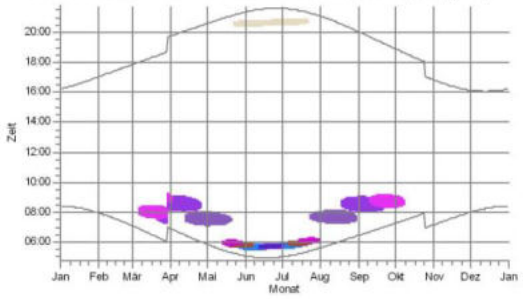
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

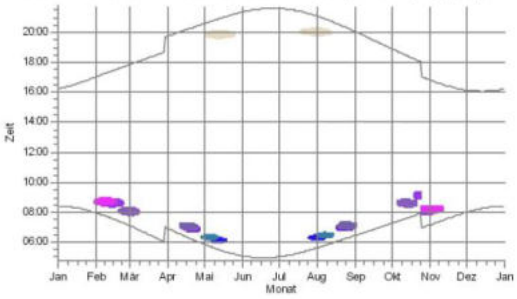
SHADOW - Grafischer Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem

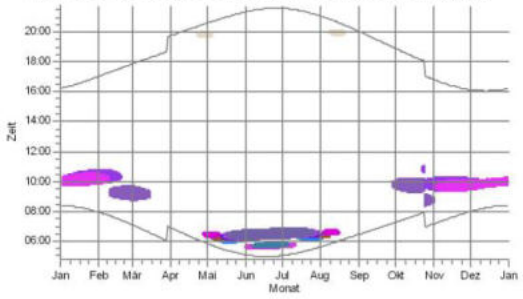
10B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (326)



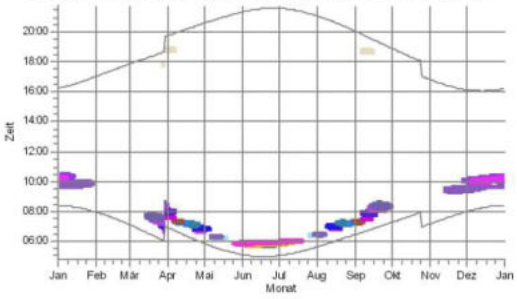
11B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (327)



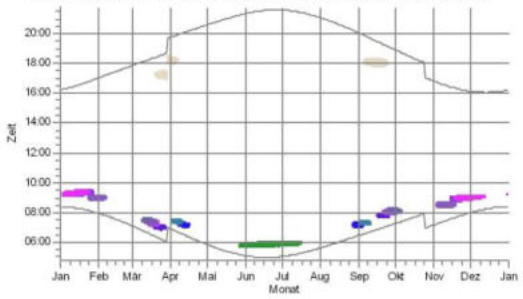
13B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (328)



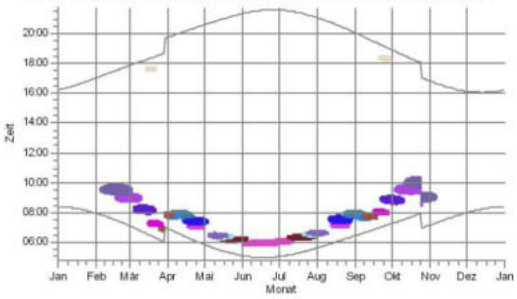
14B: ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (337)



15B: ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (335)



18B: ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (336)



Schattenrezeptoren

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Berechnet:
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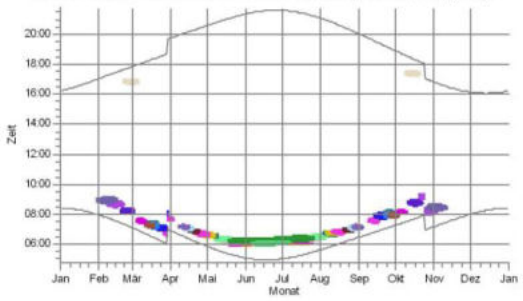
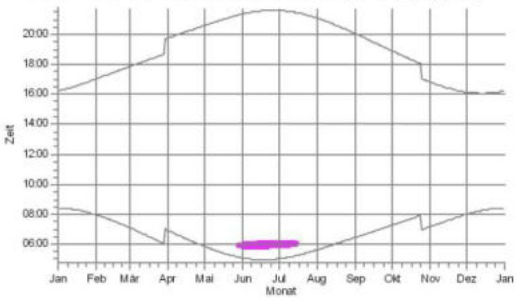
SHADOW - Grafischer Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem

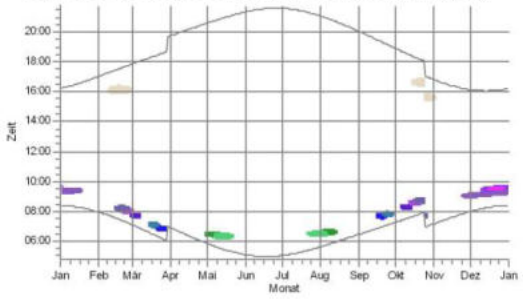
19B: ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (338)



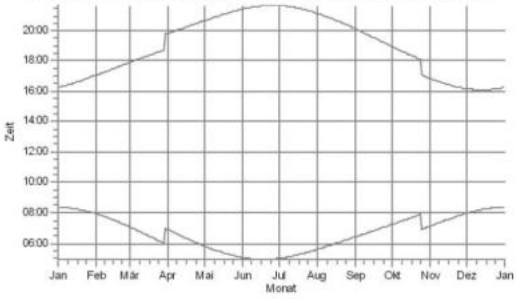
1B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (322)



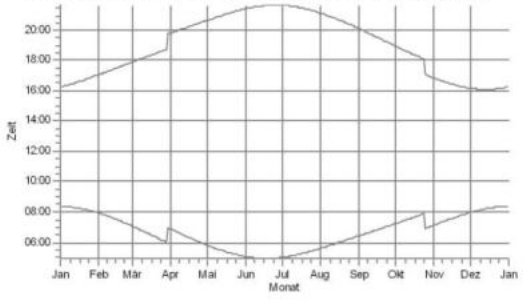
20B: ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (339)



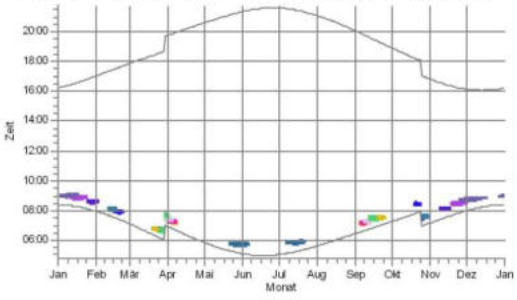
27B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (334)



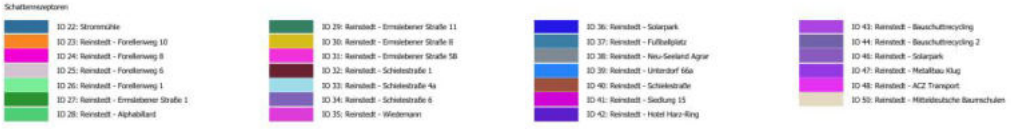
28B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (329)



29B: ENERCON E-70 E4 2000 71.0 !O! NH: 98,2 m (Ges:133,7 m) (340)



Schattenrezeptoren



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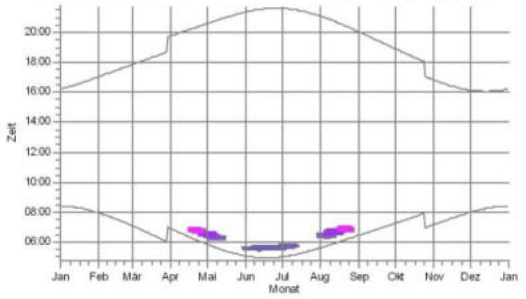
Berechnet:
16.02.2024 15:21/3.6.366

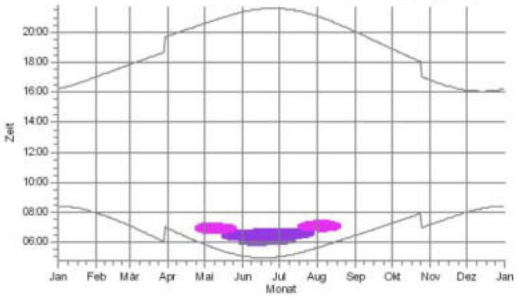
SHADOW - Grafischer Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem

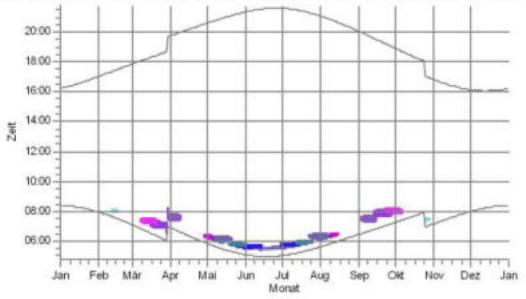
2B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (323)



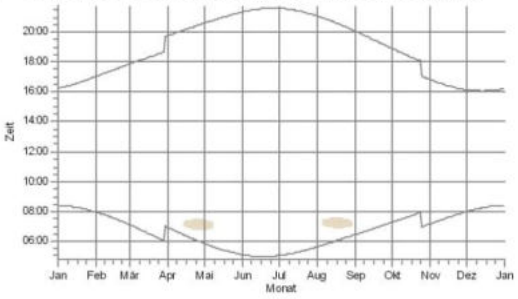
5B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (324)



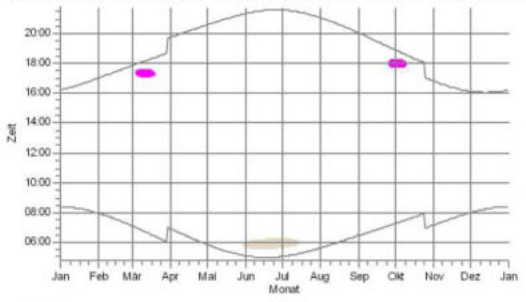
6B: NEG MICON NM72-1500C 1500-400 72.0 !O! NH: 98,0 m (Ges:134,0 m) (



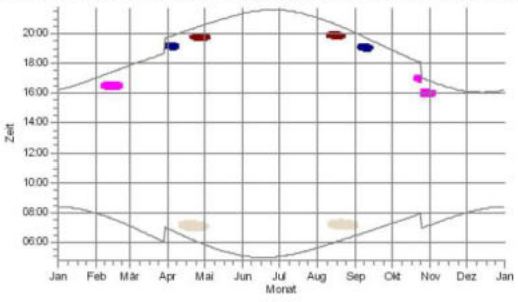
9B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (325)



SAB W1: VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



SAB W2: VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



Schattenrezeptoren

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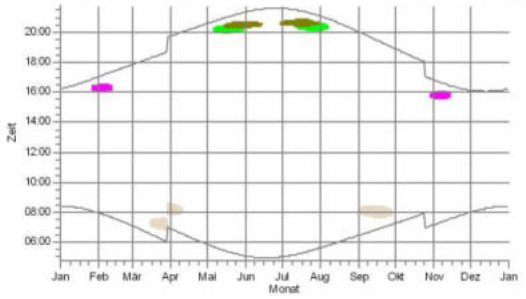
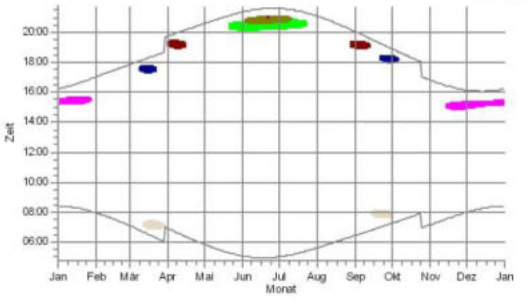
SHADOW - Grafischer Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem

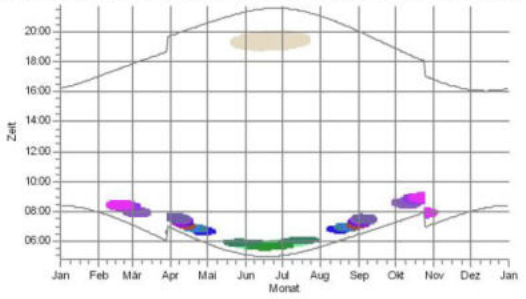
SAB W3: VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



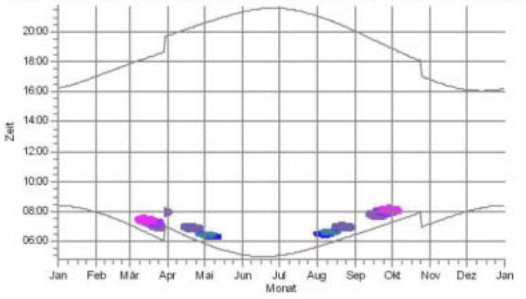
SAB W4: VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



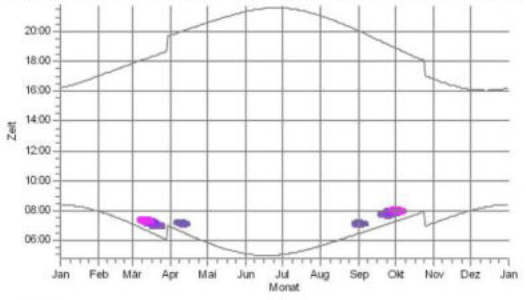
WEA 02: VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



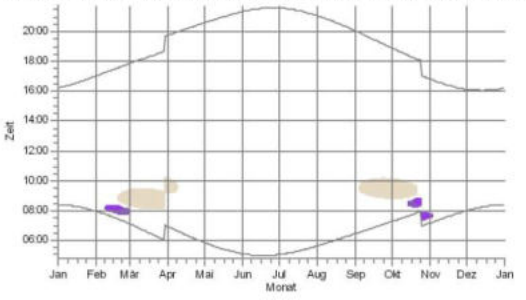
WEA 03: VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



WEA 04: VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



WEA 06: VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



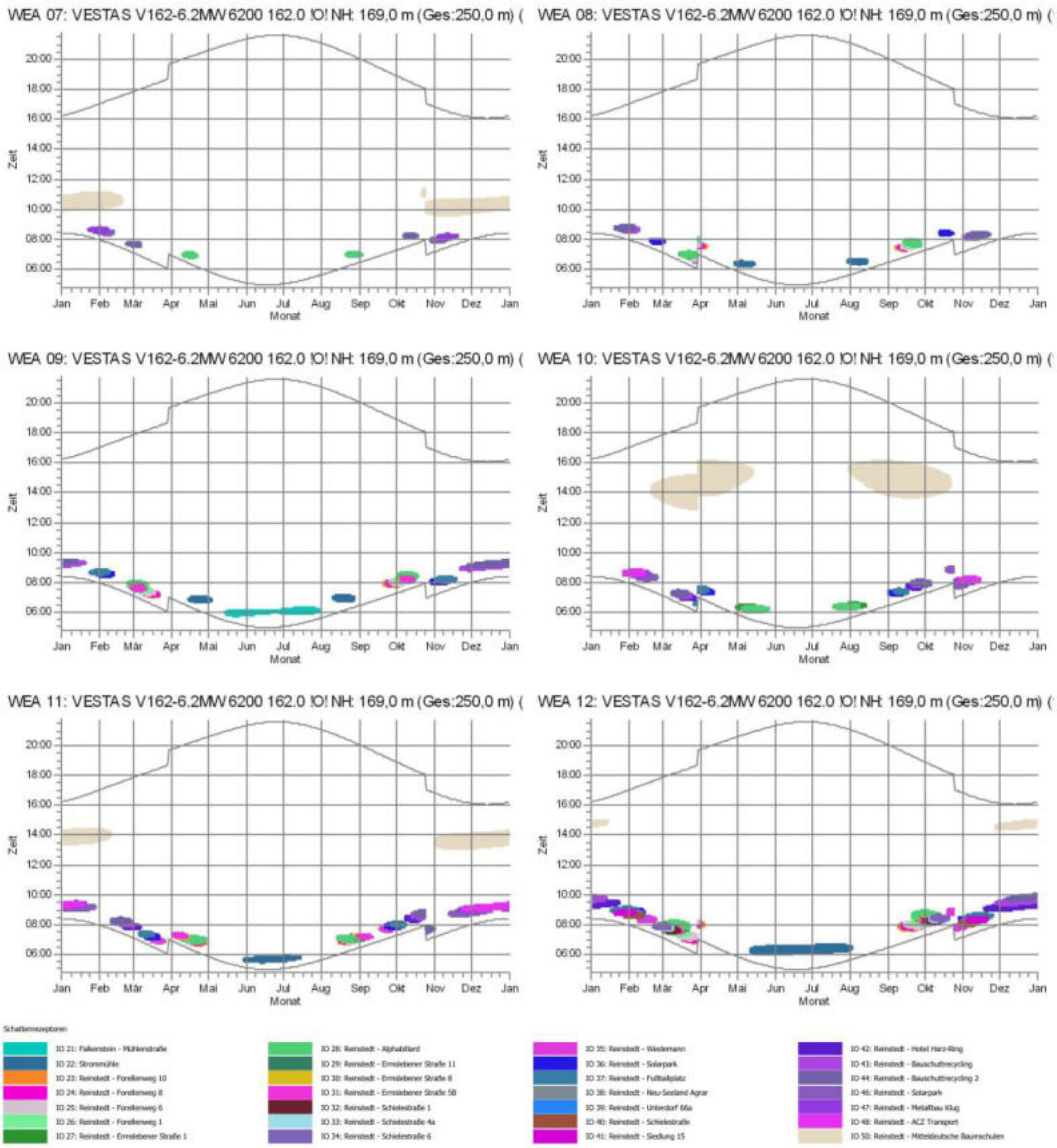
Schattenrezeptoren

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

SHADOW - Grafischer Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem



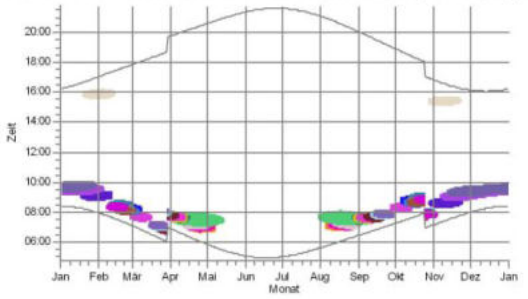
Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:21/3.6.366

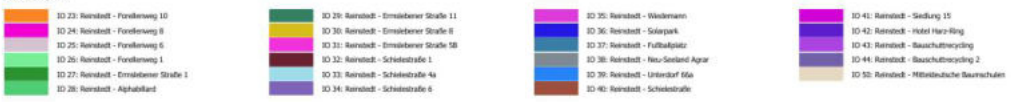
SHADOW - Grafischer Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_VB_pem

WEA 13: VESTAS V162-6.2MW 6200 162.0 !O! NH 169,0 m (Ges:250,0 m) (



Schattenrezeptoren



5.2.2 Zusatzbelastung

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Hauptergebnis

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem

Annahmen für Schattenwurfberechnung

Beschattungsbereich der WEA
Schatten nur relevant, wo Rotorblatt mind. 20% der Sonne verdeckt
Siehe WEA-Tabelle

Minimale relevante Sonnenhöhe über Horizont	3 °
Tage zwischen Berechnungen	1 Tag(e)
Berechnungszeitsprung	1 Minuten

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsstunden ermittelt aus WEA in Berechnung und Windverteilung:
231123_WLS630_169m_1y_MCP_EU+_2022 (100)

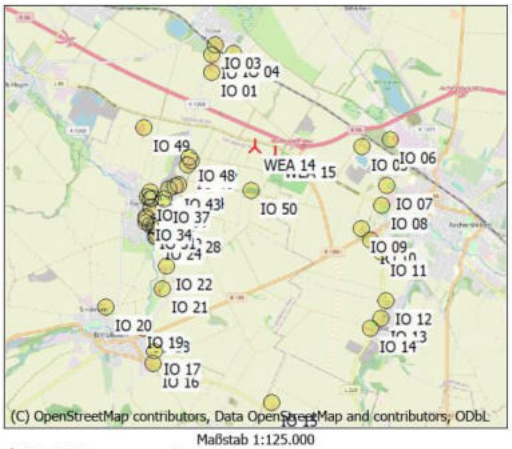
Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Eine WEA wird nicht berücksichtigt, wenn sie von keinem Teil der Rezeptorfläche aus sichtbar ist. Die Sichtbarkeitsberechnung basiert auf den folgenden Annahmen:
Verwendete Höhenlinien: Höhenraster-Objekt
Rasterauflösung: 1,0 m

Alle Koordinatenangaben in:
UTM (north)-ETRS89 Zone: 32



Maßstab 1:125.000
Neue WEA
Schattenrezeptor

WEA

	Ost	Nord	Z	Beschreibung	WEA-Typ Aktuell	Hersteller	Typ	Nennleistung	Rotordurchmesser	Nabenhöhe	Schattendaten Beschatt.-Bereich	U/min
			[m]					[kW]	[m]	[m]	[m]	[U/min]
WEA 14	665.022	5.738.335	138,4	VESTAS V162-6.2MW 6200 162.0 !O! NH: ...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 15	665.473	5.738.197	139,0	VESTAS V162-6.2MW 6200 162.0 !O! NH: ...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6

Schattenrezeptor-Eingabe

Nr.	Name	Ost	Nord	Z	Breite	Höhe	Höhe ü.Gr.	Neigung des Fensters	Ausrichtungsmodus	Augenhöhe (ZVI) ü.Gr.
				[m]	[m]	[m]	[m]	[°]		[m]
IO 01	Frose - Reinstedter Str. - Industrie	663.985	5.739.985	131,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 02	Frose - Reinstedter Str. 1	663.975	5.740.369	128,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 03	Frose - Vor dem Bahnhof 274E	664.043	5.740.595	127,1	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 04	Frose - Wohngebiet	664.464	5.740.418	126,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 05	Aschersleben - Außenbereich	667.439	5.738.423	116,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 06	Aschersleben - MAWEA	668.069	5.738.609	109,6	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 07	Aschersleben - Am Hangelsberg	668.027	5.737.557	132,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 08	Aschersleben - Am Chausee 23	667.933	5.737.122	142,7	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 09	Aschersleben - Am Harzblick 49	667.477	5.736.591	147,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 10	Aschersleben - Am Harzblick 45	667.694	5.736.334	147,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 11	Aschersleben - Über der Eine 18A	667.947	5.736.066	147,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 12	Westdorf - Am Landgraben 1A	668.079	5.734.974	149,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 13	Westdorf - Aschersleber Str. 2A	667.987	5.734.573	149,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 14	Westdorf - Autoverwertung Lorenz	667.760	5.734.343	155,8	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 15	Welbsleben - Außenbereich	665.590	5.732.580	186,5	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 16	Ermsleben - KFZ Werkstatt	662.882	5.733.364	168,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 17	Ermsleben - Neue Str.	662.906	5.733.663	162,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 18	Ermsleben - Am Mittelweg	662.657	5.734.178	161,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 19	Ermsleben - Mühlenstraße	662.513	5.734.268	150,6	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 20	Ermsleben - Radislebener Weg	661.775	5.734.619	162,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 21	Falkenstein - Mühlenstraße	663.024	5.735.077	149,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 22	Strommühle	663.112	5.735.593	147,7	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 23	Reinstedt - Forellenweg 10	662.845	5.736.237	140,6	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 24	Reinstedt - Forellenweg 8	662.851	5.736.271	140,1	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 25	Reinstedt - Forellenweg 6	662.876	5.736.316	140,1	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0

(Fortsetzung nächste Seite)...

Projekt:
Reinstedt

Lizenzierter Anwender:
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4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Hauptergebnis

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem

...(Fortsetzung von vorheriger Seite)

Nr.	Name	Ost	Nord	Z	Breite	Höhe	Höhe ü.Gr.	Neigung des Fensters	Ausrichtungsmodus	Augenhöhe (ZVI) ü.Gr.
				[m]	[m]	[m]	[m]	[°]		[m]
IO 26	Reinstedt - Forellenweg 1	662.907	5.736.412	139,5	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 27	Reinstedt - Ermslebener Straße 1	663.139	5.736.445	139,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 28	Reinstedt - Alphabillard	663.274	5.736.434	139,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 29	Reinstedt - Ermslebener Straße 11	662.841	5.736.488	139,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 30	Reinstedt - Ermslebener Straße 8	662.798	5.736.491	138,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 31	Reinstedt - Ermslebener Straße 5B	662.726	5.736.507	138,8	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 32	Reinstedt - Schielestraße 1	662.607	5.736.564	137,8	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 33	Reinstedt - Schielestraße 4a	662.615	5.736.644	137,8	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 34	Reinstedt - Schielestraße 6	662.626	5.736.685	137,6	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 35	Reinstedt - Wiedemann	662.715	5.736.902	137,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 36	Reinstedt - Solarpark	662.973	5.737.006	137,5	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 37	Reinstedt - Fußballplatz	662.994	5.737.096	138,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 38	Reinstedt - Neu-Seeland Agrar	662.740	5.737.113	137,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 39	Reinstedt - Unterdorf 66a	662.695	5.737.092	136,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 40	Reinstedt - Schielestraße	662.633	5.737.132	136,5	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 41	Reinstedt - Siedlung 15	662.682	5.737.243	136,7	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 42	Reinstedt - Hotel Harz-Ring	663.093	5.737.326	134,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 43	Reinstedt - Bauschuttrecycling	663.240	5.737.394	137,7	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 44	Reinstedt - Bauschuttrecycling 2	663.322	5.737.428	142,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 46	Reinstedt - Solarpark	663.521	5.737.872	143,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 47	Reinstedt - Metallbau Klug	663.591	5.737.975	143,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 48	Reinstedt - ACZ Transport	663.531	5.738.048	143,1	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 49	Reinstedt - Danpower Energie Service	662.506	5.738.693	139,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 50	Reinstedt - Mitteldeutsche Baumschulen	664.973	5.737.351	143,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0

Berechnungsergebnisse

Schattenrezeptor

Nr.	Name	astron. max. mögl. Beschattungsdauer			met. wahrsch. Beschattungsdauer
		Stunden/Jahr	Schattentage/Jahr	Max.Schattendauer/Tag	Stunden/Jahr
		[h/a]	[d/a]	[h/d]	[h/a]
IO 01	Frose - Reinstedter Str. - Industrie	0:00	0	0:00	0:00
IO 02	Frose - Reinstedter Str. 1	0:00	0	0:00	0:00
IO 03	Frose - Vor dem Bahnhof 274E	0:00	0	0:00	0:00
IO 04	Frose - Wohngebiet	0:00	0	0:00	0:00
IO 05	Aschersleben - Außenbereich	5:51	24	0:19	1:13
IO 06	Aschersleben - MAWEA	0:00	0	0:00	0:00
IO 07	Aschersleben - Am Hangelsberg	0:00	0	0:00	0:00
IO 08	Aschersleben - Am Chausee 23	0:00	0	0:00	0:00
IO 09	Aschersleben - Am Harzblick 49	0:00	0	0:00	0:00
IO 10	Aschersleben - Am Harzblick 45	0:00	0	0:00	0:00
IO 11	Aschersleben - Über der Eine 18A	0:00	0	0:00	0:00
IO 12	Westdorf - Am Landgraben 1A	0:00	0	0:00	0:00
IO 13	Westdorf - Aschersleben Str. 2A	0:00	0	0:00	0:00
IO 14	Westdorf - Autoverwertung Lorenz	0:00	0	0:00	0:00
IO 15	Welbsleben - Außenbereich	0:00	0	0:00	0:00
IO 16	Ermsleben - KFZ Werkstatt	0:00	0	0:00	0:00
IO 17	Ermsleben - Neue Str.	0:00	0	0:00	0:00
IO 18	Ermsleben - Am Mittelweg	0:00	0	0:00	0:00
IO 19	Ermsleben - Mühlenstraße	0:00	0	0:00	0:00
IO 20	Ermsleben - Radislebener Weg	0:00	0	0:00	0:00
IO 21	Falkenstein - Mühlenstraße	0:00	0	0:00	0:00
IO 22	Strommühle	0:00	0	0:00	0:00
IO 23	Reinstedt - Forellenweg 10	0:00	0	0:00	0:00
IO 24	Reinstedt - Forellenweg 8	0:00	0	0:00	0:00
IO 25	Reinstedt - Forellenweg 6	0:00	0	0:00	0:00
IO 26	Reinstedt - Forellenweg 1	0:00	0	0:00	0:00
IO 27	Reinstedt - Ermslebener Straße 1	0:00	0	0:00	0:00
IO 28	Reinstedt - Alphabillard	0:00	0	0:00	0:00
IO 29	Reinstedt - Ermslebener Straße 11	0:00	0	0:00	0:00
IO 30	Reinstedt - Ermslebener Straße 8	0:00	0	0:00	0:00
IO 31	Reinstedt - Ermslebener Straße 5B	0:00	0	0:00	0:00
IO 32	Reinstedt - Schielestraße 1	0:00	0	0:00	0:00
IO 33	Reinstedt - Schielestraße 4a	0:00	0	0:00	0:00
IO 34	Reinstedt - Schielestraße 6	0:00	0	0:00	0:00

(Fortsetzung nächste Seite)...

Projekt:
Reinstedt

Lizenzierter Anwender:
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Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Hauptergebnis

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem

...(Fortsetzung von vorheriger Seite)

Nr.	Name	astron. max. mögl. Beschattungsdauer Stunden/Jahr [h/a]	Schattentage/Jahr [d/a]	Max.Schattendauer/Tag [h/d]	met. wahrsch. Beschattungsdauer Stunden/Jahr [h/a]
IO 35	Reinstedt - Wiedemann	0:00	0	0:00	0:00
IO 36	Reinstedt - Solarpark	0:00	0	0:00	0:00
IO 37	Reinstedt - Fußballplatz	0:00	0	0:00	0:00
IO 38	Reinstedt - Neu-Seeland Agrar	0:00	0	0:00	0:00
IO 39	Reinstedt - Unterdorf 66a	0:00	0	0:00	0:00
IO 40	Reinstedt - Schielestraße	0:00	0	0:00	0:00
IO 41	Reinstedt - Siedlung 15	0:00	0	0:00	0:00
IO 42	Reinstedt - Hotel Harz-Ring	0:00	0	0:00	0:00
IO 43	Reinstedt - Bauschuttrecycling	10:42	44	0:20	2:59
IO 44	Reinstedt - Bauschuttrecycling 2	12:00	48	0:21	3:20
IO 46	Reinstedt - Solarpark	17:57	64	0:25	4:48
IO 47	Reinstedt - Metallbau Klug	19:13	65	0:26	4:58
IO 48	Reinstedt - ACZ Transport	17:23	59	0:25	4:24
IO 49	Reinstedt - Danpower Energie Service	0:00	0	0:00	0:00
IO 50	Reinstedt - Mitteldeutsche Baumschulen	0:00	0	0:00	0:00

Gesamtdauer Beschattung an Rezeptoren pro WEA

Nr.	Name	Maximal [h/a]	Erwartet [h/a]
WEA 14	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (1574)	39:14	10:41
WEA 15	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (1575)	19:15	4:28

Summen in Rezeptortabelle und WEA-Tabelle können sich unterscheiden, da eine WEA gleichzeitig an zwei oder mehr Rezeptoren Beschattung verursachen kann und/oder ein Rezeptor gleichzeitig von zwei oder mehr WEA beschattet werden kann.

Die Berechnung der Gesamtsumme für einen Rezeptor arbeitet mit einer gemittelten Richtungskorrektur für alle WEA, die an einem gegebenen Tag zur Beschattung beitragen. Wenn der Schattenwurf durch mehrere WEA an einem Tag nicht gleichzeitig stattfindet, kann die so ermittelte Summe geringfügig von der Summe der Beschattungszeiten abweichen, die für die individuellen WEA berechnet werden.

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
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4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 01 - Frose - Reinstedter Str. - Industrie

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:37	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:43	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:06
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:49	06:38	07:28	07:22	08:09
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	16:26	17:19	18:09	20:02	20:52	21:32	21:33	20:50	19:43	18:34	16:33	16:05
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	16:27	17:21	18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:56	06:47	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:35	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:33	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:34	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:24	16:05
17	08:14	07:27	06:27	06:17	05:20	04:56	05:15	06:01	06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19	04:56	05:16	06:03	06:53	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:11	21:38	21:20	20:26	19:16	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:56	05:24	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:04	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:02	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:19	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	259	278	367	416	485	498	501	453	381	332	267	244
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 02 - Frose - Reinstedter Str. 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:37	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:43	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:06
6	08:21	07:48	06:52	06:41	05:38	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
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	16:21	17:13	18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41	16:38	16:06
8	08:21	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:49	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:07	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:33	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:42	07:31	07:26	08:11
	16:27	17:21	18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:04
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:56	06:47	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:35	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:33	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:34	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:24	16:05
17	08:14	07:27	06:27	06:17	05:20	04:56	05:15	06:01	06:51	07:41	07:36	08:17
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18	08:13	07:25	06:25	06:14	05:19	04:55	05:16	06:03	06:53	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:37	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:22	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:11	21:38	21:20	20:26	19:16	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:56	05:24	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:04	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
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27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:02	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:19	21:38	21:12	20:13	19:02	16:56	16:11	16:11
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	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:09	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	259	278	367	416	485	498	501	453	381	332	267	244
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 03 - Frose - Vor dem Bahnhof 274E

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:14	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:00	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:37	21:02	19:59	18:50	16:45	16:07
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:43	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:06
6	08:21	07:48	06:52	06:41	05:38	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:04	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41	16:38	16:06
8	08:21	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
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	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
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	16:25	17:19	18:09	20:02	20:52	21:32	21:33	20:50	19:43	18:34	16:33	16:05
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	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:56	06:46	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:35	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:33	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:04
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:34	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:24	16:05
17	08:14	07:27	06:27	06:17	05:20	04:55	05:15	06:01	06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19	04:55	05:16	06:03	06:53	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:37	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:55	05:18	06:04	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:22	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:11	21:38	21:20	20:26	19:16	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:56	05:24	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:04	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:02	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:19	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:09	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	259	278	367	416	485	498	501	453	381	332	267	244
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 04 - Frose - Wohngebiet

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:08	07:58
	16:14	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:00	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:37	21:02	19:59	18:50	16:45	16:07
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:43	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:06
6	08:21	07:48	06:52	06:41	05:38	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:04	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
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	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:31	04:57	05:07	05:50	06:40	07:29	07:24	08:10
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	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:04
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:56	06:46	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:35	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:33	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:04
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:16
	16:34	17:30	18:20	20:12	21:02	21:36	21:27	20:38	19:29	18:21	16:24	16:05
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	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:55	05:18	06:04	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
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23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:56	05:24	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:33	20:26	21:13	21:38	21:18	20:21	19:11	18:04	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
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27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:02	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:09	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	259	278	367	416	485	498	501	453	381	332	267	244
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 05 - Aschersleben - Außenbereich

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März		April	Mai	Juni	Juli	August	September		Oktober	November	Dezember
1	08:22	07:55	07:02		06:52	05:48	05:03	05:00	05:36	06:25		07:14	07:07	07:58
	16:14	17:02	17:53		19:47	20:37	21:23	21:37	21:05	20:04		18:55	16:49	16:09
2	08:22	07:54	07:00		06:50	05:46	05:02	05:00	05:37	06:27		07:16	07:09	08:00
	16:15	17:04	17:55		19:49	20:39	21:24	21:37	21:04	20:01		18:52	16:47	16:08
3	08:22	07:52	06:58		06:48	05:44	05:01	05:01	05:39	06:29		07:17	07:11	08:01
	16:17	17:06	17:57		19:50	20:41	21:25	21:36	21:02	19:59		18:50	16:45	16:07
4	08:22	07:51	06:56		06:45	05:42	05:00	05:02	05:41	06:30		07:19	07:13	08:02
	16:18	17:07	17:59		19:52	20:42	21:26	21:36	21:00	19:57		18:48	16:43	16:07
5	08:21	07:49	06:54		06:43	05:40	05:00	05:03	05:42	06:32		07:21	07:15	08:04
	16:19	17:09	18:00		19:54	20:44	21:27	21:35	20:59	19:55		18:45	16:42	16:06
6	08:21	07:47	06:51		06:41	05:38	04:59	05:04	05:44	06:33		07:22	07:16	08:05
	16:20	17:11	18:02		19:55	20:46	21:28	21:35	20:57	19:52		18:43	16:40	16:06
7	08:21	07:46	06:49		06:38	05:37	04:58	05:04	05:45	06:35		07:24	07:18	08:06
	16:21	17:13	18:04		19:57	20:47	21:29	21:34	20:55	19:50		18:41	16:38	16:06
8	08:20	07:44	06:47		06:36	05:35	04:58	05:05	05:47	06:37		07:26	07:20	08:07
	16:23	17:15	18:06		19:59	20:49	21:30	21:34	20:53	19:48		18:39	16:36	16:05
9	08:20	07:42	06:45		06:34	05:33	04:57	05:06	05:48	06:38		07:27	07:22	08:09
	16:24	17:17	18:07		20:00	20:51	21:31	21:33	20:51	19:46		18:36	16:35	16:05
10	08:19	07:40	06:43		06:32	05:31	04:57	05:07	05:50	06:40		07:29	07:23	08:10
	16:25	17:19	18:09		20:02	20:52	21:32	21:32	20:50	19:43		18:34	16:33	16:05
11	08:19	07:39	06:40		06:30	05:30	04:57	05:08	05:52	06:41		07:31	07:25	08:11
	16:27	17:20	18:11		20:04	20:54	21:32	21:31	20:48	19:41		18:32	16:32	16:04
12	08:18	07:37	06:38		06:27	05:28	04:56	05:09	05:53	06:43		07:32	07:27	08:12
	16:28	17:22	18:13		20:06	20:55	21:33	21:31	20:46	19:39		18:30	16:30	16:04
13	08:17	07:35	06:36		06:25	05:26	04:56	05:10	05:55	06:45		07:34	07:29	08:13
	16:30	17:24	18:14		20:07	20:57	21:34	21:30	20:44	19:36		18:28	16:29	16:04
14	08:17	07:33	06:33		06:23	05:25	04:56	05:12	05:56	06:46	18:37 (WEA 15)	07:36	07:31	08:14
	16:31	17:26	18:16		20:09	20:58	21:34	21:29	20:42	19:34	10 18:47 (WEA 15)	18:25	16:27	16:04
15	08:16	07:31	06:31		06:21	05:23	04:56	05:13	05:58	06:48	18:34 (WEA 15)	07:38	07:32	08:15
	16:33	17:28	18:18		20:11	21:00	21:35	21:28	20:40	19:32	14 18:48 (WEA 15)	18:23	16:26	16:04
16	08:15	07:29	06:29		06:19	05:22	04:55	05:14	06:00	06:50	18:33 (WEA 15)	07:39	07:34	08:15
	16:34	17:30	18:20		20:12	21:02	21:35	21:27	20:38	19:29	16 18:49 (WEA 15)	18:21	16:24	16:05
17	08:14	07:27	06:27		06:16	05:20	04:55	05:15	06:01	06:51	18:31 (WEA 15)	07:41	07:36	08:16
	16:36	17:31	18:21		20:14	21:03	21:36	21:26	20:36	19:27	18 18:49 (WEA 15)	18:19	16:23	16:05
18	08:13	07:25	06:24		06:14	05:19	04:55	05:16	06:03	06:53	18:31 (WEA 15)	07:43	07:37	08:17
	16:38	17:33	18:23		20:16	21:05	21:36	21:25	20:34	19:25	18 18:49 (WEA 15)	18:17	16:22	16:05
19	08:12	07:23	06:22	17:50 (WEA 15)	06:12	05:17	04:55	05:18	06:04	06:54	18:30 (WEA 15)	07:44	07:39	08:18
	16:39	17:35	18:25	9 17:59 (WEA 15)	20:17	21:06	21:37	21:24	20:32	19:22	18 18:48 (WEA 15)	18:15	16:20	16:05
20	08:11	07:21	06:20	17:47 (WEA 15)	06:10	05:16	04:56	05:19	06:06	06:56	18:30 (WEA 15)	07:46	07:41	08:18
	16:41	17:37	18:26	13 18:00 (WEA 15)	20:19	21:07	21:37	21:22	20:30	19:20	18 18:48 (WEA 15)	18:12	16:19	16:06
21	08:10	07:19	06:17	17:46 (WEA 15)	06:08	05:15	04:56	05:20	06:08	06:58	18:30 (WEA 15)	07:48	07:42	08:19
	16:42	17:39	18:28	16 18:02 (WEA 15)	20:21	21:09	21:37	21:21	20:28	19:18	18 18:48 (WEA 15)	18:10	16:18	16:06
22	08:09	07:17	06:15	17:45 (WEA 15)	06:06	05:13	04:56	05:22	06:09	06:59	18:30 (WEA 15)	07:50	07:44	08:20
	16:44	17:41	18:30	17 18:02 (WEA 15)	20:22	21:10	21:37	21:20	20:25	19:15	16 18:46 (WEA 15)	18:08	16:17	16:06
23	08:08	07:15	06:13	17:43 (WEA 15)	06:04	05:12	04:56	05:23	06:11	07:01	18:31 (WEA 15)	07:51	07:46	08:20
	16:46	17:42	18:32	19 18:02 (WEA 15)	20:24	21:12	21:38	21:19	20:23	19:13	14 18:45 (WEA 15)	18:06	16:16	16:07
24	08:07	07:13	06:11	17:43 (WEA 15)	06:02	05:11	04:56	05:24	06:12	07:03	18:33 (WEA 15)	07:53	07:47	08:20
	16:48	17:44	18:33	19 18:02 (WEA 15)	20:26	21:13	21:38	21:17	20:21	19:11	11 18:44 (WEA 15)	18:04	16:15	16:08
25	08:05	07:11	06:08	17:43 (WEA 15)	06:00	05:10	04:57	05:26	06:14	07:04	18:35 (WEA 15)	06:55	07:49	08:21
	16:49	17:46	18:35	19 18:02 (WEA 15)	20:27	21:14	21:38	21:16	20:19	19:08	5 18:40 (WEA 15)	17:02	16:14	16:08
26	08:04	07:09	06:06	17:43 (WEA 15)	05:58	05:09	04:57	05:27	06:16	07:06		06:57	07:51	08:21
	16:51	17:48	18:37	18 18:01 (WEA 15)	20:29	21:16	21:38	21:15	20:17	19:06		17:00	16:13	16:09
27	08:03	07:07	06:04	17:43 (WEA 15)	05:56	05:08	04:58	05:29	06:17	07:07		06:59	07:52	08:21
	16:53	17:50	18:38	17 18:00 (WEA 15)	20:31	21:17	21:38	21:13	20:15	19:04		16:58	16:12	16:10
28	08:01	07:05	06:01	17:45 (WEA 15)	05:54	05:06	04:58	05:30	06:19	07:09		07:00	07:54	08:22
	16:55	17:51	18:40	14 17:59 (WEA 15)	20:32	21:18	21:38	21:12	20:13	19:01		16:56	16:11	16:10
29	08:00		06:59	18:45 (WEA 15)	05:52	05:05	04:59	05:31	06:21	07:11		07:02	07:55	08:22
	16:56		19:42	11 18:56 (WEA 15)	20:34	21:19	21:37	21:10	20:10	18:59		16:54	16:10	16:11
30	07:58		06:57	18:49 (WEA 15)	05:50	05:04	04:59	05:33	06:22	07:12		07:04	07:57	08:22
	16:58		19:44	3 18:52 (WEA 15)	20:36	21:21	21:37	21:09	20:08	18:57		16:52	16:09	16:12
31	07:57		06:54			05:04		05:34	06:24			07:06		08:22
	17:00		19:45			21:22		21:07	20:06			16:51		16:13
Sonnenscheinstunden	260	278	367		416	484	498	501	453	381		332	267	245
astr.max.mögl.Beschattung				175							176			
Red.Sonnenscheinwahrsch.				0,27							0,34			
Reduktion Betriebsdauer				0,94							0,94			
Reduktion Windrichtung				0,72							0,72			
Gesamte Reduktion				0,18							0,23			
Met.wahrsch.Beschattung				32							41			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 06 - Aschersleben - MAWEA

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:14	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:54	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:00	05:37	06:27	07:16	07:09	08:00
	16:15	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:07
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:07	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:59	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38	04:59	05:03	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:38	05:37	04:58	05:04	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:05
8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:36	16:05
9	08:20	07:42	06:45	06:34	05:33	04:57	05:06	05:48	06:38	07:27	07:22	08:09
	16:24	17:17	18:07	20:00	20:51	21:31	21:33	20:51	19:45	18:36	16:35	16:05
10	08:19	07:40	06:42	06:32	05:31	04:57	05:07	05:50	06:40	07:29	07:23	08:10
	16:25	17:18	18:09	20:02	20:52	21:32	21:32	20:49	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:29	05:30	04:57	05:08	05:52	06:41	07:31	07:25	08:11
	16:27	17:20	18:11	20:04	20:54	21:32	21:31	20:48	19:41	18:32	16:32	16:04
12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:04
13	08:17	07:35	06:36	06:25	05:26	04:56	05:10	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:14	20:07	20:57	21:34	21:30	20:44	19:36	18:27	16:29	16:04
14	08:17	07:33	06:33	06:23	05:25	04:56	05:12	05:56	06:46	07:36	07:30	08:14
	16:31	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:04
16	08:15	07:29	06:29	06:18	05:22	04:55	05:14	05:59	06:50	07:39	07:34	08:15
	16:34	17:30	18:20	20:12	21:01	21:35	21:27	20:38	19:29	18:21	16:24	16:04
17	08:14	07:27	06:27	06:16	05:20	04:55	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:31	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:55	05:16	06:03	06:53	07:43	07:37	08:17
	16:37	17:33	18:23	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:17	04:55	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:20	16:05
20	08:11	07:21	06:20	06:10	05:16	04:55	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37	21:22	20:30	19:20	18:12	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
	16:42	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:13	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:25	19:15	18:08	16:17	16:06
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:12	21:37	21:19	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11	04:56	05:24	06:12	07:02	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	21:38	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:57	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:55	05:07	04:57	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:53	05:06	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:51	18:40	20:32	21:18	21:38	21:12	20:13	19:01	16:56	16:11	16:10
29	08:00		06:59	05:51	05:05	04:58	05:31	06:20	07:11	07:02	07:55	08:22
	16:56		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:04	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:21	21:37	21:09	20:08	18:57	16:52	16:09	16:12
31	07:57		06:54		05:04		05:34	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 07 - Aschersleben - Am Hangelsberg

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:14	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:00	05:37	06:27	07:16	07:09	07:59
	16:15	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:07
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:07	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:59	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38	04:59	05:04	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:38	05:37	04:58	05:04	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:36	16:05
9	08:20	07:42	06:45	06:34	05:33	04:57	05:06	05:48	06:38	07:27	07:22	08:08
	16:24	17:17	18:07	20:00	20:51	21:31	21:33	20:51	19:45	18:36	16:35	16:05
10	08:19	07:40	06:42	06:32	05:31	04:57	05:07	05:50	06:40	07:29	07:23	08:10
	16:25	17:19	18:09	20:02	20:52	21:31	21:32	20:49	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:29	05:30	04:57	05:08	05:52	06:41	07:31	07:25	08:11
	16:27	17:20	18:11	20:04	20:54	21:32	21:31	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:04
13	08:17	07:35	06:36	06:25	05:26	04:56	05:10	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:14	20:07	20:57	21:34	21:30	20:44	19:36	18:27	16:29	16:04
14	08:16	07:33	06:33	06:23	05:25	04:56	05:12	05:56	06:46	07:36	07:30	08:14
	16:31	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:04
16	08:15	07:29	06:29	06:19	05:22	04:55	05:14	06:00	06:50	07:39	07:34	08:15
	16:34	17:30	18:20	20:12	21:01	21:35	21:27	20:38	19:29	18:21	16:24	16:05
17	08:14	07:27	06:27	06:16	05:20	04:55	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:31	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:55	05:16	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:17	04:55	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:20	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37	21:22	20:30	19:20	18:12	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
	16:42	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:13	04:56	05:22	06:09	06:59	07:50	07:44	08:19
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:25	19:15	18:08	16:17	16:06
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:12	21:37	21:19	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11	04:56	05:24	06:12	07:02	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	21:38	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:55	05:08	04:58	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:04	06:01	05:54	05:06	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:51	18:40	20:32	21:18	21:37	21:12	20:12	19:01	16:56	16:11	16:10
29	08:00		06:59	05:52	05:05	04:59	05:31	06:20	07:11	07:02	07:55	08:22
	16:56		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:04	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:21	21:37	21:08	20:08	18:57	16:52	16:09	16:12
31	07:57		06:54		05:04		05:34	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 08 - Aschersleben - Am Chausee 23

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:14	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:00	05:38	06:27	07:16	07:09	07:59
	16:15	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:07
4	08:21	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:07	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:59	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38	04:59	05:04	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
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8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:36	16:05
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16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:15
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19	08:12	07:23	06:22	06:12	05:17	04:55	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:36	21:24	20:32	19:22	18:15	16:20	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37	21:22	20:30	19:20	18:12	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:13	04:56	05:22	06:09	06:59	07:50	07:44	08:19
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23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:12	21:37	21:19	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11	04:56	05:24	06:12	07:02	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	21:38	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
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	16:55	17:51	18:40	20:32	21:18	21:37	21:12	20:12	19:01	16:56	16:11	16:10
29	08:00		06:59	05:52	05:05	04:59	05:32	06:21	07:11	07:02	07:55	08:22
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30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:21	21:37	21:08	20:08	18:57	16:52	16:09	16:12
31	07:57		06:54		05:04		05:34	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 09 - Aschersleben - Am Harzblick 49

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:14	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:07
4	08:21	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:07	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
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	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:59	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38	04:59	05:04	05:44	06:33	07:22	07:16	08:05
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8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:07
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11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:42	07:31	07:25	08:11
	16:27	17:20	18:11	20:04	20:54	21:32	21:31	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:04
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	16:30	17:24	18:14	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
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18	08:13	07:25	06:24	06:14	05:19	04:55	05:16	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:36	21:24	20:32	19:22	18:15	16:20	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:13	04:56	05:22	06:09	06:59	07:50	07:44	08:19
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:25	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:12	21:37	21:19	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:11	06:02	05:11	04:56	05:24	06:12	07:03	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	21:38	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:51	18:40	20:32	21:18	21:37	21:12	20:13	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:21	21:37	21:08	20:08	18:57	16:53	16:09	16:12
31	07:57		06:54		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 10 - Aschersleben - Am Harzblick 45

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:14	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:07
4	08:21	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:07	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:59	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38	04:59	05:04	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
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	16:21	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:48	06:38	07:27	07:22	08:08
	16:24	17:17	18:07	20:00	20:50	21:31	21:33	20:51	19:45	18:36	16:35	16:05
10	08:19	07:40	06:42	06:32	05:31	04:57	05:07	05:50	06:40	07:29	07:23	08:10
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11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:41	07:31	07:25	08:11
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12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:04
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:14	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:16	07:33	06:33	06:23	05:25	04:56	05:12	05:56	06:46	07:36	07:30	08:14
	16:31	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:04
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:15
	16:34	17:30	18:20	20:12	21:01	21:35	21:27	20:38	19:29	18:21	16:24	16:05
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	16:36	17:31	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:55	05:16	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:36	21:24	20:32	19:22	18:15	16:20	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:13	04:56	05:22	06:09	06:59	07:50	07:44	08:19
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:25	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:12	21:37	21:19	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11	04:56	05:24	06:12	07:03	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	21:38	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:51	18:40	20:32	21:18	21:37	21:12	20:12	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
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30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:21	21:37	21:08	20:08	18:57	16:53	16:09	16:12
31	07:57		06:54		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 11 - Aschersleben - Über der Eine 18A

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:14	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:07
4	08:21	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:07	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:14	08:03
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:58	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38	04:59	05:04	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
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11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:41	07:31	07:25	08:11
	16:27	17:20	18:11	20:04	20:54	21:32	21:31	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:04
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24	08:06	07:13	06:10	06:02	05:11	04:56	05:24	06:12	07:02	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	21:38	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:50	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:37	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:04	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:51	18:40	20:32	21:18	21:37	21:12	20:12	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:21	21:37	21:08	20:08	18:57	16:53	16:09	16:12
31	07:57		06:54		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 12 - Westdorf - Am Landgraben 1A

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:15	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:21	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:14	08:03
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:58	19:55	18:45	16:42	16:06
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9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:48	06:38	07:27	07:22	08:08
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13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
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19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:36	21:23	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:27	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:19
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:25	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:11	21:37	21:18	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11	04:57	05:24	06:12	07:02	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	21:37	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:50	08:21
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27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:37	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:04	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:21
	16:55	17:51	18:40	20:32	21:18	21:37	21:11	20:12	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:20	21:37	21:08	20:08	18:57	16:53	16:09	16:12
31	07:57		06:54		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 13 - Westdorf - Aschersleberener Str. 2A

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:15	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:21	07:51	06:56	06:45	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:14	08:03
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:58	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38	04:59	05:04	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:20	07:46	06:49	06:38	05:37	04:59	05:05	05:45	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
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11	08:18	07:38	06:40	06:30	05:30	04:57	05:08	05:52	06:41	07:31	07:25	08:11
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30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:56	08:22
	16:58		19:43	20:36	21:20	21:37	21:08	20:08	18:57	16:53	16:10	16:12
31	07:57		06:54		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 14 - Westdorf - Autoverwertung Lorenz

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:15	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:21	07:51	06:56	06:45	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:14	08:03
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:58	19:55	18:45	16:42	16:07
6	08:21	07:47	06:51	06:41	05:38	04:59	05:04	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:20	07:46	06:49	06:39	05:37	04:59	05:05	05:45	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:33	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:48	06:38	07:27	07:22	08:08
	16:24	17:17	18:07	20:00	20:50	21:31	21:33	20:51	19:45	18:36	16:35	16:05
10	08:19	07:40	06:42	06:32	05:32	04:57	05:07	05:50	06:40	07:29	07:23	08:09
	16:26	17:19	18:09	20:02	20:52	21:31	21:32	20:49	19:43	18:34	16:33	16:05
11	08:18	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:42	07:31	07:25	08:11
	16:27	17:20	18:11	20:04	20:54	21:32	21:31	20:47	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:10	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55	21:33	21:30	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:14	20:07	20:57	21:33	21:30	20:44	19:36	18:28	16:29	16:05
14	08:16	07:33	06:33	06:23	05:25	04:56	05:12	05:56	06:46	07:36	07:30	08:14
	16:31	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:25	16:27	16:05
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:32	08:14
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:15
	16:34	17:30	18:20	20:12	21:01	21:35	21:27	20:38	19:29	18:21	16:24	16:05
17	08:14	07:27	06:27	06:16	05:20	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:36	21:23	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:27	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:19
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:25	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:11	21:37	21:18	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:11	06:02	05:11	04:57	05:24	06:12	07:03	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:27	21:14	21:37	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:50	08:21
	16:51	17:48	18:37	20:29	21:15	21:37	21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:37	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:04	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:21
	16:55	17:51	18:40	20:32	21:18	21:37	21:11	20:12	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:56	08:22
	16:58		19:43	20:36	21:20	21:37	21:08	20:08	18:57	16:53	16:10	16:12
31	07:57		06:54		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 15 - Welbsleben - Außenbereich

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:07	07:58
	16:15	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:02	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:21	07:51	06:56	06:45	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:03
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:47	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:33	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:38	07:27	07:22	08:08
	16:24	17:17	18:08	20:00	20:51	21:31	21:33	20:51	19:46	18:37	16:35	16:05
10	08:19	07:40	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:23	08:10
	16:26	17:19	18:09	20:02	20:52	21:31	21:32	20:49	19:43	18:34	16:34	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:31	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:22	18:13	20:06	20:55	21:33	21:30	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:33	21:30	20:44	19:36	18:28	16:29	16:05
14	08:16	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:46	07:36	07:30	08:14
	16:32	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:14
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:15
	16:35	17:30	18:20	20:12	21:01	21:35	21:27	20:38	19:29	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:37	08:17
	16:38	17:34	18:23	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:17	21:06	21:36	21:23	20:32	19:22	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:27	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:19
	16:45	17:41	18:30	20:22	21:10	21:37	21:20	20:25	19:15	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:37	21:19	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:27	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:50	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:37	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:32	21:18	21:37	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:55	16:10	16:12
30	07:58		06:57	05:50	05:05	05:00	05:33	06:22	07:12	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:08	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 16 - Ermsleben - KFZ Werkstatt

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	05:00	05:04	05:44	06:34	07:23	07:17	08:05
	16:21	17:12	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:39	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
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9	08:20	07:42	06:45	06:34	05:34	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:25	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
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	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:29	04:57	05:10	05:54	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:31	16:05
13	08:17	07:35	06:36	06:25	05:27	04:57	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:16	06:02	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:36	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:17	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:07
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:57	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:17	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:59	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:01		19:45		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 17 - Ermsleben - Neue Str.

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	05:00	05:04	05:44	06:34	07:23	07:17	08:05
	16:21	17:12	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:39	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:34	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:58	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:54	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:31	16:05
13	08:17	07:35	06:36	06:25	05:27	04:57	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:16	06:02	06:51	07:41	07:36	08:16
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18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
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	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:57	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:17	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:59	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:01		19:45		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
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Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 18 - Ermsleben - Am Mittelweg

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	05:00	05:04	05:44	06:34	07:23	07:17	08:05
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7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:39	16:06
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	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:34	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
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	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
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	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:16	06:02	06:51	07:41	07:36	08:16
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18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:17	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:57	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:17	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:01		19:45		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 19 - Ermsleben - Mühlenstraße

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	05:00	05:04	05:44	06:34	07:23	07:17	08:05
	16:21	17:12	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:39	16:06
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	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
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	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
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	16:29	17:23	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:31	16:05
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14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:35	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:16	06:02	06:51	07:41	07:36	08:16
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18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
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19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:36	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:17	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:57	05:23	06:11	07:01	07:52	07:46	08:20
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	16:48	17:45	18:34	20:26	21:13	21:38	21:17	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:09	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
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27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
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	16:57		19:42	20:34	21:20	21:37	21:10	20:11	18:59	16:55	16:11	16:12
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	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:01		19:45		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 20 - Ermsleben - Radislebener Weg

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:01	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:46	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	05:00	05:04	05:44	06:34	07:23	07:17	08:05
	16:21	17:12	18:03	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:50	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:39	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:34	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:25	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:58	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:10	20:02	20:52	21:32	21:32	20:50	19:44	18:35	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:29	04:57	05:10	05:54	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:31	16:05
13	08:17	07:35	06:36	06:25	05:27	04:57	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:25	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:24	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:35	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:16	06:02	06:52	07:41	07:36	08:16
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	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
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20	08:11	07:22	06:20	06:10	05:17	04:56	05:19	06:06	06:56	07:46	07:41	08:19
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21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:29	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:07
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:57	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
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	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
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	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:23	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:01		19:46		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 21 - Falkenstein - Mühlenstraße

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
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	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
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	16:29	17:23	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
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14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
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16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
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18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
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	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
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23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:52	07:46	08:20
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	16:48	17:45	18:34	20:26	21:13	21:38	21:17	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
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28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
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30	07:59		06:57	05:50	05:05	05:00	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 22 - Strommühle

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
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	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
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9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
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10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
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11	08:19	07:39	06:40	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
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14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
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	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:17	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 23 - Reinstedt - Forellenweg 10

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
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	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
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	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 24 - Reinstedt - Forellenweg 8

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
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8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
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9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
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10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
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11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
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	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
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	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
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23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 25 - Reinstedt - Forellenweg 6

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 26 - Reinstedt - Forellenweg 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
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8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
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9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
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10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
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	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
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	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
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18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
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23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:52	07:46	08:20
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24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
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	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 27 - Reinstedt - Ermslebener Straße 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:35	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 28 - Reinstedt - Alphabillard

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
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Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 29 - Reinstedt - Ermslebener Straße 11

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 30 - Reinstedt - Ermslebener Straße 8

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
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	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
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Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
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Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 31 - Reinstedt - Ermslebener Straße 5B

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
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Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
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	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
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	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
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	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
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	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
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	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:26	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 32 - Reinstedt - Schielestraße 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:41	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
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	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
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	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:26	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:22	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
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27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
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30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 33 - Reinstedt - Schielestraße 4a

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:41	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:33	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:26	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:22	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 34 - Reinstedt - Schielestraße 6

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:41	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
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	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
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	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
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11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
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16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:17
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19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:22	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
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23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:52	07:46	08:20
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	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
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26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
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27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 35 - Reinstedt - Wiedemann

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
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	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
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	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
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9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
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10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
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	16:27	17:21	18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
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13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
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	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:26	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:22	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
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30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 36 - Reinstedt - Solarpark

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
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18	08:13	07:25	06:25	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
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19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
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20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	07:00	07:50	07:44	08:20
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23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
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25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
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27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
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	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
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	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 37 - Reinstedt - Fußballplatz

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
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8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
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	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	07:00	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 38 - Reinstedt - Neu-Seeland Agrar

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
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	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
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	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
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13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
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16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
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	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:22	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
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27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 39 - Reinstedt - Unterdorf 66a

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
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9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
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10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
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11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:26	08:11
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27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 40 - Reinstedt - Schielestraße

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:26	08:11
	16:27	17:21	18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:33	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:26	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:22	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:11	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 41 - Reinstedt - Siedlung 15

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:26	08:11
	16:27	17:21	18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:33	08:15
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16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
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	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:26	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
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	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
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23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 42 - Reinstedt - Hotel Harz-Ring

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
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9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	07:00	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende
			(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 43 - Reinstedt - Bauschuttrecycling

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai		Juni	Juli		August		September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48		05:03	05:00		05:36		06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38		21:23	21:37		21:06	11 06:16 (WEA 14)	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46		05:02	05:01		05:38	06:06 (WEA 14)	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39		21:24	21:37		21:04	8 06:14 (WEA 14)	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44		05:01	05:01		05:39	06:08 (WEA 14)	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41		21:25	21:36		21:02	5 06:13 (WEA 14)	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42		05:01	05:02		05:41		06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43		21:26	21:36		21:01		19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40		05:00	05:03		05:42		06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44		21:27	21:36		20:59		19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39		04:59	05:04		05:44		06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46		21:28	21:35		20:57		19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37		04:59	05:05		05:46		06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48		21:29	21:34		20:55		19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35		04:58	05:06		05:47		06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49		21:30	21:34		20:53		19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	05:59 (WEA 14)	04:58	05:07		05:49		06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	2 06:01 (WEA 14)	21:31	21:33		20:52		19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	05:57 (WEA 14)	04:57	05:08		05:50		06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	6 06:03 (WEA 14)	21:32	21:32		20:50		19:43	18:34	16:34	16:05
11	08:19	07:39	06:40	06:30	05:30	05:55 (WEA 14)	04:57	05:09		05:52		06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	9 06:04 (WEA 14)	21:33	21:32		20:48		19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	05:54 (WEA 14)	04:57	05:10		05:53		06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	12 06:06 (WEA 14)	21:33	21:31		20:46		19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	05:52 (WEA 14)	04:56	05:11	06:05 (WEA 14)	05:55		06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	14 06:06 (WEA 14)	21:34	21:30	5 06:10 (WEA 14)	20:44		19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	05:51 (WEA 14)	04:56	05:12	06:03 (WEA 14)	05:57		06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	16 06:07 (WEA 14)	21:34	21:29	9 06:12 (WEA 14)	20:42		19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	05:50 (WEA 14)	04:56	05:13	06:02 (WEA 14)	05:58		06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	18 06:08 (WEA 14)	21:35	21:28	11 06:13 (WEA 14)	20:40		19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	05:48 (WEA 14)	04:56	05:14	06:01 (WEA 14)	06:00		06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	19 06:07 (WEA 14)	21:36	21:27	13 06:14 (WEA 14)	20:38		19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	05:48 (WEA 14)	04:56	05:15	06:01 (WEA 14)	06:01		06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	20 06:08 (WEA 14)	21:36	21:26	14 06:15 (WEA 14)	20:36		19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19	05:49 (WEA 14)	04:56	05:17	06:00 (WEA 14)	06:03		06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	19 06:08 (WEA 14)	21:36	21:25	15 06:15 (WEA 14)	20:34		19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	05:48 (WEA 14)	04:56	05:18	06:00 (WEA 14)	06:05		06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	20 06:08 (WEA 14)	21:37	21:24	17 06:17 (WEA 14)	20:32		19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	05:48 (WEA 14)	04:56	05:19	06:00 (WEA 14)	06:06		06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	20 06:08 (WEA 14)	21:37	21:23	17 06:17 (WEA 14)	20:30		19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	05:49 (WEA 14)	04:56	05:21	05:59 (WEA 14)	06:08		06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	19 06:08 (WEA 14)	21:37	21:21	18 06:17 (WEA 14)	20:28		19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	05:49 (WEA 14)	04:56	05:22	05:59 (WEA 14)	06:09		07:00	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	19 06:08 (WEA 14)	21:38	21:20	18 06:17 (WEA 14)	20:26		19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	05:50 (WEA 14)	04:56	05:23	05:59 (WEA 14)	06:11		07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	18 06:08 (WEA 14)	21:38	21:19	19 06:18 (WEA 14)	20:24		19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	05:50 (WEA 14)	04:57	05:25	05:59 (WEA 14)	06:13		07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	17 06:07 (WEA 14)	21:38	21:18	19 06:18 (WEA 14)	20:21		19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	05:50 (WEA 14)	04:57	05:26	05:58 (WEA 14)	06:14		07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	16 06:06 (WEA 14)	21:38	21:16	20 06:18 (WEA 14)	20:19		19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	05:51 (WEA 14)	04:57	05:27	05:59 (WEA 14)	06:16		07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	14 06:05 (WEA 14)	21:38	21:15	20 06:19 (WEA 14)	20:17		19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	05:52 (WEA 14)	04:58	05:29	05:59 (WEA 14)	06:18		07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	14 06:06 (WEA 14)	21:38	21:13	19 06:18 (WEA 14)	20:15		19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	05:53 (WEA 14)	04:58	05:30	05:59 (WEA 14)	06:19		07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	12 06:05 (WEA 14)	21:38	21:12	19 06:18 (WEA 14)	20:13		19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	05:54 (WEA 14)	04:59	05:32	06:01 (WEA 14)	06:21		07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	10 06:04 (WEA 14)	21:38	21:10	17 06:18 (WEA 14)	20:11		18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	05:56 (WEA 14)	04:59	05:33	06:02 (WEA 14)	06:22		07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	6 06:02 (WEA 14)	21:37	21:09	15 06:17 (WEA 14)	20:08		18:57	16:53	16:10	16:12
31	07:57		06:55		05:04			05:35	06:03 (WEA 14)	06:24			07:06		08:22
	17:00		19:45		21:22			21:07	13 06:16 (WEA 14)	20:06			16:51		16:13
Sonnenscheinstunden	260	278	367	416	484		498	501		453		381	332	267	245
astr.max.mögl.Beschattung						320			298		24				
Red.Sonnenscheinwahrsch.						0,43			0,40		0,43				
Reduktion Betriebsdauer						0,94			0,94		0,94				
Reduktion Windrichtung						0,71			0,71		0,71				
Gesamte Reduktion						0,29			0,27		0,29				
Met.wahrsch.Beschattung						92			80		7				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende
			(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 44 - Reinstedt - Bauschuttrecycling 2

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai		Juni		Juli		August		September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48		05:03	05:55 (WEA 14)	05:00		05:36	06:05 (WEA 14)	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38		21:23 7	06:02 (WEA 14)	21:37		21:06 10	06:15 (WEA 14)	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46		05:02	05:58 (WEA 14)	05:01		05:38	06:06 (WEA 14)	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39		21:24 3	06:01 (WEA 14)	21:37		21:04 7	06:13 (WEA 14)	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44		05:01		05:01		05:39	06:08 (WEA 14)	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41		21:25		21:36		21:02 3	06:11 (WEA 14)	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42		05:01		05:02		05:41		06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43		21:26		21:36		21:01		19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40		05:00		05:03		05:42		06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44		21:27		21:36		20:59		19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39		04:59		05:04		05:44		06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46		21:28		21:35		20:57		19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37		04:59		05:05		05:45		06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48		21:29		21:34		20:55		19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35		04:58		05:06		05:47		06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49		21:30		21:34		20:53		19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33		04:58		05:07		05:49		06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51		21:31		21:33		20:52		19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	05:57 (WEA 14)	04:57		05:08		05:50		06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	5 06:02 (WEA 14)	21:32		21:32		20:50		19:43	18:34	16:34	16:05
11	08:19	07:39	06:40	06:30	05:30	05:55 (WEA 14)	04:57		05:09	06:04 (WEA 14)	05:52		06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	8 06:03 (WEA 14)	21:33		21:32 5	06:09 (WEA 14)	20:48		19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	05:54 (WEA 14)	04:57		05:10	06:02 (WEA 14)	05:53		06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	11 06:05 (WEA 14)	21:33		21:31 9	06:11 (WEA 14)	20:46		19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	05:52 (WEA 14)	04:56		05:11	06:01 (WEA 14)	05:55		06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	13 06:05 (WEA 14)	21:34		21:30 11	06:12 (WEA 14)	20:44		19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	05:51 (WEA 14)	04:56		05:12	06:01 (WEA 14)	05:57		06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	15 06:06 (WEA 14)	21:34		21:29 12	06:13 (WEA 14)	20:42		19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	05:50 (WEA 14)	04:56		05:13	06:00 (WEA 14)	05:58		06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	17 06:07 (WEA 14)	21:35		21:28 14	06:14 (WEA 14)	20:40		19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	05:48 (WEA 14)	04:56		05:14	05:59 (WEA 14)	06:00		06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	19 06:07 (WEA 14)	21:36		21:27 16	06:15 (WEA 14)	20:38		19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	05:47 (WEA 14)	04:56		05:15	05:59 (WEA 14)	06:01		06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21 06:08 (WEA 14)	21:36		21:26 16	06:15 (WEA 14)	20:36		19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19	05:48 (WEA 14)	04:56		05:17	05:58 (WEA 14)	06:03		06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	20 06:08 (WEA 14)	21:36		21:25 18	06:16 (WEA 14)	20:34		19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	05:47 (WEA 14)	04:56		05:18	05:59 (WEA 14)	06:05		06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	20 06:07 (WEA 14)	21:37		21:24 18	06:17 (WEA 14)	20:32		19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	05:47 (WEA 14)	04:56		05:19	05:58 (WEA 14)	06:06		06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21 06:08 (WEA 14)	21:37		21:23 19	06:17 (WEA 14)	20:30		19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	05:47 (WEA 14)	04:56		05:21	05:58 (WEA 14)	06:08		06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21 06:08 (WEA 14)	21:37		21:21 19	06:17 (WEA 14)	20:28		19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	05:48 (WEA 14)	04:56		05:22	05:57 (WEA 14)	06:09		06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	20 06:08 (WEA 14)	21:38		21:20 20	06:17 (WEA 14)	20:26		19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	05:48 (WEA 14)	04:56		05:23	05:58 (WEA 14)	06:11		07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	20 06:08 (WEA 14)	21:38		21:19 20	06:18 (WEA 14)	20:24		19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	05:49 (WEA 14)	04:57		05:25	05:58 (WEA 14)	06:13		07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	19 06:08 (WEA 14)	21:38		21:18 20	06:18 (WEA 14)	20:21		19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	05:48 (WEA 14)	04:57		05:26	05:57 (WEA 14)	06:14		07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	18 06:06 (WEA 14)	21:38		21:16 21	06:18 (WEA 14)	20:19		19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	05:49 (WEA 14)	04:57		05:27	05:58 (WEA 14)	06:16		07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	17 06:06 (WEA 14)	21:38		21:15 20	06:18 (WEA 14)	20:17		19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	05:50 (WEA 14)	04:58		05:29	05:58 (WEA 14)	06:18		07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	17 06:07 (WEA 14)	21:38		21:13 20	06:18 (WEA 14)	20:15		19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	05:51 (WEA 14)	04:58		05:30	05:59 (WEA 14)	06:19		07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	15 06:06 (WEA 14)	21:38		21:12 18	06:17 (WEA 14)	20:13		19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	05:52 (WEA 14)	04:59		05:32	06:01 (WEA 14)	06:21		07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	13 06:05 (WEA 14)	21:38		21:10 16	06:17 (WEA 14)	20:11		18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	05:52 (WEA 14)	04:59		05:33	06:02 (WEA 14)	06:22		07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	12 06:04 (WEA 14)	21:37		21:09 14	06:16 (WEA 14)	20:08		18:57	16:53	16:10	16:12
31	07:57		06:55		05:04	05:53 (WEA 14)			05:35	06:03 (WEA 14)	06:24			07:06		08:22
	17:00		19:45		21:22	10 06:03 (WEA 14)			21:07 12	06:15 (WEA 14)	20:06			16:51		16:13
Sonnenscheinstunden	260	278	367	416	484		498		501		453		381	332	267	245
astr.max.mögl.Beschattung					352		10		338		20					
Red.Sonnenscheinwahrsch.					0,43		0,35		0,40		0,43					
Reduktion Betriebsdauer					0,94		0,94		0,94		0,94					
Reduktion Windrichtung					0,71		0,71		0,71		0,71					
Gesamte Reduktion					0,29		0,23		0,27		0,29					
Met.wahrsch.Beschattung					101		2		91		6					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem
Annahmen für Schattenwurfberechnung

Schattenrezeptor: IO 46 - Reinstedt - Solarpark

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22 16:15	07:56 17:02	07:03 17:53	06:52 19:47	05:48 20:38 23	06:26 (WEA 14) 06:49 (WEA 14)	05:03 21:23	05:00 21:37	05:36 21:06	06:26 20:04 19	06:53 (WEA 15) 07:12 (WEA 15)	07:14 18:55	07:08 16:49	07:58 16:09
2	08:22 16:16	07:54 17:04	07:00 17:55	06:50 19:49	05:46 20:39 22	06:26 (WEA 14) 06:48 (WEA 14)	05:02 21:24	05:01 21:37	05:38 21:04	06:27 20:02 18	06:53 (WEA 15) 07:11 (WEA 15)	07:16 18:52	07:09 16:47	08:00 16:08
3	08:22 16:17	07:53 17:06	06:58 17:57	06:48 19:51	05:44 20:41 21	06:27 (WEA 14) 06:48 (WEA 14)	05:01 21:25	05:01 21:36	05:39 21:02	06:29 19:59 16	06:55 (WEA 15) 07:11 (WEA 15)	07:18 18:50	07:11 16:45	08:01 16:08
4	08:22 16:18	07:51 17:08	06:56 17:59	06:46 19:52	05:42 20:43 18	06:28 (WEA 14) 06:46 (WEA 14)	05:01 21:26	05:02 21:36	05:41 21:01	06:30 19:57 13	06:56 (WEA 15) 07:09 (WEA 15)	07:19 18:48	07:13 16:44	08:03 16:07
5	08:22 16:19	07:49 17:10	06:54 18:01	06:43 19:54	05:40 20:44 17	06:28 (WEA 14) 06:45 (WEA 14)	05:00 21:27	05:03 21:36	05:42 20:59 4	06:45 (WEA 14) 06:49 (WEA 14)	06:32 19:55 10	06:58 (WEA 15) 07:08 (WEA 15)	07:21 18:46	07:15 16:42	08:04 16:07
6	08:21 16:20	07:48 17:11	06:52 18:02	06:41 19:56 6	07:04 (WEA 15) 07:10 (WEA 15)	05:39 20:46 14	06:29 (WEA 14) 06:43 (WEA 14)	04:59 21:28	05:04 21:35	05:44 20:57 11	06:41 (WEA 14) 06:52 (WEA 14)	06:34 19:53 7	06:59 (WEA 15) 07:06 (WEA 15)	07:23 18:43	07:17 16:40	08:05 16:06
7	08:21 16:22	07:46 17:13	06:49 18:04	06:39 19:57 10	07:01 (WEA 15) 07:11 (WEA 15)	05:37 20:48 9	06:32 (WEA 14) 06:41 (WEA 14)	04:59 21:29	05:05 21:34	05:45 20:55 15	06:39 (WEA 14) 06:54 (WEA 14)	06:35 19:50 1	07:01 (WEA 15) 07:02 (WEA 15)	07:24 18:41	07:18 16:38	08:06 16:06
8	08:20 16:23	07:44 17:15	06:47 18:06	06:36 19:59 13	06:59 (WEA 15) 07:12 (WEA 15)	05:35 20:49		04:58 21:30	05:06 21:34	05:47 20:53 18	06:37 (WEA 14) 06:55 (WEA 14)	06:37 19:48		07:26 18:39	07:20 16:37	08:08 16:05
9	08:20 16:24	07:42 17:17	06:45 18:08	06:34 20:01 16	06:57 (WEA 15) 07:13 (WEA 15)	05:33 20:51		04:58 21:31	05:07 21:33	05:49 20:52 19	06:37 (WEA 14) 06:56 (WEA 14)	06:38 19:46		07:28 18:37	07:22 16:35	08:09 16:05
10	08:19 16:26	07:41 17:19	06:43 18:09	06:32 20:02 18	06:55 (WEA 15) 07:13 (WEA 15)	05:32 20:52		04:57 21:32	05:08 21:32	05:50 20:50 21	06:35 (WEA 14) 06:56 (WEA 14)	06:40 19:43		07:29 18:34	07:24 16:33	08:10 16:05
11	08:19 16:27	07:39 17:21	06:40 18:11	06:30 20:04 19	06:53 (WEA 15) 07:12 (WEA 15)	05:30 20:54		04:57 21:33	05:09 21:32	05:52 20:48 22	06:35 (WEA 14) 06:57 (WEA 14)	06:42 19:41		07:31 18:32	07:25 16:32	08:11 16:05
12	08:18 16:29	07:37 17:22	06:38 18:13	06:28 20:06 19	06:53 (WEA 15) 07:12 (WEA 15)	05:28 20:56		04:57 21:33	05:10 21:31	05:53 20:46 23	06:34 (WEA 14) 06:57 (WEA 14)	06:43 19:39		07:33 18:30	07:27 16:30	08:12 16:05
13	08:18 16:30	07:35 17:24	06:36 18:15	06:25 20:07 19	06:53 (WEA 15) 07:12 (WEA 15)	05:27 20:57		04:56 21:34	05:11 21:30	05:55 20:44 24	06:34 (WEA 14) 06:58 (WEA 14)	06:45 19:37		07:34 18:28	07:29 16:29	08:13 16:05
14	08:17 16:31	07:33 17:26	06:34 18:16	06:23 20:09 17	06:54 (WEA 15) 07:11 (WEA 15)	05:25 20:59		04:56 21:34	05:12 21:29	05:57 20:42 24	06:33 (WEA 14) 06:57 (WEA 14)	06:47 19:34		07:36 18:26	07:31 16:27	08:14 16:05
15	08:16 16:33	07:31 17:28	06:31 18:18	06:21 20:11 16	06:54 (WEA 15) 07:10 (WEA 15)	05:24 21:00		04:56 21:35	05:13 21:28	05:58 20:40 25	06:33 (WEA 14) 06:58 (WEA 14)	06:48 19:32		07:38 18:23	07:32 16:26	08:15 16:05
16	08:15 16:35	07:29 17:30	06:29 18:20	06:19 20:13 14	06:55 (WEA 15) 07:09 (WEA 15)	05:22 21:02		04:56 21:36	05:14 21:27	06:00 20:38 24	06:33 (WEA 14) 06:57 (WEA 14)	06:50 19:30		07:40 18:21	07:34 16:25	08:16 16:05
17	08:14 16:36	07:27 17:32	06:27 18:22	06:17 20:14 9	06:57 (WEA 15) 07:06 (WEA 15)	05:21 21:03		04:56 21:36	05:15 21:26	06:01 20:36 24	06:33 (WEA 14) 06:57 (WEA 14)	06:51 19:27		07:41 18:19	07:36 16:23	08:17 16:05
18	08:13 16:38	07:25 17:34	06:25 18:23	06:14 20:16	05:19 21:05	04:56 21:36	05:17 21:25	06:03 20:34 23	06:33 (WEA 14) 06:56 (WEA 14)	06:53 19:25		07:43 18:17	07:38 16:22	08:17 16:05
19	08:12 16:39	07:23 17:35	06:22 18:25	06:12 20:18 4	06:37 (WEA 14) 06:41 (WEA 14)	05:18 21:06		04:56 21:37	05:18 21:24	06:05 20:32 22	06:34 (WEA 14) 06:56 (WEA 14)	06:55 19:23		07:45 18:15	07:39 16:21	08:18 16:05
20	08:11 16:41	07:21 17:37	06:20 18:27	06:10 20:19 12	06:33 (WEA 14) 06:45 (WEA 14)	05:16 21:08		04:56 21:37	05:19 21:23	06:06 20:30 20	06:34 (WEA 14) 06:54 (WEA 14)	06:56 19:20		07:46 18:13	07:41 16:19	08:19 16:06
21	08:10 16:43	07:19 17:39	06:18 18:28	06:08 20:21 16	06:31 (WEA 14) 06:47 (WEA 14)	05:15 21:09		04:56 21:37	05:20 21:21	06:08 20:28 18	06:35 (WEA 14) 06:53 (WEA 14)	06:58 19:18		07:48 18:11	07:43 16:18	08:19 16:06
22	08:09 16:44	07:17 17:41	06:15 18:30	06:06 20:23 19	06:29 (WEA 14) 06:48 (WEA 14)	05:14 21:10		04:56 21:38	05:22 21:20	06:09 20:26 15	06:36 (WEA 14) 06:51 (WEA 14)	06:59 19:16		07:50 18:09	07:44 16:17	08:20 16:07
23	08:08 16:46	07:15 17:43	06:13 18:32	06:04 20:24 21	06:28 (WEA 14) 06:49 (WEA 14)	05:12 21:12		04:56 21:38	05:23 21:19	06:11 20:24 11	06:38 (WEA 14) 06:49 (WEA 14)	07:01 19:13		07:52 18:07	07:46 16:16	08:20 16:07
24	08:07 16:48	07:13 17:44	06:11 18:34	06:02 20:26 22	06:27 (WEA 14) 06:49 (WEA 14)	05:11 21:13		04:57 21:38	05:25 21:18	06:13 20:21 2	06:42 (WEA 14) 06:44 (WEA 14)	07:03 19:11		07:53 18:04	07:48 16:15	08:21 16:08
25	08:05 16:50	07:11 17:46	06:08 18:35	06:00 20:28 23	06:26 (WEA 14) 06:49 (WEA 14)	05:10 21:15		04:57 21:38	05:26 21:16	06:14 20:19		07:04 19:09		06:55 17:02	07:49 16:14	08:21 16:08
26	08:04 16:51	07:09 17:48	06:06 18:37	05:58 20:29 23	06:26 (WEA 14) 06:49 (WEA 14)	05:09 21:16		04:57 21:38	05:27 21:15	06:16 20:17 9	06:59 (WEA 15) 07:08 (WEA 15)	07:06 19:06		06:57 17:00	07:51 16:13	08:21 16:09
27	08:03 16:53	07:07 17:50	06:04 18:39	05:56 20:31 24	06:26 (WEA 14) 06:50 (WEA 14)	05:08 21:17		04:58 21:38	05:29 21:13	06:18 20:15 13	06:57 (WEA 15) 07:10 (WEA 15)	07:08 19:04		06:59 16:59	07:52 16:12	08:22 16:10
28	08:01 16:55	07:05 17:52	06:02 18:40	05:54 20:33 24	06:26 (WEA 14) 06:50 (WEA 14)	05:07 21:18		04:58 21:38	05:30 21:12	06:19 20:13 16	06:55 (WEA 15) 07:11 (WEA 15)	07:09 19:02		07:01 16:57	07:54 16:11	08:22 16:11
29	08:00 16:57		06:59 19:42	05:52 20:34 24	06:26 (WEA 14) 06:50 (WEA 14)	05:06 21:20		04:59 21:38	05:32 21:10	06:21 20:11 17	06:55 (WEA 15) 07:12 (WEA 15)	07:11 18:59		07:02 16:55	07:55 16:10	08:22 16:12
30	07:59 16:59		06:57 19:44	05:50 20:36 23	06:26 (WEA 14) 06:49 (WEA 14)	05:05 21:21		04:59 21:37	05:33 21:09	06:22 20:08 19	06:54 (WEA 15) 07:13 (WEA 15)	07:13 18:57		07:04 16:53	07:57 16:10	08:22 16:12
31	07:57 17:00		06:55 19:45			05:04 21:22			05:35 21:07	06:24 20:06 19	06:53 (WEA 15) 07:12 (WEA 15)			07:06 16:51		08:22 16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung				411 124				458 84				
Red.Sonnenscheinwahrsch.				0,36 0,43				0,43 0,34				
Reduktion Betriebsdauer				0,94 0,94				0,94 0,94				
Reduktion Windrichtung				0,72 0,72				0,72 0,72				
Gesamte Reduktion				0,24 0,29				0,29 0,23				
Met.wahrsch.Beschattung				100 36				133 19				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 47 - Reinstedt - Metallbau Klug

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April			Mai			Juni		Juli		August			September			Oktober		November	Dezember
1	08:22		07:56		07:03		06:52		07:15 (WEA 15)	05:48		06:40 (WEA 14)	05:03		05:00		05:36			06:26		07:04 (WEA 15)	07:14		07:08	07:58
	16:15		17:02		17:53		19:47	3	07:18 (WEA 15)	20:38	15	06:55 (WEA 14)	21:23		21:37		21:06			20:04	16	07:20 (WEA 15)	18:55		16:49	16:09
2	08:22		07:54		07:00		06:50		07:13 (WEA 15)	05:46		06:42 (WEA 14)	05:02		05:01		05:38			06:27		07:02 (WEA 15)	07:16		07:09	08:00
	16:16		17:04		17:55		19:49	8	07:21 (WEA 15)	20:39	11	06:53 (WEA 14)	21:24		21:37		21:04			20:02	18	07:20 (WEA 15)	18:52		16:47	16:08
3	08:22		07:53		06:58		06:48		07:10 (WEA 15)	05:44			05:01		05:01		05:39			06:29		07:01 (WEA 15)	07:18		07:11	08:01
	16:17		17:06		17:57		19:51	12	07:22 (WEA 15)	20:41			21:25		21:36		21:02			19:59	20	07:21 (WEA 15)	18:50		16:45	16:08
4	08:22		07:51		06:56		06:45		07:08 (WEA 15)	05:42			05:01		05:02		05:41			06:30		07:00 (WEA 15)	07:19		07:13	08:03
	16:18		17:08		17:59		19:52	15	07:23 (WEA 15)	20:43			21:26		21:36		21:01			19:57	20	07:20 (WEA 15)	18:48		16:44	16:07
5	08:22		07:49		06:54		06:43		07:06 (WEA 15)	05:40			05:00		05:03		05:42			06:32		07:00 (WEA 15)	07:21		07:15	08:04
	16:19		17:10		18:01		19:54	18	07:24 (WEA 15)	20:44			21:27		21:36		20:59			19:55	20	07:20 (WEA 15)	18:46		16:42	16:07
6	08:21		07:48		06:52		06:41		07:04 (WEA 15)	05:39			04:59		05:04		05:44			06:34		07:00 (WEA 15)	07:23		07:17	08:05
	16:20		17:11		18:02		19:56	20	07:24 (WEA 15)	20:46			21:28		21:35		20:57			19:53	19	07:19 (WEA 15)	18:43		16:40	16:06
7	08:21		07:46		06:49		06:39		07:03 (WEA 15)	05:37			04:59		05:05		05:45			06:35		07:01 (WEA 15)	07:24		07:18	08:06
	16:22		17:13		18:04		19:57	20	07:23 (WEA 15)	20:48			21:29		21:34		20:55			19:50	18	07:19 (WEA 15)	18:41		16:38	16:06
8	08:20		07:44		06:47		06:36		07:03 (WEA 15)	05:35			04:58		05:06		05:47			06:37		07:02 (WEA 15)	07:26		07:20	08:08
	16:23		17:15		18:06		19:59	20	07:23 (WEA 15)	20:49			21:30		21:34		20:53			19:48	15	07:17 (WEA 15)	18:39		16:37	16:05
9	08:20		07:42		06:45		06:34		07:03 (WEA 15)	05:33			04:58		05:07		05:49			06:38		07:04 (WEA 15)	07:28		07:22	08:09
	16:24		17:17		18:08		20:01	19	07:22 (WEA 15)	20:51			21:31		21:33		20:52			19:46	12	07:16 (WEA 15)	18:37		16:35	16:05
10	08:19		07:41		06:43		06:32		07:04 (WEA 15)	05:32			04:57		05:08		05:50		06:54 (WEA 14)	06:40		07:06 (WEA 15)	07:29		07:24	08:10
	16:26		17:19		18:09		20:02	18	07:22 (WEA 15)	20:52			21:32		21:32		20:50	5	06:59 (WEA 14)	19:43	9	07:15 (WEA 15)	18:34		16:33	16:05
11	08:19		07:39		06:40		06:30		07:04 (WEA 15)	05:30			04:57		05:09		05:52		06:51 (WEA 14)	06:42		07:07 (WEA 15)	07:31		07:25	08:11
	16:27		17:21		18:11		20:04	16	07:20 (WEA 15)	20:54			21:33		21:32		20:48	12	07:03 (WEA 14)	19:41	4	07:11 (WEA 15)	18:32		16:32	16:05
12	08:18		07:37		06:38		06:28		07:05 (WEA 15)	05:28			04:57		05:10		05:53		06:48 (WEA 14)	06:43			07:33		07:27	08:12
	16:28		17:22		18:13		20:06	13	07:18 (WEA 15)	20:56			21:33		21:31		20:46	16	07:04 (WEA 14)	19:39			18:30		16:30	16:05
13	08:18		07:35		06:36		06:25		07:07 (WEA 15)	05:27			04:56		05:11		05:55		06:47 (WEA 14)	06:45			07:34		07:29	08:13
	16:30		17:24		18:15		20:07	9	07:16 (WEA 15)	20:57			21:34		21:30		20:44	19	07:06 (WEA 14)	19:36			18:28		16:29	16:05
14	08:17		07:33		06:34		06:23		06:50 (WEA 14)	05:25			04:56		05:12		05:57		06:46 (WEA 14)	06:47			07:36		07:31	08:14
	16:31		17:26		18:16		20:09	3	06:53 (WEA 14)	20:59			21:34		21:29		20:42	20	07:06 (WEA 14)	19:34			18:26		16:27	16:05
15	08:16		07:31		06:31		06:21		06:45 (WEA 14)	05:24			04:56		05:13		05:58		06:45 (WEA 14)	06:48			07:38		07:32	08:15
	16:33		17:28		18:18		20:11	12	06:57 (WEA 14)	21:00			21:35		21:28		20:40	22	07:07 (WEA 14)	19:32			18:23		16:26	16:05
16	08:15		07:29		06:29		06:19		06:43 (WEA 14)	05:22			04:56		05:14		06:00		06:44 (WEA 14)	06:50			07:40		07:34	08:16
	16:35		17:30		18:20		20:13	16	06:59 (WEA 14)	21:02			21:36		21:27		20:38	23	07:07 (WEA 14)	19:30			18:21		16:25	16:05
17	08:14		07:27		06:27		06:17		06:41 (WEA 14)	05:21			04:56		05:15		06:01		06:43 (WEA 14)	06:51			07:41		07:36	08:17
	16:36		17:32		18:22		20:14	20	07:01 (WEA 14)	21:03			21:36		21:26		20:36	25	07:08 (WEA 14)	19:27			18:19		16:23	16:05
18	06:13		07:25		06:25		06:14		06:40 (WEA 14)	05:19			04:56		05:17		06:03		06:42 (WEA 14)	06:53			07:43		07:38	08:17
	16:38		17:34		18:23		20:16	22	07:02 (WEA 14)	21:05			21:36		21:25		20:34	26	07:08 (WEA 14)	19:25			18:17		16:22	16:05
19	08:12		07:23		06:22		06:12		06:38 (WEA 14)	05:18			04:56		05:18		06:05		06:43 (WEA 14)	06:55			07:45		07:39	08:18
	16:39		17:35		18:25		20:18	23	07:01 (WEA 14)	21:06			21:37		21:24		20:32	25	07:08 (WEA 14)	19:23			18:15		16:21	16:05
20	06:11		07:21		06:20		06:10		06:37 (WEA 14)	05:16			04:56		05:19		06:06		06:42 (WEA 14)	06:56			07:46		07:41	08:19
	16:41		17:37		18:27		20:19	25	07:02 (WEA 14)	21:08			21:37		21:23		20:30	26	07:08 (WEA 14)	19:20			18:13		16:19	16:06
21	08:10		07:19		06:18		06:08		06:37 (WEA 14)	05:15			04:56		05:20		06:08		06:42 (WEA 14)	06:58			07:48		07:43	08:19
	16:43		17:39		18:28		20:21	25	07:02 (WEA 14)	21:09			21:37		21:21		20:28	26	07:08 (WEA 14)	19:18			18:11		16:18	16:06
22	08:09		07:17		06:15		06:06		06:36 (WEA 14)	05:14			04:56		05:22		06:09		06:42 (WEA 14)	06:59			07:50		07:44	08:20
	16:44		17:41		18:30		20:23	26	07:02 (WEA 14)	21:10			21:38		21:20		20:26	25	07:07 (WEA 14)	19:16			18:09		16:17	16:07
23	08:08		07:15		06:13		06:04		06:36 (WEA 14)	05:12			04:56		05:23		06:11		06:42 (WEA 14)	07:01			07:52		07:46	08:20
	16:46		17:43		18:32		20:24	26	07:02 (WEA 14)	21:12			21:38		21:19		20:24	24	07:06 (WEA 14)	19:13			18:07		16:16	16:07
24	08:07		07:13		06:11		06:02		06:36 (WEA 14)	05:11			04:57		05:25		06:13		06:42 (WEA 14)	07:03			07:53		07:48	08:21
	16:48		17:44		18:34		20:26	26	07:02 (WEA 14)	21:13			21:38		21:18		20:21	23	07:05 (WEA 14)	19:11			18:04		16:15	16:08
25	08:05		07:11		06:08		06:00		06:36 (WEA 14)	05:10			04:57		05:26		06:14		06:43 (WEA 14)	07:04			06:55		07:49	08:21
	16:50		17:46		18:35		20:28	25	07:01 (WEA 14)	21:15			21:38		21:16		20:19	21	07:04 (WEA 14)	19:09			17:02		16:14	16:08
26	08:04		07:09		06:06		05:58		06:36 (WEA 14)	05:09			04:57		05:27		06:16		06:43 (WEA 14)	07:06			06:57		07:51	08:21
	16:51		17:48		18:37		20:29	24	07:00 (WEA 14)	21:16			21:38		21:15		20:17	19	07:02 (WEA 14)	19:06			17:00		16:13	16:09
27	08:03		07:07		06:04		05:56		06:37 (WEA 14)	05:08			04:58		05:29		06:18		06:45 (WEA 14)	07:08			06:59		07:52	08:22
	16:53		17:50		18:39		20:31	24	07:01 (WEA 14)	21:17			21:38		21:13		20:15	16	07:01 (WEA 14)	19:04			16:58		16:12	16:10
28	08:01		07:05		06:02		05:54		06:38 (WEA 14)	05:07			04:58		05:30		06:19		06:46 (WEA 14)	07:09			07:01		07:54	08:22
	16:55		17:52		18:40		20:33	22	07:00 (WEA 14)	21:18			21:38		21:12		20:13	12	06:58 (WEA 14)	19:02			16:57		16:11	16:11
29	08:00				06:59		05:52		06:38 (WEA 14)	05:06			04:59		05:32		06:21		06:52 (WEA 14)	07:11			07:02		07:55	08:22
	16:57				19:42		20:34	20	06:58 (WEA 14)	21:20			21:38		21:10		20:11	1	06:53 (WEA 14)	18:59			16:55		16:10	16:12
30	07:59				06:57		05:50		06:39 (WEA 14)	05:05			04:59		05:33		06:22		07:07 (WEA 15)	07:13			07:04		07:57	08:22
	16:59				19:44		20:36	18	06:57 (WEA 14)	21:21			21:37		21:09		20:08	9	07:16 (WEA 15)	18:57			16:53		16:10	16:12
31	07:57				06:55					05:04					05:35		06:24		07:05 (WEA 15)				07:06			08:22
	17:00				19:45					21:22					21:07		20:06	13	07:18 (WEA 15)				16:51			16:13
Sonnenscheinstunden	260		278		367		416			484			498		501		453			381			332		267	245
astr.max.mögl.Beschattung								548			26							408			171					
Red.Sonnenscheinwahrsch.								0,36			0,43							0,43			0,34					
Reduktion Betriebsdauer								0,94			0,94							0,94			0,94					
Reduktion Windrichtung								0,72			0,71							0,72			0,72					
Gesamte Reduktion								0,24			0,29							0,29			0,23					
Met.wahrsch.Beschattung								133			8							118			40					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende
(WEA mit erstem Schatten) (WEA mit letztem Schatten)			

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 48 - Reinstedt - ACZ Transport

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	06:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:45	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01 07:04 (WEA 14)	06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36 3 07:07 (WEA 14)	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19	04:56	05:17	06:03 06:59 (WEA 14)	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34 11 07:10 (WEA 14)	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05 06:57 (WEA 14)	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32 16 07:13 (WEA 14)	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06 06:55 (WEA 14)	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30 18 07:13 (WEA 14)	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08 06:54 (WEA 14)	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28 21 07:15 (WEA 14)	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09 06:53 (WEA 14)	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	21:38	21:20	20:26 22 07:15 (WEA 14)	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11 06:52 (WEA 14)	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24 24 07:16 (WEA 14)	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13 06:51 (WEA 14)	07:03	07:53	07:48	08:21
	16:48	17:44	18:34	20:26	21:13	21:38	21:18	20:21 24 07:15 (WEA 14)	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14 06:51 (WEA 14)	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28 10 07:03 (WEA 14)	21:15	21:38	21:16	20:19 25 07:16 (WEA 14)	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16 06:50 (WEA 14)	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17 25 07:15 (WEA 14)	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18 06:50 (WEA 14)	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15 25 07:15 (WEA 14)	19:04	16:58	16:12	16:10
28	08:02	07:05	06:02 06:24 (WEA 15)	05:54	05:07	04:58	05:30	06:19 06:50 (WEA 14)	07:09	07:01	07:54	08:22
	16:55	17:52	18:40 1 06:25 (WEA 15)	20:33	21:18	21:38	21:12	20:13 24 07:14 (WEA 14)	19:02	16:57	16:11	16:11
29	08:00		06:59 07:22 (WEA 15)	05:52	05:06	04:59	05:32	06:21 06:50 (WEA 14)	07:11	07:02	07:55	08:22
	16:57		19:42 7 07:29 (WEA 15)	20:34	21:20	21:38	21:10	20:11 24 07:14 (WEA 14)	18:59	16:55	16:10	16:12
30	07:59		06:57 07:19 (WEA 15)	05:50	05:05	04:59	05:33	06:22 06:50 (WEA 14)	07:13	07:04	07:57	08:22
	16:59		19:44 11 07:30 (WEA 15)	20:36	21:21	21:37	21:09	20:08 22 07:12 (WEA 14)	18:57	16:53	16:10	16:12
31	07:57		06:55 07:17 (WEA 15)		05:04		05:35	06:24 06:51 (WEA 14)		07:06		08:22
	17:00		19:45 14 07:31 (WEA 15)		21:22		21:07	20:06 21 07:12 (WEA 14)		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung			33	483				305	222			
Red.Sonnenscheinwahrsch.			0,27	0,36				0,43	0,34			
Reduktion Betriebsdauer			0,94	0,94				0,94	0,94			
Reduktion Windrichtung			0,72	0,72				0,72	0,72			
Gesamte Reduktion			0,18	0,24				0,29	0,23			
Met.wahrsch.Beschattung			6	117				89	52			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 49 - Reinstedt - Danpower Energie Service

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:01	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:10	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:37	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:50	06:39	05:37	04:59	05:05	05:45	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41	16:38	16:06
8	08:21	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:54	19:48	18:39	16:37	16:05
9	08:20	07:43	06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:20	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:33	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:26	08:11
	16:27	17:21	18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:08	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:35	21:29	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:33	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:28	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:26	06:25	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:37	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:22	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:47	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:20	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:22	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	07:00	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:11	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:54	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:22	19:11	18:05	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:22
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:19	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:12
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	485	498	501	453	381	332	267	244
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **Schattenrezeptor:** IO 50 - Reinstedt - Mitteldeutsche Baumschulen

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
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	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
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	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende
			(WEA mit erstem Schatten) (WEA mit letztem Schatten)

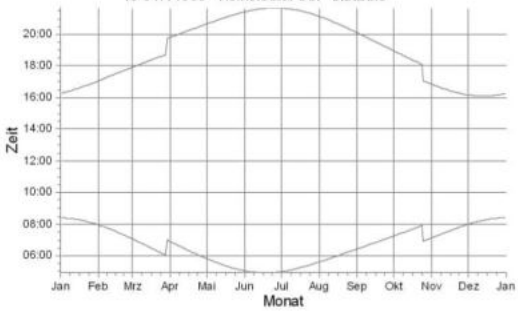
Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

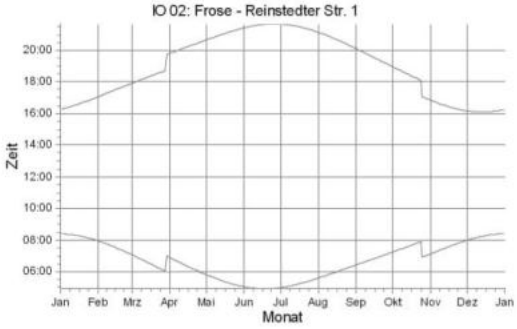
SHADOW - Grafischer Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem

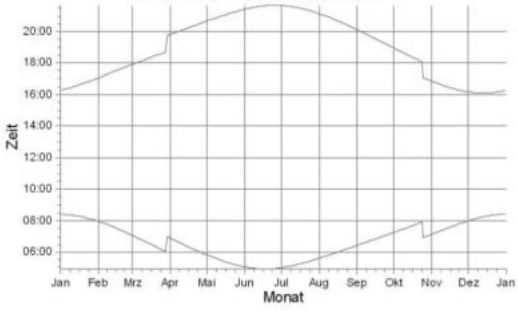
IO 01: Frose - Reinstedter Str. - Industrie



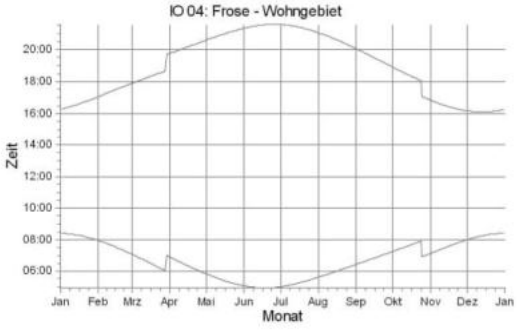
IO 02: Frose - Reinstedter Str. 1



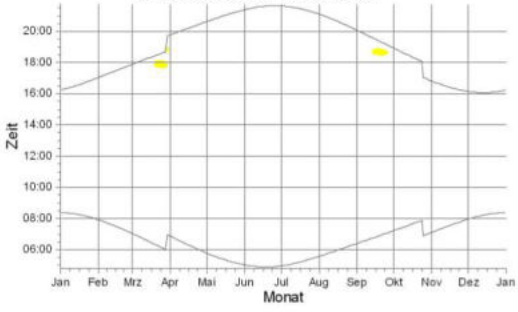
IO 03: Frose - Vor dem Bahnhof 274E



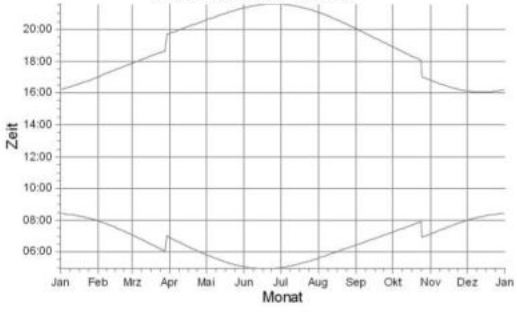
IO 04: Frose - Wohngebiet



IO 05: Aschersleben - Außenbereich



IO 06: Aschersleben - MAWEA



WEA

WEA 15: VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (1575)

Projekt:
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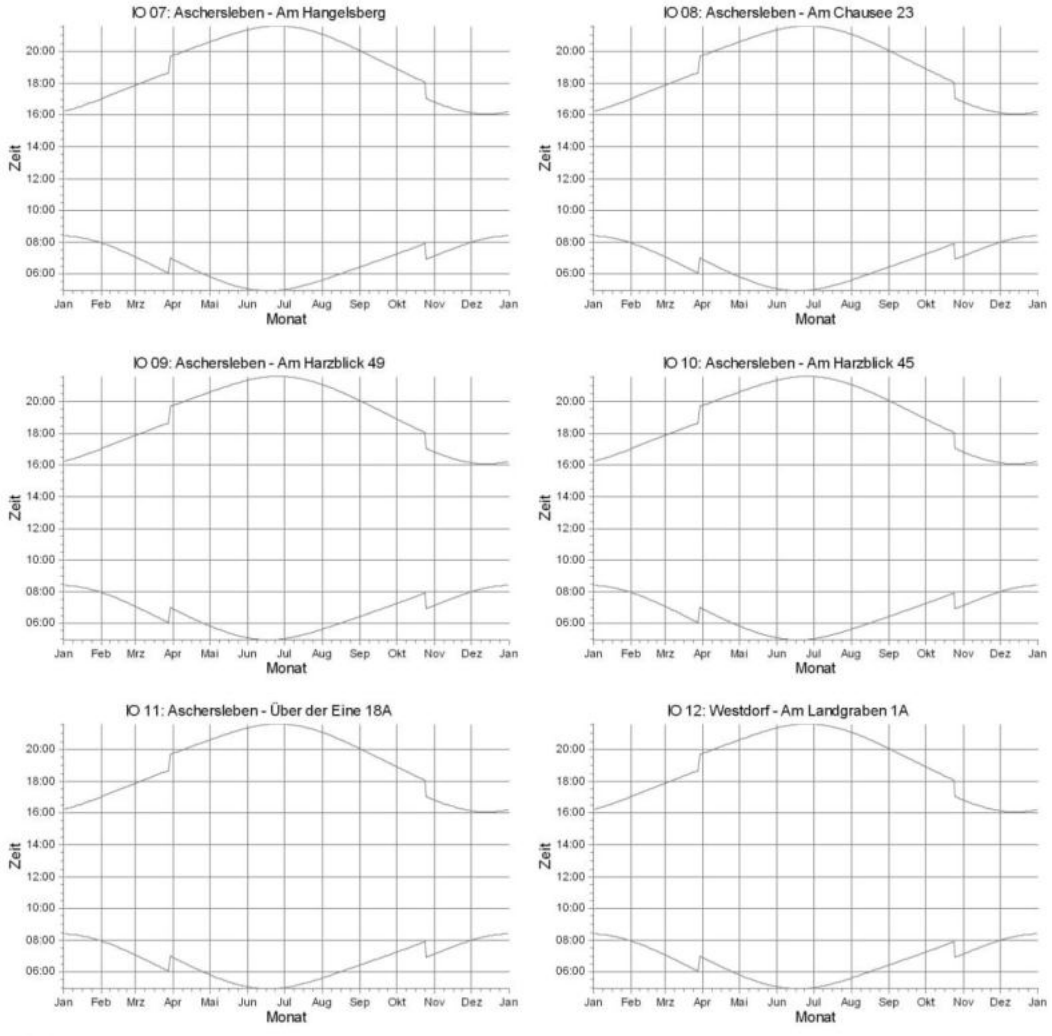
30.01.2024 16:23/3.6.366

SHADOW - Grafischer Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem



WEA

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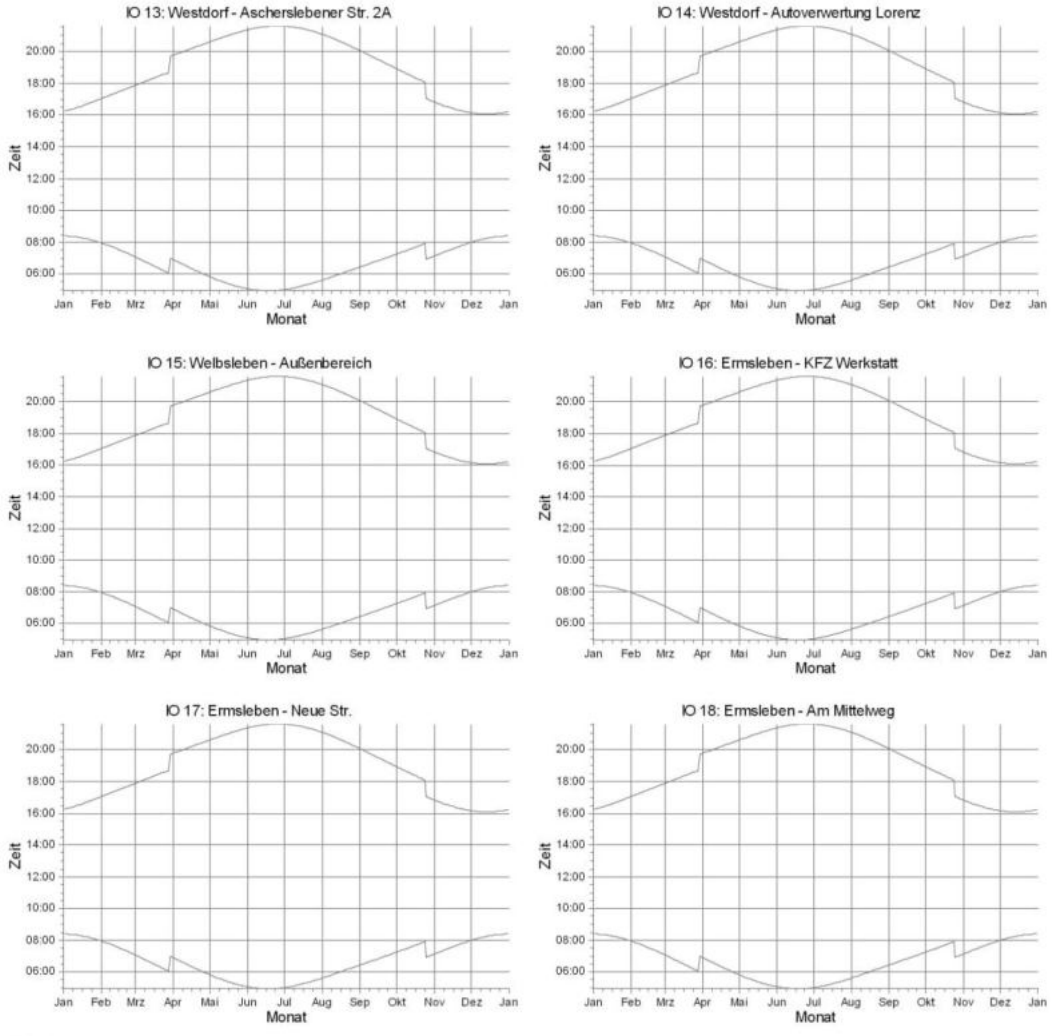
SHADOW - Grafischer Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem



WEA

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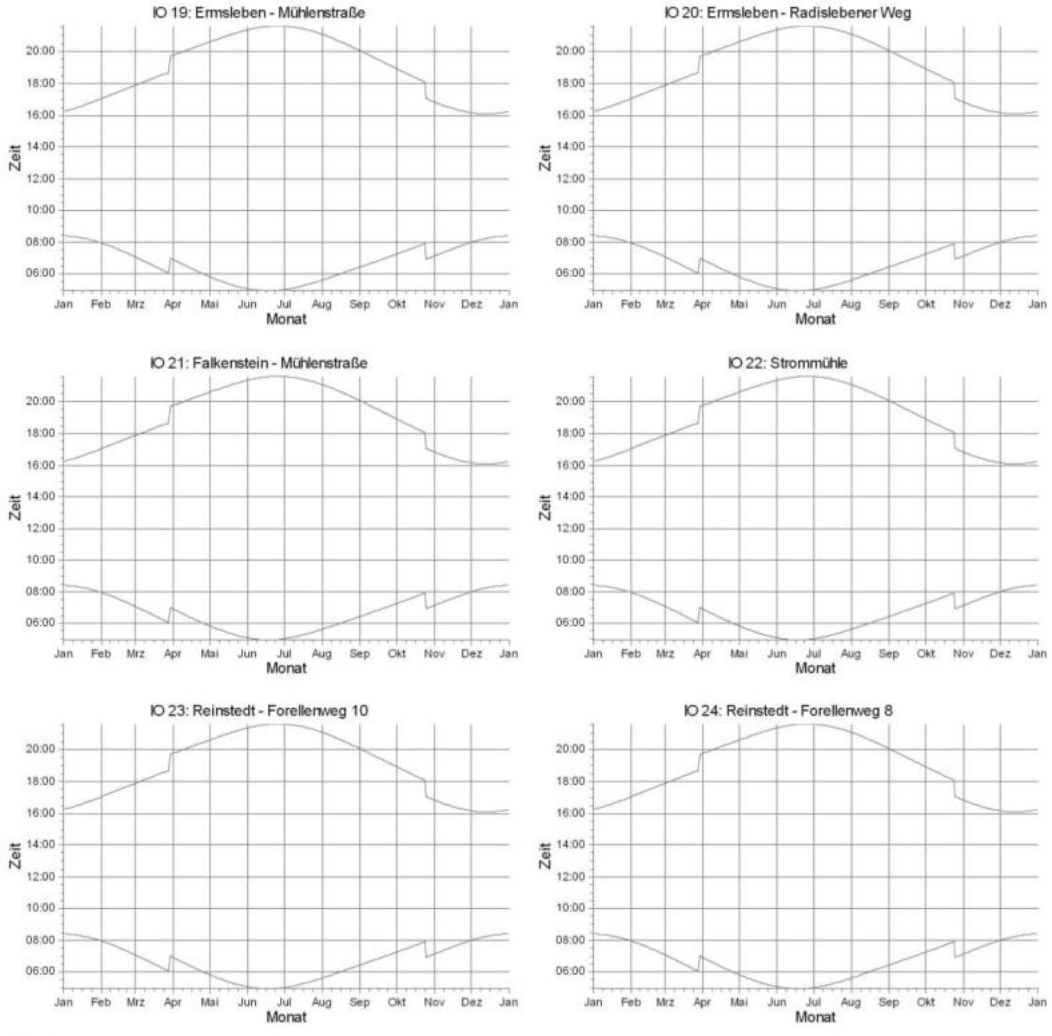
SHADOW - Grafischer Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem



WEA

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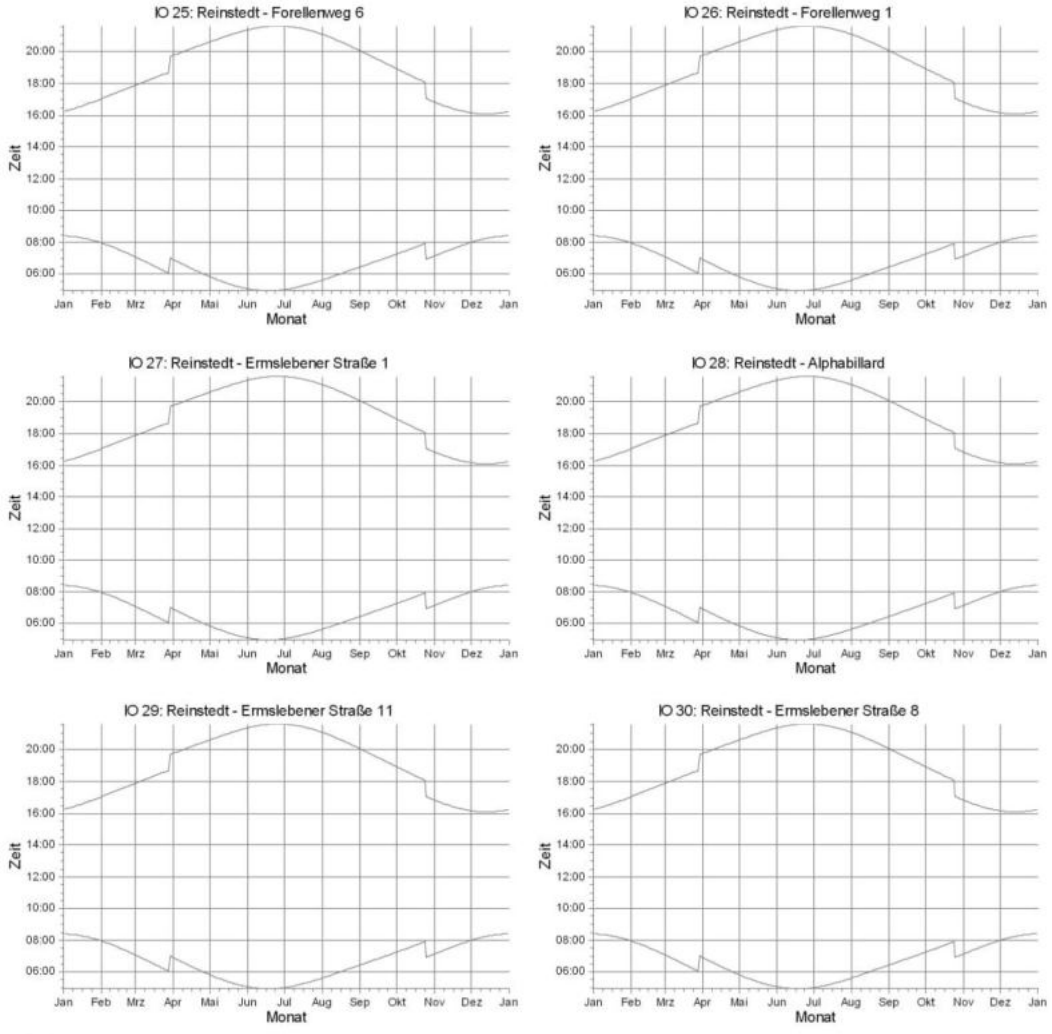
SHADOW - Grafischer Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem



WEA

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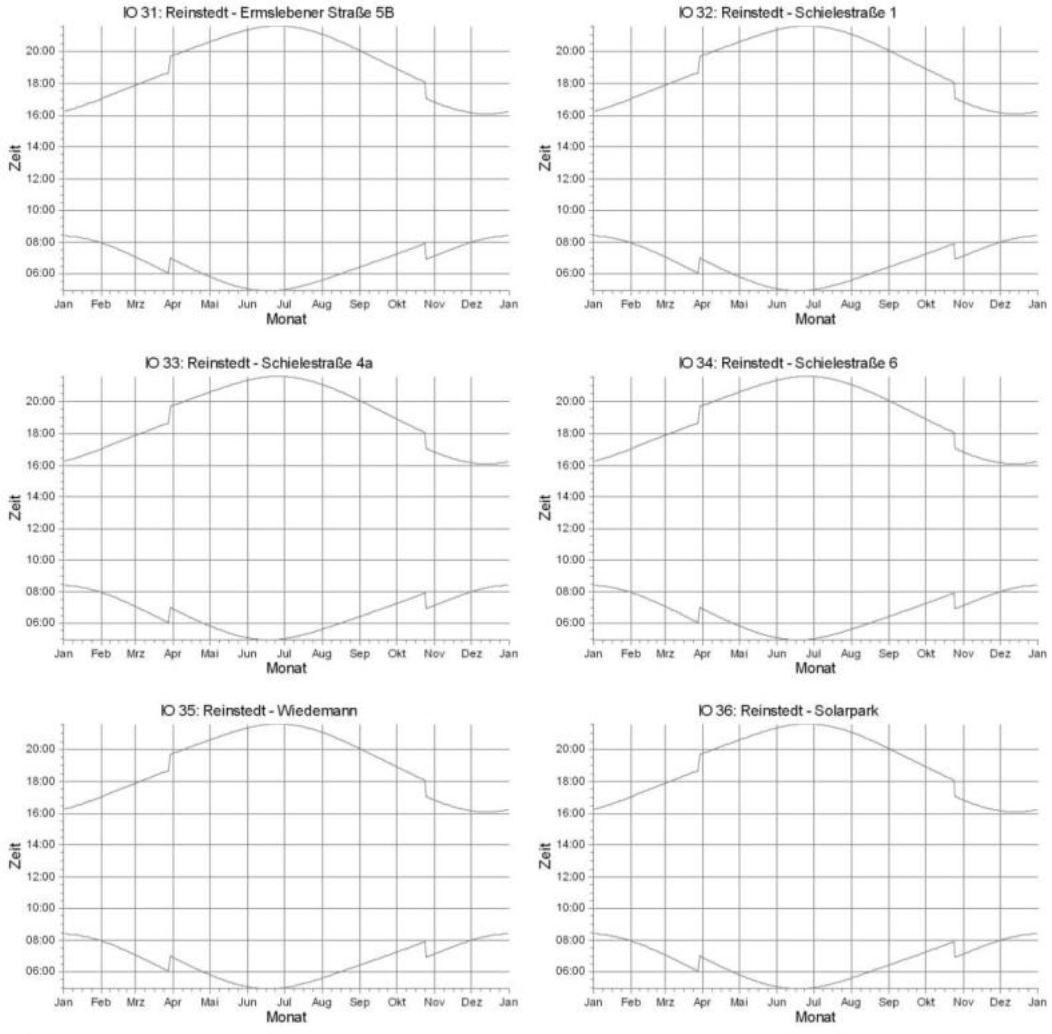
SHADOW - Grafischer Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem



WEA

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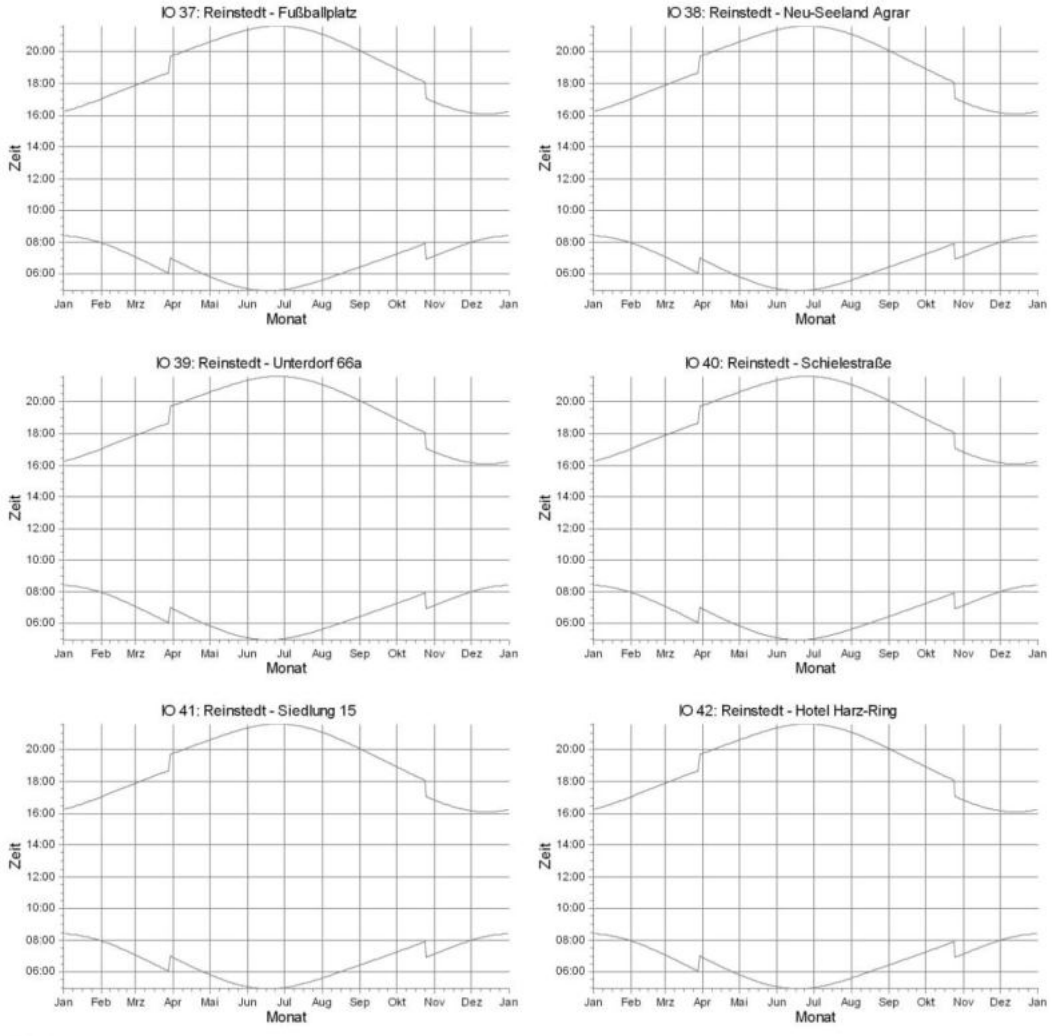
SHADOW - Grafischer Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem



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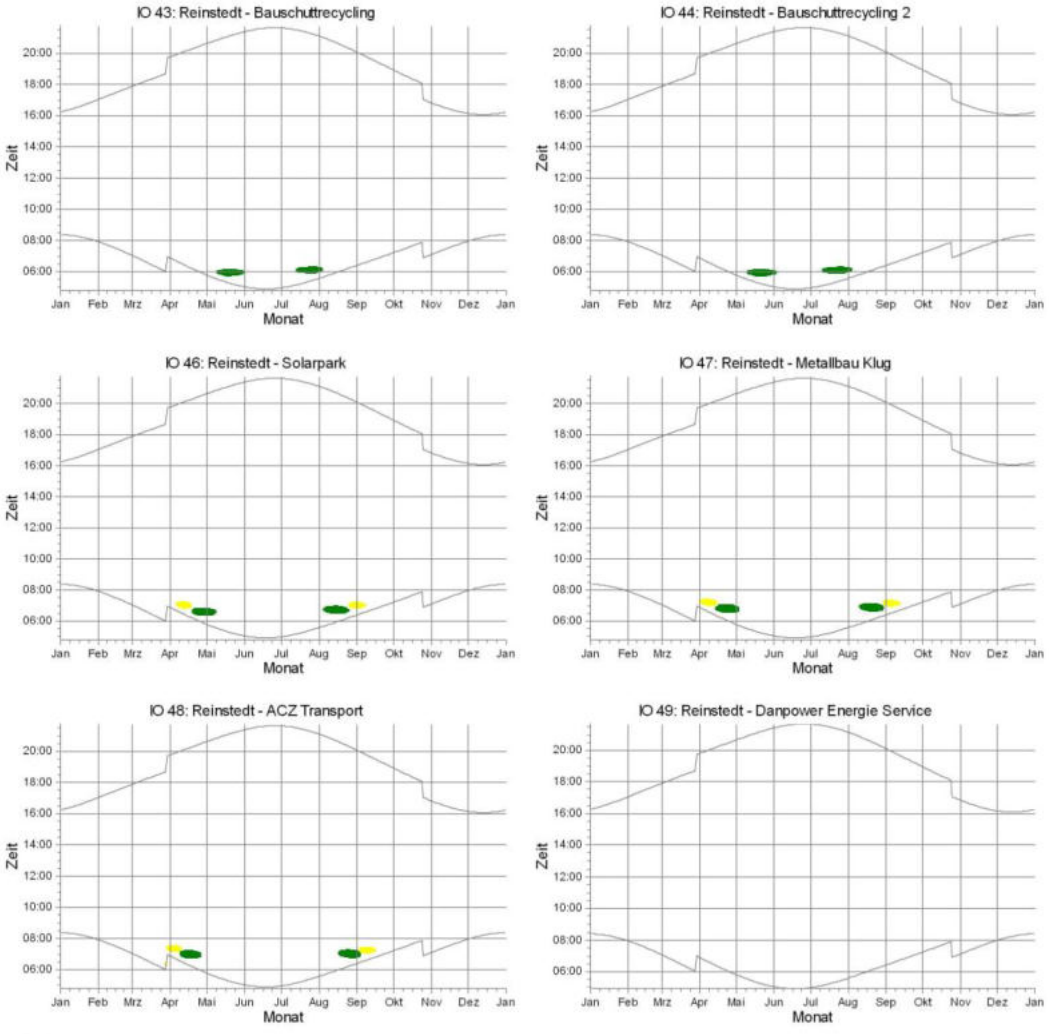
SHADOW - Grafischer Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem



WEA

WEA 14: VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (1574)

WEA 15: VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (1575)

Projekt:
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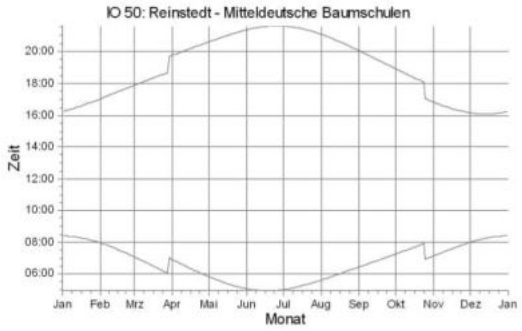
SHADOW - Grafischer Kalender

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem



WEA

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Berechnet:
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SHADOW - Kalender pro WEA

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **WEA:** WEA 14 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (1574)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22 16:15	07:56 17:02	07:03 17:53	06:52 19:47	05:48 06:26-06:55/29 20:38	05:03 05:55-06:02/7 21:23	05:00 21:37	05:36 06:05-06:16/11 21:05	06:25 06:53-07:11/18 20:04	07:14 18:55	07:08 16:49	07:58 16:09
2	08:22 16:16	07:54 17:04	07:00 17:55	06:50 19:49	05:46 06:26-06:53/27 20:39	05:02 05:58-06:01/3 21:24	05:01 21:37	05:38 06:06-06:14/8 21:04	06:27 06:53-07:08/15 20:02	07:16 18:52	07:09 16:47	08:00 16:08
3	08:22 16:17	07:52 17:06	06:58 17:57	06:48 19:50	05:44 06:27-06:48/21 20:41	05:01 21:25	05:01 21:36	05:39 06:08-06:13/5 21:02	06:29 06:56-07:06/10 19:59	07:17 18:50	07:11 16:45	08:01 16:08
4	08:22 16:18	07:51 17:08	06:56 17:59	06:45 19:52	05:42 06:28-06:46/18 20:43	05:00 21:26	05:02 21:36	05:41 21:00	06:30 19:57	07:19 18:48	07:13 16:43	08:02 16:07
5	08:21 16:19	07:49 17:09	06:54 18:01	06:43 19:54	05:40 06:28-06:45/17 20:44	05:00 21:27	05:03 21:35	05:42 06:45-06:49/4 20:59	06:32 19:55	07:21 18:46	07:15 16:42	08:04 16:06
6	08:21 16:20	07:48 17:11	06:52 18:02	06:41 19:56	05:39 06:29-06:43/14 20:46	04:59 21:28	05:04 21:35	05:44 06:41-06:52/11 20:57	06:34 19:53	07:22 18:43	07:17 16:40	08:05 16:06
7	08:21 16:22	07:46 17:13	06:49 18:04	06:39 19:57	05:37 06:32-06:41/9 20:47	04:59 21:29	05:05 21:34	05:45 06:39-06:54/15 20:55	06:35 19:50	07:24 18:41	07:18 16:38	08:06 16:06
8	08:20 16:23	07:44 17:15	06:47 18:06	06:36 19:59	05:35 20:49	04:58 21:30	05:05 21:34	05:47 06:37-06:55/18 20:53	06:37 19:48	07:26 18:39	07:20 16:37	08:08 16:05
9	08:20 16:24	07:42 17:17	06:45 18:08	06:34 06:58-07:07/9 20:01	05:33 05:59-06:01/2 20:51	04:58 21:31	05:06 21:33	05:49 06:37-06:56/19 20:52	06:38 19:46	07:28 18:37	07:22 16:35	08:09 16:05
10	08:19 16:26	07:41 17:19	06:43 18:09	06:32 06:55-07:10/15 20:02	05:32 05:57-06:03/6 20:52	04:57 21:32	05:07 21:32	05:50 06:35-06:59/24 20:50	06:40 19:43	07:29 18:34	07:24 16:33	08:10 16:05
11	08:19 16:27	07:39 17:21	06:40 18:11	06:30 06:53-07:11/18 20:04	05:30 05:55-06:04/9 20:54	04:57 21:32	05:08 06:04-06:09/5 21:32	05:52 06:35-07:03/28 20:48	06:42 19:41	07:31 18:32	07:25 16:32	08:11 16:05
12	08:18 16:28	07:37 17:22	06:38 18:13	06:27 06:51-07:12/21 20:06	05:28 05:54-06:06/12 20:55	04:56 21:33	05:09 06:02-06:11/9 21:31	05:53 06:34-07:04/30 20:46	06:43 19:39	07:33 18:30	07:27 16:30	08:12 16:05
13	08:17 16:30	07:35 17:24	06:36 18:15	06:25 06:50-07:13/23 20:07	05:27 05:52-06:06/14 20:57	04:56 21:34	05:11 06:01-06:12/11 21:30	05:55 06:34-07:06/32 20:44	06:45 19:36	07:34 18:28	07:29 16:29	08:13 16:04
14	08:17 16:31	07:33 17:26	06:34 18:16	06:23 06:50-07:13/23 20:09	05:25 05:51-06:07/16 20:59	04:56 21:34	05:12 06:01-06:13/12 21:29	05:56 06:33-07:06/33 20:42	06:46 19:34	07:36 18:25	07:31 16:27	08:14 16:04
15	08:16 16:33	07:31 17:28	06:31 18:18	06:21 06:45-07:13/28 20:11	05:23 05:50-06:08/18 21:00	04:56 21:35	05:13 06:00-06:14/14 21:28	05:58 06:33-07:07/34 20:40	06:48 19:32	07:38 18:23	07:32 16:26	08:15 16:05
16	08:15 16:34	07:29 17:30	06:29 18:20	06:19 06:43-07:13/30 20:12	05:22 05:48-06:07/19 21:02	04:56 21:35	05:14 05:59-06:15/16 21:27	06:00 06:33-07:07/34 20:38	06:50 19:29	07:39 18:21	07:34 16:24	08:16 16:05
17	08:14 16:36	07:27 17:32	06:27 18:21	06:16 06:41-07:13/32 20:14	05:20 05:47-06:08/21 21:03	04:56 21:36	05:15 05:59-06:15/16 21:26	06:01 06:33-07:08/35 20:36	06:51 19:27	07:41 18:19	07:36 16:23	08:16 16:05
18	08:13 16:38	07:25 17:33	06:24 18:23	06:14 06:40-07:13/33 20:16	05:19 05:48-06:08/20 21:05	04:56 21:36	05:17 05:58-06:16/18 21:25	06:03 06:33-07:10/37 20:34	06:53 19:25	07:43 18:17	07:38 16:22	08:17 16:05
19	08:12 16:39	07:23 17:35	06:22 18:25	06:12 06:37-07:12/35 20:17	05:18 05:47-06:08/21 21:06	04:56 21:37	05:18 05:59-06:17/18 21:24	06:04 06:34-07:13/39 20:32	06:55 19:22	07:45 18:15	07:39 16:21	08:18 16:05
20	08:11 16:41	07:21 17:37	06:20 18:27	06:10 06:33-07:11/38 20:19	05:16 05:47-06:08/21 21:08	04:56 21:37	05:19 05:58-06:17/19 21:23	06:06 06:34-07:13/39 20:30	06:56 19:20	07:46 18:13	07:41 16:19	08:19 16:06
21	08:10 16:43	07:19 17:39	06:18 18:28	06:08 06:31-07:10/39 20:21	05:15 05:47-06:08/21 21:09	04:56 21:37	05:20 05:58-06:17/19 21:21	06:08 06:35-07:15/40 20:28	06:58 19:18	07:48 18:11	07:43 16:18	08:19 16:06
22	08:09 16:44	07:17 17:41	06:15 18:30	06:06 06:29-07:09/40 20:23	05:14 05:48-06:08/20 21:10	04:56 21:38	05:22 05:57-06:17/20 21:20	06:09 06:36-07:15/39 20:26	06:59 19:16	07:50 18:08	07:44 16:17	08:20 16:07
23	08:08 16:46	07:15 17:43	06:13 18:32	06:04 06:28-07:08/40 20:24	05:12 05:48-06:08/20 21:12	04:56 21:38	05:23 05:58-06:18/20 21:19	06:11 06:38-07:16/38 20:23	07:01 19:13	07:52 18:06	07:46 16:16	08:20 16:07
24	08:07 16:48	07:13 17:44	06:11 18:33	06:02 06:27-07:06/39 20:26	05:11 05:49-06:08/19 21:13	04:56 21:38	05:24 05:58-06:18/20 21:17	06:13 06:42-07:15/33 20:21	07:03 19:11	07:53 18:04	07:48 16:15	08:21 16:08
25	08:05 16:50	07:11 17:46	06:08 18:35	06:00 06:26-07:03/37 20:28	05:10 05:48-06:06/18 21:15	04:57 21:38	05:26 05:57-06:18/21 21:16	06:14 06:43-07:16/33 20:19	07:04 19:09	06:55 17:02	07:49 16:14	08:21 16:08
26	08:04 16:51	07:09 17:48	06:06 18:37	05:58 06:26-07:00/34 20:29	05:09 05:49-06:06/17 21:16	04:57 21:38	05:27 05:58-06:19/21 21:15	06:16 06:43-07:15/32 20:17	07:06 19:06	06:57 17:00	07:51 16:13	08:21 16:09
27	08:03 16:53	07:07 17:50	06:04 18:39	05:56 06:26-07:01/35 20:31	05:08 05:50-06:07/17 21:17	04:58 21:38	05:29 05:58-06:18/20 21:13	06:17 06:45-07:15/30 20:15	07:08 19:04	06:59 16:58	07:52 16:12	08:22 16:10
28	08:01 16:55	07:05 17:52	06:01 18:40	05:54 06:26-07:00/34 20:33	05:07 05:51-06:06/15 21:18	04:58 21:38	05:30 05:59-06:18/19 21:12	06:19 06:46-07:14/28 20:13	07:09 19:02	07:00 16:56	07:54 16:11	08:22 16:11
29	08:00 16:57		06:59 19:42	05:52 06:26-06:58/32 20:34	05:06 05:52-06:05/13 21:20	04:59 21:38	05:32 06:01-06:18/17 21:10	06:21 06:50-07:14/24 20:10	07:11 18:59	06:55 16:55	07:55 16:10	08:22 16:11
30	07:59 16:58		06:57 19:44	05:50 06:26-06:57/31 20:36	05:05 05:52-06:04/12 21:21	04:59 21:37	05:33 06:02-06:17/15 21:09	06:22 06:50-07:12/22 20:08	07:12 18:57	07:04 16:53	07:57 16:10	08:22 16:12
31	07:57 17:00		06:55 19:45		05:04 05:53-06:03/10 21:22		05:35 06:03-06:16/13 21:07	06:24 06:51-07:12/21 20:06		07:06 16:51		08:22 16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	666	496	10	343	796	43	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem **WEA:** WEA 15 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (1575)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	284	347	522	506	401	435	783	1.165	1.365	1.337	712	8.253

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:02	06:52 07:15-07:32/17	05:48	05:03	05:00	05:36	06:25 06:53-07:20/27	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50 07:13-07:32/19	05:46	05:02	05:01	05:38	06:27 06:53-07:20/27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48 07:10-07:31/21	05:44	05:01	05:01	05:39	06:29 06:55-07:21/26	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45 07:08-07:31/23	05:42	05:00	05:02	05:41	06:30 06:56-07:23/27	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43 07:06-07:30/24	05:40	05:00	05:03	05:42	06:32 06:58-07:25/27	07:21	07:15	08:04
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:06
6	08:21	07:48	06:52	06:41 07:04-07:30/26	05:38	04:59	05:04	05:44	06:34 06:59-07:25/26	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39 07:01-07:28/27	05:37	04:59	05:05	05:45	06:35 07:01-07:26/25	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36 06:59-07:26/27	05:35	04:58	05:05	05:47	06:37 07:02-07:25/23	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34 06:57-07:23/26	05:33	04:58	05:06	05:48	06:38 07:04-07:25/21	07:27	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:51	19:46	18:36	16:35	16:05
10	08:19	07:41	06:43	06:32 06:55-07:22/27	05:32	04:57	05:07	05:50	06:40 07:06-07:25/19	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30 06:53-07:20/27	05:30	04:57	05:08	05:52	06:42 07:07-07:24/17	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27 06:53-07:18/25	05:28	04:56	05:09	05:53	06:43 07:09-07:23/14	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25 06:53-07:16/23	05:27	04:56	05:11	05:55	06:45 07:10-07:21/11	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34	06:23 06:54-07:11/17	05:25	04:56	05:12	05:56	06:46 07:12-07:20/8	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34 18:37-18:47/10	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21 06:54-07:10/16	05:23	04:56	05:13	05:58	06:48 07:13-07:16/3	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32 18:34-18:48/14	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19 06:55-07:09/14	05:22	04:56	05:14	06:00	06:50 18:33-18:49/16	07:39	07:34	08:16
	16:34	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:29	18:21	16:24	16:05
17	08:14	07:27	06:27	06:16 06:57-07:06/9	05:20	04:56	05:15	06:01	06:51 18:31-18:49/18	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:56	05:16	06:03	06:53 18:31-18:49/18	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22 17:50-17:59/9	06:12	05:18	04:56	05:18	06:04	06:55 18:30-18:48/18	07:45	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20 17:47-18:00/13	06:10	05:16	04:56	05:19	06:06	06:56 18:30-18:48/18	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18 17:46-18:02/16	06:08	05:15	04:56	05:20	06:08	06:58 18:30-18:48/18	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15 17:45-18:02/17	06:06	05:14	04:56	05:22	06:09	06:59 18:30-18:46/16	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13 17:43-18:02/19	06:04	05:12	04:56	05:23	06:11	07:01 18:31-18:45/14	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11 17:43-18:02/19	06:02	05:11	04:56	05:24	06:13	07:03 18:33-18:44/11	07:53	07:48	08:21
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08 17:43-18:02/19	06:00	05:10	04:57	05:26	06:14	07:04 18:35-18:40/5	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06 17:43-18:01/18	05:58	05:09	04:57	05:27	06:16 06:59-07:08/9	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04 17:43-18:00/17	05:56	05:08	04:58	05:29	06:17 06:57-07:10/13	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01 06:24-06:25/1	05:54	05:07	04:58	05:30	06:19 06:55-07:11/16	07:09	07:00	07:54	08:22
	16:55	17:52	18:40 17:45-17:59/14	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59 07:22-07:29/7	05:52	05:06	04:59	05:32	06:21 06:55-07:12/17	07:11	07:02	07:55	08:22
	16:57		19:42 18:45-18:56/11	20:34	21:20	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:59		06:57 07:19-07:30/11	05:50	05:05	04:59	05:33	06:22 06:54-07:16/22	07:12	07:04	07:57	08:22
	16:58		19:44 18:49-18:52/3	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55 07:17-07:31/14		05:04		05:35	06:24 06:53-07:18/25		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	208	368	0	0	0	102	477	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

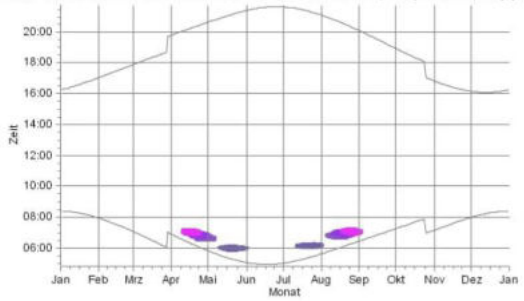
Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
30.01.2024 16:23/3.6.366

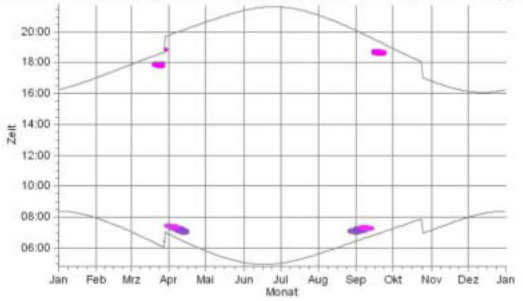
SHADOW - Grafischer Kalender pro WEA

Berechnung: 240130_Schatten_Reinstedt Nord_ZB_pem

WEA 14: VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (1



WEA 15: VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (1575)



Schattenrezeptoren

5.2.3 Gesamtbelastung

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Hauptergebnis

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

Annahmen für Schattenwurfberechnung

Beschattungsbereich der WEA
Schatten nur relevant, wo Rotorblatt mind. 20% der Sonne verdeckt
Siehe WEA-Tabelle

Minimale relevante Sonnenhöhe über Horizont	3 °
Tage zwischen Berechnungen	1 Tag(e)
Berechnungszeitsprung	1 Minuten

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsstunden ermittelt aus WEA in Berechnung und Windverteilung:
231123_WLS630_169m_1y_MCP_EU+_2022 (100)

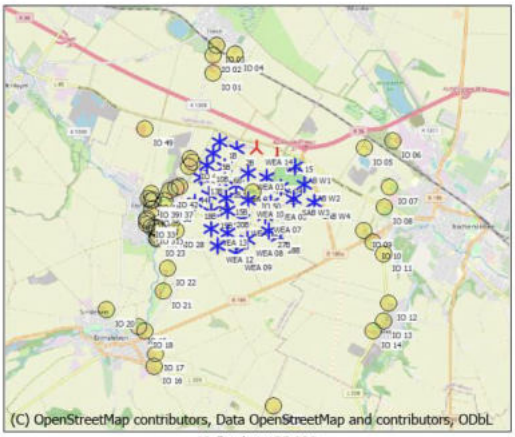
Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Eine WEA wird nicht berücksichtigt, wenn sie von keinem Teil der Rezeptorfläche aus sichtbar ist. Die Sichtbarkeitsberechnung basiert auf den folgenden Annahmen:
Verwendete Höhenlinien: Höhenraster-Objekt
Rasterauflösung: 1,0 m

Alle Koordinatenangaben in:
UTM (north)-ETRS89 Zone: 32



Maßstab 1:125.000
Neue WEA
Existierende WEA
Schattenrezeptor

WEA

	Ost	Nord	Z	Beschreibung	WEA-Typ Aktuell	Hersteller	Typ	Nennleistung	Rotordurchmesser	Nabenhöhe	Schattendaten Beschatt.-Bereich	U/min
			[m]					[kW]	[m]	[m]	[m]	[U/min]
10B	663.925	5.737.920	142,7	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
11B	664.218	5.737.592	143,5	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
13B	663.801	5.737.659	144,0	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
14B	663.990	5.737.275	145,1	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	138,3	1.547	19,5
15B	664.353	5.737.210	144,8	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	138,3	1.547	19,5
18B	663.679	5.737.097	147,8	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	138,3	1.547	19,5
19B	664.036	5.736.897	147,9	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	138,3	1.547	19,5
1B	664.192	5.738.461	139,8	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
20B	664.405	5.736.922	145,7	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	138,3	1.547	19,5
27B	665.341	5.736.504	144,5	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
28B	665.573	5.736.394	144,3	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
29B	664.426	5.736.423	151,0	ENERCON E-70 E4 2000 71.0 !O! N...	Nein	ENERCON	E-70 E4-2.000	2.000	71,0	98,2	1.643	20,0
2B	664.575	5.738.313	140,0	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
5B	664.055	5.738.194	141,0	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
6B	664.317	5.737.897	141,8	NEG MICON NM72-1500C 1500-400...	Nein	NEG MICON	NM72-1500C-1.500/400	1.500	72,0	98,0	2.500	17,3
9B	665.588	5.737.475	141,7	ENERCON E-82 2000 82.0 !O! NH: ...	Nein	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
SAB W1	665.887	5.737.960	139,2	VESTAS V162-5.6MW 5600 162.0 !...	Ja	VESTAS	V162-5.6MW-5.600	5.600	162,0	169,0	2.041	9,3
SAB W2	666.117	5.737.565	141,7	VESTAS V162-5.6MW 5600 162.0 !...	Ja	VESTAS	V162-5.6MW-5.600	5.600	162,0	169,0	2.041	9,3
SAB W3	665.875	5.737.247	142,2	VESTAS V162-5.6MW 5600 162.0 !...	Ja	VESTAS	V162-5.6MW-5.600	5.600	162,0	169,0	2.041	9,3
SAB W4	666.355	5.737.175	143,3	VESTAS V162-5.6MW 5600 162.0 !...	Ja	VESTAS	V162-5.6MW-5.600	5.600	162,0	169,0	2.041	9,3
WEA 02	664.581	5.737.492	142,6	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 03	664.853	5.737.776	141,1	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 04	665.250	5.737.709	141,0	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 06	665.380	5.737.130	142,8	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 07	665.260	5.736.843	143,7	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 08	664.873	5.736.300	149,4	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 09	664.625	5.735.978	156,3	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 10	664.863	5.737.172	143,5	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 11	664.747	5.736.744	145,7	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 12	664.199	5.736.129	157,1	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 13	664.060	5.736.520	152,6	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 14	665.022	5.738.335	138,4	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6
WEA 15	665.473	5.738.197	139,0	VESTAS V162-6.2MW 6200 162.0 !...	Ja	VESTAS	V162-6.2MW-6.200	6.200	162,0	169,0	2.041	9,6

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Hauptergebnis

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

Schattenrezeptor-Eingabe

Nr.	Name	Ost	Nord	Z	Breite	Höhe	Höhe ü.Gr.	Neigung des Fensters	Ausrichtungsmodus	Augenhöhe (ZVI) ü.Gr.
				[m]	[m]	[m]	[m]	[°]		[m]
IO 01	Frose - Reinstedter Str. - Industrie	663.985	5.739.985	131,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 02	Frose - Reinstedter Str. 1	663.975	5.740.369	128,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 03	Frose - Vor dem Bahnhof 274E	664.043	5.740.595	127,1	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 04	Frose - Wohngebiet	664.463	5.740.418	126,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 05	Aschersleben - Außenbereich	667.439	5.738.423	116,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 06	Aschersleben - MAWEA	668.069	5.738.608	109,6	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 07	Aschersleben - Am Hangelsberg	668.027	5.737.557	132,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 08	Aschersleben - Am Chausee 23	667.933	5.737.122	142,7	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 09	Aschersleben - Am Harzblick 49	667.477	5.736.590	147,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 10	Aschersleben - Am Harzblick 45	667.694	5.736.334	147,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 11	Aschersleben - Über der Eine 18A	667.947	5.736.066	147,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 12	Westdorf - Am Landgraben 1A	668.079	5.734.974	149,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 13	Westdorf - Ascherslebener Str. 2A	667.987	5.734.573	149,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 14	Westdorf - Autoverwertung Lorenz	667.759	5.734.343	155,8	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 15	Welbsleben - Außenbereich	665.590	5.732.580	186,5	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 16	Ermsleben - KFZ Werkstatt	662.882	5.733.364	168,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 17	Ermsleben - Neue Str.	662.906	5.733.663	162,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 18	Ermsleben - Am Mittelweg	662.657	5.734.178	161,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 19	Ermsleben - Mühlenstraße	662.513	5.734.267	150,6	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 20	Ermsleben - Radislebener Weg	661.775	5.734.619	162,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 21	Falkenstein - Mühlenstraße	663.024	5.735.076	149,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 22	Strommühle	663.112	5.735.593	147,8	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 23	Reinstedt - Forellenweg 10	662.845	5.736.237	140,6	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 24	Reinstedt - Forellenweg 8	662.851	5.736.271	140,1	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 25	Reinstedt - Forellenweg 6	662.876	5.736.316	140,1	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 26	Reinstedt - Forellenweg 1	662.907	5.736.412	139,5	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 27	Reinstedt - Ermslebener Straße 1	663.139	5.736.445	139,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 28	Reinstedt - Alphabillard	663.274	5.736.434	139,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 29	Reinstedt - Ermslebener Straße 11	662.841	5.736.488	139,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 30	Reinstedt - Ermslebener Straße 8	662.798	5.736.491	138,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 31	Reinstedt - Ermslebener Straße 5B	662.725	5.736.507	138,8	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 32	Reinstedt - Schielestraße 1	662.607	5.736.564	137,8	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 33	Reinstedt - Schielestraße 4a	662.615	5.736.644	137,8	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 34	Reinstedt - Schielestraße 6	662.626	5.736.685	137,6	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 35	Reinstedt - Wiedemann	662.715	5.736.901	137,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 36	Reinstedt - Solarpark	662.972	5.737.006	137,5	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 37	Reinstedt - Fußballplatz	662.994	5.737.096	138,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 38	Reinstedt - Neu-Seeland Agrar	662.740	5.737.113	137,0	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 39	Reinstedt - Unterdorf 66a	662.695	5.737.092	136,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 40	Reinstedt - Schielestraße	662.633	5.737.132	136,5	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 41	Reinstedt - Siedlung 15	662.682	5.737.242	136,7	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 42	Reinstedt - Hotel Harz-Ring	663.093	5.737.326	134,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 43	Reinstedt - Bauschuttrecycling	663.240	5.737.394	137,7	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 44	Reinstedt - Bauschuttrecycling 2	663.322	5.737.428	142,9	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 46	Reinstedt - Solarpark	663.520	5.737.871	143,4	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 47	Reinstedt - Metallbau Klug	663.591	5.737.975	143,2	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 48	Reinstedt - ACZ Transport	663.531	5.738.047	143,1	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 49	Reinstedt - Danpower Energie Service	662.505	5.738.693	139,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0
IO 50	Reinstedt - Mitteldeutsche Baumschulen	664.973	5.737.351	143,3	1,0	1,0	1,0	90,0	"Gewächshaus-Modus"	2,0

Berechnungsergebnisse

Schattenrezeptor

Nr.	Name	astron. max. mögl. Beschattungsdauer Stunden/Jahr [h/a]	Schattentage/Jahr [d/a]	Max.Schattendauer/Tag [h/d]	met. wahrsch. Beschattungsdauer Stunden/Jahr [h/a]
IO 01	Frose - Reinstedter Str. - Industrie	0:00	0	0:00	0:00
IO 02	Frose - Reinstedter Str. 1	0:00	0	0:00	0:00
IO 03	Frose - Vor dem Bahnhof 274E	0:00	0	0:00	0:00
IO 04	Frose - Wohngebiet	0:00	0	0:00	0:00
IO 05	Aschersleben - Außenbereich	56:01	180	0:28	9:10
IO 06	Aschersleben - MAWEA	0:00	0	0:00	0:00
IO 07	Aschersleben - Am Hangelsberg	14:14	53	0:22	3:05
IO 08	Aschersleben - Am Chausee 23	17:46	62	0:24	4:31

(Fortsetzung nächste Seite)...

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Hauptergebnis

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

...(Fortsetzung von vorheriger Seite)

Nr.	Name	astron. max. mögl. Beschattungsdauer Stunden/Jahr [h/a]	Schattentage/Jahr [d/a]	Max.Schattendauer/Tag [h/d]	met. wahrsch. Beschattungsdauer Stunden/Jahr [h/a]
IO 09	Aschersleben - Am Harzblick 49	41:44	94	0:32	10:24
IO 10	Aschersleben - Am Harzblick 45	23:47	76	0:26	5:45
IO 11	Aschersleben - Über der Eine 18A	0:01	1	0:01	0:00
IO 12	Westdorf - Am Landgraben 1A	0:00	0	0:00	0:00
IO 13	Westdorf - Aschersleben Str. 2A	0:00	0	0:00	0:00
IO 14	Westdorf - Autoverwertung Lorenz	0:00	0	0:00	0:00
IO 15	Welbsleben - Außenbereich	0:00	0	0:00	0:00
IO 16	Ermsleben - KFZ Werkstatt	0:00	0	0:00	0:00
IO 17	Ermsleben - Neue Str.	0:00	0	0:00	0:00
IO 18	Ermsleben - Am Mittelweg	0:00	0	0:00	0:00
IO 19	Ermsleben - Mühlenstraße	0:00	0	0:00	0:00
IO 20	Ermsleben - Radislebener Weg	0:00	0	0:00	0:00
IO 21	Falkenstein - Mühlenstraße	20:08	78	0:22	5:22
IO 22	Strommühle	75:29	135	0:49	20:03
IO 23	Reinstedt - Forellenweg 10	56:09	153	0:43	13:53
IO 24	Reinstedt - Forellenweg 8	54:57	146	0:43	13:30
IO 25	Reinstedt - Forellenweg 6	55:53	144	0:44	13:36
IO 26	Reinstedt - Forellenweg 1	74:12	195	0:51	17:51
IO 27	Reinstedt - Ermslebener Straße 1	122:37	225	1:03	30:05
IO 28	Reinstedt - Alphabillard	118:09	203	1:10	29:13
IO 29	Reinstedt - Ermslebener Straße 11	63:23	196	0:49	15:10
IO 30	Reinstedt - Ermslebener Straße 8	49:07	159	0:48	11:15
IO 31	Reinstedt - Ermslebener Straße 5B	49:29	158	0:45	11:24
IO 32	Reinstedt - Schielestraße 1	32:33	126	0:26	7:32
IO 33	Reinstedt - Schielestraße 4a	35:43	148	0:26	8:20
IO 34	Reinstedt - Schielestraße 6	36:17	152	0:27	8:29
IO 35	Reinstedt - Wiedemann	57:22	199	0:43	12:55
IO 36	Reinstedt - Solarpark	111:30	267	1:01	25:07
IO 37	Reinstedt - Fußballplatz	113:09	278	0:56	24:27
IO 38	Reinstedt - Neu-Seeland Agrar	63:26	234	0:33	14:18
IO 39	Reinstedt - Unterdorf 66a	60:01	229	0:32	13:40
IO 40	Reinstedt - Schielestraße	50:27	207	0:29	11:23
IO 41	Reinstedt - Siedlung 15	53:11	211	0:25	11:24
IO 42	Reinstedt - Hotel Harz-Ring	145:50	344	0:42	28:41
IO 43	Reinstedt - Bauschuttrecycling	209:42	353	1:04	40:06
IO 44	Reinstedt - Bauschuttrecycling 2	237:55	350	1:13	45:52
IO 46	Reinstedt - Solarpark	260:43	348	1:31	51:25
IO 47	Reinstedt - Metallbau Klug	281:38	349	1:28	53:12
IO 48	Reinstedt - ACZ Transport	228:20	360	1:10	41:51
IO 49	Reinstedt - Danpower Energie Service	0:35	9	0:06	0:06
IO 50	Reinstedt - Mitteldeutsche Baumschulen	832:48	365	4:43	156:25

Gesamtdauer Beschattung an Rezeptoren pro WEA

Nr.	Name	Maximal [h/a]	Erwartet [h/a]
	10B ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (326)	158:00	38:58
	11B ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (327)	66:50	15:45
	13B ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (328)	202:27	38:39
	14B ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (337)	124:57	24:31
	15B ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (335)	65:23	12:42
	18B ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (336)	141:22	31:30
	19B ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (338)	105:28	24:33
	1B ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (322)	17:46	4:23
	20B ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (339)	57:30	10:49
	27B ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (334)	0:00	0:00
	28B ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (329)	0:00	0:00
	29B ENERCON E-70 E4 2000 71.0 !O! NH: 98,2 m (Ges:133,7 m) (340)	30:00	5:33
	2B ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (323)	28:04	7:35
	5B ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (324)	86:42	23:14
	6B NEG MICON NM72-1500C 1500-400 72.0 !O! NH: 98,0 m (Ges:134,0 m) (333)	43:49	10:31
	9B ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (325)	18:48	5:13
SAB W1	VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (318)	26:21	5:58
SAB W2	VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (319)	45:24	11:12
SAB W3	VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (320)	62:26	14:23

(Fortsetzung nächste Seite)...

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
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DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Hauptergebnis

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

...(Fortsetzung von vorheriger Seite)

Nr.	Name	Maximal [h/a]	Erwartet [h/a]
SAB W4	VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (321)	89:40	18:01
WEA 02	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (972)	177:52	42:06
WEA 03	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (973)	55:05	13:03
WEA 04	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (978)	24:10	5:10
WEA 06	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (982)	104:21	19:54
WEA 07	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (979)	135:24	18:42
WEA 08	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (970)	47:19	9:43
WEA 09	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (971)	99:28	18:53
WEA 10	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (976)	358:58	74:40
WEA 11	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (977)	204:08	31:54
WEA 12	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (968)	202:53	35:35
WEA 13	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (969)	240:45	45:57
WEA 14	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (1574)	39:14	10:50
WEA 15	VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (1575)	19:15	4:32

Summen in Rezeptortabelle und WEA-Tabelle können sich unterscheiden, da eine WEA gleichzeitig an zwei oder mehr Rezeptoren Beschattung verursachen kann und/oder ein Rezeptor gleichzeitig von zwei oder mehr WEA beschattet werden kann.

Die Berechnung der Gesamtsumme für einen Rezeptor arbeitet mit einer gemittelten Richtungskorrektur für alle WEA, die an einem gegebenen Tag zur Beschattung beitragen. Wenn der Schattenwurf durch mehrere WEA an einem Tag nicht gleichzeitig stattfindet, kann die so ermittelte Summe geringfügig von der Summe der Beschattungszeiten abweichen, die für die individuellen WEA berechnet werden.

Projekt:
Reinstedt

Lizenzierter Anwender:
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4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 01 - Frose - Reinstedter Str. - Industrie

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:37	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:43	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:06
6	08:21	07:48	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:49	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:07	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:33	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:42	07:31	07:26	08:11
	16:27	17:21	18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:56	06:47	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:35	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:33	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:34	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:24	16:05
17	08:14	07:27	06:27	06:17	05:20	04:56	05:15	06:01	06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19	04:56	05:16	06:03	06:53	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:11	21:38	21:20	20:26	19:16	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:56	05:24	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:04	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:02	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:19	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	259	278	367	416	485	498	501	453	381	332	267	244
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

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Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 02 - Frose - Reinstedter Str. 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:37	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:43	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:06
6	08:21	07:48	06:52	06:41	05:38	04:59	05:04	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:04	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41	16:38	16:06
8	08:21	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:49	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:07	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:33	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:42	07:31	07:26	08:11
	16:27	17:21	18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:04
13	08:18	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:56	06:47	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:35	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:33	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:34	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:24	16:05
17	08:14	07:27	06:27	06:17	05:20	04:56	05:15	06:01	06:51	07:41	07:36	08:17
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19	04:55	05:16	06:03	06:53	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:37	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:22	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:11	21:38	21:20	20:26	19:16	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:56	05:24	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:04	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:02	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:19	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:09	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	259	278	367	416	485	498	501	453	381	332	267	244
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 03 - Frose - Vor dem Bahnhof 274E

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:14	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:00	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:37	21:02	19:59	18:50	16:45	16:07
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:43	16:07
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	16:21	17:13	18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41	16:38	16:06
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9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:48	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
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12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:33	07:27	08:12
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	16:31	17:26	18:16	20:09	20:59	21:35	21:29	20:42	19:34	18:25	16:27	16:04
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16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:34	17:30	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21	16:24	16:05
17	08:14	07:27	06:27	06:17	05:20	04:55	05:15	06:01	06:51	07:41	07:36	08:17
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	16:38	17:33	18:23	20:16	21:05	21:37	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:55	05:18	06:04	06:55	07:45	07:39	08:18
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20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:22	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:11	21:38	21:20	20:26	19:16	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:56	05:24	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:04	16:15	16:08
25	08:06	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
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27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:02	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:19	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:09	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	259	278	367	416	485	498	501	453	381	332	267	244
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 04 - Frose - Wohngebiet

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:08	07:58
	16:14	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:00	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:37	21:02	19:59	18:50	16:45	16:07
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:03
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:43	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:06
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	16:21	17:13	18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41	16:38	16:06
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11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:42	07:31	07:25	08:11
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	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:04
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26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:02	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:09	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	259	278	367	416	485	498	501	453	381	332	267	244
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 05 - Aschersleben - Außenbereich

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April	Mai	Juni
1	08:22		15:13 (SAB W4)	07:55		16:11 (SAB W3)	07:02			06:52	05:48	05:03
	16:14	18	15:31 (SAB W4)	17:02	17	16:28 (SAB W3)	17:53			19:47	20:37	21:23
2	08:22		15:14 (SAB W4)	07:54		16:10 (SAB W3)	07:00			06:50	05:46	05:02
	16:15	18	15:32 (SAB W4)	17:04	19	16:29 (SAB W3)	17:55			19:49	20:39	21:24
3	08:22		15:14 (SAB W4)	07:52		16:09 (SAB W3)	06:58			06:48	05:44	05:01
	16:17	19	15:33 (SAB W4)	17:06	20	16:29 (SAB W3)	17:57			19:50	20:41	21:25
4	08:22		15:14 (SAB W4)	07:51		16:09 (SAB W3)	06:56		17:20 (SAB W1)	06:45	05:42	05:00
	16:18	19	15:33 (SAB W4)	17:07	20	16:29 (SAB W3)	17:59	7	17:27 (SAB W1)	19:52	20:42	21:26
5	08:21		15:14 (SAB W4)	07:49		16:10 (SAB W3)	06:54		17:17 (SAB W1)	06:43	05:40	05:00
	16:19	20	15:34 (SAB W4)	17:09	20	16:30 (SAB W3)	18:00	13	17:30 (SAB W1)	19:54	20:44	21:27
6	08:21		15:14 (SAB W4)	07:47		16:10 (SAB W3)	06:51		17:14 (SAB W1)	06:41	05:38	04:59
	16:20	20	15:34 (SAB W4)	17:11	24	16:34 (SAB W2)	18:02	17	17:31 (SAB W1)	19:55	20:46	21:28
7	08:21		15:14 (SAB W4)	07:46		16:10 (SAB W3)	06:49		17:13 (SAB W1)	06:38	05:37	04:58
	16:21	22	15:36 (SAB W4)	17:13	27	16:37 (SAB W2)	18:04	19	17:32 (SAB W1)	19:57	20:47	21:29
8	08:20		15:14 (SAB W4)	07:44		16:11 (SAB W3)	06:47		17:12 (SAB W1)	06:36	05:35	04:58
	16:23	22	15:36 (SAB W4)	17:15	28	16:39 (SAB W2)	18:06	21	17:33 (SAB W1)	19:59	20:49	21:30
9	08:20		15:15 (SAB W4)	07:42		16:12 (SAB W3)	06:45		17:12 (SAB W1)	06:34	05:33	04:57
	16:24	22	15:37 (SAB W4)	17:17	28	16:40 (SAB W2)	18:07	22	17:34 (SAB W1)	20:00	20:51	21:31
10	08:19		15:15 (SAB W4)	07:40		16:13 (SAB W3)	06:43		17:10 (SAB W1)	06:32	05:31	04:57
	16:25	23	15:38 (SAB W4)	17:19	28	16:41 (SAB W2)	18:09	23	17:33 (SAB W1)	20:02	20:52	21:32
11	08:19		15:15 (SAB W4)	07:39		16:15 (SAB W3)	06:40		17:10 (SAB W1)	06:30	05:30	04:57
	16:27	23	15:38 (SAB W4)	17:20	26	16:41 (SAB W2)	18:11	23	17:33 (SAB W1)	20:04	20:54	21:32
12	08:18		15:15 (SAB W4)	07:37		16:19 (SAB W2)	06:38		17:10 (SAB W1)	06:27	05:28	04:56
	16:28	23	15:38 (SAB W4)	17:22	23	16:42 (SAB W2)	18:13	23	17:33 (SAB W1)	20:06	20:55	21:33
13	08:17		15:15 (SAB W4)	07:35		16:19 (SAB W2)	06:36		17:10 (SAB W1)	06:25	05:26	04:56
	16:30	24	15:39 (SAB W4)	17:24	24	16:43 (SAB W2)	18:14	22	17:32 (SAB W1)	20:07	20:57	21:34
14	08:17		15:16 (SAB W4)	07:33		16:19 (SAB W2)	06:33		17:10 (SAB W1)	06:23	05:25	04:56
	16:31	24	15:40 (SAB W4)	17:26	24	16:43 (SAB W2)	18:16	21	17:31 (SAB W1)	20:09	20:58	21:34
15	08:16		15:16 (SAB W4)	07:31		16:19 (SAB W2)	06:31		17:11 (SAB W1)	06:21	05:23	04:56
	16:33	24	15:40 (SAB W4)	17:28	24	16:43 (SAB W2)	18:18	19	17:30 (SAB W1)	20:11	21:00	21:35
16	08:15		15:17 (SAB W4)	07:29		16:18 (SAB W2)	06:29		17:13 (SAB W1)	06:19	05:22	04:55
	16:34	24	15:41 (SAB W4)	17:30	24	16:42 (SAB W2)	18:20	16	17:29 (SAB W1)	20:12	21:02	21:35
17	08:14		15:16 (SAB W4)	07:27		16:19 (SAB W2)	06:27		17:14 (SAB W1)	06:16	05:20	04:55
	16:36	24	15:40 (SAB W4)	17:31	23	16:42 (SAB W2)	18:21	12	17:26 (SAB W1)	20:14	21:03	21:36
18	08:13		15:17 (SAB W4)	07:25		16:19 (SAB W2)	06:24		17:17 (SAB W1)	06:14	05:19	04:55
	16:38	23	15:40 (SAB W4)	17:33	22	16:41 (SAB W2)	18:23	6	17:23 (SAB W1)	20:16	21:05	21:36
19	08:12		15:17 (SAB W4)	07:23		16:20 (SAB W2)	06:22		17:50 (WEA 15)	06:12	05:17	04:55
	16:39	24	15:41 (SAB W4)	17:35	21	16:41 (SAB W2)	18:25	9	17:59 (WEA 15)	20:17	21:06	21:37
20	08:11		15:18 (SAB W4)	07:21		16:21 (SAB W2)	06:20		17:47 (WEA 15)	06:10	05:16	04:56
	16:41	23	15:41 (SAB W4)	17:37	19	16:40 (SAB W2)	18:26	13	18:00 (WEA 15)	20:19	21:07	21:37
21	08:10		15:19 (SAB W4)	07:19		16:23 (SAB W2)	06:17		17:46 (WEA 15)	06:08	05:15	04:56
	16:42	22	15:41 (SAB W4)	17:39	15	16:38 (SAB W2)	18:28	16	18:02 (WEA 15)	20:21	21:09	21:37
22	08:09		15:19 (SAB W4)	07:17		16:25 (SAB W2)	06:15		17:45 (WEA 15)	06:06	05:13	04:56
	16:44	21	15:40 (SAB W4)	17:41	11	16:36 (SAB W2)	18:30	17	18:02 (WEA 15)	20:22	21:10	21:37
23	08:08		15:21 (SAB W4)	07:15			06:13		17:43 (WEA 15)	06:04	05:12	04:56
	16:46	19	15:40 (SAB W4)	17:42			18:32	19	18:02 (WEA 15)	20:24	21:12	21:38
24	08:07		15:22 (SAB W4)	07:13			06:11		17:43 (WEA 15)	06:02	05:11	04:56
	16:48	18	15:40 (SAB W4)	17:44			18:33	19	18:02 (WEA 15)	20:26	21:13	21:38
25	08:05		15:23 (SAB W4)	07:11			06:08		17:43 (WEA 15)	06:00	05:10	04:57
	16:49	16	15:39 (SAB W4)	17:46			18:35	19	18:02 (WEA 15)	20:27	21:14	21:38
26	08:04		15:25 (SAB W4)	07:09			06:06		17:43 (WEA 15)	05:58	05:09	04:57
	16:51	13	15:38 (SAB W4)	17:48			18:37	18	18:01 (WEA 15)	20:29	21:16	21:38
27	08:03		15:27 (SAB W4)	07:07			06:04		17:43 (WEA 15)	05:56	05:08	04:58
	16:53	9	15:36 (SAB W4)	17:50			18:38	17	18:00 (WEA 15)	20:31	21:17	21:38
28	08:01		16:14 (SAB W3)	07:05			06:01		17:45 (WEA 15)	05:54	05:06	04:58
	16:55	8	16:22 (SAB W3)	17:51			18:40	14	17:59 (WEA 15)	20:32	21:18	21:38
29	08:00		16:12 (SAB W3)				06:59		18:45 (WEA 15)	05:52	05:05	04:59
	16:56	12	16:24 (SAB W3)				19:42	11	18:56 (WEA 15)	20:34	21:19	21:37
30	07:58		16:11 (SAB W3)				06:57		18:49 (WEA 15)	05:50	05:04	04:59
	16:58	15	16:26 (SAB W3)				19:44	3	18:52 (WEA 15)	20:36	21:21	21:37
31	07:57		16:10 (SAB W3)				06:54				05:04	
	17:00	17	16:27 (SAB W3)				19:45				21:22	
Sonnenscheinstunden	260			278			367			416	484	498
astr.max.mögl.Beschattung		609			487			439				
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27				
Reduktion Betriebsdauer		0,96			0,96			0,96				
Reduktion Windrichtung		0,66			0,70			0,72				
Gesamte Reduktion		0,13			0,21			0,18				
Met.wahrsch.Beschattung		81			102			81				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 05 - Aschersleben - Außenbereich

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September		Oktober		November		Dezember	
1	05:00	05:36	06:25		07:14		17:49 (SAB W1)	07:07	15:42 (SAB W3)	07:58	14:57 (SAB W4)
	21:37	21:05	20:04		18:55	23	18:12 (SAB W1)	16:49 28	16:10 (SAB W2)	16:09 23	15:20 (SAB W4)
2	05:00	05:37	06:27		07:16		17:49 (SAB W1)	07:09	15:41 (SAB W3)	08:00	14:58 (SAB W4)
	21:37	21:04	20:01		18:52	23	18:12 (SAB W1)	16:47 28	16:09 (SAB W2)	16:08 23	15:21 (SAB W4)
3	05:01	05:39	06:29		07:17		17:48 (SAB W1)	07:11	15:40 (SAB W3)	08:01	14:58 (SAB W4)
	21:36	21:02	19:59		18:50	23	18:11 (SAB W1)	16:45 28	16:08 (SAB W2)	16:07 22	15:20 (SAB W4)
4	05:02	05:41	06:30		07:19		17:48 (SAB W1)	07:13	15:40 (SAB W3)	08:02	14:59 (SAB W4)
	21:36	21:00	19:57		18:48	23	18:11 (SAB W1)	16:43 26	16:06 (SAB W2)	16:07 22	15:21 (SAB W4)
5	05:03	05:42	06:32		07:21		17:49 (SAB W1)	07:15	15:40 (SAB W3)	08:04	14:59 (SAB W4)
	21:35	20:59	19:55		18:45	21	18:10 (SAB W1)	16:42 23	16:03 (SAB W2)	16:06 22	15:21 (SAB W4)
6	05:04	05:44	06:33		07:22		17:49 (SAB W1)	07:16	15:40 (SAB W3)	08:05	15:00 (SAB W4)
	21:35	20:57	19:52		18:43	20	18:09 (SAB W1)	16:40 20	16:00 (SAB W3)	16:06 20	15:20 (SAB W4)
7	05:04	05:45	06:35		07:24		17:49 (SAB W1)	07:18	15:40 (SAB W3)	08:06	15:01 (SAB W4)
	21:34	20:55	19:50		18:41	18	18:07 (SAB W1)	16:38 20	16:00 (SAB W3)	16:06 20	15:21 (SAB W4)
8	05:05	05:47	06:37		07:26		17:51 (SAB W1)	07:20	15:40 (SAB W3)	08:07	15:02 (SAB W4)
	21:34	20:53	19:48		18:39	15	18:06 (SAB W1)	16:36 20	16:00 (SAB W3)	16:05 19	15:21 (SAB W4)
9	05:06	05:48	06:38		07:27		17:53 (SAB W1)	07:22	15:41 (SAB W3)	08:09	15:02 (SAB W4)
	21:33	20:51	19:46		18:36	11	18:04 (SAB W1)	16:35 18	15:59 (SAB W3)	16:05 19	15:21 (SAB W4)
10	05:07	05:50	06:40		07:29			07:23	15:41 (SAB W3)	08:10	15:03 (SAB W4)
	21:32	20:50	19:43		18:34			16:33 18	15:59 (SAB W3)	16:05 18	15:21 (SAB W4)
11	05:08	05:52	06:41		07:31			07:25	15:41 (SAB W3)	08:11	15:04 (SAB W4)
	21:31	20:48	19:41		18:32			16:32 17	15:58 (SAB W3)	16:04 17	15:21 (SAB W4)
12	05:09	05:53	06:43		07:32			07:27	15:42 (SAB W3)	08:12	15:04 (SAB W4)
	21:31	20:46	19:39		18:30			16:30 15	15:57 (SAB W3)	16:04 17	15:21 (SAB W4)
13	05:10	05:55	06:45		07:34			07:29	15:44 (SAB W3)	08:13	15:05 (SAB W4)
	21:30	20:44	19:36		18:28			16:29 12	15:56 (SAB W3)	16:04 16	15:21 (SAB W4)
14	05:12	05:56	06:46	18:37 (WEA 15)	07:36			07:31	15:46 (SAB W3)	08:14	15:06 (SAB W4)
	21:29	20:42	19:34 10	18:47 (WEA 15)	18:25			16:27 8	15:54 (SAB W3)	16:04 15	15:21 (SAB W4)
15	05:13	05:58	06:48	18:34 (WEA 15)	07:38			07:32	14:59 (SAB W4)	08:15	15:07 (SAB W4)
	21:28	20:40	19:32 14	18:48 (WEA 15)	18:23			16:26 10	15:09 (SAB W4)	16:04 14	15:21 (SAB W4)
16	05:14	06:00	06:50	18:33 (WEA 15)	07:39			07:34	14:58 (SAB W4)	08:15	15:08 (SAB W4)
	21:27	20:38	19:29 16	18:49 (WEA 15)	18:21			16:24 13	15:11 (SAB W4)	16:05 14	15:22 (SAB W4)
17	05:15	06:01	06:51	18:31 (WEA 15)	07:41			07:36	14:57 (SAB W4)	08:16	15:08 (SAB W4)
	21:26	20:36	19:27 18	18:49 (WEA 15)	18:19			16:23 16	15:13 (SAB W4)	16:05 14	15:22 (SAB W4)
18	05:16	06:03	06:53	18:31 (WEA 15)	07:43			07:37	14:56 (SAB W4)	08:17	15:09 (SAB W4)
	21:25	20:34	19:25 18	18:49 (WEA 15)	18:17			16:22 18	15:14 (SAB W4)	16:05 14	15:23 (SAB W4)
19	05:18	06:04	06:54	18:30 (WEA 15)	07:44		17:00 (SAB W2)	07:39	14:56 (SAB W4)	08:18	15:09 (SAB W4)
	21:24	20:32	19:22 18	18:48 (WEA 15)	18:15	4	17:04 (SAB W2)	16:20 19	15:15 (SAB W4)	16:05 13	15:22 (SAB W4)
20	05:19	06:06	06:56	18:30 (WEA 15)	07:46		16:55 (SAB W2)	07:41	14:54 (SAB W4)	08:18	15:10 (SAB W4)
	21:22	20:30	19:20 18	18:48 (WEA 15)	18:12	12	17:07 (SAB W2)	16:19 21	15:15 (SAB W4)	16:06 13	15:23 (SAB W4)
21	05:20	06:08	06:58	18:30 (WEA 15)	07:48		16:53 (SAB W2)	07:42	14:54 (SAB W4)	08:19	15:10 (SAB W4)
	21:21	20:28	19:18 18	18:48 (WEA 15)	18:10	16	17:09 (SAB W2)	16:18 22	15:16 (SAB W4)	16:06 13	15:23 (SAB W4)
22	05:22	06:09	06:59	18:30 (WEA 15)	07:50		16:51 (SAB W2)	07:44	14:54 (SAB W4)	08:20	15:11 (SAB W4)
	21:20	20:25	19:15 16	18:46 (WEA 15)	18:08	19	17:10 (SAB W2)	16:17 23	15:17 (SAB W4)	16:06 13	15:24 (SAB W4)
23	05:23	06:11	07:01	18:31 (WEA 15)	07:51		16:50 (SAB W2)	07:46	14:55 (SAB W4)	08:20	15:11 (SAB W4)
	21:19	20:23	19:13 14	18:45 (WEA 15)	18:06	21	17:11 (SAB W2)	16:16 23	15:18 (SAB W4)	16:07 13	15:24 (SAB W4)
24	05:24	06:12	07:03	18:33 (WEA 15)	07:53		16:50 (SAB W2)	07:47	14:55 (SAB W4)	08:20	15:12 (SAB W4)
	21:17	20:21	19:11 11	18:44 (WEA 15)	18:04	22	17:12 (SAB W2)	16:15 24	15:19 (SAB W4)	16:08 13	15:25 (SAB W4)
25	05:26	06:14	07:04	18:35 (WEA 15)	06:55		15:49 (SAB W2)	07:49	14:54 (SAB W4)	08:21	15:12 (SAB W4)
	21:16	20:19	19:08 5	18:40 (WEA 15)	17:02	23	16:12 (SAB W2)	16:14 24	15:18 (SAB W4)	16:08 13	15:25 (SAB W4)
26	05:27	06:16	07:06	17:57 (SAB W1)	06:57		15:49 (SAB W2)	07:51	14:55 (SAB W4)	08:21	15:12 (SAB W4)
	21:15	20:17	19:06 11	18:08 (SAB W1)	17:00	24	16:13 (SAB W2)	16:13 24	15:19 (SAB W4)	16:09 14	15:26 (SAB W4)
27	05:29	06:17	07:07	17:54 (SAB W1)	06:59		15:49 (SAB W2)	07:52	14:55 (SAB W4)	08:21	15:13 (SAB W4)
	21:13	20:15	19:04 15	18:09 (SAB W1)	16:58	24	16:13 (SAB W2)	16:12 25	15:20 (SAB W4)	16:10 13	15:26 (SAB W4)
28	05:30	06:19	07:09	17:52 (SAB W1)	07:00		15:48 (SAB W2)	07:54	14:55 (SAB W4)	08:22	15:13 (SAB W4)
	21:12	20:13	19:01 19	18:11 (SAB W1)	16:56	24	16:12 (SAB W2)	16:11 24	15:19 (SAB W4)	16:10 14	15:27 (SAB W4)
29	05:31	06:21	07:11	17:51 (SAB W1)	07:02		15:48 (SAB W2)	07:55	14:56 (SAB W4)	08:22	15:13 (SAB W4)
	21:10	20:10	18:59 21	18:12 (SAB W1)	16:54	24	16:12 (SAB W2)	16:10 24	15:20 (SAB W4)	16:11 15	15:28 (SAB W4)
30	05:33	06:22	07:12	17:50 (SAB W1)	07:04		15:47 (SAB W3)	07:57	14:57 (SAB W4)	08:22	15:13 (SAB W4)
	21:09	20:08	18:57 21	18:11 (SAB W1)	16:52	24	16:11 (SAB W2)	16:09 23	15:20 (SAB W4)	16:12 16	15:29 (SAB W4)
31	05:34	06:24			07:06		15:44 (SAB W3)			08:22	15:13 (SAB W4)
	21:07	20:06			16:51	27	16:11 (SAB W2)			16:13 16	15:29 (SAB W4)
Sonnenscheinstunden	501	453	381		332			267		245	
astr.max.mögl.Beschattung				263		441			614		508
Red.Sonnenscheinwahrsch.				0,34		0,28			0,22		0,18
Reduktion Betriebsdauer				0,96		0,96			0,96		0,96
Reduktion Windrichtung				0,72		0,71			0,67		0,65
Gesamte Reduktion				0,23		0,19			0,14		0,11
Met.wahrsch.Beschattung				61		83			87		55

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 06 - Aschersleben - MAWEA

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:14	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:54	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:00	05:37	06:27	07:16	07:09	08:00
	16:15	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:07
4	08:22	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:07	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:59	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38	04:59	05:03	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:38	05:37	04:58	05:04	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:05
8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:36	16:05
9	08:20	07:42	06:45	06:34	05:33	04:57	05:06	05:48	06:38	07:27	07:22	08:09
	16:24	17:17	18:07	20:00	20:51	21:31	21:33	20:51	19:45	18:36	16:35	16:05
10	08:19	07:40	06:42	06:32	05:31	04:57	05:07	05:50	06:40	07:29	07:23	08:10
	16:25	17:18	18:09	20:02	20:52	21:32	21:32	20:49	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:29	05:30	04:57	05:08	05:52	06:41	07:31	07:25	08:11
	16:27	17:20	18:11	20:04	20:54	21:32	21:31	20:48	19:41	18:32	16:32	16:04
12	08:18	07:37	06:38	06:27	05:28	04:56	05:09	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:04
13	08:17	07:35	06:36	06:25	05:26	04:56	05:10	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:14	20:07	20:57	21:34	21:30	20:44	19:36	18:27	16:29	16:04
14	08:17	07:33	06:33	06:23	05:25	04:56	05:12	05:56	06:46	07:36	07:30	08:14
	16:31	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:04
16	08:15	07:29	06:29	06:18	05:22	04:55	05:14	05:59	06:50	07:39	07:34	08:15
	16:34	17:30	18:20	20:12	21:01	21:35	21:27	20:38	19:29	18:21	16:24	16:04
17	08:14	07:27	06:27	06:16	05:20	04:55	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:31	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:55	05:16	06:03	06:53	07:43	07:37	08:17
	16:37	17:33	18:23	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:17	04:55	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:20	16:05
20	08:11	07:21	06:20	06:10	05:16	04:55	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37	21:22	20:30	19:20	18:12	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
	16:42	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:13	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:25	19:15	18:08	16:17	16:06
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:12	21:37	21:19	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11	04:56	05:24	06:12	07:02	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	21:38	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:57	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:55	05:07	04:57	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:53	05:06	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:51	18:40	20:32	21:18	21:38	21:12	20:13	19:01	16:56	16:11	16:10
29	08:00		06:59	05:51	05:05	04:58	05:31	06:20	07:11	07:02	07:55	08:22
	16:56		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:04	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:21	21:37	21:09	20:08	18:57	16:52	16:09	16:12
31	07:57		06:54		05:04		05:34	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 07 - Aschersleben - Am Hangelsberg

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52 19:03 (SAB W2)	05:48	05:03	05:00	05:36	06:25	07:14 18:04 (SAB W4)	07:07	07:58
	16:14	17:02	17:53	19:47 18 19:21 (SAB W2)	20:37	21:23	21:37	21:05	20:04	18:55 20 18:24 (SAB W4)	16:49	16:09
2	08:22	07:54	07:00	06:50 19:02 (SAB W2)	05:46	05:02	05:00	05:37	06:27	07:16 18:05 (SAB W4)	07:09	07:59
	16:15	17:04	17:55	19:49 19 19:21 (SAB W2)	20:39	21:24	21:37	21:04	20:01	18:52 18 18:23 (SAB W4)	16:47	16:08
3	08:22	07:52	06:58	06:48 19:01 (SAB W2)	05:44	05:01	05:01	05:39	06:29 19:02 (SAB W2)	07:17 18:05 (SAB W4)	07:11	08:01
	16:17	17:06	17:57	19:50 20 19:21 (SAB W2)	20:41	21:25	21:36	21:02	19:59 10 19:12 (SAB W2)	18:50 16 18:21 (SAB W4)	16:45	16:07
4	08:22	07:51	06:56	06:45 19:01 (SAB W2)	05:42	05:00	05:02	05:41	06:30 19:00 (SAB W2)	07:19 18:07 (SAB W4)	07:13	08:02
	16:18	17:07	17:59	19:52 20 19:21 (SAB W2)	20:42	21:26	21:36	21:00	19:57 14 19:14 (SAB W2)	18:48 12 18:19 (SAB W4)	16:43	16:07
5	08:21	07:49	06:54	06:43 19:01 (SAB W2)	05:40	05:00	05:03	05:42	06:32 18:59 (SAB W2)	07:21 18:11 (SAB W4)	07:15	08:04
	16:19	17:09	18:00	19:54 19 19:20 (SAB W2)	20:44	21:27	21:35	20:59	19:55 16 19:15 (SAB W2)	18:45 4 18:15 (SAB W4)	16:42	16:06
6	08:21	07:47	06:51	06:41 19:01 (SAB W2)	05:38	04:59	05:04	05:44	06:33 18:57 (SAB W2)	07:22	07:16	08:05
	16:20	17:11	18:02	19:55 18 19:19 (SAB W2)	20:46	21:28	21:35	20:57	19:52 18 19:15 (SAB W2)	18:43	16:40	16:06
7	08:21	07:46	06:49	06:38 19:02 (SAB W2)	05:37	04:58	05:04	05:45	06:35 18:57 (SAB W2)	07:24	07:18	08:06
	16:21	17:13	18:04	19:57 16 19:18 (SAB W2)	20:47	21:29	21:34	20:55	19:50 19 19:16 (SAB W2)	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36 19:03 (SAB W2)	05:35	04:58	05:05	05:47	06:37 18:55 (SAB W2)	07:26	07:20	08:07
	16:23	17:15	18:06	19:59 14 19:17 (SAB W2)	20:49	21:30	21:34	20:53	19:48 20 19:15 (SAB W2)	18:39	16:36	16:05
9	08:20	07:42	06:45 17:32 (SAB W4)	06:34 19:05 (SAB W2)	05:33	04:57	05:06	05:48	06:38 18:55 (SAB W2)	07:27	07:22	08:08
	16:24	17:17	18:07 9 17:41 (SAB W4)	20:00 10 19:15 (SAB W2)	20:51	21:31	21:33	20:51	19:45 20 19:15 (SAB W2)	18:36	16:35	16:05
10	08:19	07:40	06:42 17:28 (SAB W4)	06:32	05:31	04:57	05:07	05:50	06:40 18:55 (SAB W2)	07:29	07:23	08:10
	16:25	17:19	18:09 14 17:42 (SAB W4)	20:02	20:52	21:31	21:32	20:49	19:43 19 19:14 (SAB W2)	18:34	16:33	16:05
11	08:19	07:39	06:40 17:27 (SAB W4)	06:29	05:30	04:57	05:08	05:52	06:41 18:55 (SAB W2)	07:31	07:25	08:11
	16:27	17:20	18:11 17 17:44 (SAB W4)	20:04	20:54	21:32	21:31	20:48	19:41 19 19:14 (SAB W2)	18:32	16:32	16:05
12	08:18	07:37	06:38 17:26 (SAB W4)	06:27	05:28	04:56	05:09	05:53	06:43 18:55 (SAB W2)	07:32	07:27	08:12
	16:28	17:22	18:13 19 17:45 (SAB W4)	20:05	20:55	21:33	21:31	20:46	19:39 16 19:11 (SAB W2)	18:30	16:30	16:04
13	08:17	07:35	06:36 17:24 (SAB W4)	06:25	05:26	04:56	05:10	05:55	06:45 18:56 (SAB W2)	07:34	07:29	08:13
	16:30	17:24	18:14 21 17:45 (SAB W4)	20:07	20:57	21:34	21:30	20:44	19:36 13 19:09 (SAB W2)	18:27	16:29	16:04
14	08:16	07:33	06:33 17:24 (SAB W4)	06:23	05:25	04:56	05:12	05:56	06:46 18:58 (SAB W2)	07:36	07:30	08:14
	16:31	17:26	18:16 21 17:45 (SAB W4)	20:09	20:58	21:34	21:29	20:42	19:34 10 19:08 (SAB W2)	18:25	16:27	16:04
15	08:16	07:31	06:31 17:24 (SAB W4)	06:21	05:23	04:56	05:13	05:58	06:48 19:02 (SAB W2)	07:38	07:32	08:15
	16:33	17:28	18:18 21 17:45 (SAB W4)	20:11	21:00	21:35	21:28	20:40	19:32 2 19:04 (SAB W2)	18:23	16:26	16:04
16	08:15	07:29	06:29 17:23 (SAB W4)	06:19	05:22	04:55	05:14	06:00	06:50	07:39	07:34	08:15
	16:34	17:30	18:20 21 17:44 (SAB W4)	20:12	21:01	21:35	21:27	20:38	19:29	18:21	16:24	16:05
17	08:14	07:27	06:27 17:23 (SAB W4)	06:16	05:20	04:55	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:31	18:21 21 17:44 (SAB W4)	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	06:13	07:25	06:24 17:24 (SAB W4)	06:14	05:19	04:55	05:16	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23 19 17:43 (SAB W4)	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22 17:25 (SAB W4)	06:12	05:17	04:55	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25 18 17:43 (SAB W4)	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:20	16:05
20	08:11	07:21	06:20 17:25 (SAB W4)	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26 15 17:40 (SAB W4)	20:19	21:07	21:37	21:22	20:30	19:20	18:12	16:19	16:06
21	08:10	07:19	06:17 17:27 (SAB W4)	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
	16:42	17:39	18:28 11 17:38 (SAB W4)	20:21	21:09	21:37	21:21	20:28	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15 17:31 (SAB W4)	06:06	05:13	04:56	05:22	06:09	06:59 18:12 (SAB W4)	07:50	07:44	08:19
	16:44	17:41	18:30 3 17:34 (SAB W4)	20:22	21:10	21:37	21:20	20:25	19:15 10 18:22 (SAB W4)	18:08	16:17	16:06
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01 18:10 (SAB W4)	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:12	21:37	21:19	20:23	19:13 14 18:24 (SAB W4)	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11	04:56	05:24	06:12	07:02 18:08 (SAB W4)	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11 17 18:25 (SAB W4)	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04 18:07 (SAB W4)	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	21:38	21:16	20:19	19:08 19 18:26 (SAB W4)	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06 18:06 (SAB W4)	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:14	20:17	19:06 20 18:26 (SAB W4)	17:00	16:13	16:09
27	08:03	07:07	06:04	05:55	05:08	04:58	05:29	06:17	07:07 18:05 (SAB W4)	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:38	21:13	20:15	19:04 21 18:26 (SAB W4)	16:58	16:12	16:10
28	08:01	07:04	06:01	05:54	05:06	04:58	05:30	06:19	07:09 18:04 (SAB W4)	07:00	07:54	08:22
	16:55	17:51	18:40	20:32	21:18	21:37	21:12	20:12	19:01 22 18:26 (SAB W4)	16:56	16:11	16:10
29	08:00		06:59 19:07 (SAB W2)	05:52	05:05	04:59	05:31	06:20	07:11 18:04 (SAB W4)	07:02	07:55	08:22
	16:56		19:42 9 19:16 (SAB W2)	20:34	21:19	21:37	21:10	20:10	18:59 22 18:26 (SAB W4)	16:54	16:10	16:11
30	07:58		06:57 19:05 (SAB W2)	05:50	05:04	04:59	05:33	06:22	07:12 18:04 (SAB W4)	07:04	07:57	08:22
	16:58		19:43 13 19:18 (SAB W2)	20:36	21:21	21:37	21:08	20:08	18:57 21 18:25 (SAB W4)	16:52	16:09	16:12
31	07:57		06:54 19:04 (SAB W2)		05:04		05:34	06:24		07:06		08:22
	17:00		19:45 16 19:20 (SAB W2)		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung			268	154					362	70		
Red.Sonnenscheinwahrsch.			0,27	0,36					0,34	0,28		
Reduktion Betriebsdauer			0,96	0,96					0,96	0,96		
Reduktion Windrichtung			0,72	0,72					0,72	0,72		
Gesamte Reduktion			0,18	0,25					0,23	0,19		
Met.wahrsch.Beschattung			49	38					85	14		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 08 - Aschersleben - Am Chausee 23

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	19:10 (SAB W4)	05:48	19:39 (SAB W2)	05:03	05:00	05:36	06:25	19:00 (SAB W4)	07:14	07:07	07:58
	16:14	17:02	17:53	19:47 11	19:21 (SAB W4)	20:37 17	19:56 (SAB W2)	21:23	21:37	21:05	20:04 22	19:22 (SAB W4)	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	19:07 (SAB W4)	05:46	19:40 (SAB W2)	05:02	05:00	05:38	06:27	19:00 (SAB W4)	07:16	07:09	07:59
	16:15	17:04	17:55	19:49 15	19:22 (SAB W4)	20:39 15	19:55 (SAB W2)	21:24	21:37	21:04	20:01 22	19:22 (SAB W4)	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	19:05 (SAB W4)	05:44	19:41 (SAB W2)	05:01	05:01	05:39	06:29	18:58 (SAB W4)	07:17	07:11	08:01
	16:17	17:06	17:57	19:50 19	19:24 (SAB W4)	20:41 12	19:53 (SAB W2)	21:25	21:36	21:02	19:59 24	19:22 (SAB W4)	18:50	16:45	16:07
4	08:21	07:51	06:56	06:45	19:04 (SAB W4)	05:42	19:44 (SAB W2)	05:00	05:02	05:41	06:30	18:58 (SAB W4)	07:19	07:13	08:02
	16:18	17:07	17:59	19:52 21	19:25 (SAB W4)	20:42 7	19:51 (SAB W2)	21:26	21:36	21:00	19:57 24	19:22 (SAB W4)	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	19:03 (SAB W4)	05:40		05:00	05:03	05:42	06:32	18:58 (SAB W4)	07:21	07:15	08:04
	16:19	17:09	18:00	19:54 22	19:25 (SAB W4)	20:44		21:27	21:35	20:59	19:55 24	19:22 (SAB W4)	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	19:02 (SAB W4)	05:38		04:59	05:04	05:44	06:33	18:58 (SAB W4)	07:22	07:16	08:05
	16:20	17:11	18:02	19:55 23	19:25 (SAB W4)	20:46		21:28	21:35	20:57	19:52 23	19:21 (SAB W4)	18:43	16:40	16:06
7	08:21	07:46	06:49	06:38	19:01 (SAB W4)	05:37		04:58	05:04	05:45	06:35	18:58 (SAB W4)	07:24	07:18	08:06
	16:21	17:13	18:04	19:57 24	19:25 (SAB W4)	20:47		21:29	21:34	20:55	19:50 22	19:20 (SAB W4)	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	19:01 (SAB W4)	05:35		04:58	05:05	05:47	06:37	18:58 (SAB W4)	07:26	07:20	08:07
	16:23	17:15	18:06	19:59 24	19:25 (SAB W4)	20:49		21:30	21:34	20:53	19:48 21	19:19 (SAB W4)	18:39	16:36	16:05
9	08:20	07:42	06:45	06:34	19:01 (SAB W4)	05:33		04:57	05:06	05:48 19:52 (SAB W2)	06:38	18:59 (SAB W4)	07:27	07:22	08:08
	16:24	17:17	18:07	20:00 24	19:25 (SAB W4)	20:51		21:31	21:33	20:51 9 20:01 (SAB W2)	19:45 19	19:18 (SAB W4)	18:36	16:35	16:05
10	08:19	07:40	06:42	06:32	19:01 (SAB W4)	05:31		04:57	05:07	05:50 19:50 (SAB W2)	06:40	19:00 (SAB W4)	07:29	07:23	08:10
	16:25	17:19	18:09	20:02 22	19:23 (SAB W4)	20:52		21:31	21:32	20:49 13 20:03 (SAB W2)	19:43 16	19:16 (SAB W4)	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	19:01 (SAB W4)	05:30		04:57	05:08	05:52 19:48 (SAB W2)	06:41	19:02 (SAB W4)	07:31	07:25	08:11
	16:27	17:20	18:11	20:04 22	19:23 (SAB W4)	20:54		21:32	21:31	20:48 16 20:04 (SAB W2)	19:41 12	19:14 (SAB W4)	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	19:02 (SAB W4)	05:28		04:56	05:09	05:53 19:48 (SAB W2)	06:43	19:06 (SAB W4)	07:32	07:27	08:12
	16:28	17:22	18:13	20:05 20	19:22 (SAB W4)	20:55		21:33	21:31	20:46 17 20:05 (SAB W2)	19:39 2	19:08 (SAB W4)	18:30	16:30	16:04
13	08:17	07:35	06:36	06:25	19:03 (SAB W4)	05:26		04:56	05:10	05:55 19:46 (SAB W2)	06:45		07:34	07:29	08:13
	16:30	17:24	18:14	20:07 18	19:21 (SAB W4)	20:57		21:34	21:30	20:44 19 20:05 (SAB W2)	19:36		18:27	16:29	16:04
14	08:16	07:33	06:33	06:23	19:04 (SAB W4)	05:25		04:56	05:12	05:56 19:46 (SAB W2)	06:46		07:36	07:30	08:14
	16:31	17:26	18:16	20:09 15	19:19 (SAB W4)	20:58		21:34	21:29	20:42 20 20:06 (SAB W2)	19:34		18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	19:06 (SAB W4)	05:23		04:56	05:13	05:58 19:45 (SAB W2)	06:48		07:38	07:32	08:15
	16:33	17:28	18:18	20:11 11	19:17 (SAB W4)	21:00		21:35	21:28	20:40 20 20:05 (SAB W2)	19:32		18:23	16:26	16:04
16	08:15	07:29	06:29	06:19		05:22		04:56	05:14	06:00 19:45 (SAB W2)	06:50		07:39	07:34	08:15
	16:34	17:30	18:20	20:12		21:01		21:35	21:27	20:38 21 20:06 (SAB W2)	19:29		18:21	16:24	16:05
17	08:14	07:27	06:27	06:16		05:20		04:55	05:15	06:01 19:45 (SAB W2)	06:51		07:41	07:36	08:16
	16:36	17:31	18:21	20:14		21:03		21:36	21:26	20:36 20 20:05 (SAB W2)	19:27		18:19	16:23	16:05
18	06:13	07:25	06:24	06:14		05:19		04:55	05:16	06:03 19:45 (SAB W2)	06:53		07:43	07:37	08:17
	16:38	17:33	18:23	20:16		21:04		21:36	21:25	20:34 20 20:05 (SAB W2)	19:25		18:17	16:22	16:05
19	08:12	07:23	06:22	06:12 19:48 (SAB W2)		05:17		04:55	05:18	06:04 19:45 (SAB W2)	06:54		07:44	07:39	08:18
	16:39	17:35	18:25	20:17 2 19:50 (SAB W2)		21:06		21:36	21:24	20:32 18 20:03 (SAB W2)	19:22		18:15	16:20	16:05
20	08:11	07:21	06:20	06:10 19:44 (SAB W2)		05:16		04:56	05:19	06:06 19:45 (SAB W2)	06:56		07:46	07:41	08:18
	16:41	17:37	18:26	20:19 8 19:52 (SAB W2)		21:07		21:37	21:22	20:30 17 20:02 (SAB W2)	19:20		18:12	16:19	16:06
21	08:10	07:19	06:17	06:08 19:42 (SAB W2)		05:15		04:56	05:20	06:08 19:46 (SAB W2)	06:58		07:48	07:42	08:19
	16:43	17:39	18:28	20:21 11 19:53 (SAB W2)		21:09		21:37	21:21	20:28 13 19:59 (SAB W2)	19:18		18:10	16:18	16:06
22	08:09	07:17	06:15	06:06 19:41 (SAB W2)		05:13		04:56	05:22	06:09 19:47 (SAB W2)	06:59		07:50	07:44	08:19
	16:44	17:41	18:30	20:22 14 19:55 (SAB W2)		21:10		21:37	21:20	20:25 11 19:58 (SAB W2)	19:15		18:08	16:17	16:07
23	08:08	07:15	06:13	06:04 19:40 (SAB W2)		05:12		04:56	05:23	06:11 19:49 (SAB W2)	07:01		07:51	07:46	08:20
	16:46	17:42	18:32	20:24 17 19:57 (SAB W2)		21:12		21:37	21:19	20:23 7 19:56 (SAB W2)	19:13		18:06	16:16	16:07
24	08:06	07:13	06:10	06:02 19:39 (SAB W2)		05:11		04:56	05:24	06:12	07:02		07:53	07:47	08:20
	16:48	17:44	18:33	20:26 19 19:58 (SAB W2)		21:13		21:38	21:17	20:21	19:11		18:04	16:15	16:08
25	08:05	07:11	06:08	06:00 19:38 (SAB W2)		05:10		04:57	05:26	06:14	07:04		06:55	07:49	08:21
	16:49	17:46	18:35	20:27 20 19:58 (SAB W2)		21:14		21:38	21:16	20:19	19:08		17:02	16:14	16:08
26	08:04	07:09	06:06	05:58 19:38 (SAB W2)		05:09		04:57	05:27	06:16	07:06		06:57	07:51	08:21
	16:51	17:48	18:37	20:29 20 19:58 (SAB W2)		21:16		21:38	21:14	20:17	19:06		17:00	16:13	16:09
27	08:03	07:07	06:04	05:56 19:38 (SAB W2)		05:08		04:58	05:29	06:17	07:07		06:58	07:52	08:21
	16:53	17:50	18:38	20:31 20 19:58 (SAB W2)		21:17		21:38	21:13	20:15	19:04		16:58	16:12	16:10
28	08:01	07:04	06:01	05:54 19:38 (SAB W2)		05:06		04:58	05:30	06:19 19:07 (SAB W4)	07:09		07:00	07:54	08:22
	16:55	17:51	18:40	20:32 20 19:58 (SAB W2)		21:18		21:37	21:12	20:12 11 19:18 (SAB W4)	19:01		16:56	16:11	16:10
29	08:00		06:59	05:52 19:39 (SAB W2)		05:05		04:59	05:32	06:21 19:05 (SAB W4)	07:11		07:02	07:55	08:22
	16:57		19:42	20:34 19 19:58 (SAB W2)		21:19		21:37	21:10	20:10 15 19:20 (SAB W4)	18:59		16:54	16:10	16:11
30	07:58		06:57	05:50 19:39 (SAB W2)		05:05		04:59	05:33	06:22 19:03 (SAB W4)	07:12		07:04	07:57	08:22
	16:58		19:43	20:36 18 19:57 (SAB W2)		21:21		21:37	21:08	20:08 18 19:21 (SAB W4)	18:57		16:52	16:09	16:12
31	07:57		06:54			05:04			05:34	06:24 19:02 (SAB W4)			07:06		08:22
	17:00		19:45			21:22			21:07	20:06 20 19:22 (SAB W4)			16:51		16:13
Sonnenscheinstunden	260	278	367	416		484		498	501	453	381		332	267	245
astr.max.mögl.Beschattung					51					305		231			
Red.Sonnenscheinwahrsch.				479	0,43					0,43		0,34			
Reduktion Betriebsdauer				0,36	0,96					0,96		0,96			
Reduktion Windrichtung				0,96	0,69					0,69		0,72			
Gesamte Reduktion				0,71	0,28					0,29		0,23			
Met.wahrsch.Beschattung				0,24	14					87		54			
				116											

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 09 - Aschersleben - Am Harzblick 49

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai			Juni			Juli			August			September		Oktober		November	Dezember
1	08:22		07:55		07:02		06:52		05:48			05:03		20:14 (SAB W4)	05:00		20:18 (SAB W4)	05:36		20:15 (SAB W3)	06:25		07:14		07:07	07:58
	16:14		17:02		17:53		19:47		20:37			21:23	29	20:43 (SAB W4)	21:37	32	20:50 (SAB W4)	21:05	21	20:36 (SAB W3)	20:04		18:55		16:49	16:09
2	08:22		07:54		07:00		06:50		05:46			05:02		20:14 (SAB W4)	05:01		20:19 (SAB W4)	05:38		20:15 (SAB W3)	06:27		07:16		07:09	07:59
	16:16		17:04		17:55		19:49		20:39			21:24	29	20:43 (SAB W4)	21:37	31	20:50 (SAB W4)	21:04	19	20:34 (SAB W3)	20:01		18:52		16:47	16:08
3	08:22		07:52		06:58		06:48		05:44			05:01		20:14 (SAB W4)	05:01		20:20 (SAB W4)	05:39		20:16 (SAB W3)	06:29		07:17		07:11	08:01
	16:17		17:06		17:57		19:50		20:41			21:25	30	20:44 (SAB W4)	21:36	31	20:51 (SAB W4)	21:02	17	20:33 (SAB W3)	19:59		18:50		16:45	16:07
4	08:21		07:51		06:56		06:45		05:42			05:00		20:14 (SAB W4)	05:02		20:19 (SAB W4)	05:41		20:16 (SAB W3)	06:30		07:19		07:13	08:02
	16:18		17:07		17:59		19:52		20:42			21:26	30	20:44 (SAB W4)	21:36	31	20:50 (SAB W4)	21:00	15	20:31 (SAB W3)	19:57		18:48		16:43	16:07
5	08:21		07:49		06:54		06:43		05:40			05:00		20:14 (SAB W4)	05:03		20:20 (SAB W4)	05:42		20:17 (SAB W3)	06:32		07:21		07:15	08:04
	16:19		17:09		18:00		19:54		20:44			21:27	31	20:45 (SAB W4)	21:35	31	20:51 (SAB W4)	20:59	12	20:29 (SAB W3)	19:55		18:45		16:42	16:06
6	08:21		07:47		06:51		06:41		05:38		20:10 (SAB W3)	04:59		20:14 (SAB W4)	05:04		20:20 (SAB W4)	05:44		20:19 (SAB W3)	06:33		07:22		07:16	08:05
	16:20		17:11		18:02		19:55		20:46	7	20:17 (SAB W3)	21:28	30	20:44 (SAB W4)	21:35	31	20:51 (SAB W4)	20:57	9	20:28 (SAB W3)	19:52		18:43		16:40	16:06
7	08:21		07:46		06:49		06:39		05:37		20:09 (SAB W3)	04:59		20:14 (SAB W4)	05:04		20:21 (SAB W4)	05:45		20:21 (SAB W3)	06:35		07:24		07:18	08:06
	16:21		17:13		18:04		19:57		20:47	10	20:19 (SAB W3)	21:29	31	20:45 (SAB W4)	21:34	30	20:51 (SAB W4)	20:55	4	20:25 (SAB W3)	19:50		18:41		16:38	16:06
8	08:20		07:44		06:47		06:36		05:35		20:07 (SAB W3)	04:58		20:14 (SAB W4)	05:05		20:21 (SAB W4)	05:47			06:37		07:26		07:20	08:07
	16:23		17:15		18:06		19:59		20:49	13	20:28 (SAB W3)	21:30	31	20:45 (SAB W4)	21:34	30	20:51 (SAB W4)	20:53			19:48		18:39		16:37	16:05
9	08:20		07:42		06:45		06:34		05:33		20:05 (SAB W3)	04:58		20:14 (SAB W4)	05:06		20:22 (SAB W4)	05:48			06:38		07:27		07:22	08:08
	16:24		17:17		18:07		20:00		20:51	16	20:21 (SAB W3)	21:31	32	20:46 (SAB W4)	21:33	29	20:51 (SAB W4)	20:51			19:45		18:36		16:35	16:05
10	08:19		07:40		06:42		06:32		05:31		20:05 (SAB W3)	04:57		20:15 (SAB W4)	05:07		20:22 (SAB W4)	05:50			06:40		07:29		07:23	08:10
	16:25		17:19		18:09		20:02		20:52	18	20:23 (SAB W3)	21:31	31	20:46 (SAB W4)	21:32	29	20:51 (SAB W4)	20:49			19:43		18:34		16:33	16:05
11	08:19		07:39		06:40		06:30		05:30		20:04 (SAB W3)	04:57		20:14 (SAB W4)	05:08		20:22 (SAB W4)	05:52			06:42		07:31		07:25	08:11
	16:27		17:20		18:11		20:04		20:54	20	20:24 (SAB W3)	21:32	32	20:46 (SAB W4)	21:31	29	20:51 (SAB W4)	20:48			19:41		18:32		16:32	16:05
12	08:18		07:37		06:38		06:27		05:28		20:04 (SAB W3)	04:56		20:15 (SAB W4)	05:09		20:23 (SAB W4)	05:53			06:43		07:32		07:27	08:12
	16:28		17:22		18:13		20:05		20:55	21	20:25 (SAB W3)	21:33	31	20:46 (SAB W4)	21:31	28	20:51 (SAB W4)	20:46			19:39		18:30		16:30	16:04
13	08:17		07:35		06:36		06:25		05:27		20:03 (SAB W3)	04:56		20:15 (SAB W4)	05:11		20:23 (SAB W4)	05:55			06:45		07:34		07:29	08:13
	16:30		17:24		18:14		20:07		20:57	22	20:25 (SAB W3)	21:34	32	20:47 (SAB W4)	21:30	28	20:51 (SAB W4)	20:44			19:36		18:28		16:29	16:04
14	08:16		07:33		06:33		06:23		05:25		20:03 (SAB W3)	04:56		20:15 (SAB W4)	05:12		20:24 (SAB W3)	05:56			06:46		07:36		07:30	08:14
	16:31		17:26		18:16		20:09		20:58	23	20:26 (SAB W3)	21:34	32	20:47 (SAB W4)	21:29	26	20:50 (SAB W4)	20:42			19:34		18:25		16:27	16:04
15	08:16		07:31		06:31		06:21		05:23		20:03 (SAB W3)	04:56		20:16 (SAB W4)	05:13		20:20 (SAB W3)	05:58			06:48		07:38		07:32	08:15
	16:33		17:28		18:18		20:11		21:00	22	20:25 (SAB W3)	21:35	31	20:47 (SAB W4)	21:28	30	20:50 (SAB W4)	20:40			19:32		18:23		16:26	16:04
16	08:15		07:29		06:29		06:19		05:22		20:03 (SAB W3)	04:56		20:16 (SAB W4)	05:14		20:19 (SAB W3)	06:00			06:50		07:39		07:34	08:15
	16:34		17:30		18:20		20:12		21:01	23	20:26 (SAB W3)	21:35	32	20:48 (SAB W4)	21:27	30	20:49 (SAB W4)	20:38			19:29		18:21		16:24	16:05
17	08:14		07:27		06:27		06:16		05:20		20:03 (SAB W3)	04:56		20:16 (SAB W4)	05:15		20:18 (SAB W3)	06:01			06:51		07:41		07:36	08:16
	16:36		17:32		18:21		20:14		21:03	23	20:26 (SAB W3)	21:36	32	20:48 (SAB W4)	21:26	31	20:49 (SAB W4)	20:36			19:27		18:19		16:23	16:05
18	08:13		07:25		06:24		06:14		05:19		20:03 (SAB W3)	04:55		20:16 (SAB W4)	05:16		20:17 (SAB W3)	06:03			06:53		07:43		07:37	08:17
	16:38		17:33		18:23		20:16		21:04	22	20:25 (SAB W3)	21:36	32	20:48 (SAB W4)	21:25	31	20:48 (SAB W4)	20:34			19:25		18:17		16:22	16:05
19	08:12		07:23		06:22		06:12		05:18		20:03 (SAB W3)	04:56		20:16 (SAB W4)	05:18		20:16 (SAB W3)	06:04			06:54		07:44		07:39	08:18
	16:39		17:35		18:25		20:17		21:06	22	20:25 (SAB W3)	21:36	32	20:48 (SAB W4)	21:24	31	20:47 (SAB W4)	20:32			19:22		18:15		16:20	16:05
20	08:11		07:21		06:20		06:10		05:16		20:04 (SAB W3)	04:56		20:16 (SAB W4)	05:19		20:16 (SAB W3)	06:06			06:56		07:46		07:41	08:18
	16:41		17:37		18:26		20:19		21:07	21	20:25 (SAB W3)	21:37	32	20:48 (SAB W4)	21:22	31	20:47 (SAB W4)	20:30			19:20		18:13		16:19	16:06
21	08:10		07:19		06:17		06:08		05:15		20:05 (SAB W3)	04:56		20:16 (SAB W4)	05:20		20:15 (SAB W3)	06:08			06:58		07:48		07:42	08:19
	16:43		17:39		18:28		20:21		21:09	27	20:32 (SAB W4)	21:37	32	20:48 (SAB W4)	21:21	30	20:45 (SAB W4)	20:28			19:18		18:10		16:18	16:06
22	08:09		07:17		06:15		06:06		05:13		20:04 (SAB W3)	04:56		20:16 (SAB W4)	05:22		20:15 (SAB W3)	06:09			06:59		07:50		07:44	08:19
	16:44		17:41		18:30		20:22		21:10	29	20:33 (SAB W4)	21:37	32	20:48 (SAB W4)	21:20	28	20:43 (SAB W4)	20:25			19:15		18:08		16:17	16:07
23	08:08		07:15		06:13		06:04		05:12		20:05 (SAB W3)	04:56		20:17 (SAB W4)	05:23		20:14 (SAB W3)	06:11			07:01		07:51		07:46	08:20
	16:46		17:42		18:32		20:24		21:12	30	20:35 (SAB W4)	21:37	32	20:49 (SAB W4)	21:19	25	20:39 (SAB W4)	20:23			19:13		18:06		16:16	16:07
24	08:06		07:13		06:11		06:02		05:11		20:06 (SAB W3)	04:56		20:17 (SAB W4)	05:24		20:14 (SAB W3)	06:12			07:03		07:53		07:47	08:20
	16:48		17:44		18:33		20:26		21:13	31	20:37 (SAB W4)	21:38	32	20:49 (SAB W4)	21:17	22	20:36 (SAB W3)	20:21			19:11		18:04		16:15	16:08
25	08:05		07:11		06:08		06:00		05:10		20:07 (SAB W3)	04:57		20:17 (SAB W4)	05:26		20:14 (SAB W3)	06:14			07:04		06:55		07:49	08:21
	16:49		17:46		18:35		20:27		21:14	31	20:38 (SAB W4)	21:38	32	20:49 (SAB W4)	21:16	22	20:36 (SAB W3)	20:19			19:08		17:02		16:14	16:08
26	08:04		07:09		06:06		05:58		05:09		20:08 (SAB W3)	04:57		20:18 (SAB W4)	05:27		20:13 (SAB W3)	06:16			07:06		06:57		07:51	08:21
	16:51		17:48		18:37		20:29		21:16	31	20:39 (SAB W4)	21:38	32	20:50 (SAB W4)	21:14	23	20:36 (SAB W3)	20:17			19:06		17:00		16:13	16:09
27	08:03		07:07		06:04		05:56		05:08		20:09 (SAB W3)	04:58		20:18 (SAB W4)	05:29		20:14 (SAB W3)	06:17			07:07		06:58		07:52	08:21
	16:53		17:50		18:38		20:31		21:17	30	20:39 (SAB W4)	21:38	32	20:50 (SAB W4)	21:13	23	20:37 (SAB W3)	20:15			19:04		16:58		16:12	16:10
28	08:01		07:05		06:01		05:54		05:07		20:10 (SAB W3)	04:58		20:19 (SAB W4)	05:30		20:13 (SAB W3)	06:19			07:09		07:00		07:54	08:22
	16:55		17:51		18:40		20:32		21:18	30	20:40 (SAB W4)	21:37	31	20:50 (SAB W4)	21:12	23	20:36 (SAB W3)	20:13			19:01		16:56		16:11	16:11
29	08:00				06:59		05:52		05:06		20:13 (SAB W3)	04:59		20:18 (SAB W4)	05:32		20:13 (SAB W3)	06:21			07:11		07:02		07:55	08:22
	16:57				19:42		20:34		21:19	29	20:42 (SAB W4)	21:37	32	20:50 (SAB W4)	21:10	23	20:36 (SAB W3)	20:10			18:59		16:54		16:10	16:11
30	07:58				06:57		05:50		05:05		20:15 (SAB W4)	04:59		20:19 (SAB W4)	05:33		20:14 (SAB W3)	06:22			07:12		07:04		07:57	08:22
	16:58				19:43		20:36		21:21	27	20:42 (SAB W4)	21:37	31	20:50 (SAB W4)	21:08	22	20:36 (SAB W3)	20:08			18:57		16:53		16:09	16:12
31	07:57				06:54				05:04		20:15 (SAB W4)				21:05		20:14 (SAB W3)	06:24					07:06			08:22
	17:00				19:45				21:22	27	20:42 (SAB W4)				21:07	21	20:35 (SAB W3)	20:06					16:51			16:13
Sonnenscheinstunden	260		278		367		416		484			498			501			453			381		332		267	245
astr.max.mögl.Beschattung										605			940			862			97							
Red.Sonnenscheinwahrsch.										0,43			0,35			0,40			0,43							
Reduktion Betriebsdauer										0,96			0,96			0,96			0,96							
Reduktion Windrichtung										0,67			0,67			0,67			0,68							
Gesamte Reduktion										0,28			0,22			0,26			0,28							
Met.wahrsch.Beschattung										167			208			222			27							

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 10 - Aschersleben - Am Harzblick 45

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai			Juni			Juli			August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48			05:03		20:24 (SAB W3)	05:00		20:35 (SAB W3)	05:36	06:25	07:14	07:07	07:58
	16:14	17:02	17:53	19:47	20:37			21:23	17	20:41 (SAB W3)	21:37	24	21:03 (SAB W4)	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46			05:02		20:24 (SAB W3)	05:01		20:35 (SAB W3)	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39			21:24	17	20:41 (SAB W3)	21:36	25	21:03 (SAB W4)	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44			05:01		20:25 (SAB W3)	05:01		20:35 (SAB W3)	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41			21:25	22	20:52 (SAB W4)	21:36	25	21:03 (SAB W4)	21:02	19:59	18:50	16:45	16:07
4	08:21	07:51	06:56	06:45	05:42			05:00		20:25 (SAB W3)	05:02		20:34 (SAB W3)	05:41	06:30	07:19	07:13	08:02
	16:18	17:07	17:59	19:52	20:42			21:26	24	20:53 (SAB W4)	21:36	25	21:02 (SAB W4)	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40			05:00		20:27 (SAB W3)	05:03		20:34 (SAB W3)	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:00	19:54	20:44			21:27	25	20:55 (SAB W4)	21:35	25	21:02 (SAB W4)	20:59	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38			04:59		20:27 (SAB W3)	05:04		20:33 (SAB W3)	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46			21:28	25	20:55 (SAB W4)	21:35	26	21:02 (SAB W4)	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:38	05:37			04:59		20:28 (SAB W3)	05:04		20:33 (SAB W3)	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:47			21:29	25	20:56 (SAB W4)	21:34	25	21:01 (SAB W4)	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35			04:58		20:28 (SAB W3)	05:05		20:33 (SAB W3)	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49			21:30	26	20:57 (SAB W4)	21:34	24	21:01 (SAB W4)	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33			04:58		20:29 (SAB W3)	05:06		20:33 (SAB W3)	05:48	06:38	07:27	07:22	08:08
	16:24	17:17	18:07	20:00	20:50			21:31	26	20:58 (SAB W4)	21:33	22	21:00 (SAB W4)	20:51	19:45	18:36	16:35	16:05
10	08:19	07:40	06:42	06:32	05:31			04:57		20:31 (SAB W3)	05:07		20:33 (SAB W3)	05:50	06:40	07:29	07:23	08:10
	16:25	17:19	18:09	20:02	20:52			21:31	25	20:59 (SAB W4)	21:32	19	20:58 (SAB W4)	20:49	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30			04:57		20:31 (SAB W3)	05:08		20:32 (SAB W3)	05:52	06:41	07:31	07:25	08:11
	16:27	17:20	18:11	20:04	20:54			21:32	24	20:59 (SAB W4)	21:31	17	20:49 (SAB W3)	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28			04:56		20:32 (SAB W3)	05:09		20:32 (SAB W3)	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55			21:33	24	21:00 (SAB W4)	21:31	18	20:50 (SAB W3)	20:46	19:39	18:30	16:30	16:04
13	08:17	07:35	06:36	06:25	05:27			04:56		20:34 (SAB W3)	05:11		20:32 (SAB W3)	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:14	20:07	20:57			21:34	21	21:00 (SAB W4)	21:30	18	20:50 (SAB W3)	20:44	19:36	18:28	16:29	16:04
14	08:16	07:33	06:33	06:23	05:25			04:56		20:41 (SAB W4)	05:12		20:32 (SAB W3)	05:56	06:46	07:36	07:30	08:14
	16:31	17:26	18:16	20:09	20:58			21:34	20	21:01 (SAB W4)	21:29	18	20:50 (SAB W3)	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23		20:27 (SAB W3)	04:56		20:42 (SAB W4)	05:13		20:32 (SAB W3)	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	2	20:29 (SAB W3)	21:35	20	21:02 (SAB W4)	21:28	19	20:51 (SAB W3)	20:40	19:32	18:23	16:26	16:04
16	08:15	07:29	06:29	06:19	05:22		20:25 (SAB W3)	04:56		20:42 (SAB W4)	05:14		20:32 (SAB W3)	06:00	06:50	07:39	07:34	08:15
	16:34	17:30	18:20	20:12	21:01	6	20:31 (SAB W3)	21:35	20	21:02 (SAB W4)	21:27	19	20:51 (SAB W3)	20:38	19:29	18:21	16:24	16:05
17	08:14	07:27	06:27	06:16	05:20		20:25 (SAB W3)	04:56		20:42 (SAB W4)	05:15		20:31 (SAB W3)	06:01	06:51	07:41	07:36	08:16
	16:36	17:31	18:21	20:14	21:03	8	20:33 (SAB W3)	21:36	20	21:02 (SAB W4)	21:26	20	20:51 (SAB W3)	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19		20:23 (SAB W3)	04:55		20:42 (SAB W4)	05:16		20:31 (SAB W3)	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:04	11	20:34 (SAB W3)	21:36	21	21:03 (SAB W4)	21:25	20	20:51 (SAB W3)	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18		20:23 (SAB W3)	04:56		20:42 (SAB W4)	05:18		20:31 (SAB W3)	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	12	20:35 (SAB W3)	21:36	21	21:03 (SAB W4)	21:24	20	20:51 (SAB W3)	20:32	19:22	18:15	16:20	16:05
20	08:11	07:21	06:20	06:10	05:16		20:23 (SAB W3)	04:56		20:42 (SAB W4)	05:19		20:32 (SAB W3)	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	14	20:37 (SAB W3)	21:37	21	21:03 (SAB W4)	21:22	19	20:51 (SAB W3)	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15		20:23 (SAB W3)	04:56		20:42 (SAB W4)	05:20		20:32 (SAB W3)	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	15	20:38 (SAB W3)	21:37	21	21:03 (SAB W4)	21:21	18	20:50 (SAB W3)	20:28	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:13		20:22 (SAB W3)	04:56		20:42 (SAB W4)	05:22		20:32 (SAB W3)	06:09	06:59	07:50	07:44	08:19
	16:44	17:41	18:30	20:22	21:10	17	20:39 (SAB W3)	21:37	21	21:03 (SAB W4)	21:20	17	20:49 (SAB W3)	20:25	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12		20:22 (SAB W3)	04:56		20:43 (SAB W4)	05:23		20:32 (SAB W3)	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:12	18	20:40 (SAB W3)	21:37	21	21:04 (SAB W4)	21:19	15	20:47 (SAB W3)	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11		20:22 (SAB W3)	04:56		20:43 (SAB W4)	05:24		20:33 (SAB W3)	06:12	07:03	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	19	20:41 (SAB W3)	21:38	21	21:04 (SAB W4)	21:17	14	20:47 (SAB W3)	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10		20:22 (SAB W3)	04:57		20:43 (SAB W4)	05:26		20:34 (SAB W3)	06:14	07:04	07:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	19	20:41 (SAB W3)	21:38	20	21:03 (SAB W4)	21:16	11	20:45 (SAB W3)	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09		20:22 (SAB W3)	04:57		20:44 (SAB W4)	05:27		20:34 (SAB W3)	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	19	20:41 (SAB W3)	21:38	20	21:04 (SAB W4)	21:14	9	20:43 (SAB W3)	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08		20:22 (SAB W3)	04:58		20:44 (SAB W4)	05:29		20:36 (SAB W3)	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	19	20:41 (SAB W3)	21:38	20	21:04 (SAB W4)	21:13	7	20:43 (SAB W3)	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07		20:22 (SAB W3)	04:58		20:45 (SAB W4)	05:30		20:37 (SAB W3)	06:19	07:09	07:00	07:54	08:22
	16:55	17:51	18:40	20:32	21:18	19	20:41 (SAB W3)	21:37	19	21:04 (SAB W4)	21:12	4	20:41 (SAB W3)	20:12	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06		20:23 (SAB W3)	04:59		20:44 (SAB W4)	05:32		20:38 (SAB W3)	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	19	20:42 (SAB W3)	21:37	20	21:04 (SAB W4)	21:10	1	20:39 (SAB W3)	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:05		20:23 (SAB W3)	04:59		20:37 (SAB W3)	05:33			06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:21	19	20:42 (SAB W3)	21:37	23	21:04 (SAB W4)	21:08			20:08	18:57	16:53	16:09	16:12
31	07:57		06:54		05:04		20:24 (SAB W3)				05:35			06:24		07:06		08:22
	17:00		19:45		21:22	17	20:41 (SAB W3)				21:07			20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484			498			501			453	381	332	267	245
astr.max.mögl.Beschattung						253			650			524						
Red.Sonnenscheinwahrsch.						0,43			0,35			0,40						
Reduktion Betriebsdauer						0,96			0,96			0,96						
Reduktion Windrichtung						0,67			0,66			0,66						
Gesamte Reduktion						0,27			0,22			0,26						
Met.wahrsch.Beschattung						69			142			134						

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 11 - Aschersleben - Über der Eine 18A

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni		Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03		05:00	05:36	06:25	07:14	07:07	07:58
	16:14	17:02	17:53	19:47	20:37	21:23		21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02		05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24		21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01		05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25		21:36	21:02	19:59	18:50	16:45	16:07
4	08:21	07:51	06:56	06:45	05:42	05:00		05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:07	17:59	19:52	20:42	21:26		21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00		05:03	05:42	06:32	07:21	07:14	08:03
	16:19	17:09	18:00	19:54	20:44	21:27		21:35	20:58	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38	04:59		05:04	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28		21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:38	05:37	04:59		05:04	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:47	21:29		21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58		05:05	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30		21:33	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58		05:06	05:48	06:38	07:27	07:22	08:08
	16:24	17:17	18:07	20:00	20:50	21:31		21:33	20:51	19:45	18:36	16:35	16:05
10	08:19	07:40	06:42	06:32	05:31	04:57		05:07	05:50	06:40	07:29	07:23	08:10
	16:25	17:19	18:09	20:02	20:52	21:31		21:32	20:49	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57		05:08	05:52	06:41	07:31	07:25	08:11
	16:27	17:20	18:11	20:04	20:54	21:32		21:31	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56		05:09	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55	21:33		21:31	20:46	19:39	18:30	16:30	16:04
13	08:17	07:35	06:36	06:25	05:27	04:56		05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:14	20:07	20:57	21:34		21:30	20:44	19:36	18:28	16:29	16:04
14	08:16	07:33	06:33	06:23	05:25	04:56		05:12	05:56	06:46	07:36	07:30	08:14
	16:31	17:26	18:16	20:09	20:58	21:34		21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56		05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35		21:28	20:40	19:32	18:23	16:26	16:04
16	08:15	07:29	06:29	06:19	05:22	04:56		05:14	06:00	06:50	07:39	07:34	08:15
	16:34	17:30	18:20	20:12	21:01	21:35		21:27	20:38	19:29	18:21	16:24	16:05
17	08:14	07:27	06:27	06:16	05:20	04:56		05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:31	18:21	20:14	21:03	21:36		21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:55		05:16	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:04	21:36		21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56		05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:36		21:23	20:32	19:22	18:15	16:20	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56		05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37		21:22	20:30	19:20	18:12	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	21:03 (SAB W4)	05:20	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	1 21:04 (SAB W4)	21:21	20:27	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:13	04:56		05:22	06:09	06:59	07:50	07:44	08:19
	16:44	17:41	18:30	20:22	21:10	21:37		21:20	20:25	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56		05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:12	21:37		21:19	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11	04:56		05:24	06:12	07:02	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37		21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57		05:26	06:14	07:04	06:55	07:49	08:21
	16:49	17:46	18:35	20:27	21:14	21:38		21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57		05:27	06:16	07:06	06:57	07:50	08:21
	16:51	17:48	18:37	20:29	21:16	21:38		21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58		05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:37		21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:04	06:01	05:54	05:07	04:58		05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:51	18:40	20:32	21:18	21:37		21:12	20:12	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59		05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37		21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:05	04:59		05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:21	21:37		21:08	20:08	18:57	16:53	16:09	16:12
31	07:57		06:54		05:04			05:35	06:24		07:06		08:22
	17:00		19:45		21:22			21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498		501	453	381	332	267	245
astr.max.mögl.Beschattung							1						
Red.Sonnenscheinwahrsch.							0,35						
Reduktion Betriebsdauer							0,96						
Reduktion Windrichtung							0,64						
Gesamte Reduktion							0,21						
Met.wahrsch.Beschattung							0						

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 12 - Westdorf - Am Landgraben 1A

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:15	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:21	07:51	06:56	06:45	05:42	05:00	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:14	08:03
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:58	19:55	18:45	16:42	16:06
6	08:21	07:47	06:51	06:41	05:38	04:59	05:04	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:20	07:46	06:49	06:38	05:37	04:59	05:05	05:45	06:35	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:33	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:48	06:38	07:27	07:22	08:08
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	16:26	17:19	18:09	20:02	20:52	21:31	21:32	20:49	19:43	18:34	16:33	16:05
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	16:27	17:20	18:11	20:04	20:54	21:32	21:31	20:47	19:41	18:32	16:32	16:05
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13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
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14	08:16	07:33	06:33	06:23	05:25	04:56	05:12	05:56	06:46	07:36	07:30	08:14
	16:31	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:37	07:32	08:14
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:15
	16:34	17:30	18:20	20:12	21:01	21:35	21:27	20:38	19:29	18:21	16:24	16:05
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18	08:13	07:25	06:24	06:14	05:19	04:56	05:16	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
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	16:39	17:35	18:25	20:17	21:06	21:36	21:23	20:32	19:22	18:15	16:21	16:05
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22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:19
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23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:11	21:37	21:18	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:10	06:02	05:11	04:57	05:24	06:12	07:02	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37	21:17	20:21	19:11	18:04	16:15	16:08
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26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:50	08:21
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27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:37	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:04	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:21
	16:55	17:51	18:40	20:32	21:18	21:37	21:11	20:12	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:43	20:36	21:20	21:37	21:08	20:08	18:57	16:53	16:09	16:12
31	07:57		06:54		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 13 - Westdorf - Aschersleberer Str. 2A

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:15	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
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	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
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	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
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	16:23	17:15	18:06	19:59	20:49	21:30	21:33	20:53	19:48	18:39	16:37	16:05
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	16:31	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:25	16:27	16:04
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16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:15
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	16:39	17:35	18:25	20:17	21:06	21:36	21:23	20:32	19:22	18:15	16:21	16:05
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21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
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22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:19
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23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
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24	08:06	07:13	06:10	06:02	05:11	04:57	05:24	06:12	07:02	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
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	16:51	17:48	18:37	20:29	21:15	21:37	21:14	20:17	19:06	17:00	16:13	16:09
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	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:54	16:10	16:11
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	16:58		19:43	20:36	21:20	21:37	21:08	20:08	18:57	16:53	16:10	16:12
31	07:57		06:54		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
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	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 14 - Westdorf - Autoverwertung Lorenz

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:07	07:58
	16:15	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
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	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:21	07:51	06:56	06:45	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:14	08:03
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:58	19:55	18:45	16:42	16:07
6	08:21	07:47	06:51	06:41	05:38	04:59	05:04	05:44	06:33	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
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8	08:20	07:44	06:47	06:36	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
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11	08:18	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:42	07:31	07:25	08:11
	16:27	17:20	18:11	20:04	20:54	21:32	21:31	20:47	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:10	05:53	06:43	07:32	07:27	08:12
	16:28	17:22	18:13	20:05	20:55	21:33	21:30	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:14	20:07	20:57	21:33	21:30	20:44	19:36	18:28	16:29	16:05
14	08:16	07:33	06:33	06:23	05:25	04:56	05:12	05:56	06:46	07:36	07:30	08:14
	16:31	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:25	16:27	16:05
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:32	08:14
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:15
	16:34	17:30	18:20	20:12	21:01	21:35	21:27	20:38	19:29	18:21	16:24	16:05
17	08:14	07:27	06:27	06:16	05:20	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:04	06:54	07:44	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:36	21:23	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:26	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:17	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:27	19:18	18:10	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:19
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23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:42	18:32	20:24	21:11	21:37	21:18	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:11	06:02	05:11	04:57	05:24	06:12	07:03	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:27	21:14	21:37	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:50	08:21
	16:51	17:48	18:37	20:29	21:15	21:37	21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:07	06:58	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:37	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:04	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:21
	16:55	17:51	18:40	20:32	21:18	21:37	21:11	20:12	19:01	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:54	16:10	16:11
30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:56	08:22
	16:58		19:43	20:36	21:20	21:37	21:08	20:08	18:57	16:53	16:10	16:12
31	07:57		06:54		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 15 - Welbsleben - Außenbereich

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:55	07:02	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:07	07:58
	16:15	17:02	17:53	19:47	20:37	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	07:59
	16:16	17:04	17:55	19:49	20:39	21:24	21:36	21:04	20:01	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:02	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:21	07:51	06:56	06:45	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:03
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:47	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:33	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:33	04:58	05:07	05:49	06:38	07:27	07:22	08:08
	16:24	17:17	18:08	20:00	20:51	21:31	21:33	20:51	19:46	18:37	16:35	16:05
10	08:19	07:40	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:23	08:10
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11	08:19	07:39	06:40	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
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	16:29	17:22	18:13	20:06	20:55	21:33	21:30	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:33	21:30	20:44	19:36	18:28	16:29	16:05
14	08:16	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:46	07:36	07:30	08:14
	16:32	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:14
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:15
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	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:37	08:17
	16:38	17:34	18:23	20:16	21:04	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:17	21:06	21:36	21:23	20:32	19:22	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:27	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:42	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:19
	16:45	17:41	18:30	20:22	21:10	21:37	21:20	20:25	19:15	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:56	05:23	06:11	07:01	07:51	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:37	21:19	20:23	19:13	18:06	16:16	16:07
24	08:06	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:47	08:20
	16:48	17:44	18:33	20:26	21:13	21:37	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:27	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:50	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:14	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:21
	16:53	17:50	18:38	20:31	21:17	21:37	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:32	21:18	21:37	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:55	16:10	16:12
30	07:58		06:57	05:50	05:05	05:00	05:33	06:22	07:12	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:08	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 16 - Ermsleben - KFZ Werkstatt

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	05:00	05:04	05:44	06:34	07:23	07:17	08:05
	16:21	17:12	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
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	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:39	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
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10	08:19	07:41	06:43	06:32	05:32	04:58	05:08	05:50	06:40	07:29	07:24	08:10
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11	08:19	07:39	06:40	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
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	16:29	17:23	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:31	16:05
13	08:17	07:35	06:36	06:25	05:27	04:57	05:11	05:55	06:45	07:34	07:29	08:13
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18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:36	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:17	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:07
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
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23	08:08	07:15	06:13	06:04	05:13	04:57	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:17	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:59	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:01		19:45		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 17 - Ermsleben - Neue Str.

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
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	16:21	17:12	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
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13	08:17	07:35	06:36	06:25	05:27	04:57	05:11	05:55	06:45	07:34	07:29	08:13
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17	08:14	07:27	06:27	06:17	05:21	04:56	05:16	06:02	06:51	07:41	07:36	08:16
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	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:17	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:57	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:17	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:59	05:30	06:19	07:09	07:00	07:54	08:22
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	16:57		19:42	20:34	21:20	21:37	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:01		19:45		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 18 - Ermsleben - Am Mittelweg

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
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	16:21	17:12	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
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11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
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24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:17	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:01		19:45		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 19 - Ermsleben - Mühlenstraße

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	05:00	05:04	05:44	06:34	07:23	07:17	08:05
	16:21	17:12	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:39	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:34	04:58	05:07	05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:10	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
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	16:29	17:23	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:31	16:05
13	08:17	07:35	06:36	06:25	05:27	04:57	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:13	21:02	21:35	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:16	06:02	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:40	17:36	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:17	04:56	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	04:57	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13	21:38	21:17	20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:09	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:01		19:45		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 20 - Ermsleben - Radislebener Weg

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:01	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:02	05:02	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25	21:36	21:02	19:59	18:50	16:46	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:02	05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:03	05:43	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	05:00	05:04	05:44	06:34	07:23	07:17	08:05
	16:21	17:12	18:03	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:50	06:39	05:37	04:59	05:05	05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:39	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:34	04:58	05:07	05:49	06:39	07:28	07:22	08:09
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10	08:19	07:41	06:43	06:32	05:32	04:58	05:08	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:10	20:02	20:52	21:32	21:32	20:50	19:44	18:35	16:34	16:05
11	08:19	07:39	06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:29	04:57	05:10	05:54	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:31	16:05
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	16:30	17:25	18:15	20:07	20:57	21:34	21:30	20:44	19:37	18:28	16:29	16:05
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	16:32	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:28	16:05
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18	08:13	07:26	06:25	06:15	05:19	04:56	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:24	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
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23	08:08	07:15	06:13	06:04	05:13	04:57	05:23	06:11	07:01	07:52	07:46	08:20
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	16:48	17:45	18:34	20:26	21:13	21:38	21:18	20:21	19:11	18:05	16:15	16:08
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	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	04:58	05:28	06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	16:13	16:09
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	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	16:12	16:10
28	08:02	07:05	06:02	05:54	05:07	04:59	05:30	06:19	07:09	07:01	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:00	05:33	06:23	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:01		19:46		21:22		21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 21 - Falkenstein - Mühlenstraße

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:45 (WEA 09) 05:00	05:56 (WEA 09) 05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:54	19:47	20:38	21:23 20	06:05 (WEA 09) 21:37 12	06:08 (WEA 09) 21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:46 (WEA 09) 05:01	05:55 (WEA 09) 05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24 20	06:06 (WEA 09) 21:37 13	06:08 (WEA 09) 21:04	20:02	18:53	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:46 (WEA 09) 05:02	05:55 (WEA 09) 05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:51	20:41	21:25 19	06:05 (WEA 09) 21:36 14	06:09 (WEA 09) 21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:46	05:42	05:01	05:48 (WEA 09) 05:02	05:55 (WEA 09) 05:41	06:31	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26 18	06:06 (WEA 09) 21:36 15	06:10 (WEA 09) 21:00	19:57	18:48	16:44	16:07
5	08:21	07:49	06:54	06:43	05:41	05:00	05:48 (WEA 09) 05:03	05:55 (WEA 09) 05:42	06:32	07:21	07:15	08:04
	16:19	17:10	18:01	19:54	20:44	21:27 17	06:05 (WEA 09) 21:35 16	06:11 (WEA 09) 20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59	05:48 (WEA 09) 05:04	05:54 (WEA 09) 05:44	06:34	07:23	07:17	08:05
	16:21	17:11	18:02	19:56	20:46	21:28 16	06:04 (WEA 09) 21:35 17	06:11 (WEA 09) 20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:49 (WEA 09) 05:05	05:54 (WEA 09) 05:46	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29 16	06:05 (WEA 09) 21:34 17	06:11 (WEA 09) 20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:37	05:35	04:58	05:50 (WEA 09) 05:06	05:54 (WEA 09) 05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30 15	06:05 (WEA 09) 21:34 18	06:12 (WEA 09) 20:53	19:48	18:39	16:37	16:06
9	08:20	07:42	06:45	06:34	05:33	04:58	05:50 (WEA 09) 05:07	05:54 (WEA 09) 05:49	06:39	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31 14	06:04 (WEA 09) 21:33 18	06:12 (WEA 09) 20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:50 (WEA 09) 05:08	05:54 (WEA 09) 05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32 14	06:04 (WEA 09) 21:32 19	06:13 (WEA 09) 20:50	19:43	18:34	16:34	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:51 (WEA 09) 05:09	05:54 (WEA 09) 05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32 13	06:04 (WEA 09) 21:32 19	06:13 (WEA 09) 20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:28	05:28	04:57	05:51 (WEA 09) 05:10	05:54 (WEA 09) 05:53	06:43	07:33	07:27	08:12
	16:29	17:23	18:13	20:06	20:55	21:33 12	06:03 (WEA 09) 21:31 20	06:14 (WEA 09) 20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:52 (WEA 09) 05:11	05:54 (WEA 09) 05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34 11	06:03 (WEA 09) 21:30 20	06:14 (WEA 09) 20:44	19:37	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	05:51 (WEA 09) 04:56	05:53 (WEA 09) 05:12	05:53 (WEA 09) 05:57	06:47	07:36	07:31	08:14
	16:32	17:26	18:16	20:09	20:59 6	05:57 (WEA 09) 21:34 10	06:03 (WEA 09) 21:29 21	06:14 (WEA 09) 20:42	19:34	18:26	16:28	16:05
15	08:16	07:31	06:31	06:21	05:24	05:50 (WEA 09) 04:56	05:53 (WEA 09) 05:13	05:53 (WEA 09) 05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00 10	06:00 (WEA 09) 21:35 10	06:03 (WEA 09) 21:28 22	06:15 (WEA 09) 20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	05:48 (WEA 09) 04:56	05:54 (WEA 09) 05:14	05:53 (WEA 09) 06:00	06:50	07:40	07:34	08:16
	16:35	17:30	18:20	20:12	21:02 13	06:01 (WEA 09) 21:35 9	06:03 (WEA 09) 21:27 22	06:15 (WEA 09) 20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	05:47 (WEA 09) 04:56	05:55 (WEA 09) 05:16	05:53 (WEA 09) 06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03 15	06:02 (WEA 09) 21:36 8	06:03 (WEA 09) 21:26 22	06:15 (WEA 09) 20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:15	05:19	05:46 (WEA 09) 04:56	05:55 (WEA 09) 05:17	05:54 (WEA 09) 06:03	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05 17	06:03 (WEA 09) 21:36 8	06:03 (WEA 09) 21:25 22	06:16 (WEA 09) 20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	05:45 (WEA 09) 04:56	05:55 (WEA 09) 05:18	05:54 (WEA 09) 06:05	06:55	07:45	07:39	08:18
	16:40	17:35	18:25	20:18	21:06 18	06:03 (WEA 09) 21:37 8	06:03 (WEA 09) 21:24 22	06:16 (WEA 09) 20:32	19:23	18:15	16:21	16:06
20	08:11	07:21	06:20	06:10	05:16	05:45 (WEA 09) 04:56	05:56 (WEA 09) 05:19	05:54 (WEA 09) 06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08 19	06:04 (WEA 09) 21:37 7	06:03 (WEA 09) 21:23 21	06:15 (WEA 09) 20:30	19:20	18:13	16:20	16:06
21	08:10	07:19	06:18	06:08	05:15	05:44 (WEA 09) 04:56	05:56 (WEA 09) 05:21	05:54 (WEA 09) 06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09 21	06:05 (WEA 09) 21:37 7	06:03 (WEA 09) 21:21 21	06:15 (WEA 09) 20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	05:44 (WEA 09) 04:56	05:57 (WEA 09) 05:22	05:54 (WEA 09) 06:10	07:00	07:50	07:44	08:20
	16:45	17:41	18:30	20:23	21:10 21	06:05 (WEA 09) 21:37 7	06:04 (WEA 09) 21:20 21	06:15 (WEA 09) 20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:13	05:44 (WEA 09) 04:56	05:56 (WEA 09) 05:23	05:55 (WEA 09) 06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12 22	06:06 (WEA 09) 21:38 8	06:04 (WEA 09) 21:19 20	06:15 (WEA 09) 20:24	19:13	18:07	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	05:44 (WEA 09) 04:57	05:56 (WEA 09) 05:25	05:55 (WEA 09) 06:13	07:03	07:53	07:48	08:21
	16:48	17:45	18:34	20:26	21:13 22	06:06 (WEA 09) 21:38 8	06:04 (WEA 09) 21:17 19	06:14 (WEA 09) 20:21	19:11	18:05	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	05:44 (WEA 09) 04:57	05:57 (WEA 09) 05:26	05:55 (WEA 09) 06:14	07:04	07:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14 22	06:06 (WEA 09) 21:38 8	06:05 (WEA 09) 21:16 19	06:14 (WEA 09) 20:19	19:09	17:03	16:14	16:09
26	08:04	07:09	06:06	05:58	05:09	05:45 (WEA 09) 04:58	05:56 (WEA 09) 05:28	05:57 (WEA 09) 06:16	07:06	06:57	07:51	08:21
	16:52	17:48	18:37	20:29	21:16 21	06:06 (WEA 09) 21:38 9	06:05 (WEA 09) 21:15 17	06:14 (WEA 09) 20:17	19:06	17:01	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	05:45 (WEA 09) 04:58	05:56 (WEA 09) 05:29	05:58 (WEA 09) 06:18	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17 21	06:06 (WEA 09) 21:38 9	06:05 (WEA 09) 21:13 14	06:12 (WEA 09) 20:15	19:04	16:59	16:12	16:10
28	08:01	07:05	06:02	05:54	05:07	05:45 (WEA 09) 04:58	05:56 (WEA 09) 05:30	05:59 (WEA 09) 06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18 21	06:06 (WEA 09) 21:38 10	06:06 (WEA 09) 21:12 12	06:11 (WEA 09) 20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06	05:45 (WEA 09) 04:59	05:55 (WEA 09) 05:32	06:01 (WEA 09) 06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20 21	06:06 (WEA 09) 21:37 11	06:06 (WEA 09) 21:10 9	06:10 (WEA 09) 20:11	18:59	16:55	16:11	16:12
30	07:59		06:57	05:50	05:05	05:45 (WEA 09) 05:00	05:56 (WEA 09) 05:33	06:04 (WEA 09) 06:22	07:13	07:04	07:57	08:22
	16:59		19:44	20:36	21:21 21	06:06 (WEA 09) 21:37 11	06:07 (WEA 09) 21:09 1	06:05 (WEA 09) 20:08	18:57	16:53	16:10	16:13
31	07:57		06:55		05:04	05:45 (WEA 09)	05:35	06:24		07:06		08:22
	17:00		19:45		21:22 21	06:06 (WEA 09)	21:07	20:06		16:51		16:14
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
astr.max.mögl.Beschattung					332	353	523					
Red.Sonnenscheinwahrsch.					0,43	0,35	0,40					
Reduktion Betriebsdauer					0,96	0,96	0,96					
Reduktion Windrichtung					0,71	0,71	0,71					
Gesamte Reduktion					0,29	0,24	0,27					
Met.wahrsch.Beschattung					97	83	143					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 22 - Strommühle

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April			Mai			Juni		
1	08:22	07:56	07:03	06:52			05:48		06:12 (WEA 08)	05:03		05:31 (WEA 11)
	16:15	17:02	17:54	19:47			20:38	31	06:55 (WEA 09)	21:23	48	06:30 (WEA 12)
2	08:22	07:54	07:00	06:50			05:46		06:10 (WEA 08)	05:02		05:31 (WEA 11)
	16:16	17:04	17:55	19:49			20:39	30	06:53 (WEA 09)	21:24	47	06:30 (WEA 12)
3	08:22	07:53	06:58	06:48			05:44		06:10 (WEA 08)	05:01		05:30 (WEA 11)
	16:17	17:06	17:57	19:51			20:41	23	06:49 (WEA 09)	21:25	47	06:30 (WEA 12)
4	08:22	07:51	06:56	06:46			05:42		06:09 (WEA 08)	05:01		05:30 (WEA 11)
	16:18	17:08	17:59	19:52			20:43	21	06:30 (WEA 08)	21:26	47	06:31 (WEA 12)
5	08:21	07:49	06:54	06:43			05:41		06:09 (WEA 08)	05:00		05:29 (WEA 11)
	16:19	17:10	18:01	19:54			20:44	20	06:29 (WEA 08)	21:27	46	06:30 (WEA 12)
6	08:21	07:48	06:52	06:41			05:39		06:09 (WEA 08)	04:59		05:28 (WEA 11)
	16:20	17:11	18:02	19:56			20:46	20	06:29 (WEA 08)	21:28	46	06:30 (WEA 12)
7	08:21	07:46	06:49	06:39			05:37		06:09 (WEA 08)	04:59		05:28 (WEA 11)
	16:22	17:13	18:04	19:57			20:48	20	06:29 (WEA 08)	21:29	47	06:30 (WEA 12)
8	08:20	07:44	06:47	06:37			05:35		06:09 (WEA 08)	04:58		05:28 (WEA 11)
	16:23	17:15	18:06	19:59			20:49	20	06:29 (WEA 08)	21:30	48	06:31 (WEA 12)
9	08:20	07:42	06:45	06:34			05:33		06:10 (WEA 08)	04:58		05:27 (WEA 11)
	16:24	17:17	18:08	20:01			20:51	19	06:29 (WEA 08)	21:31	47	06:30 (WEA 12)
10	08:19	07:41	06:43	06:32			05:32		06:10 (WEA 08)	04:57		05:27 (WEA 11)
	16:26	17:19	18:09	20:02			20:52	18	06:28 (WEA 08)	21:32	48	06:30 (WEA 12)
11	08:19	07:39	06:40	06:30			05:30		06:07 (WEA 12)	04:57		05:27 (WEA 11)
	16:27	17:21	18:11	20:04			20:54	19	06:26 (WEA 08)	21:32	49	06:31 (WEA 12)
12	08:18	07:37	06:38	06:28			05:28		06:05 (WEA 12)	04:57		05:26 (WEA 11)
	16:29	17:23	18:13	20:06			20:56	21	06:26 (WEA 08)	21:33	48	06:30 (WEA 12)
13	08:17	07:35	06:36	06:25			05:27		06:03 (WEA 12)	04:56		05:26 (WEA 11)
	16:30	17:24	18:15	20:07			20:57	21	06:24 (WEA 08)	21:34	49	06:30 (WEA 12)
14	08:17	07:33	06:34	06:23			05:25		06:02 (WEA 12)	04:56		05:26 (WEA 11)
	16:32	17:26	18:16	20:09			20:59	21	06:23 (WEA 12)	21:34	49	06:31 (WEA 12)
15	08:16	07:31	06:31	06:21		06:50 (WEA 09)	05:24		06:01 (WEA 12)	04:56		05:26 (WEA 11)
	16:33	17:28	18:18	20:11	2	06:52 (WEA 09)	21:00	24	06:25 (WEA 12)	21:35	49	06:31 (WEA 12)
16	08:15	07:29	06:29	06:19		06:45 (WEA 09)	05:22		06:00 (WEA 12)	04:56		05:27 (WEA 11)
	16:35	17:30	18:20	20:12	12	06:57 (WEA 09)	21:02	25	06:25 (WEA 12)	21:35	49	06:31 (WEA 12)
17	08:14	07:27	06:27	06:17		06:43 (WEA 09)	05:21		05:59 (WEA 12)	04:56		05:27 (WEA 11)
	16:36	17:32	18:22	20:14	16	06:59 (WEA 09)	21:03	27	06:26 (WEA 12)	21:36	48	06:31 (WEA 12)
18	08:13	07:25	06:25	06:15		06:41 (WEA 09)	05:19		05:59 (WEA 12)	04:56		05:27 (WEA 11)
	16:38	17:34	18:23	20:16	19	07:00 (WEA 09)	21:05	28	06:27 (WEA 12)	21:36	48	06:31 (WEA 12)
19	08:12	07:23	06:22	06:12		06:40 (WEA 09)	05:18		05:58 (WEA 12)	04:56		05:27 (WEA 11)
	16:40	17:35	18:25	20:18	21	07:01 (WEA 09)	21:06	29	06:27 (WEA 12)	21:37	48	06:31 (WEA 12)
20	08:11	07:21	06:20	06:10		06:38 (WEA 09)	05:16		05:58 (WEA 12)	04:56		05:27 (WEA 11)
	16:41	17:37	18:27	20:19	23	07:01 (WEA 09)	21:08	29	06:27 (WEA 12)	21:37	48	06:31 (WEA 12)
21	08:10	07:19	06:18	06:08		06:38 (WEA 09)	05:15		05:42 (29B)	04:56		05:27 (WEA 11)
	16:43	17:39	18:28	20:21	23	07:01 (WEA 09)	21:09	32	06:28 (WEA 12)	21:37	48	06:31 (WEA 12)
22	08:09	07:17	06:15	06:06		06:37 (WEA 09)	05:14		05:41 (29B)	04:56		05:28 (WEA 11)
	16:45	17:41	18:30	20:23	24	07:01 (WEA 09)	21:10	36	06:29 (WEA 12)	21:37	48	06:32 (WEA 12)
23	08:08	07:15	06:13	06:04		06:37 (WEA 09)	05:13		05:40 (29B)	04:56		05:28 (WEA 11)
	16:46	17:43	18:32	20:24	24	07:01 (WEA 09)	21:12	37	06:29 (WEA 12)	21:38	48	06:32 (WEA 12)
24	08:07	07:13	06:11	06:02		06:36 (WEA 09)	05:11		05:39 (29B)	04:57		05:28 (WEA 11)
	16:48	17:45	18:34	20:26	25	07:01 (WEA 09)	21:13	39	06:29 (WEA 12)	21:38	48	06:32 (WEA 12)
25	08:05	07:11	06:08	06:00		06:36 (WEA 09)	05:10		05:38 (29B)	04:57		05:29 (WEA 11)
	16:50	17:46	18:35	20:28	24	07:00 (WEA 09)	21:15	41	06:30 (WEA 12)	21:38	48	06:33 (WEA 12)
26	08:04	07:09	06:06	05:58		06:37 (WEA 09)	05:09		05:37 (29B)	04:57		05:29 (WEA 11)
	16:51	17:48	18:37	20:29	24	07:01 (WEA 09)	21:16	43	06:30 (WEA 12)	21:38	49	06:33 (WEA 12)
27	08:03	07:07	06:04	05:56		06:37 (WEA 09)	05:08		05:36 (29B)	04:58		05:29 (WEA 11)
	16:53	17:50	18:39	20:31	23	07:00 (WEA 09)	21:17	44	06:30 (WEA 12)	21:38	48	06:33 (WEA 12)
28	08:01	07:05	06:02	05:54		06:18 (WEA 08)	05:07		05:35 (29B)	04:58		05:29 (WEA 11)
	16:55	17:52	18:40	20:33	28	06:59 (WEA 09)	21:18	45	06:30 (WEA 12)	21:38	49	06:34 (WEA 12)
29	08:00		06:59	05:52		06:16 (WEA 08)	05:06		05:34 (WEA 11)	04:59		05:29 (WEA 11)
	16:57		19:42	20:34	31	06:58 (WEA 09)	21:20	46	06:30 (WEA 12)	21:37	49	06:33 (WEA 12)
30	07:59		06:57	05:50		06:14 (WEA 08)	05:05		05:33 (WEA 11)	05:00		05:30 (WEA 11)
	16:59		19:44	20:36	32	06:57 (WEA 09)	21:21	46	06:30 (WEA 12)	21:37	48	06:34 (WEA 12)
31	07:57		06:55				05:04		05:32 (WEA 11)			
	17:00		19:45				21:22	47	06:30 (WEA 12)			
Sonnenscheinstunden	260	278	367	416			484			498		
astr.max.mögl.Beschattung					351			922			1439	
Red.Sonnenscheinwahrsch.					0,36			0,43			0,35	
Reduktion Betriebsdauer					0,96			0,96			0,96	
Reduktion Windrichtung					0,71			0,71			0,71	
Gesamte Reduktion					0,24			0,29			0,24	
Met.wahrsch.Beschattung					86			270			339	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 22 - Strommühle

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September	Oktober	November	Dezember
1	05:00		05:31 (WEA 11)	05:36	06:16 (WEA 12)	06:26	07:14	07:08	07:58
	21:37	49	06:35 (WEA 12)	21:06	21	06:37 (WEA 08)	20:04	18:55	16:49	16:09
2	05:01		05:31 (WEA 11)	05:38	06:19 (WEA 12)	06:27	07:16	07:09	08:00
	21:37	48	06:35 (WEA 12)	21:04	18	06:37 (WEA 08)	20:02	18:53	16:47	16:08
3	05:02		05:32 (WEA 11)	05:39	06:20 (WEA 08)	06:29	07:18	07:11	08:01
	21:36	48	06:35 (WEA 12)	21:02	18	06:38 (WEA 08)	19:59	18:50	16:45	16:08
4	05:02		05:33 (WEA 11)	05:41	06:19 (WEA 08)	06:30	07:19	07:13	08:02
	21:36	48	06:36 (WEA 12)	21:00	19	06:38 (WEA 08)	19:57	18:48	16:44	16:07
5	05:03		05:34 (WEA 11)	05:42	06:20 (WEA 08)	06:32	07:21	07:15	08:04
	21:35	46	06:36 (WEA 12)	20:59	19	06:39 (WEA 08)	19:55	18:46	16:42	16:07
6	05:04		05:34 (WEA 11)	05:44	06:19 (WEA 08)	06:34	07:23	07:17	08:05
	21:35	46	06:36 (WEA 12)	20:57	20	06:39 (WEA 08)	19:53	18:43	16:40	16:06
7	05:05		05:35 (WEA 11)	05:46	06:19 (WEA 08)	06:35	07:24	07:18	08:06
	21:34	46	06:36 (WEA 12)	20:55	20	06:39 (WEA 08)	19:50	18:41	16:38	16:06
8	05:06		05:36 (WEA 11)	05:47	06:18 (WEA 08)	06:37	07:26	07:20	08:08
	21:34	47	06:37 (WEA 12)	20:53	21	06:39 (WEA 08)	19:48	18:39	16:37	16:06
9	05:07		05:37 (WEA 11)	05:49	06:19 (WEA 08)	06:39	07:28	07:22	08:09
	21:33	47	06:37 (WEA 12)	20:52	20	06:39 (WEA 08)	19:46	18:37	16:35	16:05
10	05:08		05:38 (WEA 11)	05:50	06:19 (WEA 08)	06:40	07:29	07:24	08:10
	21:32	48	06:38 (WEA 12)	20:50	26	07:00 (WEA 09)	19:43	18:34	16:34	16:05
11	05:09		05:39 (WEA 11)	05:52	06:20 (WEA 08)	06:42	07:31	07:25	08:11
	21:32	47	06:38 (WEA 12)	20:48	30	07:03 (WEA 09)	19:41	18:32	16:32	16:05
12	05:10		05:40 (WEA 11)	05:53	06:21 (WEA 08)	06:43	07:33	07:27	08:12
	21:31	46	06:38 (WEA 12)	20:46	32	07:04 (WEA 09)	19:39	18:30	16:30	16:05
13	05:11		05:41 (WEA 11)	05:55	06:23 (WEA 08)	06:45	07:34	07:29	08:13
	21:30	46	06:38 (WEA 12)	20:44	32	07:06 (WEA 09)	19:37	18:28	16:29	16:05
14	05:12		05:42 (WEA 11)	05:57	06:24 (WEA 08)	06:47	07:36	07:31	08:14
	21:29	45	06:38 (WEA 12)	20:42	30	07:06 (WEA 09)	19:34	18:26	16:28	16:05
15	05:13		05:43 (WEA 11)	05:58	06:26 (WEA 08)	06:48	07:38	07:32	08:15
	21:28	44	06:38 (WEA 12)	20:40	28	07:07 (WEA 09)	19:32	18:23	16:26	16:05
16	05:14		05:44 (29B)	06:00	06:44 (WEA 09)	06:50	07:40	07:34	08:16
	21:27	43	06:38 (WEA 12)	20:38	23	07:07 (WEA 09)	19:30	18:21	16:25	16:05
17	05:15		05:45 (29B)	06:01	06:44 (WEA 09)	06:51	07:41	07:36	08:16
	21:26	42	06:38 (WEA 12)	20:36	24	07:08 (WEA 09)	19:27	18:19	16:23	16:05
18	05:17		05:47 (29B)	06:03	06:43 (WEA 09)	06:53	07:43	07:38	08:17
	21:25	41	06:39 (WEA 12)	20:34	24	07:07 (WEA 09)	19:25	18:17	16:22	16:05
19	05:18		05:48 (29B)	06:05	06:43 (WEA 09)	06:55	07:45	07:39	08:18
	21:24	40	06:39 (WEA 12)	20:32	24	07:07 (WEA 09)	19:23	18:15	16:21	16:06
20	05:19		05:49 (29B)	06:06	06:42 (WEA 09)	06:56	07:46	07:41	08:19
	21:23	38	06:39 (WEA 12)	20:30	25	07:07 (WEA 09)	19:20	18:13	16:20	16:06
21	05:21		05:50 (29B)	06:08	06:43 (WEA 09)	06:58	07:48	07:43	08:19
	21:21	36	06:38 (WEA 12)	20:28	24	07:07 (WEA 09)	19:18	18:11	16:18	16:06
22	05:22		05:51 (29B)	06:10	06:42 (WEA 09)	07:00	07:50	07:44	08:20
	21:20	34	06:38 (WEA 12)	20:26	24	07:06 (WEA 09)	19:16	18:09	16:17	16:07
23	05:23		06:08 (WEA 12)	06:11	06:43 (WEA 09)	07:01	07:52	07:46	08:20
	21:19	30	06:38 (WEA 12)	20:24	22	07:05 (WEA 09)	19:13	18:07	16:16	16:07
24	05:25		06:08 (WEA 12)	06:13	06:43 (WEA 09)	07:03	07:53	07:48	08:21
	21:17	30	06:38 (WEA 12)	20:21	21	07:04 (WEA 09)	19:11	18:05	16:15	16:08
25	05:26		06:08 (WEA 12)	06:14	06:44 (WEA 09)	07:04	06:55	07:49	08:21
	21:16	29	06:37 (WEA 12)	20:19	19	07:03 (WEA 09)	19:09	17:03	16:14	16:09
26	05:27		06:10 (WEA 12)	06:16	06:45 (WEA 09)	07:06	06:57	07:51	08:21
	21:15	27	06:37 (WEA 12)	20:17	15	07:00 (WEA 09)	19:06	17:01	16:13	16:09
27	05:29		06:10 (WEA 12)	06:18	06:47 (WEA 09)	07:08	06:59	07:52	08:22
	21:13	26	06:36 (WEA 12)	20:15	12	06:59 (WEA 09)	19:04	16:59	16:12	16:10
28	05:30		06:10 (WEA 12)	06:19			07:09	07:01	07:54	08:22
	21:12	25	06:35 (WEA 12)	20:13			19:02	16:57	16:11	16:11
29	05:32		06:12 (WEA 12)	06:21			07:11	07:02	07:55	08:22
	21:10	23	06:35 (WEA 12)	20:11			18:59	16:55	16:11	16:12
30	05:33		06:13 (WEA 12)	06:22			07:13	07:04	07:57	08:22
	21:09	20	06:33 (WEA 08)	20:08			18:57	16:53	16:10	16:13
31	05:35		06:15 (WEA 12)	06:24				07:06		08:22
	21:07	21	06:36 (WEA 08)	20:06				16:51		16:13
Sonnenscheinstunden	501			453			381	332	267	245
astr.max.mögl.Beschattung		1206			611					
Red.Sonnenscheinwahrsch.		0,40			0,43					
Reduktion Betriebsdauer		0,96			0,96					
Reduktion Windrichtung		0,71			0,72					
Gesamte Reduktion		0,27			0,29					
Met.wahrsch.Beschattung		329			180					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 23 - Reinstedt - Forellenweg 10

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22		07:56		07:03		06:52		07:22 (WEA 08)		06:42 (WEA 13)	
	16:15		17:02		17:54		19:47	37	08:07 (WEA 12)		07:09 (WEA 13)	
2	08:22		07:54		07:00		06:50		07:13 (29B)		06:43 (WEA 13)	
	16:16		17:04		17:55		19:49	34	08:05 (WEA 12)		07:08 (WEA 13)	
3	08:22		07:53		06:58		06:48		07:10 (29B)		06:44 (WEA 13)	
	16:17		17:06		17:57		19:51	29	08:01 (WEA 12)		07:08 (WEA 13)	
4	08:22		07:51		06:56		06:46		07:08 (29B)		06:45 (WEA 13)	
	16:18		17:08		17:59		19:52	20	07:35 (WEA 08)		07:06 (WEA 13)	
5	08:21		07:49		06:54		06:43		07:06 (29B)		06:46 (WEA 13)	
	16:19		17:10		18:01		19:54	15	07:32 (WEA 08)		07:05 (WEA 13)	
6	08:21		07:48		06:52		06:41		07:07 (29B)		06:47 (WEA 13)	
	16:20		17:11		18:02		19:56	10	07:17 (29B)		07:03 (WEA 13)	
7	08:21		07:46		06:49		06:39		07:06 (29B)		06:50 (WEA 13)	
	16:22		17:13		18:04		19:57	9	07:15 (29B)		07:01 (WEA 13)	
8	08:20		07:44		06:47		06:37		07:08 (29B)			
	16:23		17:15		18:06		19:59	5	07:13 (29B)			
9	08:20		07:42		06:45		06:34					
	16:24		17:17		18:08		20:01					
10	08:19		07:41		06:43		06:32					
	16:26		17:19		18:09	6	07:15 (WEA 09)					
11	08:19		07:39		06:41		06:30					
	16:27		17:21		18:11	12	07:17 (WEA 09)					
12	08:18		07:37		06:38		06:28					
	16:29		17:23		18:13	16	07:19 (WEA 09)					
13	08:17		07:35		06:36		06:25					
	16:30		17:24		18:15	18	07:20 (WEA 09)					
14	08:17		07:33		06:34		06:23					
	16:32		17:26		18:16	20	07:20 (WEA 09)					
15	08:16		07:31		06:31		06:21		06:44 (WEA 11)			
	16:33		17:28		18:18	20	07:20 (WEA 09)		07:03 (WEA 13)			
16	08:15		07:29		06:29		06:19		06:42 (WEA 11)			
	16:35		17:30		18:20	20	07:20 (WEA 09)		07:07 (WEA 13)			
17	08:14		07:27		06:27		06:17		06:40 (WEA 11)			
	16:36		17:32		18:22	20	07:19 (WEA 09)		07:09 (WEA 13)			
18	08:13		07:25		06:25		06:15		06:38 (WEA 11)			
	16:38		17:34		18:23	23	07:19 (WEA 09)		07:10 (WEA 13)			
19	08:12		07:23		06:22		06:12		06:36 (WEA 11)			
	16:40		17:35		18:25	24	07:18 (WEA 09)		07:11 (WEA 13)			
20	08:11		07:21		06:20		06:10		06:34 (WEA 11)			
	16:41		17:37		18:27	25	07:17 (WEA 09)		07:11 (WEA 13)			
21	08:10		07:19		06:18		06:08		06:34 (WEA 11)			
	16:43		17:39		18:28	25	07:15 (WEA 09)		07:11 (WEA 13)			
22	08:09		07:17		06:15		06:06		06:34 (WEA 11)			
	16:45		17:41		18:30	24	07:13 (WEA 09)		07:12 (WEA 13)			
23	08:08		07:15		06:13		06:04		06:34 (WEA 11)			
	16:46		17:43		18:32	26	07:14 (WEA 12)		07:12 (WEA 13)			
24	08:07		07:13		06:11		06:02		06:34 (WEA 11)			
	16:48		17:45		18:34	26	07:13 (WEA 12)		07:12 (WEA 13)			
25	08:05		07:11		06:08		06:00		06:34 (WEA 11)			
	16:50		17:46		18:35	34	07:14 (WEA 12)		07:12 (WEA 13)			
26	08:04		07:09		06:06		05:58		06:36 (WEA 11)			
	16:51		17:48		18:37	39	07:14 (WEA 12)		07:13 (WEA 13)			
27	08:03		07:07		06:04		05:56		06:37 (WEA 11)			
	16:53		17:50		18:39	41	07:12 (WEA 12)		07:12 (WEA 13)			
28	08:01		07:05		06:02		05:54		06:39 (WEA 11)			
	16:55		17:52		18:40	43	07:12 (WEA 12)		07:12 (WEA 13)			
29	08:00				06:59		05:52		06:42 (WEA 13)			
	16:57				19:42	43	08:11 (WEA 12)		07:11 (WEA 13)			
30	07:59				06:57		05:50		06:42 (WEA 13)			
	16:59				19:44	42	08:10 (WEA 12)		07:10 (WEA 13)			
31	07:57				06:55		07:22 (WEA 08)					
	17:00				19:45	40	08:09 (WEA 12)					
Sonnenscheinstunden	260		278		367		416		484		498	
astr.max.mögl.Beschattung						587		679		314		94
Red.Sonnenscheinwahrsch.						0,27		0,36		0,43		0,35
Reduktion Betriebsdauer						0,96		0,96		0,96		0,96
Reduktion Windrichtung						0,71		0,72		0,71		0,71
Gesamte Reduktion						0,18		0,25		0,29		0,24
Met.wahrsch.Beschattung						108		166		92		22

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 23 - Reinstedt - Forellenweg 10

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00			05:36			06:26			07:14		07:41 (WEA 09)	07:08	07:58
	21:37			21:06			20:04			18:55	17	07:58 (WEA 09)	16:49	16:09
2	05:01			05:38			06:27			07:16		07:43 (WEA 09)	07:09	08:00
	21:37			21:04			20:02			18:53	14	07:57 (WEA 09)	16:47	16:08
3	05:01		06:03 (19B)	05:39			06:29			07:18		07:45 (WEA 09)	07:11	08:01
	21:36	4	06:07 (19B)	21:02			19:59			18:50	9	07:54 (WEA 09)	16:45	16:08
4	05:02		06:02 (19B)	05:41			06:30		07:05 (29B)	07:19			07:13	08:02
	21:36	7	06:09 (19B)	21:01			19:57	5	07:10 (29B)	18:48			16:44	16:07
5	05:03		06:02 (19B)	05:42		07:03 (WEA 13)	06:32		07:04 (29B)	07:21			07:15	08:04
	21:36	8	06:10 (19B)	20:59	5	07:08 (WEA 13)	19:55	8	07:12 (29B)	18:46			16:42	16:07
6	05:04		06:01 (19B)	05:44		06:58 (WEA 13)	06:34		07:02 (29B)	07:23			07:17	08:05
	21:35	9	06:10 (19B)	20:57	13	07:11 (WEA 13)	19:53	10	07:12 (29B)	18:43			16:40	16:06
7	05:05		06:01 (19B)	05:46		06:57 (WEA 13)	06:35		07:02 (29B)	07:24			07:18	08:06
	21:34	10	06:11 (19B)	20:55	17	07:14 (WEA 13)	19:50	14	07:27 (WEA 08)	18:41			16:38	16:06
8	05:06		06:00 (19B)	05:47		06:55 (WEA 13)	06:37		07:02 (29B)	07:26			07:20	08:08
	21:34	11	06:11 (19B)	20:53	20	07:15 (WEA 13)	19:48	19	07:29 (WEA 08)	18:39			16:37	16:06
9	05:07		06:00 (19B)	05:49		06:54 (WEA 13)	06:39		07:04 (29B)	07:28			07:22	08:09
	21:33	12	06:12 (19B)	20:52	22	07:16 (WEA 13)	19:46	28	07:55 (WEA 12)	18:37			16:35	16:05
10	05:08		06:00 (19B)	05:50		06:52 (WEA 13)	06:40		07:06 (29B)	07:29			07:24	08:10
	21:32	13	06:13 (19B)	20:50	25	07:17 (WEA 13)	19:43	34	07:58 (WEA 12)	18:34			16:34	16:05
11	05:09		06:00 (19B)	05:52		06:52 (WEA 13)	06:42		07:15 (WEA 08)	07:31			07:25	08:11
	21:32	13	06:13 (19B)	20:48	26	07:18 (WEA 13)	19:41	35	07:59 (WEA 12)	18:32			16:32	16:05
12	05:10		06:00 (19B)	05:53		06:51 (WEA 13)	06:43		07:14 (WEA 08)	07:33			07:27	08:12
	21:31	14	06:14 (19B)	20:46	27	07:18 (WEA 13)	19:39	41	08:01 (WEA 12)	18:30			16:30	16:05
13	05:11		06:00 (19B)	05:55		06:50 (WEA 13)	06:45		07:13 (WEA 08)	07:34			07:29	08:13
	21:30	14	06:14 (19B)	20:44	29	07:19 (WEA 13)	19:37	43	08:01 (WEA 12)	18:28			16:29	16:05
14	05:12		06:00 (19B)	05:57		06:49 (WEA 13)	06:47		07:14 (WEA 08)	07:36			07:31	08:14
	21:29	14	06:14 (19B)	20:42	30	07:19 (WEA 13)	19:34	43	08:02 (WEA 12)	18:26			16:28	16:05
15	05:13		06:00 (19B)	05:58		06:46 (WEA 11)	06:48		07:13 (WEA 08)	07:38			07:32	08:15
	21:28	14	06:14 (19B)	20:40	33	07:19 (WEA 13)	19:32	43	08:01 (WEA 12)	18:23			16:26	16:05
16	05:14		05:59 (19B)	06:00		06:43 (WEA 11)	06:50		07:15 (WEA 08)	07:40			07:34	08:16
	21:27	15	06:14 (19B)	20:38	36	07:19 (WEA 13)	19:30	42	08:02 (WEA 12)	18:21			16:25	16:05
17	05:15		05:59 (19B)	06:01		06:42 (WEA 11)	06:51		07:17 (WEA 08)	07:41			07:36	08:16
	21:26	15	06:14 (19B)	20:36	37	07:19 (WEA 13)	19:27	38	08:02 (WEA 12)	18:19			16:23	16:05
18	05:17		06:00 (19B)	06:03		06:41 (WEA 11)	06:53		07:18 (WEA 08)	07:43			07:38	08:17
	21:25	15	06:15 (19B)	20:34	37	07:18 (WEA 13)	19:25	35	08:01 (WEA 12)	18:17			16:22	16:05
19	05:18		06:01 (19B)	06:05		06:40 (WEA 11)	06:55		07:34 (WEA 12)	07:45			07:39	08:18
	21:24	14	06:15 (19B)	20:32	39	07:19 (WEA 13)	19:23	27	08:01 (WEA 12)	18:15			16:21	16:06
20	05:19		06:01 (19B)	06:06		06:39 (WEA 11)	06:56		07:33 (WEA 12)	07:46			07:41	08:19
	21:23	14	06:15 (19B)	20:30	39	07:18 (WEA 13)	19:20	27	08:00 (WEA 12)	18:13			16:20	16:06
21	05:21		06:01 (19B)	06:08		06:39 (WEA 11)	06:58		07:34 (WEA 12)	07:48			07:43	08:19
	21:21	13	06:14 (19B)	20:28	38	07:17 (WEA 13)	19:18	25	07:59 (WEA 12)	18:11			16:18	16:06
22	05:22		06:01 (19B)	06:10		06:39 (WEA 11)	07:00		07:35 (WEA 12)	07:50			07:44	08:20
	21:20	12	06:13 (19B)	20:26	37	07:16 (WEA 13)	19:16	25	08:00 (WEA 09)	18:09			16:17	16:07
23	05:23		06:03 (19B)	06:11		06:39 (WEA 11)	07:01		07:35 (WEA 12)	07:52			07:46	08:20
	21:19	10	06:13 (19B)	20:24	36	07:15 (WEA 13)	19:13	26	08:01 (WEA 09)	18:07			16:16	16:07
24	05:25		06:04 (19B)	06:13		06:39 (WEA 11)	07:03		07:37 (WEA 12)	07:53			07:48	08:21
	21:18	8	06:12 (19B)	20:21	35	07:14 (WEA 13)	19:11	25	08:02 (WEA 09)	18:05			16:15	16:08
25	05:26		06:05 (19B)	06:14		06:41 (WEA 11)	07:04		07:38 (WEA 12)	06:55			07:49	08:21
	21:16	5	06:10 (19B)	20:19	32	07:13 (WEA 13)	19:09	23	08:01 (WEA 09)	17:03			16:14	16:09
26	05:27			06:16		06:42 (WEA 11)	07:06		07:41 (WEA 09)	06:57			07:51	08:21
	21:15			20:17	28	07:10 (WEA 13)	19:06	21	08:02 (WEA 09)	17:01			16:13	16:09
27	05:29			06:18		06:44 (WEA 11)	07:08		07:41 (WEA 09)	06:59			07:52	08:22
	21:13			20:15	23	07:08 (WEA 13)	19:04	21	08:02 (WEA 09)	16:59			16:12	16:10
28	05:30			06:19		06:45 (WEA 11)	07:09		07:40 (WEA 09)	07:01			07:54	08:22
	21:12			20:13	9	07:03 (WEA 13)	19:02	21	08:01 (WEA 09)	16:57			16:11	16:11
29	05:32			06:21			07:11		07:41 (WEA 09)	07:02			07:55	08:22
	21:10			20:11			18:59	20	08:01 (WEA 09)	16:55			16:10	16:12
30	05:33			06:22			07:13		07:41 (WEA 09)	07:04			07:57	08:22
	21:09			20:08			18:57	19	08:00 (WEA 09)	16:53			16:10	16:13
31	05:35			06:24						07:06				08:22
	21:07			20:06						16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		264			673			718			40			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,71			0,70			
Gesamte Reduktion		0,27			0,29			0,23			0,19			
Met.wahrsch.Beschattung		72			198			167			8			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 24 - Reinstedt - Forellenweg 8

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März		April		Mai		Juni	
1	08:22	07:56	07:03		06:52		07:15 (29B)	05:48	06:49 (WEA 13)	05:03		05:57 (19B)
	16:15	17:02	17:54		19:47	29	08:06 (WEA 12)	20:38	23 07:12 (WEA 13)	21:23	10	06:07 (19B)
2	08:22	07:54	07:00		06:50		07:13 (29B)	05:46	06:50 (WEA 13)	05:02		05:59 (19B)
	16:16	17:04	17:55		19:49	22	07:41 (WEA 08)	20:39	20 07:10 (WEA 13)	21:24	8	06:07 (19B)
3	08:22	07:53	06:58		06:48		07:10 (29B)	05:44	06:52 (WEA 13)	05:01		06:00 (19B)
	16:17	17:06	17:57		19:51	19	07:37 (WEA 08)	20:41	17 07:09 (WEA 13)	21:25	6	06:06 (19B)
4	08:22	07:51	06:56		06:46		07:11 (29B)	05:42	06:54 (WEA 13)	05:01		06:02 (19B)
	16:18	17:08	17:59		19:52	10	07:21 (29B)	20:43	13 07:07 (WEA 13)	21:26	4	06:06 (19B)
5	08:21	07:49	06:54		06:43		07:11 (29B)	05:41	06:58 (WEA 13)	05:00		
	16:19	17:10	18:01		19:54	9	07:20 (29B)	20:44	4 07:02 (WEA 13)	21:27		
6	08:21	07:48	06:52		06:41		07:13 (29B)	05:39		04:59		
	16:20	17:11	18:02		19:56	5	07:18 (29B)	20:46		21:28		
7	08:21	07:46	06:49		06:39			05:37		04:59		
	16:22	17:13	18:04		19:57			20:48		21:29		
8	08:20	07:44	06:47		06:37			05:35		04:58		
	16:23	17:15	18:06		19:59			20:49		21:30		
9	08:20	07:42	06:45	07:10 (WEA 09)	06:34			05:33		04:58		
	16:24	17:17	18:08	10 07:20 (WEA 09)	20:01			20:51		21:31		
10	08:19	07:41	06:43	07:08 (WEA 09)	06:32			05:32		04:57		
	16:26	17:19	18:09	14 07:22 (WEA 09)	20:02			20:52		21:32		
11	08:19	07:39	06:41	07:06 (WEA 09)	06:30			05:30		04:57		
	16:27	17:21	18:11	17 07:23 (WEA 09)	20:04			20:54		21:32		
12	08:18	07:37	06:38	07:05 (WEA 09)	06:28			05:28		04:57		
	16:29	17:23	18:13	19 07:24 (WEA 09)	20:06			20:56		21:33		
13	08:17	07:35	06:36	07:04 (WEA 09)	06:25		07:00 (WEA 13)	05:27		04:56		
	16:30	17:24	18:15	20 07:24 (WEA 09)	20:07	10	07:10 (WEA 13)	20:57		21:34		
14	08:17	07:33	06:34	07:03 (WEA 09)	06:23		06:46 (WEA 11)	05:25		04:56		
	16:32	17:26	18:16	21 07:24 (WEA 09)	20:09	24	07:13 (WEA 13)	20:59		21:34		
15	08:16	07:31	06:31	07:03 (WEA 09)	06:21		06:44 (WEA 11)	05:24		04:56		
	16:33	17:28	18:18	21 07:24 (WEA 09)	20:11	31	07:15 (WEA 13)	21:00		21:35		
16	08:15	07:29	06:29	07:01 (WEA 12)	06:19		06:42 (WEA 11)	05:22	05:58 (19B)	04:56		
	16:35	17:30	18:20	22 07:23 (WEA 09)	20:13	34	07:16 (WEA 13)	21:02	6 06:04 (19B)	21:36		
17	08:14	07:27	06:27	06:58 (WEA 12)	06:17		06:40 (WEA 11)	05:21	05:57 (19B)	04:56		
	16:36	17:32	18:22	24 07:22 (WEA 09)	20:14	37	07:17 (WEA 13)	21:03	9 06:06 (19B)	21:36		
18	08:13	07:25	06:25	06:56 (WEA 12)	06:15		06:39 (WEA 11)	05:19	05:56 (19B)	04:56		
	16:38	17:34	18:23	25 07:21 (WEA 09)	20:16	38	07:17 (WEA 13)	21:05	12 06:08 (19B)	21:36		
19	08:12	07:23	06:22	06:55 (WEA 12)	06:12		06:38 (WEA 11)	05:18	05:55 (19B)	04:56		
	16:40	17:35	18:25	25 07:20 (WEA 09)	20:18	40	07:18 (WEA 13)	21:06	13 06:08 (19B)	21:37		
20	08:11	07:21	06:20	06:54 (WEA 12)	06:10		06:37 (WEA 11)	05:16	05:55 (19B)	04:56		
	16:41	17:37	18:27	25 07:19 (WEA 12)	20:19	40	07:17 (WEA 13)	21:08	13 06:08 (19B)	21:37		
21	08:10	07:19	06:18	06:53 (WEA 12)	06:08		06:37 (WEA 11)	05:15	05:55 (19B)	04:56		
	16:43	17:39	18:28	26 07:19 (WEA 12)	20:21	40	07:17 (WEA 13)	21:09	14 06:09 (19B)	21:37		
22	08:09	07:17	06:15	06:52 (WEA 12)	06:06		06:37 (WEA 11)	05:14	05:55 (19B)	04:56		
	16:45	17:41	18:30	27 07:19 (WEA 12)	20:23	40	07:17 (WEA 13)	21:10	14 06:09 (19B)	21:38		
23	08:08	07:15	06:13	06:36 (WEA 08)	06:04		06:37 (WEA 11)	05:13	05:55 (19B)	04:56		
	16:46	17:43	18:32	30 07:19 (WEA 12)	20:24	40	07:17 (WEA 13)	21:12	15 06:10 (19B)	21:38		
24	08:07	07:13	06:11	06:33 (WEA 08)	06:02		06:38 (WEA 11)	05:11	05:55 (19B)	04:57		
	16:48	17:45	18:34	36 07:18 (WEA 12)	20:26	39	07:17 (WEA 13)	21:13	15 06:10 (19B)	21:38		
25	08:05	07:11	06:08	06:31 (WEA 08)	06:00		06:39 (WEA 11)	05:10	05:55 (19B)	04:57		
	16:50	17:46	18:35	39 07:18 (WEA 12)	20:28	38	07:17 (WEA 13)	21:15	15 06:10 (19B)	21:38		
26	08:04	07:09	06:06	06:29 (WEA 08)	05:58		06:41 (WEA 11)	05:09	05:55 (19B)	04:57		
	16:51	17:48	18:37	42 07:18 (WEA 12)	20:29	36	07:17 (WEA 13)	21:16	15 06:10 (19B)	21:38		
27	08:03	07:07	06:04	06:27 (WEA 08)	05:56		06:44 (WEA 11)	05:08	05:55 (19B)	04:58		
	16:53	17:50	18:39	42 07:16 (WEA 12)	20:31	32	07:16 (WEA 13)	21:17	15 06:10 (19B)	21:38		
28	08:01	07:05	06:02	06:26 (WEA 08)	05:54		06:48 (WEA 13)	05:07	05:56 (19B)	04:58		
	16:55	17:52	18:40	41 07:15 (WEA 12)	20:33	27	07:15 (WEA 13)	21:18	14 06:10 (19B)	21:38		
29	08:00		06:59	07:26 (WEA 08)	05:52		06:48 (WEA 13)	05:06	05:56 (19B)	04:59		
	16:57		19:42	39 08:14 (WEA 12)	20:34	26	07:14 (WEA 13)	21:20	13 06:09 (19B)	21:38		
30	07:59		06:57	07:25 (WEA 08)	05:50		06:49 (WEA 13)	05:05	05:56 (19B)	04:59		
	16:59		19:44	36 08:11 (WEA 12)	20:36	24	07:13 (WEA 13)	21:21	13 06:09 (19B)	21:37		
31	07:57		06:55	07:17 (29B)				05:04	05:57 (19B)			
	17:00		19:45	33 08:09 (WEA 12)				21:22	11 06:08 (19B)			
Sonnenscheinstunden	260	278	367		416			484		498		
astr.max.mögl.Beschattung				634		690			284		28	
Red.Sonnenscheinwahrsch.				0,27		0,36			0,43		0,35	
Reduktion Betriebsdauer				0,96		0,96			0,96		0,96	
Reduktion Windrichtung				0,71		0,72			0,71		0,71	
Gesamte Reduktion				0,18		0,25			0,29		0,24	
Met.wahrsch.Beschattung				116		170			83		7	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM) Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 24 - Reinstedt - Forellenweg 8

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00			05:36			06:26			07:14		07:43 (WEA 09)	07:08	07:58
	21:37			21:06			20:04			18:55	20	08:03 (WEA 09)	16:49	16:09
2	05:01			05:38			06:27			07:16		07:44 (WEA 09)	07:09	08:00
	21:37			21:04			20:02			18:53	18	08:02 (WEA 09)	16:47	16:08
3	05:01			05:39			06:29			07:18		07:45 (WEA 09)	07:11	08:01
	21:36			21:02			19:59			18:50	16	08:01 (WEA 09)	16:45	16:08
4	05:02			05:41			06:30			07:19		07:46 (WEA 09)	07:13	08:02
	21:36			21:01			19:57			18:48	12	07:58 (WEA 09)	16:44	16:07
5	05:03			05:42			06:32			07:21		07:48 (WEA 09)	07:15	08:04
	21:36			20:59			19:55			18:46	8	07:56 (WEA 09)	16:42	16:07
6	05:04			05:44			06:34		07:08 (29B)	07:23			07:17	08:05
	21:35			20:57			19:53	5	07:13 (29B)	18:43			16:40	16:06
7	05:05			05:46			06:35		07:06 (29B)	07:24			07:18	08:06
	21:34			20:55			19:50	9	07:15 (29B)	18:41			16:38	16:06
8	05:06		06:09 (19B)	05:47		07:06 (WEA 13)	06:37		07:05 (29B)	07:26			07:20	08:08
	21:34	2	06:11 (19B)	20:53	7	07:13 (WEA 13)	19:48	10	07:15 (29B)	18:39			16:37	16:06
9	05:07		06:07 (19B)	05:49		07:03 (WEA 13)	06:39		07:05 (29B)	07:28			07:22	08:09
	21:33	6	06:13 (19B)	20:52	14	07:17 (WEA 13)	19:46	18	07:31 (WEA 08)	18:37			16:35	16:05
10	05:08		06:07 (19B)	05:50		07:00 (WEA 13)	06:40		07:06 (29B)	07:29			07:24	08:10
	21:32	7	06:14 (19B)	20:50	18	07:18 (WEA 13)	19:43	22	07:34 (WEA 08)	18:34			16:34	16:05
11	05:09		06:06 (19B)	05:52		06:59 (WEA 13)	06:42		07:07 (29B)	07:31			07:25	08:11
	21:32	9	06:15 (19B)	20:48	21	07:20 (WEA 13)	19:41	26	07:57 (WEA 12)	18:32			16:32	16:05
12	05:10		06:06 (19B)	05:53		06:58 (WEA 13)	06:43		07:09 (29B)	07:33			07:27	08:12
	21:31	10	06:16 (19B)	20:46	23	07:21 (WEA 13)	19:39	33	08:01 (WEA 12)	18:30			16:30	16:05
13	05:11		06:05 (19B)	05:55		06:57 (WEA 13)	06:45		07:17 (WEA 08)	07:34			07:29	08:13
	21:30	12	06:17 (19B)	20:44	25	07:22 (WEA 13)	19:37	35	08:02 (WEA 12)	18:28			16:29	16:05
14	05:12		06:05 (19B)	05:57		06:56 (WEA 13)	06:47		07:16 (WEA 08)	07:36			07:31	08:14
	21:29	12	06:17 (19B)	20:42	26	07:22 (WEA 13)	19:34	40	08:04 (WEA 12)	18:26			16:28	16:05
15	05:13		06:04 (19B)	05:58		06:55 (WEA 13)	06:48		07:15 (WEA 08)	07:38			07:32	08:15
	21:28	14	06:18 (19B)	20:40	28	07:23 (WEA 13)	19:32	42	08:04 (WEA 12)	18:23			16:26	16:05
16	05:14		06:04 (19B)	06:00		06:50 (WEA 11)	06:50		07:16 (WEA 08)	07:40			07:34	08:16
	21:27	14	06:18 (19B)	20:38	33	07:23 (WEA 13)	19:30	43	08:05 (WEA 12)	18:21			16:25	16:05
17	05:15		06:04 (19B)	06:01		06:47 (WEA 11)	06:51		07:17 (WEA 08)	07:41			07:36	08:16
	21:26	14	06:18 (19B)	20:36	37	07:24 (WEA 13)	19:27	42	08:06 (WEA 12)	18:19			16:23	16:05
18	05:17		06:05 (19B)	06:03		06:45 (WEA 11)	06:53		07:18 (WEA 08)	07:43			07:38	08:17
	21:25	14	06:19 (19B)	20:34	38	07:23 (WEA 13)	19:25	39	08:05 (WEA 12)	18:17			16:22	16:05
19	05:18		06:04 (19B)	06:05		06:44 (WEA 11)	06:55		07:20 (WEA 08)	07:45			07:39	08:18
	21:24	15	06:19 (19B)	20:32	40	07:24 (WEA 13)	19:23	38	08:06 (WEA 12)	18:15			16:21	16:06
20	05:19		06:04 (19B)	06:06		06:43 (WEA 11)	06:56		07:21 (WEA 08)	07:46			07:41	08:19
	21:23	15	06:19 (19B)	20:30	40	07:23 (WEA 13)	19:20	33	08:05 (WEA 12)	18:13			16:20	16:06
21	05:21		06:04 (19B)	06:08		06:43 (WEA 11)	06:58		07:38 (WEA 12)	07:48			07:43	08:19
	21:21	15	06:19 (19B)	20:28	40	07:23 (WEA 13)	19:18	27	08:05 (WEA 12)	18:11			16:18	16:06
22	05:22		06:04 (19B)	06:10		06:42 (WEA 11)	07:00		07:38 (WEA 12)	07:50			07:44	08:20
	21:20	15	06:19 (19B)	20:26	40	07:22 (WEA 13)	19:16	26	08:04 (WEA 12)	18:09			16:17	16:07
23	05:23		06:05 (19B)	06:11		06:42 (WEA 11)	07:01		07:38 (WEA 12)	07:52			07:46	08:20
	21:19	14	06:19 (19B)	20:24	40	07:22 (WEA 13)	19:13	25	08:03 (WEA 12)	18:07			16:16	16:07
24	05:25		06:05 (19B)	06:13		06:41 (WEA 11)	07:03		07:38 (WEA 12)	07:53			07:48	08:21
	21:18	14	06:19 (19B)	20:21	40	07:21 (WEA 13)	19:11	25	08:03 (WEA 09)	18:05			16:15	16:08
25	05:26		06:06 (19B)	06:14		06:42 (WEA 11)	07:04		07:38 (WEA 12)	06:55			07:49	08:21
	21:16	12	06:18 (19B)	20:19	38	07:20 (WEA 13)	19:09	25	08:03 (WEA 09)	17:03			16:14	16:09
26	05:27		06:07 (19B)	06:16		06:42 (WEA 11)	07:06		07:40 (WEA 12)	06:57			07:51	08:21
	21:15	11	06:18 (19B)	20:17	36	07:18 (WEA 13)	19:06	24	08:04 (WEA 09)	17:01			16:13	16:09
27	05:29		06:08 (19B)	06:18		06:44 (WEA 11)	07:08		07:42 (WEA 12)	06:59			07:52	08:22
	21:13	8	06:16 (19B)	20:15	34	07:18 (WEA 13)	19:04	23	08:05 (WEA 09)	16:59			16:12	16:10
28	05:30		06:10 (19B)	06:19		06:45 (WEA 11)	07:09		07:44 (WEA 09)	07:01			07:54	08:22
	21:12	3	06:13 (19B)	20:13	30	07:15 (WEA 13)	19:02	20	08:04 (WEA 09)	16:57			16:11	16:11
29	05:32			06:21		06:47 (WEA 11)	07:11		07:44 (WEA 09)	07:02			07:55	08:22
	21:10			20:11	23	07:13 (WEA 13)	18:59	20	08:04 (WEA 09)	16:55			16:10	16:12
30	05:33			06:22		07:01 (WEA 13)	07:13		07:44 (WEA 09)	07:04			07:57	08:22
	21:09			20:08	10	07:11 (WEA 13)	18:57	20	08:04 (WEA 09)	16:53			16:10	16:13
31	05:35			06:24						07:06				08:22
	21:07			20:06						16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		236			681			670			74			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,71			0,70			
Gesamte Reduktion		0,27			0,30			0,23			0,19			
Met.wahrsch.Beschattung		65			201			156			14			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 25 - Reinstedt - Forellenweg 6

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März			April			Mai			Juni	
1	08:22		07:56		07:03			06:52			07:16 (29B)	05:48		07:00 (WEA 13)	05:03
	16:15		17:02		17:54			19:47	21		07:43 (WEA 08)	20:38	13	07:13 (WEA 13)	21:23
2	08:22		07:54		07:00			06:50			07:17 (29B)	05:46		07:04 (WEA 13)	05:02
	16:16		17:04		17:55			19:49	10		07:27 (29B)	20:39	5	07:09 (WEA 13)	21:24
3	08:22		07:53		06:58			06:48			07:17 (29B)	05:44			05:01
	16:17		17:06		17:57			19:51	8		07:25 (29B)	20:41			21:25
4	08:22		07:51		06:56			06:46			07:19 (29B)	05:42			05:01
	16:18		17:08		17:59			19:52	3		07:22 (29B)	20:43			21:26
5	08:21		07:49		06:54			06:43				05:41			05:00
	16:19		17:10		18:01			19:54				20:44			21:27
6	08:21		07:48		06:52		07:18 (WEA 09)	06:41				05:39			04:59
	16:20		17:11		18:02	6	07:24 (WEA 09)	19:56				20:46			21:28
7	08:21		07:46		06:49		07:14 (WEA 09)	06:39				05:37			04:59
	16:22		17:13		18:04	12	07:26 (WEA 09)	19:57				20:48			21:29
8	08:20		07:44		06:47		07:12 (WEA 09)	06:37				05:35			04:58
	16:23		17:15		18:06	16	07:28 (WEA 09)	19:59				20:49			21:30
9	08:20		07:42		06:45		07:11 (WEA 09)	06:34				05:33			04:58
	16:24		17:17		18:08	18	07:29 (WEA 09)	20:01				20:51			21:31
10	08:19		07:41		06:43		07:10 (WEA 09)	06:32			07:08 (WEA 13)	05:32			04:57
	16:26		17:19		18:09	20	07:30 (WEA 09)	20:02	9		07:17 (WEA 13)	20:52			21:32
11	08:19		07:39		06:41		07:09 (WEA 09)	06:30			07:04 (WEA 13)	05:30			04:57
	16:27		17:21		18:11	20	07:29 (WEA 09)	20:04	16		07:20 (WEA 13)	20:54			21:32
12	08:18		07:37		06:38		07:09 (WEA 09)	06:28			06:50 (WEA 11)	05:28			04:57
	16:29		17:23		18:13	21	07:30 (WEA 09)	20:06	27		07:21 (WEA 13)	20:56			21:33
13	08:17		07:35		06:36		07:09 (WEA 09)	06:25			06:48 (WEA 11)	05:27		06:04 (19B)	04:56
	16:30		17:24		18:15	21	07:30 (WEA 09)	20:07	35		07:23 (WEA 13)	20:57	3	06:07 (19B)	21:34
14	08:17		07:33		06:34		07:05 (WEA 12)	06:23			06:46 (WEA 11)	05:25		06:02 (19B)	04:56
	16:32		17:26		18:16	23	07:28 (WEA 09)	20:09	38		07:24 (WEA 13)	20:59	8	06:10 (19B)	21:34
15	08:16		07:31		06:31		07:04 (WEA 12)	06:21			06:44 (WEA 11)	05:24		06:01 (19B)	04:56
	16:33		17:28		18:18	24	07:28 (WEA 09)	20:11	41		07:25 (WEA 13)	21:00	11	06:12 (19B)	21:35
16	08:15		07:29		06:29		07:02 (WEA 12)	06:19			06:43 (WEA 11)	05:22		06:00 (19B)	04:56
	16:35		17:30		18:20	25	07:27 (WEA 09)	20:13	42		07:25 (WEA 13)	21:02	12	06:12 (19B)	21:36
17	08:14		07:27		06:27		07:01 (WEA 12)	06:17			06:42 (WEA 11)	05:21		05:59 (19B)	04:56
	16:36		17:32		18:22	25	07:26 (WEA 12)	20:14	43		07:25 (WEA 13)	21:03	14	06:13 (19B)	21:36
18	08:13		07:25		06:25		07:00 (WEA 12)	06:15			06:42 (WEA 11)	05:19		05:59 (19B)	04:56
	16:38		17:34		18:23	26	07:26 (WEA 12)	20:16	44		07:26 (WEA 13)	21:05	15	06:14 (19B)	21:36
19	08:12		07:23		06:22		07:00 (WEA 12)	06:12			06:42 (WEA 11)	05:18		05:58 (19B)	04:56
	16:40		17:35		18:25	27	07:27 (WEA 12)	20:18	44		07:26 (WEA 13)	21:06	16	06:14 (19B)	21:37
20	08:11		07:21		06:20		06:59 (WEA 12)	06:10			06:41 (WEA 11)	05:16		05:58 (19B)	04:56
	16:41		17:37		18:27	28	07:27 (WEA 12)	20:19	44		07:25 (WEA 13)	21:08	16	06:14 (19B)	21:37
21	08:10		07:19		06:18		06:41 (WEA 08)	06:08			06:41 (WEA 11)	05:15		05:59 (19B)	04:56
	16:43		17:39		18:28	29	07:26 (WEA 12)	20:21	43		07:24 (WEA 13)	21:09	15	06:14 (19B)	21:37
22	08:09		07:17		06:15		06:38 (WEA 08)	06:06			06:42 (WEA 11)	05:14		05:59 (19B)	04:56
	16:45		17:41		18:30	37	07:26 (WEA 12)	20:23	42		07:24 (WEA 13)	21:10	15	06:14 (19B)	21:38
23	08:08		07:15		06:13		06:36 (WEA 08)	06:04			06:43 (WEA 11)	05:13		05:59 (19B)	04:56
	16:46		17:43		18:32	38	07:25 (WEA 12)	20:24	40		07:23 (WEA 13)	21:12	15	06:14 (19B)	21:38
24	08:07		07:13		06:11		06:33 (WEA 08)	06:02			06:44 (WEA 11)	05:11		06:00 (19B)	04:57
	16:48		17:45		18:34	42	07:24 (WEA 12)	20:26	39		07:23 (WEA 13)	21:13	14	06:14 (19B)	21:38
25	08:05		07:11		06:08		06:32 (WEA 08)	06:00			06:46 (WEA 11)	05:10		06:00 (19B)	04:57
	16:50		17:46		18:35	41	07:23 (WEA 12)	20:28	34		07:22 (WEA 13)	21:15	14	06:14 (19B)	21:38
26	08:04		07:09		06:06		06:31 (WEA 08)	05:58			06:55 (WEA 13)	05:09		06:01 (19B)	04:57
	16:51		17:48		18:37	41	07:22 (WEA 12)	20:29	27		07:22 (WEA 13)	21:16	13	06:14 (19B)	21:38
27	08:03		07:07		06:04		06:30 (WEA 08)	05:56			06:56 (WEA 13)	05:08		06:01 (19B)	04:58
	16:53		17:50		18:39	39	07:20 (WEA 12)	20:31	25		07:21 (WEA 13)	21:17	12	06:13 (19B)	21:38
28	08:01		07:05		06:02		06:30 (WEA 08)	05:54			06:56 (WEA 13)	05:07		06:02 (19B)	04:58
	16:55		17:52		18:40	35	07:18 (WEA 12)	20:33	23		07:19 (WEA 13)	21:18	11	06:13 (19B)	21:38
29	08:00				06:59		07:22 (29B)	05:52			06:57 (WEA 13)	05:06		06:03 (19B)	04:59
	16:57				19:42	30	08:14 (WEA 12)	20:34	21		07:18 (WEA 13)	21:20	9	06:12 (19B)	21:38
30	07:59				06:57		07:19 (29B)	05:50			06:59 (WEA 13)	05:05		06:04 (19B)	04:59
	16:59				19:44	23	07:46 (WEA 08)	20:36	17		07:16 (WEA 13)	21:21	7	06:11 (19B)	21:37
31	07:57				06:55		07:17 (29B)					05:04		06:05 (19B)	
	17:00				19:45	23	07:45 (WEA 08)					21:22	4	06:09 (19B)	
Sonnenscheinstunden	260		278		367			416				484			498
astr.max.mögl.Beschattung						690			736				242		
Red.Sonnenscheinwahrsch.						0,27			0,36				0,43		
Reduktion Betriebsdauer						0,96			0,96				0,96		
Reduktion Windrichtung						0,71			0,72				0,71		
Gesamte Reduktion						0,18			0,25				0,29		
Met.wahrsch.Beschattung						125			181				71		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 25 - Reinstedt - Forellenweg 6

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00			05:36			06:26		07:03 (WEA 13)	07:14		07:48 (WEA 09)	07:08	07:58
	21:37			21:06			20:04	16	07:19 (WEA 13)	18:55	21	08:09 (WEA 09)	16:49	16:09
2	05:01			05:38			06:27		07:06 (WEA 13)	07:16		07:48 (WEA 09)	07:09	08:00
	21:37			21:04			20:02	9	07:15 (WEA 13)	18:53	20	08:08 (WEA 09)	16:47	16:08
3	05:01			05:39			06:29			07:18		07:48 (WEA 09)	07:11	08:01
	21:36			21:02			19:59			18:50	20	08:08 (WEA 09)	16:45	16:08
4	05:02			05:41			06:30			07:19		07:48 (WEA 09)	07:13	08:02
	21:36			21:01			19:57			18:48	18	08:06 (WEA 09)	16:44	16:07
5	05:03			05:42			06:32			07:21		07:49 (WEA 09)	07:15	08:04
	21:36			20:59			19:55			18:46	17	08:06 (WEA 09)	16:42	16:07
6	05:04			05:44			06:34			07:23		07:50 (WEA 09)	07:17	08:05
	21:35			20:57			19:53			18:43	14	08:04 (WEA 09)	16:40	16:06
7	05:05			05:46			06:35			07:24		07:51 (WEA 09)	07:18	08:06
	21:34			20:55			19:50			18:41	10	08:01 (WEA 09)	16:38	16:06
8	05:06			05:47			06:37		07:14 (29B)	07:26			07:20	08:08
	21:34			20:53			19:48	2	07:16 (29B)	18:39			16:37	16:06
9	05:07			05:49			06:39		07:11 (29B)	07:28			07:22	08:09
	21:33			20:52			19:46	8	07:19 (29B)	18:37			16:35	16:05
10	05:08			05:50			06:40		07:10 (29B)	07:29			07:24	08:10
	21:32			20:50			19:43	10	07:20 (29B)	18:34			16:34	16:05
11	05:09			05:52		07:12 (WEA 13)	06:42		07:09 (29B)	07:31			07:25	08:11
	21:32			20:48	8	07:20 (WEA 13)	19:41	19	07:35 (WEA 08)	18:32			16:32	16:05
12	05:10		06:15 (19B)	05:53		07:08 (WEA 13)	06:43		07:09 (29B)	07:33			07:27	08:12
	21:31	1	06:16 (19B)	20:46	14	07:22 (WEA 13)	19:39	23	07:37 (WEA 08)	18:30			16:30	16:05
13	05:11		06:13 (19B)	05:55		07:07 (WEA 13)	06:45		07:10 (29B)	07:34			07:29	08:13
	21:30	6	06:19 (19B)	20:44	18	07:25 (WEA 13)	19:37	23	07:37 (WEA 08)	18:28			16:29	16:05
14	05:12		06:11 (19B)	05:57		07:05 (WEA 13)	06:47		07:12 (29B)	07:36			07:31	08:14
	21:29	9	06:20 (19B)	20:42	21	07:26 (WEA 13)	19:34	30	08:04 (WEA 12)	18:26			16:28	16:05
15	05:13		06:11 (19B)	05:58		07:04 (WEA 13)	06:48		07:20 (WEA 08)	07:38			07:32	08:15
	21:28	10	06:21 (19B)	20:40	23	07:27 (WEA 13)	19:32	32	08:06 (WEA 12)	18:23			16:26	16:05
16	05:14		06:10 (19B)	06:00		07:02 (WEA 13)	06:50		07:20 (WEA 08)	07:40			07:34	08:16
	21:27	12	06:22 (19B)	20:38	26	07:28 (WEA 13)	19:30	37	08:09 (WEA 12)	18:21			16:25	16:05
17	05:15		06:09 (19B)	06:01		07:01 (WEA 13)	06:51		07:20 (WEA 08)	07:41			07:36	08:16
	21:26	13	06:22 (19B)	20:36	28	07:29 (WEA 13)	19:27	39	08:10 (WEA 12)	18:19			16:23	16:05
18	05:17		06:10 (19B)	06:03		06:52 (WEA 11)	06:53		07:19 (WEA 08)	07:43			07:38	08:17
	21:25	14	06:24 (19B)	20:34	37	07:29 (WEA 13)	19:25	41	08:10 (WEA 12)	18:17			16:22	16:05
19	05:18		06:09 (19B)	06:05		06:50 (WEA 11)	06:55		07:20 (WEA 08)	07:45			07:39	08:18
	21:24	15	06:24 (19B)	20:32	40	07:30 (WEA 13)	19:23	41	08:11 (WEA 12)	18:15			16:21	16:06
20	05:19		06:09 (19B)	06:06		06:48 (WEA 11)	06:56		07:21 (WEA 08)	07:46			07:41	08:19
	21:23	15	06:24 (19B)	20:30	41	07:29 (WEA 13)	19:20	40	08:11 (WEA 12)	18:13			16:20	16:06
21	05:21		06:09 (19B)	06:08		06:47 (WEA 11)	06:58		07:23 (WEA 08)	07:48			07:43	08:19
	21:21	15	06:24 (19B)	20:28	43	07:30 (WEA 13)	19:18	37	08:11 (WEA 12)	18:11			16:18	16:06
22	05:22		06:08 (19B)	06:10		06:46 (WEA 11)	07:00		07:25 (WEA 08)	07:50			07:44	08:20
	21:20	16	06:24 (19B)	20:26	43	07:29 (WEA 13)	19:16	32	08:11 (WEA 12)	18:09			16:17	16:07
23	05:23		06:09 (19B)	06:11		06:46 (WEA 11)	07:01		07:43 (WEA 12)	07:52			07:46	08:20
	21:19	16	06:25 (19B)	20:24	43	07:29 (WEA 13)	19:13	28	08:11 (WEA 12)	18:07			16:16	16:07
24	05:25		06:09 (19B)	06:13		06:45 (WEA 11)	07:03		07:43 (WEA 12)	07:53			07:48	08:21
	21:18	15	06:24 (19B)	20:21	43	07:28 (WEA 13)	19:11	27	08:10 (WEA 12)	18:05			16:15	16:08
25	05:26		06:09 (19B)	06:14		06:45 (WEA 11)	07:04		07:42 (WEA 12)	06:55			07:49	08:21
	21:16	15	06:24 (19B)	20:19	43	07:28 (WEA 13)	19:09	27	08:09 (WEA 12)	17:03			16:14	16:09
26	05:27		06:10 (19B)	06:16		06:44 (WEA 11)	07:06		07:43 (WEA 12)	06:57			07:51	08:21
	21:15	14	06:24 (19B)	20:17	43	07:27 (WEA 13)	19:06	26	08:09 (WEA 12)	17:01			16:13	16:09
27	05:29		06:10 (19B)	06:18		06:45 (WEA 11)	07:08		07:44 (WEA 12)	06:59			07:52	08:22
	21:13	13	06:23 (19B)	20:15	42	07:27 (WEA 13)	19:04	24	08:08 (WEA 09)	16:59			16:12	16:10
28	05:30		06:10 (19B)	06:19		06:45 (WEA 11)	07:09		07:44 (WEA 12)	07:01			07:54	08:22
	21:12	12	06:22 (19B)	20:13	40	07:25 (WEA 13)	19:02	24	08:08 (WEA 09)	16:57			16:11	16:11
29	05:32		06:12 (19B)	06:21		06:47 (WEA 11)	07:11		07:45 (WEA 12)	07:02			07:55	08:22
	21:10	10	06:22 (19B)	20:11	38	07:25 (WEA 13)	18:59	24	08:09 (WEA 09)	16:55			16:10	16:12
30	05:33		06:13 (19B)	06:22		06:49 (WEA 11)	07:13		07:47 (WEA 12)	07:04			07:57	08:22
	21:09	7	06:20 (19B)	20:08	35	07:24 (WEA 13)	18:57	22	08:09 (WEA 09)	16:53			16:10	16:13
31	05:35			06:24		06:50 (WEA 11)				07:06				08:22
	21:07			20:06	27	07:21 (WEA 13)				16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		228			696			641			120			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,71			0,70			
Gesamte Reduktion		0,27			0,30			0,23			0,19			
Met.wahrsch.Beschattung		62			206			148			23			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 26 - Reinstedt - Forellenweg 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22	07:56		07:03		07:29 (WEA 09)	06:52		05:48		05:03	05:32 (WEA 02)
	16:15	17:02		17:54	7	07:36 (WEA 09)	19:47		20:38		21:23	20 05:52 (WEA 02)
2	08:22	07:54		07:00		07:26 (WEA 09)	06:50		05:46		05:02	05:33 (WEA 02)
	16:16	17:04		17:55	13	07:39 (WEA 09)	19:49		20:39		21:24	20 05:53 (WEA 02)
3	08:22	07:53		06:58		07:23 (WEA 09)	06:48	07:24 (WEA 13)	05:44		05:01	05:33 (WEA 02)
	16:17	17:06		17:57	16	07:39 (WEA 09)	19:51	10 07:34 (WEA 13)	20:41		21:25	20 05:53 (WEA 02)
4	08:22	07:51		06:56		07:22 (WEA 09)	06:46	07:20 (WEA 13)	05:42		05:01	05:33 (WEA 02)
	16:18	17:08		17:59	18	07:40 (WEA 09)	19:52	17 07:37 (WEA 13)	20:43		21:26	20 05:53 (WEA 02)
5	08:22	07:49		06:54		07:22 (WEA 09)	06:43	07:18 (WEA 13)	05:40		05:00	05:33 (WEA 02)
	16:19	17:10		18:01	19	07:41 (WEA 09)	19:54	21 07:39 (WEA 13)	20:44		21:27	20 05:53 (WEA 02)
6	08:21	07:48		06:52		07:21 (WEA 09)	06:41	07:17 (WEA 13)	05:39	06:17 (19B)	04:59	05:33 (WEA 02)
	16:20	17:11		18:02	21	07:42 (WEA 09)	19:56	24 07:41 (WEA 13)	20:46	3 06:20 (19B)	21:28	20 05:53 (WEA 02)
7	08:21	07:46		06:49		07:20 (WEA 09)	06:39	07:14 (WEA 13)	05:37	06:15 (19B)	04:59	05:33 (WEA 02)
	16:22	17:13		18:04	21	07:41 (WEA 09)	19:57	27 07:41 (WEA 13)	20:48	8 06:23 (19B)	21:29	21 05:54 (WEA 02)
8	08:20	07:44		06:47		07:20 (WEA 09)	06:37	06:59 (WEA 11)	05:35	06:13 (19B)	04:58	05:34 (WEA 02)
	16:23	17:15		18:06	21	07:41 (WEA 09)	19:59	38 07:42 (WEA 13)	20:49	11 06:24 (19B)	21:30	20 05:54 (WEA 02)
9	08:20	07:42		06:45		07:19 (WEA 12)	06:34	06:57 (WEA 11)	05:33	06:12 (19B)	04:58	05:34 (WEA 02)
	16:24	17:17		18:08	22	07:41 (WEA 09)	20:01	43 07:42 (WEA 13)	20:51	14 06:26 (19B)	21:31	20 05:54 (WEA 02)
10	08:19	07:41		06:43		07:18 (WEA 12)	06:32	06:55 (WEA 11)	05:32	06:11 (19B)	04:57	05:34 (WEA 02)
	16:26	17:19		18:09	24	07:42 (WEA 12)	20:02	47 07:43 (WEA 13)	20:52	15 06:26 (19B)	21:32	20 05:54 (WEA 02)
11	08:19	07:39		06:41		07:16 (WEA 12)	06:30	06:54 (WEA 11)	05:30	06:10 (19B)	04:57	05:35 (WEA 02)
	16:27	17:21		18:11	26	07:42 (WEA 12)	20:04	49 07:43 (WEA 13)	20:54	16 06:26 (19B)	21:32	20 05:55 (WEA 02)
12	08:18	07:37		06:38		07:15 (WEA 12)	06:28	06:52 (WEA 11)	05:28	06:11 (19B)	04:57	05:34 (WEA 02)
	16:29	17:23		18:13	27	07:42 (WEA 12)	20:06	50 07:42 (WEA 13)	20:56	16 06:27 (19B)	21:33	20 05:54 (WEA 02)
13	08:17	07:35		06:36		07:15 (WEA 12)	06:25	06:52 (WEA 11)	05:27	06:10 (19B)	04:56	05:35 (WEA 02)
	16:30	17:24		18:15	28	07:43 (WEA 12)	20:07	50 07:42 (WEA 13)	20:57	16 06:26 (19B)	21:34	19 05:54 (WEA 02)
14	08:17	07:33		06:34		07:14 (WEA 12)	06:23	06:51 (WEA 11)	05:25	06:10 (19B)	04:56	05:35 (WEA 02)
	16:32	17:26		18:16	28	07:42 (WEA 12)	20:09	51 07:42 (WEA 13)	20:59	17 06:27 (19B)	21:34	19 05:54 (WEA 02)
15	08:16	07:31		06:31		07:14 (WEA 12)	06:21	06:51 (WEA 11)	05:24	06:11 (19B)	04:56	05:35 (WEA 02)
	16:33	17:28		18:18	28	07:42 (WEA 12)	20:11	50 07:41 (WEA 13)	21:00	16 06:27 (19B)	21:35	20 05:55 (WEA 02)
16	08:15	07:29		06:29		07:14 (WEA 12)	06:19	06:52 (WEA 11)	05:22	06:11 (19B)	04:56	05:36 (WEA 02)
	16:35	17:30		18:20	28	07:42 (WEA 12)	20:13	49 07:41 (WEA 13)	21:02	15 06:26 (19B)	21:36	19 05:55 (WEA 02)
17	08:14	07:27		06:27		06:49 (WEA 08)	06:17	06:52 (WEA 11)	05:21	06:11 (19B)	04:56	05:36 (WEA 02)
	16:36	17:32		18:22	31	07:40 (WEA 12)	20:14	48 07:40 (WEA 13)	21:03	15 06:26 (19B)	21:36	19 05:55 (WEA 02)
18	08:13	07:25		06:25		06:47 (WEA 08)	06:15	06:53 (WEA 11)	05:19	06:12 (19B)	04:56	05:36 (WEA 02)
	16:38	17:34		18:23	36	07:40 (WEA 12)	20:16	44 07:39 (WEA 13)	21:05	14 06:26 (19B)	21:36	19 05:55 (WEA 02)
19	08:12	07:23		06:22		06:45 (WEA 08)	06:12	06:54 (WEA 11)	05:18	06:12 (19B)	04:56	05:36 (WEA 02)
	16:40	17:35		18:25	38	07:39 (WEA 12)	20:18	40 07:38 (WEA 13)	21:06	12 06:24 (19B)	21:37	19 05:55 (WEA 02)
20	08:11	07:21		06:20		06:43 (WEA 08)	06:10	06:54 (WEA 11)	05:16	06:14 (19B)	04:56	05:36 (WEA 02)
	16:41	17:37		18:27	39	07:38 (WEA 12)	20:19	35 07:36 (WEA 13)	21:08	9 06:23 (19B)	21:37	19 05:55 (WEA 02)
21	08:10	07:19		06:18		06:41 (WEA 08)	06:08	07:12 (WEA 13)	05:15	06:15 (19B)	04:56	05:36 (WEA 02)
	16:43	17:39		18:28	37	07:35 (WEA 12)	20:21	23 07:35 (WEA 13)	21:09	7 06:22 (19B)	21:37	19 05:55 (WEA 02)
22	08:09	07:17		06:15		06:41 (WEA 08)	06:06	07:13 (WEA 13)	05:14	05:41 (WEA 02)	04:56	05:37 (WEA 02)
	16:45	17:41		18:30	33	07:33 (WEA 12)	20:23	20 07:33 (WEA 13)	21:10	4 05:45 (WEA 02)	21:38	19 05:56 (WEA 02)
23	08:08	07:15		06:13		06:36 (29B)	06:04	07:15 (WEA 13)	05:13	05:40 (WEA 02)	04:56	05:37 (WEA 02)
	16:46	17:43		18:32	26	07:28 (WEA 12)	20:24	16 07:31 (WEA 13)	21:12	7 05:47 (WEA 02)	21:38	19 05:56 (WEA 02)
24	08:07	07:13		06:11		06:33 (29B)	06:02	07:18 (WEA 13)	05:11	05:39 (WEA 02)	04:57	05:37 (WEA 02)
	16:48	17:45		18:34	25	06:59 (WEA 08)	20:26	10 07:28 (WEA 13)	21:13	9 05:48 (WEA 02)	21:38	19 05:56 (WEA 02)
25	08:05	07:11		06:08		06:31 (29B)	06:00		05:10	05:38 (WEA 02)	04:57	05:38 (WEA 02)
	16:50	17:46		18:35	26	06:58 (WEA 08)	20:28		21:15	11 05:49 (WEA 02)	21:38	19 05:57 (WEA 02)
26	08:04	07:09		06:06		06:30 (29B)	05:58		05:09	05:37 (WEA 02)	04:57	05:38 (WEA 02)
	16:51	17:48		18:37	26	06:57 (WEA 08)	20:29		21:16	13 05:50 (WEA 02)	21:38	19 05:57 (WEA 02)
27	08:03	07:07		06:04		06:29 (29B)	05:56		05:08	05:36 (WEA 02)	04:58	05:38 (WEA 02)
	16:53	17:50		18:39	24	06:55 (WEA 08)	20:31		21:17	14 05:50 (WEA 02)	21:38	19 05:57 (WEA 02)
28	08:01	07:05		06:02		06:30 (29B)	05:54		05:07	05:35 (WEA 02)	04:58	05:38 (WEA 02)
	16:55	17:52		18:40	18	06:53 (WEA 08)	20:33		21:18	16 05:51 (WEA 02)	21:38	20 05:58 (WEA 02)
29	08:00			06:59		07:31 (29B)	05:52		05:06	05:34 (WEA 02)	04:59	05:38 (WEA 02)
	16:57			19:42	7	07:38 (29B)	20:34		21:20	17 05:51 (WEA 02)	21:38	19 05:57 (WEA 02)
30	07:59			06:57			05:50		05:05	05:33 (WEA 02)	04:59	05:38 (WEA 02)
	16:59			19:44			20:36		21:21	19 05:52 (WEA 02)	21:37	20 05:58 (WEA 02)
31	07:57			06:55					05:04	05:32 (WEA 02)		
	17:00			19:45					21:22	20 05:52 (WEA 02)		
Sonnenscheinstunden	260		278		367		416		484		498	
astr.max.mögl.Beschattung				713			762		334		586	
Red.Sonnenscheinwahrsch.				0,27			0,36		0,43		0,35	
Reduktion Betriebsdauer				0,96			0,96		0,96		0,96	
Reduktion Windrichtung				0,70			0,72		0,71		0,70	
Gesamte Reduktion				0,18			0,25		0,29		0,23	
Met.wahrsch.Beschattung				128			188		97		137	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 26 - Reinstedt - Forellenweg 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November	Dezember
1	05:00		05:39 (WEA 02)	05:36		06:21 (19B)	06:26		06:53 (WEA 11)	07:14		07:54 (WEA 12)	07:08	07:58
	21:37	20	05:59 (WEA 02)	21:06	16	06:37 (19B)	20:04	49	07:42 (WEA 13)	18:55	27	08:21 (WEA 12)	16:49	16:09
2	05:01		05:38 (WEA 02)	05:38		06:21 (19B)	06:27		06:53 (WEA 11)	07:16		07:54 (WEA 12)	07:09	08:00
	21:37	20	05:58 (WEA 02)	21:04	15	06:36 (19B)	20:02	47	07:41 (WEA 13)	18:53	27	08:21 (WEA 12)	16:47	16:08
3	05:01		05:39 (WEA 02)	05:39		06:22 (19B)	06:29		06:55 (WEA 11)	07:18		07:55 (WEA 12)	07:11	08:01
	21:36	20	05:59 (WEA 02)	21:02	14	06:36 (19B)	19:59	43	07:40 (WEA 13)	18:50	25	08:20 (WEA 12)	16:45	16:08
4	05:02		05:39 (WEA 02)	05:41		06:22 (19B)	06:30		06:56 (WEA 11)	07:19		07:55 (WEA 12)	07:13	08:02
	21:36	20	05:59 (WEA 02)	21:01	13	06:35 (19B)	19:57	38	07:39 (WEA 13)	18:48	23	08:18 (WEA 09)	16:44	16:07
5	05:03		05:40 (WEA 02)	05:42		06:24 (19B)	06:32		07:11 (WEA 13)	07:21		07:56 (WEA 12)	07:15	08:04
	21:36	20	06:00 (WEA 02)	20:59	10	06:34 (19B)	19:55	27	07:38 (WEA 13)	18:46	22	08:18 (WEA 09)	16:42	16:07
6	05:04		05:39 (WEA 02)	05:44		06:25 (19B)	06:34		07:12 (WEA 13)	07:23		07:57 (WEA 09)	07:17	08:05
	21:35	20	05:59 (WEA 02)	20:57	7	06:32 (19B)	19:53	24	07:36 (WEA 13)	18:43	21	08:18 (WEA 09)	16:40	16:06
7	05:05		05:39 (WEA 02)	05:46			06:35		07:13 (WEA 13)	07:24		07:56 (WEA 09)	07:18	08:06
	21:34	21	06:00 (WEA 02)	20:55			19:50	21	07:34 (WEA 13)	18:41	21	08:17 (WEA 09)	16:38	16:06
8	05:06		05:40 (WEA 02)	05:47			06:37		07:14 (WEA 13)	07:26		07:56 (WEA 09)	07:20	08:08
	21:34	20	06:00 (WEA 02)	20:53			19:48	17	07:31 (WEA 13)	18:39	21	08:17 (WEA 09)	16:37	16:06
9	05:07		05:40 (WEA 02)	05:49			06:39		07:18 (WEA 13)	07:28		07:57 (WEA 09)	07:22	08:09
	21:33	20	06:00 (WEA 02)	20:52			19:46	10	07:28 (WEA 13)	18:37	19	08:16 (WEA 09)	16:35	16:05
10	05:08		05:40 (WEA 02)	05:50			06:40			07:29		07:58 (WEA 09)	07:24	08:10
	21:32	20	06:00 (WEA 02)	20:50			19:43			18:34	17	08:15 (WEA 09)	16:34	16:05
11	05:09		05:40 (WEA 02)	05:52			06:42			07:31		07:58 (WEA 09)	07:25	08:11
	21:32	20	06:00 (WEA 02)	20:48			19:41			18:32	15	08:13 (WEA 09)	16:32	16:05
12	05:10		05:41 (WEA 02)	05:53			06:43			07:33		08:00 (WEA 09)	07:27	08:12
	21:31	19	06:00 (WEA 02)	20:46			19:39			18:30	11	08:11 (WEA 09)	16:30	16:05
13	05:11		05:41 (WEA 02)	05:55			06:45			07:34			07:29	08:13
	21:30	19	06:00 (WEA 02)	20:44			19:37			18:28			16:29	16:05
14	05:12		05:42 (WEA 02)	05:57			06:47		07:22 (29B)	07:36			07:31	08:14
	21:29	18	06:00 (WEA 02)	20:42			19:34	6	07:28 (29B)	18:26			16:27	16:05
15	05:13		05:43 (WEA 02)	05:58			06:48		07:19 (29B)	07:38			07:32	08:15
	21:28	17	06:00 (WEA 02)	20:40			19:32	17	07:42 (WEA 08)	18:23			16:26	16:05
16	05:14		05:44 (WEA 02)	06:00			06:50		07:18 (29B)	07:40			07:34	08:16
	21:27	15	05:59 (WEA 02)	20:38			19:30	23	07:44 (WEA 08)	18:21			16:25	16:05
17	05:15		05:45 (WEA 02)	06:01			06:51		07:18 (29B)	07:41			07:36	08:16
	21:26	14	05:59 (WEA 02)	20:36			19:27	27	07:46 (WEA 08)	18:19			16:23	16:05
18	05:17		05:47 (WEA 02)	06:03			06:53		07:18 (29B)	07:43			07:38	08:17
	21:25	12	05:59 (WEA 02)	20:34			19:25	28	07:46 (WEA 08)	18:17			16:22	16:05
19	05:18		05:48 (WEA 02)	06:05		07:24 (WEA 13)	06:55		07:20 (29B)	07:45			07:39	08:18
	21:24	10	05:58 (WEA 02)	20:32	11	07:35 (WEA 13)	19:23	25	07:46 (WEA 08)	18:15			16:21	16:06
20	05:19		05:49 (WEA 02)	06:06		07:20 (WEA 13)	06:56		07:21 (29B)	07:46			07:41	08:19
	21:23	8	05:57 (WEA 02)	20:30	17	07:37 (WEA 13)	19:20	22	07:45 (WEA 08)	18:13			16:20	16:06
21	05:21		05:50 (WEA 02)	06:08		07:19 (WEA 13)	06:58		07:27 (WEA 08)	07:48			07:43	08:19
	21:21	5	05:55 (WEA 02)	20:28	20	07:39 (WEA 13)	19:18	31	08:17 (WEA 12)	18:11			16:18	16:06
22	05:22		05:51 (WEA 02)	06:09		07:02 (WEA 11)	07:00		07:27 (WEA 08)	07:50			07:44	08:20
	21:20	6	06:31 (19B)	20:26	27	07:40 (WEA 13)	19:16	35	08:20 (WEA 12)	18:09			16:17	16:07
23	05:23		06:25 (19B)	06:11		06:59 (WEA 11)	07:01		07:26 (WEA 08)	07:52			07:46	08:20
	21:19	8	06:33 (19B)	20:24	35	07:41 (WEA 13)	19:13	39	08:21 (WEA 12)	18:07			16:16	16:07
24	05:25		06:24 (19B)	06:13		06:56 (WEA 11)	07:03		07:28 (WEA 08)	07:53			07:48	08:21
	21:18	10	06:34 (19B)	20:21	41	07:41 (WEA 13)	19:11	38	08:22 (WEA 12)	18:05			16:15	16:08
25	05:26		06:22 (19B)	06:14		06:55 (WEA 11)	07:04		07:29 (WEA 08)	06:55			07:49	08:21
	21:16	13	06:35 (19B)	20:19	46	07:42 (WEA 13)	19:09	37	08:22 (WEA 12)	17:03			16:14	16:09
26	05:27		06:22 (19B)	06:16		06:54 (WEA 11)	07:06		07:31 (WEA 08)	06:57			07:51	08:21
	21:15	14	06:36 (19B)	20:17	48	07:42 (WEA 13)	19:06	34	08:23 (WEA 12)	17:01			16:13	16:09
27	05:29		06:22 (19B)	06:18		06:53 (WEA 11)	07:08		07:56 (WEA 12)	06:59			07:52	08:22
	21:13	14	06:36 (19B)	20:15	50	07:43 (WEA 13)	19:04	27	08:23 (WEA 12)	16:59			16:12	16:10
28	05:30		06:21 (19B)	06:19		06:52 (WEA 11)	07:09		07:55 (WEA 12)	07:01			07:54	08:22
	21:12	15	06:36 (19B)	20:13	50	07:42 (WEA 13)	19:02	28	08:23 (WEA 12)	16:57			16:11	16:11
29	05:32		06:21 (19B)	06:21		06:52 (WEA 11)	07:11		07:55 (WEA 12)	07:02			07:55	08:22
	21:10	16	06:37 (19B)	20:11	51	07:43 (WEA 13)	18:59	28	08:23 (WEA 12)	16:55			16:10	16:12
30	05:33		06:21 (19B)	06:22		06:52 (WEA 11)	07:13		07:55 (WEA 12)	07:04			07:57	08:22
	21:09	16	06:37 (19B)	20:08	51	07:43 (WEA 13)	18:57	28	08:23 (WEA 12)	16:53			16:10	16:13
31	05:35		06:21 (19B)	06:24		06:52 (WEA 11)				07:06				08:22
	21:07	17	06:38 (19B)	20:06	50	07:42 (WEA 13)				16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		487			572			749			249			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,71			0,69			
Gesamte Reduktion		0,27			0,30			0,23			0,18			
Met.wahrsch.Beschattung		132			170			173			46			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 27 - Reinstedt - Ermslebener Straße 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22	07:56		07:03		07:34 (WEA 09)	06:52		05:48		06:12 (WEA 10)	05:03		05:40 (15B)
	16:15	17:02		17:54	22	07:56 (WEA 09)	19:47		20:38	31	07:35 (WEA 13)	21:23	32	06:21 (19B)
2	08:22	07:54		07:00		07:33 (WEA 09)	06:50		05:46		06:10 (WEA 10)	05:02		05:40 (15B)
	16:16	17:04		17:55	24	07:57 (WEA 12)	19:49		20:39	22	06:32 (20B)	21:24	33	06:22 (19B)
3	08:22	07:53		06:58		07:32 (WEA 09)	06:48		05:44		06:09 (WEA 10)	05:01		05:31 (WEA 02)
	16:17	17:06		17:57	26	07:58 (WEA 12)	19:51		20:41	24	06:33 (20B)	21:25	37	06:22 (19B)
4	08:22	07:51		06:56		07:32 (WEA 09)	06:46	07:30 (WEA 13)	05:42		06:07 (WEA 10)	05:01		05:29 (WEA 02)
	16:18	17:08		17:59	28	08:00 (WEA 12)	19:52	12 07:42 (WEA 13)	20:43	26	06:33 (20B)	21:26	40	06:21 (19B)
5	08:21	07:49		06:54		07:32 (WEA 09)	06:43	07:27 (WEA 13)	05:40		06:06 (WEA 10)	05:00		05:29 (WEA 02)
	16:19	17:10		18:01	29	08:01 (WEA 12)	19:54	19 07:46 (WEA 13)	20:44	27	06:33 (20B)	21:27	42	06:22 (19B)
6	08:21	07:48		06:52		07:32 (WEA 09)	06:41	07:24 (WEA 13)	05:39		06:06 (WEA 10)	04:59		05:28 (WEA 02)
	16:20	17:11		18:02	30	08:02 (WEA 12)	19:56	24 07:48 (WEA 13)	20:46	26	06:32 (20B)	21:28	44	06:22 (19B)
7	08:21	07:46		06:49		07:31 (WEA 12)	06:39	07:21 (WEA 13)	05:37		06:06 (WEA 10)	04:59		05:28 (WEA 02)
	16:22	17:13		18:04	31	08:02 (WEA 12)	19:57	28 07:49 (WEA 13)	20:48	27	06:33 (20B)	21:29	45	06:22 (19B)
8	08:20	07:44		06:47		07:31 (WEA 12)	06:37	07:20 (WEA 13)	05:35		06:06 (WEA 10)	04:58		05:28 (WEA 02)
	16:23	17:15		18:06	32	08:03 (WEA 12)	19:59	30 07:50 (WEA 13)	20:49	26	06:32 (20B)	21:30	44	06:22 (19B)
9	08:20	07:42		06:45		07:31 (WEA 12)	06:34	06:59 (WEA 11)	05:33		06:06 (WEA 10)	04:58		05:27 (WEA 02)
	16:24	17:17		18:08	32	08:03 (WEA 12)	20:01	42 07:51 (WEA 13)	20:51	26	06:32 (20B)	21:31	46	06:22 (19B)
10	08:19	07:41		06:43		07:30 (WEA 12)	06:32	06:57 (WEA 11)	05:32		06:06 (WEA 10)	04:57		05:27 (WEA 02)
	16:26	17:19		18:09	33	08:03 (WEA 12)	20:02	48 07:52 (WEA 13)	20:52	24	06:30 (20B)	21:32	45	06:22 (19B)
11	08:19	07:39		06:40		07:29 (WEA 12)	06:30	06:55 (WEA 11)	05:30		06:06 (WEA 10)	04:57		05:27 (WEA 02)
	16:27	17:21		18:11	34	08:03 (WEA 12)	20:04	53 07:53 (WEA 13)	20:54	22	06:28 (20B)	21:32	45	06:22 (19B)
12	08:18	07:37		06:38		07:29 (WEA 12)	06:28	06:53 (WEA 11)	05:28		06:07 (WEA 10)	04:57		05:26 (WEA 02)
	16:29	17:23		18:13	33	08:02 (WEA 12)	20:06	57 07:53 (WEA 13)	20:56	18	06:25 (WEA 10)	21:33	45	06:21 (19B)
13	08:17	07:35		06:36		07:30 (WEA 12)	06:25	06:52 (WEA 11)	05:27		06:07 (WEA 10)	04:56		05:26 (WEA 02)
	16:30	17:24		18:15	32	08:02 (WEA 12)	20:07	60 07:53 (WEA 13)	20:57	17	06:24 (WEA 10)	21:34	45	06:22 (19B)
14	08:17	07:33		06:34		07:29 (WEA 12)	06:23	06:51 (WEA 11)	05:25		06:08 (WEA 10)	04:56		05:26 (WEA 02)
	16:32	17:26		18:16	32	08:01 (WEA 12)	20:09	61 07:53 (WEA 13)	20:59	16	06:24 (WEA 10)	21:34	45	06:22 (19B)
15	08:16	07:31		06:31		06:57 (WEA 08)	06:21	06:51 (WEA 11)	05:24		06:09 (WEA 10)	04:56		05:26 (WEA 02)
	16:33	17:28		18:18	34	08:00 (WEA 12)	20:11	62 07:53 (WEA 13)	21:00	14	06:23 (WEA 10)	21:35	45	06:22 (19B)
16	08:15	07:29		06:29		06:53 (WEA 08)	06:19	06:50 (WEA 11)	05:22		06:10 (WEA 10)	04:56		05:26 (WEA 02)
	16:35	17:30		18:20	42	08:00 (WEA 12)	20:13	63 07:53 (WEA 13)	21:02	11	06:21 (WEA 10)	21:35	45	06:22 (19B)
17	08:14	07:27		06:27		06:50 (WEA 08)	06:17	06:50 (WEA 11)	05:21		06:12 (WEA 10)	04:56		05:26 (WEA 02)
	16:36	17:32		18:22	44	07:58 (WEA 12)	20:14	63 07:53 (WEA 13)	21:03	8	06:20 (WEA 10)	21:36	44	06:22 (19B)
18	08:13	07:25		06:25		06:49 (WEA 08)	06:14	06:50 (WEA 11)	05:19		06:08 (19B)	04:56		05:26 (WEA 02)
	16:38	17:34		18:23	43	07:56 (WEA 12)	20:16	63 07:53 (WEA 13)	21:05	7	06:15 (19B)	21:36	45	06:22 (19B)
19	08:12	07:23		06:22		06:48 (WEA 08)	06:12	06:51 (WEA 11)	05:18		06:05 (19B)	04:56		05:26 (WEA 02)
	16:39	17:35		18:25	42	07:55 (WEA 12)	20:18	60 07:52 (WEA 13)	21:06	11	06:16 (19B)	21:37	45	06:22 (19B)
20	08:11	07:21		06:20		06:48 (WEA 08)	06:10	06:50 (WEA 11)	05:16		06:04 (19B)	04:56		05:26 (WEA 02)
	16:41	17:37		18:27	38	07:53 (WEA 12)	20:19	59 07:51 (WEA 13)	21:08	13	06:17 (19B)	21:37	45	06:22 (19B)
21	08:10	07:19		06:18		06:46 (WEA 08)	06:08	06:51 (WEA 11)	05:15		06:03 (19B)	04:56		05:27 (WEA 02)
	16:43	17:39		18:28	33	07:48 (WEA 12)	20:21	56 07:50 (WEA 13)	21:09	15	06:18 (19B)	21:37	44	06:22 (19B)
22	08:09	07:17		06:15		06:40 (29B)	06:06	06:52 (WEA 11)	05:14		06:03 (19B)	04:56		05:27 (WEA 02)
	16:45	17:41		18:30	28	07:08 (WEA 08)	20:23	53 07:49 (WEA 13)	21:10	16	06:19 (19B)	21:38	45	06:23 (19B)
23	08:08	07:15		06:13		06:38 (29B)	06:04	06:53 (WEA 11)	05:12		06:03 (19B)	04:56		05:27 (WEA 02)
	16:46	17:43		18:32	29	07:07 (WEA 08)	20:24	49 07:49 (WEA 13)	21:12	17	06:20 (19B)	21:38	45	06:23 (19B)
24	08:07	07:13		06:11		06:36 (29B)	06:02	06:56 (WEA 11)	05:11		06:02 (19B)	04:57		05:27 (WEA 02)
	16:48	17:45		18:34	30	07:06 (WEA 08)	20:26	42 07:48 (WEA 13)	21:13	19	06:21 (19B)	21:38	45	06:23 (19B)
25	08:05	07:11	07:41 (WEA 09)	06:08		06:35 (29B)	06:00	07:14 (WEA 13)	05:10		06:02 (19B)	04:57		05:28 (WEA 02)
	16:50	17:46	9 07:50 (WEA 09)	18:35	30	07:05 (WEA 08)	20:28	32 07:46 (WEA 13)	21:15	19	06:21 (19B)	21:38	44	06:24 (19B)
26	08:04	07:09	07:38 (WEA 09)	06:06		06:35 (29B)	05:58	07:15 (WEA 13)	05:09		06:02 (19B)	04:57		05:28 (WEA 02)
	16:51	17:48	15 07:53 (WEA 09)	18:37	29	07:04 (WEA 08)	20:29	31 07:46 (WEA 13)	21:16	19	06:21 (19B)	21:38	44	06:24 (19B)
27	08:03	07:07	07:36 (WEA 09)	06:04		06:34 (29B)	05:56	07:16 (WEA 13)	05:08		05:44 (15B)	04:58		05:28 (WEA 02)
	16:53	17:50	18 07:54 (WEA 09)	18:39	25	07:01 (WEA 08)	20:31	29 07:45 (WEA 13)	21:17	24	06:22 (19B)	21:38	45	06:24 (19B)
28	08:01	07:05	07:35 (WEA 09)	06:02		06:35 (29B)	05:54	07:17 (WEA 13)	05:07		05:43 (15B)	04:58		05:29 (WEA 02)
	16:55	17:52	20 07:55 (WEA 09)	18:40	19	06:59 (WEA 08)	20:33	26 07:43 (WEA 13)	21:18	27	06:22 (19B)	21:38	45	06:25 (19B)
29	08:00			06:59		07:37 (29B)	05:52	07:19 (WEA 13)	05:06		05:42 (15B)	04:59		05:29 (WEA 02)
	16:57			19:42	7	07:44 (29B)	20:34	22 07:41 (WEA 13)	21:20	29	06:22 (19B)	21:38	46	06:25 (19B)
30	07:59			06:57			05:50	06:14 (WEA 10)	05:05		05:41 (15B)	04:59		05:30 (WEA 02)
	16:59			19:44			20:36	32 07:38 (WEA 13)	21:21	30	06:22 (19B)	21:37	45	06:26 (19B)
31	07:57			06:55					05:04		05:40 (15B)			
	17:00			19:45					21:22	33	06:22 (19B)			
Sonnenscheinstunden	260	278		367			416		484			498		
astr.max.mögl.Beschattung			62		891			1176		644			1305	
Red.Sonnenscheinwahrsch.			0,32		0,27			0,36		0,43			0,35	
Reduktion Betriebsdauer			0,96		0,96			0,96		0,96			0,96	
Reduktion Windrichtung			0,68		0,69			0,72		0,71			0,70	
Gesamte Reduktion			0,21		0,18			0,25		0,29			0,23	
Met.wahrsch.Beschattung			13		158			290		189			305	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende
			(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 27 - Reinstedt - Ermslebener Straße 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November	Dezember
1	05:00		05:31 (WEA 02)	05:36		06:17 (WEA 10)	06:26		06:54 (WEA 11)	07:14		08:08 (WEA 12)	07:08	07:58
	21:37	45	06:26 (19B)	21:06	20	06:37 (20B)	20:04	53	07:52 (WEA 13)	18:55	33	08:41 (WEA 12)	16:49	16:09
2	05:01		05:31 (WEA 02)	05:38		06:16 (WEA 10)	06:27		06:55 (WEA 11)	07:16		08:08 (WEA 12)	07:09	08:00
	21:37	45	06:26 (19B)	21:04	23	06:39 (20B)	20:02	49	07:50 (WEA 13)	18:52	33	08:41 (WEA 12)	16:47	16:08
3	05:01		05:32 (WEA 02)	05:39		06:16 (WEA 10)	06:29		06:57 (WEA 11)	07:18		08:08 (WEA 12)	07:11	08:01
	21:36	45	06:27 (19B)	21:02	25	06:41 (20B)	19:59	42	07:49 (WEA 13)	18:50	33	08:41 (WEA 12)	16:45	16:08
4	05:02		05:33 (WEA 02)	05:41		06:16 (WEA 10)	06:30		07:17 (WEA 13)	07:19		08:07 (WEA 12)	07:13	08:02
	21:36	45	06:28 (19B)	21:01	25	06:41 (20B)	19:57	30	07:47 (WEA 13)	18:48	33	08:40 (WEA 12)	16:44	16:07
5	05:03		05:33 (WEA 02)	05:42		06:16 (WEA 10)	06:32		07:18 (WEA 13)	07:21		08:08 (WEA 12)	07:15	08:04
	21:36	45	06:27 (19B)	20:59	27	06:43 (20B)	19:55	28	07:46 (WEA 13)	18:46	32	08:40 (WEA 12)	16:42	16:07
6	05:04		05:34 (WEA 02)	05:44		06:16 (WEA 10)	06:34		07:19 (WEA 13)	07:23		08:08 (WEA 12)	07:17	08:05
	21:35	44	06:28 (19B)	20:57	26	06:42 (20B)	19:53	24	07:43 (WEA 13)	18:43	31	08:39 (WEA 12)	16:40	16:06
7	05:05		05:35 (WEA 02)	05:46		06:16 (WEA 10)	06:35		07:22 (WEA 13)	07:24		08:07 (WEA 09)	07:18	08:06
	21:34	43	06:28 (19B)	20:55	27	06:43 (20B)	19:50	19	07:41 (WEA 13)	18:41	31	08:38 (WEA 12)	16:38	16:06
8	05:06		05:36 (WEA 02)	05:47		06:16 (WEA 10)	06:37		07:24 (WEA 13)	07:26		08:07 (WEA 09)	07:20	08:08
	21:34	41	06:29 (19B)	20:53	26	06:42 (20B)	19:48	13	07:37 (WEA 13)	18:39	30	08:37 (WEA 12)	16:37	16:06
9	05:07		05:37 (WEA 02)	05:49		06:17 (WEA 10)	06:39			07:28		08:07 (WEA 09)	07:22	08:09
	21:33	39	06:29 (19B)	20:52	26	06:43 (20B)	19:46			18:37	29	08:36 (WEA 12)	16:35	16:05
10	05:08		05:48 (15B)	05:50		06:18 (WEA 10)	06:40			07:29		08:07 (WEA 09)	07:24	08:10
	21:32	33	06:30 (19B)	20:50	23	06:41 (20B)	19:43			18:34	27	08:34 (WEA 12)	16:34	16:05
11	05:09		05:48 (15B)	05:52		06:20 (WEA 10)	06:42			07:31		08:06 (WEA 09)	07:25	08:11
	21:32	33	06:30 (19B)	20:48	23	07:39 (WEA 13)	19:41			18:32	26	08:32 (WEA 12)	16:32	16:05
12	05:10		05:49 (15B)	05:53		06:21 (WEA 10)	06:43			07:33		08:07 (WEA 09)	07:27	08:12
	21:31	31	06:30 (19B)	20:46	31	07:44 (WEA 13)	19:39			18:30	22	08:29 (WEA 09)	16:30	16:05
13	05:11		05:49 (15B)	05:55		06:23 (WEA 10)	06:45			07:34		08:07 (WEA 09)	07:29	08:13
	21:30	31	06:30 (19B)	20:44	30	07:47 (WEA 13)	19:37			18:28	21	08:28 (WEA 09)	16:29	16:05
14	05:12		05:50 (15B)	05:57		07:26 (WEA 13)	06:47		07:28 (29B)	07:36		08:08 (WEA 09)	07:31	08:14
	21:29	30	06:30 (19B)	20:42	23	07:49 (WEA 13)	19:34	6	07:34 (29B)	18:26	19	08:27 (WEA 09)	16:27	16:05
15	05:13		05:51 (15B)	05:58		07:24 (WEA 13)	06:48		07:25 (29B)	07:38		08:09 (WEA 09)	07:32	08:15
	21:28	28	06:30 (19B)	20:40	27	07:51 (WEA 13)	19:32	16	07:47 (WEA 08)	18:23	17	08:26 (WEA 09)	16:26	16:05
16	05:14		05:52 (15B)	06:00		07:23 (WEA 13)	06:50		07:24 (29B)	07:40		08:10 (WEA 09)	07:34	08:16
	21:27	26	06:30 (19B)	20:38	28	07:51 (WEA 13)	19:30	24	07:50 (WEA 08)	18:21	13	08:23 (WEA 09)	16:25	16:05
17	05:15		06:10 (19B)	06:01		07:22 (WEA 13)	06:51		07:24 (29B)	07:41		08:14 (WEA 09)	07:36	08:16
	21:26	20	06:30 (19B)	20:36	31	07:53 (WEA 13)	19:27	28	07:52 (WEA 08)	18:19	6	08:20 (WEA 09)	16:23	16:05
18	05:17		06:11 (19B)	06:03		07:20 (WEA 13)	06:53		07:23 (29B)	07:43			07:38	08:17
	21:25	20	06:31 (19B)	20:34	33	07:53 (WEA 13)	19:25	29	07:52 (WEA 08)	18:17			16:22	16:05
19	05:18		06:12 (19B)	06:05		07:02 (WEA 11)	06:55		07:23 (29B)	07:45			07:39	08:18
	21:24	18	06:30 (19B)	20:32	42	07:54 (WEA 13)	19:23	30	07:53 (WEA 08)	18:15			16:21	16:06
20	05:19		06:12 (19B)	06:06		06:59 (WEA 11)	06:56		07:23 (29B)	07:46			07:41	08:19
	21:23	18	06:30 (19B)	20:30	49	07:54 (WEA 13)	19:20	30	07:53 (WEA 08)	18:13			16:20	16:06
21	05:21		06:12 (19B)	06:08		06:57 (WEA 11)	06:58		07:24 (29B)	07:48			07:43	08:19
	21:21	17	06:29 (19B)	20:28	54	07:55 (WEA 13)	19:18	29	07:53 (WEA 08)	18:11			16:18	16:06
22	05:22		06:13 (19B)	06:09		06:56 (WEA 11)	07:00		07:32 (WEA 08)	07:50			07:44	08:20
	21:20	15	06:28 (19B)	20:26	56	07:55 (WEA 13)	19:16	30	08:33 (WEA 12)	18:09			16:17	16:07
23	05:23		06:14 (19B)	06:11		06:55 (WEA 11)	07:01		07:31 (WEA 08)	07:52			07:46	08:20
	21:19	14	06:28 (19B)	20:24	60	07:56 (WEA 13)	19:13	37	08:35 (WEA 12)	18:07			16:16	16:07
24	05:25		06:15 (19B)	06:13		06:53 (WEA 11)	07:03		07:32 (WEA 08)	07:53			07:48	08:21
	21:18	12	06:27 (19B)	20:21	62	07:55 (WEA 13)	19:11	41	08:38 (WEA 12)	18:05			16:15	16:08
25	05:26		06:16 (19B)	06:14		06:53 (WEA 11)	07:04		07:31 (WEA 08)	06:55			07:49	08:21
	21:16	9	06:25 (19B)	20:19	63	07:56 (WEA 13)	19:09	44	08:39 (WEA 12)	17:03			16:14	16:09
26	05:27		06:19 (19B)	06:16		06:52 (WEA 11)	07:06		07:32 (WEA 08)	06:57			07:51	08:21
	21:15	10	06:29 (WEA 10)	20:17	63	07:55 (WEA 13)	19:06	44	08:40 (WEA 12)	17:01			16:13	16:09
27	05:29		06:22 (WEA 10)	06:18		06:52 (WEA 11)	07:08		07:34 (WEA 08)	06:59			07:52	08:22
	21:13	9	06:31 (WEA 10)	20:15	63	07:55 (WEA 13)	19:04	42	08:41 (WEA 12)	16:59			16:12	16:10
28	05:30		06:20 (WEA 10)	06:19		06:52 (WEA 11)	07:09		07:36 (WEA 08)	07:01			07:54	08:22
	21:12	12	06:32 (WEA 10)	20:13	62	07:54 (WEA 13)	19:02	38	08:41 (WEA 12)	16:57			16:11	16:11
29	05:32		06:19 (WEA 10)	06:21		06:52 (WEA 11)	07:11		08:10 (WEA 12)	07:02			07:55	08:22
	21:10	15	06:34 (WEA 10)	20:11	61	07:54 (WEA 13)	18:59	31	08:41 (WEA 12)	16:55			16:10	16:12
30	05:33		06:18 (WEA 10)	06:22		06:53 (WEA 11)	07:13		08:09 (WEA 12)	07:04			07:57	08:22
	21:09	17	06:35 (WEA 10)	20:08	60	07:54 (WEA 13)	18:57	33	08:42 (WEA 12)	16:53			16:10	16:13
31	05:35		06:18 (WEA 10)	06:24		06:53 (WEA 11)				07:06				08:22
	21:07	18	06:36 (WEA 10)	20:06	56	07:52 (WEA 13)				16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		828			1225			790			436			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,71			0,68			
Gesamte Reduktion		0,27			0,30			0,23			0,18			
Met.wahrsch.Beschattung		225			363			182			80			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 28 - Reinstedt - Alphabillard

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22	07:56		07:03		07:38 (WEA 09)	06:52		07:39 (29B)	05:48	07:08 (WEA 13)	05:03	
	16:15	17:02		17:54	28	08:06 (WEA 12)	19:47	1	07:40 (29B)	20:38	42	07:50 (WEA 13)	21:23	
2	08:22	07:54		07:00		07:37 (WEA 09)	06:50			05:46		07:08 (WEA 13)	05:02	
	16:16	17:04		17:55	32	08:09 (WEA 12)	19:49			20:39	41	07:49 (WEA 13)	21:24	
3	08:22	07:53		06:58		07:36 (WEA 09)	06:48			05:44		07:09 (WEA 13)	05:01	
	16:17	17:06		17:57	33	08:09 (WEA 12)	19:51			20:41	40	07:49 (WEA 13)	21:25	
4	08:22	07:51		06:56		07:36 (WEA 09)	06:46			05:42		06:08 (WEA 10)	05:01	
	16:18	17:08		17:59	35	08:11 (WEA 12)	19:52			20:43	44	07:48 (WEA 13)	21:26	
5	08:21	07:49		06:54		07:36 (WEA 09)	06:43			05:40		06:05 (WEA 10)	05:00	
	16:19	17:10		18:01	36	08:12 (WEA 12)	19:54			20:44	48	07:47 (WEA 13)	21:27	
6	08:21	07:48		06:52		07:37 (WEA 09)	06:41			05:39		06:03 (WEA 10)	04:59	05:58 (19B)
	16:20	17:11		18:02	36	08:13 (WEA 12)	19:56			20:46	51	07:45 (WEA 13)	21:28	3 06:01 (19B)
7	08:21	07:46		06:49		07:36 (WEA 09)	06:39			05:37		06:02 (WEA 10)	04:59	05:57 (19B)
	16:22	17:13		18:04	37	08:13 (WEA 12)	19:57			20:48	54	07:45 (WEA 13)	21:29	6 06:03 (19B)
8	08:20	07:44		06:47		07:37 (WEA 09)	06:36		07:30 (WEA 13)	05:35		06:01 (WEA 10)	04:58	05:56 (19B)
	16:23	17:15		18:06	36	08:13 (WEA 12)	19:59	10	07:40 (WEA 13)	20:49	53	07:43 (WEA 13)	21:30	9 06:05 (19B)
9	08:20	07:42		06:45		07:37 (WEA 12)	06:34		07:25 (WEA 13)	05:33		06:01 (WEA 10)	04:58	05:55 (19B)
	16:24	17:17		18:08	37	08:14 (WEA 12)	20:01	19	07:44 (WEA 13)	20:51	51	07:42 (WEA 13)	21:31	10 06:05 (19B)
10	08:19	07:41		06:43		07:36 (WEA 12)	06:32		06:55 (WEA 07)	05:32		06:00 (WEA 10)	04:57	05:55 (19B)
	16:26	17:19		18:09	38	08:14 (WEA 12)	20:02	32	07:47 (WEA 13)	20:52	49	07:40 (WEA 13)	21:32	12 06:07 (19B)
11	08:19	07:39		06:40		07:35 (WEA 12)	06:30		06:52 (WEA 07)	05:30		05:59 (WEA 10)	04:57	05:55 (19B)
	16:27	17:21		18:11	38	08:13 (WEA 12)	20:04	40	07:48 (WEA 13)	20:54	46	07:37 (WEA 13)	21:32	13 06:08 (19B)
12	08:18	07:37		06:38		07:35 (WEA 12)	06:28		06:50 (WEA 07)	05:28		05:59 (WEA 10)	04:57	05:54 (19B)
	16:29	17:23		18:13	38	08:13 (WEA 12)	20:06	49	07:50 (WEA 13)	20:56	42	07:35 (WEA 13)	21:33	13 06:07 (19B)
13	08:17	07:35		06:36		07:36 (WEA 12)	06:25		06:48 (WEA 07)	05:27		05:58 (WEA 10)	04:56	05:54 (19B)
	16:30	17:24		18:15	37	08:13 (WEA 12)	20:07	55	07:51 (WEA 13)	20:57	33	07:30 (WEA 13)	21:34	14 06:08 (19B)
14	08:17	07:33		06:34		07:35 (WEA 12)	06:23		06:47 (WEA 07)	05:25		05:59 (WEA 10)	04:56	05:54 (19B)
	16:32	17:26		18:16	36	08:11 (WEA 12)	20:09	60	07:52 (WEA 13)	20:59	27	06:26 (20B)	21:34	15 06:09 (19B)
15	08:16	07:31		06:31		07:35 (WEA 12)	06:21		06:46 (WEA 07)	05:24		05:59 (WEA 10)	04:56	05:54 (19B)
	16:33	17:28		18:18	36	08:11 (WEA 12)	20:11	64	07:53 (WEA 13)	21:00	27	06:26 (20B)	21:35	15 06:09 (19B)
16	08:15	07:29		06:29		06:55 (WEA 08)	06:19		06:46 (WEA 07)	05:22		05:59 (WEA 10)	04:56	05:54 (19B)
	16:35	17:30		18:20	44	08:10 (WEA 12)	20:12	67	07:54 (WEA 13)	21:02	26	06:25 (20B)	21:35	16 06:10 (19B)
17	08:14	07:27		06:27		06:52 (WEA 08)	06:17		06:46 (WEA 07)	05:21		05:59 (WEA 10)	04:56	05:54 (19B)
	16:36	17:32		18:22	47	08:09 (WEA 12)	20:14	68	07:54 (WEA 13)	21:03	26	06:25 (20B)	21:36	16 06:10 (19B)
18	08:13	07:25		06:25		06:50 (WEA 08)	06:14		06:46 (WEA 11)	05:19		06:00 (WEA 10)	04:56	05:54 (19B)
	16:38	17:34		18:23	48	08:07 (WEA 12)	20:16	69	07:55 (WEA 13)	21:05	25	06:25 (20B)	21:36	16 06:10 (19B)
19	08:12	07:23		06:22		06:49 (WEA 08)	06:12		06:45 (WEA 11)	05:18		06:00 (WEA 10)	04:56	05:54 (19B)
	16:39	17:35		18:25	48	08:06 (WEA 12)	20:18	69	07:54 (WEA 13)	21:06	23	06:23 (20B)	21:37	17 06:11 (19B)
20	08:11	07:21		06:20		06:47 (WEA 08)	06:10		06:45 (WEA 11)	05:16		06:01 (WEA 10)	04:56	05:54 (19B)
	16:41	17:37		18:27	48	08:04 (WEA 12)	20:19	69	07:54 (WEA 13)	21:08	22	06:23 (20B)	21:37	17 06:11 (19B)
21	08:10	07:19		06:18		06:47 (WEA 08)	06:08		06:45 (WEA 11)	05:15		06:01 (WEA 10)	04:56	05:54 (19B)
	16:43	17:39		18:28	44	08:02 (WEA 12)	20:21	69	07:54 (WEA 13)	21:09	20	06:21 (20B)	21:37	17 06:11 (19B)
22	08:09	07:17		06:15		06:47 (WEA 08)	06:06		06:45 (WEA 11)	05:14		06:02 (WEA 10)	04:56	05:55 (19B)
	16:45	17:41		18:30	39	07:59 (WEA 12)	20:23	69	07:54 (WEA 13)	21:10	16	06:18 (WEA 10)	21:38	17 06:12 (19B)
23	08:08	07:15		06:13		06:41 (29B)	06:04		06:45 (WEA 11)	05:12		06:03 (WEA 10)	04:56	05:55 (19B)
	16:46	17:43		18:32	32	07:54 (WEA 12)	20:24	69	07:54 (WEA 13)	21:12	15	06:18 (WEA 10)	21:38	17 06:12 (19B)
24	08:07	07:13	07:45 (WEA 09)	06:11		06:37 (29B)	06:02		06:45 (WEA 11)	05:11		06:05 (WEA 10)	04:57	05:55 (19B)
	16:48	17:45	12 07:57 (WEA 09)	18:34	32	07:09 (WEA 08)	20:26	69	07:54 (WEA 13)	21:13	12	06:17 (WEA 10)	21:38	17 06:12 (19B)
25	08:05	07:11	07:43 (WEA 09)	06:08		06:35 (29B)	06:00		06:46 (WEA 11)	05:10		06:06 (WEA 10)	04:57	05:56 (19B)
	16:50	17:46	16 07:59 (WEA 09)	18:35	33	07:08 (WEA 08)	20:28	66	07:53 (WEA 13)	21:15	10	06:16 (WEA 10)	21:38	16 06:12 (19B)
26	08:04	07:09	07:41 (WEA 09)	06:06		06:35 (29B)	05:58		06:48 (WEA 11)	05:09		06:08 (WEA 10)	04:57	05:56 (19B)
	16:51	17:48	20 08:01 (WEA 09)	18:37	32	07:07 (WEA 08)	20:29	65	07:54 (WEA 13)	21:16	5	06:13 (WEA 10)	21:38	16 06:12 (19B)
27	08:03	07:07	07:39 (WEA 09)	06:04		06:33 (29B)	05:56		06:49 (WEA 11)	05:08			04:58	05:56 (19B)
	16:53	17:50	22 08:01 (WEA 09)	18:39	32	07:05 (WEA 08)	20:31	61	07:53 (WEA 13)	21:17			21:38	16 06:12 (19B)
28	08:01	07:05	07:38 (WEA 09)	06:02		06:33 (29B)	05:54		06:51 (WEA 11)	05:07			04:58	05:57 (19B)
	16:55	17:52	25 08:03 (WEA 12)	18:40	31	07:04 (WEA 08)	20:33	57	07:53 (WEA 13)	21:18			21:38	15 06:12 (19B)
29	08:00			06:59		07:34 (29B)	05:52		07:07 (WEA 13)	05:06			04:59	05:57 (19B)
	16:57			19:42	25	08:02 (WEA 08)	20:34	45	07:52 (WEA 13)	21:20			21:38	14 06:11 (19B)
30	07:59			06:57		07:34 (29B)	05:50		07:07 (WEA 13)	05:05			04:59	05:58 (19B)
	16:59			19:44	13	07:56 (WEA 08)	20:36	44	07:51 (WEA 13)	21:21			21:37	14 06:12 (19B)
31	07:57			06:55		07:35 (29B)				05:04				
	17:00			19:45	9	07:44 (29B)				21:22				
Sonnenscheinstunden	260	278		367			416			484		498		
astr.max.mögl.Beschattung			95		1090			1286			848			351
Red.Sonnenscheinwahrsch.			0,32		0,27			0,36			0,43			0,35
Reduktion Betriebsdauer			0,96		0,96			0,96			0,96			0,96
Reduktion Windrichtung			0,68		0,69			0,72			0,72			0,71
Gesamte Reduktion			0,21		0,18			0,25			0,29			0,23
Met.wahrsch.Beschattung			20		193			317			250			82

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 28 - Reinstedt - Alphabillard

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00		05:59 (19B)	05:36		06:10 (WEA 10)	06:26		06:52 (WEA 07)	07:14		08:14 (WEA 12)	07:08	07:58
	21:37	13	06:12 (19B)	21:06	44	07:47 (WEA 13)	20:04	40	07:48 (WEA 13)	18:55	38	08:52 (WEA 12)	16:49	16:09
2	05:01		05:59 (19B)	05:38		06:09 (WEA 10)	06:27		06:53 (WEA 07)	07:16		08:14 (WEA 12)	07:09	08:00
	21:37	12	06:11 (19B)	21:04	49	07:49 (WEA 13)	20:02	32	07:45 (WEA 13)	18:52	38	08:52 (WEA 12)	16:47	16:08
3	05:01		06:00 (19B)	05:39		06:10 (WEA 10)	06:29		06:55 (WEA 07)	07:18		08:14 (WEA 12)	07:11	08:01
	21:36	11	06:11 (19B)	21:02	51	07:51 (WEA 13)	19:59	20	07:42 (WEA 13)	18:50	38	08:52 (WEA 12)	16:45	16:08
4	05:02		06:01 (19B)	05:41		06:10 (WEA 10)	06:30		07:27 (WEA 13)	07:19		08:13 (WEA 12)	07:13	08:02
	21:36	10	06:11 (19B)	21:01	52	07:52 (WEA 13)	19:57	10	07:37 (WEA 13)	18:48	38	08:51 (WEA 12)	16:44	16:07
5	05:03		06:01 (19B)	05:42		06:11 (WEA 10)	06:32			07:21		08:14 (WEA 12)	07:15	08:04
	21:35	8	06:09 (19B)	20:59	54	07:54 (WEA 13)	19:55			18:46	36	08:50 (WEA 12)	16:42	16:07
6	05:04		06:03 (19B)	05:44		06:12 (WEA 10)	06:34			07:23		08:14 (WEA 09)	07:17	08:05
	21:35	5	06:08 (19B)	20:57	53	07:55 (WEA 13)	19:53			18:43	36	08:50 (WEA 12)	16:40	16:06
7	05:05			05:46		06:14 (WEA 10)	06:35			07:24		08:12 (WEA 09)	07:18	08:06
	21:34			20:55	48	07:56 (WEA 13)	19:50			18:41	36	08:48 (WEA 12)	16:38	16:06
8	05:06			05:47		06:15 (WEA 10)	06:37			07:26		08:12 (WEA 09)	07:20	08:08
	21:34			20:53	48	07:57 (WEA 13)	19:48			18:39	35	08:47 (WEA 12)	16:37	16:05
9	05:07			05:49		07:19 (WEA 13)	06:39			07:28		08:11 (WEA 09)	07:22	08:09
	21:33			20:52	39	07:58 (WEA 13)	19:46			18:37	35	08:46 (WEA 12)	16:35	16:05
10	05:08			05:50		07:17 (WEA 13)	06:40			07:29		08:11 (WEA 09)	07:24	08:10
	21:32			20:50	41	07:58 (WEA 13)	19:43			18:34	34	08:45 (WEA 12)	16:34	16:05
11	05:09			05:52		07:17 (WEA 13)	06:42			07:31		08:10 (WEA 09)	07:25	08:11
	21:32			20:48	42	07:59 (WEA 13)	19:41			18:32	33	08:43 (WEA 12)	16:32	16:05
12	05:10			05:53		07:16 (WEA 13)	06:43		07:27 (29B)	07:33		08:11 (WEA 09)	07:27	08:12
	21:31			20:46	43	07:59 (WEA 13)	19:39	9	07:36 (29B)	18:30	30	08:41 (WEA 12)	16:30	16:05
13	05:11			05:55		07:16 (WEA 13)	06:45		07:25 (29B)	07:34		08:11 (WEA 09)	07:29	08:13
	21:30			20:44	44	08:00 (WEA 13)	19:37	11	07:36 (29B)	18:28	27	08:38 (WEA 12)	16:29	16:05
14	05:12			05:57		07:01 (WEA 11)	06:47		07:24 (29B)	07:36		08:12 (WEA 09)	07:31	08:14
	21:29			20:42	50	08:00 (WEA 13)	19:34	24	07:52 (WEA 08)	18:26	23	08:35 (WEA 09)	16:27	16:05
15	05:13			05:58		06:58 (WEA 11)	06:48		07:23 (29B)	07:38		08:13 (WEA 09)	07:32	08:15
	21:28			20:40	57	08:00 (WEA 13)	19:32	29	07:53 (WEA 08)	18:23	21	08:34 (WEA 09)	16:26	16:05
16	05:14			06:00		06:55 (WEA 11)	06:50		07:23 (29B)	07:40		08:13 (WEA 09)	07:34	08:16
	21:27			20:38	62	08:00 (WEA 13)	19:30	32	07:55 (WEA 08)	18:21	18	08:31 (WEA 09)	16:25	16:05
17	05:15			06:01		06:54 (WEA 11)	06:51		07:23 (29B)	07:41		08:15 (WEA 09)	07:36	08:16
	21:26			20:36	66	08:01 (WEA 13)	19:27	33	07:56 (WEA 08)	18:19	15	08:30 (WEA 09)	16:23	16:05
18	05:17		06:16 (WEA 10)	06:03		06:53 (WEA 11)	06:53		07:23 (29B)	07:43		08:18 (WEA 09)	07:38	08:17
	21:25	7	06:23 (WEA 10)	20:34	67	08:00 (WEA 13)	19:25	32	07:55 (WEA 08)	18:17	9	08:27 (WEA 09)	16:22	16:05
19	05:18		06:15 (WEA 10)	06:05		06:52 (WEA 11)	06:55		07:24 (29B)	07:45			07:39	08:18
	21:24	11	06:26 (WEA 10)	20:32	68	08:00 (WEA 13)	19:23	32	07:56 (WEA 08)	18:15			16:21	16:06
20	05:19		06:14 (WEA 10)	06:06		06:51 (WEA 11)	06:56		07:25 (29B)	07:46			07:41	08:19
	21:23	13	06:27 (WEA 10)	20:30	69	08:00 (WEA 13)	19:20	29	07:55 (WEA 08)	18:13			16:19	16:06
21	05:21		06:12 (WEA 10)	06:08		06:50 (WEA 11)	06:58		07:32 (WEA 08)	07:48			07:43	08:19
	21:21	16	06:28 (WEA 10)	20:28	70	08:00 (WEA 13)	19:18	37	08:43 (WEA 12)	18:11			16:18	16:06
22	05:22		06:11 (WEA 10)	06:09		06:49 (WEA 11)	07:00		07:32 (WEA 08)	07:50			07:44	08:20
	21:20	19	06:30 (20B)	20:26	70	07:59 (WEA 13)	19:16	43	08:46 (WEA 12)	18:09			16:17	16:07
23	05:23		06:12 (WEA 10)	06:11		06:50 (WEA 11)	07:01		07:32 (WEA 08)	07:52			07:46	08:20
	21:19	21	06:33 (20B)	20:24	69	07:59 (WEA 13)	19:13	47	08:48 (WEA 12)	18:07			16:16	16:07
24	05:25		06:11 (WEA 10)	06:13		06:49 (WEA 11)	07:03		07:32 (WEA 08)	07:53			07:48	08:21
	21:18	23	06:34 (20B)	20:21	69	07:58 (WEA 13)	19:11	48	08:49 (WEA 12)	18:05			16:15	16:08
25	05:26		06:10 (WEA 10)	06:14		06:49 (WEA 07)	07:04		07:32 (WEA 08)	06:55			07:49	08:21
	21:16	24	06:34 (20B)	20:19	68	07:57 (WEA 13)	19:09	49	08:50 (WEA 12)	17:03			16:14	16:09
26	05:27		06:10 (WEA 10)	06:16		06:48 (WEA 07)	07:06		07:34 (WEA 08)	06:57			07:51	08:21
	21:15	26	06:36 (20B)	20:17	68	07:56 (WEA 13)	19:06	48	08:51 (WEA 12)	17:01			16:13	16:09
27	05:29		06:10 (WEA 10)	06:18		06:48 (WEA 07)	07:08		07:36 (WEA 08)	06:59			07:52	08:22
	21:13	26	06:36 (20B)	20:15	65	07:55 (WEA 13)	19:04	46	08:52 (WEA 12)	16:59			16:12	16:10
28	05:30		06:09 (WEA 10)	06:19		06:47 (WEA 07)	07:09		07:40 (WEA 08)	07:01			07:54	08:22
	21:12	27	06:36 (20B)	20:13	64	07:54 (WEA 13)	19:02	38	08:52 (WEA 12)	16:57			16:11	16:11
29	05:32		06:10 (WEA 10)	06:21		06:47 (WEA 07)	07:11		08:16 (WEA 12)	07:02			07:55	08:22
	21:10	27	06:37 (20B)	20:11	61	07:53 (WEA 13)	18:59	36	08:52 (WEA 12)	16:55			16:10	16:12
30	05:33		06:09 (WEA 10)	06:22		06:49 (WEA 07)	07:13		08:15 (WEA 12)	07:04			07:57	08:22
	21:09	27	06:36 (20B)	20:08	54	07:52 (WEA 13)	18:57	37	08:52 (WEA 12)	16:53			16:10	16:12
31	05:35		06:10 (WEA 10)	06:24		06:50 (WEA 07)				07:06				08:22
	21:07	38	07:44 (WEA 13)	20:06	48	07:50 (WEA 13)				16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		364			1753			762			540			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,70			0,68			
Gesamte Reduktion		0,27			0,30			0,23			0,18			
Met.wahrsch.Beschattung		100			519			174			99			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)	
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)	

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 29 - Reinstedt - Ermslebener Straße 11

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22	07:56		07:03		07:29 (WEA 09)	06:52		07:27 (WEA 13)	05:48	06:26 (19B)	05:03		05:43 (WEA 02)
	16:15	17:02		17:54	17	07:46 (WEA 09)	19:47	27	07:54 (WEA 13)	20:38	14	06:40 (19B)	21:23	17	06:00 (WEA 02)
2	08:22	07:54		07:00		07:28 (WEA 09)	06:50		07:27 (WEA 13)	05:46		06:25 (19B)	05:02		05:44 (WEA 02)
	16:16	17:04		17:55	19	07:47 (WEA 09)	19:49	28	07:55 (WEA 13)	20:39	15	06:40 (19B)	21:24	17	06:01 (WEA 02)
3	08:22	07:53		06:58		07:28 (WEA 09)	06:48		07:10 (WEA 11)	05:44		06:26 (19B)	05:01		05:44 (WEA 02)
	16:17	17:06		17:57	19	07:47 (WEA 09)	19:51	33	07:54 (WEA 13)	20:41	15	06:41 (19B)	21:25	16	06:00 (WEA 02)
4	08:22	07:51		06:56		07:26 (WEA 09)	06:46		07:08 (WEA 11)	05:42		06:25 (19B)	05:01		05:46 (WEA 02)
	16:18	17:08		17:59	21	07:47 (WEA 09)	19:52	39	07:54 (WEA 13)	20:43	16	06:41 (19B)	21:26	15	06:01 (WEA 02)
5	08:22	07:49		06:54		07:26 (WEA 12)	06:43		07:06 (WEA 11)	05:40		06:25 (19B)	05:00		05:46 (WEA 02)
	16:19	17:10		18:01	22	07:48 (WEA 12)	19:54	44	07:55 (WEA 13)	20:44	15	06:40 (19B)	21:27	14	06:00 (WEA 02)
6	08:21	07:48		06:52		07:25 (WEA 12)	06:41		07:04 (WEA 11)	05:39		06:25 (19B)	04:59		05:38 (14B)
	16:20	17:11		18:02	24	07:49 (WEA 12)	19:56	47	07:55 (WEA 13)	20:46	14	06:39 (19B)	21:28	16	05:59 (WEA 02)
7	08:21	07:46		06:49		07:24 (WEA 12)	06:39		07:02 (WEA 11)	05:37		06:27 (19B)	04:59		05:37 (14B)
	16:22	17:13		18:04	25	07:49 (WEA 12)	19:57	48	07:53 (WEA 13)	20:48	12	06:39 (19B)	21:29	18	05:59 (WEA 02)
8	08:20	07:44		06:47		07:23 (WEA 12)	06:37		07:01 (WEA 11)	05:35		06:27 (19B)	04:58		05:37 (14B)
	16:23	17:15		18:06	26	07:49 (WEA 12)	19:59	49	07:53 (WEA 13)	20:49	10	06:37 (19B)	21:30	19	05:59 (WEA 02)
9	08:20	07:42		06:45		07:23 (WEA 12)	06:34		07:01 (WEA 11)	05:33		06:29 (19B)	04:58		05:36 (14B)
	16:24	17:17		18:08	27	07:50 (WEA 12)	20:01	48	07:53 (WEA 13)	20:51	7	06:36 (19B)	21:31	19	05:58 (WEA 02)
10	08:19	07:41		06:43		07:23 (WEA 12)	06:32		07:01 (WEA 11)	05:32			04:57		05:36 (14B)
	16:26	17:19		18:09	27	07:50 (WEA 12)	20:02	47	07:52 (WEA 13)	20:52			21:32	19	05:58 (WEA 02)
11	08:19	07:39		06:41		07:22 (WEA 12)	06:30		07:01 (WEA 11)	05:30			04:57		05:36 (14B)
	16:27	17:21		18:11	27	07:49 (WEA 12)	20:04	45	07:51 (WEA 13)	20:54			21:32	18	05:58 (WEA 02)
12	08:18	07:37		06:38		07:23 (WEA 12)	06:28		07:01 (WEA 11)	05:28			04:57		05:35 (14B)
	16:29	17:23		18:13	25	07:48 (WEA 12)	20:06	41	07:49 (WEA 13)	20:56			21:33	17	05:57 (WEA 02)
13	08:18	07:35		06:36		07:23 (WEA 12)	06:25		07:01 (WEA 11)	05:27			04:56		05:35 (14B)
	16:30	17:24		18:15	25	07:48 (WEA 12)	20:07	37	07:47 (WEA 13)	20:57			21:34	16	05:56 (WEA 02)
14	08:17	07:33		06:34		07:23 (WEA 12)	06:23		07:02 (WEA 11)	05:25			04:56		05:36 (14B)
	16:32	17:26		18:16	23	07:46 (WEA 12)	20:09	33	07:46 (WEA 13)	20:59			21:34	11	05:47 (14B)
15	08:16	07:31		06:31		07:24 (WEA 12)	06:21		07:04 (WEA 11)	05:24		05:50 (WEA 02)	04:56		05:36 (14B)
	16:33	17:28		18:18	21	07:45 (WEA 12)	20:11	24	07:43 (WEA 13)	21:00	6	05:56 (WEA 02)	21:35	12	05:48 (14B)
16	08:15	07:29		06:29		07:26 (WEA 12)	06:19		07:33 (WEA 13)	05:22		05:48 (WEA 02)	04:56		05:36 (14B)
	16:35	17:30		18:20	17	07:43 (WEA 12)	20:13	6	07:39 (WEA 13)	21:02	9	05:57 (WEA 02)	21:36	12	05:48 (14B)
17	08:14	07:27		06:27		07:27 (WEA 12)	06:17			05:21		05:47 (WEA 02)	04:56		05:36 (14B)
	16:36	17:32		18:22	13	07:40 (WEA 12)	20:14			21:03	11	05:58 (WEA 02)	21:36	13	05:49 (14B)
18	08:13	07:25		06:25		07:31 (WEA 12)	06:15			05:19		05:46 (WEA 02)	04:56		05:36 (14B)
	16:38	17:34		18:23	5	07:36 (WEA 12)	20:16			21:05	13	05:59 (WEA 02)	21:36	13	05:49 (14B)
19	08:12	07:24		06:22		06:45 (29B)	06:12			05:18		05:44 (WEA 02)	04:56		05:36 (14B)
	16:40	17:35		18:25	4	06:49 (29B)	20:18			21:06	15	05:59 (WEA 02)	21:37	13	05:49 (14B)
20	08:11	07:21		06:20		06:43 (29B)	06:10			05:16		05:43 (WEA 02)	04:56		05:36 (14B)
	16:41	17:37		18:27	7	06:50 (29B)	20:19			21:08	17	06:00 (WEA 02)	21:37	13	05:49 (14B)
21	08:10	07:19		06:18		06:40 (29B)	06:08			05:15		05:42 (WEA 02)	04:56		05:36 (14B)
	16:43	17:39		18:28	10	06:50 (29B)	20:21			21:09	18	06:00 (WEA 02)	21:37	13	05:49 (14B)
22	08:09	07:17		06:15		06:39 (29B)	06:06			05:14		05:42 (WEA 02)	04:56		05:37 (14B)
	16:45	17:41		18:30	11	06:50 (29B)	20:23			21:10	19	06:01 (WEA 02)	21:38	13	05:50 (14B)
23	08:08	07:15		06:13		06:40 (29B)	06:04			05:13		05:42 (WEA 02)	04:56		05:37 (14B)
	16:46	17:43		18:32	9	06:49 (29B)	20:24			21:12	19	06:01 (WEA 02)	21:38	13	05:50 (14B)
24	08:07	07:13		06:11		06:40 (29B)	06:02			05:11		05:42 (WEA 02)	04:57		05:37 (14B)
	16:48	17:45		18:34	7	06:47 (29B)	20:26			21:13	20	06:02 (WEA 02)	21:38	13	05:50 (14B)
25	08:05	07:11		06:08			06:00			05:10		05:42 (WEA 02)	04:57		05:38 (14B)
	16:50	17:46		18:35			20:28			21:15	20	06:02 (WEA 02)	21:38	13	05:51 (14B)
26	08:04	07:09	07:35 (WEA 09)	06:06			05:58			05:09		05:42 (WEA 02)	04:57		05:38 (14B)
	16:51	17:48	6 07:41 (WEA 09)	18:37			20:29			21:16	20	06:02 (WEA 02)	21:38	12	05:50 (14B)
27	08:03	07:07	07:31 (WEA 09)	06:04			05:56		06:33 (19B)	05:08		05:42 (WEA 02)	04:58		05:38 (14B)
	16:53	17:50	12 07:43 (WEA 09)	18:39			20:31	2	06:35 (19B)	21:17	20	06:02 (WEA 02)	21:38	12	05:50 (14B)
28	08:01	07:05	07:30 (WEA 09)	06:02		06:35 (WEA 13)	05:54		06:30 (19B)	05:07		05:42 (WEA 02)	04:58		05:39 (14B)
	16:55	17:52	15 07:45 (WEA 09)	18:40	13	06:48 (WEA 13)	20:33	8	06:38 (19B)	21:18	20	06:02 (WEA 02)	21:38	12	05:51 (14B)
29	08:00			06:59		07:33 (WEA 13)	05:52		06:28 (19B)	05:06		05:42 (WEA 02)	04:59		05:39 (14B)
	16:57			19:42	18	07:51 (WEA 13)	20:34	12	06:40 (19B)	21:20	20	06:02 (WEA 02)	21:38	14	05:59 (WEA 02)
30	07:59			06:57		07:30 (WEA 13)	05:50		06:27 (19B)	05:05		05:43 (WEA 02)	04:59		05:39 (14B)
	16:59			19:44	22	07:52 (WEA 13)	20:36	13	06:40 (19B)	21:21	18	06:01 (WEA 02)	21:37	18	06:01 (WEA 02)
31	07:57			06:55		07:29 (WEA 13)				05:04		05:43 (WEA 02)			
	17:00			19:45	24	07:53 (WEA 13)				21:22	18	06:01 (WEA 02)			
Sonnenscheinstunden	260	278		367			416			484			498		
astr.max.mögl.Beschattung			33		508			631			401			441	
Red.Sonnenscheinwahrsch.			0,32		0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer			0,96		0,96			0,96			0,96			0,96	
Reduktion Windrichtung			0,68		0,69			0,72			0,71			0,70	
Gesamte Reduktion			0,21		0,18			0,25			0,29			0,23	
Met.wahrsch.Beschattung			7		90			156			117			103	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 29 - Reinstedt - Ermslebener Straße 11

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00		05:40 (14B)	05:36			06:26		07:00 (WEA 11)	07:14		08:02 (WEA 12)	07:08	07:58
	21:37	18	06:02 (WEA 02)	21:06			20:04	45	07:50 (WEA 13)	18:55	25	08:27 (WEA 12)	16:49	16:09
2	05:01		05:40 (14B)	05:38			06:27		06:59 (WEA 11)	07:16		08:01 (WEA 12)	07:09	08:00
	21:37	18	06:02 (WEA 02)	21:04			20:02	47	07:50 (WEA 13)	18:53	26	08:27 (WEA 12)	16:47	16:08
3	05:01		05:41 (14B)	05:39		06:41 (19B)	06:29		06:59 (WEA 11)	07:18		08:01 (WEA 12)	07:11	08:01
	21:36	18	06:03 (WEA 02)	21:02	3	06:44 (19B)	19:59	48	07:51 (WEA 13)	18:50	27	08:28 (WEA 12)	16:45	16:08
4	05:02		05:42 (14B)	05:41		06:38 (19B)	06:30		06:58 (WEA 11)	07:19		08:00 (WEA 12)	07:13	08:02
	21:36	18	06:04 (WEA 02)	21:01	9	06:47 (19B)	19:57	49	07:50 (WEA 13)	18:48	27	08:27 (WEA 12)	16:44	16:07
5	05:03		05:43 (14B)	05:42		06:37 (19B)	06:32		06:59 (WEA 11)	07:21		08:00 (WEA 12)	07:15	08:04
	21:36	19	06:05 (WEA 02)	20:59	11	06:48 (19B)	19:55	48	07:50 (WEA 13)	18:46	26	08:26 (WEA 12)	16:42	16:07
6	05:04		05:43 (14B)	05:44		06:36 (19B)	06:34		06:59 (WEA 11)	07:23		08:01 (WEA 12)	07:17	08:05
	21:35	18	06:05 (WEA 02)	20:57	13	06:49 (19B)	19:53	48	07:50 (WEA 13)	18:43	25	08:26 (WEA 12)	16:40	16:06
7	05:05		05:52 (WEA 02)	05:46		06:36 (19B)	06:35		07:01 (WEA 11)	07:24		08:00 (WEA 12)	07:18	08:06
	21:34	14	06:06 (WEA 02)	20:55	14	06:50 (19B)	19:50	45	07:50 (WEA 13)	18:41	25	08:25 (WEA 12)	16:38	16:06
8	05:06		05:52 (WEA 02)	05:47		06:35 (19B)	06:37		07:02 (WEA 11)	07:26		08:01 (WEA 12)	07:20	08:08
	21:34	15	06:07 (WEA 02)	20:53	15	06:50 (19B)	19:48	40	07:49 (WEA 13)	18:39	23	08:24 (WEA 12)	16:37	16:06
9	05:07		05:52 (WEA 02)	05:49		06:35 (19B)	06:39		07:04 (WEA 11)	07:28		08:01 (WEA 09)	07:22	08:09
	21:33	16	06:08 (WEA 02)	20:52	15	06:50 (19B)	19:46	34	07:48 (WEA 13)	18:37	22	08:23 (WEA 12)	16:35	16:05
10	05:08		05:52 (WEA 02)	05:50		06:34 (19B)	06:40		07:20 (WEA 13)	07:29		08:02 (WEA 09)	07:24	08:10
	21:32	16	06:08 (WEA 02)	20:50	16	06:50 (19B)	19:43	28	07:48 (WEA 13)	18:34	20	08:22 (WEA 09)	16:34	16:05
11	05:09		05:52 (WEA 02)	05:52		06:35 (19B)	06:42		07:20 (WEA 13)	07:31		08:01 (WEA 09)	07:25	08:11
	21:32	17	06:09 (WEA 02)	20:48	15	06:50 (19B)	19:41	26	07:46 (WEA 13)	18:32	19	08:20 (WEA 09)	16:32	16:05
12	05:10		05:51 (WEA 02)	05:53		06:34 (19B)	06:43		07:21 (WEA 13)	07:33		08:01 (WEA 09)	07:27	08:12
	21:31	18	06:09 (WEA 02)	20:46	15	06:49 (19B)	19:39	24	07:45 (WEA 13)	18:30	19	08:20 (WEA 09)	16:30	16:05
13	05:11		05:51 (WEA 02)	05:55		06:35 (19B)	06:45		07:21 (WEA 13)	07:34		08:02 (WEA 09)	07:29	08:13
	21:30	19	06:10 (WEA 02)	20:44	14	06:49 (19B)	19:37	22	07:43 (WEA 13)	18:28	17	08:19 (WEA 09)	16:29	16:05
14	05:12		05:51 (WEA 02)	05:57		06:36 (19B)	06:47		07:23 (WEA 13)	07:36		08:03 (WEA 09)	07:31	08:14
	21:29	19	06:10 (WEA 02)	20:42	11	06:47 (19B)	19:34	18	07:41 (WEA 13)	18:26	15	08:18 (WEA 09)	16:27	16:05
15	05:13		05:51 (WEA 02)	05:58		06:38 (19B)	06:48		07:24 (WEA 13)	07:38		08:05 (WEA 09)	07:32	08:15
	21:28	19	06:10 (WEA 02)	20:40	8	06:46 (19B)	19:32	14	07:38 (WEA 13)	18:23	11	08:16 (WEA 09)	16:26	16:05
16	05:14		05:51 (WEA 02)	06:00			06:50		07:29 (WEA 13)	07:40			07:34	08:16
	21:27	19	06:10 (WEA 02)	20:38			19:30	4	07:33 (WEA 13)	18:21			16:25	16:05
17	05:15		05:51 (WEA 02)	06:01			06:51			07:41			07:36	08:16
	21:26	19	06:10 (WEA 02)	20:36			19:27			18:19			16:23	16:05
18	05:17		05:51 (WEA 02)	06:03			06:53			07:43			07:38	08:17
	21:25	20	06:11 (WEA 02)	20:34			19:25			18:17			16:22	16:05
19	05:18		05:51 (WEA 02)	06:05			06:55		07:28 (29B)	07:45			07:39	08:18
	21:24	20	06:11 (WEA 02)	20:32			19:23	6	07:34 (29B)	18:15			16:21	16:06
20	05:19		05:51 (WEA 02)	06:06			06:56		07:26 (29B)	07:46			07:41	08:19
	21:23	20	06:11 (WEA 02)	20:30			19:20	9	07:35 (29B)	18:13			16:20	16:06
21	05:21		05:51 (WEA 02)	06:08			06:58		07:25 (29B)	07:48			07:43	08:19
	21:21	20	06:11 (WEA 02)	20:28			19:18	10	07:35 (29B)	18:11			16:18	16:06
22	05:22		05:51 (WEA 02)	06:10			07:00		07:25 (29B)	07:50			07:44	08:20
	21:20	19	06:10 (WEA 02)	20:26			19:16	10	07:35 (29B)	18:09			16:17	16:07
23	05:23		05:53 (WEA 02)	06:11			07:01		07:26 (29B)	07:52			07:46	08:20
	21:19	18	06:11 (WEA 02)	20:24			19:13	8	07:34 (29B)	18:07			16:16	16:07
24	05:25		05:54 (WEA 02)	06:13			07:03		07:28 (29B)	07:53			07:48	08:21
	21:18	16	06:10 (WEA 02)	20:21			19:11	5	07:33 (29B)	18:05			16:15	16:08
25	05:26		05:55 (WEA 02)	06:14			07:04			06:55			07:49	08:21
	21:16	14	06:09 (WEA 02)	20:19			19:09			17:03			16:14	16:09
26	05:27		05:57 (WEA 02)	06:16			07:06		08:11 (WEA 12)	06:57			07:51	08:21
	21:15	12	06:09 (WEA 02)	20:17			19:06	11	08:22 (WEA 12)	17:01			16:13	16:09
27	05:29		05:58 (WEA 02)	06:18		07:35 (WEA 13)	07:08		08:08 (WEA 12)	06:59			07:52	08:22
	21:13	10	06:08 (WEA 02)	20:15	6	07:41 (WEA 13)	19:04	16	08:24 (WEA 12)	16:59			16:12	16:10
28	05:30		05:59 (WEA 02)	06:19		07:05 (WEA 11)	07:09		08:06 (WEA 12)	07:01			07:54	08:22
	21:12	7	06:06 (WEA 02)	20:13	24	07:44 (WEA 13)	19:02	19	08:25 (WEA 12)	16:57			16:11	16:11
29	05:32		06:01 (WEA 02)	06:21		07:03 (WEA 11)	07:11		08:04 (WEA 12)	07:02			07:55	08:22
	21:10	4	06:05 (WEA 02)	20:11	33	07:47 (WEA 13)	18:59	22	08:26 (WEA 12)	16:55			16:10	16:12
30	05:33			06:22		07:02 (WEA 11)	07:13		08:03 (WEA 12)	07:04			07:57	08:22
	21:09			20:08	37	07:48 (WEA 13)	18:57	24	08:27 (WEA 12)	16:53			16:10	16:13
31	05:35			06:24		07:00 (WEA 11)				07:06				08:22
	21:07			20:06	43	07:49 (WEA 13)				16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		480			302			680			327			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,72			0,68			
Gesamte Reduktion		0,27			0,30			0,23			0,18			
Met.wahrsch.Beschattung		130			89			159			60			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 30 - Reinstedt - Ermslebener Straße 8

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22	07:56	07:03	07:28 (WEA 09) 06:52	07:27 (WEA 13) 05:48	06:27 (19B) 05:03 05:39 (14B)
	16:15	17:02	17:54 17	07:45 (WEA 09) 19:47 27	07:54 (WEA 13) 20:38 16	06:43 (19B) 21:23 6 05:45 (14B)
2	08:22	07:54	07:00	07:27 (WEA 09) 06:50	07:27 (WEA 13) 05:46	06:27 (19B) 05:02 05:39 (14B)
	16:16	17:04	17:55 18	07:45 (WEA 09) 19:49 27	07:54 (WEA 13) 20:39 15	06:42 (19B) 21:24 8 05:47 (14B)
3	08:22	07:53	06:58	07:27 (WEA 09) 06:48	07:10 (WEA 11) 05:44	06:28 (19B) 05:01 05:38 (14B)
	16:17	17:06	17:57 19	07:46 (WEA 09) 19:51 36	07:54 (WEA 13) 20:41 14	06:42 (19B) 21:25 10 05:48 (14B)
4	08:22	07:51	06:56	07:25 (WEA 09) 06:46	07:08 (WEA 11) 05:42	06:28 (19B) 05:01 05:38 (14B)
	16:18	17:08	17:59 20	07:45 (WEA 09) 19:52 40	07:54 (WEA 13) 20:43 14	06:42 (19B) 21:26 11 05:49 (14B)
5	08:22	07:49	06:54	07:25 (WEA 12) 06:43	07:06 (WEA 11) 05:40	06:29 (19B) 05:00 05:38 (14B)
	16:19	17:10	18:01 21	07:46 (WEA 12) 19:54 43	07:54 (WEA 13) 20:44 11	06:40 (19B) 21:27 11 05:49 (14B)
6	08:21	07:48	06:52	07:24 (WEA 12) 06:41	07:04 (WEA 11) 05:39	06:30 (19B) 04:59 05:37 (14B)
	16:20	17:11	18:02 23	07:47 (WEA 12) 19:56 46	07:54 (WEA 13) 20:46 9	06:39 (19B) 21:28 12 05:49 (14B)
7	08:21	07:46	06:49	07:23 (WEA 12) 06:39	07:02 (WEA 11) 05:37	06:32 (19B) 04:59 05:37 (14B)
	16:22	17:13	18:04 24	07:47 (WEA 12) 19:57 48	07:53 (WEA 13) 20:48 5	06:37 (19B) 21:29 13 05:50 (14B)
8	08:20	07:44	06:47	07:22 (WEA 12) 06:37	07:02 (WEA 11) 05:35	04:58 05:38 (14B)
	16:23	17:15	18:06 25	07:47 (WEA 12) 19:59 47	07:52 (WEA 13) 20:49	21:30 13 05:51 (14B)
9	08:20	07:42	06:45	07:22 (WEA 12) 06:34	07:02 (WEA 11) 05:33	04:58 05:37 (14B)
	16:24	17:17	18:08 26	07:48 (WEA 12) 20:01 45	07:51 (WEA 13) 20:51	21:31 14 05:51 (14B)
10	08:19	07:41	06:43	07:22 (WEA 12) 06:32	07:02 (WEA 11) 05:32	04:57 05:38 (14B)
	16:26	17:19	18:09 26	07:48 (WEA 12) 20:02 43	07:50 (WEA 13) 20:52	21:32 13 05:51 (14B)
11	08:19	07:39	06:41	07:21 (WEA 12) 06:30	07:02 (WEA 11) 05:30	04:57 05:38 (14B)
	16:27	17:21	18:11 26	07:47 (WEA 12) 20:04 41	07:49 (WEA 13) 20:54	21:32 14 05:52 (14B)
12	08:18	07:37	06:38	07:22 (WEA 12) 06:28	07:02 (WEA 11) 05:28	04:57 05:37 (14B)
	16:29	17:23	18:13 24	07:46 (WEA 12) 20:06 37	07:47 (WEA 13) 20:56	21:33 14 05:51 (14B)
13	08:18	07:35	06:36	07:22 (WEA 12) 06:25	07:03 (WEA 11) 05:27	04:56 05:38 (14B)
	16:30	17:24	18:15 24	07:46 (WEA 12) 20:07 31	07:45 (WEA 13) 20:57	21:34 14 05:52 (14B)
14	08:17	07:33	06:34	07:22 (WEA 12) 06:23	07:04 (WEA 11) 05:25	04:56 05:38 (14B)
	16:32	17:26	18:16 22	07:44 (WEA 12) 20:09 23	07:42 (WEA 13) 20:59	21:34 14 05:52 (14B)
15	08:16	07:31	06:31	07:23 (WEA 12) 06:21	07:08 (WEA 11) 05:24	04:56 05:38 (14B)
	16:33	17:28	18:18 20	07:43 (WEA 12) 20:11 3	07:11 (WEA 11) 21:00	21:35 14 05:52 (14B)
16	08:15	07:29	06:29	07:25 (WEA 12) 06:19	05:22	04:56 05:38 (14B)
	16:35	17:30	18:20 16	07:41 (WEA 12) 20:13	21:02	21:36 15 05:53 (14B)
17	08:14	07:27	06:27	07:26 (WEA 12) 06:17	05:21	04:56 05:39 (14B)
	16:36	17:32	18:22 12	07:38 (WEA 12) 20:14	21:03	21:36 14 05:53 (14B)
18	08:13	07:25	06:25	06:15	05:19	04:56 05:39 (14B)
	16:38	17:34	18:23	20:16	21:05	21:36 14 05:53 (14B)
19	08:12	07:24	06:22	06:45 (29B) 06:12	05:18	04:56 05:39 (14B)
	16:40	17:35	18:25 4	06:49 (29B) 20:18	21:06	21:37 14 05:53 (14B)
20	08:11	07:21	06:20	06:43 (29B) 06:10	05:16	04:56 05:39 (14B)
	16:41	17:37	18:27 7	06:50 (29B) 20:19	21:08	21:37 14 05:53 (14B)
21	08:10	07:19	06:18	06:40 (29B) 06:08	05:15	04:56 05:39 (14B)
	16:43	17:39	18:28 10	06:50 (29B) 20:21	21:09	21:37 14 05:53 (14B)
22	08:09	07:17	06:15	06:40 (29B) 06:06	05:14	04:56 05:40 (14B)
	16:45	17:41	18:30 9	06:49 (29B) 20:23	21:10	21:38 14 05:54 (14B)
23	08:08	07:15	06:13	06:40 (29B) 06:04	05:13	04:56 05:40 (14B)
	16:46	17:43	18:32 9	06:49 (29B) 20:24	21:12	21:38 14 05:54 (14B)
24	08:07	07:13	06:11	06:41 (29B) 06:02	05:11	04:57 05:40 (14B)
	16:48	17:45	18:34 5	06:46 (29B) 20:26	21:13	21:38 14 05:54 (14B)
25	08:05	07:11	06:08	06:00	05:10	04:57 05:41 (14B)
	16:50	17:46	18:35	20:28	21:15	21:38 14 05:55 (14B)
26	08:04	07:09 07:36 (WEA 09)	06:06	05:58 06:33 (19B)	05:09	04:57 05:40 (14B)
	16:51	17:48 2 07:38 (WEA 09)	18:37	20:29 7 06:40 (19B)	21:16	21:38 15 05:55 (14B)
27	08:03	07:07 07:31 (WEA 09)	06:04	06:37 (WEA 13) 05:56	06:31 (19B) 05:08	04:58 05:40 (14B)
	16:53	17:50 10 07:41 (WEA 09)	18:39 9	06:46 (WEA 13) 20:31 11	06:42 (19B) 21:17	21:38 15 05:55 (14B)
28	08:01	07:05 07:29 (WEA 09)	06:02	06:34 (WEA 13) 05:54	06:30 (19B) 05:07	04:58 05:41 (14B)
	16:55	17:52 14 07:43 (WEA 09)	18:40 16	06:50 (WEA 13) 20:33 12	06:42 (19B) 21:18	21:38 14 05:55 (14B)
29	08:00		06:59	07:32 (WEA 13) 05:52	06:29 (19B) 05:06	04:59 05:41 (14B)
	16:57		19:42 20	07:52 (WEA 13) 20:34 14	06:43 (19B) 21:20	21:38 14 05:55 (14B)
30	07:59		06:57	07:29 (WEA 13) 05:50	06:28 (19B) 05:05	04:59 05:41 (14B)
	16:59		19:44 23	07:52 (WEA 13) 20:36 15	06:43 (19B) 21:21	21:37 14 05:55 (14B)
31	07:57		06:55	07:28 (WEA 13)	05:04	
	17:00		19:45 25	07:53 (WEA 13)	21:22	
Sonnenscheinstunden	260	278	367	416	484	498
astr.max.mögl.Beschattung		26	500	596	84	394
Red.Sonnenscheinwahrsch.		0,32	0,27	0,36	0,43	0,35
Reduktion Betriebsdauer		0,96	0,96	0,96	0,96	0,96
Reduktion Windrichtung		0,68	0,69	0,72	0,72	0,70
Gesamte Reduktion		0,21	0,18	0,25	0,29	0,23
Met.wahrsch.Beschattung		5	89	147	25	92

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 30 - Reinstedt - Ermslebener Straße 8

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00		05:42 (14B)	05:36			06:26		07:01 (WEA 11)	07:14		08:01 (WEA 12)	07:08	07:58
	21:37	14	05:56 (14B)	21:06			20:04	41	07:48 (WEA 13)	18:55	24	08:25 (WEA 12)	16:49	16:09
2	05:01		05:42 (14B)	05:38			06:27		07:00 (WEA 11)	07:16		08:00 (WEA 12)	07:09	08:00
	21:37	13	05:55 (14B)	21:04			20:02	43	07:48 (WEA 13)	18:53	25	08:25 (WEA 12)	16:47	16:08
3	05:01		05:42 (14B)	05:39			06:29		07:00 (WEA 11)	07:18		08:00 (WEA 12)	07:11	08:01
	21:36	14	05:56 (14B)	21:02			19:59	45	07:49 (WEA 13)	18:50	26	08:26 (WEA 12)	16:45	16:08
4	05:02		05:43 (14B)	05:41			06:30		06:59 (WEA 11)	07:19		07:59 (WEA 12)	07:13	08:02
	21:36	13	05:56 (14B)	21:01			19:57	47	07:49 (WEA 13)	18:48	26	08:25 (WEA 12)	16:44	16:07
5	05:03		05:44 (14B)	05:42			06:32		06:59 (WEA 11)	07:21		07:59 (WEA 12)	07:15	08:04
	21:36	12	05:56 (14B)	20:59			19:55	48	07:50 (WEA 13)	18:46	25	08:24 (WEA 12)	16:42	16:07
6	05:04		05:43 (14B)	05:44		06:41 (19B)	06:34		06:59 (WEA 11)	07:23		08:00 (WEA 12)	07:17	08:05
	21:35	12	05:55 (14B)	20:57	6	06:47 (19B)	19:53	46	07:49 (WEA 13)	18:43	24	08:24 (WEA 12)	16:40	16:06
7	05:05		05:44 (14B)	05:46		06:40 (19B)	06:35		07:01 (WEA 11)	07:24		07:59 (WEA 12)	07:18	08:06
	21:34	11	05:55 (14B)	20:55	10	06:50 (19B)	19:50	44	07:49 (WEA 13)	18:41	24	08:23 (WEA 12)	16:38	16:06
8	05:06		05:45 (14B)	05:47		06:38 (19B)	06:37		07:02 (WEA 11)	07:26		08:00 (WEA 12)	07:20	08:08
	21:34	10	05:55 (14B)	20:53	12	06:50 (19B)	19:48	40	07:48 (WEA 13)	18:39	22	08:22 (WEA 12)	16:37	16:06
9	05:07		05:45 (14B)	05:49		06:38 (19B)	06:39		07:04 (WEA 11)	07:28		08:01 (WEA 09)	07:22	08:09
	21:33	10	05:55 (14B)	20:52	13	06:51 (19B)	19:46	36	07:48 (WEA 13)	18:37	20	08:21 (WEA 12)	16:35	16:05
10	05:08		05:46 (14B)	05:50		06:37 (19B)	06:40		07:20 (WEA 13)	07:29		08:01 (WEA 09)	07:24	08:10
	21:32	9	05:55 (14B)	20:50	14	06:51 (19B)	19:43	28	07:48 (WEA 13)	18:34	19	08:20 (WEA 09)	16:34	16:05
11	05:09		05:47 (14B)	05:52		06:37 (19B)	06:42		07:19 (WEA 13)	07:31		08:00 (WEA 09)	07:25	08:11
	21:32	7	05:54 (14B)	20:48	15	06:52 (19B)	19:41	27	07:46 (WEA 13)	18:32	19	08:19 (WEA 09)	16:32	16:05
12	05:10		05:49 (14B)	05:53		06:36 (19B)	06:43		07:20 (WEA 13)	07:33		08:01 (WEA 09)	07:27	08:12
	21:31	4	05:53 (14B)	20:46	15	06:51 (19B)	19:39	25	07:45 (WEA 13)	18:30	17	08:18 (WEA 09)	16:30	16:05
13	05:11			05:55		06:37 (19B)	06:45		07:20 (WEA 13)	07:34		08:01 (WEA 09)	07:29	08:13
	21:30			20:44	14	06:51 (19B)	19:37	23	07:43 (WEA 13)	18:28	16	08:17 (WEA 09)	16:29	16:05
14	05:12			05:57		06:36 (19B)	06:47		07:22 (WEA 13)	07:36		08:03 (WEA 09)	07:31	08:14
	21:29			20:42	14	06:50 (19B)	19:34	20	07:42 (WEA 13)	18:26	13	08:16 (WEA 09)	16:28	16:05
15	05:13			05:58		06:37 (19B)	06:48		07:23 (WEA 13)	07:38		08:05 (WEA 09)	07:32	08:15
	21:28			20:40	13	06:50 (19B)	19:32	16	07:39 (WEA 13)	18:23	9	08:14 (WEA 09)	16:26	16:05
16	05:14			06:00		06:38 (19B)	06:50		07:26 (WEA 13)	07:40			07:34	08:16
	21:27			20:38	10	06:48 (19B)	19:30	10	07:36 (WEA 13)	18:21			16:25	16:05
17	05:15			06:01		06:40 (19B)	06:51			07:41			07:36	08:16
	21:26			20:36	6	06:46 (19B)	19:27			18:19			16:23	16:05
18	05:17			06:03			06:53			07:43			07:38	08:17
	21:25			20:34			19:25			18:17			16:22	16:05
19	05:18			06:05			06:55		07:29 (29B)	07:45			07:39	08:18
	21:24			20:32			19:23	4	07:33 (29B)	18:15			16:21	16:06
20	05:19			06:06			06:56		07:26 (29B)	07:46			07:41	08:19
	21:23			20:30			19:20	8	07:34 (29B)	18:13			16:20	16:06
21	05:21			06:08			06:58		07:25 (29B)	07:48			07:43	08:19
	21:21			20:28			19:18	10	07:35 (29B)	18:11			16:18	16:06
22	05:22			06:10			07:00		07:25 (29B)	07:50			07:44	08:20
	21:20			20:26			19:16	10	07:35 (29B)	18:09			16:17	16:07
23	05:23			06:11			07:01		07:26 (29B)	07:52			07:46	08:20
	21:19			20:24			19:13	8	07:34 (29B)	18:07			16:16	16:07
24	05:25			06:13			07:03		07:28 (29B)	07:53			07:48	08:21
	21:18			20:21			19:11	5	07:33 (29B)	18:05			16:15	16:08
25	05:26			06:14			07:04		07:29 (29B)	06:55			07:49	08:21
	21:16			20:19			19:09	1	07:30 (29B)	17:03			16:14	16:09
26	05:27			06:16			07:06		08:10 (WEA 12)	06:57			07:51	08:21
	21:15			20:17			19:06	9	08:19 (WEA 12)	17:01			16:13	16:09
27	05:29			06:18			07:08		08:07 (WEA 12)	06:59			07:52	08:22
	21:13			20:15			19:04	15	08:22 (WEA 12)	16:59			16:12	16:10
28	05:30			06:19		07:08 (WEA 11)	07:09		08:04 (WEA 12)	07:01			07:54	08:22
	21:12			20:13	4	07:12 (WEA 11)	19:02	19	08:23 (WEA 12)	16:57			16:11	16:11
29	05:32			06:21		07:05 (WEA 11)	07:11		08:03 (WEA 12)	07:02			07:55	08:22
	21:10			20:11	23	07:43 (WEA 13)	18:59	21	08:24 (WEA 12)	16:55			16:10	16:12
30	05:33			06:22		07:04 (WEA 11)	07:13		08:02 (WEA 12)	07:04			07:57	08:22
	21:09			20:08	31	07:46 (WEA 13)	18:57	23	08:25 (WEA 12)	16:53			16:10	16:13
31	05:35			06:24		07:02 (WEA 11)				07:06				08:22
	21:07			20:06	37	07:47 (WEA 13)				16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		129			237			672			309			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,70			0,72			0,72			0,68			
Gesamte Reduktion		0,27			0,30			0,23			0,18			
Met.wahrsch.Beschattung		35			70			157			57			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 31 - Reinstedt - Ermslebener Straße 5B

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22	07:56	07:03	07:27 (WEA 09) 06:52	07:28 (WEA 13) 05:48	06:34 (19B) 05:03 05:42 (14B)
	16:15	17:02	17:54 16	07:43 (WEA 09) 19:47 27	07:55 (WEA 13) 20:38 11	06:45 (19B) 21:23 14 05:56 (14B)
2	08:22	07:54	07:00	07:26 (WEA 09) 06:50	07:13 (WEA 11) 05:46	06:35 (19B) 05:02 05:43 (14B)
	16:16	17:04	17:55 18	07:44 (WEA 09) 19:49 35	07:56 (WEA 13) 20:39 8	06:43 (19B) 21:24 14 05:57 (14B)
3	08:22	07:53	06:58	07:26 (WEA 09) 06:48	07:10 (WEA 11) 05:44	05:01 05:43 (14B)
	16:17	17:06	17:57 19	07:45 (WEA 09) 19:51 39	07:55 (WEA 13) 20:41	21:25 15 05:58 (18B)
4	08:22	07:51	06:56	07:25 (WEA 09) 06:46	07:08 (WEA 11) 05:42	05:01 05:43 (14B)
	16:18	17:08	17:59 19	07:44 (WEA 09) 19:52 41	07:54 (WEA 13) 20:43	21:26 16 05:59 (18B)
5	08:22	07:49	06:54	07:24 (WEA 12) 06:43	07:06 (WEA 11) 05:41	05:00 05:43 (14B)
	16:19	17:10	18:01 21	07:45 (WEA 12) 19:54 44	07:54 (WEA 13) 20:44	21:27 17 06:00 (18B)
6	08:21	07:48	06:52	07:24 (WEA 12) 06:41	07:05 (WEA 11) 05:39	04:59 05:43 (14B)
	16:20	17:11	18:02 22	07:46 (WEA 12) 19:56 45	07:54 (WEA 13) 20:46	21:28 17 06:00 (18B)
7	08:21	07:46	06:49	07:22 (WEA 12) 06:39	07:04 (WEA 11) 05:37	04:59 05:44 (14B)
	16:22	17:13	18:04 23	07:45 (WEA 12) 19:57 43	07:52 (WEA 13) 20:48	21:29 17 06:01 (18B)
8	08:20	07:44	06:47	07:22 (WEA 12) 06:37	07:04 (WEA 11) 05:35	04:58 05:45 (14B)
	16:23	17:15	18:06 24	07:46 (WEA 12) 19:59 41	07:51 (WEA 13) 20:49	21:30 17 06:02 (18B)
9	08:20	07:42	06:45	07:21 (WEA 12) 06:34	07:04 (WEA 11) 05:33	04:58 05:44 (14B)
	16:24	17:17	18:08 25	07:46 (WEA 12) 20:01 39	07:50 (WEA 13) 20:51	21:31 17 06:01 (18B)
10	08:19	07:41	06:43	07:22 (WEA 12) 06:32	07:05 (WEA 11) 05:32	04:57 05:45 (14B)
	16:26	17:19	18:09 24	07:46 (WEA 12) 20:02 34	07:48 (WEA 13) 20:52	21:32 17 06:02 (18B)
11	08:19	07:39	06:41	07:21 (WEA 12) 06:30	07:06 (WEA 11) 05:30	04:57 05:46 (14B)
	16:27	17:21	18:11 24	07:45 (WEA 12) 20:04 27	07:45 (WEA 13) 20:54	21:32 17 06:03 (18B)
12	08:18	07:37	06:38	07:21 (WEA 12) 06:28	07:06 (WEA 11) 05:28	04:57 05:45 (14B)
	16:29	17:23	18:13 23	07:44 (WEA 12) 20:06 16	07:40 (WEA 13) 20:56	21:33 17 06:02 (18B)
13	08:18	07:35	06:36	07:22 (WEA 12) 06:25	07:09 (WEA 11) 05:27	04:56 05:46 (14B)
	16:30	17:24	18:15 22	07:44 (WEA 12) 20:07 5	07:14 (WEA 11) 20:57	21:34 17 06:03 (18B)
14	08:17	07:33	06:34	07:22 (WEA 12) 06:23	05:25	04:56 05:46 (14B)
	16:32	17:26	18:16 19	07:41 (WEA 12) 20:09	20:59	21:34 17 06:03 (18B)
15	08:16	07:31	06:31	07:24 (WEA 12) 06:21	05:24	04:56 05:47 (14B)
	16:33	17:28	18:18 16	07:40 (WEA 12) 20:11	21:00	21:35 17 06:04 (18B)
16	08:15	07:29	06:29	07:26 (WEA 12) 06:19	05:22	04:56 05:47 (14B)
	16:35	17:30	18:20 12	07:38 (WEA 12) 20:13	21:02	21:36 17 06:04 (18B)
17	08:14	07:27	06:27	07:30 (WEA 12) 06:17	05:21	04:56 05:47 (14B)
	16:36	17:32	18:22 1	07:31 (WEA 12) 20:14	21:03	21:36 17 06:04 (18B)
18	08:13	07:26	06:25	06:15	05:19	04:56 05:47 (14B)
	16:38	17:34	18:23	20:16	21:05	21:36 18 06:05 (18B)
19	08:12	07:24	06:22	06:12	05:18	04:56 05:47 (14B)
	16:40	17:35	18:25	20:18	21:06	21:37 18 06:05 (18B)
20	08:11	07:21	06:20	06:10	05:16	04:56 05:47 (14B)
	16:41	17:37	18:27	20:19	21:08	21:37 18 06:05 (18B)
21	08:10	07:19	06:18	06:08	05:15	04:56 05:47 (14B)
	16:43	17:39	18:28	20:21	21:09	21:37 18 06:05 (18B)
22	08:09	07:17	06:15	06:06 06:39 (19B)	05:14	04:56 05:48 (14B)
	16:45	17:41	18:30	20:23 3 06:42 (19B)	21:10	21:38 18 06:06 (18B)
23	08:08	07:15	06:13	06:04 06:36 (19B)	05:13	04:56 05:48 (14B)
	16:46	17:43	18:32	20:24 9 06:45 (19B)	21:12	21:38 18 06:06 (18B)
24	08:07	07:13	06:11	06:02 06:35 (19B)	05:11 05:46 (14B)	04:57 05:48 (14B)
	16:48	17:45	18:34	20:26 11 06:46 (19B)	21:13 6 05:52 (14B)	21:38 18 06:06 (18B)
25	08:05	07:11	06:08	06:00 06:34 (19B)	05:10 05:45 (14B)	04:57 05:49 (18B)
	16:50	17:46	18:35	20:28 13 06:47 (19B)	21:15 8 05:53 (14B)	21:38 17 06:06 (18B)
26	08:04	07:09 07:36 (WEA 09)	06:06	06:38 (WEA 13) 05:58	06:34 (19B) 05:09	05:44 (14B) 04:57 05:49 (14B)
	16:51	17:48 1 07:37 (WEA 09)	18:37 12	06:50 (WEA 13) 20:29 14	06:48 (19B) 21:16 10	05:54 (14B) 21:38 17 06:06 (18B)
27	08:03	07:07 07:30 (WEA 09)	06:04	06:34 (WEA 13) 05:56	06:33 (19B) 05:08	05:44 (14B) 04:58 05:49 (14B)
	16:53	17:50 10 07:40 (WEA 09)	18:39 18	06:52 (WEA 13) 20:31 15	06:48 (19B) 21:17 11	05:55 (14B) 21:38 17 06:06 (18B)
28	08:02	07:05 07:28 (WEA 09)	06:02	06:33 (WEA 13) 05:54	06:33 (19B) 05:07	05:43 (14B) 04:58 05:49 (18B)
	16:55	17:52 14 07:42 (WEA 09)	18:40 20	06:53 (WEA 13) 20:33 14	06:47 (19B) 21:18 12	05:55 (14B) 21:38 18 06:07 (18B)
29	08:00		06:59	07:31 (WEA 13) 05:52	06:33 (19B) 05:06	05:43 (14B) 04:59 05:49 (14B)
	16:57		19:42 24	07:55 (WEA 13) 20:34 14	06:47 (19B) 21:20 13	05:56 (14B) 21:38 17 06:06 (18B)
30	07:59		06:57	07:29 (WEA 13) 05:50	06:34 (19B) 05:05	05:42 (14B) 04:59 05:50 (14B)
	16:59		19:44 25	07:54 (WEA 13) 20:36 12	06:46 (19B) 21:21 14	05:56 (14B) 21:37 17 06:07 (18B)
31	07:57		06:55	07:29 (WEA 13)	05:04	05:42 (14B)
	17:00		19:45 26	07:55 (WEA 13)	21:22 14	05:56 (14B)
Sonnenscheinstunden	260	278	367	416	484	498
astr.max.mögl.Beschattung		25	453	541	107	509
Red.Sonnenscheinwahrsch.		0,32	0,27	0,36	0,43	0,35
Reduktion Betriebsdauer		0,96	0,96	0,96	0,96	0,96
Reduktion Windrichtung		0,68	0,69	0,72	0,71	0,70
Gesamte Reduktion		0,21	0,18	0,25	0,29	0,23
Met.wahrsch.Beschattung		5	81	133	31	119

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten) Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 31 - Reinstedt - Ermslebener Straße 5B

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00		05:50 (14B)	05:36			06:26		07:05 (WEA 11)	07:14		08:00 (WEA 12)	07:08	07:58
	21:37	17	06:07 (18B)	21:06			20:04	28	07:45 (WEA 13)	18:55	23	08:23 (WEA 12)	16:49	16:09
2	05:01		05:49 (14B)	05:38			06:27		07:03 (WEA 11)	07:16		08:00 (WEA 12)	07:09	08:00
	21:37	18	06:07 (18B)	21:04			20:02	34	07:46 (WEA 13)	18:53	23	08:23 (WEA 12)	16:47	16:08
3	05:01		05:50 (14B)	05:39			06:29		07:02 (WEA 11)	07:18		08:00 (WEA 12)	07:11	08:01
	21:36	17	06:07 (18B)	21:02			19:59	39	07:48 (WEA 13)	18:50	24	08:24 (WEA 12)	16:45	16:08
4	05:02		05:50 (14B)	05:41			06:31		07:01 (WEA 11)	07:19		07:58 (WEA 12)	07:13	08:02
	21:36	17	06:07 (18B)	21:01			19:57	41	07:48 (WEA 13)	18:48	25	08:23 (WEA 12)	16:44	16:07
5	05:03		05:50 (14B)	05:42			06:32		07:01 (WEA 11)	07:21		07:58 (WEA 12)	07:15	08:04
	21:36	17	06:07 (18B)	20:59			19:55	43	07:49 (WEA 13)	18:46	25	08:23 (WEA 12)	16:42	16:07
6	05:04		05:49 (14B)	05:44			06:34		07:00 (WEA 11)	07:23		07:59 (WEA 12)	07:17	08:05
	21:35	17	06:06 (18B)	20:57			19:53	44	07:49 (WEA 13)	18:43	24	08:23 (WEA 12)	16:40	16:06
7	05:05		05:50 (14B)	05:46			06:35		07:01 (WEA 11)	07:24		07:58 (WEA 12)	07:18	08:06
	21:34	16	06:06 (18B)	20:55			19:50	44	07:49 (WEA 13)	18:41	23	08:21 (WEA 12)	16:38	16:06
8	05:06		05:50 (14B)	05:47			06:37		07:02 (WEA 11)	07:26		07:59 (WEA 12)	07:20	08:08
	21:34	16	06:06 (18B)	20:53			19:48	43	07:49 (WEA 13)	18:39	21	08:20 (WEA 12)	16:37	16:06
9	05:07		05:50 (14B)	05:49			06:39		07:04 (WEA 11)	07:28		08:00 (WEA 09)	07:22	08:09
	21:33	16	06:06 (18B)	20:52			19:46	40	07:49 (WEA 13)	18:37	19	08:19 (WEA 09)	16:35	16:05
10	05:08		05:50 (14B)	05:50		06:47 (19B)	06:40		07:06 (WEA 11)	07:29		08:00 (WEA 09)	07:24	08:10
	21:32	15	06:05 (18B)	20:50	3	06:50 (19B)	19:43	36	07:49 (WEA 13)	18:34	19	08:19 (WEA 09)	16:34	16:05
11	05:09		05:50 (14B)	05:52		06:44 (19B)	06:42		07:07 (WEA 11)	07:31		07:59 (WEA 09)	07:25	08:11
	21:32	14	06:04 (14B)	20:48	9	06:53 (19B)	19:41	30	07:48 (WEA 13)	18:32	19	08:18 (WEA 09)	16:32	16:05
12	05:10		05:51 (14B)	05:53		06:42 (19B)	06:43		07:21 (WEA 13)	07:33		08:00 (WEA 09)	07:27	08:12
	21:31	13	06:04 (14B)	20:46	11	06:53 (19B)	19:39	26	07:47 (WEA 13)	18:30	17	08:17 (WEA 09)	16:30	16:05
13	05:11		05:51 (14B)	05:55		06:42 (19B)	06:45		07:21 (WEA 13)	07:34		08:01 (WEA 09)	07:29	08:13
	21:30	13	06:04 (14B)	20:44	13	06:55 (19B)	19:37	25	07:46 (WEA 13)	18:28	15	08:16 (WEA 09)	16:29	16:05
14	05:12		05:51 (14B)	05:57		06:41 (19B)	06:47		07:21 (WEA 13)	07:36		08:02 (WEA 09)	07:31	08:14
	21:29	13	06:04 (14B)	20:42	13	06:54 (19B)	19:34	24	07:45 (WEA 13)	18:26	13	08:15 (WEA 09)	16:28	16:05
15	05:13		05:51 (14B)	05:58		06:41 (19B)	06:48		07:22 (WEA 13)	07:38		08:04 (WEA 09)	07:32	08:15
	21:28	13	06:04 (14B)	20:40	14	06:55 (19B)	19:32	21	07:43 (WEA 13)	18:23	9	08:13 (WEA 09)	16:26	16:05
16	05:14		05:52 (14B)	06:00		06:40 (19B)	06:50		07:23 (WEA 13)	07:40			07:34	08:16
	21:27	11	06:03 (14B)	20:38	14	06:54 (19B)	19:30	18	07:41 (WEA 13)	18:21			16:25	16:05
17	05:15		05:52 (14B)	06:01		06:41 (19B)	06:51		07:25 (WEA 13)	07:41			07:36	08:16
	21:26	11	06:03 (14B)	20:36	13	06:54 (19B)	19:27	14	07:39 (WEA 13)	18:19			16:23	16:05
18	05:17		05:54 (14B)	06:03		06:40 (19B)	06:53		07:29 (WEA 13)	07:43			07:38	08:17
	21:25	9	06:03 (14B)	20:34	13	06:53 (19B)	19:25	5	07:34 (WEA 13)	18:17			16:22	16:05
19	05:18		05:55 (14B)	06:05		06:41 (19B)	06:55			07:45			07:39	08:18
	21:24	7	06:02 (14B)	20:32	11	06:52 (19B)	19:23			18:15			16:21	16:06
20	05:19		05:57 (14B)	06:06		06:42 (19B)	06:56			07:46			07:41	08:19
	21:23	3	06:00 (14B)	20:30	8	06:50 (19B)	19:20			18:13			16:20	16:06
21	05:21			06:08			06:58			07:48			07:43	08:19
	21:21			20:28			19:18			18:11			16:18	16:06
22	05:22			06:10			07:00			07:50			07:44	08:20
	21:20			20:26			19:16			18:09			16:17	16:07
23	05:23			06:11			07:01			07:52			07:46	08:20
	21:19			20:24			19:13			18:07			16:16	16:07
24	05:25			06:13			07:03			07:53			07:48	08:21
	21:18			20:21			19:11			18:05			16:15	16:08
25	05:26			06:14			07:04			06:55			07:49	08:21
	21:16			20:19			19:09			17:03			16:14	16:09
26	05:27			06:16			07:06			06:57			07:51	08:21
	21:15			20:17			19:06			17:01			16:13	16:09
27	05:29			06:18			07:08		08:09 (WEA 12)	06:59			07:52	08:22
	21:13			20:15			19:04	9	08:18 (WEA 12)	16:59			16:12	16:10
28	05:30			06:19			07:09		08:05 (WEA 12)	07:01			07:54	08:22
	21:12			20:13			19:02	15	08:20 (WEA 12)	16:57			16:11	16:11
29	05:32			06:21			07:11		08:03 (WEA 12)	07:02			07:55	08:22
	21:10			20:11			18:59	19	08:22 (WEA 12)	16:55			16:10	16:12
30	05:33			06:22		07:10 (WEA 11)	07:13		08:02 (WEA 12)	07:04			07:57	08:22
	21:09			20:08	5	07:15 (WEA 11)	18:57	21	08:23 (WEA 12)	16:53			16:10	16:13
31	05:35			06:24		07:06 (WEA 11)				07:06				08:22
	21:07			20:06	16	07:40 (WEA 13)				16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		273			143			619			299			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,72			0,68			
Gesamte Reduktion		0,27			0,29			0,23			0,18			
Met.wahrsch.Beschattung		74			42			145			55			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 32 - Reinstedt - Schielestraße 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22	07:56	07:03	07:30 (WEA 12) 06:52	07:36 (WEA 13) 05:48	05:03 06:04 (18B)
	16:15	17:02	17:54 14	07:44 (WEA 12) 19:47 23	07:59 (WEA 13) 20:38	21:23 11 06:15 (18B)
2	08:22	07:54	07:00	07:29 (WEA 12) 06:50	07:36 (WEA 13) 05:46	05:02 06:05 (18B)
	16:16	17:04	17:55 16	07:45 (WEA 12) 19:49 23	07:59 (WEA 13) 20:39	21:24 10 06:15 (18B)
3	08:22	07:53	06:58	07:28 (WEA 12) 06:48	07:36 (WEA 13) 05:44	05:01 06:06 (18B)
	16:17	17:06	17:57 19	07:47 (WEA 12) 19:51 21	07:57 (WEA 13) 20:41	21:25 8 06:14 (18B)
4	08:22	07:51	06:56	07:26 (WEA 12) 06:46	07:37 (WEA 13) 05:42	05:01 06:08 (18B)
	16:18	17:08	17:59 21	07:47 (WEA 12) 19:52 18	07:55 (WEA 13) 20:43	21:26 5 06:13 (18B)
5	08:22	07:49	06:54	07:25 (WEA 12) 06:43	07:39 (WEA 13) 05:41	05:00
	16:19	17:10	18:01 22	07:47 (WEA 12) 19:54 14	07:53 (WEA 13) 20:44	21:27
6	08:21	07:48	06:52	07:25 (WEA 12) 06:41	07:42 (WEA 13) 05:39	04:59
	16:20	17:11	18:02 22	07:47 (WEA 12) 19:56 8	07:50 (WEA 13) 20:46	21:28
7	08:21	07:46	06:49	07:24 (WEA 12) 06:39	05:37	04:59
	16:22	17:13	18:04 23	07:47 (WEA 12) 19:57	20:48	21:29
8	08:20	07:44	06:47	07:24 (WEA 12) 06:37	05:35	04:58
	16:23	17:15	18:06 22	07:46 (WEA 12) 19:59	20:49	21:30
9	08:20	07:42	06:45	07:25 (WEA 12) 06:34	05:33	04:58
	16:24	17:17	18:08 21	07:46 (WEA 12) 20:01	20:51	21:31
10	08:19	07:41	06:43	07:25 (WEA 12) 06:32	05:32	04:57
	16:26	17:19	18:09 21	07:46 (WEA 12) 20:02	20:52	21:32
11	08:19	07:39	06:41	07:25 (WEA 12) 06:30	05:30	04:57
	16:27	17:21	18:11 19	07:44 (WEA 12) 20:04	20:54	21:33
12	08:18	07:37	06:38	07:27 (WEA 12) 06:28	05:28	04:57
	16:29	17:23	18:13 15	07:42 (WEA 12) 20:06	20:56	21:33
13	08:18	07:35	06:36	07:29 (WEA 12) 06:25	05:27	04:56
	16:30	17:24	18:15 11	07:40 (WEA 12) 20:07	20:57	21:34
14	08:17	07:33	06:34	07:32 (WEA 12) 06:23	05:25 06:07 (18B)	04:56
	16:32	17:26	18:16 3	07:35 (WEA 12) 20:09	20:59 3 06:10 (18B)	21:34
15	08:16	07:31	06:31	06:21	05:24 06:05 (18B)	04:56
	16:33	17:28	18:18	20:11	21:00 8 06:13 (18B)	21:35
16	08:15	07:29	06:29	06:19 06:49 (19B)	05:22 06:03 (18B)	04:56
	16:35	17:30	18:20	20:13 8 06:57 (19B)	21:02 11 06:14 (18B)	21:36
17	08:14	07:27	06:27	06:17 06:48 (19B)	05:21 06:02 (18B)	04:56
	16:36	17:32	18:22	20:14 10 06:58 (19B)	21:03 13 06:15 (18B)	21:36
18	08:13	07:26	06:25	06:15 06:47 (19B)	05:19 06:02 (18B)	04:56
	16:38	17:34	18:23	20:16 12 06:59 (19B)	21:05 14 06:16 (18B)	21:36
19	08:12	07:24	06:22	06:12 06:46 (19B)	05:18 06:00 (18B)	04:56
	16:40	17:35	18:25	20:18 13 06:59 (19B)	21:06 16 06:16 (18B)	21:37
20	08:11	07:22	06:20	06:10 06:45 (19B)	05:16 06:00 (18B)	04:56
	16:41	17:37	18:27	20:19 13 06:58 (19B)	21:08 16 06:16 (18B)	21:37
21	08:10	07:19	06:18	06:50 (WEA 13) 06:08	06:45 (19B) 05:15	06:00 (18B) 04:56
	16:43	17:39	18:28 2	06:52 (WEA 13) 20:21 12	06:57 (19B) 21:09 17	06:17 (18B) 21:37
22	08:09	07:17	06:15	06:45 (WEA 13) 06:06	06:45 (19B) 05:14	06:01 (18B) 04:56
	16:45	17:41	18:30 12	06:57 (WEA 13) 20:23 12	06:57 (19B) 21:10 16	06:17 (18B) 21:38
23	08:08	07:15	06:13	06:42 (WEA 13) 06:04	06:46 (19B) 05:13	06:01 (18B) 04:56
	16:46	17:43	18:32 17	06:59 (WEA 13) 20:24 10	06:56 (19B) 21:12 17	06:18 (18B) 21:38
24	08:07	07:13	06:11	06:40 (WEA 13) 06:02	06:47 (19B) 05:11	06:01 (18B) 04:57
	16:48	17:45	18:34 20	07:00 (WEA 13) 20:26 7	06:54 (19B) 21:13 17	06:18 (18B) 21:38
25	08:05	07:11	06:08	06:39 (WEA 13) 06:00	05:10	06:01 (18B) 04:57
	16:50	17:46	18:35 22	07:01 (WEA 13) 20:28	21:15 17	06:18 (18B) 21:38
26	08:04	07:09	06:06	06:38 (WEA 13) 05:58	05:09	06:01 (18B) 04:57
	16:51	17:48	18:37 23	07:01 (WEA 13) 20:29	21:16 17	06:18 (18B) 21:38
27	08:03	07:07	06:04	06:36 (WEA 13) 05:56	05:08	06:02 (18B) 04:58
	16:53	17:50	18:39 25	07:01 (WEA 13) 20:31	21:17 15	06:17 (18B) 21:38
28	08:02	07:05 07:33 (WEA 12)	06:02	06:36 (WEA 13) 05:54	05:07	06:02 (18B) 04:58
	16:55	17:52 8 07:41 (WEA 12)	18:40 25	07:01 (WEA 13) 20:33	21:18 15	06:17 (18B) 21:38
29	08:00		06:59	07:36 (WEA 13) 05:52	05:06	06:02 (18B) 04:59
	16:57		19:42 25	08:01 (WEA 13) 20:34	21:20 15	06:17 (18B) 21:38
30	07:59		06:57	07:35 (WEA 13) 05:50	05:05	06:03 (18B) 04:59
	16:59		19:44 25	08:00 (WEA 13) 20:36	21:21 13	06:16 (18B) 21:37
31	07:57		06:55	07:35 (WEA 13)	05:04	06:03 (18B)
	17:00		19:45 25	08:00 (WEA 13)	21:22 12	06:15 (18B)
Sonnenscheinstunden	260	278	367	416	484	498
astr.max.mögl.Beschattung		8	470	204	252	34
Red.Sonnenscheinwahrsch.		0,32	0,27	0,36	0,43	0,35
Reduktion Betriebsdauer		0,96	0,96	0,96	0,96	0,96
Reduktion Windrichtung		0,68	0,70	0,72	0,71	0,71
Gesamte Reduktion		0,21	0,18	0,25	0,29	0,24
Met.wahrsch.Beschattung		2	84	50	74	8

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 32 - Reinstedt - Schielestraße 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00			05:36			06:26			07:14		08:06 (WEA 12)	07:08	07:58
	21:37			21:06			20:04			18:55	14	08:20 (WEA 12)	16:49	16:09
2	05:01			05:38			06:27			07:16		08:05 (WEA 12)	07:09	08:00
	21:37			21:04			20:02			18:53	17	08:22 (WEA 12)	16:47	16:08
3	05:01			05:39			06:29			07:18		08:03 (WEA 12)	07:11	08:01
	21:36			21:02			19:59			18:50	20	08:23 (WEA 12)	16:45	16:08
4	05:02			05:41			06:31			07:19		08:02 (WEA 12)	07:13	08:03
	21:36			21:01			19:57			18:48	21	08:23 (WEA 12)	16:44	16:07
5	05:03			05:42			06:32			07:21		08:01 (WEA 12)	07:15	08:04
	21:36			20:59			19:55			18:46	22	08:23 (WEA 12)	16:42	16:07
6	05:04			05:44			06:34		07:38 (WEA 13)	07:23		08:01 (WEA 12)	07:17	08:05
	21:35			20:57			19:53	7	07:45 (WEA 13)	18:43	23	08:24 (WEA 12)	16:40	16:06
7	05:05			05:46			06:35		07:34 (WEA 13)	07:24		08:01 (WEA 12)	07:18	08:06
	21:34			20:55			19:50	14	07:48 (WEA 13)	18:41	23	08:24 (WEA 12)	16:38	16:06
8	05:06		06:15 (18B)	05:47			06:37		07:32 (WEA 13)	07:26		08:00 (WEA 12)	07:20	08:08
	21:34	4	06:19 (18B)	20:53			19:48	17	07:49 (WEA 13)	18:39	22	08:22 (WEA 12)	16:37	16:06
9	05:07		06:14 (18B)	05:49			06:39		07:30 (WEA 13)	07:28		08:01 (WEA 12)	07:22	08:09
	21:33	7	06:21 (18B)	20:52			19:46	21	07:51 (WEA 13)	18:37	21	08:22 (WEA 12)	16:35	16:05
10	05:08		06:13 (18B)	05:50			06:40		07:29 (WEA 13)	07:29		08:01 (WEA 12)	07:24	08:10
	21:32	9	06:22 (18B)	20:50			19:43	23	07:52 (WEA 13)	18:34	20	08:21 (WEA 12)	16:34	16:05
11	05:09		06:12 (18B)	05:52			06:42		07:28 (WEA 13)	07:31		08:01 (WEA 12)	07:25	08:11
	21:32	11	06:23 (18B)	20:48			19:41	24	07:52 (WEA 13)	18:32	18	08:19 (WEA 12)	16:32	16:05
12	05:10		06:12 (18B)	05:53			06:43		07:27 (WEA 13)	07:33		08:02 (WEA 12)	07:27	08:12
	21:31	12	06:24 (18B)	20:46			19:39	25	07:52 (WEA 13)	18:30	16	08:18 (WEA 12)	16:30	16:05
13	05:11		06:12 (18B)	05:55			06:45		07:26 (WEA 13)	07:34		08:04 (WEA 12)	07:29	08:13
	21:30	12	06:24 (18B)	20:44			19:37	25	07:51 (WEA 13)	18:28	12	08:16 (WEA 12)	16:29	16:05
14	05:12		06:11 (18B)	05:57			06:47		07:26 (WEA 13)	07:36		08:09 (WEA 12)	07:31	08:14
	21:29	14	06:25 (18B)	20:42			19:34	26	07:52 (WEA 13)	18:26	2	08:11 (WEA 12)	16:28	16:05
15	05:13		06:11 (18B)	05:58			06:48		07:25 (WEA 13)	07:38			07:32	08:15
	21:28	14	06:25 (18B)	20:40			19:32	26	07:51 (WEA 13)	18:23			16:26	16:05
16	05:14		06:10 (18B)	06:00			06:50		07:26 (WEA 13)	07:40			07:34	08:16
	21:27	16	06:26 (18B)	20:38			19:30	24	07:50 (WEA 13)	18:21			16:25	16:05
17	05:15		06:10 (18B)	06:01			06:51		07:26 (WEA 13)	07:41			07:36	08:17
	21:26	16	06:26 (18B)	20:36			19:27	24	07:50 (WEA 13)	18:19			16:23	16:05
18	05:17		06:11 (18B)	06:03			06:53		07:26 (WEA 13)	07:43			07:38	08:17
	21:25	16	06:27 (18B)	20:34			19:25	22	07:48 (WEA 13)	18:17			16:22	16:05
19	05:18		06:10 (18B)	06:05		06:53 (19B)	06:55		07:27 (WEA 13)	07:45			07:39	08:18
	21:24	17	06:27 (18B)	20:32	8	07:01 (19B)	19:23	20	07:47 (WEA 13)	18:15			16:21	16:06
20	05:19		06:10 (18B)	06:06		06:51 (19B)	06:56		07:27 (WEA 13)	07:46			07:41	08:19
	21:23	17	06:27 (18B)	20:30	10	07:01 (19B)	19:20	18	07:45 (WEA 13)	18:13			16:20	16:06
21	05:21		06:10 (18B)	06:08		06:51 (19B)	06:58		07:29 (WEA 13)	07:48			07:43	08:19
	21:21	17	06:27 (18B)	20:28	12	07:03 (19B)	19:18	14	07:43 (WEA 13)	18:11			16:18	16:06
22	05:22		06:10 (18B)	06:10		06:49 (19B)	07:00		07:33 (WEA 13)	07:50			07:44	08:20
	21:20	17	06:27 (18B)	20:26	13	07:02 (19B)	19:16	7	07:40 (WEA 13)	18:09			16:17	16:07
23	05:23		06:11 (18B)	06:11		06:49 (19B)	07:01			07:52			07:46	08:20
	21:19	16	06:27 (18B)	20:24	14	07:03 (19B)	19:13			18:07			16:16	16:07
24	05:25		06:11 (18B)	06:13		06:49 (19B)	07:03			07:53			07:48	08:21
	21:18	16	06:27 (18B)	20:21	13	07:02 (19B)	19:11			18:05			16:15	16:08
25	05:26		06:11 (18B)	06:14		06:49 (19B)	07:04			06:55			07:49	08:21
	21:16	15	06:26 (18B)	20:19	12	07:01 (19B)	19:09			17:03			16:14	16:09
26	05:27		06:12 (18B)	06:16		06:50 (19B)	07:06			06:57			07:51	08:21
	21:15	14	06:26 (18B)	20:17	10	07:00 (19B)	19:06			17:01			16:13	16:09
27	05:29		06:13 (18B)	06:18		06:51 (19B)	07:08			06:59			07:52	08:22
	21:13	12	06:25 (18B)	20:15	7	06:58 (19B)	19:04			16:59			16:12	16:10
28	05:30		06:14 (18B)	06:19			07:09			07:01			07:54	08:22
	21:12	10	06:24 (18B)	20:13			19:02			16:57			16:11	16:11
29	05:32		06:16 (18B)	06:21			07:11			07:02			07:55	08:22
	21:10	7	06:23 (18B)	20:11			18:59			16:55			16:10	16:12
30	05:33			06:22			07:13		08:10 (WEA 12)	07:04			07:57	08:22
	21:09			20:08			18:57	9	08:19 (WEA 12)	16:53			16:10	16:13
31	05:35			06:24						07:06				08:22
	21:07			20:06						16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		289			99			346			251			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,72			0,68			
Gesamte Reduktion		0,27			0,29			0,23			0,18			
Met.wahrsch.Beschattung		79			29			81			46			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 33 - Reinstedt - Schielestraße 4a

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56			07:03			07:35 (WEA 12)	06:52		07:54 (WEA 13)	05:48			05:03		
	16:15			17:02			17:54	22		07:57 (WEA 12)	19:47	7	08:01 (WEA 13)	20:38			21:23		
2	08:22			07:54			07:00			07:35 (WEA 12)	06:50			05:46			05:02		
	16:16			17:04			17:55	22		07:57 (WEA 12)	19:49			20:39			21:24		
3	08:22			07:53			06:58			07:35 (WEA 12)	06:48			05:44			05:01		
	16:17			17:06			17:57	22		07:57 (WEA 12)	19:51			20:41			21:25		
4	08:22			07:51			06:56			07:34 (WEA 12)	06:46			05:42			05:01		
	16:18			17:08			17:59	22		07:56 (WEA 12)	19:52			20:43			21:26		
5	08:22			07:49			06:54			07:34 (WEA 12)	06:43			05:41			05:00		
	16:19			17:10			18:01	21		07:55 (WEA 12)	19:54			20:44			21:27		
6	08:21			07:48			06:52			07:35 (WEA 12)	06:41			05:39			04:59		05:28 (6B)
	16:20			17:11			18:02	20		07:55 (WEA 12)	19:56			20:46			21:28	1	05:29 (6B)
7	08:21			07:46			06:49			07:35 (WEA 12)	06:39			05:37		06:09 (14B)	04:59		05:28 (6B)
	16:22			17:13			18:04	18		07:53 (WEA 12)	19:57			20:48	10	06:24 (18B)	21:29	2	05:30 (6B)
8	08:20			07:44			06:47			07:36 (WEA 12)	06:37			05:35		06:06 (14B)	04:58		05:28 (6B)
	16:23			17:15			18:06	15		07:51 (WEA 12)	19:59			20:49	19	06:25 (18B)	21:30	2	05:30 (6B)
9	08:20			07:42			06:45			07:39 (WEA 12)	06:34			05:33		06:06 (14B)	04:58		05:27 (6B)
	16:24			17:17			18:08	10		07:49 (WEA 12)	20:01			20:51	21	06:27 (18B)	21:31	3	05:30 (6B)
10	08:19			07:41			06:43				06:32			05:32		06:05 (14B)	04:57		05:27 (6B)
	16:26			17:19			18:09				20:02			20:52	23	06:28 (18B)	21:32	3	05:30 (6B)
11	08:19			07:39			06:41				06:30		07:01 (19B)	05:30		06:04 (14B)	04:57		05:27 (6B)
	16:27			17:21			18:11				20:04	7	07:08 (19B)	20:54	24	06:28 (18B)	21:33	4	05:31 (6B)
12	08:18			07:37			06:38				06:28		06:58 (19B)	05:28		06:04 (14B)	04:57		05:26 (6B)
	16:29			17:23			18:13				20:06	11	07:09 (19B)	20:56	25	06:29 (18B)	21:33	4	05:30 (6B)
13	08:18			07:35			06:36				06:25		06:57 (19B)	05:27		06:03 (14B)	04:56		05:26 (6B)
	16:30			17:24			18:15				20:07	12	07:09 (19B)	20:57	25	06:28 (18B)	21:34	4	05:30 (6B)
14	08:17			07:33			06:34				06:23		06:56 (19B)	05:25		06:04 (14B)	04:56		05:26 (6B)
	16:32			17:26			18:16				20:09	14	07:10 (19B)	20:59	25	06:29 (18B)	21:34	5	05:31 (6B)
15	08:16			07:31			06:31				06:21		06:56 (19B)	05:24		06:05 (14B)	04:56		05:26 (6B)
	16:33			17:28			18:18				20:11	14	07:10 (19B)	21:00	24	06:29 (18B)	21:35	5	05:31 (6B)
16	08:15			07:29			06:29				06:19		06:56 (19B)	05:22		06:05 (14B)	04:56		05:26 (6B)
	16:35			17:30			18:20				20:13	13	07:09 (19B)	21:02	24	06:29 (18B)	21:36	5	05:31 (6B)
17	08:14			07:27			06:27			06:56 (WEA 13)	06:17		06:57 (19B)	05:21		06:06 (14B)	04:56		05:26 (6B)
	16:36			17:32			18:22	11		07:07 (WEA 13)	20:14	11	07:08 (19B)	21:03	23	06:29 (18B)	21:36	5	05:31 (6B)
18	08:13			07:26			06:25			06:53 (WEA 13)	06:15		06:58 (19B)	05:19		06:07 (14B)	04:56		05:26 (6B)
	16:38			17:34			18:23	17		07:10 (WEA 13)	20:16	9	07:07 (19B)	21:05	22	06:29 (18B)	21:36	5	05:31 (6B)
19	08:12			07:24			06:22			06:52 (WEA 13)	06:12		06:59 (19B)	05:18		06:08 (14B)	04:56		05:26 (6B)
	16:40			17:35			18:25	19		07:11 (WEA 13)	20:18	6	07:05 (19B)	21:06	18	06:27 (18B)	21:37	5	05:31 (6B)
20	08:11			07:22			06:20			06:51 (WEA 13)	06:10			05:16		06:13 (18B)	04:56		05:26 (6B)
	16:41			17:37			18:27	22		07:13 (WEA 13)	20:19			21:08	14	06:27 (18B)	21:37	5	05:31 (6B)
21	08:10			07:19			06:18			06:49 (WEA 13)	06:08			05:15		06:14 (18B)	04:56		05:26 (6B)
	16:43			17:39			18:28	23		07:12 (WEA 13)	20:21			21:09	13	06:27 (18B)	21:37	5	05:31 (6B)
22	08:09			07:17			06:15			06:48 (WEA 13)	06:06			05:14		06:16 (18B)	04:56		05:27 (6B)
	16:45			17:41			18:30	25		07:13 (WEA 13)	20:23			21:10	10	06:26 (18B)	21:38	5	05:32 (6B)
23	08:08			07:15			06:13			06:48 (WEA 13)	06:04			05:13		06:17 (18B)	04:56		05:27 (6B)
	16:46			17:43			18:32	25		07:13 (WEA 13)	20:24			21:12	8	06:25 (18B)	21:38	5	05:32 (6B)
24	08:07			07:13		07:42 (WEA 12)	06:11			06:47 (WEA 13)	06:02			05:11		06:20 (18B)	04:57		05:27 (6B)
	16:48			17:45	9	07:51 (WEA 12)	18:34	25		07:12 (WEA 13)	20:26			21:13	2	06:22 (18B)	21:38	5	05:32 (6B)
25	08:05			07:11		07:39 (WEA 12)	06:08			06:47 (WEA 13)	06:00			05:10			04:57		05:28 (6B)
	16:50			17:46	15	07:54 (WEA 12)	18:35	25		07:12 (WEA 13)	20:28			21:15			21:38	5	05:33 (6B)
26	08:04			07:09		07:38 (WEA 12)	06:06			06:47 (WEA 13)	05:58			05:09			04:57		05:28 (6B)
	16:51			17:48	17	07:55 (WEA 12)	18:37	25		07:12 (WEA 13)	20:29			21:16			21:38	5	05:33 (6B)
27	08:03			07:07		07:36 (WEA 12)	06:04			06:47 (WEA 13)	05:56			05:08			04:58		05:28 (6B)
	16:53			17:50	19	07:55 (WEA 12)	18:39	23		07:10 (WEA 13)	20:31			21:17			21:38	5	05:33 (6B)
28	08:02			07:05		07:35 (WEA 12)	06:02			06:47 (WEA 13)	05:54			05:07			04:58		05:29 (6B)
	16:55			17:52	21	07:56 (WEA 12)	18:40	23		07:10 (WEA 13)	20:33			21:18			21:38	5	05:34 (6B)
29	08:00						06:59			07:48 (WEA 13)	05:52			05:06			04:59		05:29 (6B)
	16:57						19:42	21		08:09 (WEA 13)	20:34			21:20			21:38	4	05:33 (6B)
30	07:59						06:57			07:48 (WEA 13)	05:50			05:05			04:59		05:30 (6B)
	16:59						19:44	18		08:06 (WEA 13)	20:36			21:21			21:37	4	05:34 (6B)
31	07:57						06:55			07:50 (WEA 13)				05:04					
	17:00						19:45	14		08:04 (WEA 13)				21:22					
Sonnenscheinstunden	260			278			367				416			484			498		
astr.max.mögl.Beschattung					81			488				104			330			106	
Red.Sonnenscheinwahrsch.					0,32			0,27				0,36			0,43			0,35	
Reduktion Betriebsdauer					0,96			0,96				0,96			0,96			0,96	
Reduktion Windrichtung					0,68			0,70				0,72			0,72			0,69	
Gesamte Reduktion					0,21			0,18				0,25			0,29			0,23	
Met.wahrsch.Beschattung					17			88				26			97			24	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 33 - Reinstedt - Schielestraße 4a

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November	Dezember
1	05:00		05:31 (6B)	05:36		06:14 (14B)	06:26		07:00 (19B)	07:14			07:08	07:58
	21:37	4	05:35 (6B)	21:06	25	06:39 (18B)	20:04	7	07:07 (19B)	18:55			16:49	16:09
2	05:01		05:31 (6B)	05:38		06:14 (14B)	06:27			07:16			07:09	08:00
	21:37	4	05:35 (6B)	21:04	24	06:38 (18B)	20:02			18:53			16:47	16:08
3	05:01		05:32 (6B)	05:39		06:15 (14B)	06:29			07:18			07:11	08:01
	21:36	3	05:35 (6B)	21:02	23	06:38 (18B)	19:59			18:50			16:45	16:08
4	05:02		05:33 (6B)	05:41		06:15 (14B)	06:31			07:19		08:17 (WEA 12)	07:13	08:03
	21:36	3	05:36 (6B)	21:01	21	06:36 (18B)	19:57			18:48	7	08:24 (WEA 12)	16:44	16:07
5	05:03		05:34 (6B)	05:42		06:17 (14B)	06:32			07:21		08:14 (WEA 12)	07:15	08:04
	21:36	2	05:36 (6B)	20:59	16	06:35 (18B)	19:55			18:46	13	08:27 (WEA 12)	16:42	16:07
6	05:04		05:34 (6B)	05:44		06:20 (14B)	06:34			07:23		08:13 (WEA 12)	07:17	08:05
	21:35	1	05:35 (6B)	20:57	3	06:31 (18B)	19:53			18:43	16	08:29 (WEA 12)	16:40	16:06
7	05:05		05:35 (6B)	05:46			06:35			07:24		08:11 (WEA 12)	07:18	08:06
	21:34	1	05:36 (6B)	20:55			19:50			18:41	19	08:30 (WEA 12)	16:38	16:06
8	05:06			05:47			06:37			07:26		08:10 (WEA 12)	07:20	08:08
	21:34			20:53			19:48			18:39	20	08:30 (WEA 12)	16:37	16:06
9	05:07			05:49			06:39			07:28		08:09 (WEA 12)	07:22	08:09
	21:33			20:52			19:46			18:37	22	08:31 (WEA 12)	16:35	16:05
10	05:08			05:50			06:40			07:29		08:09 (WEA 12)	07:24	08:10
	21:32			20:50			19:43			18:34	22	08:31 (WEA 12)	16:34	16:05
11	05:09			05:52			06:42		07:47 (WEA 13)	07:31		08:08 (WEA 12)	07:25	08:11
	21:32			20:48			19:41	5	07:52 (WEA 13)	18:32	22	08:30 (WEA 12)	16:32	16:05
12	05:10			05:53			06:43		07:43 (WEA 13)	07:33		08:08 (WEA 12)	07:27	08:12
	21:31			20:46			19:39	13	07:56 (WEA 13)	18:30	22	08:30 (WEA 12)	16:30	16:05
13	05:11			05:55			06:45		07:40 (WEA 13)	07:34		08:08 (WEA 12)	07:29	08:13
	21:30			20:44			19:37	17	07:57 (WEA 13)	18:28	22	08:30 (WEA 12)	16:29	16:05
14	05:12			05:57			06:47		07:39 (WEA 13)	07:36		08:09 (WEA 12)	07:31	08:14
	21:29			20:42			19:34	20	07:59 (WEA 13)	18:26	20	08:29 (WEA 12)	16:28	16:05
15	05:13			05:58			06:48		07:37 (WEA 13)	07:38		08:09 (WEA 12)	07:33	08:15
	21:28			20:40			19:32	22	07:59 (WEA 13)	18:23	19	08:28 (WEA 12)	16:26	16:05
16	05:14			06:00			06:50		07:36 (WEA 13)	07:40		08:10 (WEA 12)	07:34	08:16
	21:27			20:38			19:30	24	08:00 (WEA 13)	18:21	16	08:26 (WEA 12)	16:25	16:05
17	05:15			06:01			06:51		07:36 (WEA 13)	07:41		08:11 (WEA 12)	07:36	08:17
	21:26			20:36			19:27	24	08:00 (WEA 13)	18:19	13	08:24 (WEA 12)	16:23	16:05
18	05:17			06:03			06:53		07:34 (WEA 13)	07:43		08:14 (WEA 12)	07:38	08:17
	21:25			20:34			19:25	26	08:00 (WEA 13)	18:17	7	08:21 (WEA 12)	16:22	16:05
19	05:18			06:05			06:55		07:34 (WEA 13)	07:45			07:39	08:18
	21:24			20:32			19:23	26	08:00 (WEA 13)	18:15			16:21	16:06
20	05:19		06:28 (18B)	06:06			06:56		07:33 (WEA 13)	07:46			07:41	08:19
	21:23	5	06:33 (18B)	20:30			19:20	26	07:59 (WEA 13)	18:13			16:20	16:06
21	05:21		06:26 (18B)	06:08			06:58		07:34 (WEA 13)	07:48			07:43	08:19
	21:21	9	06:35 (18B)	20:28			19:18	25	07:59 (WEA 13)	18:11			16:18	16:06
22	05:22		06:25 (18B)	06:10			07:00		07:34 (WEA 13)	07:50			07:44	08:20
	21:20	11	06:36 (18B)	20:26			19:16	24	07:58 (WEA 13)	18:09			16:17	16:07
23	05:23		06:24 (18B)	06:11			07:01		07:34 (WEA 13)	07:52			07:46	08:20
	21:19	13	06:37 (18B)	20:24			19:13	22	07:56 (WEA 13)	18:07			16:16	16:07
24	05:25		06:24 (18B)	06:13		07:02 (19B)	07:03		07:35 (WEA 13)	07:53			07:48	08:21
	21:18	14	06:38 (18B)	20:21	6	07:08 (19B)	19:11	20	07:55 (WEA 13)	18:05			16:15	16:08
25	05:26		06:18 (14B)	06:14		07:00 (19B)	07:04		07:35 (WEA 13)	06:55			07:49	08:21
	21:16	20	06:38 (18B)	20:19	10	07:10 (19B)	19:09	18	07:53 (WEA 13)	17:03			16:14	16:09
26	05:27		06:17 (14B)	06:16		06:58 (19B)	07:06		07:37 (WEA 13)	06:57			07:51	08:21
	21:15	22	06:39 (18B)	20:17	12	07:10 (19B)	19:06	14	07:51 (WEA 13)	17:01			16:13	16:09
27	05:29		06:16 (14B)	06:18		06:58 (19B)	07:08		07:41 (WEA 13)	06:59			07:52	08:22
	21:13	23	06:39 (18B)	20:15	13	07:11 (19B)	19:04	6	07:47 (WEA 13)	16:59			16:12	16:10
28	05:30		06:15 (14B)	06:19		06:57 (19B)	07:09			07:01			07:54	08:22
	21:12	24	06:39 (18B)	20:13	13	07:10 (19B)	19:02			16:57			16:11	16:11
29	05:32		06:15 (14B)	06:21		06:57 (19B)	07:11			07:02			07:55	08:22
	21:10	25	06:40 (18B)	20:11	13	07:10 (19B)	18:59			16:55			16:10	16:12
30	05:33		06:14 (14B)	06:22		06:58 (19B)	07:13			07:04			07:57	08:22
	21:09	25	06:39 (18B)	20:08	12	07:10 (19B)	18:57			16:53			16:10	16:13
31	05:35		06:15 (14B)	06:24		06:58 (19B)				07:06				08:22
	21:07	25	06:40 (18B)	20:06	10	07:08 (19B)				16:51				16:13
Sonnenscheinstunden	501			453			381			332			267	245
astr.max.mögl.Beschattung		234			201			339			260			
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			
Reduktion Windrichtung		0,71			0,72			0,71			0,68			
Gesamte Reduktion		0,27			0,30			0,23			0,18			
Met.wahrsch.Beschattung		64			59			79			48			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 34 - Reinstedt - Schielestraße 6

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar			März		April			Mai			Juni		
1	08:22		07:56			07:03		07:39 (WEA 12)	06:52		05:48			05:03		
	16:15		17:02			17:54	23	08:02 (WEA 12)	19:47		20:38			21:23		
2	08:22		07:54			07:00		07:39 (WEA 12)	06:50		05:46			05:02		05:31 (6B)
	16:16		17:04			17:55	22	08:01 (WEA 12)	19:49		20:39			21:24	1	05:32 (6B)
3	08:22		07:53			06:58		07:40 (WEA 12)	06:48		05:44			05:01		05:30 (6B)
	16:17		17:06			17:57	21	08:01 (WEA 12)	19:51		20:41			21:25	2	05:32 (6B)
4	08:22		07:51			06:56		07:40 (WEA 12)	06:46		05:42		06:23 (18B)	05:01		05:30 (6B)
	16:18		17:08			17:59	19	07:59 (WEA 12)	19:52		20:43	8	06:31 (18B)	21:26	3	05:33 (6B)
5	08:22		07:49			06:54		07:41 (WEA 12)	06:43		05:41		06:12 (14B)	05:00		05:29 (6B)
	16:19		17:10			18:01	17	07:58 (WEA 12)	19:54		20:44	18	06:32 (18B)	21:27	3	05:32 (6B)
6	08:21		07:48			06:52		07:42 (WEA 12)	06:41		05:39		06:10 (14B)	04:59		05:28 (6B)
	16:20		17:11			18:02	15	07:57 (WEA 12)	19:56		20:46	23	06:33 (18B)	21:28	4	05:32 (6B)
7	08:21		07:46			06:49		07:44 (WEA 12)	06:39		05:37		06:10 (14B)	04:59		05:28 (6B)
	16:22		17:13			18:04	9	07:53 (WEA 12)	19:57		20:48	25	06:35 (18B)	21:29	4	05:32 (6B)
8	08:20		07:44			06:47			06:37	07:08 (19B)	05:35		06:09 (14B)	04:58		05:28 (6B)
	16:23		17:15			18:06			19:59	4 07:12 (19B)	20:49	26	06:35 (18B)	21:30	5	05:33 (6B)
9	08:20		07:42			06:45			06:34	07:05 (19B)	05:33		06:09 (14B)	04:58		05:27 (6B)
	16:24		17:17			18:08			20:01	9 07:14 (19B)	20:51	27	06:36 (18B)	21:31	5	05:32 (6B)
10	08:19		07:41			06:43			06:32	07:04 (19B)	05:32		06:08 (14B)	04:57		05:27 (6B)
	16:26		17:19			18:09			20:02	11 07:15 (19B)	20:52	27	06:35 (18B)	21:32	6	05:33 (6B)
11	08:19		07:39			06:41			06:30	07:03 (19B)	05:30		06:08 (14B)	04:57		05:27 (6B)
	16:27		17:21			18:11			20:04	13 07:16 (19B)	20:54	27	06:35 (18B)	21:33	6	05:33 (6B)
12	08:18		07:37			06:38			06:28	07:02 (19B)	05:28		06:09 (14B)	04:57		05:26 (6B)
	16:29		17:23			18:13			20:06	13 07:15 (19B)	20:56	26	06:35 (18B)	21:33	6	05:32 (6B)
13	08:18		07:35			06:36			06:25	07:02 (19B)	05:27		06:09 (14B)	04:56		05:26 (6B)
	16:30		17:24			18:15			20:07	13 07:15 (19B)	20:57	25	06:34 (18B)	21:34	6	05:32 (6B)
14	08:17		07:33			06:34		07:04 (WEA 13)	06:23	07:02 (19B)	05:25		06:10 (14B)	04:56		05:27 (6B)
	16:32		17:26			18:16	8	07:12 (WEA 13)	20:09	12 07:14 (19B)	20:59	24	06:34 (18B)	21:34	5	05:32 (6B)
15	08:16		07:31			06:31		07:01 (WEA 13)	06:21	07:03 (19B)	05:24		06:11 (14B)	04:56		05:28 (6B)
	16:33		17:28			18:18	14	07:15 (WEA 13)	20:11	10 07:13 (19B)	21:00	23	06:34 (18B)	21:35	4	05:32 (6B)
16	08:15		07:29			06:29		06:59 (WEA 13)	06:19	07:04 (19B)	05:22		06:13 (14B)	04:56		05:28 (6B)
	16:35		17:30			18:20	18	07:17 (WEA 13)	20:13	8 07:12 (19B)	21:02	18	06:33 (18B)	21:36	4	05:32 (6B)
17	08:14		07:27			06:27		06:56 (WEA 13)	06:17		05:21		06:20 (18B)	04:56		05:29 (6B)
	16:36		17:32			18:22	21	07:17 (WEA 13)	20:14		21:03	13	06:33 (18B)	21:36	3	05:32 (6B)
18	08:13		07:26			06:25		06:55 (WEA 13)	06:15		05:19		06:22 (18B)	04:56		05:29 (6B)
	16:38		17:34			18:23	23	07:18 (WEA 13)	20:16		21:05	10	06:32 (18B)	21:36	3	05:32 (6B)
19	08:12		07:24			06:22		06:55 (WEA 13)	06:12		05:18		06:23 (18B)	04:56		05:30 (6B)
	16:40		17:35			18:25	24	07:19 (WEA 13)	20:18		21:06	6	06:29 (18B)	21:37	2	05:32 (6B)
20	08:11		07:22			06:20		06:54 (WEA 13)	06:10		05:16			04:56		05:30 (6B)
	16:41		17:37			18:27	25	07:19 (WEA 13)	20:19		21:08			21:37	1	05:31 (6B)
21	08:10		07:19		07:49 (WEA 12)	06:18		06:53 (WEA 13)	06:08		05:15			04:56		05:30 (6B)
	16:43	4	17:39	4	07:53 (WEA 12)	18:28	26	07:19 (WEA 13)	20:21		21:09			21:37	1	05:31 (6B)
22	08:09		07:17		07:45 (WEA 12)	06:15		06:53 (WEA 13)	06:06		05:14			04:56		05:31 (6B)
	16:45	12	17:41	12	07:57 (WEA 12)	18:30	26	07:19 (WEA 13)	20:23		21:10			21:38	1	05:32 (6B)
23	08:08		07:15		07:43 (WEA 12)	06:13		06:53 (WEA 13)	06:04		05:13			04:56		05:31 (6B)
	16:46	16	17:43	16	07:59 (WEA 12)	18:32	26	07:19 (WEA 13)	20:24		21:12			21:38	2	05:33 (6B)
24	08:07		07:13		07:42 (WEA 12)	06:11		06:53 (WEA 13)	06:02		05:11			04:57		05:30 (6B)
	16:48	18	17:45	18	08:00 (WEA 12)	18:34	24	07:17 (WEA 13)	20:26		21:13			21:38	3	05:33 (6B)
25	08:05		07:11		07:41 (WEA 12)	06:08		06:53 (WEA 13)	06:00		05:10			04:57		05:31 (6B)
	16:50	20	17:46	20	08:01 (WEA 12)	18:35	24	07:17 (WEA 13)	20:28		21:15			21:38	3	05:34 (6B)
26	08:04		07:09		07:41 (WEA 12)	06:06		06:54 (WEA 13)	05:58		05:09			04:57		05:30 (6B)
	16:51	21	17:48	21	08:02 (WEA 12)	18:37	22	07:16 (WEA 13)	20:29		21:16			21:38	4	05:34 (6B)
27	08:03		07:07		07:39 (WEA 12)	06:04		06:54 (WEA 13)	05:56		05:08			04:58		05:30 (6B)
	16:53	22	17:50	22	08:01 (WEA 12)	18:39	19	07:13 (WEA 13)	20:31		21:17			21:38	4	05:34 (6B)
28	08:02		07:05		07:39 (WEA 12)	06:02		06:56 (WEA 13)	05:54		05:07			04:58		05:30 (6B)
	16:55	23	17:52	23	08:02 (WEA 12)	18:40	16	07:12 (WEA 13)	20:33		21:18			21:38	5	05:35 (6B)
29	08:00					06:59		07:58 (WEA 13)	05:52		05:06			04:59		05:30 (6B)
	16:57					19:42	11	08:09 (WEA 13)	20:34		21:20			21:38	5	05:35 (6B)
30	07:59					06:57			05:50		05:05			04:59		05:30 (6B)
	16:59					19:44			20:36		21:21			21:37	6	05:36 (6B)
31	07:57					06:55					05:04					
	17:00					19:45					21:22					
Sonnenscheinstunden	260		278			367			416		484			498		
astr.max.mögl.Beschattung				136			453			93			326			107
Red.Sonnenscheinwahrsch.				0,32			0,27			0,36			0,43			0,35
Reduktion Betriebsdauer				0,96			0,96			0,96			0,96			0,96
Reduktion Windrichtung				0,68			0,70			0,72			0,72			0,69
Gesamte Reduktion				0,21			0,18			0,25			0,29			0,23
Met.wahrsch.Beschattung				28			81			23			96			25

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 34 - Reinstedt - Schielestraße 6

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November	Dezember
1	05:00		05:31 (6B)	05:36	06:19 (14B)	06:26	07:02 (19B)	07:14	07:08	07:58
	21:37	6	05:37 (6B)	21:06 27	06:46 (18B)	20:04 13	07:15 (19B)	18:55	16:49	16:09
2	05:01		05:31 (6B)	05:38	06:18 (14B)	06:27	07:02 (19B)	07:16	07:09	08:00
	21:37	6	05:37 (6B)	21:04 27	06:45 (18B)	20:02 11	07:13 (19B)	18:53	16:47	16:08
3	05:01		05:32 (6B)	05:39	06:19 (14B)	06:29	07:03 (19B)	07:18	07:11	08:01
	21:36	5	05:37 (6B)	21:02 27	06:46 (18B)	19:59 9	07:12 (19B)	18:50	16:45	16:08
4	05:02		05:33 (6B)	05:41	06:18 (14B)	06:31	07:05 (19B)	07:19	07:13	08:03
	21:36	5	05:38 (6B)	21:01 27	06:45 (18B)	19:57 4	07:09 (19B)	18:48	16:44	16:07
5	05:03		05:34 (6B)	05:42	06:19 (14B)	06:32		07:21	07:15	08:04
	21:36	5	05:39 (6B)	20:59 26	06:45 (18B)	19:55		18:46	16:42	16:07
6	05:04		05:34 (6B)	05:44	06:19 (14B)	06:34		07:23	08:23 (WEA 12)	07:17 08:05
	21:35	4	05:38 (6B)	20:57 25	06:44 (18B)	19:53		18:43 5	08:28 (WEA 12)	16:40 16:06
7	05:05		05:35 (6B)	05:46	06:21 (14B)	06:35		07:24	08:20 (WEA 12)	07:18 08:06
	21:34	4	05:39 (6B)	20:55 22	06:43 (18B)	19:50		18:41 11	08:31 (WEA 12)	16:38 16:06
8	05:06		05:36 (6B)	05:47	06:22 (14B)	06:37		07:26	08:17 (WEA 12)	07:20 08:08
	21:34	3	05:39 (6B)	20:53 16	06:41 (18B)	19:48		18:39 15	08:32 (WEA 12)	16:37 16:06
9	05:07		05:37 (6B)	05:49	06:34 (18B)	06:39		07:28	08:15 (WEA 12)	07:22 08:09
	21:33	2	05:39 (6B)	20:52 6	06:40 (18B)	19:46		18:37 19	08:34 (WEA 12)	16:35 16:05
10	05:08		05:38 (6B)	05:50		06:40		07:29	08:14 (WEA 12)	07:24 08:10
	21:32	1	05:39 (6B)	20:50		19:43		18:34 21	08:35 (WEA 12)	16:34 16:05
11	05:09			05:52		06:42		07:31	08:13 (WEA 12)	07:25 08:11
	21:32			20:48		19:41		18:32 21	08:34 (WEA 12)	16:32 16:05
12	05:10			05:53		06:43		07:33	08:12 (WEA 12)	07:27 08:12
	21:31			20:46		19:39		18:30 23	08:35 (WEA 12)	16:30 16:05
13	05:11			05:55		06:45		07:34	08:12 (WEA 12)	07:29 08:13
	21:30			20:44		19:37		18:28 23	08:35 (WEA 12)	16:29 16:05
14	05:12			05:57		06:47	07:49 (WEA 13)	07:36	08:12 (WEA 12)	07:31 08:14
	21:29			20:42		19:34 10	07:59 (WEA 13)	18:26 23	08:35 (WEA 12)	16:28 16:05
15	05:13			05:58		06:48	07:45 (WEA 13)	07:38	08:13 (WEA 12)	07:33 08:15
	21:28			20:40		19:32 16	08:01 (WEA 13)	18:23 21	08:34 (WEA 12)	16:26 16:05
16	05:14			06:00		06:50	07:44 (WEA 13)	07:40	08:12 (WEA 12)	07:34 08:16
	21:27			20:38		19:30 19	08:03 (WEA 13)	18:21 21	08:33 (WEA 12)	16:25 16:05
17	05:15			06:01		06:51	07:43 (WEA 13)	07:41	08:13 (WEA 12)	07:36 08:17
	21:26			20:36		19:27 21	08:04 (WEA 13)	18:19 19	08:32 (WEA 12)	16:23 16:05
18	05:17			06:03		06:53	07:41 (WEA 13)	07:43	08:14 (WEA 12)	07:38 08:17
	21:25			20:34		19:25 23	08:04 (WEA 13)	18:17 17	08:31 (WEA 12)	16:22 16:05
19	05:18			06:05		06:55	07:40 (WEA 13)	07:45	08:15 (WEA 12)	07:39 08:18
	21:24			20:32		19:23 25	08:05 (WEA 13)	18:15 15	08:30 (WEA 12)	16:21 16:06
20	05:19			06:06		06:56	07:39 (WEA 13)	07:46	08:18 (WEA 12)	07:41 08:19
	21:23			20:30		19:20 25	08:04 (WEA 13)	18:13 9	08:27 (WEA 12)	16:20 16:06
21	05:21			06:08		06:58	07:39 (WEA 13)	07:48		07:43 08:19
	21:21			20:28		19:18 25	08:04 (WEA 13)	18:11		16:18 16:06
22	05:22			06:10		07:00	07:39 (WEA 13)	07:50		07:44 08:20
	21:20			20:26		19:16 25	08:04 (WEA 13)	18:09		16:17 16:07
23	05:23			06:11		07:01	07:38 (WEA 13)	07:52		07:46 08:20
	21:19			20:24		19:13 25	08:03 (WEA 13)	18:07		16:16 16:07
24	05:25		06:35 (18B)	06:13		07:03	07:38 (WEA 13)	07:53		07:48 08:21
	21:18	3	06:38 (18B)	20:21		19:11 25	08:03 (WEA 13)	18:05		16:15 16:08
25	05:26		06:32 (18B)	06:14		07:04	07:38 (WEA 13)	06:55		07:49 08:21
	21:16	9	06:41 (18B)	20:19		19:09 23	08:01 (WEA 13)	17:03		16:14 16:09
26	05:27		06:32 (18B)	06:16		07:06	07:39 (WEA 13)	06:57		07:51 08:21
	21:15	11	06:43 (18B)	20:17		19:06 21	08:00 (WEA 13)	17:01		16:13 16:09
27	05:29		06:30 (18B)	06:18	07:06 (19B)	07:08	07:40 (WEA 13)	06:59		07:52 08:22
	21:13	13	06:43 (18B)	20:15 8	07:14 (19B)	19:04 19	07:59 (WEA 13)	16:59		16:12 16:10
28	05:30		06:22 (14B)	06:19	07:03 (19B)	07:09	07:41 (WEA 13)	07:01		07:54 08:22
	21:12	21	06:44 (18B)	20:13 11	07:14 (19B)	19:02 16	07:57 (WEA 13)	16:57		16:11 16:11
29	05:32		06:21 (14B)	06:21	07:03 (19B)	07:11	07:43 (WEA 13)	07:02		07:55 08:22
	21:10	24	06:45 (18B)	20:11 12	07:15 (19B)	18:59 11	07:54 (WEA 13)	16:55		16:10 16:12
30	05:33		06:20 (14B)	06:22	07:03 (19B)	07:13		07:04		07:57 08:22
	21:09	25	06:45 (18B)	20:08 13	07:16 (19B)	18:57		16:53		16:10 16:13
31	05:35		06:20 (14B)	06:24	07:02 (19B)			07:06		08:22
	21:07	26	06:46 (18B)	20:06 13	07:15 (19B)			16:51		16:13
Sonnenscheinstunden	501			453		381		332	267	245
astr.max.mögl.Beschattung		173		260		366		263		
Red.Sonnenscheinwahrsch.		0,40		0,43		0,34		0,28		
Reduktion Betriebsdauer		0,96		0,96		0,96		0,96		
Reduktion Windrichtung		0,71		0,72		0,71		0,68		
Gesamte Reduktion		0,27		0,29		0,23		0,18		
Met.wahrsch.Beschattung		47		77		85		48		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 35 - Reinstedt - Wiedemann

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56			07:03			07:34 (WEA 13)	06:52		07:34 (19B)	05:48		06:26 (WEA 02)	05:03		05:33 (13B)
	16:15			17:02			17:54	15		07:49 (WEA 13)	19:47	13	07:47 (19B)	20:38	20	06:46 (14B)	21:23	4	05:37 (13B)
2	08:22			07:54			07:00			07:32 (WEA 13)	06:50		07:35 (19B)	05:46		06:26 (WEA 02)	05:02		05:32 (13B)
	16:16			17:04			17:55	19		07:51 (WEA 13)	19:49	11	07:46 (19B)	20:39	18	06:44 (14B)	21:24	7	05:39 (13B)
3	08:22			07:53			06:58			07:31 (WEA 13)	06:48		07:36 (19B)	05:44		06:29 (WEA 02)	05:01		05:31 (13B)
	16:17			17:06			17:57	21		07:52 (WEA 13)	19:51	7	07:43 (19B)	20:41	10	06:39 (WEA 02)	21:25	9	05:40 (13B)
4	08:22			07:51			06:56			07:29 (WEA 13)	06:46			05:42		06:31 (WEA 02)	05:01		05:30 (13B)
	16:18			17:08			17:59	23		07:52 (WEA 13)	19:52			20:43	5	06:36 (WEA 02)	21:26	10	05:40 (13B)
5	08:22			07:49			06:54			07:28 (WEA 13)	06:43			05:40			05:00		05:30 (13B)
	16:19			17:10			18:01	25		07:53 (WEA 13)	19:54			20:44			21:27	11	05:41 (13B)
6	08:21			07:48			06:52			07:28 (WEA 13)	06:41			05:39			04:59		05:29 (13B)
	16:20			17:11			18:02	25		07:53 (WEA 13)	19:56			20:46			21:28	12	05:41 (13B)
7	08:21			07:46			06:49			07:26 (WEA 13)	06:39			05:37			04:59		05:30 (13B)
	16:22			17:13			18:04	27		07:53 (WEA 13)	19:57			20:48			21:29	12	05:42 (13B)
8	08:20			07:44		08:14 (WEA 12)	06:47			07:26 (WEA 13)	06:37			05:35			04:58		05:30 (13B)
	16:23		7	17:15	7	08:21 (WEA 12)	18:06	27		07:53 (WEA 13)	19:59			20:49			21:30	13	05:43 (13B)
9	08:20			07:42		08:12 (WEA 12)	06:45			07:26 (WEA 13)	06:34			05:33			04:58		05:29 (13B)
	16:24			17:17	12	08:24 (WEA 12)	18:08	27		07:53 (WEA 13)	20:01			20:51			21:31	14	05:43 (13B)
10	08:19			07:41		08:11 (WEA 12)	06:43			07:27 (WEA 13)	06:32			05:32			04:57		05:30 (13B)
	16:26			17:19	16	08:27 (WEA 12)	18:09	25		07:52 (WEA 13)	20:02			20:52			21:32	14	05:44 (13B)
11	08:19			07:39		08:10 (WEA 12)	06:41			07:26 (WEA 13)	06:30			05:30			04:57		05:30 (13B)
	16:27			17:21	18	08:28 (WEA 12)	18:11	25		07:51 (WEA 13)	20:04			20:54			21:33	14	05:44 (13B)
12	08:18			07:37		08:09 (WEA 12)	06:38			07:27 (WEA 13)	06:28			05:28			04:57		05:29 (13B)
	16:29			17:23	20	08:29 (WEA 12)	18:13	23		07:50 (WEA 13)	20:06			20:56			21:33	15	05:44 (13B)
13	08:18			07:35		08:08 (WEA 12)	06:36			07:28 (WEA 13)	06:25			05:27			04:56		05:30 (13B)
	16:30			17:24	21	08:29 (WEA 12)	18:15	21		07:49 (WEA 13)	20:07			20:57			21:34	14	05:44 (13B)
14	08:17			07:33		08:08 (WEA 12)	06:34			07:28 (WEA 13)	06:23			05:25			04:56		05:30 (13B)
	16:32			17:26	22	08:30 (WEA 12)	18:16	19		07:47 (WEA 13)	20:09			20:59			21:34	15	05:45 (13B)
15	08:16			07:31		08:07 (WEA 12)	06:31			06:54 (WEA 11)	06:21			05:24			04:56		05:30 (13B)
	16:33			17:28	23	08:30 (WEA 12)	18:18	20		07:45 (WEA 13)	20:11			21:00			21:35	15	05:45 (13B)
16	08:15			07:29		08:07 (WEA 12)	06:29			06:52 (WEA 11)	06:19			05:22			04:56		05:30 (13B)
	16:35			17:30	23	08:30 (WEA 12)	18:20	18		07:42 (WEA 13)	20:13			21:02			21:36	16	05:46 (13B)
17	08:14			07:27		08:07 (WEA 12)	06:27			06:49 (WEA 11)	06:17		07:01 (18B)	05:21			04:56		05:31 (13B)
	16:36			17:32	23	08:30 (WEA 12)	18:22	13		07:02 (WEA 11)	20:14	8	07:09 (18B)	21:03			21:36	15	05:46 (13B)
18	08:13			07:26		08:08 (WEA 12)	06:25			06:47 (WEA 11)	06:15		06:59 (18B)	05:19			04:56		05:31 (13B)
	16:38			17:34	22	08:30 (WEA 12)	18:23	16		07:03 (WEA 11)	20:16	12	07:11 (18B)	21:05			21:36	15	05:46 (13B)
19	08:12			07:24		08:08 (WEA 12)	06:22			06:46 (WEA 11)	06:12		06:57 (18B)	05:18			04:56		05:31 (13B)
	16:39			17:35	21	08:29 (WEA 12)	18:25	17		07:03 (WEA 11)	20:18	16	07:13 (18B)	21:06			21:37	15	05:46 (13B)
20	08:11			07:22		08:08 (WEA 12)	06:20			06:46 (WEA 11)	06:10		06:33 (WEA 02)	05:16		05:43 (6B)	04:56		05:31 (13B)
	16:41			17:37	19	08:27 (WEA 12)	18:27	18		07:04 (WEA 11)	20:19	24	07:12 (18B)	21:08	1	05:44 (6B)	21:37	15	05:46 (13B)
21	08:10			07:19		08:09 (WEA 12)	06:18			06:45 (WEA 11)	06:08		06:31 (WEA 02)	05:15		05:42 (6B)	04:56		05:31 (13B)
	16:43			17:39	17	08:26 (WEA 12)	18:28	18		07:03 (WEA 11)	20:21	30	07:13 (18B)	21:09	3	05:45 (6B)	21:37	15	05:46 (13B)
22	08:09			07:17		08:11 (WEA 12)	06:15			06:45 (WEA 11)	06:06		06:29 (WEA 02)	05:14		05:41 (6B)	04:56		05:32 (13B)
	16:45			17:41	14	08:25 (WEA 12)	18:30	17		07:02 (WEA 11)	20:23	35	07:13 (18B)	21:10	4	05:45 (6B)	21:38	15	05:47 (13B)
23	08:08			07:15		08:13 (WEA 12)	06:13			06:45 (WEA 11)	06:04		06:27 (WEA 02)	05:12		05:40 (6B)	04:56		05:32 (13B)
	16:46			17:43	9	08:22 (WEA 12)	18:32	17		07:02 (WEA 11)	20:24	40	07:13 (18B)	21:12	5	05:45 (6B)	21:38	15	05:47 (13B)
24	08:07			07:13			06:11			06:45 (WEA 11)	06:02		06:25 (WEA 02)	05:11		05:39 (6B)	04:57		05:32 (13B)
	16:48			17:45			18:34	15		07:00 (WEA 11)	20:26	43	07:13 (18B)	21:13	6	05:45 (6B)	21:38	15	05:47 (13B)
25	08:05			07:11			06:08			06:47 (WEA 11)	06:00		06:25 (WEA 02)	05:10		05:38 (6B)	04:57		05:33 (13B)
	16:50			17:46			18:35	11		06:58 (WEA 11)	20:28	42	07:12 (18B)	21:15	7	05:45 (6B)	21:38	15	05:48 (13B)
26	08:04			07:09			06:06			06:39 (19B)	05:58		06:25 (WEA 02)	05:09		05:37 (6B)	04:57		05:32 (13B)
	16:51			17:48			18:37	13		06:55 (WEA 11)	20:29	42	07:12 (18B)	21:16	8	05:45 (6B)	21:38	16	05:48 (13B)
27	08:03			07:07			06:04			06:36 (19B)	05:56		06:25 (WEA 02)	05:08		05:37 (6B)	04:58		05:32 (13B)
	16:53			17:50			18:39	11		06:47 (19B)	20:31	40	07:11 (18B)	21:17	8	05:45 (6B)	21:38	15	05:47 (13B)
28	08:02			07:05		07:37 (WEA 13)	06:02			06:35 (19B)	05:54		06:25 (WEA 02)	05:07		05:38 (6B)	04:58		05:33 (13B)
	16:55			17:52	9	07:46 (WEA 13)	18:40	13		06:48 (19B)	20:33	39	07:10 (18B)	21:18	6	05:44 (6B)	21:38	15	05:48 (13B)
29	08:00						06:59			07:35 (19B)	05:52		06:25 (WEA 02)	05:06		05:40 (6B)	04:59		05:33 (13B)
	16:57						19:42	14		07:49 (19B)	20:34	36	07:09 (18B)	21:20	2	05:42 (6B)	21:38	15	05:48 (13B)
30	07:59						06:57			07:34 (19B)	05:50		06:25 (WEA 02)	05:05			04:59		05:33 (13B)
	16:59						19:44	14		07:48 (19B)	20:36	30	07:06 (18B)	21:21			21:37	15	05:48 (13B)
31	07:57						06:55			07:34 (19B)				05:04					
	17:00						19:45	14		07:48 (19B)				21:22					
Sonnenscheinstunden		260			278			367			416			484				498	
astr.max.mögl.Beschattung						296			581			468			103			406	
Red.Sonnenscheinwahrsch.						0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer						0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung						0,67			0,69			0,72			0,71			0,70	
Gesamte Reduktion						0,20			0,18			0,24			0,29			0,23	
Met.wahrsch.Beschattung						60			104			115			30			94	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 35 - Reinstedt - Wiedemann

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember
1	05:00		05:34 (13B)	05:36	06:26		07:14		08:06 (WEA 13)	07:08	07:40 (WEA 12)	07:58
	21:37	15	05:49 (13B)	21:06	20:04		18:55	23	08:29 (WEA 13)	16:49	15 07:55 (WEA 12)	16:09
2	05:01		05:34 (13B)	05:38	06:27		07:16		08:05 (WEA 13)	07:09	07:42 (WEA 12)	08:00
	21:37	14	05:48 (13B)	21:04	20:02		18:53	25	08:30 (WEA 13)	16:47	11 07:53 (WEA 12)	16:08
3	05:01		05:35 (13B)	05:39	06:29		07:18		08:05 (WEA 13)	07:11	07:45 (WEA 12)	08:01
	21:36	13	05:48 (13B)	21:02	19:59		18:50	25	08:30 (WEA 13)	16:45	5 07:50 (WEA 12)	16:08
4	05:02		05:35 (13B)	05:41	06:30		07:19		08:03 (WEA 13)	07:13		08:03
	21:36	14	05:49 (13B)	21:01	19:57		18:48	27	08:30 (WEA 13)	16:44		16:07
5	05:03		05:35 (13B)	05:42	06:32		07:21		08:03 (WEA 13)	07:15		08:04
	21:36	13	05:48 (13B)	20:59	19:55		18:46	27	08:30 (WEA 13)	16:42		16:07
6	05:04		05:36 (13B)	05:44	06:34		07:23		08:03 (WEA 13)	07:17		08:05
	21:35	12	05:48 (13B)	20:57	19:53		18:43	27	08:30 (WEA 13)	16:40		16:06
7	05:05		05:36 (13B)	05:46	06:35		07:24		08:03 (WEA 13)	07:18		08:06
	21:34	12	05:48 (13B)	20:55	19:50		18:41	26	08:29 (WEA 13)	16:38		16:06
8	05:06		05:37 (13B)	05:47	06:37		07:26		08:03 (WEA 13)	07:20		08:08
	21:34	11	05:48 (13B)	20:53	19:48		18:39	25	08:28 (WEA 13)	16:37		16:06
9	05:07		05:38 (13B)	05:49	06:39 (WEA 02)	06:39	07:31 (19B)	07:28	08:03 (WEA 13)	07:22		08:09
	21:33	9	05:47 (13B)	20:52	7 06:46 (WEA 02)	19:46	6 07:37 (19B)	18:37	24 08:27 (WEA 13)	16:35		16:05
10	05:08		05:39 (13B)	05:50	06:37 (WEA 02)	06:40	07:29 (19B)	07:29	08:04 (WEA 13)	07:24		08:10
	21:32	8	05:47 (13B)	20:50	13 06:50 (14B)	19:43	10 07:39 (19B)	18:34	23 08:27 (WEA 13)	16:34		16:05
11	05:09		05:40 (13B)	05:52	06:36 (WEA 02)	06:42	07:27 (19B)	07:31	08:04 (WEA 13)	07:25		08:11
	21:32	6	05:46 (13B)	20:48	18 06:54 (14B)	19:41	12 07:39 (19B)	18:32	20 08:24 (WEA 13)	16:32		16:05
12	05:10			05:53	06:34 (WEA 02)	06:43	07:26 (19B)	07:33	08:06 (WEA 13)	07:27		08:12
	21:31			20:46	23 07:11 (18B)	19:39	14 07:40 (19B)	18:30	17 08:23 (WEA 13)	16:30		16:05
13	05:11			05:55	06:34 (WEA 02)	06:45	07:25 (19B)	07:34	08:08 (WEA 13)	07:29		08:13
	21:30			20:44	31 07:15 (18B)	19:37	14 07:39 (19B)	18:28	13 08:21 (WEA 13)	16:29		16:05
14	05:12			05:57	06:32 (WEA 02)	06:47	07:25 (19B)	07:36	08:12 (WEA 13)	07:31		08:14
	21:29			20:42	38 07:17 (18B)	19:34	14 07:39 (19B)	18:26	4 08:16 (WEA 13)	16:27		16:05
15	05:13		05:47 (6B)	05:58	06:32 (WEA 02)	06:48	07:25 (19B)	07:38		07:33		08:15
	21:28	5	05:52 (6B)	20:40	39 07:18 (18B)	19:32	13 07:38 (19B)	18:23		16:26		16:05
16	05:14		05:46 (6B)	06:00	06:32 (WEA 02)	06:50	07:26 (19B)	07:40		07:34		08:16
	21:27	7	05:53 (6B)	20:38	41 07:18 (18B)	19:30	11 07:37 (19B)	18:21		16:25		16:05
17	05:15		05:46 (6B)	06:01	06:32 (WEA 02)	06:51	07:27 (19B)	07:41		07:36		08:17
	21:26	7	05:53 (6B)	20:36	42 07:19 (18B)	19:27	11 07:42 (WEA 11)	18:19		16:23		16:05
18	05:17		05:47 (6B)	06:03	06:31 (WEA 02)	06:53	07:35 (WEA 11)	07:43		07:38		08:17
	21:25	8	05:55 (6B)	20:34	43 07:19 (18B)	19:25	10 07:45 (WEA 11)	18:17		16:22		16:05
19	05:18		05:48 (6B)	06:05	06:32 (WEA 02)	06:55	07:33 (WEA 11)	07:45	08:43 (WEA 12)	07:39		08:18
	21:24	7	05:55 (6B)	20:32	41 07:19 (18B)	19:23	14 07:47 (WEA 11)	18:15	12 08:55 (WEA 12)	16:21		16:06
20	05:19		05:49 (6B)	06:06	06:33 (WEA 02)	06:56	07:31 (WEA 11)	07:46	08:41 (WEA 12)	07:41		08:19
	21:23	6	05:55 (6B)	20:30	39 07:19 (18B)	19:20	16 07:47 (WEA 11)	18:13	16 08:57 (WEA 12)	16:20		16:06
21	05:21		05:50 (6B)	06:08	06:35 (WEA 02)	06:58	07:31 (WEA 11)	07:48	08:40 (WEA 12)	07:43		08:19
	21:21	5	05:55 (6B)	20:28	35 07:19 (18B)	19:18	17 07:48 (WEA 11)	18:11	18 08:58 (WEA 12)	16:18		16:06
22	05:22		05:51 (6B)	06:09	06:36 (WEA 02)	07:00	07:30 (WEA 11)	07:50	08:38 (WEA 12)	07:44		08:20
	21:20	3	05:54 (6B)	20:26	28 07:17 (18B)	19:16	18 07:48 (WEA 11)	18:09	20 08:58 (WEA 12)	16:17		16:07
23	05:23		05:53 (6B)	06:11	06:38 (WEA 02)	07:01	07:29 (WEA 11)	07:52	08:37 (WEA 12)	07:46		08:20
	21:19	2	05:55 (6B)	20:24	23 07:17 (18B)	19:13	18 07:47 (WEA 11)	18:07	22 08:59 (WEA 12)	16:16		16:07
24	05:25			06:13	07:00 (18B)	07:03	07:29 (WEA 11)	07:53	08:37 (WEA 12)	07:48		08:21
	21:18			20:21	15 07:15 (18B)	19:11	18 07:47 (WEA 11)	18:05	22 08:59 (WEA 12)	16:15		16:08
25	05:26			06:14	07:02 (18B)	07:04	07:29 (WEA 11)	06:55	07:37 (WEA 12)	07:49		08:21
	21:16			20:19	12 07:14 (18B)	19:09	17 07:46 (WEA 11)	17:03	22 07:59 (WEA 12)	16:14		16:09
26	05:27			06:16	07:03 (18B)	07:06	07:31 (WEA 11)	06:57	07:37 (WEA 12)	07:51		08:21
	21:15			20:17	8 07:11 (18B)	19:06	14 07:45 (WEA 11)	17:01	23 08:00 (WEA 12)	16:13		16:09
27	05:29			06:18		07:08	07:33 (WEA 11)	06:59	07:37 (WEA 12)	07:52		08:22
	21:13			20:15		19:04	15 08:21 (WEA 13)	16:59	22 07:59 (WEA 12)	16:12		16:10
28	05:30			06:19		07:09	07:34 (WEA 11)	07:01	07:37 (WEA 12)	07:54		08:22
	21:12			20:13		19:02	20 08:25 (WEA 13)	16:57	22 07:59 (WEA 12)	16:11		16:11
29	05:32			06:21		07:11	08:10 (WEA 13)	07:02	07:38 (WEA 12)	07:55		08:22
	21:10			20:11		18:59	17 08:27 (WEA 13)	16:55	21 07:59 (WEA 12)	16:10		16:12
30	05:33			06:22		07:13	08:08 (WEA 13)	07:04	07:38 (WEA 12)	07:57		08:22
	21:09			20:08		18:57	21 08:29 (WEA 13)	16:53	20 07:58 (WEA 12)	16:10		16:13
31	05:35			06:24				07:06	07:38 (WEA 12)			08:22
	21:07			20:06				16:51	18 07:56 (WEA 12)			16:13
Sonnenscheinstunden	501			453		381		332		267		245
astr.max.mögl.Beschattung		177		496		320		564		31		
Red.Sonnenscheinwahrsch.		0,40		0,43		0,34		0,28		0,22		
Reduktion Betriebsdauer		0,96		0,96		0,96		0,96		0,96		
Reduktion Windrichtung		0,70		0,72		0,71		0,67		0,67		
Gesamte Reduktion		0,27		0,29		0,23		0,18		0,14		
Met.wahrsch.Beschattung		47		146		74		102		4		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 36 - Reinstedt - Solarpark

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56		08:23 (WEA 09)	07:03		07:45 (WEA 08)	06:52		07:15 (WEA 10)	05:48		06:12 (WEA 03)	05:03		05:31 (6B)
	16:15			17:02	36	08:59 (WEA 12)	17:54	41	08:26 (WEA 13)	19:47	14	07:29 (WEA 10)	20:38	60	07:31 (18B)	21:23	11	05:42 (6B)
2	08:22			07:54		08:22 (WEA 09)	07:00		07:48 (WEA 08)	06:50		07:13 (WEA 10)	05:46		06:10 (WEA 03)	05:02		05:32 (6B)
	16:16			17:04	37	08:59 (WEA 12)	17:55	34	08:26 (WEA 13)	19:49	17	07:30 (WEA 10)	20:39	57	07:28 (18B)	21:24	11	05:43 (6B)
3	08:22			07:53		08:21 (WEA 09)	06:58		07:57 (WEA 13)	06:48		07:11 (WEA 10)	05:44		06:09 (WEA 03)	05:01		05:31 (6B)
	16:17			17:06	38	08:59 (WEA 12)	17:57	28	08:25 (WEA 13)	19:51	19	07:30 (WEA 10)	20:41	50	07:26 (18B)	21:25	11	05:42 (6B)
4	08:22			07:51		08:22 (WEA 09)	06:56		07:57 (WEA 13)	06:46		07:11 (WEA 10)	05:42		06:08 (WEA 03)	05:01		05:31 (6B)
	16:18			17:08	38	09:00 (WEA 12)	17:59	26	08:23 (WEA 13)	19:52	19	07:30 (WEA 10)	20:43	43	06:55 (14B)	21:26	11	05:42 (6B)
5	08:22			07:49		08:21 (WEA 09)	06:54		07:58 (WEA 13)	06:43		07:11 (WEA 10)	05:40		06:08 (WEA 03)	05:00		05:32 (6B)
	16:19			17:10	39	09:00 (WEA 12)	18:01	24	08:22 (WEA 13)	19:54	19	07:30 (WEA 10)	20:44	36	06:52 (14B)	21:27	10	05:42 (6B)
6	08:21			07:48		08:21 (WEA 09)	06:52		08:00 (WEA 13)	06:41		07:11 (WEA 10)	05:39		06:03 (11B)	04:59		05:32 (6B)
	16:20			17:11	39	09:00 (WEA 12)	18:02	20	08:20 (WEA 13)	19:56	19	07:30 (WEA 10)	20:46	28	06:40 (WEA 02)	21:28	10	05:42 (6B)
7	08:21			07:46		08:21 (WEA 09)	06:49		08:01 (WEA 13)	06:39		07:10 (WEA 10)	05:37		06:02 (11B)	04:59		05:33 (6B)
	16:22			17:13	39	09:00 (WEA 12)	18:04	16	08:17 (WEA 13)	19:57	19	07:29 (WEA 10)	20:48	25	06:27 (WEA 03)	21:29	9	05:42 (6B)
8	08:20			07:44		08:21 (WEA 09)	06:47		08:04 (WEA 13)	06:37		07:07 (15B)	05:35		06:01 (11B)	04:58		05:34 (6B)
	16:23			17:15	38	08:59 (WEA 12)	18:06	10	08:14 (WEA 13)	19:59	21	07:28 (WEA 10)	20:49	25	06:26 (WEA 03)	21:30	8	05:42 (6B)
9	08:20			07:42		08:22 (WEA 09)	06:45			06:34		07:05 (15B)	05:33		06:01 (11B)	04:58		05:34 (6B)
	16:24			17:17	37	08:59 (WEA 12)	18:08			20:01	22	07:27 (WEA 10)	20:51	25	06:26 (WEA 03)	21:31	7	05:41 (6B)
10	08:19			07:41		08:23 (WEA 09)	06:43		07:06 (WEA 11)	06:32		07:04 (15B)	05:32		06:00 (11B)	04:57		05:35 (6B)
	16:26			17:19	36	08:59 (WEA 12)	18:09	11	07:17 (WEA 11)	20:02	21	07:25 (WEA 10)	20:52	25	06:25 (WEA 03)	21:32	6	05:41 (6B)
11	08:19			07:39		08:24 (WEA 09)	06:41		07:03 (WEA 11)	06:30		07:03 (15B)	05:30		05:59 (11B)	04:57		05:36 (6B)
	16:27			17:21	34	08:58 (WEA 12)	18:11	15	07:18 (WEA 11)	20:04	20	07:23 (WEA 10)	20:54	24	06:23 (WEA 03)	21:33	5	05:41 (6B)
12	08:18			07:37		08:25 (WEA 09)	06:38		07:02 (WEA 11)	06:28		07:02 (15B)	05:28		06:00 (11B)	04:57		05:36 (6B)
	16:29			17:23	29	08:56 (WEA 12)	18:13	17	07:19 (WEA 11)	20:06	14	07:16 (15B)	20:56	23	06:23 (WEA 03)	21:33	4	05:40 (6B)
13	08:18			07:35		08:27 (WEA 09)	06:36		07:01 (WEA 11)	06:25		07:02 (15B)	05:27		05:59 (11B)	04:56		05:38 (6B)
	16:30			17:24	21	08:54 (WEA 12)	18:15	19	07:20 (WEA 11)	20:07	13	07:15 (15B)	20:57	22	06:21 (WEA 03)	21:34	2	05:40 (6B)
14	08:17			07:33		08:46 (WEA 12)	06:34		07:00 (WEA 11)	06:23		07:02 (15B)	05:25		06:00 (11B)	04:56		
	16:32			17:26	3	08:49 (WEA 12)	18:16	20	07:20 (WEA 11)	20:09	21	07:31 (18B)	20:59	13	06:13 (11B)	21:34		
15	08:16			07:31			06:31		06:59 (WEA 11)	06:21		07:03 (15B)	05:24		06:01 (11B)	04:56		
	16:33			17:28			18:18	21	07:20 (WEA 11)	20:11	25	07:34 (18B)	21:00	12	06:13 (11B)	21:35		
16	08:15			07:29		07:54 (29B)	06:29		06:59 (WEA 11)	06:19		07:05 (15B)	05:22		06:01 (11B)	04:56		
	16:35			17:30	10	08:16 (WEA 13)	18:20	21	07:20 (WEA 11)	20:13	24	07:35 (18B)	21:02	11	06:12 (11B)	21:36		
17	08:14			07:27		07:52 (29B)	06:27		06:59 (WEA 11)	06:17		07:16 (18B)	05:21		06:02 (11B)	04:56		
	16:36			17:32	21	08:20 (WEA 13)	18:22	20	07:19 (WEA 11)	20:14	21	07:37 (18B)	21:03	9	06:11 (11B)	21:36		
18	08:13			07:25		07:50 (WEA 08)	06:25		06:59 (WEA 11)	06:14		07:15 (18B)	05:19		06:04 (11B)	04:56		
	16:38			17:34	28	08:22 (WEA 13)	18:23	19	07:18 (WEA 11)	20:16	23	07:38 (18B)	21:05	6	06:10 (11B)	21:36		
19	08:12			07:24		07:48 (WEA 08)	06:22		07:00 (WEA 11)	06:12		06:38 (WEA 02)	05:18			04:56		
	16:39			17:35	35	08:24 (WEA 13)	18:25	18	07:18 (WEA 11)	20:18	30	07:38 (18B)	21:06			21:37		
20	08:11			07:21		07:45 (WEA 08)	06:20		06:51 (20B)	06:10		06:34 (WEA 02)	05:16			04:56		
	16:41			17:37	39	08:24 (WEA 13)	18:27	21	07:16 (WEA 11)	20:19	38	07:38 (18B)	21:08			21:37		
21	08:10			07:19		07:43 (WEA 08)	06:18		06:47 (20B)	06:08		06:32 (WEA 02)	05:15			04:56		
	16:43			17:39	42	08:25 (WEA 13)	18:28	26	07:14 (WEA 11)	20:21	42	07:38 (18B)	21:09			21:37		
22	08:09			07:17		07:42 (WEA 08)	06:15		06:46 (20B)	06:06		06:30 (WEA 02)	05:14			04:56		
	16:45			17:41	44	08:26 (WEA 13)	18:30	28	07:14 (19B)	20:23	52	07:38 (18B)	21:10			21:38		
23	08:08			07:15		07:42 (WEA 08)	06:13		06:46 (20B)	06:04		06:29 (WEA 02)	05:12			04:56		
	16:46			17:43	45	08:27 (WEA 13)	18:32	28	07:14 (19B)	20:24	54	07:37 (18B)	21:12			21:38		
24	08:07			07:13		07:42 (WEA 08)	06:11		06:45 (20B)	06:02		06:28 (WEA 02)	05:11			04:57		
	16:48			17:45	45	08:27 (WEA 13)	18:34	28	07:13 (19B)	20:26	56	07:37 (18B)	21:13			21:38		
25	08:05		08:42 (WEA 12)	07:11		07:42 (WEA 08)	06:08		06:45 (20B)	06:00		06:28 (WEA 02)	05:10		05:38 (6B)	04:57		
	16:50	8	08:50 (WEA 12)	17:46	45	08:27 (WEA 13)	18:35	28	07:13 (19B)	20:28	57	07:37 (18B)	21:15	2	05:40 (6B)	21:38		
26	08:04		08:39 (WEA 12)	07:09		07:42 (WEA 08)	06:06		06:46 (20B)	05:58		06:28 (WEA 02)	05:09		05:37 (6B)	04:57		
	16:51	13	08:52 (WEA 12)	17:48	45	08:27 (WEA 13)	18:37	26	07:12 (19B)	20:29	57	07:37 (18B)	21:16	4	05:41 (6B)	21:38		
27	08:03		08:38 (WEA 12)	07:07		07:42 (WEA 08)	06:04		06:46 (20B)	05:56		06:28 (WEA 02)	05:08		05:36 (6B)	04:58		
	16:53	16	08:54 (WEA 12)	17:50	44	08:26 (WEA 13)	18:39	24	07:11 (19B)	20:31	56	07:36 (18B)	21:17	5	05:41 (6B)	21:38		
28	08:02		08:37 (WEA 12)	07:05		07:43 (WEA 08)	06:02		06:57 (19B)	05:54		06:18 (WEA 03)	05:07		05:35 (6B)	04:58		
	16:55	18	08:55 (WEA 12)	17:52	43	08:26 (WEA 13)	18:40	12	07:09 (19B)	20:33	58	07:35 (18B)	21:18	7	05:42 (6B)	21:38		
29	08:00		08:37 (WEA 12)				06:59		07:59 (19B)	05:52		06:16 (WEA 03)	05:06		05:34 (6B)	04:59		
	16:57	20	08:57 (WEA 12)				19:42	8	08:07 (19B)	20:34	60	07:34 (18B)	21:20	8	05:42 (6B)	21:38		
30	07:59		08:26 (WEA 09)				06:57		07:19 (WEA 10)	05:50		06:14 (WEA 03)	05:05		05:33 (6B)	04:59		05:41 (6B)
	16:59	29	08:57 (WEA 12)				19:44	6	07:25 (WEA 10)	20:36	61	07:33 (18B)	21:21	9	05:42 (6B)	21:37	3	05:44 (6B)
31	07:57		08:24 (WEA 09)				06:55		07:17 (WEA 10)				05:04		05:32 (6B)			
	17:00	34	08:58 (WEA 12)				19:45	11	07:28 (WEA 10)				21:22	10	05:42 (6B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		138			950			626			972			539			108	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,64			0,66			0,70			0,72			0,71			0,70	
Gesamte Reduktion		0,13			0,20			0,18			0,24			0,29			0,23	
Met.wahrsch.Beschattung		18			189			112			238			157			25	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 36 - Reinstedt - Solarpark

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Juli			August			September			Oktober			November			Dezember
1	05:00		05:41 (6B)	05:36		06:10 (11B)	06:26		07:02 (15B)	07:14		07:40 (WEA 11)	07:08		07:52 (WEA 09)	07:58
	21:37	4	05:45 (6B)	21:06	24	06:34 (WEA 03)	20:04	20	07:22 (WEA 10)	18:55	18	07:58 (WEA 11)	16:49	36	08:28 (WEA 12)	16:09
2	05:01		05:40 (6B)	05:38		06:10 (11B)	06:27		07:02 (15B)	07:16		07:41 (WEA 11)	07:09		07:51 (WEA 09)	08:00
	21:37	5	05:45 (6B)	21:04	24	06:34 (WEA 03)	20:02	21	07:23 (WEA 10)	18:53	16	07:57 (WEA 11)	16:47	37	08:28 (WEA 12)	16:08
3	05:01		05:40 (6B)	05:39		06:10 (11B)	06:29		07:03 (15B)	07:18		07:43 (WEA 11)	07:11		07:51 (WEA 09)	08:01
	21:36	6	05:46 (6B)	21:02	26	06:36 (WEA 03)	19:59	22	07:25 (WEA 10)	18:50	13	07:56 (WEA 11)	16:45	38	08:29 (WEA 12)	16:08
4	05:02		05:40 (6B)	05:41		06:10 (11B)	06:30		07:04 (15B)	07:19		07:45 (WEA 11)	07:13		07:51 (WEA 09)	08:03
	21:36	7	05:47 (6B)	21:01	26	06:36 (WEA 03)	19:57	21	07:25 (WEA 10)	18:48	7	07:52 (WEA 11)	16:44	39	08:30 (WEA 12)	16:07
5	05:03		05:39 (6B)	05:42		06:11 (11B)	06:32		07:07 (WEA 10)	07:21		08:45 (WEA 13)	07:15		07:51 (WEA 09)	08:04
	21:36	8	05:47 (6B)	20:59	25	06:36 (WEA 03)	19:55	19	07:26 (WEA 10)	18:46	1	08:46 (WEA 13)	16:42	39	08:30 (WEA 12)	16:07
6	05:04		05:39 (6B)	05:44		06:12 (11B)	06:34		07:06 (WEA 10)	07:23		08:39 (WEA 13)	07:17		07:51 (WEA 09)	08:05
	21:35	9	05:48 (6B)	20:57	24	06:36 (WEA 03)	19:53	19	07:25 (WEA 10)	18:43	14	08:53 (WEA 13)	16:40	39	08:30 (WEA 12)	16:06
7	05:05		05:39 (6B)	05:46		06:14 (11B)	06:35		07:06 (WEA 10)	07:24		08:36 (WEA 13)	07:18		07:52 (WEA 09)	08:06
	21:34	9	05:48 (6B)	20:55	30	06:51 (WEA 02)	19:50	19	07:25 (WEA 10)	18:41	18	08:54 (WEA 13)	16:38	38	08:30 (WEA 12)	16:06
8	05:06		05:39 (6B)	05:47		06:17 (WEA 03)	06:37		07:05 (WEA 10)	07:26		08:34 (WEA 13)	07:20		07:52 (WEA 09)	08:08
	21:34	10	05:49 (6B)	20:53	39	07:02 (14B)	19:48	19	07:24 (WEA 10)	18:39	22	08:56 (WEA 13)	16:37	38	08:30 (WEA 12)	16:05
9	05:07		05:39 (6B)	05:49		06:18 (WEA 03)	06:39		07:05 (WEA 10)	07:28		08:33 (WEA 13)	07:22		07:53 (WEA 09)	08:09
	21:33	10	05:49 (6B)	20:52	43	07:05 (14B)	19:46	19	07:24 (WEA 10)	18:37	24	08:57 (WEA 13)	16:35	37	08:30 (WEA 12)	16:05
10	05:08		05:39 (6B)	05:50		06:18 (WEA 03)	06:40		07:06 (WEA 10)	07:29		08:32 (WEA 13)	07:24		07:54 (WEA 09)	08:10
	21:32	11	05:50 (6B)	20:50	53	07:36 (18B)	19:43	18	07:24 (WEA 10)	18:34	26	08:58 (WEA 13)	16:34	36	08:30 (WEA 12)	16:05
11	05:09		05:39 (6B)	05:52		06:20 (WEA 03)	06:42		07:07 (WEA 10)	07:31		08:30 (WEA 13)	07:25		07:56 (WEA 09)	08:11
	21:32	11	05:50 (6B)	20:48	58	07:39 (18B)	19:41	15	07:22 (WEA 10)	18:32	28	08:58 (WEA 13)	16:32	34	08:30 (WEA 12)	16:05
12	05:10		05:40 (6B)	05:53		06:21 (WEA 03)	06:43		07:09 (WEA 10)	07:33		08:19 (WEA 08)	07:27		07:58 (WEA 09)	08:12
	21:31	10	05:50 (6B)	20:46	61	07:40 (18B)	19:39	11	07:20 (WEA 10)	18:30	38	08:59 (WEA 13)	16:30	30	08:29 (WEA 12)	16:05
13	05:11		05:41 (6B)	05:55		06:23 (WEA 03)	06:45		07:10 (WEA 10)	07:34		08:17 (WEA 08)	07:29		08:08 (WEA 12)	08:13
	21:30	9	05:50 (6B)	20:44	60	07:41 (18B)	19:37	7	07:17 (WEA 10)	18:28	42	08:59 (WEA 13)	16:29	21	08:29 (WEA 12)	16:05
14	05:12		05:42 (6B)	05:57		06:24 (WEA 03)	06:47		07:50 (19B)	07:36		08:16 (WEA 08)	07:31		08:09 (WEA 12)	08:14
	21:29	8	05:50 (6B)	20:42	61	07:42 (18B)	19:34	7	07:57 (19B)	18:26	44	09:00 (WEA 13)	16:27	18	08:27 (WEA 12)	16:05
15	05:13		05:43 (6B)	05:58		06:26 (WEA 03)	06:48		07:47 (19B)	07:38		08:15 (WEA 08)	07:32		08:10 (WEA 12)	08:15
	21:28	7	05:50 (6B)	20:40	57	07:43 (18B)	19:32	11	07:58 (19B)	18:23	45	09:00 (WEA 13)	16:26	16	08:26 (WEA 12)	16:05
16	05:14		05:44 (6B)	06:00		06:34 (WEA 02)	06:50		07:36 (20B)	07:40		08:13 (WEA 08)	07:34		08:12 (WEA 12)	08:16
	21:27	6	05:50 (6B)	20:38	57	07:43 (18B)	19:30	23	08:00 (19B)	18:21	46	08:59 (WEA 13)	16:25	13	08:25 (WEA 12)	16:05
17	05:15		05:45 (6B)	06:01		06:35 (WEA 02)	06:51		07:34 (20B)	07:41		08:13 (WEA 08)	07:36		08:15 (WEA 12)	08:17
	21:26	4	05:49 (6B)	20:36	57	07:44 (18B)	19:27	27	08:01 (19B)	18:19	45	08:58 (WEA 13)	16:23	8	08:23 (WEA 12)	16:05
18	05:17		05:46 (6B)	06:03		06:34 (WEA 02)	06:53		07:33 (20B)	07:43		08:13 (WEA 08)	07:38			08:17
	21:25	3	05:49 (6B)	20:34	57	07:43 (18B)	19:25	27	08:00 (19B)	18:17	45	08:58 (WEA 13)	16:22			16:05
19	05:18		05:48 (6B)	06:05		06:35 (WEA 02)	06:55		07:32 (20B)	07:45		08:13 (WEA 08)	07:39			08:18
	21:24	1	05:49 (6B)	20:32	56	07:44 (18B)	19:23	29	08:01 (19B)	18:15	45	08:58 (WEA 13)	16:21			16:06
20	05:19			06:06		06:35 (WEA 02)	06:56		07:31 (20B)	07:46		08:14 (WEA 08)	07:41			08:19
	21:23			20:30	54	07:43 (18B)	19:20	29	08:00 (19B)	18:13	43	08:57 (WEA 13)	16:19			16:06
21	05:21			06:08		06:36 (WEA 02)	06:58		07:32 (20B)	07:48		08:15 (WEA 08)	07:43			08:19
	21:21			20:28	51	07:43 (18B)	19:18	27	07:59 (19B)	18:11	41	08:56 (WEA 13)	16:18			16:06
22	05:22			06:09		06:37 (WEA 02)	07:00		07:33 (20B)	07:50		08:16 (WEA 08)	07:44			08:20
	21:20			20:26	41	07:42 (18B)	19:16	26	07:59 (19B)	18:09	37	08:54 (WEA 13)	16:17			16:07
23	05:23			06:11		06:39 (WEA 02)	07:01		07:33 (20B)	07:52		08:18 (WEA 08)	07:46			08:20
	21:19			20:24	36	07:42 (18B)	19:13	25	08:00 (WEA 11)	18:07	33	08:53 (WEA 13)	16:16			16:07
24	05:25			06:13		06:42 (WEA 02)	07:03		07:44 (WEA 11)	07:53		08:20 (29B)	07:48			08:21
	21:18			20:21	28	07:41 (18B)	19:11	17	08:01 (WEA 11)	18:05	27	08:51 (WEA 13)	16:15			16:08
25	05:26		06:15 (11B)	06:14		07:18 (18B)	07:04		07:42 (WEA 11)	06:55		07:22 (29B)	07:49			08:21
	21:16	3	06:18 (11B)	20:19	22	07:40 (18B)	19:09	19	08:01 (WEA 11)	17:03	18	07:48 (WEA 13)	16:14			16:09
26	05:27		06:14 (11B)	06:16		07:18 (18B)	07:06		07:41 (WEA 11)	06:57		07:24 (29B)	07:51			08:21
	21:15	7	06:21 (11B)	20:17	20	07:38 (18B)	19:06	20	08:01 (WEA 11)	17:01	1	07:25 (29B)	16:13			16:09
27	05:29		06:12 (11B)	06:18		07:06 (15B)	07:08		07:41 (WEA 11)	06:59			07:52			08:22
	21:13	10	06:22 (11B)	20:15	25	07:37 (18B)	19:04	21	08:02 (WEA 11)	16:59			16:12			16:10
28	05:30		06:11 (11B)	06:19		07:04 (15B)	07:09		07:40 (WEA 11)	07:01		08:14 (WEA 12)	07:54			08:22
	21:12	12	06:23 (11B)	20:13	24	07:34 (18B)	19:02	21	08:01 (WEA 11)	16:57	7	08:21 (WEA 12)	16:11			16:11
29	05:32		06:11 (11B)	06:21		07:03 (15B)	07:11		07:40 (WEA 11)	07:02		07:56 (WEA 09)	07:55			08:22
	21:10	13	06:24 (11B)	20:11	20	07:31 (18B)	18:59	21	08:01 (WEA 11)	16:55	23	08:24 (WEA 12)	16:10			16:12
30	05:33		06:10 (11B)	06:22		07:03 (15B)	07:13		07:41 (WEA 11)	07:04		07:55 (WEA 09)	07:57			08:22
	21:09	19	06:30 (WEA 03)	20:08	13	07:16 (15B)	18:57	19	08:00 (WEA 11)	16:53	30	08:26 (WEA 12)	16:10			16:12
31	05:35		06:11 (11B)	06:24		07:02 (15B)				07:06		07:52 (WEA 09)				08:22
	21:07	22	06:33 (WEA 03)	20:06	14	07:16 (15B)				16:51	34	08:26 (WEA 12)				16:13
Sonnenscheinstunden	501			453			381			332			267			245
astr.max.mögl.Beschattung		224			1186			599			831			517		
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22		
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96		
Reduktion Windrichtung		0,71			0,72			0,71			0,67			0,65		
Gesamte Reduktion		0,27			0,29			0,23			0,18			0,14		
Met.wahrsch.Beschattung		60			349			139			150			70		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 37 - Reinstedt - Fußballplatz

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56		08:30 (WEA 09)	07:03		08:18 (WEA 13)	06:52		07:20 (WEA 10)	05:48		06:13 (11B)	05:03		05:44 (6B)
	16:15			17:02	40	09:10 (WEA 12)	17:54	13	08:31 (WEA 13)	19:47	20	07:40 (WEA 10)	20:38	22	06:35 (WEA 03)	21:23	1	05:45 (6B)
2	08:22			07:54		08:29 (WEA 09)	07:00			06:50		07:20 (WEA 10)	05:46		06:12 (11B)	05:02		
	16:16			17:04	41	09:10 (WEA 12)	17:55			19:49	20	07:40 (WEA 10)	20:39	22	06:34 (WEA 03)	21:24		
3	08:22			07:53		08:29 (WEA 09)	06:58			06:48		07:18 (15B)	05:44		06:12 (11B)	05:01		
	16:17			17:06	40	09:09 (WEA 12)	17:57			19:51	31	07:59 (18B)	20:41	23	06:35 (WEA 03)	21:25		
4	08:22			07:51		08:31 (WEA 09)	06:56			06:46		07:17 (15B)	05:42		06:11 (11B)	05:01		
	16:18			17:08	38	09:09 (WEA 12)	17:59			19:52	37	08:01 (18B)	20:43	23	06:34 (WEA 03)	21:26		
5	08:22			07:49		08:31 (WEA 09)	06:54		07:17 (WEA 11)	06:43		07:16 (15B)	05:40		06:11 (11B)	05:00		
	16:19			17:10	37	09:08 (WEA 12)	18:01	9	07:26 (WEA 11)	19:54	40	08:03 (18B)	20:44	22	06:33 (WEA 03)	21:27		
6	08:21			07:48		08:32 (WEA 09)	06:52		07:15 (WEA 11)	06:41		07:16 (15B)	05:39		06:10 (11B)	04:59		
	16:20			17:11	33	09:07 (WEA 12)	18:02	13	07:28 (WEA 11)	19:56	41	08:04 (18B)	20:46	22	06:32 (WEA 03)	21:28		
7	08:21			07:46		08:33 (WEA 09)	06:49		07:13 (WEA 11)	06:39		07:15 (15B)	05:37		06:11 (11B)	04:59		05:39 (13B)
	16:22			17:13	28	09:05 (WEA 12)	18:04	16	07:29 (WEA 11)	19:57	40	08:04 (18B)	20:48	20	06:31 (WEA 03)	21:29	3	05:42 (13B)
8	08:20			07:44		08:34 (WEA 09)	06:47		07:12 (WEA 11)	06:37		07:15 (15B)	05:35		06:11 (11B)	04:58		05:38 (13B)
	16:23			17:15	19	09:02 (WEA 12)	18:06	18	07:30 (WEA 11)	19:59	39	08:05 (18B)	20:49	18	06:29 (WEA 03)	21:30	6	05:44 (13B)
9	08:20			07:42		08:21 (WEA 13)	06:45		07:11 (WEA 11)	06:34		07:16 (15B)	05:33		06:12 (11B)	04:58		05:36 (13B)
	16:24			17:17	14	08:42 (WEA 09)	18:08	20	07:31 (WEA 11)	20:01	38	08:05 (18B)	20:51	16	06:28 (WEA 03)	21:31	9	05:45 (13B)
10	08:19			07:41		08:19 (WEA 13)	06:43		07:11 (WEA 11)	06:32		07:18 (15B)	05:32		06:13 (11B)	04:57		05:36 (13B)
	16:26			17:19	15	08:34 (WEA 13)	18:09	20	07:31 (WEA 11)	20:02	35	08:05 (18B)	20:52	10	06:23 (11B)	21:32	10	05:46 (13B)
11	08:19			07:39		08:04 (29B)	06:41		07:09 (WEA 11)	06:30		07:38 (18B)	05:30		06:14 (11B)	04:57		05:36 (13B)
	16:27			17:21	24	08:36 (WEA 13)	18:11	21	07:30 (WEA 11)	20:04	27	08:05 (18B)	20:54	6	06:20 (11B)	21:33	11	05:47 (13B)
12	08:18			07:37		08:02 (29B)	06:38		07:10 (WEA 11)	06:28		07:37 (18B)	05:28			04:57		05:35 (13B)
	16:29			17:23	31	08:38 (WEA 13)	18:13	20	07:30 (WEA 11)	20:06	27	08:04 (18B)	20:56			21:33	12	05:47 (13B)
13	08:18			07:35		08:00 (29B)	06:36		07:10 (WEA 11)	06:25		07:37 (18B)	05:27			04:56		05:35 (13B)
	16:30			17:24	35	08:39 (WEA 13)	18:15	21	07:31 (19B)	20:07	27	08:04 (18B)	20:57			21:34	13	05:48 (13B)
14	08:17			07:33		08:00 (29B)	06:34		07:05 (20B)	06:23		06:50 (WEA 02)	05:25			04:56		05:35 (13B)
	16:32			17:26	38	08:40 (WEA 13)	18:16	23	07:31 (19B)	20:09	36	08:03 (18B)	20:59			21:34	13	05:48 (13B)
15	08:16			07:31		08:00 (29B)	06:31		07:01 (20B)	06:21		06:45 (WEA 02)	05:24			04:56		05:35 (13B)
	16:33			17:28	39	08:41 (WEA 13)	18:18	29	07:31 (19B)	20:11	49	08:02 (18B)	21:00			21:35	14	05:49 (13B)
16	08:15			07:29		08:01 (29B)	06:29		07:00 (20B)	06:19		06:43 (WEA 02)	05:22			04:56		05:35 (13B)
	16:35			17:30	38	08:41 (WEA 13)	18:20	32	07:32 (19B)	20:13	54	08:01 (18B)	21:02			21:36	14	05:49 (13B)
17	08:14		08:52 (WEA 12)	07:27		08:02 (29B)	06:27		06:58 (20B)	06:17		06:42 (WEA 02)	05:21			04:56		05:35 (13B)
	16:36	5	08:57 (WEA 12)	17:32	37	08:42 (WEA 13)	18:22	31	07:31 (19B)	20:14	56	08:00 (18B)	21:03			21:36	15	05:50 (13B)
18	08:13		08:50 (WEA 12)	07:25		08:11 (WEA 13)	06:25		06:58 (20B)	06:14		06:40 (WEA 02)	05:19		05:46 (6B)	04:56		05:35 (13B)
	16:38	10	09:00 (WEA 12)	17:34	31	08:42 (WEA 13)	18:23	31	07:30 (19B)	20:16	55	07:58 (18B)	21:05	1	05:47 (6B)	21:36	15	05:50 (13B)
19	08:12		08:47 (WEA 12)	07:24		08:11 (WEA 13)	06:22		06:58 (20B)	06:12		06:39 (WEA 02)	05:18		05:44 (6B)	04:56		05:35 (13B)
	16:39	14	09:01 (WEA 12)	17:35	31	08:42 (WEA 13)	18:25	29	07:30 (19B)	20:18	51	07:55 (18B)	21:06	4	05:48 (6B)	21:37	15	05:50 (13B)
20	08:11		08:47 (WEA 12)	07:21		08:10 (WEA 13)	06:20		06:59 (20B)	06:10		06:38 (WEA 02)	05:16		05:43 (6B)	04:56		05:35 (13B)
	16:41	16	09:03 (WEA 12)	17:37	31	08:41 (WEA 13)	18:27	26	07:29 (19B)	20:19	47	07:52 (18B)	21:08	6	05:49 (6B)	21:37	15	05:50 (13B)
21	08:10		08:46 (WEA 12)	07:19		08:10 (WEA 13)	06:18		06:59 (20B)	06:08		06:37 (WEA 02)	05:15		05:42 (6B)	04:56		05:35 (13B)
	16:43	18	09:04 (WEA 12)	17:39	31	08:41 (WEA 13)	18:28	20	07:26 (19B)	20:21	39	07:16 (14B)	21:09	7	05:49 (6B)	21:37	15	05:50 (13B)
22	08:09		08:46 (WEA 12)	07:17		08:10 (WEA 13)	06:15		07:01 (20B)	06:06		06:37 (WEA 02)	05:14		05:41 (6B)	04:56		05:36 (13B)
	16:44	20	09:06 (WEA 12)	17:41	31	08:41 (WEA 13)	18:30	10	07:23 (19B)	20:23	38	07:15 (14B)	21:10	9	05:50 (6B)	21:38	15	05:51 (13B)
23	08:08		08:45 (WEA 12)	07:15		08:11 (WEA 13)	06:13			06:04		06:37 (WEA 02)	05:12		05:40 (6B)	04:56		05:36 (13B)
	16:46	21	09:06 (WEA 12)	17:43	29	08:40 (WEA 13)	18:32			20:24	38	07:15 (14B)	21:12	10	05:50 (6B)	21:38	15	05:51 (13B)
24	08:07		08:35 (WEA 09)	07:13		08:12 (WEA 13)	06:11			06:02		06:25 (WEA 03)	05:11		05:39 (6B)	04:57		05:36 (13B)
	16:48	27	09:07 (WEA 12)	17:45	28	08:40 (WEA 13)	18:34			20:26	40	07:13 (14B)	21:13	11	05:50 (6B)	21:38	15	05:51 (13B)
25	08:05		08:33 (WEA 09)	07:11		08:12 (WEA 13)	06:08			06:00		06:23 (WEA 03)	05:10		05:39 (6B)	04:57		05:37 (13B)
	16:50	33	09:08 (WEA 12)	17:46	27	08:39 (WEA 13)	18:35			20:28	43	07:12 (14B)	21:15	12	05:51 (6B)	21:38	15	05:52 (13B)
26	08:04		08:31 (WEA 09)	07:09		08:13 (WEA 13)	06:06		06:29 (WEA 10)	05:58		06:22 (WEA 03)	05:09		05:39 (6B)	04:57		05:37 (13B)
	16:51	38	09:09 (WEA 12)	17:48	25	08:38 (WEA 13)	18:37	8	06:37 (WEA 10)	20:29	43	07:11 (14B)	21:16	11	05:50 (6B)	21:38	14	05:51 (13B)
27	08:03		08:31 (WEA 09)	07:07		08:14 (WEA 13)	06:04		06:26 (WEA 10)	05:56		06:20 (WEA 03)	05:08		05:40 (6B)	04:58		05:37 (13B)
	16:53	39	09:10 (WEA 12)	17:50	21	08:35 (WEA 13)	18:39	12	06:38 (WEA 10)	20:31	33	06:58 (WEA 02)	21:17	10	05:50 (6B)	21:38	14	05:51 (13B)
28	08:02		08:30 (WEA 09)	07:05		08:16 (WEA 13)	06:02		06:24 (WEA 10)	05:54		06:18 (WEA 03)	05:07		05:40 (6B)	04:58		05:38 (13B)
	16:55	39	09:09 (WEA 12)	17:52	18	08:34 (WEA 13)	18:40	15	06:39 (WEA 10)	20:33	34	06:57 (WEA 02)	21:18	10	05:50 (6B)	21:38	13	05:51 (13B)
29	08:00		08:30 (WEA 09)				06:59		07:22 (WEA 10)	05:52		06:16 (WEA 03)	05:06		05:41 (6B)	04:59		05:38 (13B)
	16:57	40	09:10 (WEA 12)				19:42	18	07:40 (WEA 10)	20:34	33	06:55 (WEA 02)	21:20	8	05:49 (6B)	21:38	13	05:51 (13B)
30	07:59		08:29 (WEA 09)				06:57		07:21 (WEA 10)	05:50		06:14 (11B)	05:05		05:41 (6B)	04:59		05:39 (13B)
	16:59	41	09:10 (WEA 12)				19:44	19	07:40 (WEA 10)	20:36	32	06:53 (WEA 02)	21:21	7	05:48 (6B)	21:37	12	05:51 (13B)
31	07:57		08:29 (WEA 09)				06:55		07:20 (WEA 10)				05:04		05:42 (6B)			
	17:00	41	09:10 (WEA 12)				19:45	20	07:40 (WEA 10)				21:22	5	05:47 (6B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		402			850			494			1143			315			307	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,63			0,66			0,70			0,72			0,71			0,70	
Gesamte Reduktion		0,13			0,20			0,18			0,24			0,29			0,23	
Met.wahrsch.Beschattung		51			168			88			279			91			71	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 37 - Reinstedt - Fußballplatz

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Juli		August		September		Oktober		November		Dezember
1 | 05:00		05:40 (13B) | 05:36		| 06:26		07:37 (18B) | 07:14		07:49 (WEA 11) | 07:08		07:48 (WEA 13) | 07:58
| 21:37	11	05:51 (13B) | 21:06		| 20:04	27	08:04 (18B) | 18:55	20	08:09 (19B) | 16:49	15	08:03 (WEA 13) | 16:09
2 | 05:01		05:40 (13B) | 05:38		06:24 (11B) | 06:27		07:16 (15B) | 07:16		07:48 (WEA 11) | 07:09		07:52 (WEA 13) | 08:00
| 21:37	10	05:50 (13B) | 21:04	7	06:31 (11B) | 20:02	35	08:03 (18B) | 18:53	21	08:09 (WEA 11) | 16:47	14	08:13 (WEA 09) | 16:08
3 | 05:01		05:41 (13B) | 05:39		06:23 (11B) | 06:29		07:14 (15B) | 07:18		07:48 (WEA 11) | 07:11		08:03 (WEA 09) | 08:01
| 21:36	9	05:50 (13B) | 21:02	10	06:33 (11B) | 19:59	37	08:03 (18B) | 18:50	21	08:09 (WEA 11) | 16:45	22	08:33 (WEA 12) | 16:08
4 | 05:02		05:42 (13B) | 05:41		06:22 (11B) | 06:30		07:12 (15B) | 07:19		07:48 (WEA 11) | 07:13		08:02 (WEA 09) | 08:03
| 21:36	8	05:50 (13B) | 21:01	16	06:38 (WEA 03) | 19:57	39	08:02 (18B) | 18:48	20	08:08 (WEA 11) | 16:44	29	08:35 (WEA 12) | 16:07
5 | 05:03		05:43 (13B) | 05:42		06:21 (11B) | 06:32		07:12 (15B) | 07:21		07:48 (WEA 11) | 07:15		08:01 (WEA 09) | 08:04
| 21:36	5	05:48 (13B) | 20:59	20	06:41 (WEA 03) | 19:55	40	08:01 (18B) | 18:46	19	08:07 (WEA 11) | 16:42	35	08:37 (WEA 12) | 16:07
6 | 05:04		| 05:44		06:20 (11B) | 06:34		07:11 (15B) | 07:23		07:49 (WEA 11) | 07:17		08:01 (WEA 09) | 08:05
| 21:35		| 20:57	21	06:41 (WEA 03) | 19:53	41	07:59 (18B) | 18:43	17	08:06 (WEA 11) | 16:40	37	08:38 (WEA 12) | 16:06
7 | 05:05		| 05:46		06:21 (11B) | 06:35		07:11 (15B) | 07:24		07:49 (WEA 11) | 07:18		08:00 (WEA 09) | 08:06
| 21:34		| 20:55	22	06:43 (WEA 03) | 19:50	41	07:58 (18B) | 18:41	15	08:04 (WEA 11) | 16:38	39	08:39 (WEA 12) | 16:06
8 | 05:06		| 05:47		06:20 (11B) | 06:37		07:11 (15B) | 07:26		07:51 (WEA 11) | 07:20		08:00 (WEA 09) | 08:08
| 21:34		| 20:53	23	06:43 (WEA 03) | 19:48	38	07:56 (18B) | 18:39	11	08:02 (WEA 11) | 16:37	40	08:40 (WEA 12) | 16:05
9 | 05:07		| 05:49		06:21 (11B) | 06:39		07:12 (15B) | 07:28		07:55 (WEA 11) | 07:22		08:00 (WEA 09) | 08:09
| 21:33		| 20:52	23	06:44 (WEA 03) | 19:46	32	07:53 (18B) | 18:37	3	07:58 (WEA 11) | 16:35	41	08:41 (WEA 12) | 16:05
10 | 05:08		| 05:50		06:20 (11B) | 06:40		07:14 (WEA 10) | 07:29		| 07:24		08:00 (WEA 09) | 08:10
| 21:32		| 20:50	23	06:43 (WEA 03) | 19:43	19	07:33 (WEA 10) | 18:34		| 16:34	41	08:41 (WEA 12) | 16:05
11 | 05:09		| 05:52		06:21 (11B) | 06:42		07:12 (WEA 10) | 07:31		| 07:25		08:01 (WEA 09) | 08:11
| 21:32		| 20:48	23	06:44 (WEA 03) | 19:41	20	07:32 (WEA 10) | 18:32		| 16:32	41	08:42 (WEA 12) | 16:05
12 | 05:10		05:51 (6B) | 05:53		06:22 (11B) | 06:43		07:13 (WEA 10) | 07:33		08:54 (WEA 13) | 07:27		08:01 (WEA 09) | 08:12
| 21:31	4	05:55 (6B) | 20:46	26	06:58 (WEA 02) | 19:39	19	07:32 (WEA 10) | 18:30	7	09:01 (WEA 13) | 16:30	41	08:42 (WEA 12) | 16:05
13 | 05:11		05:50 (6B) | 05:55		06:24 (11B) | 06:45		07:12 (WEA 10) | 07:34		08:50 (WEA 13) | 07:29		08:02 (WEA 09) | 08:13
| 21:30	6	05:56 (6B) | 20:44	32	07:02 (WEA 02) | 19:37	19	07:31 (WEA 10) | 18:28	15	09:05 (WEA 13) | 16:29	40	08:42 (WEA 12) | 16:05
14 | 05:12		05:49 (6B) | 05:57		06:24 (WEA 03) | 06:47		07:13 (WEA 10) | 07:36		08:48 (WEA 13) | 07:31		08:02 (WEA 09) | 08:14
| 21:29	8	05:57 (6B) | 20:42	34	07:03 (WEA 02) | 19:34	18	07:31 (WEA 10) | 18:26	20	09:08 (WEA 13) | 16:27	39	08:41 (WEA 12) | 16:05
15 | 05:13		05:49 (6B) | 05:58		06:26 (WEA 03) | 06:48		07:13 (WEA 10) | 07:38		08:46 (WEA 13) | 07:32		08:03 (WEA 09) | 08:15
| 21:28	9	05:58 (6B) | 20:40	34	07:05 (WEA 02) | 19:32	16	07:29 (WEA 10) | 18:23	23	09:09 (WEA 13) | 16:26	38	08:41 (WEA 12) | 16:05
16 | 05:14		05:48 (6B) | 06:00		06:27 (WEA 03) | 06:50		07:15 (WEA 10) | 07:40		08:44 (WEA 13) | 07:34		08:04 (WEA 09) | 08:16
| 21:27	10	05:58 (6B) | 20:38	39	07:15 (14B) | 19:30	13	07:28 (WEA 10) | 18:21	25	09:09 (WEA 13) | 16:25	37	08:41 (WEA 12) | 16:05
17 | 05:15		05:48 (6B) | 06:01		06:29 (WEA 03) | 06:51		07:17 (WEA 10) | 07:41		08:43 (WEA 13) | 07:36		08:06 (WEA 09) | 08:17
| 21:26	11	05:59 (6B) | 20:36	42	07:18 (14B) | 19:27	9	07:26 (WEA 10) | 18:19	27	09:10 (WEA 13) | 16:23	33	08:41 (WEA 12) | 16:05
18 | 05:17		05:48 (6B) | 06:03		06:30 (WEA 03) | 06:53		| 07:43		08:43 (WEA 13) | 07:38		08:09 (WEA 09) | 08:17
| 21:25	11	05:59 (6B) | 20:34	43	07:19 (14B) | 19:25		| 18:17	28	09:11 (WEA 13) | 16:22	27	08:41 (WEA 12) | 16:05
19 | 05:18		05:48 (6B) | 06:05		06:32 (WEA 03) | 06:55		| 07:45		08:42 (WEA 13) | 07:39		08:20 (WEA 12) | 08:18
| 21:24	12	06:00 (6B) | 20:32	39	07:20 (14B) | 19:23		| 18:15	30	09:12 (WEA 13) | 16:21	21	08:41 (WEA 12) | 16:06
20 | 05:19		05:49 (6B) | 06:06		06:43 (WEA 02) | 06:56		| 07:46		08:42 (WEA 13) | 07:41		08:21 (WEA 12) | 08:19
| 21:23	11	06:00 (6B) | 20:30	37	07:20 (14B) | 19:20		| 18:13	30	09:12 (WEA 13) | 16:19	20	08:41 (WEA 12) | 16:06
21 | 05:21		05:50 (6B) | 06:08		06:43 (WEA 02) | 06:58		07:48 (20B) | 07:48		08:42 (WEA 13) | 07:43		08:21 (WEA 12) | 08:19
| 21:21	10	06:00 (6B) | 20:28	38	07:21 (14B) | 19:18	3	07:51 (20B) | 18:11	30	09:12 (WEA 13) | 16:18	18	08:39 (WEA 12) | 16:06
22 | 05:22		05:51 (6B) | 06:09		06:42 (WEA 02) | 07:00		07:45 (20B) | 07:50		08:40 (WEA 13) | 07:44		08:23 (WEA 12) | 08:20
| 21:20	8	05:59 (6B) | 20:26	39	07:21 (14B) | 19:16	18	08:11 (19B) | 18:09	31	09:11 (WEA 13) | 16:17	16	08:39 (WEA 12) | 16:07
23 | 05:23		05:53 (6B) | 06:11		06:43 (WEA 02) | 07:01		07:43 (20B) | 07:52		08:40 (WEA 13) | 07:46		08:24 (WEA 12) | 08:20
| 21:19	7	06:00 (6B) | 20:24	49	07:58 (18B) | 19:13	24	08:12 (19B) | 18:07	31	09:11 (WEA 13) | 16:16	14	08:38 (WEA 12) | 16:07
24 | 05:25		05:54 (6B) | 06:13		06:42 (WEA 02) | 07:03		07:42 (20B) | 07:53		08:41 (WEA 13) | 07:48		08:27 (WEA 12) | 08:21
| 21:18	5	05:59 (6B) | 20:21	54	08:00 (18B) | 19:11	28	08:13 (19B) | 18:05	30	09:11 (WEA 13) | 16:15	10	08:37 (WEA 12) | 16:08
25 | 05:26		05:55 (6B) | 06:14		06:43 (WEA 02) | 07:04		07:41 (20B) | 06:55		07:31 (29B) | 07:49		08:30 (WEA 12) | 08:21
| 21:16	3	05:58 (6B) | 20:19	55	08:01 (18B) | 19:09	30	08:13 (19B) | 17:03	37	08:11 (WEA 13) | 16:14	5	08:35 (WEA 12) | 16:09
26 | 05:27		| 06:16		06:44 (WEA 02) | 07:06		07:41 (20B) | 06:57		07:30 (29B) | 07:51		| 08:21
| 21:15		| 20:17	55	08:02 (18B) | 19:06	30	08:13 (19B) | 17:01	38	08:11 (WEA 13) | 16:13		| 16:09
27 | 05:29		| 06:18		06:45 (WEA 02) | 07:08		07:42 (20B) | 06:59		07:30 (29B) | 07:52		| 08:22
| 21:13		| 20:15	53	08:03 (18B) | 19:04	31	08:13 (19B) | 16:59	38	08:10 (WEA 13) | 16:12		| 16:10
28 | 05:30		| 06:19		06:46 (WEA 02) | 07:09		07:42 (20B) | 07:01		07:29 (29B) | 07:54		| 08:22
| 21:12		| 20:13	48	08:03 (18B) | 19:02	30	08:12 (19B) | 16:57	37	08:09 (WEA 13) | 16:11		| 16:11
29 | 05:32		| 06:21		07:06 (14B) | 07:11		07:44 (20B) | 07:02		07:30 (29B) | 07:55		| 08:22
| 21:10		| 20:11	33	08:04 (18B) | 18:59	27	08:12 (19B) | 16:55	34	08:08 (WEA 13) | 16:10		| 16:12
30 | 05:33		| 06:22		07:38 (18B) | 07:13		07:50 (WEA 11) | 07:04		07:32 (29B) | 07:57		| 08:22
| 21:09		| 20:08	27	08:05 (18B) | 18:57	21	08:11 (19B) | 16:53	29	08:07 (WEA 13) | 16:10		| 16:12
31 | 05:35		| 06:24		07:37 (18B) |			| 07:06		07:33 (29B) |		| 08:22
| 21:07		| 20:06	27	08:04 (18B) |			| 16:51	23	08:05 (WEA 13) |		| 16:13
Sonnenscheinstunden | 501		| 453		| 381			| 332		| 267		| 245
astr.max.mögl.Beschattung |	158		992	|	705			710		|	713		|
Red.Sonnenscheinwahrsch. |	0,40		0,43	|	0,34			0,28		|	0,22		|
Reduktion Betriebsdauer |	0,96		0,96	|	0,96			0,96		|	0,96		|
Reduktion Windrichtung |	0,70		0,72	|	0,71			0,67		|	0,63		|
Gesamte Reduktion |	0,27		0,29	|	0,23			0,18		|	0,13		|
Met.wahrsch.Beschattung |	42		291	|	163			127		|	95		|

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 38 - Reinstedt - Neu-Seeland Agrar

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56		08:29 (WEA 12)	07:03		07:59 (WEA 13)	06:52		07:40 (18B)	05:48			05:03		05:31 (10B)
	16:15			17:02	21	08:50 (WEA 12)	17:54	18	08:17 (WEA 13)	19:47	19	07:59 (18B)	20:38			21:23	10	05:41 (10B)
2	08:22			07:54		08:29 (WEA 12)	07:00		08:00 (WEA 13)	06:50		07:40 (18B)	05:46			05:02		05:31 (10B)
	16:16			17:04	21	08:50 (WEA 12)	17:55	15	08:15 (WEA 13)	19:49	20	08:00 (18B)	20:39			21:24	12	05:43 (10B)
3	08:22			07:53		08:28 (WEA 12)	06:58		08:04 (WEA 13)	06:48		07:38 (18B)	05:44			05:01		05:30 (10B)
	16:17			17:06	22	08:50 (WEA 12)	17:57	8	08:12 (WEA 13)	19:51	21	07:59 (18B)	20:41			21:25	13	05:43 (10B)
4	08:22			07:51		08:29 (WEA 12)	06:56			06:46		07:39 (18B)	05:42			05:01		05:30 (10B)
	16:18			17:08	22	08:51 (WEA 12)	17:59			19:52	19	07:58 (18B)	20:43			21:26	13	05:43 (10B)
5	08:22			07:49		08:29 (WEA 12)	06:54			06:43		07:39 (18B)	05:40			05:00		05:30 (10B)
	16:19			17:10	22	08:51 (WEA 12)	18:01			19:54	19	07:58 (18B)	20:44			21:27	14	05:44 (10B)
6	08:21			07:48		08:29 (WEA 12)	06:52			06:41		07:39 (18B)	05:39			04:59		05:30 (10B)
	16:20			17:11	22	08:51 (WEA 12)	18:02			19:56	18	07:57 (18B)	20:46			21:28	14	05:44 (10B)
7	08:21			07:46		08:29 (WEA 12)	06:49			06:39		07:13 (14B)	05:37		06:02 (6B)	04:59		05:30 (10B)
	16:22			17:13	21	08:50 (WEA 12)	18:04			19:57	21	07:55 (18B)	20:48	1	06:03 (6B)	21:29	14	05:44 (10B)
8	08:20			07:44		08:30 (WEA 12)	06:47			06:37		07:10 (14B)	05:35		06:00 (6B)	04:58		05:31 (10B)
	16:23			17:15	20	08:50 (WEA 12)	18:06			19:59	22	07:53 (18B)	20:49	4	06:04 (6B)	21:30	14	05:45 (10B)
9	08:20			07:42		08:30 (WEA 12)	06:45			06:34		07:09 (14B)	05:33		05:59 (6B)	04:58		05:30 (10B)
	16:24			17:17	19	08:49 (WEA 12)	18:08			20:01	20	07:51 (18B)	20:51	6	06:05 (6B)	21:31	15	05:45 (10B)
10	08:19			07:41		08:32 (WEA 12)	06:43			06:32		06:55 (WEA 02)	05:32		05:57 (6B)	04:57		05:31 (10B)
	16:26			17:19	17	08:49 (WEA 12)	18:09			20:02	22	07:22 (14B)	20:52	7	06:04 (6B)	21:32	14	05:45 (10B)
11	08:19			07:39		08:34 (WEA 12)	06:41			06:30		06:53 (WEA 02)	05:30		05:55 (6B)	04:57		05:31 (10B)
	16:27			17:21	13	08:47 (WEA 12)	18:11			20:04	27	07:22 (14B)	20:54	9	06:04 (6B)	21:33	15	05:46 (10B)
12	08:18			07:37		08:36 (WEA 12)	06:38		07:12 (19B)	06:28		06:50 (WEA 02)	05:28		05:55 (6B)	04:57		05:31 (10B)
	16:29			17:23	9	08:45 (WEA 12)	18:13	8	07:20 (19B)	20:06	30	07:21 (14B)	20:56	12	06:07 (13B)	21:33	14	05:45 (10B)
13	08:18			07:35			06:36		07:10 (19B)	06:25		06:48 (WEA 02)	05:27		05:55 (6B)	04:56		05:31 (10B)
	16:30			17:24			18:15	12	07:22 (19B)	20:07	33	07:21 (14B)	20:57	12	06:07 (13B)	21:34	15	05:46 (10B)
14	08:17			07:33		08:08 (WEA 13)	06:34		07:08 (19B)	06:23		06:47 (WEA 02)	05:25		05:55 (13B)	04:56		05:32 (10B)
	16:32			17:26	3	08:11 (WEA 13)	18:16	14	07:22 (19B)	20:09	32	07:20 (14B)	20:59	14	06:09 (13B)	21:34	14	05:46 (10B)
15	08:16			07:31		08:03 (WEA 13)	06:31		07:08 (19B)	06:21		06:47 (WEA 02)	05:24		05:55 (13B)	04:56		05:32 (10B)
	16:33			17:28	12	08:15 (WEA 13)	18:18	14	07:22 (19B)	20:11	32	07:19 (14B)	21:00	15	06:10 (13B)	21:35	14	05:46 (10B)
16	08:15			07:29		08:01 (WEA 13)	06:29		07:08 (19B)	06:19		06:46 (WEA 02)	05:22		05:54 (13B)	04:56		05:32 (10B)
	16:35			17:30	17	08:18 (WEA 13)	18:20	14	07:22 (19B)	20:13	29	07:17 (14B)	21:02	15	06:09 (13B)	21:36	14	05:46 (10B)
17	08:14			07:27		08:00 (WEA 13)	06:27		07:07 (19B)	06:17		06:46 (WEA 02)	05:21		05:54 (13B)	04:56		05:32 (10B)
	16:36			17:32	19	08:19 (WEA 13)	18:22	14	07:21 (19B)	20:14	20	07:06 (WEA 02)	21:03	16	06:10 (13B)	21:36	15	05:47 (10B)
18	08:13			07:26		07:59 (WEA 13)	06:25		07:08 (19B)	06:15		06:46 (WEA 02)	05:19		05:54 (13B)	04:56		05:33 (10B)
	16:38			17:34	21	08:20 (WEA 13)	18:23	12	07:20 (19B)	20:16	20	07:06 (WEA 02)	21:05	17	06:11 (13B)	21:36	14	05:47 (10B)
19	08:12			07:24		07:58 (WEA 13)	06:22		07:09 (19B)	06:12		06:47 (WEA 02)	05:18		05:53 (13B)	04:56		05:33 (10B)
	16:39			17:35	23	08:21 (WEA 13)	18:25	10	07:19 (19B)	20:18	18	07:05 (WEA 02)	21:06	17	06:10 (13B)	21:37	14	05:47 (10B)
20	08:11			07:22		07:56 (WEA 13)	06:20		07:12 (19B)	06:10		06:46 (WEA 02)	05:16		05:53 (13B)	04:56		05:33 (10B)
	16:41			17:37	25	08:21 (WEA 13)	18:27	4	07:16 (19B)	20:19	17	07:03 (WEA 02)	21:08	17	06:10 (13B)	21:37	14	05:47 (10B)
21	08:10			07:19		07:56 (WEA 13)	06:18			06:08		06:47 (WEA 02)	05:15		05:54 (13B)	04:56		05:33 (10B)
	16:43			17:39	25	08:21 (WEA 13)	18:28			20:21	15	07:02 (WEA 02)	21:09	16	06:10 (13B)	21:37	14	05:47 (10B)
22	08:09			07:17		07:56 (WEA 13)	06:15			06:06		06:49 (WEA 02)	05:14		05:54 (13B)	04:56		05:34 (10B)
	16:45			17:41	25	08:21 (WEA 13)	18:30			20:23	11	07:00 (WEA 02)	21:10	16	06:10 (13B)	21:38	14	05:48 (10B)
23	08:08			07:15		07:56 (WEA 13)	06:13			06:04		06:51 (WEA 02)	05:12		05:55 (13B)	04:56		05:34 (10B)
	16:46			17:43	26	08:22 (WEA 13)	18:32			20:24	6	06:57 (WEA 02)	21:12	15	06:10 (13B)	21:38	14	05:48 (10B)
24	08:07			07:13		07:56 (WEA 13)	06:11			06:02			05:11		05:55 (13B)	04:57		05:34 (10B)
	16:48			17:45	26	08:22 (WEA 13)	18:34			20:26			21:13	15	06:10 (13B)	21:38	14	05:48 (10B)
25	08:06			07:11		07:56 (WEA 13)	06:08			06:00			05:10		05:56 (13B)	04:57		05:34 (10B)
	16:50			17:46	25	08:21 (WEA 13)	18:35			20:28			21:15	14	06:10 (13B)	21:38	15	05:49 (10B)
26	08:04		08:37 (WEA 12)	07:09		07:57 (WEA 13)	06:06			05:58			05:09		05:57 (13B)	04:57		05:34 (10B)
	16:51	2	08:39 (WEA 12)	17:48	24	08:21 (WEA 13)	18:37			20:29			21:16	12	06:09 (13B)	21:38	14	05:48 (10B)
27	08:03		08:34 (WEA 12)	07:07		07:56 (WEA 13)	06:04			05:56			05:08		05:57 (13B)	04:58		05:34 (10B)
	16:53	9	08:43 (WEA 12)	17:50	23	08:19 (WEA 13)	18:39			20:31			21:17	11	06:08 (13B)	21:38	14	05:48 (10B)
28	08:02		08:32 (WEA 12)	07:05		07:57 (WEA 13)	06:02		06:47 (18B)	05:54			05:07		05:35 (10B)	04:58		05:35 (10B)
	16:55	13	08:45 (WEA 12)	17:52	21	08:18 (WEA 13)	18:40	8	06:55 (18B)	20:33			21:18	13	06:08 (13B)	21:38	14	05:49 (10B)
29	08:00		08:31 (WEA 12)				06:59		07:44 (18B)	05:52			05:06		05:34 (10B)	04:59		05:34 (10B)
	16:57	16	08:47 (WEA 12)				19:42	13	07:57 (18B)	20:34			21:20	11	06:06 (13B)	21:38	15	05:49 (10B)
30	07:59		08:30 (WEA 12)				06:57		07:42 (18B)	05:50			05:05		05:33 (10B)	04:59		05:35 (10B)
	16:59	18	08:48 (WEA 12)				19:44	16	07:58 (18B)	20:36			21:21	9	06:04 (13B)	21:37	14	05:49 (10B)
31	07:57		08:29 (WEA 12)				06:55		07:41 (18B)				05:04		05:32 (10B)			
	17:00	19	08:48 (WEA 12)				19:45	18	07:59 (18B)				21:22	9	05:41 (10B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		77			544			198			491			303			418	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,65			0,66			0,70			0,72			0,71			0,70	
Gesamte Reduktion		0,13			0,20			0,18			0,25			0,29			0,23	
Met.wahrsch.Beschattung		10			109			36			120			88			97	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 38 - Reinstedt - Neu-Seeland Agrar

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember
1	05:00		05:35 (10B)	05:36		06:05 (6B)	06:26	06:52 (WEA 02)	07:14	07:50 (19B)	07:08	08:01 (WEA 12)	07:58
	21:37	15	05:50 (10B)	21:06	11	06:16 (13B)	20:04	27 07:21 (14B)	18:55	10 08:00 (19B)	16:49	17 08:18 (WEA 12)	16:09
2	05:01		05:35 (10B)	05:38		06:06 (6B)	06:27	06:53 (WEA 02)	07:16	07:52 (19B)	07:09	08:00 (WEA 12)	08:00
	21:37	14	05:49 (10B)	21:04	8	06:14 (6B)	20:02	21 07:20 (14B)	18:53	5 07:57 (19B)	16:47	19 08:19 (WEA 12)	16:08
3	05:01		05:36 (10B)	05:39		06:08 (6B)	06:29	07:07 (14B)	07:18		07:11	07:59 (WEA 12)	08:01
	21:36	14	05:50 (10B)	21:02	7	06:15 (6B)	19:59	20 07:49 (18B)	18:50		16:45	20 08:19 (WEA 12)	16:08
4	05:02		05:36 (10B)	05:41		06:09 (6B)	06:30	07:07 (14B)	07:19		07:13	07:59 (WEA 12)	08:03
	21:36	14	05:50 (10B)	21:01	5	06:14 (6B)	19:57	22 07:50 (18B)	18:48		16:44	21 08:20 (WEA 12)	16:07
5	05:03		05:36 (10B)	05:42		06:11 (6B)	06:32	07:09 (14B)	07:21		07:15	07:59 (WEA 12)	08:04
	21:36	14	05:50 (10B)	20:59	3	06:14 (6B)	19:55	22 07:52 (18B)	18:46		16:42	21 08:20 (WEA 12)	16:07
6	05:04		05:36 (10B)	05:44			06:34	07:35 (18B)	07:23		07:17	07:59 (WEA 12)	08:05
	21:35	14	05:50 (10B)	20:57			19:53	17 07:52 (18B)	18:43		16:40	22 08:21 (WEA 12)	16:06
7	05:05		05:36 (10B)	05:46			06:35	07:34 (18B)	07:24		07:18	07:59 (WEA 12)	08:06
	21:34	14	05:50 (10B)	20:55			19:50	19 07:53 (18B)	18:41		16:38	22 08:21 (WEA 12)	16:06
8	05:06		05:37 (10B)	05:47			06:37	07:33 (18B)	07:26		07:20	07:59 (WEA 12)	08:08
	21:34	13	05:50 (10B)	20:53			19:48	19 07:52 (18B)	18:39		16:37	22 08:21 (WEA 12)	16:05
9	05:07		05:37 (10B)	05:49			06:39	07:33 (18B)	07:28		07:22	08:00 (WEA 12)	08:09
	21:33	13	05:50 (10B)	20:52			19:46	20 07:53 (18B)	18:37		16:35	21 08:21 (WEA 12)	16:05
10	05:08		05:38 (10B)	05:50			06:40	07:33 (18B)	07:29		07:24	08:00 (WEA 12)	08:10
	21:32	12	05:50 (10B)	20:50			19:43	20 07:53 (18B)	18:34		16:34	20 08:20 (WEA 12)	16:05
11	05:09		05:39 (10B)	05:52			06:42	07:32 (18B)	07:31	08:35 (WEA 13)	07:25	08:01 (WEA 12)	08:11
	21:32	11	05:50 (10B)	20:48			19:41	20 07:52 (18B)	18:32	12 08:47 (WEA 13)	16:32	19 08:20 (WEA 12)	16:05
12	05:10		05:40 (10B)	05:53			06:43	07:33 (18B)	07:33	08:33 (WEA 13)	07:27	08:02 (WEA 12)	08:12
	21:31	10	05:50 (10B)	20:46			19:39	18 07:51 (18B)	18:30	16 08:49 (WEA 13)	16:30	17 08:19 (WEA 12)	16:05
13	05:11		05:41 (10B)	05:55			06:45	07:33 (18B)	07:34	08:31 (WEA 13)	07:29	08:03 (WEA 12)	08:13
	21:30	8	05:49 (10B)	20:44			19:37	16 07:49 (18B)	18:28	20 08:51 (WEA 13)	16:29	16 08:19 (WEA 12)	16:05
14	05:12		05:42 (10B)	05:57			06:47	07:34 (18B)	07:36	08:30 (WEA 13)	07:31	08:04 (WEA 12)	08:14
	21:29	11	06:14 (13B)	20:42			19:34	14 07:48 (18B)	18:26	22 08:52 (WEA 13)	16:27	13 08:17 (WEA 12)	16:05
15	05:13		05:43 (10B)	05:58			06:48	07:36 (18B)	07:38	08:29 (WEA 13)	07:33	08:06 (WEA 12)	08:15
	21:28	12	06:15 (13B)	20:40			19:32	9 07:45 (18B)	18:23	24 08:53 (WEA 13)	16:26	9 08:15 (WEA 12)	16:05
16	05:14		06:06 (13B)	06:00			06:50		07:40	08:28 (WEA 13)	07:34	08:10 (WEA 12)	08:16
	21:27	10	06:16 (13B)	20:38			19:30		18:21	24 08:52 (WEA 13)	16:25	1 08:11 (WEA 12)	16:05
17	05:15		06:05 (13B)	06:01			06:51		07:41	08:27 (WEA 13)	07:36		08:17
	21:26	12	06:17 (13B)	20:36			19:27		18:19	26 08:53 (WEA 13)	16:23		16:05
18	05:17		06:06 (13B)	06:03			06:53		07:43	08:27 (WEA 13)	07:38		08:17
	21:25	13	06:19 (13B)	20:34			19:25		18:17	26 08:53 (WEA 13)	16:22		16:05
19	05:18		06:05 (13B)	06:05			06:55		07:45	08:27 (WEA 13)	07:39		08:18
	21:24	14	06:19 (13B)	20:32			19:23		18:15	26 08:53 (WEA 13)	16:21		16:06
20	05:19		06:05 (13B)	06:06		06:56 (WEA 02)	06:56		07:46	08:27 (WEA 13)	07:41		08:19
	21:23	15	06:20 (13B)	20:30	8	07:04 (WEA 02)	19:20		18:13	26 08:53 (WEA 13)	16:20		16:06
21	05:21		06:04 (13B)	06:08		06:54 (WEA 02)	06:58		07:48	08:27 (WEA 13)	07:43		08:19
	21:21	16	06:20 (13B)	20:28	12	07:06 (WEA 02)	19:18		18:11	25 08:52 (WEA 13)	16:18		16:06
22	05:22		06:04 (13B)	06:09		06:52 (WEA 02)	07:00		07:50	08:27 (WEA 13)	07:44		08:20
	21:20	16	06:20 (13B)	20:26	15	07:07 (WEA 02)	19:16		18:09	24 08:51 (WEA 13)	16:17		16:07
23	05:23		06:04 (13B)	06:11		06:51 (WEA 02)	07:01		07:52	08:27 (WEA 13)	07:46		08:20
	21:19	17	06:21 (13B)	20:24	17	07:08 (WEA 02)	19:13		18:07	23 08:50 (WEA 13)	16:16		16:07
24	05:25		06:04 (13B)	06:13		06:50 (WEA 02)	07:03	07:53 (19B)	07:53	08:28 (WEA 13)	07:48		08:21
	21:18	17	06:21 (13B)	20:21	18	07:08 (WEA 02)	19:11	9 08:02 (19B)	18:05	21 08:49 (WEA 13)	16:15		16:08
25	05:26		06:04 (13B)	06:14		06:49 (WEA 02)	07:04	07:51 (19B)	06:55	07:30 (WEA 13)	07:49		08:21
	21:16	16	06:20 (13B)	20:19	20	07:09 (WEA 02)	19:09	12 08:03 (19B)	17:03	18 07:48 (WEA 13)	16:14		16:09
26	05:27		06:04 (13B)	06:16		06:48 (WEA 02)	07:06	07:50 (19B)	06:57	07:31 (WEA 13)	07:51		08:21
	21:15	17	06:21 (13B)	20:17	22	07:16 (14B)	19:06	13 08:03 (19B)	17:01	16 07:47 (WEA 13)	16:13		16:09
27	05:29		06:04 (13B)	06:18		06:48 (WEA 02)	07:08	07:50 (19B)	06:59	07:34 (WEA 13)	07:52		08:22
	21:13	16	06:20 (13B)	20:15	28	07:19 (14B)	19:04	14 08:04 (19B)	16:59	10 07:44 (WEA 13)	16:12		16:10
28	05:30		06:04 (13B)	06:19		06:48 (WEA 02)	07:09	07:49 (19B)	07:01		07:54		08:22
	21:12	16	06:20 (13B)	20:13	31	07:20 (14B)	19:02	14 08:03 (19B)	16:57		16:11		16:11
29	05:32		06:05 (13B)	06:21		06:48 (WEA 02)	07:11	07:49 (19B)	07:02		07:55		08:22
	21:10	15	06:20 (13B)	20:11	32	07:21 (14B)	18:59	14 08:03 (19B)	16:55		16:10		16:12
30	05:33		06:06 (6B)	06:22		06:49 (WEA 02)	07:13	07:49 (19B)	07:04	08:05 (WEA 12)	07:57		08:22
	21:09	13	06:19 (13B)	20:08	33	07:22 (14B)	18:57	13 08:02 (19B)	16:53	10 08:15 (WEA 12)	16:10		16:12
31	05:35		06:06 (6B)	06:24		06:50 (WEA 02)			07:06	08:02 (WEA 12)			08:22
	21:07	12	06:18 (13B)	20:06	30	07:21 (14B)			16:51	14 08:16 (WEA 12)			16:13
Sonnenscheinstunden	501			453			381		332		267		245
astr.max.mögl.Beschattung		424			300			373		398		280	
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34		0,28		0,22	
Reduktion Betriebsdauer		0,96			0,96			0,96		0,96		0,96	
Reduktion Windrichtung		0,71			0,72			0,72		0,67		0,65	
Gesamte Reduktion		0,27			0,29			0,23		0,18		0,14	
Met.wahrsch.Beschattung		115			88			87		72		38	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 39 - Reinstedt - Unterdorf 66a

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56		08:26 (WEA 12)	07:03		07:52 (WEA 13)	06:52		07:36 (18B)	05:48			05:03		05:31 (10B)
	16:15			17:02	17	08:43 (WEA 12)	17:54	22	08:14 (WEA 13)	19:47	17	07:53 (18B)	20:38			21:23	12	05:43 (10B)
2	08:22			07:54		08:25 (WEA 12)	07:00		07:53 (WEA 13)	06:50		07:36 (18B)	05:46			05:02		05:31 (10B)
	16:16			17:04	18	08:43 (WEA 12)	17:55	19	08:12 (WEA 13)	19:49	18	07:54 (18B)	20:39			21:24	13	05:44 (10B)
3	08:22			07:53		08:24 (WEA 12)	06:58		07:54 (WEA 13)	06:48		07:34 (18B)	05:44			05:01		05:31 (10B)
	16:17			17:06	20	08:44 (WEA 12)	17:57	17	08:11 (WEA 13)	19:51	19	07:53 (18B)	20:41			21:25	13	05:44 (10B)
4	08:22			07:51		08:25 (WEA 12)	06:56		07:55 (WEA 13)	06:46		07:34 (18B)	05:42			05:01		05:30 (10B)
	16:18			17:08	20	08:45 (WEA 12)	17:59	13	08:08 (WEA 13)	19:52	19	07:53 (18B)	20:43			21:26	14	05:44 (10B)
5	08:22			07:49		08:24 (WEA 12)	06:54		08:00 (WEA 13)	06:43		07:34 (18B)	05:40			05:00		05:31 (10B)
	16:19			17:10	22	08:46 (WEA 12)	18:01	3	08:03 (WEA 13)	19:54	19	07:53 (18B)	20:44			21:27	14	05:45 (10B)
6	08:21			07:48		08:24 (WEA 12)	06:52			06:41		07:34 (18B)	05:39			04:59		05:30 (10B)
	16:20			17:11	22	08:46 (WEA 12)	18:02			19:56	19	07:53 (18B)	20:46			21:28	14	05:44 (10B)
7	08:21			07:46		08:24 (WEA 12)	06:49			06:39		07:34 (18B)	05:37		06:02 (6B)	04:59		05:31 (10B)
	16:22			17:13	21	08:45 (WEA 12)	18:04			19:57	17	07:51 (18B)	20:48	1	06:03 (6B)	21:29	14	05:45 (10B)
8	08:20			07:44		08:24 (WEA 12)	06:47			06:37		07:09 (14B)	05:35		06:00 (6B)	04:58		05:32 (10B)
	16:23			17:15	21	08:45 (WEA 12)	18:06			19:59	22	07:50 (18B)	20:49	4	06:04 (6B)	21:30	14	05:46 (10B)
9	08:20			07:42		08:24 (WEA 12)	06:45			06:34		07:07 (14B)	05:33		05:59 (6B)	04:58		05:31 (10B)
	16:24			17:17	21	08:45 (WEA 12)	18:08			20:01	23	07:48 (18B)	20:51	5	06:04 (6B)	21:31	14	05:45 (10B)
10	08:19			07:41		08:26 (WEA 12)	06:43			06:32		06:55 (WEA 02)	05:32		05:57 (6B)	04:57		05:32 (10B)
	16:26			17:19	19	08:45 (WEA 12)	18:09			20:02	25	07:46 (18B)	20:52	7	06:04 (6B)	21:32	14	05:46 (10B)
11	08:19			07:39		08:26 (WEA 12)	06:41			06:30		06:53 (WEA 02)	05:30		05:55 (6B)	04:57		05:32 (10B)
	16:27			17:21	18	08:44 (WEA 12)	18:11			20:04	23	07:19 (14B)	20:54	10	06:05 (13B)	21:33	14	05:46 (10B)
12	08:18			07:37		08:27 (WEA 12)	06:38			06:28		06:50 (WEA 02)	05:28		05:55 (6B)	04:57		05:32 (10B)
	16:29			17:23	16	08:43 (WEA 12)	18:13			20:06	27	07:18 (14B)	20:56	12	06:07 (13B)	21:33	13	05:45 (10B)
13	08:18			07:35		08:29 (WEA 12)	06:36		07:09 (19B)	06:25		06:48 (WEA 02)	05:27		05:55 (6B)	04:56		05:32 (10B)
	16:30			17:24	13	08:42 (WEA 12)	18:15	5	07:14 (19B)	20:07	30	07:18 (14B)	20:57	12	06:07 (13B)	21:34	14	05:46 (10B)
14	08:17			07:33		08:31 (WEA 12)	06:34		07:06 (19B)	06:23		06:46 (WEA 02)	05:25		05:55 (13B)	04:56		05:33 (10B)
	16:32			17:26	8	08:39 (WEA 12)	18:16	10	07:16 (19B)	20:09	32	07:18 (14B)	20:59	13	06:08 (13B)	21:34	13	05:46 (10B)
15	08:16			07:31			06:31		07:05 (19B)	06:21		06:46 (WEA 02)	05:24		05:54 (13B)	04:56		05:33 (10B)
	16:33			17:28			18:18	12	07:17 (19B)	20:11	31	07:17 (14B)	21:00	15	06:09 (13B)	21:35	13	05:46 (10B)
16	08:15			07:29			06:29		07:04 (19B)	06:19		06:45 (WEA 02)	05:22		05:53 (13B)	04:56		05:33 (10B)
	16:35			17:30			18:20	14	07:18 (19B)	20:13	31	07:16 (14B)	21:02	16	06:09 (13B)	21:36	13	05:46 (10B)
17	08:14			07:27		07:59 (WEA 13)	06:27		07:03 (19B)	06:17		06:45 (WEA 02)	05:21		05:54 (13B)	04:56		05:34 (10B)
	16:36			17:32	11	08:10 (WEA 13)	18:22	14	07:17 (19B)	20:14	26	07:13 (14B)	21:03	16	06:10 (13B)	21:36	13	05:47 (10B)
18	08:13			07:26		07:57 (WEA 13)	06:25		07:03 (19B)	06:15		06:45 (WEA 02)	05:19		05:54 (13B)	04:56		05:34 (10B)
	16:38			17:34	15	08:12 (WEA 13)	18:23	14	07:17 (19B)	20:16	19	07:04 (WEA 02)	21:05	16	06:10 (13B)	21:36	13	05:47 (10B)
19	08:12			07:24		07:55 (WEA 13)	06:22		07:03 (19B)	06:12		06:45 (WEA 02)	05:18		05:53 (13B)	04:56		05:34 (10B)
	16:39			17:35	19	08:14 (WEA 13)	18:25	13	07:16 (19B)	20:18	19	07:04 (WEA 02)	21:06	16	06:09 (13B)	21:37	13	05:47 (10B)
20	08:11			07:22		07:53 (WEA 13)	06:20		07:05 (19B)	06:10		06:45 (WEA 02)	05:16		05:54 (13B)	04:56		05:34 (10B)
	16:41			17:37	21	08:14 (WEA 13)	18:27	10	07:15 (19B)	20:19	17	07:02 (WEA 02)	21:08	15	06:09 (13B)	21:37	13	05:47 (10B)
21	08:10			07:19		07:52 (WEA 13)	06:18		07:05 (19B)	06:08		06:46 (WEA 02)	05:15		05:54 (13B)	04:56		05:34 (10B)
	16:43			17:39	23	08:15 (WEA 13)	18:28	7	07:12 (19B)	20:21	15	07:01 (WEA 02)	21:09	15	06:09 (13B)	21:37	13	05:47 (10B)
22	08:09			07:17		07:51 (WEA 13)	06:15			06:06		06:47 (WEA 02)	05:14		05:55 (13B)	04:56		05:35 (10B)
	16:45			17:41	24	08:15 (WEA 13)	18:30			20:23	12	06:59 (WEA 02)	21:11	14	06:09 (13B)	21:38	13	05:48 (10B)
23	08:08			07:15		07:51 (WEA 13)	06:13			06:04		06:49 (WEA 02)	05:12		05:55 (13B)	04:56		05:35 (10B)
	16:46			17:43	25	08:16 (WEA 13)	18:32			20:24	8	06:57 (WEA 02)	21:12	14	06:09 (13B)	21:38	13	05:48 (10B)
24	08:07			07:13		07:51 (WEA 13)	06:11			06:02			05:11		05:56 (13B)	04:57		05:35 (10B)
	16:48			17:45	25	08:16 (WEA 13)	18:34			20:26			21:13	13	06:09 (13B)	21:38	13	05:48 (10B)
25	08:06			07:11		07:51 (WEA 13)	06:08			06:00			05:10		05:57 (13B)	04:57		05:36 (10B)
	16:50			17:46	25	08:16 (WEA 13)	18:35			20:28			21:15	11	06:08 (13B)	21:38	13	05:49 (10B)
26	08:04			07:09		07:51 (WEA 13)	06:06			05:58			05:09		05:58 (13B)	04:57		05:35 (10B)
	16:51			17:48	25	08:16 (WEA 13)	18:37			20:29			21:16	9	06:07 (13B)	21:38	14	05:49 (10B)
27	08:03			07:07		07:50 (WEA 13)	06:04			05:56			05:08		05:36 (10B)	04:58		05:35 (10B)
	16:53			17:50	25	08:15 (WEA 13)	18:39			20:31			21:17	10	06:06 (13B)	21:38	13	05:48 (10B)
28	08:02			07:05		07:51 (WEA 13)	06:02			05:54			05:07		05:35 (10B)	04:58		05:36 (10B)
	16:55			17:52	23	08:14 (WEA 13)	18:40			20:33			21:18	9	06:04 (13B)	21:38	13	05:49 (10B)
29	08:00		08:31 (WEA 12)				06:59		07:45 (18B)	05:52			05:06		05:34 (10B)	04:59		05:35 (10B)
	16:57	6	08:37 (WEA 12)				19:42	1	07:46 (18B)	20:34			21:20	7	05:41 (10B)	21:38	14	05:49 (10B)
30	07:59		08:28 (WEA 12)				06:57		07:40 (18B)	05:50			05:05		05:33 (10B)	04:59		05:36 (10B)
	16:59	11	08:39 (WEA 12)				19:44	10	07:50 (18B)	20:36			21:21	9	05:42 (10B)	21:37	14	05:50 (10B)
31	07:57		08:26 (WEA 12)				06:55		07:38 (18B)				05:04		05:32 (10B)			
	17:00	15	08:41 (WEA 12)				19:45	14	07:52 (18B)				21:22	10	05:42 (10B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		32			517			198			488			279			401	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,65			0,66			0,70			0,72			0,71			0,70	
Gesamte Reduktion		0,13			0,20			0,18			0,25			0,29			0,23	
Met.wahrsch.Beschattung		4			104			35			120			81			93	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 39 - Reinstedt - Unterdorf 66a

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember
1	05:00		05:37 (10B)	05:36		06:05 (6B)	06:26	06:52 (WEA 02)	07:14		07:08		07:54 (WEA 12)	07:58
	21:37	13	05:50 (10B)	21:06	12	06:17 (13B)	20:04	23 07:18 (14B)	18:55		16:49	20	08:14 (WEA 12)	16:09
2	05:01		05:36 (10B)	05:38		06:06 (6B)	06:27	06:53 (WEA 02)	07:16		07:09		07:54 (WEA 12)	08:00
	21:37	14	05:50 (10B)	21:04	8	06:14 (6B)	20:02	25 07:44 (18B)	18:53		16:47	21	08:15 (WEA 12)	16:08
3	05:01		05:36 (10B)	05:39		06:08 (6B)	06:29	07:05 (14B)	07:18		07:11		07:54 (WEA 12)	08:01
	21:36	14	05:50 (10B)	21:02	6	06:14 (6B)	19:59	23 07:46 (18B)	18:50		16:45	21	08:15 (WEA 12)	16:08
4	05:02		05:37 (10B)	05:41		06:09 (6B)	06:30	07:06 (14B)	07:19		07:13		07:54 (WEA 12)	08:03
	21:36	14	05:51 (10B)	21:01	5	06:14 (6B)	19:57	22 07:47 (18B)	18:48		16:44	21	08:15 (WEA 12)	16:07
5	05:03		05:36 (10B)	05:42		06:11 (6B)	06:32	07:31 (18B)	07:21		07:15		07:54 (WEA 12)	08:04
	21:36	14	05:50 (10B)	20:59	3	06:14 (6B)	19:55	17 07:48 (18B)	18:46		16:42	21	08:15 (WEA 12)	16:07
6	05:04		05:37 (10B)	05:44			06:34	07:29 (18B)	07:23		07:17		07:54 (WEA 12)	08:05
	21:35	14	05:51 (10B)	20:57			19:53	19 07:48 (18B)	18:43		16:40	21	08:15 (WEA 12)	16:06
7	05:05		05:37 (10B)	05:46			06:35	07:29 (18B)	07:24		07:18		07:54 (WEA 12)	08:06
	21:34	14	05:51 (10B)	20:55			19:50	19 07:48 (18B)	18:41		16:38	21	08:15 (WEA 12)	16:06
8	05:06		05:37 (10B)	05:47			06:37	07:28 (18B)	07:26		07:20		07:55 (WEA 12)	08:08
	21:34	14	05:51 (10B)	20:53			19:48	19 07:47 (18B)	18:39		16:37	20	08:15 (WEA 12)	16:05
9	05:07		05:38 (10B)	05:49			06:39	07:28 (18B)	07:28	08:32 (WEA 13)	07:22		07:56 (WEA 12)	08:09
	21:33	13	05:51 (10B)	20:52			19:46	19 07:47 (18B)	18:37	9 08:41 (WEA 13)	16:35	18	08:14 (WEA 12)	16:05
10	05:08		05:38 (10B)	05:50			06:40	07:29 (18B)	07:29	08:29 (WEA 13)	07:24		07:57 (WEA 12)	08:10
	21:32	13	05:51 (10B)	20:50			19:43	18 07:47 (18B)	18:34	15 08:44 (WEA 13)	16:34	17	08:14 (WEA 12)	16:05
11	05:09		05:39 (10B)	05:52			06:42	07:29 (18B)	07:31	08:27 (WEA 13)	07:26		07:58 (WEA 12)	08:11
	21:32	12	05:51 (10B)	20:48			19:41	16 07:45 (18B)	18:32	18 08:45 (WEA 13)	16:32	15	08:13 (WEA 12)	16:05
12	05:10		05:40 (10B)	05:53			06:43	07:30 (18B)	07:33	08:25 (WEA 13)	07:27		08:00 (WEA 12)	08:12
	21:31	11	05:51 (10B)	20:46			19:39	14 07:44 (18B)	18:30	21 08:46 (WEA 13)	16:30	11	08:11 (WEA 12)	16:05
13	05:11		05:41 (10B)	05:55			06:45	07:30 (18B)	07:34	08:24 (WEA 13)	07:29		08:03 (WEA 12)	08:13
	21:30	10	05:51 (10B)	20:44			19:37	12 07:42 (18B)	18:28	23 08:47 (WEA 13)	16:29	6	08:09 (WEA 12)	16:05
14	05:12		05:42 (10B)	05:57			06:47	07:34 (18B)	07:36	08:24 (WEA 13)	07:31			08:14
	21:29	8	05:50 (10B)	20:42			19:34	4 07:38 (18B)	18:26	24 08:48 (WEA 13)	16:27			16:05
15	05:13		05:43 (10B)	05:58			06:48		07:38	08:23 (WEA 13)	07:33			08:15
	21:28	6	05:49 (10B)	20:40			19:32		18:23	25 08:48 (WEA 13)	16:26			16:05
16	05:14		05:44 (10B)	06:00			06:50		07:40	08:22 (WEA 13)	07:34			08:16
	21:27	10	06:14 (13B)	20:38			19:30		18:21	25 08:47 (WEA 13)	16:25			16:05
17	05:15		05:45 (10B)	06:01			06:51		07:41	08:22 (WEA 13)	07:36			08:17
	21:26	9	06:15 (13B)	20:36			19:27		18:19	25 08:47 (WEA 13)	16:23			16:05
18	05:17		06:07 (13B)	06:03			06:53		07:43	08:22 (WEA 13)	07:38			08:17
	21:25	10	06:17 (13B)	20:34			19:25		18:17	25 08:47 (WEA 13)	16:22			16:05
19	05:18		06:06 (13B)	06:05			06:55		07:45	08:22 (WEA 13)	07:39			08:18
	21:24	12	06:18 (13B)	20:32			19:23		18:15	25 08:47 (WEA 13)	16:21			16:06
20	05:19		06:05 (13B)	06:06		06:54 (WEA 02)	06:56		07:46	08:23 (WEA 13)	07:41			08:19
	21:23	13	06:18 (13B)	20:30	9	07:03 (WEA 02)	19:20		18:13	23 08:46 (WEA 13)	16:20			16:06
21	05:21		06:04 (13B)	06:08		06:52 (WEA 02)	06:58		07:48	08:24 (WEA 13)	07:43			08:19
	21:21	15	06:19 (13B)	20:28	13	07:05 (WEA 02)	19:18		18:11	22 08:46 (WEA 13)	16:18			16:06
22	05:22		06:04 (13B)	06:09		06:50 (WEA 02)	07:00	07:52 (19B)	07:50	08:24 (WEA 13)	07:44			08:20
	21:20	15	06:19 (13B)	20:26	16	07:06 (WEA 02)	19:16	5 07:57 (19B)	18:09	20 08:44 (WEA 13)	16:17			16:07
23	05:23		06:04 (13B)	06:11		06:50 (WEA 02)	07:01	07:49 (19B)	07:52	08:25 (WEA 13)	07:46			08:20
	21:19	16	06:20 (13B)	20:24	17	07:07 (WEA 02)	19:13	9 07:58 (19B)	18:07	18 08:43 (WEA 13)	16:16			16:07
24	05:25		06:04 (13B)	06:13		06:48 (WEA 02)	07:03	07:47 (19B)	07:53	08:27 (WEA 13)	07:48			08:21
	21:18	16	06:20 (13B)	20:21	19	07:07 (WEA 02)	19:11	13 08:00 (19B)	18:05	14 08:41 (WEA 13)	16:15			16:08
25	05:26		06:04 (13B)	06:14		06:48 (WEA 02)	07:04	07:46 (19B)	06:55	07:29 (WEA 13)	07:49			08:21
	21:16	16	06:20 (13B)	20:19	19	07:07 (WEA 02)	19:09	13 07:59 (19B)	17:03	9 07:38 (WEA 13)	16:14			16:09
26	05:27		06:04 (13B)	06:16		06:47 (WEA 02)	07:06	07:45 (19B)	06:57		07:51			08:21
	21:15	16	06:20 (13B)	20:17	26	07:15 (14B)	19:06	14 07:59 (19B)	17:01		16:13			16:09
27	05:29		06:04 (13B)	06:18		06:47 (WEA 02)	07:08	07:46 (19B)	06:59		07:52			08:22
	21:13	16	06:20 (13B)	20:15	30	07:17 (14B)	19:04	13 07:59 (19B)	16:59		16:12			16:10
28	05:30		06:04 (13B)	06:19		06:47 (WEA 02)	07:09	07:45 (19B)	07:01	08:00 (WEA 12)	07:54			08:22
	21:12	15	06:19 (13B)	20:13	31	07:18 (14B)	19:02	13 07:58 (19B)	16:57	9 08:09 (WEA 12)	16:11			16:11
29	05:32		06:05 (13B)	06:21		06:47 (WEA 02)	07:11	07:46 (19B)	07:02	07:58 (WEA 12)	07:55			08:22
	21:10	15	06:20 (13B)	20:11	32	07:19 (14B)	18:59	11 07:57 (19B)	16:55	14 08:12 (WEA 12)	16:10			16:12
30	05:33		06:05 (13B)	06:22		06:49 (WEA 02)	07:13	07:48 (19B)	07:04	07:57 (WEA 12)	07:57			08:22
	21:09	14	06:19 (13B)	20:08	30	07:19 (14B)	18:57	7 07:55 (19B)	16:53	16 08:13 (WEA 12)	16:10			16:12
31	05:35		06:06 (6B)	06:24		06:50 (WEA 02)			07:06	07:55 (WEA 12)				08:22
	21:07	12	06:18 (13B)	20:06	27	07:18 (14B)			16:51	18 08:13 (WEA 12)				16:13
Sonnenscheinstunden	501			453			381		332		267			245
astr.max.mögl.Beschattung		404			303			348		398		233		
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34		0,28		0,22		
Reduktion Betriebsdauer		0,96			0,96			0,96		0,96		0,96		
Reduktion Windrichtung		0,71			0,72			0,72		0,67		0,65		
Gesamte Reduktion		0,27			0,29			0,23		0,18		0,14		
Met.wahrsch.Beschattung		109			89			81		72		32		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 40 - Reinstedt - Schielestraße

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22			07:56		08:25 (WEA 12)	07:03		07:55 (WEA 13)	06:52		07:42 (18B)	05:48			05:03		05:40 (10B)
	16:15			17:02	17	08:42 (WEA 12)	17:54	17	08:12 (WEA 13)	19:47	17	07:59 (18B)	20:38			21:23	11	05:51 (10B)
2	08:22			07:54		08:25 (WEA 12)	07:00		07:57 (WEA 13)	06:50		07:42 (18B)	05:46			05:02		05:41 (10B)
	16:16			17:04	18	08:43 (WEA 12)	17:55	13	08:10 (WEA 13)	19:49	16	07:58 (18B)	20:39			21:24	11	05:52 (10B)
3	08:22			07:53		08:24 (WEA 12)	06:58		08:00 (WEA 13)	06:48		07:42 (18B)	05:44		06:09 (6B)	05:01		05:41 (10B)
	16:17			17:06	19	08:43 (WEA 12)	17:57	7	08:07 (WEA 13)	19:51	15	07:57 (18B)	20:41	1	06:10 (6B)	21:25	10	05:51 (10B)
4	08:22			07:51		08:24 (WEA 12)	06:56			06:46		07:18 (14B)	05:42		06:07 (6B)	05:01		05:41 (10B)
	16:18			17:08	21	08:45 (WEA 12)	17:59			19:52	16	07:55 (18B)	20:43	6	06:13 (13B)	21:26	9	05:50 (10B)
5	08:22			07:49		08:24 (WEA 12)	06:54			06:43		07:15 (14B)	05:40		06:05 (6B)	05:00		05:43 (10B)
	16:19			17:10	21	08:45 (WEA 12)	18:01			19:54	15	07:52 (18B)	20:44	11	06:16 (13B)	21:27	7	05:50 (10B)
6	08:21			07:48		08:24 (WEA 12)	06:52			06:41		07:13 (14B)	05:39		06:03 (6B)	04:59		05:43 (10B)
	16:20			17:11	21	08:45 (WEA 12)	18:02			19:56	12	07:25 (14B)	20:46	14	06:17 (13B)	21:28	6	05:49 (10B)
7	08:21			07:46		08:24 (WEA 12)	06:49			06:39		07:12 (14B)	05:37		06:02 (6B)	04:59		05:45 (10B)
	16:22			17:13	21	08:45 (WEA 12)	18:04			19:57	13	07:25 (14B)	20:48	16	06:18 (13B)	21:29	4	05:49 (10B)
8	08:20			07:44		08:24 (WEA 12)	06:47			06:37		06:59 (WEA 02)	05:35		06:02 (6B)	04:58		
	16:23			17:15	20	08:44 (WEA 12)	18:06			19:59	21	07:25 (14B)	20:49	16	06:18 (13B)	21:30		
9	08:20			07:42		08:25 (WEA 12)	06:45			06:34		06:57 (WEA 02)	05:33		06:04 (6B)	04:58		
	16:24			17:17	19	08:44 (WEA 12)	18:08			20:01	25	07:25 (14B)	20:51	15	06:19 (13B)	21:31		
10	08:19			07:41		08:26 (WEA 12)	06:43			06:32		06:55 (WEA 02)	05:32		06:03 (13B)	04:57		
	16:26			17:19	18	08:44 (WEA 12)	18:09			20:02	28	07:25 (14B)	20:52	16	06:19 (13B)	21:32		
11	08:19			07:39		08:27 (WEA 12)	06:41		07:12 (19B)	06:30		06:53 (WEA 02)	05:30		06:03 (13B)	04:57		
	16:27			17:21	16	08:43 (WEA 12)	18:11	6	07:18 (19B)	20:04	29	07:24 (14B)	20:54	15	06:18 (13B)	21:33		
12	08:18			07:37		08:29 (WEA 12)	06:38		07:10 (19B)	06:28		06:51 (WEA 02)	05:28		06:03 (13B)	04:57		
	16:29			17:23	12	08:41 (WEA 12)	18:13	10	07:20 (19B)	20:06	27	07:21 (14B)	20:56	16	06:19 (13B)	21:33		
13	08:18			07:35		08:31 (WEA 12)	06:36		07:09 (19B)	06:25		06:50 (WEA 02)	05:27		06:03 (13B)	04:56		
	16:30			17:24	8	08:39 (WEA 12)	18:15	12	07:21 (19B)	20:07	22	07:18 (14B)	20:57	15	06:18 (13B)	21:34		
14	08:17			07:33			06:34		07:07 (19B)	06:23		06:50 (WEA 02)	05:25		06:04 (13B)	04:56		
	16:32			17:26			18:16	14	07:21 (19B)	20:09	19	07:09 (WEA 02)	20:59	14	06:18 (13B)	21:34		
15	08:16			07:31			06:31		07:07 (19B)	06:21		06:50 (WEA 02)	05:24		06:05 (13B)	04:56		
	16:33			17:28			18:18	14	07:21 (19B)	20:11	19	07:09 (WEA 02)	21:00	12	06:17 (13B)	21:35		
16	08:15			07:29		08:00 (WEA 13)	06:29		07:08 (19B)	06:19		06:51 (WEA 02)	05:22		06:05 (13B)	04:56		
	16:35			17:30	11	08:11 (WEA 13)	18:20	12	07:20 (19B)	20:13	17	07:08 (WEA 02)	21:02	11	06:16 (13B)	21:36		
17	08:14			07:27		07:57 (WEA 13)	06:27		07:08 (19B)	06:17		06:51 (WEA 02)	05:21		06:07 (13B)	04:56		
	16:36			17:32	16	08:13 (WEA 13)	18:22	11	07:19 (19B)	20:14	17	07:08 (WEA 02)	21:03	8	06:15 (13B)	21:36		
18	08:13			07:26		07:56 (WEA 13)	06:25		07:09 (19B)	06:15		06:52 (WEA 02)	05:19		06:09 (13B)	04:56		
	16:38			17:34	18	08:14 (WEA 13)	18:23	8	07:17 (19B)	20:16	14	07:06 (WEA 02)	21:05	4	06:13 (13B)	21:36		
19	08:12			07:24		07:55 (WEA 13)	06:22			06:12		06:53 (WEA 02)	05:18		05:44 (10B)	04:56		
	16:39			17:35	20	08:15 (WEA 13)	18:25			20:18	12	07:05 (WEA 02)	21:06	2	05:46 (10B)	21:37		
20	08:11			07:22		07:53 (WEA 13)	06:20			06:10		06:55 (WEA 02)	05:16		05:43 (10B)	04:56		
	16:41			17:37	22	08:15 (WEA 13)	18:27			20:19	6	07:01 (WEA 02)	21:08	5	05:48 (10B)	21:37		
21	08:10			07:19		07:53 (WEA 13)	06:18			06:08			05:15		05:42 (10B)	04:56		
	16:43			17:39	23	08:16 (WEA 13)	18:28			20:21			21:09	8	05:50 (10B)	21:37		
22	08:09			07:17		07:52 (WEA 13)	06:15			06:06			05:14		05:41 (10B)	04:56		
	16:45			17:41	24	08:16 (WEA 13)	18:30			20:23			21:11	10	05:51 (10B)	21:38		
23	08:08			07:15		07:52 (WEA 13)	06:13			06:04			05:12		05:40 (10B)	04:56		
	16:46			17:43	24	08:16 (WEA 13)	18:32			20:24			21:12	11	05:51 (10B)	21:38		
24	08:07			07:13		07:52 (WEA 13)	06:11			06:02			05:11		05:39 (10B)	04:57		
	16:48			17:45	24	08:16 (WEA 13)	18:34			20:26			21:13	13	05:52 (10B)	21:38		
25	08:06			07:11		07:52 (WEA 13)	06:08		06:51 (18B)	06:00			05:10		05:39 (10B)	04:57		
	16:50			17:46	24	08:16 (WEA 13)	18:35	4	06:55 (18B)	20:28			21:15	13	05:52 (10B)	21:38		
26	08:04			07:09		07:53 (WEA 13)	06:06		06:47 (18B)	05:58			05:09		05:39 (10B)	04:57		
	16:51			17:48	23	08:16 (WEA 13)	18:37	11	06:58 (18B)	20:29			21:16	13	05:52 (10B)	21:38		
27	08:03			07:07		07:53 (WEA 13)	06:04		06:45 (18B)	05:56			05:08		05:39 (10B)	04:58		
	16:53			17:50	21	08:14 (WEA 13)	18:39	13	06:58 (18B)	20:31			21:17	13	05:52 (10B)	21:38		
28	08:02			07:05		07:54 (WEA 13)	06:02		06:43 (18B)	05:54			05:07		05:39 (10B)	04:58		
	16:55			17:52	19	08:13 (WEA 13)	18:40	17	07:00 (18B)	20:33			21:18	13	05:52 (10B)	21:38		
29	08:00		08:29 (WEA 12)				06:59		07:43 (18B)	05:52			05:06		05:39 (10B)	04:59		
	16:57	9	08:38 (WEA 12)				19:42	17	08:00 (18B)	20:34			21:20	13	05:52 (10B)	21:38		
30	07:59		08:27 (WEA 12)				06:57		07:41 (18B)	05:50			05:05		05:39 (10B)	04:59		
	16:59	12	08:39 (WEA 12)				19:44	18	07:59 (18B)	20:36			21:21	13	05:52 (10B)	21:37		
31	07:57		08:26 (WEA 12)				06:55		07:41 (18B)				05:04		05:39 (10B)			
	17:00	15	08:41 (WEA 12)				19:45	18	07:59 (18B)				21:22	13	05:52 (10B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		36			500			222			360			330			58	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,65			0,66			0,70			0,72			0,71			0,71	
Gesamte Reduktion		0,13			0,20			0,18			0,25			0,29			0,23	
Met.wahrsch.Beschattung		5			100			40			88			96			14	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 40 - Reinstedt - Schielestraße

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November			Dezember
1	05:00			05:36		06:14 (13B)	06:26		06:52 (WEA 02)	07:14		07:48 (19B)	07:08		07:55 (WEA 12)	07:58
	21:37			21:06	15	06:29 (13B)	20:04	29	07:23 (14B)	18:55	11	07:59 (19B)	16:49	18	08:13 (WEA 12)	16:09
2	05:01			05:38		06:13 (13B)	06:27		06:53 (WEA 02)	07:16		07:49 (19B)	07:09		07:54 (WEA 12)	08:00
	21:37			21:04	16	06:29 (13B)	20:02	28	07:23 (14B)	18:53	9	07:58 (19B)	16:47	19	08:13 (WEA 12)	16:08
3	05:01			05:39		06:14 (13B)	06:29		06:55 (WEA 02)	07:18		07:53 (19B)	07:11		07:54 (WEA 12)	08:01
	21:36			21:02	15	06:29 (13B)	19:59	25	07:23 (14B)	18:50	1	07:54 (19B)	16:45	20	08:14 (WEA 12)	16:08
4	05:02			05:41		06:13 (6B)	06:30		06:56 (WEA 02)	07:19			07:13		07:54 (WEA 12)	08:03
	21:36			21:01	15	06:28 (13B)	19:57	21	07:22 (14B)	18:48			16:44	20	08:14 (WEA 12)	16:07
5	05:03		05:51 (10B)	05:42		06:12 (6B)	06:32		07:09 (14B)	07:21			07:15		07:54 (WEA 12)	08:04
	21:36	3	05:54 (10B)	20:59	16	06:28 (13B)	19:55	13	07:22 (14B)	18:46			16:42	20	08:14 (WEA 12)	16:07
6	05:04		05:50 (10B)	05:44		06:12 (6B)	06:34		07:08 (14B)	07:23			07:17		07:54 (WEA 12)	08:05
	21:35	5	05:55 (10B)	20:57	15	06:27 (13B)	19:53	12	07:20 (14B)	18:43			16:40	20	08:14 (WEA 12)	16:06
7	05:05		05:49 (10B)	05:46		06:14 (6B)	06:35		07:10 (14B)	07:24			07:18		07:54 (WEA 12)	08:06
	21:34	7	05:56 (10B)	20:55	13	06:27 (13B)	19:50	15	07:47 (18B)	18:41			16:38	20	08:14 (WEA 12)	16:06
8	05:06		05:49 (10B)	05:47		06:15 (6B)	06:37		07:11 (14B)	07:26			07:20		07:55 (WEA 12)	08:08
	21:34	8	05:57 (10B)	20:53	10	06:25 (13B)	19:48	17	07:49 (18B)	18:39			16:37	19	08:14 (WEA 12)	16:05
9	05:07		05:49 (10B)	05:49		06:17 (6B)	06:39		07:36 (18B)	07:28			07:22		07:55 (WEA 12)	08:09
	21:33	9	05:58 (10B)	20:52	3	06:20 (6B)	19:46	15	07:51 (18B)	18:37			16:35	19	08:14 (WEA 12)	16:05
10	05:08		05:48 (10B)	05:50		06:18 (6B)	06:40		07:35 (18B)	07:29			07:24		07:56 (WEA 12)	08:10
	21:32	11	05:59 (10B)	20:50	1	06:19 (6B)	19:43	17	07:52 (18B)	18:34			16:34	17	08:13 (WEA 12)	16:05
11	05:09		05:48 (10B)	05:52			06:42		07:34 (18B)	07:31		08:31 (WEA 13)	07:26		07:58 (WEA 12)	08:11
	21:32	12	06:00 (10B)	20:48			19:41	17	07:51 (18B)	18:32	11	08:42 (WEA 13)	16:32	14	08:12 (WEA 12)	16:05
12	05:10		05:48 (10B)	05:53			06:43		07:34 (18B)	07:33		08:29 (WEA 13)	07:27		07:59 (WEA 12)	08:12
	21:31	12	06:00 (10B)	20:46			19:39	18	07:52 (18B)	18:30	15	08:44 (WEA 13)	16:30	12	08:11 (WEA 12)	16:05
13	05:11		05:48 (10B)	05:55			06:45		07:33 (18B)	07:34		08:27 (WEA 13)	07:29		08:01 (WEA 12)	08:13
	21:30	12	06:00 (10B)	20:44			19:37	18	07:51 (18B)	18:28	19	08:46 (WEA 13)	16:29	8	08:09 (WEA 12)	16:05
14	05:12		05:48 (10B)	05:57			06:47		07:33 (18B)	07:36		08:26 (WEA 13)	07:31			08:14
	21:29	13	06:01 (10B)	20:42			19:34	18	07:51 (18B)	18:26	21	08:47 (WEA 13)	16:27			16:05
15	05:13		05:48 (10B)	05:58			06:48		07:33 (18B)	07:38		08:26 (WEA 13)	07:33			08:15
	21:28	13	06:01 (10B)	20:40			19:32	16	07:49 (18B)	18:23	22	08:48 (WEA 13)	16:26			16:05
16	05:14		05:47 (10B)	06:00			06:50		07:34 (18B)	07:40		08:24 (WEA 13)	07:34			08:16
	21:27	14	06:01 (10B)	20:38			19:30	14	07:48 (18B)	18:21	23	08:47 (WEA 13)	16:25			16:05
17	05:15		05:47 (10B)	06:01			06:51		07:35 (18B)	07:41		08:24 (WEA 13)	07:36			08:17
	21:26	14	06:01 (10B)	20:36			19:27	12	07:47 (18B)	18:19	24	08:48 (WEA 13)	16:23			16:05
18	05:17		05:48 (10B)	06:03			06:53		07:37 (18B)	07:43		08:23 (WEA 13)	07:38			08:17
	21:25	14	06:02 (10B)	20:34			19:25	6	07:43 (18B)	18:17	25	08:48 (WEA 13)	16:22			16:05
19	05:18		05:48 (10B)	06:05			06:55			07:45		08:24 (WEA 13)	07:39			08:18
	21:24	13	06:01 (10B)	20:32			19:23			18:15	24	08:48 (WEA 13)	16:21			16:06
20	05:19		05:49 (10B)	06:06			06:56			07:46		08:24 (WEA 13)	07:41			08:19
	21:23	12	06:01 (10B)	20:30			19:20			18:13	23	08:47 (WEA 13)	16:20			16:06
21	05:21		05:50 (10B)	06:08			06:58			07:48		08:24 (WEA 13)	07:43			08:19
	21:21	11	06:01 (10B)	20:28			19:18			18:11	23	08:47 (WEA 13)	16:18			16:06
22	05:22		05:51 (10B)	06:09			07:00			07:50		08:24 (WEA 13)	07:44			08:20
	21:20	9	06:00 (10B)	20:26			19:16			18:09	21	08:45 (WEA 13)	16:17			16:07
23	05:23		05:53 (10B)	06:11		06:59 (WEA 02)	07:01			07:52		08:25 (WEA 13)	07:46			08:20
	21:19	7	06:00 (10B)	20:24	7	07:06 (WEA 02)	19:13			18:07	20	08:45 (WEA 13)	16:16			16:07
24	05:25		05:54 (10B)	06:13		06:56 (WEA 02)	07:03			07:53		08:26 (WEA 13)	07:48			08:21
	21:18	4	05:58 (10B)	20:21	12	07:08 (WEA 02)	19:11			18:05	17	08:43 (WEA 13)	16:15			16:08
25	05:26			06:14		06:55 (WEA 02)	07:04		07:52 (19B)	06:55		07:27 (WEA 13)	07:49			08:21
	21:16			20:19	14	07:09 (WEA 02)	19:09	7	07:59 (19B)	17:03	15	07:42 (WEA 13)	16:14			16:09
26	05:27		06:19 (13B)	06:16		06:53 (WEA 02)	07:06		07:51 (19B)	06:57		07:30 (WEA 13)	07:51			08:21
	21:15	6	06:25 (13B)	20:17	16	07:09 (WEA 02)	19:06	10	08:01 (19B)	17:01	9	07:39 (WEA 13)	16:13			16:09
27	05:29		06:17 (13B)	06:18		06:52 (WEA 02)	07:08		07:50 (19B)	06:59			07:52			08:22
	21:13	9	06:26 (13B)	20:15	18	07:10 (WEA 02)	19:04	12	08:02 (19B)	16:59			16:12			16:10
28	05:30		06:15 (13B)	06:19		06:51 (WEA 02)	07:09		07:48 (19B)	07:01			07:54			08:22
	21:12	12	06:27 (13B)	20:13	19	07:10 (WEA 02)	19:02	13	08:01 (19B)	16:57			16:11			16:11
29	05:32		06:15 (13B)	06:21		06:51 (WEA 02)	07:11		07:48 (19B)	07:02		08:00 (WEA 12)	07:55			08:22
	21:10	13	06:28 (13B)	20:11	19	07:10 (WEA 02)	18:59	13	08:01 (19B)	16:55	9	08:09 (WEA 12)	16:10			16:12
30	05:33		06:14 (13B)	06:22		06:51 (WEA 02)	07:13		07:48 (19B)	07:04		07:58 (WEA 12)	07:57			08:22
	21:09	14	06:28 (13B)	20:08	22	07:19 (14B)	18:57	13	08:01 (19B)	16:53	13	08:11 (WEA 12)	16:10			16:12
31	05:35		06:14 (13B)	06:24		06:51 (WEA 02)				07:06		07:56 (WEA 12)				08:22
	21:07	15	06:29 (13B)	20:06	27	07:21 (14B)				16:51	16	08:12 (WEA 12)				16:13
Sonnenscheinstunden	501			453			381			332			267			245
astr.max.mögl.Beschattung		272			273			379			371			226		
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22		
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96		
Reduktion Windrichtung		0,71			0,72			0,72			0,67			0,65		
Gesamte Reduktion		0,27			0,29			0,23			0,18			0,14		
Met.wahrsch.Beschattung		74			80			88			67			31		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 41 - Reinstedt - Siedlung 15

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni
1	08:22		07:56	08:37 (WEA 12)	07:03		06:52		07:28 (14B)	05:48	06:12 (6B)	05:03
	16:15		17:02	20 08:57 (WEA 12)	17:54		19:47	15	07:43 (14B)	20:38	21 06:33 (13B)	21:23
2	08:22		07:54	08:37 (WEA 12)	07:00		06:50		07:28 (14B)	05:46	06:11 (6B)	05:02
	16:16		17:04	19 08:56 (WEA 12)	17:55		19:49	15	07:43 (14B)	20:39	22 06:33 (13B)	21:24
3	08:22		07:53	08:37 (WEA 12)	06:58		06:48		07:10 (WEA 02)	05:44	06:12 (6B)	05:01
	16:17		17:06	19 08:56 (WEA 12)	17:57		19:51	19	07:41 (14B)	20:41	22 06:34 (13B)	21:25
4	08:22		07:51	08:39 (WEA 12)	06:56	07:28 (19B)	06:46		07:08 (WEA 02)	05:42	06:13 (6B)	05:01
	16:18		17:08	17 08:56 (WEA 12)	17:59	8 07:36 (19B)	19:52	24	07:41 (14B)	20:43	20 06:33 (13B)	21:26
5	08:22		07:49	08:39 (WEA 12)	06:54	07:27 (19B)	06:43		07:06 (WEA 02)	05:40	06:17 (13B)	05:00
	16:19		17:10	16 08:55 (WEA 12)	18:01	11 07:38 (19B)	19:54	23	07:39 (14B)	20:44	16 06:33 (13B)	21:27
6	08:21		07:48	08:41 (WEA 12)	06:52	07:26 (19B)	06:41		07:04 (WEA 02)	05:39	06:17 (13B)	04:59
	16:20		17:11	12 08:53 (WEA 12)	18:02	13 07:39 (19B)	19:56	21	07:36 (14B)	20:46	15 06:32 (13B)	21:28
7	08:21		07:46	08:43 (WEA 12)	06:49	07:24 (19B)	06:39		07:02 (WEA 02)	05:37	06:18 (13B)	04:59
	16:22		17:13	8 08:51 (WEA 12)	18:04	14 07:38 (19B)	19:57	19	07:21 (WEA 02)	20:48	14 06:32 (13B)	21:29
8	08:20		07:44	08:15 (WEA 13)	06:47	07:24 (19B)	06:37		07:02 (WEA 02)	05:35	06:19 (13B)	04:58
	16:23		17:15	8 08:23 (WEA 13)	18:06	14 07:38 (19B)	19:59	19	07:21 (WEA 02)	20:49	12 06:31 (13B)	21:30
9	08:20		07:42	08:13 (WEA 13)	06:45	07:25 (19B)	06:34		07:01 (WEA 02)	05:33	06:20 (13B)	04:58
	16:24		17:17	13 08:26 (WEA 13)	18:08	13 07:38 (19B)	20:01	20	07:21 (WEA 02)	20:51	10 06:30 (13B)	21:31
10	08:19		07:41	08:12 (WEA 13)	06:43	07:26 (19B)	06:32		07:01 (WEA 02)	05:32	06:22 (13B)	04:57
	16:26		17:19	16 08:28 (WEA 13)	18:09	11 07:37 (19B)	20:02	20	07:21 (WEA 02)	20:52	5 06:27 (13B)	21:32
11	08:19		07:39	08:10 (WEA 13)	06:41	07:26 (19B)	06:30		07:02 (WEA 02)	05:30		04:57
	16:27		17:21	20 08:30 (WEA 13)	18:11	8 07:34 (19B)	20:04	18	07:20 (WEA 02)	20:54		21:33
12	08:18		07:37	08:09 (WEA 13)	06:38		06:28		07:01 (WEA 02)	05:28		04:57
	16:29		17:23	22 08:31 (WEA 13)	18:13		20:06	18	07:19 (WEA 02)	20:56		21:33
13	08:18		07:35	08:09 (WEA 13)	06:36		06:25		07:02 (WEA 02)	05:27	05:52 (10B)	04:56
	16:30		17:24	22 08:31 (WEA 13)	18:15		20:07	15	07:17 (WEA 02)	20:57	6 05:58 (10B)	21:34
14	08:17		07:33	08:08 (WEA 13)	06:34		06:23		07:03 (WEA 02)	05:25	05:51 (10B)	04:56
	16:32		17:26	24 08:32 (WEA 13)	18:16		20:09	13	07:16 (WEA 02)	20:59	9 06:00 (10B)	21:34
15	08:16		07:31	08:08 (WEA 13)	06:31		06:21		07:05 (WEA 02)	05:24	05:50 (10B)	04:56
	16:33		17:28	24 08:32 (WEA 13)	18:18		20:11	9	07:14 (WEA 02)	21:00	11 06:01 (10B)	21:35
16	08:15		07:29	08:08 (WEA 13)	06:29	07:12 (18B)	06:19			05:22	05:48 (10B)	04:56
	16:35		17:30	24 08:32 (WEA 13)	18:20	8 07:20 (18B)	20:13			21:02	13 06:01 (10B)	21:36
17	08:14		07:27	08:08 (WEA 13)	06:27	07:09 (18B)	06:17			05:21	05:48 (10B)	04:56
	16:36		17:32	24 08:32 (WEA 13)	18:22	12 07:21 (18B)	20:14			21:03	14 06:02 (10B)	21:36
18	08:13		07:26	08:08 (WEA 13)	06:25	07:07 (18B)	06:15			05:19	05:48 (10B)	04:56
	16:38		17:34	24 08:32 (WEA 13)	18:23	16 07:23 (18B)	20:16			21:05	14 06:02 (10B)	21:36
19	08:12		07:24	08:08 (WEA 13)	06:22	07:07 (18B)	06:12			05:18	05:48 (10B)	04:56
	16:39		17:35	24 08:32 (WEA 13)	18:25	17 07:24 (18B)	20:18			21:06	14 06:02 (10B)	21:37
20	08:11		07:22	08:08 (WEA 13)	06:20	07:06 (18B)	06:10			05:16	05:48 (10B)	04:56
	16:41		17:37	22 08:30 (WEA 13)	18:27	18 07:24 (18B)	20:19			21:08	14 06:02 (10B)	21:37
21	08:10	08:40 (WEA 12)	07:19	08:09 (WEA 13)	06:18	07:05 (18B)	06:08			05:15	05:48 (10B)	04:56
	16:43	7 08:47 (WEA 12)	17:39	20 08:29 (WEA 13)	18:28	18 07:23 (18B)	20:21			21:09	14 06:02 (10B)	21:37
22	08:09	08:39 (WEA 12)	07:17	08:10 (WEA 13)	06:15	07:05 (18B)	06:06			05:14	05:49 (10B)	04:56
	16:45	11 08:50 (WEA 12)	17:41	18 08:28 (WEA 13)	18:30	18 07:23 (18B)	20:23			21:11	13 06:02 (10B)	21:38
23	08:08	08:37 (WEA 12)	07:15	08:12 (WEA 13)	06:13	07:05 (18B)	06:04			05:12	05:49 (10B)	04:56
	16:46	14 08:51 (WEA 12)	17:43	14 08:26 (WEA 13)	18:32	18 07:23 (18B)	20:24			21:12	13 06:02 (10B)	21:38
24	08:07	08:37 (WEA 12)	07:13	08:14 (WEA 13)	06:11	07:05 (18B)	06:02			05:11	05:50 (10B)	04:57
	16:48	16 08:53 (WEA 12)	17:45	10 08:24 (WEA 13)	18:34	16 07:21 (18B)	20:26			21:13	12 06:02 (10B)	21:38
25	08:06	08:37 (WEA 12)	07:11		06:08	07:06 (18B)	06:00			05:10	05:50 (10B)	04:57
	16:50	17 08:54 (WEA 12)	17:46		18:35	14 07:20 (18B)	20:28			21:15	11 06:01 (10B)	21:38
26	08:04	08:36 (WEA 12)	07:09		06:06	07:07 (18B)	05:58			05:09	05:51 (10B)	04:57
	16:51	18 08:54 (WEA 12)	17:48		18:37	12 07:19 (18B)	20:29			21:16	10 06:01 (10B)	21:38
27	08:03	08:36 (WEA 12)	07:07		06:04	07:09 (18B)	05:56		06:24 (13B)	05:08	05:52 (10B)	04:58
	16:53	19 08:55 (WEA 12)	17:50		18:39	6 07:15 (18B)	20:31	5	06:29 (13B)	21:17	8 06:00 (10B)	21:38
28	08:02	08:35 (WEA 12)	07:05		06:02	06:35 (14B)	05:54		06:18 (6B)	05:07	05:54 (10B)	04:58
	16:55	21 08:56 (WEA 12)	17:52		18:40	4 06:39 (14B)	20:33	12	06:31 (13B)	21:18	4 05:58 (10B)	21:38
29	08:00	08:36 (WEA 12)			06:59	07:32 (14B)	05:52		06:16 (6B)	05:06		04:59
	16:57	21 08:57 (WEA 12)			19:42	10 07:42 (14B)	20:34	16	06:32 (13B)	21:20		21:38
30	07:59	08:36 (WEA 12)			06:57	07:30 (14B)	05:50		06:14 (6B)	05:05		04:59
	16:59	20 08:56 (WEA 12)			19:44	12 07:42 (14B)	20:36	19	06:33 (13B)	21:21		21:37
31	07:57	08:36 (WEA 12)			06:55	07:29 (14B)				05:04		
	17:00	20 08:56 (WEA 12)			19:45	14 07:43 (14B)				21:22		
Sonnenscheinstunden	260		278		367		416		484		498	
astr.max.mögl.Beschattung		184		440		305		320		337		
Red.Sonnenscheinwahrsch.		0,21		0,32		0,27		0,36		0,43		
Reduktion Betriebsdauer		0,96		0,96		0,96		0,96		0,96		
Reduktion Windrichtung		0,64		0,66		0,70		0,72		0,71		
Gesamte Reduktion		0,13		0,20		0,18		0,25		0,29		
Met.wahrsch.Beschattung		24		87		55		78		98		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 41 - Reinstedt - Siedlung 15

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember
1	05:00		05:36		06:26		07:01 (WEA 02)	07:14	07:08		07:41 (WEA 13) 07:58
	21:37		21:06		20:04	18	07:19 (WEA 02) 18:55		16:49	16	07:57 (WEA 13) 16:09
2	05:01		05:38		06:27		06:59 (WEA 02) 07:16	08:06 (19B)	07:09		07:43 (WEA 13) 08:00
	21:37		21:04		20:02	20	07:19 (WEA 02) 18:53	6	08:12 (19B) 16:47	12	07:55 (WEA 13) 16:08
3	05:01		05:39	06:32 (13B)	06:29		06:59 (WEA 02) 07:18	08:04 (19B)	07:11		07:46 (WEA 13) 08:01
	21:36		21:02	6 06:38 (13B)	19:59	20	07:19 (WEA 02) 18:50	10	08:14 (19B) 16:45	6	07:52 (WEA 13) 16:08
4	05:02		05:41	06:29 (13B)	06:30		06:59 (WEA 02) 07:19	08:02 (19B)	07:13		08:12 (WEA 12) 08:03
	21:36		21:01	11 06:40 (13B)	19:57	19	07:18 (WEA 02) 18:48	12	08:14 (19B) 16:44	9	08:21 (WEA 12) 16:07
5	05:03		05:42	06:29 (13B)	06:32		06:59 (WEA 02) 07:21	08:02 (19B)	07:15		08:10 (WEA 12) 08:04
	21:36		20:59	12 06:41 (13B)	19:55	19	07:18 (WEA 02) 18:46	13	08:15 (19B) 16:42	13	08:23 (WEA 12) 16:07
6	05:04		05:44	06:27 (13B)	06:34		06:59 (WEA 02) 07:23	08:01 (19B)	07:17		08:09 (WEA 12) 08:05
	21:35		20:57	15 06:42 (13B)	19:53	20	07:31 (14B) 18:43	14	08:15 (19B) 16:40	16	08:25 (WEA 12) 16:06
7	05:05		05:46	06:27 (13B)	06:35		07:01 (WEA 02) 07:24	08:02 (19B)	07:18		08:08 (WEA 12) 08:06
	21:34		20:55	16 06:43 (13B)	19:50	23	07:34 (14B) 18:41	13	08:15 (19B) 16:38	18	08:26 (WEA 12) 16:06
8	05:06		05:47	06:26 (13B)	06:37		07:02 (WEA 02) 07:26	08:01 (19B)	07:20		08:08 (WEA 12) 08:08
	21:34		20:53	16 06:42 (13B)	19:48	23	07:35 (14B) 18:39	12	08:13 (19B) 16:37	19	08:27 (WEA 12) 16:05
9	05:07		05:49	06:22 (6B)	06:39		07:04 (WEA 02) 07:28	08:02 (19B)	07:22		08:07 (WEA 12) 08:09
	21:33		20:52	21 06:43 (13B)	19:46	21	07:36 (14B) 18:37	10	08:12 (19B) 16:35	20	08:27 (WEA 12) 16:05
10	05:08		05:50	06:20 (6B)	06:40		07:22 (14B) 07:29	08:04 (19B)	07:24		08:07 (WEA 12) 08:10
	21:32		20:50	22 06:42 (13B)	19:43	14	07:36 (14B) 18:34	6	08:10 (19B) 16:34	21	08:28 (WEA 12) 16:05
11	05:09		05:52	06:20 (6B)	06:42		07:21 (14B) 07:31		07:26		08:07 (WEA 12) 08:11
	21:32		20:48	23 06:43 (13B)	19:41	14	07:35 (14B) 18:32		16:32	21	08:28 (WEA 12) 16:05
12	05:10		05:53	06:21 (6B)	06:43		07:21 (14B) 07:33		07:27		08:08 (WEA 12) 08:12
	21:31		20:46	21 06:42 (13B)	19:39	14	07:35 (14B) 18:30		16:30	20	08:28 (WEA 12) 16:05
13	05:11		05:55	06:23 (6B)	06:45		07:21 (14B) 07:34		07:29		08:08 (WEA 12) 08:13
	21:30		20:44	18 06:41 (13B)	19:37	12	07:33 (14B) 18:28		16:29	20	08:28 (WEA 12) 16:05
14	05:12		05:57	06:24 (6B)	06:47		07:22 (14B) 07:36		07:31		08:07 (WEA 12) 08:14
	21:29		20:42	16 06:40 (13B)	19:34	10	07:32 (14B) 18:26		16:27	20	08:27 (WEA 12) 16:05
15	05:13	06:03 (10B)	05:58	06:26 (6B)	06:48		07:23 (14B) 07:38		07:33		08:08 (WEA 12) 08:15
	21:28	3 06:06 (10B)	20:40	10 06:38 (13B)	19:32	6	07:29 (14B) 18:23		16:26	19	08:27 (WEA 12) 16:05
16	05:14	06:01 (10B)	06:00	06:32 (13B)	06:50		08:00 (18B) 07:40		07:34		08:09 (WEA 12) 08:16
	21:27	7 06:08 (10B)	20:38	2 06:34 (13B)	19:30	2	08:02 (18B) 18:21		16:25	18	08:27 (WEA 12) 16:05
17	05:15	06:00 (10B)	06:01		06:51		07:56 (18B) 07:41	08:49 (WEA 13)	07:36		08:10 (WEA 12) 08:17
	21:26	9 06:09 (10B)	20:36		19:27	11	08:07 (18B) 18:19	3 08:52 (WEA 13)	16:23	17	08:27 (WEA 12) 16:05
18	05:17	06:00 (10B)	06:03		06:53		07:54 (18B) 07:43	08:44 (WEA 13)	07:38		08:11 (WEA 12) 08:17
	21:25	11 06:11 (10B)	20:34		19:25	13	08:07 (18B) 18:17	12 08:56 (WEA 13)	16:22	16	08:27 (WEA 12) 16:05
19	05:18	06:00 (10B)	06:05		06:55		07:53 (18B) 07:45	08:42 (WEA 13)	07:39		08:12 (WEA 12) 08:18
	21:24	11 06:11 (10B)	20:32		19:23	16	08:09 (18B) 18:15	16 08:58 (WEA 13)	16:21	14	08:26 (WEA 12) 16:06
20	05:19	05:59 (10B)	06:06		06:56		07:51 (18B) 07:46	08:41 (WEA 13)	07:41		08:14 (WEA 12) 08:19
	21:23	12 06:11 (10B)	20:30		19:20	17	08:08 (18B) 18:13	19 09:00 (WEA 13)	16:20	11	08:25 (WEA 12) 16:06
21	05:21	05:58 (10B)	06:08		06:58		07:50 (18B) 07:48	08:40 (WEA 13)	07:43		08:15 (WEA 12) 08:19
	21:21	14 06:12 (10B)	20:28		19:18	19	08:09 (18B) 18:11	21 09:01 (WEA 13)	16:18	8	08:23 (WEA 12) 16:06
22	05:22	05:58 (10B)	06:09		07:00		07:50 (18B) 07:50	08:38 (WEA 13)	07:44		08:20
	21:20	14 06:12 (10B)	20:26		19:16	19	08:09 (18B) 18:09	23 09:01 (WEA 13)	16:17		08:07
23	05:23	05:59 (10B)	06:11		07:01		07:50 (18B) 07:52	08:38 (WEA 13)	07:46		08:20
	21:19	14 06:13 (10B)	20:24		19:13	18	08:08 (18B) 18:07	23 09:01 (WEA 13)	16:16		08:07
24	05:25	05:58 (10B)	06:13		07:03		07:50 (18B) 07:53	08:37 (WEA 13)	07:48		08:21
	21:18	15 06:13 (10B)	20:21		19:11	18	08:08 (18B) 18:05	24 09:01 (WEA 13)	16:15		08:08
25	05:26	05:58 (10B)	06:14		07:04		07:50 (18B) 06:55	07:37 (WEA 13)	07:49		08:21
	21:16	14 06:12 (10B)	20:19		19:09	16	08:06 (18B) 17:03	25 08:02 (WEA 13)	16:14		08:09
26	05:27	05:59 (10B)	06:16		07:06		07:51 (18B) 06:57	07:37 (WEA 13)	07:51		08:21
	21:15	14 06:13 (10B)	20:17		19:06	14	08:05 (18B) 17:01	25 08:02 (WEA 13)	16:13		08:09
27	05:29	05:59 (10B)	06:18		07:08		07:53 (18B) 06:59	07:38 (WEA 13)	07:52		08:22
	21:13	13 06:12 (10B)	20:15		19:04	10	08:03 (18B) 16:59	23 08:01 (WEA 13)	16:12		08:10
28	05:30	05:59 (10B)	06:19	07:06 (WEA 02)	07:09		07:01	07:38 (WEA 13)	07:54		08:22
	21:12	12 06:11 (10B)	20:13	9 07:15 (WEA 02)	19:02		16:57	23 08:01 (WEA 13)	16:11		08:11
29	05:32	06:01 (10B)	06:21	07:04 (WEA 02)	07:11		07:02	07:38 (WEA 13)	07:55		08:22
	21:10	10 06:11 (10B)	20:11	13 07:17 (WEA 02)	18:59		16:55	23 08:01 (WEA 13)	16:10		08:12
30	05:33	06:02 (10B)	06:22	07:03 (WEA 02)	07:13		07:04	07:39 (WEA 13)	07:57		08:22
	21:09	8 06:10 (10B)	20:08	15 07:18 (WEA 02)	18:57		16:53	21 08:00 (WEA 13)	16:10		08:12
31	05:35	06:04 (10B)	06:24	07:01 (WEA 02)			07:06	07:39 (WEA 13)			08:22
	21:07	4 06:08 (10B)	20:06	18 07:19 (WEA 02)			16:51	19 07:58 (WEA 13)			08:13
Sonnenscheinstunden	501		453		381		332		267		245
astr.max.mögl.Beschattung		185		264		426		396		334	
Red.Sonnenscheinwahrsch.		0,40		0,43		0,34		0,28		0,22	
Reduktion Betriebsdauer		0,96		0,96		0,96		0,96		0,96	
Reduktion Windrichtung		0,71		0,72		0,72		0,67		0,64	
Gesamte Reduktion		0,27		0,29		0,23		0,18		0,13	
Met.wahrsch.Beschattung		50		77		99		71		45	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 42 - Reinstedt - Hotel Harz-Ring

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22		09:07 (WEA 12)	07:56		08:31 (29B)	07:03		07:36 (20B)	06:52		07:47 (14B)	05:48			05:03		06:05 (13B)
	16:15	23	09:30 (WEA 12)	17:02	39	09:20 (WEA 13)	17:54	37	08:18 (19B)	19:47	21	08:08 (14B)	20:38			21:23	24	06:29 (13B)
2	08:22		09:08 (WEA 12)	07:54		08:32 (29B)	07:00		07:36 (20B)	06:50		07:48 (14B)	05:46			05:02		06:06 (13B)
	16:16	23	09:31 (WEA 12)	17:04	36	09:20 (WEA 13)	17:55	33	08:16 (19B)	19:49	20	08:08 (14B)	20:39			21:24	24	06:30 (13B)
3	08:22		09:08 (WEA 12)	07:53		08:50 (WEA 13)	06:58		07:34 (20B)	06:48		07:14 (WEA 02)	05:44			05:01		06:06 (13B)
	16:17	24	09:32 (WEA 12)	17:06	30	09:20 (WEA 13)	17:57	23	07:57 (WEA 11)	19:51	31	08:06 (14B)	20:41			21:25	24	06:30 (13B)
4	08:22		09:08 (WEA 12)	07:51		08:51 (WEA 13)	06:56		07:34 (20B)	06:46		07:12 (WEA 02)	05:42			05:01		06:06 (13B)
	16:18	24	09:32 (WEA 12)	17:08	30	09:21 (WEA 13)	17:59	34	08:18 (18B)	19:52	33	08:05 (14B)	20:43			21:26	23	06:29 (13B)
5	08:22		09:09 (WEA 12)	07:49		08:51 (WEA 13)	06:54		07:35 (20B)	06:43		07:10 (WEA 02)	05:40		06:05 (6B)	05:00		06:07 (13B)
	16:19	24	09:33 (WEA 12)	17:10	29	09:20 (WEA 13)	18:01	37	08:21 (18B)	19:54	33	08:03 (14B)	20:44	5	06:10 (6B)	21:27	22	06:29 (13B)
6	08:21		09:09 (WEA 12)	07:48		08:51 (WEA 13)	06:52		07:36 (20B)	06:41		07:09 (WEA 02)	05:39		06:03 (6B)	04:59		06:07 (13B)
	16:20	25	09:34 (WEA 12)	17:11	29	09:20 (WEA 13)	18:02	36	08:23 (18B)	19:56	32	08:01 (14B)	20:46	8	06:11 (6B)	21:28	22	06:29 (13B)
7	08:21		09:09 (WEA 12)	07:46		08:52 (WEA 13)	06:49		07:36 (20B)	06:39		07:07 (WEA 02)	05:37		06:02 (6B)	04:59		06:08 (13B)
	16:22	25	09:34 (WEA 12)	17:13	27	09:19 (WEA 13)	18:04	33	08:23 (18B)	19:57	23	07:30 (WEA 02)	20:48	11	06:13 (6B)	21:29	21	06:29 (13B)
8	08:20		09:09 (WEA 12)	07:44		08:52 (WEA 13)	06:47		07:58 (18B)	06:36		07:07 (WEA 02)	05:35		06:01 (6B)	04:58		06:08 (13B)
	16:23	25	09:34 (WEA 12)	17:15	26	09:18 (WEA 13)	18:06	26	08:24 (18B)	19:59	24	07:31 (WEA 02)	20:49	12	06:13 (6B)	21:30	20	06:28 (13B)
9	08:20		09:10 (WEA 12)	07:42		08:53 (WEA 13)	06:45		07:58 (18B)	06:34		07:06 (WEA 02)	05:33		06:01 (6B)	04:58		06:09 (13B)
	16:24	25	09:35 (WEA 12)	17:17	24	09:17 (WEA 13)	18:08	27	08:25 (18B)	20:01	25	07:31 (WEA 02)	20:51	13	06:14 (6B)	21:31	20	06:29 (13B)
10	08:19		09:10 (WEA 12)	07:41		08:56 (WEA 13)	06:43		07:57 (18B)	06:32		07:06 (WEA 02)	05:32		06:00 (6B)	04:57		06:10 (13B)
	16:26	25	09:35 (WEA 12)	17:19	20	09:16 (WEA 13)	18:09	28	08:25 (18B)	20:02	25	07:31 (WEA 02)	20:52	13	06:13 (6B)	21:32	19	06:29 (13B)
11	08:19		09:11 (WEA 12)	07:39		08:57 (WEA 13)	06:40		07:56 (18B)	06:30		07:05 (WEA 02)	05:30		06:00 (6B)	04:57		06:11 (13B)
	16:27	24	09:35 (WEA 12)	17:21	18	09:15 (WEA 13)	18:11	29	08:25 (18B)	20:04	25	07:30 (WEA 02)	20:54	13	06:13 (6B)	21:33	18	06:29 (13B)
12	08:18		09:12 (WEA 12)	07:37		09:00 (WEA 13)	06:38		07:56 (18B)	06:28		07:05 (WEA 02)	05:28		06:01 (6B)	04:57		05:36 (10B)
	16:29	24	09:36 (WEA 12)	17:23	12	09:12 (WEA 13)	18:13	29	08:25 (18B)	20:06	25	07:30 (WEA 02)	20:56	19	06:20 (13B)	21:33	23	06:28 (13B)
13	08:18		09:12 (WEA 12)	07:35			06:36		07:56 (18B)	06:25		07:05 (WEA 02)	05:27		06:00 (6B)	04:56		05:35 (10B)
	16:30	24	09:36 (WEA 12)	17:24			18:15	29	08:25 (18B)	20:07	24	07:29 (WEA 02)	20:57	22	06:22 (13B)	21:34	24	06:28 (13B)
14	08:17		09:13 (WEA 12)	07:33			06:34		07:55 (18B)	06:23		07:06 (WEA 02)	05:25		06:02 (6B)	04:56		05:35 (10B)
	16:32	23	09:36 (WEA 12)	17:26			18:16	29	08:24 (18B)	20:09	22	07:28 (WEA 02)	20:59	22	06:24 (13B)	21:34	24	06:28 (13B)
15	08:16		09:13 (WEA 12)	07:31			06:31		06:55 (WEA 10)	06:21		06:44 (WEA 03)	05:24		06:03 (6B)	04:56		05:35 (10B)
	16:33	24	09:37 (WEA 12)	17:28			18:18	36	08:23 (18B)	20:11	33	07:27 (WEA 02)	21:00	23	06:26 (13B)	21:35	25	06:28 (13B)
16	08:15		09:14 (WEA 12)	07:29			06:29		06:52 (WEA 10)	06:19		06:42 (WEA 03)	05:22		06:04 (6B)	04:56		05:35 (10B)
	16:35	23	09:37 (WEA 12)	17:30			18:20	41	08:23 (18B)	20:13	35	07:26 (WEA 02)	21:02	22	06:26 (13B)	21:36	24	06:28 (13B)
17	08:14		09:15 (WEA 12)	07:27			06:27		06:50 (WEA 10)	06:17		06:40 (WEA 03)	05:21		06:06 (13B)	04:56		05:35 (10B)
	16:36	22	09:37 (WEA 12)	17:32			18:22	42	08:21 (18B)	20:14	34	07:24 (WEA 02)	21:03	21	06:27 (13B)	21:36	25	06:28 (13B)
18	08:13		08:58 (WEA 13)	07:25			06:25		06:49 (WEA 10)	06:14		06:39 (WEA 03)	05:19		06:06 (13B)	04:56		05:35 (10B)
	16:38	30	09:37 (WEA 12)	17:34			18:23	41	08:20 (18B)	20:16	32	07:22 (WEA 02)	21:05	22	06:28 (13B)	21:36	26	06:29 (13B)
19	08:12		08:55 (WEA 13)	07:24		08:10 (19B)	06:22		06:48 (WEA 10)	06:12		06:37 (WEA 03)	05:18		06:05 (13B)	04:56		05:35 (10B)
	16:39	34	09:36 (WEA 12)	17:35	6	08:16 (19B)	18:25	40	08:18 (18B)	20:18	22	06:59 (11B)	21:06	23	06:28 (13B)	21:37	25	06:29 (13B)
20	08:11		08:54 (WEA 13)	07:21		08:06 (19B)	06:20		06:48 (WEA 10)	06:10		06:37 (WEA 03)	05:16		06:04 (13B)	04:56		05:35 (10B)
	16:41	34	09:35 (WEA 12)	17:37	11	08:17 (19B)	18:27	37	08:16 (18B)	20:19	22	06:59 (11B)	21:08	25	06:29 (13B)	21:37	26	06:29 (13B)
21	08:10		08:53 (WEA 13)	07:19		07:44 (WEA 11)	06:18		06:47 (WEA 10)	06:08		06:36 (WEA 03)	05:15		06:04 (13B)	04:56		05:35 (10B)
	16:43	36	09:35 (WEA 12)	17:39	25	08:19 (19B)	18:28	31	08:12 (18B)	20:21	23	06:59 (11B)	21:09	25	06:29 (13B)	21:37	26	06:29 (13B)
22	08:09		08:52 (WEA 13)	07:17		07:42 (WEA 11)	06:15		06:47 (WEA 10)	06:06		06:36 (WEA 03)	05:14		06:04 (13B)	04:56		05:36 (10B)
	16:44	35	09:34 (WEA 12)	17:41	31	08:20 (19B)	18:30	21	07:08 (WEA 10)	20:23	22	06:58 (11B)	21:10	26	06:30 (13B)	21:38	26	06:30 (13B)
23	08:08		08:51 (WEA 13)	07:15		07:41 (WEA 11)	06:13		06:47 (WEA 10)	06:04		06:36 (WEA 03)	05:12		06:04 (13B)	04:56		05:36 (10B)
	16:46	34	09:32 (WEA 12)	17:43	35	08:21 (19B)	18:32	21	07:08 (15B)	20:24	22	06:58 (11B)	21:12	26	06:30 (13B)	21:38	25	06:30 (13B)
24	08:07		08:51 (WEA 13)	07:13		07:40 (WEA 11)	06:11		06:47 (WEA 10)	06:02		06:36 (WEA 03)	05:11		06:04 (13B)	04:57		05:36 (10B)
	16:48	30	09:30 (WEA 12)	17:45	37	08:21 (19B)	18:34	20	07:07 (15B)	20:26	20	06:56 (11B)	21:13	26	06:30 (13B)	21:38	26	06:30 (13B)
25	08:05		08:33 (29B)	07:11		07:39 (WEA 11)	06:08		06:48 (WEA 10)	06:00		06:36 (WEA 03)	05:10		06:04 (13B)	04:57		05:36 (10B)
	16:50	30	09:17 (WEA 13)	17:46	39	08:21 (19B)	18:35	18	07:06 (15B)	20:28	19	06:55 (11B)	21:15	25	06:29 (13B)	21:38	25	06:29 (13B)
26	08:04		08:31 (29B)	07:09		07:39 (WEA 11)	06:06		06:49 (WEA 10)	05:58		06:38 (WEA 03)	05:09		06:04 (13B)	04:57		05:37 (10B)
	16:51	34	09:17 (WEA 13)	17:48	39	08:21 (19B)	18:37	18	07:07 (14B)	20:29	17	06:55 (WEA 03)	21:16	25	06:29 (13B)	21:38	24	06:30 (13B)
27	08:03		08:30 (29B)	07:07		07:38 (WEA 11)	06:04		06:50 (WEA 10)	05:56		06:39 (WEA 03)	05:08		06:05 (13B)	04:58		05:37 (10B)
	16:53	37	09:18 (WEA 13)	17:50	39	08:20 (19B)	18:39	17	07:07 (14B)	20:31	15	06:54 (WEA 03)	21:17	25	06:30 (13B)	21:38	25	06:30 (13B)
28	08:02		08:29 (29B)	07:05		07:38 (20B)	06:02		06:50 (14B)	05:54		06:40 (WEA 03)	05:07		06:05 (13B)	04:58		05:38 (10B)
	16:55	39	09:18 (WEA 13)	17:52	37	08:19 (19B)	18:40	18	07:08 (14B)	20:33	12	06:52 (WEA 03)	21:18	25	06:30 (13B)	21:38	24	06:31 (13B)
29	08:00		08:30 (29B)				06:59		07:49 (14B)	05:52		06:42 (WEA 03)	05:06		06:05 (13B)	04:59		05:38 (10B)
	16:57	40	09:20 (WEA 13)				19:42	20	08:09 (14B)	20:34	7	06:49 (WEA 03)	21:20	25	06:30 (13B)	21:38	24	06:31 (13B)
30	07:59		08:29 (29B)				06:57		07:47 (14B)	05:50			05:05		06:05 (13B)	04:59		05:40 (10B)
	16:59	42	09:20 (WEA 13)				19:44	21	08:08 (14B)	20:36			21:21	25	06:30 (13B)	21:37	22	06:32 (13B)
31	07:57		08:30 (29B)				06:55		07:47 (14B)				05:04		06:05 (13B)			
	17:00	40	09:20 (WEA 13)				19:45	21	08:08 (14B)				21:22	25	06:30 (13B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		902			619			893			698			552			706	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,61			0,65			0,69			0,72			0,72			0,71	
Gesamte Reduktion		0,12			0,19			0,18			0,24			0,29			0,23	
Met.wahrsch.Beschattung		110			120			156			169			159			164	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 42 - Reinstedt - Hotel Harz-Ring

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember	
1	05:00	05:42 (10B)	05:36	06:11 (6B)	06:26	07:05 (WEA 02)	07:14	08:34 (18B)	07:08	08:24 (WEA 13)	07:58	08:53 (WEA 12)
	21:37 21	06:33 (13B)	21:06 16	06:29 (13B)	20:04 25	07:30 (WEA 02)	18:55 30	09:04 (18B)	16:49 21	08:45 (WEA 13)	16:09 24	09:17 (WEA 12)
2	05:01	06:14 (13B)	05:38	06:10 (6B)	06:27	07:04 (WEA 02)	07:16	08:35 (18B)	07:09	08:23 (WEA 13)	08:00	08:53 (WEA 12)
	21:37 19	06:33 (13B)	21:04 13	06:23 (6B)	20:02 25	07:29 (WEA 02)	18:52 29	09:04 (18B)	16:47 24	08:47 (WEA 13)	16:08 25	09:18 (WEA 12)
3	05:01	06:14 (13B)	05:39	06:11 (6B)	06:29	07:04 (WEA 02)	07:18	08:35 (18B)	07:11	08:22 (WEA 13)	08:01	08:53 (WEA 12)
	21:36 20	06:34 (13B)	21:02 13	06:24 (6B)	19:59 25	07:29 (WEA 02)	18:50 28	09:03 (18B)	16:45 26	08:48 (WEA 13)	16:08 25	09:18 (WEA 12)
4	05:02	06:15 (13B)	05:41	06:10 (6B)	06:30	07:04 (WEA 02)	07:19	08:34 (18B)	07:13	08:21 (WEA 13)	08:03	08:54 (WEA 12)
	21:36 20	06:35 (13B)	21:01 13	06:23 (6B)	19:57 24	07:28 (WEA 02)	18:48 28	09:02 (18B)	16:44 28	08:49 (WEA 13)	16:07 25	09:19 (WEA 12)
5	05:03	06:14 (13B)	05:42	06:11 (6B)	06:32	07:04 (WEA 02)	07:21	08:35 (18B)	07:15	08:21 (WEA 13)	08:04	08:54 (WEA 12)
	21:36 20	06:34 (13B)	20:59 12	06:23 (6B)	19:55 23	07:27 (WEA 02)	18:46 26	09:01 (18B)	16:42 28	08:49 (WEA 13)	16:07 25	09:19 (WEA 12)
6	05:04	06:14 (13B)	05:44	06:12 (6B)	06:34	07:04 (WEA 02)	07:23	08:14 (20B)	07:17	08:21 (WEA 13)	08:05	08:56 (WEA 12)
	21:35 21	06:35 (13B)	20:57 10	06:22 (6B)	19:53 32	07:56 (14B)	18:43 31	09:00 (18B)	16:40 29	08:50 (WEA 13)	16:06 24	09:20 (WEA 12)
7	05:05	06:14 (13B)	05:46	06:14 (6B)	06:35	07:05 (WEA 02)	07:24	08:11 (20B)	07:18	08:20 (WEA 13)	08:06	08:56 (WEA 12)
	21:34 22	06:36 (13B)	20:55 7	06:21 (6B)	19:50 35	07:59 (14B)	18:41 33	08:58 (18B)	16:38 30	08:50 (WEA 13)	16:06 24	09:20 (WEA 12)
8	05:06	06:14 (13B)	05:47	06:15 (6B)	06:37	07:06 (WEA 02)	07:26	08:10 (20B)	07:20	08:20 (WEA 13)	08:08	08:56 (WEA 12)
	21:34 22	06:36 (13B)	20:53 3	06:18 (6B)	19:48 33	07:59 (14B)	18:39 38	08:57 (18B)	16:37 31	08:51 (WEA 13)	16:05 24	09:20 (WEA 12)
9	05:07	06:14 (13B)	05:49		06:39	07:08 (WEA 02)	07:28	08:10 (20B)	07:22	08:03 (29B)	08:09	08:56 (WEA 12)
	21:33 23	06:37 (13B)	20:52		19:46 31	08:00 (14B)	18:37 35	08:55 (18B)	16:35 37	08:51 (WEA 13)	16:05 24	09:20 (WEA 12)
10	05:08	06:14 (13B)	05:50		06:40	07:14 (WEA 02)	07:29	08:09 (20B)	07:24	08:02 (29B)	08:10	08:57 (WEA 12)
	21:32 23	06:37 (13B)	20:50		19:43 21	08:01 (14B)	18:34 30	08:51 (18B)	16:34 38	08:51 (WEA 13)	16:05 23	09:20 (WEA 12)
11	05:09	06:14 (13B)	05:52		06:42	07:40 (14B)	07:31	08:09 (20B)	07:25	08:01 (29B)	08:11	08:58 (WEA 12)
	21:32 24	06:38 (13B)	20:48		19:41 20	08:00 (14B)	18:32 28	08:47 (19B)	16:32 40	08:51 (WEA 13)	16:05 23	09:21 (WEA 12)
12	05:10	06:14 (13B)	05:53		06:43	07:39 (14B)	07:33	08:09 (20B)	07:27	08:01 (29B)	08:12	08:59 (WEA 12)
	21:31 24	06:38 (13B)	20:46		19:39 21	08:00 (14B)	18:30 35	08:50 (19B)	16:30 41	08:51 (WEA 13)	16:05 22	09:21 (WEA 12)
13	05:11	06:14 (13B)	05:55		06:45	07:39 (14B)	07:34	08:10 (20B)	07:29	08:01 (29B)	08:13	08:59 (WEA 12)
	21:30 24	06:38 (13B)	20:44		19:37 20	07:59 (14B)	18:28 37	08:52 (19B)	16:29 40	08:51 (WEA 13)	16:05 23	09:22 (WEA 12)
14	05:12	06:13 (13B)	05:57	06:49 (WEA 03)	06:47	07:39 (14B)	07:36	08:11 (WEA 11)	07:31	08:01 (29B)	08:14	09:00 (WEA 12)
	21:29 26	06:39 (13B)	20:42 8	06:57 (WEA 03)	19:34 20	07:59 (14B)	18:26 38	08:52 (19B)	16:27 39	08:50 (WEA 13)	16:05 22	09:22 (WEA 12)
15	05:13	06:13 (13B)	05:58	06:47 (WEA 03)	06:48	07:39 (14B)	07:38	08:11 (WEA 11)	07:32	08:02 (29B)	08:15	09:00 (WEA 12)
	21:28 26	06:39 (13B)	20:40 13	07:00 (WEA 03)	19:32 19	07:58 (14B)	18:23 40	08:53 (19B)	16:26 37	08:50 (WEA 13)	16:05 21	09:21 (WEA 12)
16	05:14	06:13 (13B)	06:00	06:45 (WEA 03)	06:50	07:40 (14B)	07:40	08:10 (WEA 11)	07:34	08:04 (29B)	08:16	09:00 (WEA 12)
	21:27 26	06:39 (13B)	20:38 15	07:00 (WEA 03)	19:30 17	07:57 (14B)	18:21 39	08:52 (19B)	16:25 34	08:50 (WEA 13)	16:05 22	09:22 (WEA 12)
17	05:15	06:13 (13B)	06:01	06:44 (WEA 03)	06:51	07:38 (WEA 10)	07:41	08:11 (WEA 11)	07:36	08:06 (29B)	08:17	09:01 (WEA 12)
	21:26 26	06:39 (13B)	20:36 18	07:02 (WEA 03)	19:27 17	07:55 (14B)	18:19 38	08:52 (19B)	16:23 30	08:50 (WEA 13)	16:05 22	09:23 (WEA 12)
18	05:17	06:13 (13B)	06:03	06:43 (WEA 03)	06:53	07:35 (WEA 10)	07:43	08:12 (WEA 11)	07:38	08:25 (WEA 13)	08:17	09:02 (WEA 12)
	21:25 26	06:39 (13B)	20:34 19	07:02 (11B)	19:25 18	07:53 (15B)	18:17 36	08:52 (19B)	16:22 30	09:04 (WEA 12)	16:05 21	09:23 (WEA 12)
19	05:18	06:14 (13B)	06:05	06:43 (WEA 03)	06:55	07:34 (WEA 10)	07:45	08:13 (WEA 11)	07:39	08:26 (WEA 13)	08:18	09:03 (WEA 12)
	21:24 26	06:40 (13B)	20:32 20	07:03 (11B)	19:23 20	07:54 (15B)	18:15 33	08:52 (19B)	16:21 34	09:07 (WEA 12)	16:06 21	09:24 (WEA 12)
20	05:19	06:14 (13B)	06:06	06:42 (WEA 03)	06:56	07:33 (WEA 10)	07:46	08:14 (WEA 11)	07:41	08:27 (WEA 13)	08:19	09:03 (WEA 12)
	21:23 26	06:40 (13B)	20:30 21	07:03 (11B)	19:20 20	07:53 (WEA 10)	18:13 30	08:51 (19B)	16:19 35	09:09 (WEA 12)	16:06 21	09:24 (WEA 12)
21	05:21	06:14 (13B)	06:08	06:42 (WEA 03)	06:58	07:32 (WEA 10)	07:48	08:17 (WEA 11)	07:43	08:28 (WEA 13)	08:19	09:04 (WEA 12)
	21:21 25	06:39 (13B)	20:28 22	07:04 (11B)	19:18 21	07:53 (WEA 10)	18:11 21	08:50 (19B)	16:18 36	09:10 (WEA 12)	16:06 21	09:25 (WEA 12)
22	05:22	06:14 (13B)	06:09	06:41 (WEA 03)	07:00	07:32 (WEA 10)	07:50	08:37 (19B)	07:44	08:30 (WEA 13)	08:20	09:04 (WEA 12)
	21:20 25	06:39 (13B)	20:26 23	07:04 (11B)	19:16 29	08:56 (18B)	18:09 10	08:47 (19B)	16:17 34	09:11 (WEA 12)	16:07 21	09:25 (WEA 12)
23	05:23	06:15 (13B)	06:11	06:41 (WEA 03)	07:01	07:31 (WEA 10)	07:52	08:41 (19B)	07:46	08:32 (WEA 13)	08:20	09:05 (WEA 12)
	21:19 24	06:39 (13B)	20:24 23	07:04 (11B)	19:13 36	08:59 (18B)	18:07 2	08:43 (19B)	16:16 33	09:13 (WEA 12)	16:07 21	09:26 (WEA 12)
24	05:25	06:15 (13B)	06:13	06:41 (WEA 03)	07:03	07:32 (WEA 10)	07:53		07:48	08:35 (WEA 13)	08:21	09:05 (WEA 12)
	21:18 24	06:39 (13B)	20:21 24	07:20 (WEA 02)	19:11 39	09:01 (18B)	18:05		16:15 29	09:14 (WEA 12)	16:08 21	09:26 (WEA 12)
25	05:26	06:15 (13B)	06:14	06:42 (WEA 03)	07:04	07:31 (WEA 10)	06:55		07:49	08:53 (WEA 12)	08:21	09:05 (WEA 12)
	21:16 23	06:38 (13B)	20:19 33	07:25 (WEA 02)	19:09 41	09:02 (18B)	17:03		16:14 22	09:15 (WEA 12)	16:09 21	09:26 (WEA 12)
26	05:27	06:16 (13B)	06:16	06:42 (WEA 03)	07:06	07:32 (WEA 10)	06:57		07:51	08:52 (WEA 12)	08:21	09:05 (WEA 12)
	21:15 22	06:38 (13B)	20:17 35	07:26 (WEA 02)	19:06 42	09:03 (18B)	17:01		16:13 23	09:15 (WEA 12)	16:09 21	09:26 (WEA 12)
27	05:29	06:17 (13B)	06:18	06:44 (WEA 03)	07:08	07:34 (WEA 10)	06:59		07:52	08:52 (WEA 12)	08:22	09:06 (WEA 12)
	21:13 20	06:37 (13B)	20:15 35	07:28 (WEA 02)	19:04 40	09:04 (18B)	16:59		16:12 24	09:16 (WEA 12)	16:10 22	09:28 (WEA 12)
28	05:30	06:14 (6B)	06:19	06:45 (WEA 03)	07:09	07:35 (WEA 10)	07:01		07:54	08:53 (WEA 12)	08:22	09:06 (WEA 12)
	21:12 22	06:36 (13B)	20:13 33	07:28 (WEA 02)	19:02 38	09:04 (18B)	16:57		16:11 24	09:17 (WEA 12)	16:11 22	09:28 (WEA 12)
29	05:32	06:13 (6B)	06:21	07:07 (WEA 02)	07:11	08:36 (18B)	07:02	08:32 (WEA 13)	07:55	08:52 (WEA 12)	08:22	09:07 (WEA 12)
	21:10 23	06:36 (13B)	20:11 22	07:29 (WEA 02)	18:59 28	09:04 (18B)	16:55 6	08:38 (WEA 13)	16:10 24	09:16 (WEA 12)	16:12 22	09:29 (WEA 12)
30	05:33	06:12 (6B)	06:22	07:06 (WEA 02)	07:13	08:35 (18B)	07:04	08:29 (WEA 13)	07:57	08:53 (WEA 12)	08:22	09:07 (WEA 12)
	21:09 22	06:34 (13B)	20:08 24	07:30 (WEA 02)	18:57 30	09:05 (18B)	16:53 13	08:42 (WEA 13)	16:10 24	09:17 (WEA 12)	16:12 22	09:29 (WEA 12)
31	05:35	06:11 (6B)	06:24	07:05 (WEA 02)			07:06	08:25 (WEA 13)			08:22	09:08 (WEA 12)
	21:07 21	06:32 (13B)	20:06 24	07:29 (WEA 02)			16:51 19	08:44 (WEA 13)			16:13 22	09:30 (WEA 12)
Sonnenscheinstunden	501		453		381		332		267		245	
astr.max.mögl.Beschattung	716		499		810		733		925		697	
Red.Sonnenscheinwahrsch.	0,40		0,43		0,34		0,28		0,22		0,18	
Reduktion Betriebsdauer	0,96		0,96		0,96		0,96		0,96		0,96	
Reduktion Windrichtung	0,71		0,72		0,71		0,67		0,62		0,60	
Gesamte Reduktion	0,27		0,29		0,23		0,18		0,13		0,10	
Met.wahrsch.Beschattung	194		145		184		131		119		69	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 43 - Reinstedt - Bauschuttrecycling

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22		09:00 (WEA 09)	07:56		08:27 (WEA 08)	07:03		07:55 (20B)	06:52		07:21 (WEA 02)	05:48			05:03		06:06 (13B)
	16:15	52	09:52 (WEA 12)	17:02	41	09:42 (WEA 13)	17:54	45	09:16 (18B)	19:47	28	08:24 (14B)	20:38			21:23	32	06:38 (13B)
2	08:22		09:01 (WEA 09)	07:54		08:27 (WEA 08)	07:00		08:42 (18B)	06:50		07:19 (WEA 02)	05:46			05:02		06:07 (13B)
	16:16	52	09:53 (WEA 12)	17:04	38	09:40 (WEA 13)	17:55	34	09:16 (18B)	19:49	21	07:40 (WEA 02)	20:39			21:24	32	06:39 (13B)
3	08:22		09:01 (WEA 09)	07:53		08:27 (WEA 08)	06:58		08:41 (18B)	06:48		07:17 (WEA 02)	05:44			05:01		06:06 (13B)
	16:17	52	09:53 (WEA 12)	17:06	33	09:38 (WEA 13)	17:57	33	09:14 (18B)	19:51	23	07:40 (WEA 02)	20:41			21:25	33	06:39 (13B)
4	08:22		09:01 (WEA 09)	07:51		08:28 (WEA 08)	06:56		08:42 (18B)	06:46		07:16 (WEA 02)	05:42			05:01		06:06 (13B)
	16:18	52	09:53 (WEA 12)	17:08	25	09:35 (WEA 13)	17:59	32	09:14 (18B)	19:52	25	07:41 (WEA 02)	20:43			21:26	33	06:39 (13B)
5	08:22		09:02 (WEA 09)	07:49		08:28 (WEA 08)	06:54		08:43 (18B)	06:43		07:06 (WEA 04)	05:40			05:00		06:07 (13B)
	16:19	51	09:53 (WEA 12)	17:10	19	08:47 (WEA 08)	18:01	30	09:13 (18B)	19:54	31	07:41 (WEA 02)	20:44			21:27	32	06:39 (13B)
6	08:21		09:03 (WEA 09)	07:48		08:29 (WEA 08)	06:52		08:44 (18B)	06:41		07:04 (WEA 04)	05:39		06:04 (6B)	04:59		06:06 (13B)
	16:20	51	09:54 (WEA 12)	17:11	17	08:46 (WEA 08)	18:02	28	09:12 (18B)	19:56	36	07:42 (WEA 02)	20:46	8	06:12 (6B)	21:28	33	06:39 (13B)
7	08:21		09:03 (WEA 09)	07:46		08:29 (WEA 08)	06:49		08:44 (18B)	06:39		07:01 (WEA 04)	05:37		06:03 (6B)	04:59		06:07 (13B)
	16:22	50	09:53 (WEA 12)	17:13	16	08:45 (WEA 08)	18:04	25	09:09 (18B)	19:57	40	07:41 (WEA 02)	20:48	11	06:14 (6B)	21:29	33	06:40 (13B)
8	08:20		09:03 (WEA 09)	07:44		08:30 (WEA 08)	06:47		08:45 (18B)	06:36		06:59 (WEA 04)	05:35		06:01 (6B)	04:58		06:07 (13B)
	16:23	50	09:53 (WEA 12)	17:15	14	08:44 (WEA 08)	18:06	23	09:08 (18B)	19:59	42	07:41 (WEA 02)	20:49	13	06:14 (6B)	21:30	32	06:39 (13B)
9	08:20		09:04 (WEA 09)	07:42		08:32 (WEA 08)	06:45		08:47 (18B)	06:34		06:57 (WEA 04)	05:33		05:59 (WEA 14)	04:58		06:07 (13B)
	16:24	49	09:53 (WEA 12)	17:17	13	08:45 (19B)	18:08	18	09:05 (18B)	20:01	44	07:41 (WEA 02)	20:51	16	06:15 (6B)	21:31	33	06:40 (13B)
10	08:19		09:04 (WEA 09)	07:41		08:32 (19B)	06:43		08:51 (18B)	06:32		06:57 (WEA 04)	05:32		05:57 (WEA 14)	04:57		06:08 (13B)
	16:26	49	09:53 (WEA 12)	17:19	15	08:47 (19B)	18:09	11	09:02 (18B)	20:02	43	07:40 (WEA 02)	20:52	18	06:15 (6B)	21:32	32	06:40 (13B)
11	08:19		08:48 (29B)	07:39		08:31 (19B)	06:40		07:05 (WEA 10)	06:30		06:55 (WEA 04)	05:30		05:55 (WEA 14)	04:57		06:07 (13B)
	16:27	49	09:52 (WEA 12)	17:21	17	08:48 (19B)	18:11	10	07:15 (WEA 10)	20:04	44	07:39 (WEA 02)	20:54	20	06:15 (6B)	21:33	33	06:40 (13B)
12	08:18		08:48 (29B)	07:37		08:30 (19B)	06:38		07:02 (WEA 10)	06:28		06:56 (WEA 04)	05:28		05:54 (WEA 14)	04:57		06:08 (13B)
	16:29	50	09:52 (WEA 12)	17:23	19	08:49 (19B)	18:13	15	07:17 (WEA 10)	20:06	42	07:38 (WEA 02)	20:56	21	06:15 (6B)	21:33	32	06:40 (13B)
13	08:18		08:47 (29B)	07:35		08:30 (19B)	06:36		07:01 (WEA 10)	06:25		06:50 (WEA 03)	05:27		05:52 (WEA 14)	04:56		06:08 (13B)
	16:30	50	09:51 (WEA 12)	17:24	19	08:49 (19B)	18:15	21	07:22 (15B)	20:07	46	07:37 (WEA 02)	20:57	22	06:14 (6B)	21:34	32	06:40 (13B)
14	08:17		08:46 (29B)	07:33		08:01 (WEA 11)	06:34		06:59 (WEA 10)	06:23		06:47 (WEA 03)	05:25		05:51 (WEA 14)	04:56		06:09 (13B)
	16:32	46	09:48 (WEA 12)	17:26	27	08:50 (19B)	18:16	24	07:23 (15B)	20:09	46	07:36 (WEA 02)	20:59	24	06:15 (6B)	21:34	32	06:41 (13B)
15	08:16		08:45 (29B)	07:31		07:58 (WEA 11)	06:31		06:58 (WEA 10)	06:21		06:45 (WEA 03)	05:24		05:50 (WEA 14)	04:56		06:09 (13B)
	16:33	45	09:43 (WEA 13)	17:28	33	08:50 (19B)	18:18	26	07:24 (15B)	20:11	44	07:34 (WEA 02)	21:00	31	06:25 (13B)	21:35	32	06:41 (13B)
16	08:15		08:45 (29B)	07:29		07:56 (WEA 11)	06:29		06:58 (WEA 10)	06:19		06:43 (WEA 03)	05:22		05:48 (WEA 14)	04:56		06:09 (13B)
	16:35	45	09:43 (WEA 13)	17:30	37	08:50 (19B)	18:20	27	07:25 (15B)	20:13	40	07:32 (WEA 02)	21:02	39	06:28 (13B)	21:36	32	06:41 (13B)
17	08:14		08:45 (29B)	07:27		07:55 (WEA 11)	06:27		06:57 (WEA 10)	06:17		06:42 (WEA 03)	05:21		05:48 (WEA 14)	04:56		06:10 (13B)
	16:36	45	09:44 (WEA 13)	17:32	50	09:07 (18B)	18:22	27	07:24 (15B)	20:14	35	07:29 (WEA 02)	21:03	42	06:30 (13B)	21:36	31	06:41 (13B)
18	08:13		08:45 (29B)	07:25		07:54 (WEA 11)	06:25		06:57 (WEA 10)	06:14		06:42 (WEA 03)	05:19		05:49 (WEA 14)	04:56		06:10 (13B)
	16:38	45	09:44 (WEA 13)	17:34	58	09:10 (18B)	18:23	31	07:28 (14B)	20:16	27	07:09 (11B)	21:05	43	06:32 (13B)	21:36	31	06:41 (13B)
19	08:12		08:45 (29B)	07:23		07:53 (WEA 11)	06:22		06:57 (WEA 10)	06:12		06:40 (WEA 03)	05:18		05:48 (WEA 14)	04:56		06:10 (13B)
	16:39	44	09:44 (WEA 13)	17:35	62	09:12 (18B)	18:25	34	07:31 (14B)	20:18	28	07:08 (11B)	21:06	42	06:32 (13B)	21:37	32	06:42 (13B)
20	08:11		08:45 (29B)	07:21		07:52 (WEA 11)	06:20		06:57 (WEA 10)	06:10		06:40 (WEA 03)	05:16		05:48 (WEA 14)	04:56		06:10 (13B)
	16:41	44	09:45 (WEA 13)	17:37	63	09:13 (18B)	18:27	36	07:33 (14B)	20:19	28	07:08 (11B)	21:08	44	06:33 (13B)	21:37	32	06:42 (13B)
21	08:10		08:46 (29B)	07:19		07:52 (WEA 11)	06:18		06:57 (WEA 10)	06:08		06:39 (WEA 03)	05:15		05:49 (WEA 14)	04:56		06:10 (13B)
	16:43	44	09:45 (WEA 13)	17:39	62	09:14 (18B)	18:28	36	07:33 (14B)	20:21	28	07:07 (11B)	21:09	44	06:34 (13B)	21:37	32	06:42 (13B)
22	08:09		08:47 (29B)	07:17		07:52 (WEA 11)	06:15		06:58 (WEA 10)	06:06		06:39 (WEA 03)	05:14		05:49 (WEA 14)	04:56		06:11 (13B)
	16:44	43	09:46 (WEA 13)	17:41	57	09:15 (18B)	18:30	36	07:34 (14B)	20:23	27	07:06 (11B)	21:10	46	06:35 (13B)	21:38	32	06:43 (13B)
23	08:08		08:48 (29B)	07:15		07:52 (WEA 11)	06:13		07:00 (WEA 10)	06:04		06:39 (WEA 03)	05:12		05:50 (WEA 14)	04:56		06:11 (13B)
	16:46	39	09:45 (WEA 13)	17:43	55	09:16 (18B)	18:32	34	07:34 (14B)	20:24	26	07:05 (11B)	21:12	46	06:36 (13B)	21:38	32	06:43 (13B)
24	08:07		08:50 (29B)	07:13		07:52 (WEA 11)	06:11		07:01 (WEA 10)	06:02		06:40 (WEA 03)	05:11		05:50 (WEA 14)	04:57		06:11 (13B)
	16:48	36	09:45 (WEA 13)	17:45	55	09:16 (18B)	18:34	32	07:33 (14B)	20:26	23	07:03 (11B)	21:13	45	06:36 (13B)	21:38	32	06:43 (13B)
25	08:05		08:33 (WEA 08)	07:11		07:52 (20B)	06:08		07:09 (14B)	06:00		06:40 (WEA 03)	05:10		05:50 (WEA 14)	04:57		06:11 (13B)
	16:50	38	09:46 (WEA 13)	17:46	56	09:17 (18B)	18:35	24	07:33 (14B)	20:28	21	07:01 (11B)	21:15	46	06:36 (13B)	21:38	31	06:42 (13B)
26	08:04		08:31 (WEA 08)	07:09		07:53 (20B)	06:06		07:09 (14B)	05:58		06:42 (WEA 03)	05:09		05:51 (WEA 14)	04:57		06:11 (13B)
	16:51	41	09:45 (WEA 13)	17:48	54	09:17 (18B)	18:37	24	07:33 (14B)	20:29	17	06:59 (WEA 03)	21:16	44	06:36 (13B)	21:38	32	06:43 (13B)
27	08:03		08:30 (WEA 08)	07:07		07:52 (20B)	06:04		07:08 (14B)	05:56		06:43 (WEA 03)	05:08		05:52 (WEA 14)	04:58		06:11 (13B)
	16:53	42	09:45 (WEA 13)	17:50	54	09:16 (18B)	18:39	24	07:32 (14B)	20:31	15	06:58 (WEA 03)	21:17	45	06:38 (13B)	21:38	32	06:43 (13B)
28	08:02		08:28 (WEA 08)	07:05		07:53 (20B)	06:02		07:09 (14B)	05:54		06:44 (WEA 03)	05:07		05:53 (WEA 14)	04:58		06:12 (13B)
	16:55	44	09:45 (WEA 13)	17:52	51	09:16 (18B)	18:40	22	07:31 (14B)	20:33	12	06:56 (WEA 03)	21:18	43	06:38 (13B)	21:38	32	06:44 (13B)
29	08:00		08:28 (WEA 08)				06:59		08:09 (14B)	05:52		06:48 (WEA 03)	05:06		05:54 (WEA 14)	04:59		06:12 (13B)
	16:57	45	09:45 (WEA 13)				19:42	22	08:31 (14B)	20:34	4	06:52 (WEA 03)	21:20	42	06:38 (13B)	21:38	32	06:44 (13B)
30	07:59		08:27 (WEA 08)				06:57		07:28 (WEA 02)	05:50			05:05		05:56 (WEA 14)	04:59		06:12 (13B)
	16:59	44	09:44 (WEA 13)				19:44	21	08:28 (14B)	20:36			21:21	38	06:38 (13B)	21:37	32	06:44 (13B)
31	07:57		08:26 (WEA 08)				06:55		07:23 (WEA 02)				05:04		06:06 (13B)			
	17:00	43	09:42 (WEA 13)				19:45	29	08:27 (14B)				21:22	32	06:38 (13B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		1430			1060			834			886			865			963	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,60			0,65			0,69			0,72			0,71			0,71	
Gesamte Reduktion		0,12			0,19			0,17			0,24			0,29			0,23	
Met.wahrsch.Beschattung		172			206			144			214			249			225	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 43 - Reinstedt - Bauschuttrecycling

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November			Dezember		
1	05:00		06:13 (13B)	05:36		06:05 (WEA 14)	06:26		06:55 (WEA 04)	07:14		07:40 (WEA 10)	07:08		08:01 (19B)	07:58		08:30 (29B)
	21:37	32	06:45 (13B)	21:06	21	06:26 (6B)	20:04	44	07:39 (WEA 02)	18:55	19	07:59 (15B)	16:49	14	08:15 (19B)	16:09	49	09:34 (WEA 12)
2	05:01		06:12 (13B)	05:38		06:06 (WEA 14)	06:27		06:54 (WEA 04)	07:16		07:42 (WEA 10)	07:09		08:01 (WEA 08)	08:00		08:47 (WEA 09)
	21:37	32	06:44 (13B)	21:04	19	06:25 (6B)	20:02	44	07:38 (WEA 02)	18:52	13	07:55 (WEA 10)	16:47	13	08:14 (19B)	16:08	49	09:36 (WEA 12)
3	05:01		06:13 (13B)	05:39		06:08 (WEA 14)	06:29		06:55 (WEA 04)	07:18		07:46 (WEA 10)	07:11		08:00 (WEA 08)	08:01		08:47 (WEA 09)
	21:36	32	06:45 (13B)	21:02	17	06:25 (6B)	19:59	44	07:39 (WEA 02)	18:50	11	09:37 (18B)	16:45	14	08:14 (WEA 08)	16:08	49	09:36 (WEA 12)
4	05:02		06:13 (13B)	05:41		06:11 (6B)	06:30		06:56 (WEA 04)	07:19		09:26 (18B)	07:13		07:59 (WEA 08)	08:03		08:48 (WEA 09)
	21:36	32	06:45 (13B)	21:01	13	06:24 (6B)	19:57	42	07:38 (WEA 02)	18:48	15	09:41 (18B)	16:44	16	08:15 (WEA 08)	16:07	50	09:38 (WEA 12)
5	05:03		06:12 (13B)	05:42		06:12 (6B)	06:32		06:58 (WEA 04)	07:21		09:23 (18B)	07:15		07:58 (WEA 08)	08:04		08:48 (WEA 09)
	21:36	33	06:45 (13B)	20:59	12	06:24 (6B)	19:55	40	07:38 (WEA 02)	18:46	21	09:44 (18B)	16:42	18	08:16 (WEA 08)	16:07	50	09:38 (WEA 12)
6	05:04		06:13 (13B)	05:44		06:13 (6B)	06:34		06:59 (WEA 04)	07:23		09:21 (18B)	07:17		07:58 (WEA 08)	08:05		08:49 (WEA 09)
	21:35	32	06:45 (13B)	20:57	10	06:23 (6B)	19:53	36	07:37 (WEA 02)	18:43	25	09:46 (18B)	16:40	18	08:16 (WEA 08)	16:06	51	09:40 (WEA 12)
7	05:05		06:13 (13B)	05:46		06:15 (6B)	06:35		07:01 (WEA 04)	07:24		09:19 (18B)	07:18		07:58 (WEA 08)	08:06		08:49 (WEA 09)
	21:34	33	06:46 (13B)	20:55	6	06:21 (6B)	19:50	32	07:37 (WEA 02)	18:41	27	09:46 (18B)	16:38	26	09:05 (WEA 13)	16:06	51	09:40 (WEA 12)
8	05:06		06:13 (13B)	05:47			06:37		07:10 (WEA 02)	07:26		09:18 (18B)	07:20		07:57 (WEA 08)	08:08		08:49 (WEA 09)
	21:34	33	06:46 (13B)	20:53			19:48	25	07:35 (WEA 02)	18:39	29	09:47 (18B)	16:37	35	09:09 (WEA 13)	16:05	52	09:41 (WEA 12)
9	05:07		06:14 (13B)	05:49			06:39		07:11 (WEA 02)	07:28		09:17 (18B)	07:22		07:58 (WEA 08)	08:09		08:49 (WEA 09)
	21:33	32	06:46 (13B)	20:52			19:46	23	07:34 (WEA 02)	18:37	31	09:48 (18B)	16:35	37	09:11 (WEA 13)	16:05	52	09:41 (WEA 12)
10	05:08		06:14 (13B)	05:50			06:40		07:12 (WEA 02)	07:29		09:17 (18B)	07:24		07:58 (WEA 08)	08:10		08:50 (WEA 09)
	21:32	32	06:46 (13B)	20:50			19:43	21	07:33 (WEA 02)	18:34	32	09:49 (18B)	16:34	41	09:13 (WEA 13)	16:05	52	09:42 (WEA 12)
11	05:09		06:14 (13B)	05:52			06:42		07:13 (WEA 02)	07:31		09:15 (18B)	07:25		07:58 (WEA 08)	08:11		08:51 (WEA 09)
	21:32	33	06:47 (13B)	20:48			19:41	28	08:16 (14B)	18:32	34	09:49 (18B)	16:32	43	09:14 (WEA 13)	16:05	52	09:43 (WEA 12)
12	05:10		06:14 (13B)	05:53			06:43		07:15 (WEA 02)	07:33		08:30 (20B)	07:27		07:59 (WEA 08)	08:12		08:52 (WEA 09)
	21:31	33	06:47 (13B)	20:46			19:39	30	08:19 (14B)	18:30	39	09:49 (18B)	16:30	44	09:16 (WEA 13)	16:05	52	09:44 (WEA 12)
13	05:11		06:05 (WEA 14)	05:55			06:45		07:18 (WEA 02)	07:34		08:27 (20B)	07:29		08:00 (WEA 08)	08:13		08:52 (WEA 09)
	21:30	37	06:47 (13B)	20:44			19:37	24	08:19 (14B)	18:28	48	09:49 (18B)	16:29	45	09:17 (WEA 13)	16:05	52	09:44 (WEA 12)
14	05:12		06:03 (WEA 14)	05:57		06:54 (WEA 03)	06:47		08:00 (14B)	07:36		08:26 (20B)	07:31		08:00 (WEA 08)	08:14		08:53 (WEA 09)
	21:29	41	06:47 (13B)	20:42	7	07:01 (WEA 03)	19:34	21	08:21 (14B)	18:26	51	09:49 (18B)	16:27	44	09:17 (WEA 13)	16:05	52	09:45 (WEA 12)
15	05:13		06:02 (WEA 14)	05:58		06:52 (WEA 03)	06:48		07:58 (14B)	07:38		08:25 (20B)	07:32		08:02 (WEA 08)	08:15		08:52 (WEA 09)
	21:28	42	06:46 (13B)	20:40	12	07:04 (WEA 03)	19:32	23	08:21 (14B)	18:23	53	09:49 (18B)	16:26	43	09:17 (WEA 13)	16:05	53	09:45 (WEA 12)
16	05:14		06:01 (WEA 14)	06:00		06:49 (WEA 03)	06:50		07:58 (14B)	07:40		08:24 (20B)	07:34		08:04 (WEA 08)	08:16		08:53 (WEA 09)
	21:27	44	06:46 (13B)	20:38	16	07:05 (WEA 03)	19:30	23	08:21 (14B)	18:21	54	09:48 (18B)	16:25	41	09:18 (WEA 13)	16:05	52	09:45 (WEA 12)
17	05:15		06:01 (WEA 14)	06:01		06:48 (WEA 03)	06:51		07:57 (14B)	07:41		08:24 (20B)	07:36		08:06 (WEA 08)	08:17		08:54 (WEA 09)
	21:26	45	06:46 (13B)	20:36	18	07:06 (WEA 03)	19:27	25	08:22 (14B)	18:19	55	09:48 (18B)	16:23	38	09:19 (WEA 13)	16:05	52	09:46 (WEA 12)
18	05:17		06:00 (WEA 14)	06:03		06:47 (WEA 03)	06:53		07:56 (14B)	07:43		08:23 (WEA 11)	07:38		08:24 (29B)	08:17		08:55 (WEA 09)
	21:25	45	06:46 (13B)	20:34	21	07:08 (11B)	19:25	25	08:21 (14B)	18:17	55	09:47 (18B)	16:22	36	09:19 (WEA 13)	16:05	52	09:47 (WEA 12)
19	05:18		06:00 (WEA 14)	06:05		06:46 (WEA 03)	06:55		07:50 (WEA 10)	07:45		08:23 (WEA 11)	07:39		08:23 (29B)	08:18		08:54 (WEA 09)
	21:24	46	06:46 (13B)	20:32	24	07:10 (11B)	19:23	31	08:21 (14B)	18:15	55	09:47 (18B)	16:21	39	09:20 (WEA 13)	16:06	53	09:47 (WEA 12)
20	05:19		06:00 (WEA 14)	06:06		06:45 (WEA 03)	06:56		07:46 (WEA 10)	07:46		08:23 (WEA 11)	07:41		08:22 (29B)	08:19		08:55 (WEA 09)
	21:23	46	06:46 (13B)	20:30	26	07:11 (11B)	19:20	34	08:20 (14B)	18:13	60	09:46 (18B)	16:19	43	09:21 (WEA 13)	16:06	51	09:47 (WEA 12)
21	05:21		05:59 (WEA 14)	06:08		06:45 (WEA 03)	06:58		07:44 (WEA 10)	07:48		08:23 (WEA 11)	07:43		08:21 (29B)	08:19		08:56 (WEA 09)
	21:21	45	06:45 (13B)	20:28	27	07:12 (11B)	19:18	35	08:19 (14B)	18:11	63	09:45 (18B)	16:18	44	09:20 (WEA 13)	16:06	51	09:48 (WEA 12)
22	05:22		05:59 (WEA 14)	06:09		06:44 (WEA 03)	07:00		07:43 (WEA 10)	07:50		08:22 (WEA 11)	07:44		08:21 (29B)	08:20		08:56 (WEA 09)
	21:20	44	06:44 (13B)	20:26	28	07:12 (11B)	19:16	36	08:19 (14B)	18:09	64	09:43 (18B)	16:17	44	09:21 (WEA 13)	16:07	51	09:48 (WEA 12)
23	05:23		05:59 (WEA 14)	06:11		06:44 (WEA 03)	07:01		07:41 (WEA 10)	07:52		08:23 (WEA 11)	07:46		08:22 (29B)	08:20		08:57 (WEA 09)
	21:19	44	06:44 (13B)	20:24	29	07:13 (11B)	19:13	36	08:17 (14B)	18:07	61	09:41 (18B)	16:16	44	09:21 (WEA 13)	16:07	51	09:49 (WEA 12)
24	05:25		05:59 (WEA 14)	06:13		06:44 (WEA 03)	07:03		07:41 (WEA 10)	07:53		08:24 (WEA 11)	07:48		08:22 (29B)	08:21		08:57 (WEA 09)
	21:18	42	06:43 (13B)	20:21	28	07:12 (11B)	19:11	34	08:15 (14B)	18:05	56	09:39 (18B)	16:15	45	09:21 (WEA 13)	16:08	53	09:50 (WEA 12)
25	05:26		05:58 (WEA 14)	06:14		06:44 (WEA 03)	07:04		07:39 (WEA 10)	06:55		07:25 (WEA 11)	07:49		08:23 (29B)	08:21		08:57 (WEA 09)
	21:16	43	06:42 (13B)	20:19	28	07:12 (11B)	19:09	33	08:12 (14B)	17:02	49	08:36 (18B)	16:14	45	09:22 (WEA 13)	16:08	53	09:50 (WEA 12)
26	05:27		05:59 (WEA 14)	06:16		06:44 (WEA 03)	07:06		07:39 (WEA 10)	06:57		07:26 (WEA 11)	07:51		08:23 (29B)	08:21		08:58 (WEA 09)
	21:15	42	06:41 (13B)	20:17	36	07:31 (WEA 02)	19:06	28	08:07 (14B)	17:01	35	08:19 (19B)	16:13	45	09:21 (WEA 13)	16:09	52	09:50 (WEA 12)
27	05:29		05:59 (WEA 14)	06:18		06:45 (WEA 03)	07:08		07:39 (WEA 10)	06:59		07:28 (WEA 11)	07:52		08:24 (29B)	08:22		08:59 (WEA 09)
	21:13	40	06:40 (13B)	20:15	41	07:34 (WEA 02)	19:04	28	08:07 (15B)	16:59	31	08:19 (19B)	16:12	45	09:22 (WEA 13)	16:10	52	09:51 (WEA 12)
28	05:30		05:59 (WEA 14)	06:19		06:46 (WEA 03)	07:09		07:39 (WEA 10)	07:01		07:59 (19B)	07:54		08:26 (29B)	08:22		08:59 (WEA 09)
	21:12	36	06:37 (13B)	20:13	44	07:35 (WEA 02)	19:02	26	08:05 (15B)	16:57	20	08:19 (19B)	16:11	45	09:27 (WEA 12)	16:11	52	09:51 (WEA 12)
29	05:32		06:01 (WEA 14)	06:21		06:48 (WEA 03)	07:11		07:39 (WEA 10)	07:02		07:59 (19B)	07:55		08:27 (29B)	08:22		09:00 (WEA 09)
	21:10	26	06:33 (13B)	20:11	46	07:37 (WEA 02)	18:59	25	08:04 (15B)	16:55	20	08:19 (19B)	16:10	51	09:31 (WEA 12)	16:12	52	09:52 (WEA 12)
30	05:33		06:02 (WEA 14)	06:22		06:51 (WEA 03)	07:13		07:40 (WEA 10)	07:04		08:00 (19B)	07:57		08:29 (29B)	08:22		09:00 (WEA 09)
	21:09	23	06:25 (6B)	20:08	46	07:38 (WEA 02)	18:57	23	08:03 (15B)	16:53	18	08:18 (19B)	16:10	50	09:33 (WEA 12)	16:12	52	09:52 (WEA 12)
31	05:35		06:03 (WEA 14)	06:24		06:55 (WEA 04)				07:06		08:00 (19B)				08:22		09:00 (WEA 09)
	21:07	22	06:25 (6B)	20:06	43	07:38 (WEA 02)				16:51	17	08:17 (19B)				16:13	53	09:53 (WEA 12)
Sonnenscheinstunden	501			453			381			332			267			245		
astr.max.mögl.Beschattung		1142			618			919			1161			1106			1598	
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22			0,18	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,71			0,72			0,71			0,66			0,61			0,59	
Gesamte Reduktion		0,27			0,29			0,23			0,17			0,13			0,10	
Met.wahrsch.Beschattung		308			179			209			202			140			157	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 44 - Reinstedt - Bauschuttrecycling 2

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22		08:53 (29B)	07:56		08:35 (WEA 08)	07:03		07:29 (WEA 07)	06:52		07:22 (WEA 02)	05:48			05:03		05:31 (28)
	16:15	57	10:00 (WEA 12)	17:02	26	09:01 (19B)	17:54	37	09:39 (18B)	19:47	24	07:46 (WEA 02)	20:38			21:23	47	06:41 (13B)
2	08:22		08:53 (29B)	07:54		08:35 (WEA 08)	07:00		07:29 (WEA 07)	06:50		07:21 (WEA 02)	05:46			05:02		05:31 (28)
	16:16	57	10:00 (WEA 12)	17:04	27	09:02 (19B)	17:55	31	09:36 (18B)	19:49	26	07:47 (WEA 02)	20:39			21:24	45	06:42 (13B)
3	08:22		08:53 (29B)	07:53		08:36 (WEA 08)	06:58		07:28 (WEA 07)	06:48		07:19 (WEA 02)	05:44			05:01		05:30 (28)
	16:17	57	10:00 (WEA 12)	17:06	27	09:03 (19B)	17:57	18	07:46 (WEA 07)	19:51	28	07:47 (WEA 02)	20:41			21:25	43	06:42 (13B)
4	08:22		08:52 (29B)	07:51		08:38 (WEA 08)	06:56		07:29 (WEA 07)	06:46		07:08 (WEA 04)	05:42			05:01		05:29 (28)
	16:18	57	09:59 (WEA 12)	17:08	27	09:05 (19B)	17:59	16	07:45 (WEA 07)	19:52	34	07:47 (WEA 02)	20:43			21:26	44	06:42 (13B)
5	08:22		08:52 (29B)	07:49		08:39 (WEA 08)	06:54		07:30 (WEA 07)	06:43		07:06 (WEA 04)	05:40			05:00		05:29 (28)
	16:19	56	09:58 (WEA 12)	17:10	37	09:37 (18B)	18:01	14	07:44 (WEA 07)	19:54	39	07:47 (WEA 02)	20:44			21:27	46	06:43 (13B)
6	08:21		08:52 (29B)	07:48		08:42 (WEA 08)	06:52		07:32 (WEA 07)	06:41		07:04 (WEA 04)	05:39		06:04 (6B)	04:59		05:28 (28)
	16:20	54	09:56 (WEA 13)	17:11	41	09:40 (18B)	18:02	10	07:42 (WEA 07)	19:56	43	07:48 (WEA 02)	20:46	7	06:11 (6B)	21:28	47	06:43 (13B)
7	08:21		08:52 (29B)	07:46		08:45 (19B)	06:49			06:39		07:01 (WEA 04)	05:37		06:02 (6B)	04:59		05:28 (28)
	16:22	54	09:56 (WEA 13)	17:13	42	09:42 (18B)	18:04			19:57	45	07:46 (WEA 02)	20:48	11	06:13 (6B)	21:29	49	06:44 (13B)
8	08:20		08:51 (29B)	07:44		08:44 (19B)	06:47		07:12 (WEA 10)	06:36		06:59 (WEA 04)	05:35		06:01 (6B)	04:58		05:27 (28)
	16:23	55	09:56 (WEA 13)	17:15	47	09:44 (18B)	18:06	8	07:20 (WEA 10)	19:59	47	07:46 (WEA 02)	20:49	13	06:14 (6B)	21:30	49	06:43 (13B)
9	08:20		08:52 (29B)	07:42		08:44 (19B)	06:45		07:09 (WEA 10)	06:34		06:58 (WEA 04)	05:33		06:01 (6B)	04:58		05:27 (28)
	16:24	54	09:57 (WEA 13)	17:17	49	09:45 (18B)	18:08	22	07:31 (15B)	20:01	48	07:46 (WEA 02)	20:51	14	06:15 (6B)	21:31	50	06:44 (13B)
10	08:19		08:53 (29B)	07:41		08:09 (WEA 11)	06:43		07:07 (WEA 10)	06:32		06:58 (WEA 04)	05:32		05:57 (WEA 14)	04:57		05:27 (28)
	16:26	54	09:57 (WEA 13)	17:19	58	09:47 (18B)	18:09	27	07:34 (15B)	20:02	46	07:45 (WEA 02)	20:52	18	06:15 (6B)	21:32	50	06:44 (13B)
11	08:19		08:53 (29B)	07:39		08:06 (WEA 11)	06:40		07:05 (WEA 10)	06:30		06:57 (WEA 04)	05:30		05:55 (WEA 14)	04:57		05:26 (28)
	16:27	53	09:57 (WEA 13)	17:21	64	09:48 (18B)	18:11	29	07:34 (15B)	20:04	45	07:43 (WEA 02)	20:54	20	06:15 (6B)	21:33	51	06:44 (13B)
12	08:18		08:54 (29B)	07:37		08:04 (WEA 11)	06:38		07:04 (WEA 10)	06:28		06:52 (WEA 03)	05:28		05:54 (WEA 14)	04:57		05:26 (28)
	16:29	53	09:59 (WEA 13)	17:23	70	09:49 (18B)	18:13	31	07:35 (15B)	20:06	48	07:42 (WEA 02)	20:56	21	06:15 (6B)	21:33	51	06:44 (13B)
13	08:18		08:55 (29B)	07:35		08:02 (WEA 11)	06:36		07:04 (WEA 10)	06:25		06:49 (WEA 03)	05:27		05:52 (WEA 14)	04:56		05:27 (28)
	16:30	51	09:59 (WEA 13)	17:24	72	09:50 (18B)	18:15	41	07:45 (14B)	20:07	48	07:41 (WEA 02)	20:57	23	06:15 (6B)	21:34	51	06:45 (13B)
14	08:17		08:55 (29B)	07:33		08:01 (WEA 11)	06:34		07:02 (WEA 10)	06:23		06:47 (WEA 03)	05:25		05:51 (WEA 14)	04:56		05:27 (28)
	16:32	49	09:59 (WEA 13)	17:26	73	09:50 (18B)	18:16	45	07:47 (14B)	20:09	46	07:39 (WEA 02)	20:59	24	06:15 (6B)	21:34	51	06:45 (13B)
15	08:16		08:56 (29B)	07:31		08:01 (WEA 11)	06:31		07:02 (WEA 10)	06:21		06:45 (WEA 03)	05:24		05:50 (WEA 14)	04:56		05:27 (28)
	16:33	42	09:59 (WEA 13)	17:28	71	09:51 (18B)	18:18	46	07:48 (14B)	20:11	44	07:37 (WEA 02)	21:00	25	06:15 (6B)	21:35	52	06:46 (13B)
16	08:15		08:58 (29B)	07:29		08:00 (WEA 11)	06:29		07:02 (WEA 10)	06:19		06:44 (WEA 03)	05:22		05:48 (WEA 14)	04:56		05:28 (28)
	16:35	40	09:59 (WEA 13)	17:30	66	09:51 (18B)	18:20	48	07:50 (14B)	20:13	38	07:33 (WEA 02)	21:02	26	06:14 (6B)	21:36	51	06:46 (13B)
17	08:14		08:59 (29B)	07:27		08:00 (WEA 11)	06:27		07:02 (WEA 10)	06:17		06:43 (WEA 03)	05:21		05:47 (WEA 14)	04:56		05:28 (28)
	16:36	38	10:00 (WEA 13)	17:32	62	09:51 (18B)	18:22	47	07:49 (14B)	20:14	32	07:15 (11B)	21:03	29	06:24 (13B)	21:36	51	06:46 (13B)
18	08:13		09:28 (WEA 13)	07:25		08:00 (WEA 11)	06:25		07:02 (WEA 10)	06:14		06:43 (WEA 03)	05:19		05:48 (WEA 14)	04:56		05:28 (28)
	16:38	32	10:00 (WEA 13)	17:34	62	09:51 (18B)	18:23	48	07:50 (14B)	20:16	31	07:14 (11B)	21:05	37	06:29 (13B)	21:36	51	06:46 (13B)
19	08:12		09:27 (WEA 13)	07:23		08:00 (WEA 11)	06:22		07:03 (WEA 10)	06:12		06:41 (WEA 03)	05:18		05:47 (WEA 14)	04:56		05:28 (28)
	16:39	32	09:59 (WEA 13)	17:35	62	09:51 (18B)	18:25	47	07:50 (14B)	20:18	32	07:13 (11B)	21:06	42	06:31 (13B)	21:37	51	06:46 (13B)
20	08:11		08:39 (WEA 08)	07:21		07:59 (WEA 11)	06:20		07:03 (WEA 10)	06:10		06:41 (WEA 03)	05:16		05:47 (WEA 14)	04:56		05:28 (28)
	16:41	38	09:59 (WEA 13)	17:37	62	09:50 (18B)	18:27	45	07:50 (14B)	20:19	31	07:12 (11B)	21:08	43	06:33 (13B)	21:37	51	06:46 (13B)
21	08:10		08:38 (WEA 08)	07:19		08:00 (WEA 11)	06:18		07:05 (WEA 10)	06:08		06:41 (WEA 03)	05:15		05:47 (WEA 14)	04:56		05:28 (28)
	16:43	40	09:59 (WEA 13)	17:39	60	09:50 (18B)	18:28	42	07:50 (14B)	20:21	30	07:11 (11B)	21:09	43	06:34 (13B)	21:37	51	06:46 (13B)
22	08:09		08:37 (WEA 08)	07:17		08:00 (WEA 11)	06:15		07:07 (WEA 10)	06:06		06:41 (WEA 03)	05:14		05:48 (WEA 14)	04:56		05:29 (28)
	16:44	41	09:59 (WEA 13)	17:41	58	09:49 (18B)	18:30	36	07:49 (14B)	20:23	29	07:10 (11B)	21:10	45	06:36 (13B)	21:38	51	06:47 (13B)
23	08:08		08:35 (WEA 08)	07:15		07:39 (WEA 07)	06:13		07:23 (14B)	06:04		06:41 (WEA 03)	05:12		05:48 (WEA 14)	04:56		05:29 (28)
	16:46	42	09:58 (WEA 13)	17:43	58	09:49 (18B)	18:32	26	07:49 (14B)	20:24	28	07:09 (11B)	21:12	47	06:37 (13B)	21:38	51	06:47 (13B)
24	08:07		08:34 (WEA 08)	07:13		07:37 (WEA 07)	06:11		07:23 (14B)	06:02		06:41 (WEA 03)	05:11		05:49 (WEA 14)	04:57		05:29 (28)
	16:48	43	09:58 (WEA 13)	17:45	57	09:48 (18B)	18:34	24	07:47 (14B)	20:26	25	07:06 (11B)	21:13	48	06:38 (13B)	21:38	51	06:47 (13B)
25	08:05		08:34 (WEA 08)	07:11		07:35 (WEA 07)	06:08		07:23 (14B)	06:00		06:42 (WEA 03)	05:10		05:48 (WEA 14)	04:57		05:29 (28)
	16:50	43	09:58 (WEA 13)	17:46	57	09:47 (18B)	18:35	24	07:47 (14B)	20:28	20	07:02 (WEA 03)	21:15	47	06:37 (13B)	21:38	51	06:47 (13B)
26	08:04		08:33 (WEA 08)	07:09		07:33 (WEA 07)	06:06		07:24 (14B)	05:58		06:43 (WEA 03)	05:09		05:49 (WEA 14)	04:57		05:30 (28)
	16:51	42	09:56 (WEA 13)	17:48	50	09:46 (18B)	18:37	21	07:45 (14B)	20:29	18	07:01 (WEA 03)	21:16	48	06:38 (13B)	21:38	51	06:48 (13B)
27	08:03		08:34 (WEA 08)	07:07		07:30 (WEA 07)	06:04		07:25 (14B)	05:56		06:45 (WEA 03)	05:08		05:50 (WEA 14)	04:58		05:29 (28)
	16:53	38	09:55 (WEA 13)	17:50	44	09:43 (18B)	18:39	18	07:43 (14B)	20:31	15	07:00 (WEA 03)	21:17	49	06:40 (13B)	21:38	52	06:48 (13B)
28	08:01		08:33 (WEA 08)	07:05		07:29 (WEA 07)	06:02		06:32 (WEA 02)	05:54		06:47 (WEA 03)	05:07		05:51 (WEA 14)	04:58		05:30 (28)
	16:55	36	09:53 (WEA 13)	17:52	41	09:41 (18B)	18:40	20	07:41 (14B)	20:33	10	06:57 (WEA 03)	21:18	48	06:40 (13B)	21:38	52	06:48 (13B)
29	08:00		08:34 (WEA 08)				06:59		07:28 (WEA 02)	05:52			05:06		05:52 (WEA 14)	04:59		05:30 (28)
	16:57	29	09:51 (WEA 13)				19:42	20	08:37 (14B)	20:34			21:20	46	06:40 (13B)	21:38	51	06:48 (13B)
30	07:59		08:34 (WEA 08)				06:57		07:25 (WEA 02)	05:50			05:05		05:33 (28)	04:59		05:30 (28)
	16:59	20	08:54 (WEA 08)				19:44	19	07:44 (WEA 02)	20:36			21:21	47	06:41 (13B)	21:37	52	06:49 (13B)
31	07:57		08:34 (WEA 08)				06:55		07:23 (WEA 02)				05:04		05:32 (28)			
	17:00	24	08:58 (19B)				19:45	22	07:45 (WEA 02)				21:22	48	06:41 (13B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		1381			1470			882			950			869			1494	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,60			0,63			0,69			0,72			0,71			0,71	
Gesamte Reduktion		0,12			0,19			0,17			0,24			0,29			0,23	
Met.wahrsch.Beschattung		167			278			154			230			250			347	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 44 - Reinstedt - Bauschuttrecycling 2

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November			Dezember		
1	05:00		05:31 (2B)	05:36		06:05 (WEA 14)	06:26		06:57 (WEA 04)	07:14		07:43 (WEA 10)	07:08		07:38 (WEA 11)	07:58		08:35 (29B)
	21:37	51	06:49 (13B)	21:06	21	06:26 (6B)	20:04	45	07:43 (WEA 02)	18:55	39	08:22 (14B)	16:49	57	09:16 (18B)	16:09	54	09:40 (WEA 13)
2	05:01		05:31 (2B)	05:38		06:06 (WEA 14)	06:27		06:56 (WEA 04)	07:16		07:44 (WEA 10)	07:09		08:14 (19B)	08:00		08:36 (29B)
	21:37	51	06:49 (13B)	21:04	19	06:25 (6B)	20:02	46	07:43 (WEA 02)	18:52	29	08:13 (15B)	16:47	50	09:15 (18B)	16:08	54	09:40 (WEA 13)
3	05:01		05:32 (2B)	05:39		06:08 (WEA 14)	06:29		06:56 (WEA 04)	07:18		07:45 (WEA 10)	07:11		08:14 (19B)	08:01		08:36 (29B)
	21:36	49	06:49 (13B)	21:02	17	06:25 (6B)	19:59	48	07:44 (WEA 02)	18:50	27	08:12 (15B)	16:45	46	09:13 (18B)	16:08	54	09:40 (WEA 13)
4	05:02		05:33 (2B)	05:41		06:10 (6B)	06:30		06:56 (WEA 04)	07:19		07:45 (WEA 10)	07:13		08:14 (19B)	08:03		08:37 (29B)
	21:36	50	06:50 (13B)	21:01	14	06:24 (6B)	19:57	47	07:43 (WEA 02)	18:48	24	08:09 (15B)	16:44	42	09:11 (18B)	16:07	54	09:41 (WEA 13)
5	05:03		05:33 (2B)	05:42		06:12 (6B)	06:32		06:58 (WEA 04)	07:21		07:47 (WEA 10)	07:15		08:11 (WEA 08)	08:04		08:37 (29B)
	21:36	48	06:49 (13B)	20:59	12	06:24 (6B)	19:55	45	07:43 (WEA 02)	18:46	15	08:06 (15B)	16:42	40	09:09 (18B)	16:07	54	09:41 (WEA 13)
6	05:04		05:34 (2B)	05:44		06:12 (6B)	06:34		06:59 (WEA 04)	07:23			07:17		08:09 (WEA 08)	08:05		08:37 (29B)
	21:35	47	06:49 (13B)	20:57	10	06:22 (6B)	19:53	43	07:43 (WEA 02)	18:43			16:40	35	09:06 (18B)	16:06	54	09:41 (WEA 13)
7	05:05		05:35 (2B)	05:45		06:15 (6B)	06:35		07:01 (WEA 04)	07:24		08:08 (WEA 07)	07:18		08:08 (WEA 08)	08:06		08:39 (29B)
	21:34	47	06:49 (13B)	20:55	5	06:20 (6B)	19:50	40	07:43 (WEA 02)	18:41	8	08:16 (WEA 07)	16:38	27	08:35 (19B)	16:06	56	09:45 (WEA 12)
8	05:06		05:36 (2B)	05:47			06:37		07:02 (WEA 04)	07:26		08:06 (WEA 07)	07:20		08:07 (WEA 08)	08:08		08:40 (29B)
	21:34	46	06:50 (13B)	20:53			19:48	34	07:41 (WEA 02)	18:39	12	08:18 (WEA 07)	16:37	27	08:34 (19B)	16:05	57	09:47 (WEA 12)
9	05:07		05:37 (2B)	05:49			06:39		07:13 (WEA 02)	07:28		08:05 (WEA 07)	07:22		08:06 (WEA 08)	08:09		08:41 (29B)
	21:33	45	06:50 (13B)	20:52			19:46	28	07:41 (WEA 02)	18:37	15	08:20 (WEA 07)	16:35	27	08:33 (19B)	16:05	57	09:48 (WEA 12)
10	05:08		05:38 (2B)	05:50			06:40		07:14 (WEA 02)	07:29		08:04 (WEA 07)	07:24		08:06 (WEA 08)	08:10		08:42 (29B)
	21:32	43	06:50 (13B)	20:50			19:43	26	07:40 (WEA 02)	18:34	16	08:20 (WEA 07)	16:34	26	08:32 (19B)	16:05	57	09:49 (WEA 12)
11	05:09		05:39 (2B)	05:52			06:42		07:14 (WEA 02)	07:31		08:02 (WEA 07)	07:25		08:06 (WEA 08)	08:11		08:44 (29B)
	21:32	46	06:50 (13B)	20:48			19:41	25	07:39 (WEA 02)	18:32	23	10:05 (18B)	16:32	23	08:29 (19B)	16:05	57	09:51 (WEA 12)
12	05:10		05:40 (2B)	05:53			06:43		07:15 (WEA 02)	07:33		08:02 (WEA 07)	07:27		08:06 (WEA 08)	08:12		08:45 (29B)
	21:31	48	06:50 (13B)	20:46			19:39	23	07:38 (WEA 02)	18:30	33	10:10 (18B)	16:30	20	08:26 (WEA 08)	16:05	57	09:52 (WEA 12)
13	05:11		05:41 (2B)	05:55			06:45		07:16 (WEA 02)	07:34		08:02 (WEA 07)	07:29		08:06 (WEA 08)	08:13		08:46 (29B)
	21:30	47	06:49 (13B)	20:44			19:37	19	07:35 (WEA 02)	18:28	39	10:13 (18B)	16:29	29	09:23 (WEA 13)	16:05	56	09:53 (WEA 12)
14	05:12		06:01 (WEA 14)	05:57		06:57 (WEA 03)	06:47		07:18 (WEA 02)	07:36		08:02 (WEA 07)	07:31		08:05 (WEA 08)	08:14		08:47 (29B)
	21:29	46	06:49 (13B)	20:42	5	07:02 (WEA 03)	19:34	17	08:25 (14B)	18:26	43	10:15 (18B)	16:27	36	09:25 (WEA 13)	16:05	56	09:54 (WEA 12)
15	05:13		06:00 (WEA 14)	05:58		06:54 (WEA 03)	06:48		07:21 (WEA 02)	07:38		08:04 (WEA 07)	07:32		08:06 (WEA 08)	08:15		08:47 (29B)
	21:28	47	06:49 (13B)	20:40	12	07:06 (WEA 03)	19:32	20	08:29 (14B)	18:23	44	10:17 (18B)	16:26	39	09:27 (WEA 13)	16:05	55	09:54 (WEA 12)
16	05:14		05:59 (WEA 14)	06:00		06:51 (WEA 03)	06:50		08:15 (14B)	07:40		08:05 (WEA 07)	07:34		08:06 (WEA 08)	08:16		08:48 (29B)
	21:27	48	06:48 (13B)	20:38	16	07:07 (WEA 03)	19:30	17	08:32 (14B)	18:21	53	10:17 (18B)	16:25	42	09:29 (WEA 13)	16:05	54	09:54 (WEA 12)
17	05:15		05:59 (WEA 14)	06:01		06:50 (WEA 03)	06:51		08:13 (14B)	07:41		08:07 (WEA 07)	07:36		08:07 (WEA 08)	08:17		08:49 (29B)
	21:26	47	06:48 (13B)	20:36	18	07:08 (WEA 03)	19:27	20	08:33 (14B)	18:19	57	10:19 (18B)	16:23	43	09:31 (WEA 13)	16:05	54	09:55 (WEA 12)
18	05:17		05:58 (WEA 14)	06:03		06:49 (WEA 03)	06:53		08:11 (14B)	07:43		08:09 (WEA 07)	07:38		08:08 (WEA 08)	08:17		09:03 (WEA 09)
	21:25	48	06:47 (13B)	20:34	20	07:09 (11B)	19:25	23	08:34 (14B)	18:17	57	10:19 (18B)	16:22	43	09:32 (WEA 13)	16:05	53	09:56 (WEA 12)
19	05:18		05:59 (WEA 14)	06:05		06:48 (WEA 03)	06:55		08:10 (14B)	07:45		08:32 (WEA 11)	07:39		08:10 (WEA 08)	08:18		09:02 (WEA 09)
	21:24	46	06:47 (13B)	20:32	25	07:13 (11B)	19:23	25	08:35 (14B)	18:15	56	10:20 (18B)	16:21	42	09:33 (WEA 13)	16:06	54	09:56 (WEA 12)
20	05:19		05:58 (WEA 14)	06:06		06:47 (WEA 03)	06:56		08:09 (14B)	07:46		08:31 (WEA 11)	07:41		08:12 (WEA 08)	08:19		09:03 (WEA 09)
	21:23	47	06:47 (13B)	20:30	28	07:15 (11B)	19:20	25	08:34 (14B)	18:13	59	10:21 (18B)	16:19	41	09:34 (WEA 13)	16:06	54	09:57 (WEA 12)
21	05:21		05:58 (WEA 14)	06:08		06:47 (WEA 03)	06:58		07:54 (WEA 10)	07:48		08:31 (WEA 11)	07:43		08:13 (WEA 08)	08:19		09:04 (WEA 09)
	21:21	45	06:46 (13B)	20:28	29	07:16 (11B)	19:18	34	08:35 (14B)	18:11	60	10:21 (18B)	16:18	40	09:34 (WEA 13)	16:06	54	09:58 (WEA 12)
22	05:22		05:57 (WEA 14)	06:09		06:46 (WEA 03)	06:59		07:51 (WEA 10)	07:50		08:30 (WEA 11)	07:44		08:15 (WEA 08)	08:20		09:04 (WEA 09)
	21:20	43	06:44 (13B)	20:26	30	07:16 (11B)	19:16	41	08:35 (14B)	18:09	61	10:20 (18B)	16:17	38	09:35 (WEA 13)	16:07	54	09:58 (WEA 12)
23	05:23		05:58 (WEA 14)	06:11		06:46 (WEA 03)	07:01		07:48 (WEA 10)	07:52		08:29 (WEA 11)	07:46		08:17 (WEA 08)	08:20		09:05 (WEA 09)
	21:19	42	06:44 (13B)	20:24	31	07:17 (11B)	19:13	44	08:34 (14B)	18:07	62	10:20 (18B)	16:16	33	09:36 (WEA 13)	16:07	54	09:59 (WEA 12)
24	05:25		05:58 (WEA 14)	06:13		06:45 (WEA 03)	07:03		07:47 (WEA 10)	07:53		08:29 (WEA 11)	07:48		09:05 (WEA 13)	08:21		09:05 (WEA 09)
	21:18	42	06:42 (13B)	20:21	32	07:17 (11B)	19:11	47	08:34 (14B)	18:05	63	10:21 (18B)	16:15	32	09:37 (WEA 13)	16:08	54	09:59 (WEA 12)
25	05:26		05:57 (WEA 14)	06:14		06:46 (WEA 03)	07:04		07:45 (WEA 10)	06:55		08:30 (WEA 11)	07:49		08:38 (29B)	08:21		09:06 (WEA 09)
	21:16	40	06:40 (13B)	20:19	31	07:17 (11B)	19:09	48	08:33 (14B)	17:02	60	09:20 (18B)	16:14	37	09:38 (WEA 13)	16:08	53	09:59 (WEA 12)
26	05:27		05:58 (WEA 14)	06:16		06:45 (WEA 03)	07:06		07:45 (WEA 10)	06:57		07:30 (WEA 11)	07:51		08:36 (29B)	08:21		09:06 (WEA 09)
	21:15	35	06:38 (13B)	20:17	31	07:16 (11B)	19:06	47	08:32 (14B)	17:00	67	09:20 (18B)	16:13	41	09:38 (WEA 13)	16:09	53	09:59 (WEA 12)
27	05:29		05:58 (WEA 14)	06:18		06:46 (WEA 03)	07:08		07:44 (WEA 10)	06:59		07:30 (WEA 11)	07:52		08:35 (29B)	08:22		08:54 (29B)
	21:13	27	06:25 (6B)	20:15	38	07:35 (WEA 02)	19:04	48	08:32 (14B)	16:59	72	09:20 (18B)	16:12	42	09:38 (WEA 13)	16:10	54	10:00 (WEA 12)
28	05:30		05:59 (WEA 14)	06:19		06:46 (WEA 03)	07:09		07:43 (WEA 10)	07:01		07:31 (WEA 11)	07:54		08:36 (29B)	08:22		08:54 (29B)
	21:12	26	06:25 (6B)	20:13	44	07:38 (WEA 02)	19:02	47	08:30 (14B)	16:57	72	09:20 (18B)	16:11	48	09:39 (WEA 13)	16:11	55	10:01 (WEA 12)
29	05:32		06:01 (WEA 14)	06:21		06:48 (WEA 03)	07:11		07:43 (WEA 10)	07:02		07:32 (WEA 11)	07:55		08:35 (29B)	08:22		08:54 (29B)
	21:10	25	06:26 (6B)	20:11	46	07:40 (WEA 02)	18:59	45	08:28 (14B)	16:55	72	09:19 (18B)	16:10	50	09:39 (WEA 13)	16:12	56	10:01 (WEA 12)
30	05:33		06:02 (WEA 14)	06:22		06:50 (WEA 03)	07:13		07:43 (WEA 10)	07:04		07:34 (WEA 11)	07:57		08:35 (29B)	08:22		08:54 (29B)
	21:09	24	06:26 (6B)	20:08	48	07:42 (WEA 02)	18:57	43	08:26 (14B)	16:53	68	09:18 (18B)	16:10	53	09:40 (WEA 13)	16:12	57	10:01 (WEA 12)
31	05:35		06:03 (WEA 14)	06:24		06:52 (WEA 03)				07:06		07:35 (WEA 11)				08:22		08:54 (29B)
	21:07	22	06:25 (6B)	20:06	48	07:42 (WEA 02)				16:51	64	09:17 (18B)				16:13	57	10:01 (WEA 12)
Sonnenscheinstunden	501			453			381			332			267			245		
astr.max.mögl.Beschattung		1318			630			1060			1370			1149			1702	
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22			0,18	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,71			0,72			0,71			0,64			0,61			0,60	
Gesamte Reduktion		0,27			0,29			0,23			0,17			0,13			0,10	
Met.wahrsch.Beschattung		355			183			240			234			147			168	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 46 - Reinstedt - Solarpark

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22		08:53 (WEA 11)	07:56		08:22 (WEA 07)	07:03		07:40 (WEA 02)	06:52		07:25 (6B)	05:48		06:13 (2B)	05:03		05:52 (5B)
	16:15	42	09:50 (14B)	17:02	28	09:08 (15B)	17:53	87	09:38 (13B)	19:47	37	08:03 (WEA 03)	20:38	77	07:55 (10B)	21:23	16	06:08 (5B)
2	08:22		08:53 (WEA 11)	07:54		08:20 (WEA 07)	07:00		07:40 (WEA 02)	06:50		07:25 (6B)	05:46		06:11 (2B)	05:02		05:52 (5B)
	16:16	44	09:51 (14B)	17:04	30	09:07 (15B)	17:55	86	09:38 (13B)	19:49	34	08:01 (WEA 03)	20:39	79	07:54 (10B)	21:24	18	06:10 (5B)
3	08:22		08:54 (WEA 11)	07:53		08:18 (WEA 07)	06:58		07:39 (WEA 02)	06:48		07:24 (6B)	05:44		06:10 (2B)	05:01		05:51 (5B)
	16:17	47	09:53 (14B)	17:06	33	09:07 (15B)	17:57	84	09:36 (13B)	19:51	24	07:55 (WEA 03)	20:41	80	07:55 (10B)	21:25	19	06:10 (5B)
4	08:22		08:53 (WEA 11)	07:51		08:17 (WEA 07)	06:56		07:39 (WEA 02)	06:46		07:24 (6B)	05:42		06:09 (2B)	05:01		05:50 (5B)
	16:18	49	09:53 (14B)	17:08	34	09:07 (15B)	17:59	84	09:36 (13B)	19:52	21	07:45 (6B)	20:43	78	07:54 (10B)	21:26	21	06:11 (5B)
5	08:22		08:53 (WEA 11)	07:49		08:16 (WEA 07)	06:54		07:39 (WEA 02)	06:43		07:24 (6B)	05:40		06:08 (2B)	05:00		05:50 (5B)
	16:19	52	09:54 (14B)	17:10	33	09:06 (15B)	18:01	81	09:35 (13B)	19:54	20	07:44 (6B)	20:44	77	07:53 (10B)	21:27	22	06:12 (5B)
6	08:21		08:53 (WEA 11)	07:48		08:15 (WEA 07)	06:52		07:39 (WEA 02)	06:41		07:04 (WEA 15)	05:39		06:08 (2B)	04:59		05:49 (5B)
	16:20	54	09:56 (14B)	17:11	32	09:05 (15B)	18:02	78	09:34 (13B)	19:56	25	07:44 (6B)	20:46	73	07:52 (10B)	21:28	23	06:12 (5B)
7	08:21		08:53 (WEA 11)	07:46		08:13 (WEA 10)	06:49		07:38 (WEA 02)	06:39		07:01 (WEA 15)	05:37		06:08 (2B)	04:59		05:49 (5B)
	16:22	55	09:56 (14B)	17:13	30	09:03 (15B)	18:04	77	09:32 (13B)	19:57	27	07:42 (6B)	20:48	67	07:52 (10B)	21:29	24	06:13 (5B)
8	08:20		08:53 (WEA 11)	07:44		08:11 (WEA 10)	06:47		07:39 (WEA 02)	06:36		06:59 (WEA 15)	05:35		06:08 (2B)	04:58		05:49 (5B)
	16:23	56	09:56 (14B)	17:15	23	08:34 (WEA 07)	18:06	74	09:31 (13B)	19:59	27	07:40 (6B)	20:49	57	07:51 (10B)	21:30	24	06:13 (5B)
9	08:20		08:53 (WEA 11)	07:42		08:09 (WEA 10)	06:45		07:39 (WEA 02)	06:34		06:57 (WEA 15)	05:33		06:08 (2B)	04:58		05:49 (5B)
	16:24	59	09:58 (14B)	17:17	25	08:34 (WEA 07)	18:08	71	09:30 (13B)	20:01	26	07:38 (6B)	20:51	56	07:51 (10B)	21:31	25	06:14 (5B)
10	08:19		08:53 (WEA 11)	07:41		08:09 (WEA 10)	06:43		07:40 (WEA 02)	06:32		06:55 (WEA 15)	05:32		06:08 (2B)	04:57		05:49 (5B)
	16:26	59	09:58 (14B)	17:19	40	09:22 (13B)	18:09	66	09:29 (13B)	20:02	18	07:13 (WEA 15)	20:52	54	07:50 (10B)	21:32	26	06:15 (5B)
11	08:19		08:53 (WEA 11)	07:39		08:08 (WEA 10)	06:40		07:41 (WEA 02)	06:30		06:53 (WEA 15)	05:30		06:08 (2B)	04:57		05:48 (5B)
	16:27	59	09:59 (14B)	17:21	48	09:26 (13B)	18:11	60	09:26 (13B)	20:04	19	07:12 (WEA 15)	20:54	51	07:48 (10B)	21:33	27	06:15 (5B)
12	08:18		08:54 (WEA 11)	07:37		08:07 (WEA 10)	06:38		07:42 (WEA 02)	06:28		06:53 (WEA 15)	05:28		06:09 (2B)	04:57		05:48 (5B)
	16:29	59	10:00 (14B)	17:22	52	09:28 (13B)	18:13	53	09:24 (13B)	20:06	19	07:12 (WEA 15)	20:56	48	07:48 (10B)	21:33	27	06:15 (5B)
13	08:18		08:54 (WEA 11)	07:35		08:07 (WEA 10)	06:36		07:44 (WEA 02)	06:25		06:53 (WEA 15)	05:27		06:10 (2B)	04:56		05:49 (5B)
	16:30	60	10:01 (14B)	17:24	56	09:30 (13B)	18:15	44	09:21 (13B)	20:07	31	07:42 (10B)	20:57	44	07:46 (10B)	21:34	27	06:16 (5B)
14	08:17		08:54 (WEA 11)	07:33		08:06 (WEA 10)	06:34		06:56 (WEA 04)	06:23		06:54 (WEA 15)	05:25		06:12 (2B)	04:56		05:49 (5B)
	16:31	60	10:01 (14B)	17:26	60	09:32 (13B)	18:16	40	09:16 (13B)	20:09	37	07:46 (10B)	20:59	39	07:45 (10B)	21:34	27	06:16 (5B)
15	08:16		08:54 (WEA 11)	07:31		07:56 (WEA 06)	06:31		06:54 (WEA 04)	06:21		06:54 (WEA 15)	05:24		06:14 (2B)	04:56		05:49 (5B)
	16:33	61	10:02 (14B)	17:28	66	09:33 (13B)	18:18	20	09:10 (13B)	20:11	42	07:49 (10B)	21:00	32	07:44 (10B)	21:35	28	06:17 (5B)
16	08:15		08:54 (WEA 11)	07:29		07:54 (WEA 06)	06:29		06:52 (WEA 04)	06:19		06:55 (WEA 15)	05:22		07:18 (10B)	04:56		05:49 (5B)
	16:35	60	10:02 (14B)	17:30	72	09:34 (13B)	18:20	16	07:08 (WEA 04)	20:13	43	07:50 (10B)	21:02	24	07:42 (10B)	21:36	28	06:17 (5B)
17	08:14		08:54 (WEA 11)	07:27		07:52 (WEA 06)	06:27		06:49 (WEA 04)	06:17		06:57 (WEA 15)	05:21		07:20 (10B)	04:56		05:49 (5B)
	16:36	58	10:03 (14B)	17:32	78	09:35 (13B)	18:22	19	07:08 (WEA 04)	20:14	42	07:52 (10B)	21:03	21	07:41 (10B)	21:36	29	06:18 (5B)
18	08:13		08:55 (WEA 11)	07:25		07:50 (WEA 06)	06:25		06:49 (WEA 04)	06:14		07:18 (10B)	05:19		07:22 (10B)	04:56		05:49 (5B)
	16:38	53	10:03 (14B)	17:34	82	09:36 (13B)	18:23	20	07:09 (WEA 04)	20:16	35	07:53 (10B)	21:05	17	07:39 (10B)	21:36	29	06:18 (5B)
19	08:12		08:54 (WEA 11)	07:23		07:48 (WEA 06)	06:22		06:48 (WEA 04)	06:12		06:37 (WEA 14)	05:18		07:23 (10B)	04:56		05:49 (5B)
	16:39	51	10:03 (14B)	17:35	86	09:37 (13B)	18:25	21	07:09 (WEA 04)	20:18	41	07:53 (10B)	21:06	13	07:36 (10B)	21:37	29	06:18 (5B)
20	08:11		08:55 (WEA 11)	07:21		07:45 (WEA 06)	06:20		06:47 (WEA 04)	06:10		06:33 (WEA 14)	05:16		07:29 (10B)	04:56		05:50 (5B)
	16:41	49	10:03 (14B)	17:37	88	09:37 (13B)	18:27	22	07:09 (WEA 04)	20:19	52	07:54 (10B)	21:08	2	07:31 (10B)	21:37	28	06:18 (5B)
21	08:10		08:56 (WEA 11)	07:19		07:45 (WEA 06)	06:18		06:46 (WEA 03)	06:08		06:31 (WEA 14)	05:15			04:56		05:50 (5B)
	16:43	49	10:04 (14B)	17:39	91	09:38 (13B)	18:28	24	07:10 (WEA 03)	20:21	57	07:54 (10B)	21:09			21:37	28	06:18 (5B)
22	08:09		08:57 (WEA 11)	07:17		07:45 (WEA 06)	06:15		06:45 (WEA 03)	06:06		06:29 (WEA 14)	05:14			04:56		05:50 (5B)
	16:44	47	10:04 (14B)	17:41	91	09:38 (13B)	18:30	26	07:11 (WEA 03)	20:23	62	07:55 (10B)	21:10			21:38	28	06:18 (5B)
23	08:08		08:57 (WEA 11)	07:15		07:46 (WEA 06)	06:13		06:44 (WEA 03)	06:04		06:28 (WEA 14)	05:12			04:56		05:51 (5B)
	16:46	45	10:03 (14B)	17:43	89	09:39 (13B)	18:32	27	07:11 (WEA 03)	20:24	64	07:55 (10B)	21:12			21:38	28	06:19 (5B)
24	08:07		08:52 (15B)	07:13		07:46 (WEA 02)	06:11		06:43 (WEA 03)	06:02		06:27 (WEA 14)	05:11			04:57		05:50 (5B)
	16:48	49	10:03 (14B)	17:44	85	09:39 (13B)	18:34	28	07:11 (WEA 03)	20:26	66	07:55 (10B)	21:13			21:38	29	06:19 (5B)
25	08:05		08:51 (15B)	07:11		07:45 (WEA 02)	06:08		06:43 (WEA 03)	06:00		06:26 (WEA 14)	05:10			04:57		05:50 (5B)
	16:50	50	10:04 (14B)	17:46	82	09:39 (13B)	18:35	28	07:11 (WEA 03)	20:28	69	07:56 (10B)	21:15			21:38	29	06:19 (5B)
26	08:04		08:50 (15B)	07:09		07:43 (WEA 02)	06:06		06:43 (WEA 03)	05:58		06:26 (WEA 14)	05:09			04:57		05:51 (5B)
	16:51	49	10:03 (14B)	17:48	84	09:39 (13B)	18:37	28	07:11 (WEA 03)	20:29	68	07:55 (10B)	21:16			21:38	28	06:19 (5B)
27	08:03		08:50 (15B)	07:07		07:41 (WEA 02)	06:04		06:42 (WEA 03)	05:56		06:26 (WEA 14)	05:08			04:58		05:51 (5B)
	16:53	46	10:02 (14B)	17:50	86	09:38 (13B)	18:39	27	07:09 (WEA 03)	20:31	70	07:56 (10B)	21:17			21:38	28	06:19 (5B)
28	08:01		08:49 (15B)	07:05		07:41 (WEA 02)	06:02		06:32 (6B)	05:54		06:26 (WEA 14)	05:07			04:58		05:52 (5B)
	16:55	44	10:01 (14B)	17:52	86	09:38 (13B)	18:40	35	07:09 (WEA 03)	20:33	70	07:56 (10B)	21:18			21:38	28	06:20 (5B)
29	08:00		08:49 (15B)				06:59		07:30 (6B)	05:52		06:26 (WEA 14)	05:06		05:57 (5B)	04:59		05:52 (5B)
	16:57	38	10:00 (14B)				19:42	38	08:08 (WEA 03)	20:34	70	07:56 (10B)	21:20	6	06:03 (5B)	21:38	27	06:19 (5B)
30	07:59		08:25 (WEA 07)				06:57		07:27 (6B)	05:50		06:26 (WEA 14)	05:05		05:55 (5B)	04:59		05:53 (5B)
	16:59	30	09:58 (14B)				19:44	39	08:06 (WEA 03)	20:36	69	07:55 (10B)	21:21	10	06:05 (5B)	21:37	27	06:20 (5B)
31	07:57		08:23 (WEA 07)				06:55		07:26 (6B)				05:04		05:53 (5B)			
	17:00	25	09:07 (15B)				19:45	39	08:05 (WEA 03)				21:22	14	06:07 (5B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		1559			1690			1442			1285			1019			777	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,60			0,65			0,67			0,72			0,72			0,71	
Gesamte Reduktion		0,12			0,19			0,17			0,24			0,29			0,23	
Met.wahrsch.Beschattung		189			329			246			312			297			180	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 46 - Reinstedt - Solarpark

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November			Dezember		
1	05:00		05:53 (5B)	05:36		06:20 (2B)	06:26		06:53 (WEA 15)	07:14		08:22 (WEA 02)	07:08		07:38 (WEA 10)	07:58		08:35 (WEA 11)
	21:37	27	06:20 (5B)	21:06	49	07:59 (10B)	20:04	19	07:12 (WEA 15)	18:55	48	10:01 (13B)	16:49	39	08:50 (13B)	16:09	60	09:41 (14B)
2	05:01		05:53 (5B)	05:38		06:19 (2B)	06:27		06:53 (WEA 15)	07:16		08:20 (WEA 02)	07:09		07:39 (WEA 10)	08:00		08:36 (WEA 11)
	21:37	26	06:19 (5B)	21:04	52	07:59 (10B)	20:02	18	07:11 (WEA 15)	18:52	57	10:04 (13B)	16:47	24	08:03 (WEA 07)	16:08	59	09:41 (14B)
3	05:01		05:54 (5B)	05:39		06:19 (2B)	06:29		06:55 (WEA 15)	07:18		08:19 (WEA 02)	07:11		07:41 (WEA 10)	08:01		08:36 (WEA 11)
	21:36	26	06:20 (5B)	21:02	54	08:00 (10B)	19:59	26	07:36 (6B)	18:50	63	10:06 (13B)	16:45	27	08:30 (15B)	16:08	58	09:41 (14B)
4	05:02		05:55 (5B)	05:41		06:18 (2B)	06:30		06:56 (WEA 15)	07:19		08:17 (WEA 02)	07:13		07:44 (WEA 10)	08:03		08:38 (WEA 11)
	21:36	25	06:20 (5B)	21:01	57	08:01 (10B)	19:57	27	07:37 (6B)	18:48	67	10:06 (13B)	16:44	30	08:33 (15B)	16:07	57	09:42 (14B)
5	05:03		05:54 (5B)	05:42		06:18 (2B)	06:32		06:58 (WEA 15)	07:21		08:16 (WEA 02)	07:15		07:45 (WEA 07)	08:04		08:38 (WEA 11)
	21:36	25	06:19 (5B)	20:59	62	08:02 (10B)	19:55	27	07:39 (6B)	18:46	72	10:08 (13B)	16:42	32	08:35 (15B)	16:07	55	09:41 (14B)
6	05:04		05:55 (5B)	05:44		06:18 (2B)	06:34		06:59 (WEA 15)	07:23		08:15 (WEA 02)	07:17		07:45 (WEA 07)	08:05		08:40 (WEA 11)
	21:35	24	06:19 (5B)	20:57	70	08:02 (10B)	19:53	26	07:39 (6B)	18:43	76	10:09 (13B)	16:40	34	08:36 (15B)	16:06	53	09:42 (14B)
7	05:05		05:56 (5B)	05:45		06:18 (2B)	06:35		07:01 (WEA 15)	07:24		08:14 (WEA 02)	07:18		07:47 (WEA 07)	08:06		08:40 (WEA 11)
	21:34	23	06:19 (5B)	20:55	75	08:03 (10B)	19:50	21	07:39 (6B)	18:41	78	10:09 (13B)	16:38	34	08:37 (15B)	16:06	52	09:41 (14B)
8	05:06		05:57 (5B)	05:47		06:18 (2B)	06:37		07:18 (6B)	07:26		08:14 (WEA 02)	07:20		07:49 (WEA 07)	08:08		08:41 (WEA 11)
	21:34	21	06:18 (5B)	20:53	78	08:03 (10B)	19:48	21	07:39 (6B)	18:39	80	10:10 (13B)	16:37	32	08:38 (15B)	16:05	49	09:41 (14B)
9	05:07		05:58 (5B)	05:49		06:19 (2B)	06:38		07:18 (6B)	07:28		08:14 (WEA 02)	07:22		07:51 (WEA 07)	08:09		08:42 (WEA 11)
	21:33	20	06:18 (5B)	20:52	79	08:04 (10B)	19:46	21	07:39 (6B)	18:37	82	10:11 (13B)	16:35	30	08:38 (15B)	16:05	46	09:41 (14B)
10	05:08		05:59 (5B)	05:50		06:19 (2B)	06:40		07:18 (6B)	07:29		08:14 (WEA 02)	07:24		07:53 (WEA 07)	08:10		08:42 (WEA 11)
	21:32	19	06:18 (5B)	20:50	80	08:03 (10B)	19:43	34	07:54 (WEA 03)	18:34	84	10:11 (13B)	16:33	27	08:38 (15B)	16:05	44	09:40 (14B)
11	05:09		06:00 (5B)	05:52		06:21 (2B)	06:42		07:18 (6B)	07:31		08:13 (WEA 02)	07:25		07:55 (WEA 07)	08:11		08:44 (WEA 11)
	21:32	17	06:17 (5B)	20:48	79	08:04 (10B)	19:41	37	07:55 (WEA 03)	18:32	86	10:11 (13B)	16:32	24	08:39 (15B)	16:05	42	09:41 (14B)
12	05:10		06:01 (5B)	05:53		06:22 (2B)	06:43		07:18 (6B)	07:33		08:13 (WEA 02)	07:27		07:57 (WEA 07)	08:12		08:45 (WEA 11)
	21:31	15	06:16 (5B)	20:46	76	08:04 (10B)	19:39	39	07:57 (WEA 03)	18:30	86	10:11 (13B)	16:30	31	09:30 (14B)	16:05	39	09:41 (14B)
13	05:11		06:02 (5B)	05:55		06:34 (WEA 14)	06:45		07:18 (6B)	07:34		08:14 (WEA 02)	07:29		08:21 (15B)	08:13		08:46 (WEA 11)
	21:30	13	06:15 (5B)	20:44	70	08:04 (10B)	19:37	39	07:57 (WEA 03)	18:28	86	10:11 (13B)	16:29	39	09:32 (14B)	16:05	38	09:41 (14B)
14	05:12		06:04 (5B)	05:57		06:33 (WEA 14)	06:47		07:20 (6B)	07:36		08:14 (WEA 02)	07:31		08:21 (15B)	08:14		08:48 (WEA 11)
	21:29	9	06:13 (5B)	20:42	70	08:03 (10B)	19:34	38	07:58 (WEA 03)	18:26	86	10:11 (13B)	16:27	44	09:33 (14B)	16:05	34	09:41 (14B)
15	05:13			05:58		06:33 (WEA 14)	06:48		07:21 (6B)	07:38		08:15 (WEA 02)	07:32		08:22 (15B)	08:15		08:48 (WEA 11)
	21:28			20:40	71	08:04 (10B)	19:32	36	07:58 (WEA 03)	18:23	85	10:11 (13B)	16:26	46	09:34 (14B)	16:05	30	09:40 (14B)
16	05:14			06:00		06:33 (WEA 14)	06:50		07:32 (WEA 03)	07:40		08:15 (WEA 02)	07:34		08:23 (15B)	08:16		08:49 (WEA 11)
	21:27			20:38	70	08:03 (10B)	19:30	27	07:59 (WEA 03)	18:21	83	10:10 (13B)	16:25	49	09:36 (14B)	16:05	27	09:40 (14B)
17	05:15			06:01		06:33 (WEA 14)	06:51		07:31 (WEA 03)	07:41		08:16 (WEA 02)	07:36		08:24 (15B)	08:17		08:51 (WEA 11)
	21:26			20:36	70	08:03 (10B)	19:27	28	07:59 (WEA 03)	18:19	81	10:10 (13B)	16:23	50	09:37 (14B)	16:05	24	09:40 (14B)
18	05:17			06:03		06:33 (WEA 14)	06:53		07:30 (WEA 03)	07:43		08:17 (WEA 06)	07:38		08:26 (15B)	08:17		09:04 (20B)
	21:25			20:34	68	08:02 (10B)	19:25	28	07:58 (WEA 03)	18:17	88	10:10 (13B)	16:22	49	09:37 (14B)	16:05	21	09:41 (14B)
19	05:18			06:05		06:34 (WEA 14)	06:55		07:31 (WEA 03)	07:45		08:17 (WEA 06)	07:39		08:32 (WEA 11)	08:18		09:05 (20B)
	21:24			20:32	66	08:02 (10B)	19:23	27	07:58 (WEA 03)	18:15	90	10:10 (13B)	16:21	45	09:38 (14B)	16:05	20	09:41 (14B)
20	05:19			06:06		06:34 (WEA 14)	06:56		07:30 (WEA 03)	07:46		08:17 (WEA 06)	07:41		08:32 (WEA 11)	08:19		09:05 (20B)
	21:23			20:30	64	08:01 (10B)	19:20	27	07:57 (WEA 03)	18:13	90	10:09 (13B)	16:19	47	09:39 (14B)	16:06	20	09:41 (14B)
21	05:20			06:08		06:35 (WEA 14)	06:58		07:30 (WEA 03)	07:48		08:17 (WEA 06)	07:43		08:31 (WEA 11)	08:19		09:06 (20B)
	21:21			20:28	60	08:00 (10B)	19:18	27	07:57 (WEA 03)	18:11	91	10:09 (13B)	16:18	49	09:39 (14B)	16:06	19	09:41 (14B)
22	05:22			06:09		06:36 (WEA 14)	06:59		07:31 (WEA 03)	07:50		08:16 (WEA 06)	07:44		08:31 (WEA 11)	08:20		09:06 (20B)
	21:20			20:26	56	07:59 (10B)	19:16	25	07:56 (WEA 03)	18:09	87	10:07 (13B)	16:17	50	09:39 (14B)	16:07	18	09:41 (14B)
23	05:23			06:11		06:38 (WEA 14)	07:01		07:31 (WEA 03)	07:52		08:18 (WEA 06)	07:46		08:31 (WEA 11)	08:20		09:07 (20B)
	21:19			20:24	50	07:58 (10B)	19:13	23	07:54 (WEA 03)	18:07	85	10:06 (13B)	16:16	50	09:40 (14B)	16:07	20	09:43 (14B)
24	05:25		07:36 (10B)	06:13		06:42 (WEA 14)	07:03		07:32 (WEA 04)	07:53		08:20 (WEA 06)	07:48		08:32 (WEA 11)	08:21		09:07 (20B)
	21:18	9	07:45 (10B)	20:21	40	07:57 (10B)	19:11	21	07:53 (WEA 04)	18:04	81	10:06 (13B)	16:15	53	09:40 (14B)	16:08	20	09:43 (14B)
25	05:26		07:33 (10B)	06:14		07:21 (10B)	07:04		07:31 (WEA 04)	06:55		07:22 (WEA 06)	07:49		08:32 (WEA 11)	08:21		09:07 (20B)
	21:16	15	07:48 (10B)	20:19	35	07:56 (10B)	19:09	21	07:52 (WEA 04)	17:02	77	09:05 (13B)	16:14	58	09:41 (14B)	16:08	20	09:43 (14B)
26	05:27		07:31 (10B)	06:16		06:59 (WEA 15)	07:06		07:32 (WEA 04)	06:57		07:24 (WEA 06)	07:51		08:32 (WEA 11)	08:21		08:56 (WEA 11)
	21:15	20	07:51 (10B)	20:17	42	07:54 (10B)	19:06	19	07:51 (WEA 04)	17:00	71	09:04 (13B)	16:13	60	09:40 (14B)	16:09	22	09:44 (14B)
27	05:29		07:29 (10B)	06:18		06:57 (WEA 15)	07:08		07:33 (WEA 04)	06:59		07:26 (WEA 06)	07:52		08:33 (WEA 11)	08:22		08:56 (WEA 11)
	21:13	23	07:52 (10B)	20:15	42	07:52 (10B)	19:04	18	07:51 (WEA 04)	16:59	63	09:02 (13B)	16:12	61	09:41 (14B)	16:10	27	09:46 (14B)
28	05:30		07:27 (10B)	06:19		06:55 (WEA 15)	07:09		07:34 (WEA 04)	07:01		07:36 (WEA 10)	07:54		08:34 (WEA 11)	08:22		08:55 (WEA 11)
	21:12	26	07:53 (10B)	20:13	41	07:49 (10B)	19:02	14	07:48 (WEA 04)	16:57	58	09:01 (13B)	16:11	60	09:41 (14B)	16:11	30	09:47 (14B)
29	05:32		06:23 (2B)	06:21		06:55 (WEA 15)	07:11		07:36 (WEA 04)	07:02		07:36 (WEA 10)	07:55		08:34 (WEA 11)	08:22		08:55 (WEA 11)
	21:10	36	07:55 (10B)	20:11	37	07:47 (10B)	18:59	34	09:55 (13B)	16:55	55	08:59 (13B)	16:10	60	09:41 (14B)	16:12	33	09:48 (14B)
30	05:33		06:21 (2B)	06:22		06:54 (WEA 15)	07:13		07:38 (WEA 04)	07:04		07:37 (WEA 10)	07:57		08:35 (WEA 11)	08:22		08:54 (WEA 11)
	21:09	42	07:56 (10B)	20:08	31	07:43 (10B)	18:57	44	09:59 (13B)	16:53	51	08:57 (13B)	16:10	59	09:41 (14B)	16:12	36	09:49 (14B)
31	05:35		06:20 (2B)	06:24		06:53 (WEA 15)				07:06		07:37 (WEA 10)				08:22		08:54 (WEA 11)
	21:07	46	07:57 (10B)	20:06	19	07:12 (WEA 15)				16:51	47	08:54 (13B)				16:13	39	09:50 (14B)
Sonnenscheinstunden	501			453			381			332			267			245		
astr.max.mögl.Beschattung		507			1813			812			2334			1293			1112	
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22			0,18	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,71			0,72			0,71			0,65			0,61			0,60	
Gesamte Reduktion		0,27			0,29			0,23			0,17			0,13			0,10	
Met.wahrsch.Beschattung		137			530			186			405			165			110	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 47 - Reinstedt - Metallbau Klug

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Januar			Februar			März			April			Mai			Juni		
1	08:22	09:03 (WEA 11)	07:56		08:25 (WEA 10)	07:03		08:02 (WEA 02)	06:52		07:15 (WEA 15)	05:48		06:21 (2B)	05:03		06:06 (SB)
	16:15	54 10:28 (14B)	17:02	73	10:45 (13B)	17:53	30	08:32 (WEA 02)	19:47	53	09:02 (10B)	20:38	34	06:55 (WEA 14)	21:23	38	06:44 (SB)
2	08:22	09:04 (WEA 11)	07:54		08:24 (WEA 10)	07:00		08:03 (WEA 02)	06:50		07:13 (WEA 15)	05:46		06:21 (2B)	05:02		06:07 (SB)
	16:16	51 10:28 (14B)	17:04	73	10:45 (13B)	17:55	27	08:30 (WEA 02)	19:49	59	09:02 (10B)	20:39	30	06:53 (WEA 14)	21:24	38	06:45 (SB)
3	08:22	09:05 (WEA 11)	07:53		08:23 (WEA 10)	06:58		08:04 (WEA 02)	06:48		07:10 (WEA 15)	05:44		06:22 (2B)	05:01		06:07 (SB)
	16:17	47 10:29 (14B)	17:06	73	10:44 (13B)	17:57	24	08:28 (WEA 02)	19:51	64	09:01 (10B)	20:41	18	06:40 (2B)	21:25	38	06:45 (SB)
4	08:22	09:04 (WEA 11)	07:51		08:23 (WEA 10)	06:56		08:05 (WEA 02)	06:45		07:08 (WEA 15)	05:42		06:22 (2B)	05:01		06:06 (SB)
	16:18	48 10:28 (14B)	17:08	73	10:45 (13B)	17:59	21	08:26 (WEA 02)	19:52	68	09:02 (10B)	20:43	17	06:39 (2B)	21:26	39	06:45 (SB)
5	08:22	09:05 (WEA 11)	07:49		08:22 (WEA 10)	06:54		08:08 (WEA 02)	06:43		07:06 (WEA 15)	05:40		06:22 (2B)	05:00		06:07 (SB)
	16:19	50 10:29 (14B)	17:10	75	10:45 (13B)	18:01	16	08:24 (WEA 02)	19:54	71	09:02 (10B)	20:44	16	06:38 (2B)	21:27	39	06:46 (SB)
6	08:21	09:06 (WEA 11)	07:48		08:22 (WEA 10)	06:52		08:12 (WEA 02)	06:41		07:04 (WEA 15)	05:39		06:23 (2B)	04:59		06:07 (SB)
	16:20	51 10:29 (14B)	17:11	74	10:44 (13B)	18:02	8	08:20 (WEA 02)	19:56	74	09:02 (10B)	20:46	14	06:37 (2B)	21:28	38	06:45 (SB)
7	08:21	09:06 (WEA 11)	07:46		08:22 (WEA 10)	06:49			06:39		07:03 (WEA 15)	05:37		06:25 (2B)	04:59		06:07 (SB)
	16:22	52 10:29 (14B)	17:13	73	10:44 (13B)	18:04			19:57	74	09:01 (10B)	20:48	11	06:36 (2B)	21:29	39	06:46 (SB)
8	08:20	09:06 (WEA 11)	07:44		08:21 (WEA 10)	06:47		07:10 (WEA 04)	06:36		07:03 (WEA 15)	05:35		06:26 (2B)	04:58		06:07 (SB)
	16:23	53 10:29 (14B)	17:15	73	10:43 (13B)	18:06	8	07:18 (WEA 04)	19:59	73	09:00 (10B)	20:49	8	06:34 (2B)	21:30	39	06:46 (SB)
9	08:20	09:07 (WEA 11)	07:42		08:07 (WEA 06)	06:45		07:08 (WEA 04)	06:34		07:03 (WEA 15)	05:33			04:58		06:07 (SB)
	16:24	53 10:29 (14B)	17:17	74	10:42 (13B)	18:08	12	07:20 (WEA 04)	20:01	72	09:00 (10B)	20:51			21:31	39	06:46 (SB)
10	08:19	09:08 (WEA 11)	07:41		08:06 (WEA 06)	06:43		07:06 (WEA 04)	06:32		07:04 (WEA 15)	05:32			04:57		06:08 (SB)
	16:26	53 10:29 (14B)	17:19	77	10:43 (13B)	18:09	18	07:24 (WEA 03)	20:02	71	09:00 (10B)	20:52			21:32	39	06:47 (SB)
11	08:19	09:08 (WEA 11)	07:39		08:04 (WEA 06)	06:40		07:03 (WEA 04)	06:30		07:04 (WEA 15)	05:30			04:57		06:07 (SB)
	16:27	53 10:28 (14B)	17:21	80	10:42 (13B)	18:11	22	07:25 (WEA 03)	20:04	68	08:58 (10B)	20:54			21:33	39	06:46 (SB)
12	08:18	09:09 (WEA 11)	07:37		08:02 (WEA 06)	06:38		07:03 (WEA 04)	06:28		07:05 (WEA 15)	05:28			04:57		06:08 (SB)
	16:28	55 10:30 (13B)	17:22	88	10:41 (13B)	18:13	24	07:27 (WEA 03)	20:06	65	08:58 (10B)	20:56			21:33	39	06:47 (SB)
13	08:18	09:09 (15B)	07:35		08:00 (WEA 06)	06:36		07:02 (WEA 04)	06:25		07:07 (WEA 15)	05:27			04:56		06:08 (SB)
	16:30	56 10:31 (13B)	17:24	87	10:39 (13B)	18:15	26	07:28 (WEA 03)	20:07	59	08:57 (10B)	20:57			21:34	39	06:47 (SB)
14	08:17	09:09 (15B)	07:33		07:58 (WEA 06)	06:34		07:01 (WEA 04)	06:23		06:50 (WEA 14)	05:25			04:56		06:08 (SB)
	16:31	58 10:32 (13B)	17:26	87	10:38 (13B)	18:16	27	07:28 (WEA 03)	20:09	52	08:56 (10B)	20:59			21:34	40	06:48 (SB)
15	08:16	09:09 (15B)	07:31		07:58 (WEA 06)	06:31		07:01 (WEA 04)	06:21		06:45 (WEA 14)	05:24			04:56		06:09 (SB)
	16:33	58 10:33 (13B)	17:28	84	10:36 (13B)	18:18	28	07:29 (WEA 03)	20:11	59	08:55 (10B)	21:00			21:35	39	06:48 (SB)
16	08:15	09:09 (15B)	07:29		07:58 (WEA 06)	06:29		07:01 (WEA 04)	06:19		06:43 (WEA 14)	05:22		06:19 (5B)	04:56		06:09 (SB)
	16:35	61 10:35 (13B)	17:30	80	10:34 (13B)	18:20	29	07:30 (WEA 03)	20:13	62	08:54 (10B)	21:02	11	06:30 (5B)	21:36	39	06:48 (SB)
17	08:14	09:09 (15B)	07:27		07:58 (WEA 06)	06:27		06:59 (6B)	06:17		06:41 (WEA 14)	05:21		06:16 (5B)	04:56		06:09 (SB)
	16:36	62 10:36 (13B)	17:32	76	10:32 (13B)	18:22	30	07:29 (WEA 03)	20:14	64	08:53 (10B)	21:03	17	06:33 (5B)	21:36	39	06:48 (SB)
18	08:13	09:10 (15B)	07:25		07:59 (WEA 06)	06:25		06:58 (6B)	06:14		06:40 (WEA 14)	05:19		06:15 (5B)	04:56		06:09 (SB)
	16:38	62 10:37 (13B)	17:34	67	10:28 (13B)	18:23	31	07:29 (WEA 03)	20:16	63	08:51 (10B)	21:05	20	06:35 (5B)	21:36	40	06:49 (SB)
19	08:12	09:09 (15B)	07:23		07:59 (WEA 06)	06:22		06:56 (6B)	06:12		06:38 (WEA 14)	05:18		06:13 (5B)	04:56		06:09 (SB)
	16:39	62 10:37 (13B)	17:35	55	10:22 (13B)	18:25	33	07:29 (WEA 03)	20:18	63	08:49 (10B)	21:06	22	06:35 (5B)	21:37	40	06:49 (SB)
20	08:11	09:10 (15B)	07:21		07:59 (WEA 06)	06:20		06:55 (6B)	06:10		06:37 (WEA 14)	05:16		06:12 (5B)	04:56		06:09 (SB)
	16:41	61 10:38 (13B)	17:37	47	08:46 (11B)	18:27	33	07:28 (WEA 03)	20:19	62	08:47 (10B)	21:08	25	06:37 (5B)	21:37	40	06:49 (SB)
21	08:10	09:11 (15B)	07:19		08:01 (WEA 02)	06:18		06:54 (6B)	06:08		06:37 (WEA 14)	05:15		06:11 (5B)	04:56		06:09 (SB)
	16:43	62 10:39 (13B)	17:39	43	08:44 (11B)	18:28	34	07:28 (WEA 03)	20:21	58	08:45 (10B)	21:09	27	06:38 (5B)	21:37	40	06:49 (SB)
22	08:09	09:11 (15B)	07:17		08:01 (WEA 02)	06:15		06:54 (6B)	06:06		06:36 (WEA 14)	05:14		06:10 (5B)	04:56		06:09 (SB)
	16:44	63 10:40 (13B)	17:41	41	08:42 (11B)	18:30	49	07:48 (10B)	20:23	56	08:43 (10B)	21:10	29	06:39 (5B)	21:38	40	06:49 (SB)
23	08:08	08:35 (WEA 07)	07:15		08:01 (WEA 02)	06:13		06:54 (6B)	06:04		06:36 (WEA 14)	05:12		06:10 (5B)	04:56		06:10 (SB)
	16:46	66 10:40 (13B)	17:43	38	08:39 (11B)	18:32	56	07:52 (10B)	20:24	52	08:41 (10B)	21:12	30	06:40 (5B)	21:38	40	06:50 (SB)
24	08:07	08:34 (WEA 07)	07:13		08:01 (WEA 02)	06:11		06:53 (6B)	06:02		06:29 (2B)	05:11		06:08 (5B)	04:57		06:10 (SB)
	16:48	68 10:41 (13B)	17:44	34	08:35 (WEA 02)	18:34	61	07:54 (10B)	20:26	53	08:38 (10B)	21:13	32	06:40 (5B)	21:38	40	06:50 (SB)
25	08:05	08:33 (WEA 07)	07:11		08:01 (WEA 02)	06:08		06:53 (6B)	06:00		06:26 (2B)	05:10		06:08 (5B)	04:57		06:10 (SB)
	16:50	71 10:42 (13B)	17:46	34	08:35 (WEA 02)	18:35	63	07:56 (10B)	20:28	49	08:34 (10B)	21:15	33	06:41 (5B)	21:38	40	06:50 (SB)
26	08:04	08:31 (WEA 07)	07:09		08:01 (WEA 02)	06:06		06:54 (6B)	05:58		06:24 (2B)	05:09		06:08 (5B)	04:57		06:11 (SB)
	16:51	72 10:42 (13B)	17:48	33	08:34 (WEA 02)	18:37	64	07:58 (10B)	20:29	36	07:00 (WEA 14)	21:16	33	06:41 (5B)	21:38	39	06:50 (SB)
27	08:03	08:30 (WEA 07)	07:07		08:01 (WEA 02)	06:04		06:54 (6B)	05:56		06:24 (2B)	05:08		06:07 (5B)	04:58		06:11 (SB)
	16:53	72 10:43 (13B)	17:50	32	08:33 (WEA 02)	18:39	62	07:58 (10B)	20:31	37	07:01 (WEA 14)	21:17	35	06:42 (5B)	21:38	39	06:50 (SB)
28	08:01	08:28 (WEA 07)	07:05		08:02 (WEA 02)	06:02		06:55 (6B)	05:54		06:23 (2B)	05:07		06:08 (5B)	04:58		06:11 (SB)
	16:55	66 10:43 (13B)	17:52	30	08:32 (WEA 02)	18:40	59	07:59 (10B)	20:33	37	07:00 (WEA 14)	21:18	35	06:43 (5B)	21:38	40	06:51 (SB)
29	08:00	08:27 (WEA 07)				06:59		07:57 (6B)	05:52		06:22 (2B)	05:06		06:07 (5B)	04:59		06:11 (SB)
	16:57	69 10:44 (13B)				19:42	57	09:00 (10B)	20:34	36	06:58 (WEA 14)	21:20	36	06:43 (5B)	21:38	39	06:50 (SB)
30	07:59	08:27 (WEA 07)				06:57		08:00 (6B)	05:50		06:22 (2B)	05:05		06:07 (5B)	04:59		06:12 (SB)
	16:59	69 10:44 (13B)				19:44	50	09:00 (10B)	20:36	35	06:57 (WEA 14)	21:21	37	06:44 (5B)	21:37	39	06:51 (SB)
31	07:57	08:25 (WEA 10)				06:55		08:12 (10B)				05:04		06:07 (5B)			
	17:00	71 10:44 (13B)				19:45	49	09:01 (10B)				21:22	37	06:44 (5B)			
Sonnenscheinstunden	260		278			367			416			484			498		
astr.max.mögl.Beschattung		1849		1774			1051			1745			607			1176	
Red.Sonnenscheinwahrsch.		0,21		0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96		0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,59		0,64			0,70			0,71			0,72			0,71	
Gesamte Reduktion		0,12		0,19			0,18			0,24			0,29			0,23	
Met.wahrsch.Beschattung		221		337			186			415			175			275	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 47 - Reinstedt - Metallbau Klug

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Juli			August			September			Oktober			November			Dezember		
1	05:00		06:12 (SB)	05:36			06:26		07:04 (WEA 15)	07:14		07:41 (WEA 04)	07:08		07:35 (WEA 06)	07:58		08:50 (WEA 11)
	21:37	40	06:52 (SB)	21:06			20:04	68	08:58 (10B)	18:55	26	08:07 (WEA 03)	16:49	75	10:11 (13B)	16:09	53	10:10 (14B)
2	05:01		06:12 (SB)	05:38			06:27		07:02 (WEA 15)	07:16		07:42 (WEA 04)	07:09		07:37 (WEA 06)	08:00		08:51 (WEA 11)
	21:37	39	06:51 (SB)	21:04			20:02	71	08:58 (10B)	18:52	23	08:05 (WEA 03)	16:47	73	10:12 (13B)	16:08	53	10:12 (14B)
3	05:01		06:12 (SB)	05:39			06:29		07:01 (WEA 15)	07:18		07:43 (WEA 04)	07:11		07:51 (WEA 10)	08:01		08:50 (WEA 11)
	21:36	40	06:52 (SB)	21:02			19:59	73	08:58 (10B)	18:50	20	08:03 (WEA 03)	16:45	73	10:13 (13B)	16:08	53	10:12 (14B)
4	05:02		06:13 (SB)	05:41		06:38 (2B)	06:30		07:00 (WEA 15)	07:19		07:44 (WEA 04)	07:13		07:51 (WEA 10)	08:03		08:51 (WEA 11)
	21:36	39	06:52 (SB)	21:01	3	06:41 (2B)	19:57	73	08:57 (10B)	18:48	14	07:58 (WEA 04)	16:44	75	10:14 (13B)	16:07	53	10:14 (14B)
5	05:03		06:12 (SB)	05:42		06:36 (2B)	06:32		07:00 (WEA 15)	07:21		07:46 (WEA 04)	07:15		07:52 (WEA 10)	08:04		08:51 (WEA 11)
	21:36	39	06:51 (SB)	20:59	9	06:45 (2B)	19:55	74	08:58 (10B)	18:46	10	07:56 (WEA 04)	16:42	74	10:14 (13B)	16:07	52	10:14 (14B)
6	05:04		06:13 (SB)	05:44		06:34 (2B)	06:34		07:00 (WEA 15)	07:23			07:17		07:52 (WEA 10)	08:05		08:52 (WEA 11)
	21:35	39	06:52 (SB)	20:57	12	06:46 (2B)	19:53	73	08:57 (10B)	18:43			16:40	73	10:14 (13B)	16:06	52	10:16 (14B)
7	05:05		06:13 (SB)	05:45		06:33 (2B)	06:35		07:01 (WEA 15)	07:24			07:18		07:53 (WEA 10)	08:06		08:52 (WEA 11)
	21:34	39	06:52 (SB)	20:55	15	06:48 (2B)	19:50	71	08:57 (10B)	18:41			16:38	73	10:15 (13B)	16:06	50	10:16 (14B)
8	05:06		06:14 (SB)	05:47		06:32 (2B)	06:37		07:02 (WEA 15)	07:26		08:44 (WEA 02)	07:20		07:54 (WEA 10)	08:08		08:52 (WEA 11)
	21:34	38	06:52 (SB)	20:53	16	06:48 (2B)	19:48	68	08:56 (10B)	18:39	13	08:57 (WEA 02)	16:37	73	10:15 (13B)	16:05	49	10:16 (14B)
9	05:07		06:14 (SB)	05:49		06:31 (2B)	06:38		07:04 (WEA 15)	07:28		08:42 (WEA 02)	07:22		07:54 (WEA 10)	08:09		08:53 (WEA 11)
	21:33	38	06:52 (SB)	20:52	18	06:49 (2B)	19:46	64	08:56 (10B)	18:37	18	09:00 (WEA 02)	16:35	73	10:15 (13B)	16:05	47	10:17 (14B)
10	05:08		06:14 (SB)	05:50		06:30 (2B)	06:40		07:06 (WEA 15)	07:29		08:40 (WEA 02)	07:24		07:56 (WEA 10)	08:10		08:53 (WEA 11)
	21:32	38	06:52 (SB)	20:50	24	06:59 (WEA 14)	19:43	60	08:55 (10B)	18:34	22	09:02 (WEA 02)	16:33	73	10:16 (13B)	16:05	50	10:17 (14B)
11	05:09		06:15 (SB)	05:52		06:30 (2B)	06:42		07:07 (WEA 15)	07:31		08:37 (WEA 02)	07:25		07:57 (WEA 10)	08:11		08:54 (WEA 11)
	21:32	37	06:52 (SB)	20:48	31	07:03 (WEA 14)	19:41	54	08:54 (10B)	18:32	26	09:03 (WEA 02)	16:32	72	10:16 (13B)	16:05	54	10:19 (14B)
12	05:10		06:15 (SB)	05:53		06:30 (2B)	06:43		08:04 (10B)	07:33		08:36 (WEA 02)	07:27		07:59 (WEA 07)	08:12		08:55 (WEA 11)
	21:31	37	06:52 (SB)	20:46	34	07:04 (WEA 14)	19:39	49	08:53 (10B)	18:30	28	09:04 (WEA 02)	16:30	69	10:16 (13B)	16:05	54	10:19 (14B)
13	05:11		06:15 (SB)	05:55		06:30 (2B)	06:45		08:04 (10B)	07:34		08:35 (WEA 02)	07:29		07:59 (WEA 07)	08:13		08:55 (WEA 11)
	21:30	37	06:52 (SB)	20:44	36	07:06 (WEA 14)	19:36	48	08:52 (10B)	18:28	30	09:05 (WEA 02)	16:29	69	10:16 (13B)	16:05	57	10:20 (14B)
14	05:12		06:16 (SB)	05:57		06:30 (2B)	06:47		07:48 (6B)	07:36		08:34 (WEA 02)	07:31		08:00 (WEA 07)	08:14		08:56 (WEA 11)
	21:29	36	06:52 (SB)	20:42	36	07:06 (WEA 14)	19:34	57	08:51 (10B)	18:26	32	09:06 (WEA 02)	16:27	66	10:15 (13B)	16:05	56	10:20 (14B)
15	05:13		06:16 (SB)	05:58		06:31 (2B)	06:48		07:45 (6B)	07:38		08:34 (WEA 02)	07:32		08:02 (WEA 07)	08:15		08:55 (WEA 11)
	21:28	36	06:52 (SB)	20:40	36	07:07 (WEA 14)	19:32	59	08:49 (10B)	18:23	32	09:06 (WEA 02)	16:26	72	10:15 (13B)	16:05	59	10:20 (14B)
16	05:14		06:16 (SB)	06:00		06:31 (2B)	06:50		07:43 (6B)	07:40		08:32 (WEA 02)	07:34		08:04 (WEA 07)	08:16		08:56 (WEA 11)
	21:27	35	06:51 (SB)	20:38	36	07:07 (WEA 14)	19:30	63	08:48 (10B)	18:21	34	09:06 (WEA 02)	16:25	72	10:15 (13B)	16:05	59	10:21 (14B)
17	05:15		06:17 (SB)	06:01		06:32 (2B)	06:51		07:42 (6B)	07:41		08:32 (WEA 02)	07:36		08:06 (WEA 07)	08:17		08:57 (WEA 11)
	21:26	34	06:51 (SB)	20:36	36	07:08 (WEA 14)	19:27	64	08:46 (10B)	18:19	34	09:06 (WEA 02)	16:23	71	10:15 (13B)	16:05	59	10:21 (14B)
18	05:17		06:17 (SB)	06:03		06:33 (2B)	06:53		07:41 (6B)	07:43		08:32 (WEA 02)	07:38		08:08 (WEA 07)	08:17		08:58 (WEA 11)
	21:25	33	06:50 (SB)	20:34	50	08:41 (10B)	19:25	63	08:44 (10B)	18:17	34	09:06 (WEA 02)	16:22	68	10:15 (13B)	16:05	57	10:22 (14B)
19	05:18		06:19 (SB)	06:05		06:36 (2B)	06:55		07:40 (6B)	07:45		08:32 (WEA 02)	07:39		08:10 (WEA 07)	08:18		08:58 (WEA 11)
	21:24	32	06:51 (SB)	20:32	51	08:45 (10B)	19:23	62	08:42 (10B)	18:15	40	09:12 (11B)	16:21	66	10:15 (13B)	16:05	59	10:23 (14B)
20	05:19		06:19 (SB)	06:06		06:42 (WEA 14)	06:56		07:39 (6B)	07:46		08:32 (WEA 02)	07:41		08:46 (15B)	08:19		08:58 (WEA 11)
	21:23	31	06:50 (SB)	20:30	53	08:47 (10B)	19:20	57	08:38 (10B)	18:13	42	09:14 (11B)	16:19	63	10:15 (13B)	16:06	59	10:23 (14B)
21	05:20		06:20 (SB)	06:08		06:42 (WEA 14)	06:58		07:39 (6B)	07:48		08:32 (WEA 06)	07:43		08:46 (15B)	08:19		08:59 (WEA 11)
	21:21	29	06:49 (SB)	20:28	57	08:49 (10B)	19:18	52	08:35 (10B)	18:11	44	09:16 (11B)	16:18	62	10:14 (13B)	16:06	59	10:24 (14B)
22	05:22		06:20 (SB)	06:09		06:42 (WEA 14)	06:59		07:39 (6B)	07:50		08:29 (WEA 06)	07:44		08:46 (15B)	08:20		08:59 (WEA 11)
	21:20	28	06:48 (SB)	20:26	59	08:50 (10B)	19:16	39	08:28 (10B)	18:09	47	09:16 (11B)	16:17	61	10:14 (13B)	16:07	59	10:24 (14B)
23	05:23		06:22 (SB)	06:11		06:42 (WEA 14)	07:01		07:39 (6B)	07:52		08:28 (WEA 06)	07:46		08:46 (15B)	08:20		09:00 (WEA 11)
	21:19	26	06:48 (SB)	20:24	61	08:52 (10B)	19:13	34	08:13 (WEA 03)	18:07	60	10:54 (13B)	16:16	62	10:14 (13B)	16:07	59	10:25 (14B)
24	05:25		06:23 (SB)	06:13		06:42 (WEA 14)	07:03		07:40 (6B)	07:53		08:28 (WEA 06)	07:48		08:47 (15B)	08:21		09:00 (WEA 11)
	21:18	24	06:47 (SB)	20:21	63	08:53 (10B)	19:11	33	08:13 (WEA 03)	18:04	70	10:59 (13B)	16:15	62	10:14 (13B)	16:08	59	10:25 (14B)
25	05:26		06:24 (SB)	06:14		06:43 (WEA 14)	07:04		07:40 (6B)	06:55		07:28 (WEA 06)	07:49		08:47 (15B)	08:21		09:01 (WEA 11)
	21:16	21	06:45 (SB)	20:19	63	08:54 (10B)	19:09	32	08:12 (WEA 03)	17:02	76	10:02 (13B)	16:14	62	10:14 (13B)	16:08	58	10:25 (14B)
26	05:27		06:26 (SB)	06:16		06:43 (WEA 14)	07:06		07:41 (6B)	06:57		07:27 (WEA 06)	07:51		08:47 (15B)	08:21		09:01 (WEA 11)
	21:15	18	06:44 (SB)	20:17	64	08:55 (10B)	19:06	31	08:12 (WEA 03)	17:00	82	10:04 (13B)	16:13	61	10:13 (13B)	16:09	59	10:25 (14B)
27	05:29		06:28 (SB)	06:18		06:45 (WEA 14)	07:08		07:43 (WEA 04)	06:59		07:28 (WEA 06)	07:52		08:48 (15B)	08:22		09:02 (WEA 11)
	21:13	14	06:42 (SB)	20:15	62	08:56 (10B)	19:04	29	08:12 (WEA 03)	16:58	85	10:06 (13B)	16:12	59	10:13 (13B)	16:10	58	10:26 (14B)
28	05:30		06:31 (SB)	06:19		06:46 (WEA 14)	07:09		07:42 (WEA 04)	07:01		07:28 (WEA 06)	07:54		08:49 (15B)	08:22		09:02 (WEA 11)
	21:12	7	06:38 (SB)	20:13	60	08:56 (10B)	19:02	28	08:10 (WEA 03)	16:57	88	10:08 (13B)	16:11	58	10:12 (13B)	16:11	58	10:27 (14B)
29	05:32			06:21		06:52 (WEA 14)	07:11		07:42 (WEA 04)	07:02		07:30 (WEA 06)	07:55		08:49 (15B)	08:22		09:03 (WEA 11)
	21:10			20:11	50	08:57 (10B)	18:59	28	08:10 (WEA 03)	16:55	88	10:09 (13B)	16:10	56	10:11 (13B)	16:12	57	10:27 (14B)
30	05:33			06:22		07:07 (WEA 15)	07:13		07:42 (WEA 04)	07:04		07:32 (WEA 06)	07:57		08:50 (WEA 11)	08:22		09:03 (WEA 11)
	21:09			20:08	59	08:57 (10B)	18:57	27	08:09 (WEA 03)	16:53	88	10:11 (13B)	16:10	55	10:11 (13B)	16:12	57	10:28 (14B)
31	05:35			06:24		07:05 (WEA 15)				07:06		07:33 (WEA 06)				08:22		09:04 (WEA 11)
	21:07			20:06	64	08:57 (10B)				16:51	80	10:11 (13B)				16:13	55	10:28 (14B)
Sonnenscheinstunden	501			453			381			332			267			245		
astr.max.mögl.Beschattung		904			1158			1604			1286			2021			1723	
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22			0,18	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,71			0,71			0,70			0,66			0,61			0,59	
Gesamte Reduktion		0,27			0,29			0,23			0,17			0,13			0,10	
Met.wahrsch.Beschattung		244			332			362			223			254			168	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 48 - Reinstedt - ACZ Transport

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22		09:04 (WEA 11)	07:56		08:26 (WEA 10)	07:03		08:16 (WEA 02)	06:52		07:15 (WEA 15)	05:48		06:39 (SB)	05:03		05:43 (1B)
	16:15	56	10:19 (14B)	17:02	59	10:29 (13B)	17:53	11	08:27 (WEA 02)	19:47	34	09:03 (10B)	20:38	32	07:11 (SB)	21:23	17	06:00 (1B)
2	08:22		09:05 (WEA 11)	07:54		08:25 (WEA 10)	07:00			06:50		07:13 (WEA 15)	05:46		06:38 (SB)	05:02		05:43 (1B)
	16:16	55	10:19 (14B)	17:04	59	10:28 (13B)	17:55			19:49	26	08:58 (10B)	20:39	33	07:11 (SB)	21:24	19	06:02 (1B)
3	08:22		09:05 (WEA 11)	07:53		08:25 (WEA 10)	06:58			06:48		07:12 (WEA 15)	05:44		06:38 (SB)	05:01		05:42 (1B)
	16:17	57	10:20 (14B)	17:06	58	10:27 (13B)	17:57			19:51	19	07:31 (WEA 15)	20:41	34	07:12 (SB)	21:25	20	06:02 (1B)
4	08:22		09:05 (WEA 11)	07:51		08:25 (WEA 10)	06:56			06:46		07:12 (WEA 15)	05:42		06:38 (SB)	05:01		05:42 (1B)
	16:18	56	10:19 (14B)	17:08	56	10:26 (13B)	17:59			19:52	19	07:31 (WEA 15)	20:43	34	07:12 (SB)	21:26	20	06:02 (1B)
5	08:22		09:06 (WEA 11)	07:49		08:25 (WEA 10)	06:54		07:17 (WEA 04)	06:43		07:12 (WEA 15)	05:40		06:37 (SB)	05:00		05:42 (1B)
	16:19	57	10:20 (14B)	17:10	55	10:25 (13B)	18:01	12	07:29 (WEA 03)	19:54	18	07:30 (WEA 15)	20:44	35	07:12 (SB)	21:27	21	06:03 (1B)
6	08:21		09:07 (WEA 11)	07:48		08:25 (WEA 10)	06:52		07:15 (WEA 04)	06:41		07:13 (WEA 15)	05:39		06:36 (SB)	04:59		05:41 (1B)
	16:20	55	10:20 (14B)	17:11	52	10:23 (13B)	18:02	32	08:11 (10B)	19:56	17	07:30 (WEA 15)	20:46	36	07:12 (SB)	21:28	22	06:03 (1B)
7	08:21		09:07 (WEA 11)	07:46		08:25 (WEA 10)	06:49		07:12 (WEA 04)	06:39		07:13 (WEA 15)	05:37		06:37 (SB)	04:59		05:42 (1B)
	16:22	55	10:19 (14B)	17:13	49	10:21 (13B)	18:04	43	08:13 (10B)	19:57	15	07:28 (WEA 15)	20:48	36	07:13 (SB)	21:29	22	06:04 (1B)
8	08:20		09:07 (WEA 11)	07:44		08:19 (WEA 02)	06:47		07:10 (WEA 04)	06:36		07:14 (WEA 15)	05:35		06:36 (SB)	04:58		05:41 (1B)
	16:23	56	10:20 (13B)	17:15	49	10:18 (13B)	18:06	52	08:16 (10B)	19:59	12	07:26 (WEA 15)	20:49	36	07:12 (SB)	21:30	23	06:04 (1B)
9	08:20		09:08 (WEA 11)	07:42		08:15 (WEA 02)	06:45		07:09 (WEA 04)	06:34		06:58 (WEA 14)	05:33		06:36 (SB)	04:58		05:41 (1B)
	16:24	57	10:21 (13B)	17:17	42	10:12 (13B)	18:08	58	08:18 (10B)	20:01	16	07:23 (WEA 15)	20:51	36	07:12 (SB)	21:31	24	06:05 (1B)
10	08:19		09:08 (15B)	07:41		08:14 (WEA 02)	06:43		07:09 (WEA 04)	06:32		06:55 (WEA 14)	05:32		06:36 (SB)	04:57		05:42 (1B)
	16:26	58	10:22 (13B)	17:19	40	08:54 (11B)	18:09	62	08:19 (10B)	20:02	15	07:10 (WEA 14)	20:52	36	07:12 (SB)	21:32	24	06:06 (1B)
11	08:19		09:08 (15B)	07:39		08:13 (WEA 02)	06:40		07:08 (WEA 04)	06:30		06:53 (WEA 14)	05:30		06:36 (SB)	04:57		05:41 (1B)
	16:27	58	10:22 (13B)	17:21	40	08:53 (11B)	18:11	65	08:20 (10B)	20:04	18	07:11 (WEA 14)	20:54	35	07:11 (SB)	21:33	24	06:05 (1B)
12	08:18		09:09 (15B)	07:37		08:11 (WEA 02)	06:38		07:08 (WEA 04)	06:28		06:51 (WEA 14)	05:28		06:37 (SB)	04:57		05:41 (1B)
	16:28	59	10:24 (13B)	17:22	42	08:53 (11B)	18:13	68	08:21 (10B)	20:06	21	07:12 (WEA 14)	20:56	34	07:11 (SB)	21:33	25	06:06 (1B)
13	08:18		09:09 (15B)	07:35		08:10 (WEA 02)	06:36		07:09 (WEA 04)	06:25		06:50 (WEA 14)	05:27		06:37 (SB)	04:56		05:42 (1B)
	16:30	59	10:25 (13B)	17:24	42	08:52 (11B)	18:15	69	08:22 (10B)	20:07	23	07:13 (WEA 14)	20:57	34	07:11 (SB)	21:34	24	06:06 (1B)
14	08:17		09:09 (15B)	07:33		08:09 (WEA 02)	06:34		07:08 (WEA 04)	06:23		06:50 (WEA 14)	05:25		06:37 (SB)	04:56		05:42 (1B)
	16:31	59	10:25 (13B)	17:26	42	08:51 (11B)	18:16	70	08:21 (10B)	20:09	23	07:13 (WEA 14)	20:59	34	07:11 (SB)	21:34	25	06:07 (1B)
15	08:16		09:10 (15B)	07:31		08:09 (WEA 02)	06:31		07:09 (WEA 04)	06:21		06:49 (WEA 14)	05:24		06:38 (SB)	04:56		05:42 (1B)
	16:33	59	10:26 (13B)	17:28	41	08:50 (11B)	18:18	70	08:22 (10B)	20:11	24	07:13 (WEA 14)	21:00	32	07:10 (SB)	21:35	25	06:07 (1B)
16	08:15		09:10 (15B)	07:29		08:08 (WEA 02)	06:29		07:10 (6B)	06:19		06:44 (2B)	05:22		06:38 (SB)	04:56		05:42 (1B)
	16:35	58	10:26 (13B)	17:30	40	08:48 (11B)	18:20	70	08:23 (10B)	20:13	29	07:13 (WEA 14)	21:02	31	07:09 (SB)	21:36	25	06:07 (1B)
17	08:14		09:11 (15B)	07:27		08:08 (WEA 02)	06:27		07:10 (6B)	06:17		06:42 (2B)	05:21		06:39 (SB)	04:56		05:43 (1B)
	16:36	57	10:27 (13B)	17:32	37	08:45 (11B)	18:22	69	08:22 (10B)	20:14	31	07:13 (WEA 14)	21:03	30	07:09 (SB)	21:36	25	06:08 (1B)
18	08:13		09:11 (15B)	07:25		08:08 (WEA 02)	06:25		07:10 (WEA 03)	06:14		06:41 (2B)	05:19		06:40 (SB)	04:56		05:43 (1B)
	16:38	58	10:28 (13B)	17:34	31	08:39 (WEA 02)	18:23	68	08:22 (10B)	20:16	32	07:13 (WEA 14)	21:05	29	07:09 (SB)	21:36	25	06:08 (1B)
19	08:12		09:11 (15B)	07:23		08:08 (WEA 02)	06:22		07:12 (6B)	06:12		06:39 (2B)	05:18		06:40 (SB)	04:56		05:43 (1B)
	16:39	57	10:27 (13B)	17:35	32	08:40 (WEA 02)	18:25	65	08:22 (10B)	20:18	33	07:12 (WEA 14)	21:06	27	07:07 (SB)	21:37	25	06:08 (1B)
20	08:11		09:12 (15B)	07:21		08:07 (WEA 02)	06:20		07:12 (WEA 03)	06:10		06:38 (2B)	05:16		06:41 (SB)	04:56		05:43 (1B)
	16:41	56	10:28 (13B)	17:37	31	08:38 (WEA 02)	18:27	62	08:21 (10B)	20:19	33	07:11 (WEA 14)	21:08	26	07:07 (SB)	21:37	25	06:08 (1B)
21	08:10		09:13 (15B)	07:19		08:07 (WEA 02)	06:18		07:14 (WEA 03)	06:08		06:38 (2B)	05:15		06:42 (SB)	04:56		05:43 (1B)
	16:43	56	10:29 (13B)	17:39	31	08:38 (WEA 02)	18:28	58	08:21 (10B)	20:21	32	07:10 (WEA 14)	21:09	24	07:06 (SB)	21:37	25	06:08 (1B)
22	08:09		09:15 (15B)	07:17		08:07 (WEA 02)	06:15		07:18 (WEA 03)	06:06		06:38 (2B)	05:14		06:43 (SB)	04:56		05:43 (1B)
	16:44	53	10:29 (13B)	17:41	31	08:38 (WEA 02)	18:30	49	08:20 (10B)	20:23	31	07:09 (WEA 14)	21:10	22	07:05 (SB)	21:38	25	06:08 (1B)
23	08:08		09:16 (15B)	07:15		08:08 (WEA 02)	06:13		07:37 (10B)	06:04		06:38 (2B)	05:12		06:44 (SB)	04:56		05:44 (1B)
	16:46	51	10:29 (13B)	17:43	29	08:37 (WEA 02)	18:32	43	08:20 (10B)	20:24	30	07:08 (WEA 14)	21:12	20	07:04 (SB)	21:38	25	06:09 (1B)
24	08:07		09:18 (15B)	07:13		08:09 (WEA 02)	06:11		07:37 (10B)	06:02		06:38 (2B)	05:11		06:45 (SB)	04:57		05:44 (1B)
	16:48	48	10:30 (13B)	17:44	28	08:37 (WEA 02)	18:34	41	08:18 (10B)	20:26	28	07:06 (WEA 14)	21:13	17	07:02 (SB)	21:38	25	06:09 (1B)
25	08:05		09:49 (13B)	07:11		08:10 (WEA 02)	06:08		07:38 (10B)	06:00		06:38 (2B)	05:10		06:47 (SB)	04:57		05:44 (1B)
	16:50	41	10:30 (13B)	17:46	26	08:36 (WEA 02)	18:35	40	08:18 (10B)	20:28	25	07:03 (5B)	21:15	13	07:00 (SB)	21:38	25	06:09 (1B)
26	08:04		09:49 (13B)	07:09		08:11 (WEA 02)	06:06		07:38 (10B)	05:58		06:39 (2B)	05:09		06:49 (SB)	04:57		05:44 (1B)
	16:51	41	10:30 (13B)	17:48	24	08:35 (WEA 02)	18:37	39	08:17 (10B)	20:29	27	07:06 (5B)	21:16	9	06:58 (SB)	21:38	26	06:10 (1B)
27	08:03		08:31 (WEA 10)	07:07		08:11 (WEA 02)	06:04		07:38 (10B)	05:56		06:42 (2B)	05:08		05:50 (1B)	04:58		05:44 (1B)
	16:53	51	10:30 (13B)	17:50	21	08:32 (WEA 02)	18:39	36	08:14 (10B)	20:31	26	07:08 (5B)	21:17	2	05:52 (1B)	21:38	25	06:09 (1B)
28	08:02		08:29 (WEA 10)	07:05		08:13 (WEA 02)	06:02		06:24 (WEA 15)	05:54		06:43 (5B)	05:07		05:47 (1B)	04:58		05:45 (1B)
	16:55	55	10:30 (13B)	17:52	17	08:30 (WEA 02)	18:40	35	08:13 (10B)	20:33	26	07:09 (5B)	21:18	9	05:56 (1B)	21:38	25	06:10 (1B)
29	08:00		08:28 (WEA 10)				06:59		07:22 (WEA 15)	05:52		06:41 (5B)	05:06		05:46 (1B)	04:59		05:45 (1B)
	16:57	56	10:30 (13B)				19:42	38	09:12 (10B)	20:34	29	07:10 (5B)	21:20	12	05:58 (1B)	21:38	25	06:10 (1B)
30	07:59		08:27 (WEA 10)				06:57		07:19 (WEA 15)	05:50		06:40 (5B)	05:05		05:45 (1B)	04:59		05:46 (1B)
	16:59	57	10:29 (13B)				19:44	39	09:09 (10B)	20:36	30	07:10 (5B)	21:21	14	05:59 (1B)	21:37	24	06:10 (1B)
31	07:57		08:26 (WEA 10)				06:55		07:17 (WEA 15)				05:04		05:44 (1B)			
	17:00	57	10:28 (13B)				19:45	37	09:06 (10B)				21:22	16	06:00 (1B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		1708			1104			1401			742			818			710	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,59			0,65			0,69			0,72			0,71			0,70	
Gesamte Reduktion		0,12			0,19			0,17			0,24			0,29			0,23	
Met.wahrsch.Beschattung		204			213			243			179			235			163	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 48 - Reinstedt - ACZ Transport

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Juli			August			September			Oktober			November			Dezember		
1	05:00		05:46 (1B)	05:36		06:47 (5B)	06:26		06:53 (WEA 14)	07:14		07:47 (WEA 04)	07:08		07:43 (WEA 02)	07:58		08:50 (15B)
	21:37	25	06:11 (1B)	21:06	35	07:22 (5B)	20:04	18	07:11 (WEA 14)	18:55	69	09:00 (10B)	16:49	39	08:22 (11B)	16:09	58	10:04 (13B)
2	05:01		05:46 (1B)	05:38		06:46 (5B)	06:27		06:53 (WEA 14)	07:16		07:47 (WEA 04)	07:09		07:46 (WEA 02)	08:00		08:51 (15B)
	21:37	24	06:10 (1B)	21:04	36	07:22 (5B)	20:02	15	07:08 (WEA 14)	18:52	66	08:59 (10B)	16:47	43	09:43 (13B)	16:08	58	10:05 (13B)
3	05:01		05:47 (1B)	05:39		06:47 (5B)	06:29		06:56 (WEA 14)	07:18		07:47 (WEA 04)	07:11		07:50 (WEA 02)	08:01		08:52 (WEA 11)
	21:36	23	06:10 (1B)	21:02	35	07:22 (5B)	19:59	16	07:21 (WEA 15)	18:50	63	08:58 (10B)	16:45	48	09:48 (13B)	16:08	56	10:04 (13B)
4	05:02		05:47 (1B)	05:41		06:46 (5B)	06:30		07:11 (WEA 15)	07:19		07:46 (WEA 04)	07:13		07:55 (WEA 10)	08:03		08:52 (WEA 11)
	21:36	24	06:11 (1B)	21:01	36	07:22 (5B)	19:57	12	07:23 (WEA 15)	18:48	60	08:56 (10B)	16:44	49	09:51 (13B)	16:07	56	10:05 (13B)
5	05:03		05:47 (1B)	05:42		06:47 (5B)	06:32		07:10 (WEA 15)	07:21		07:47 (WEA 04)	07:15		07:55 (WEA 10)	08:04		08:52 (WEA 11)
	21:36	23	06:10 (1B)	20:59	36	07:23 (5B)	19:55	15	07:25 (WEA 15)	18:46	54	08:54 (10B)	16:42	52	09:53 (13B)	16:07	56	10:05 (13B)
6	05:04		05:48 (1B)	05:44		06:46 (5B)	06:34		07:08 (WEA 15)	07:23		07:48 (WEA 04)	07:17		07:55 (WEA 10)	08:05		08:53 (WEA 11)
	21:35	22	06:10 (1B)	20:57	36	07:22 (5B)	19:53	17	07:25 (WEA 15)	18:43	48	08:52 (10B)	16:40	56	09:55 (13B)	16:06	55	10:06 (14B)
7	05:05		05:48 (1B)	05:45		06:47 (5B)	06:35		07:07 (WEA 15)	07:24		07:49 (WEA 04)	07:18		07:55 (WEA 10)	08:06		08:53 (WEA 11)
	21:34	22	06:10 (1B)	20:55	35	07:22 (5B)	19:50	19	07:26 (WEA 15)	18:41	38	08:48 (10B)	16:38	57	09:56 (13B)	16:06	57	10:07 (14B)
8	05:06		05:49 (1B)	05:47		06:46 (5B)	06:37		07:06 (WEA 15)	07:26		07:51 (WEA 04)	07:20		07:56 (WEA 10)	08:08		08:53 (WEA 11)
	21:34	21	06:10 (1B)	20:53	36	07:22 (5B)	19:48	19	07:25 (WEA 15)	18:39	24	08:43 (10B)	16:37	57	09:57 (13B)	16:05	56	10:07 (14B)
9	05:07		05:49 (1B)	05:49		06:47 (5B)	06:38		07:06 (WEA 15)	07:28		07:53 (WEA 04)	07:22		07:56 (WEA 10)	08:09		08:53 (WEA 11)
	21:33	21	06:10 (1B)	20:52	35	07:22 (5B)	19:46	19	07:25 (WEA 15)	18:37	6	07:59 (WEA 04)	16:35	58	09:59 (13B)	16:05	57	10:08 (14B)
10	05:08		05:50 (1B)	05:50		06:47 (5B)	06:40		07:06 (WEA 15)	07:29			07:24		07:57 (WEA 10)	08:10		08:54 (WEA 11)
	21:32	19	06:09 (1B)	20:50	34	07:21 (5B)	19:43	24	08:50 (10B)	18:34			16:33	59	10:00 (13B)	16:05	56	10:09 (14B)
11	05:09		05:51 (1B)	05:52		06:48 (5B)	06:42		07:07 (WEA 15)	07:31			07:25		07:58 (WEA 10)	08:11		08:55 (WEA 11)
	21:32	18	06:09 (1B)	20:48	32	07:20 (5B)	19:41	33	08:55 (10B)	18:32			16:32	57	10:00 (13B)	16:05	56	10:10 (14B)
12	05:10		05:52 (1B)	05:53		06:48 (5B)	06:43		07:09 (WEA 15)	07:33		08:54 (WEA 02)	07:27		07:59 (WEA 10)	08:12		08:55 (WEA 11)
	21:31	16	06:08 (1B)	20:46	31	07:19 (5B)	19:39	36	08:58 (10B)	18:30	2	08:56 (WEA 02)	16:30	56	10:01 (13B)	16:05	56	10:11 (14B)
13	05:11		05:53 (1B)	05:55		06:49 (5B)	06:45		07:10 (WEA 15)	07:34		08:48 (WEA 02)	07:29		08:00 (WEA 10)	08:13		08:56 (WEA 11)
	21:30	15	06:08 (1B)	20:44	30	07:19 (5B)	19:37	38	09:00 (10B)	18:28	14	09:02 (WEA 02)	16:29	57	10:02 (13B)	16:05	55	10:11 (14B)
14	05:12		05:54 (1B)	05:57		06:49 (5B)	06:47		07:12 (WEA 15)	07:36		08:46 (WEA 02)	07:31		08:01 (WEA 10)	08:14		08:56 (WEA 11)
	21:29	13	06:07 (1B)	20:42	28	07:17 (5B)	19:34	39	09:02 (10B)	18:26	18	09:04 (WEA 02)	16:27	53	10:01 (13B)	16:05	56	10:12 (14B)
15	05:13		05:55 (1B)	05:58		06:51 (5B)	06:48		07:13 (WEA 15)	07:38		08:44 (WEA 02)	07:32		08:03 (WEA 10)	08:15		08:57 (WEA 11)
	21:28	11	06:06 (1B)	20:40	25	07:16 (5B)	19:32	36	09:02 (10B)	18:23	22	09:06 (WEA 02)	16:26	51	10:02 (13B)	16:05	55	10:13 (14B)
16	05:14		05:57 (1B)	06:00		06:48 (2B)	06:50		08:28 (10B)	07:40		08:42 (WEA 02)	07:34		09:21 (13B)	08:16		08:57 (WEA 11)
	21:27	6	06:03 (1B)	20:38	26	07:14 (5B)	19:30	36	09:04 (10B)	18:21	24	09:06 (WEA 02)	16:25	42	10:03 (13B)	16:05	56	10:13 (14B)
17	05:15		07:00 (5B)	06:01		06:47 (2B)	06:51		08:27 (10B)	07:41		08:41 (WEA 02)	07:36		09:22 (13B)	08:17		08:57 (WEA 11)
	21:26	6	07:06 (5B)	20:36	26	07:13 (5B)	19:27	38	09:05 (10B)	18:19	27	09:08 (WEA 02)	16:23	41	10:03 (13B)	16:05	59	10:13 (14B)
18	05:17		06:57 (5B)	06:03		06:45 (2B)	06:53		08:25 (10B)	07:43		08:40 (WEA 02)	07:38		08:52 (15B)	08:17		08:58 (WEA 11)
	21:25	12	07:09 (5B)	20:34	25	07:10 (5B)	19:25	40	09:05 (10B)	18:17	28	09:08 (WEA 02)	16:22	47	10:03 (13B)	16:05	58	10:14 (14B)
19	05:18		06:56 (5B)	06:05		06:45 (2B)	06:55		08:25 (10B)	07:45		08:39 (WEA 02)	07:39		08:51 (15B)	08:18		08:59 (WEA 11)
	21:24	16	07:12 (5B)	20:32	28	07:13 (WEA 14)	19:23	41	09:06 (10B)	18:15	30	09:09 (WEA 02)	16:21	51	10:04 (13B)	16:05	59	10:15 (14B)
20	05:19		06:55 (5B)	06:06		06:43 (2B)	06:56		08:23 (10B)	07:46		08:39 (WEA 02)	07:41		08:50 (15B)	08:19		08:59 (WEA 11)
	21:23	18	07:13 (5B)	20:30	30	07:13 (WEA 14)	19:20	42	09:05 (10B)	18:13	30	09:09 (WEA 02)	16:19	53	10:04 (13B)	16:06	59	10:15 (14B)
21	05:20		06:53 (5B)	06:08		06:43 (2B)	06:58		08:23 (10B)	07:48		08:38 (WEA 02)	07:43		08:48 (15B)	08:19		09:00 (WEA 11)
	21:21	21	07:14 (5B)	20:28	32	07:15 (WEA 14)	19:18	43	09:06 (10B)	18:11	32	09:10 (WEA 02)	16:18	56	10:04 (13B)	16:06	59	10:16 (14B)
22	05:22		06:52 (5B)	06:09		06:43 (2B)	06:59		08:01 (WEA 03)	07:50		08:37 (WEA 02)	07:44		08:48 (15B)	08:20		09:00 (WEA 11)
	21:20	23	07:15 (5B)	20:26	32	07:15 (WEA 14)	19:16	56	09:06 (10B)	18:09	32	09:09 (WEA 02)	16:17	56	10:04 (13B)	16:07	60	10:16 (14B)
23	05:23		06:52 (5B)	06:11		06:43 (2B)	07:01		07:57 (WEA 03)	07:52		08:37 (WEA 02)	07:46		08:48 (15B)	08:20		09:01 (WEA 11)
	21:19	25	07:17 (5B)	20:24	33	07:16 (WEA 14)	19:13	61	09:05 (10B)	18:07	32	09:09 (WEA 02)	16:16	57	10:04 (13B)	16:07	59	10:17 (14B)
24	05:25		06:51 (5B)	06:13		06:43 (2B)	07:03		07:56 (6B)	07:53		08:37 (WEA 02)	07:48		08:48 (15B)	08:21		09:01 (WEA 11)
	21:18	26	07:17 (5B)	20:21	32	07:15 (WEA 14)	19:11	65	09:06 (10B)	18:04	32	09:09 (WEA 02)	16:15	58	10:05 (13B)	16:08	59	10:17 (14B)
25	05:26		06:50 (5B)	06:14		06:44 (2B)	07:04		07:53 (WEA 03)	06:55		07:38 (WEA 02)	07:49		08:49 (15B)	08:21		09:01 (WEA 11)
	21:16	28	07:18 (5B)	20:19	32	07:16 (WEA 14)	19:09	68	09:05 (10B)	17:02	37	08:15 (11B)	16:14	57	10:05 (13B)	16:08	59	10:17 (14B)
26	05:27		06:50 (5B)	06:16		06:44 (2B)	07:06		07:53 (6B)	06:57		07:38 (WEA 02)	07:51		08:48 (15B)	08:21		09:01 (WEA 11)
	21:15	29	07:19 (5B)	20:17	31	07:15 (WEA 14)	19:06	68	09:05 (10B)	17:00	40	08:18 (11B)	16:13	58	10:04 (13B)	16:09	59	10:17 (14B)
27	05:29		06:49 (5B)	06:18		06:46 (2B)	07:08		07:52 (6B)	06:59		07:39 (WEA 02)	07:52		08:49 (15B)	08:22		09:02 (WEA 11)
	21:13	31	07:20 (5B)	20:15	29	07:15 (WEA 14)	19:04	69	09:04 (10B)	16:58	41	08:20 (11B)	16:12	59	10:05 (13B)	16:10	58	10:18 (14B)
28	05:30		06:48 (5B)	06:19		06:50 (WEA 14)	07:09		07:50 (WEA 04)	07:01		07:39 (WEA 02)	07:54		08:50 (15B)	08:22		09:03 (WEA 11)
	21:12	32	07:20 (5B)	20:13	24	07:14 (WEA 14)	19:02	70	09:03 (10B)	16:57	42	08:21 (11B)	16:11	58	10:05 (13B)	16:11	55	10:19 (14B)
29	05:32		06:48 (5B)	06:21		06:50 (WEA 14)	07:11		07:49 (WEA 04)	07:02		07:40 (WEA 02)	07:55		08:49 (15B)	08:22		09:03 (WEA 11)
	21:10	33	07:21 (5B)	20:11	24	07:14 (WEA 14)	18:59	70	09:02 (10B)	16:55	42	08:22 (11B)	16:10	59	10:05 (13B)	16:12	56	10:19 (14B)
30	05:33		06:48 (5B)	06:22		06:50 (WEA 14)	07:13		07:49 (WEA 04)	07:04		07:41 (WEA 02)	07:57		08:50 (15B)	08:22		09:04 (WEA 11)
	21:09	33	07:21 (5B)	20:08	22	07:12 (WEA 14)	18:57	69	09:02 (10B)	16:53	42	08:23 (11B)	16:10	59	10:05 (13B)	16:12	55	10:19 (14B)
31	05:35		06:47 (5B)	06:24		06:51 (WEA 14)				07:06		07:42 (WEA 02)				08:22		09:04 (WEA 11)
	21:07	34	07:21 (5B)	20:06	21	07:12 (WEA 14)				16:51	40	08:22 (11B)				16:13	57	10:20 (14B)
Sonnenscheinstunden	501			453			381			332			267			245		
astr.max.mögl.Beschattung		670			947			1192			1035			1603			1770	
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22			0,18	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,71			0,72			0,69			0,67			0,61			0,59	
Gesamte Reduktion		0,27			0,29			0,22			0,18			0,13			0,10	
Met.wahrsch.Beschattung		179			274			264			184			202			173	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 49 - Reinstedt - Danpower Energie Service

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar			März	April	Mai	Juni	Juli	August	September	Oktober			November	Dezember
1	08:22	07:56			07:03	06:52	05:48	05:03	05:00	05:36	06:26	07:14			07:08	07:58
	16:15	17:02			17:54	19:47	20:38	21:23	21:37	21:06	20:04	18:55			16:49	16:09
2	08:22	07:54			07:01	06:50	05:46	05:02	05:01	05:38	06:27	07:16			07:10	08:00
	16:16	17:04			17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:53			16:47	16:08
3	08:22	07:53			06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:18			07:11	08:01
	16:17	17:06			17:57	19:51	20:41	21:25	21:37	21:02	19:59	18:50			16:45	16:08
4	08:22	07:51			06:56	06:46	05:42	05:01	05:02	05:41	06:30	07:19			07:13	08:03
	16:18	17:08			17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48			16:44	16:07
5	08:22	07:49			06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21			07:15	08:04
	16:19	17:10			18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46			16:42	16:07
6	08:21	07:48			06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:23			07:17	08:05
	16:20	17:11			18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43			16:40	16:06
7	08:21	07:46			06:50	06:39	05:37	04:59	05:05	05:45	06:35	07:24			07:18	08:06
	16:22	17:13			18:04	19:57	20:48	21:29	21:35	20:55	19:50	18:41			16:38	16:06
8	08:21	07:44			06:47	06:37	05:35	04:58	05:06	05:47	06:37	07:26			07:20	08:08
	16:23	17:15			18:06	19:59	20:49	21:30	21:34	20:54	19:48	18:39			16:37	16:05
9	08:20	07:43			06:45	06:34	05:33	04:58	05:07	05:49	06:39	07:28			07:22	08:09
	16:24	17:17			18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37			16:35	16:05
10	08:20	07:41			06:43	06:32	05:32	04:57	05:08	05:50	06:40	07:29			07:24	08:10
	16:26	17:19			18:09	20:02	20:52	21:32	21:33	20:50	19:43	18:34			16:34	16:05
11	08:19	07:39			06:41	06:30	05:30	04:57	05:09	05:52	06:42	07:31			07:26	08:11
	16:27	17:21			18:11	20:04	20:54	21:33	21:32	20:48	19:41	18:32			16:32	16:05
12	08:18	07:37			06:38	06:28	05:28	04:57	05:10	05:53	06:43	07:33			07:27	08:12
	16:29	17:23			18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30			16:30	16:05
13	08:18	07:35		08:00 (6B)	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34			07:29	08:13
	16:30	17:24	2	08:02 (6B)	18:15	20:08	20:57	21:34	21:30	20:44	19:37	18:28			16:29	16:05
14	08:17	07:33		07:58 (6B)	06:34	06:23	05:25	04:56	05:12	05:57	06:47	07:36			07:31	08:14
	16:32	17:26	4	08:02 (6B)	18:16	20:09	20:59	21:35	21:29	20:42	19:34	18:26			16:27	16:05
15	08:16	07:31		07:56 (6B)	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38			07:33	08:15
	16:33	17:28	6	08:02 (6B)	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23			16:26	16:05
16	08:15	07:29		07:55 (6B)	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:40			07:34	08:16
	16:35	17:30	6	08:01 (6B)	18:20	20:13	21:02	21:36	21:27	20:38	19:30	18:21			16:25	16:05
17	08:14	07:28			06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41			07:36	08:17
	16:36	17:32			18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19			16:23	16:05
18	08:13	07:26			06:25	06:14	05:19	04:56	05:17	06:03	06:53	07:43			07:38	08:17
	16:38	17:34			18:23	20:16	21:05	21:37	21:25	20:34	19:25	18:17			16:22	16:05
19	08:12	07:24			06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45			07:39	08:18
	16:39	17:35			18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15			16:21	16:06
20	08:11	07:22			06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:47			07:41	08:19
	16:41	17:37			18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13			16:19	16:06
21	08:10	07:20			06:18	06:08	05:15	04:56	05:21	06:08	06:58	07:48			07:43	08:19
	16:43	17:39			18:28	20:21	21:09	21:37	21:22	20:28	19:18	18:11			16:18	16:06
22	08:09	07:17			06:15	06:06	05:14	04:56	05:22	06:09	07:00	07:50			07:44	08:20
	16:44	17:41			18:30	20:23	21:11	21:38	21:20	20:26	19:16	18:09			16:17	16:07
23	08:08	07:15			06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52			07:46	08:20
	16:46	17:43			18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:07			16:16	16:07
24	08:07	07:13			06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:54			07:48	08:21
	16:48	17:45			18:34	20:26	21:13	21:38	21:18	20:22	19:11	18:05			16:15	16:08
25	08:06	07:11			06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55		07:27 (6B)	07:49	08:21
	16:50	17:46			18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:03	1	07:28 (6B)	16:14	16:08
26	08:04	07:09			06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57		07:24 (6B)	07:51	08:22
	16:51	17:48			18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:01	6	07:30 (6B)	16:13	16:09
27	08:03	07:07			06:04	05:56	05:08	04:58	05:29	06:18	07:08	06:59		07:26 (6B)	07:52	08:22
	16:53	17:50			18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:59	5	07:31 (6B)	16:12	16:10
28	08:02	07:05			06:02	05:54	05:07	04:58	05:30	06:19	07:09	07:01		07:28 (6B)	07:54	08:22
	16:55	17:52			18:40	20:33	21:19	21:38	21:12	20:13	19:02	16:57	4	07:32 (6B)	16:11	16:11
29	08:00				06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02		07:30 (6B)	07:55	08:22
	16:57				19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	1	07:31 (6B)	16:10	16:12
30	07:59				06:57	05:50	05:05	04:59	05:33	06:22	07:13	07:04			07:57	08:22
	16:59				19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53			16:10	16:12
31	07:57				06:55		05:04		05:35	06:24		07:06				08:22
	17:00				19:45		21:22		21:07	20:06		16:51				16:13
Sonnenscheinstunden	260	278			367	416	485	498	501	453	381	332			267	244
astr.max.mögl.Beschattung			18										17			
Red.Sonnenscheinwahrsch.			0,32										0,28			
Reduktion Betriebsdauer			0,96										0,96			
Reduktion Windrichtung			0,67										0,67			
Gesamte Reduktion			0,20										0,18			
Met.wahrsch.Beschattung			4										3			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 50 - Reinstedt - Mitteldeutsche Baumschulen

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:22		10:00 (WEA 07)	07:56		10:04 (WEA 07)	07:03		08:21 (WEA 06)	06:52		07:51 (SAB W3)	05:48		06:51 (9B)	05:03		05:42 (SAB W1)
	16:15	132	15:00 (WEA 12)	17:02	144	16:10 (WEA 13)	17:53	162	17:01 (19B)	19:47	276	19:00 (14B)	20:38	121	19:58 (13B)	21:23	86	20:46 (10B)
2	08:22		10:00 (WEA 07)	07:54		10:04 (WEA 07)	07:00		08:20 (WEA 06)	06:50		07:51 (SAB W3)	05:46		06:51 (9B)	05:02		05:41 (SAB W1)
	16:16	134	15:01 (WEA 12)	17:04	141	16:10 (WEA 13)	17:55	167	17:00 (19B)	19:49	269	18:59 (14B)	20:39	117	19:59 (11B)	21:24	90	20:47 (10B)
3	08:22		10:01 (WEA 07)	07:52		10:04 (WEA 07)	06:58		08:18 (WEA 06)	06:48		07:52 (SAB W3)	05:44		06:52 (9B)	05:01		05:40 (SAB W1)
	16:17	134	15:02 (WEA 12)	17:06	139	16:10 (WEA 13)	17:57	170	16:58 (19B)	19:50	259	18:59 (14B)	20:41	111	20:00 (11B)	21:25	94	20:47 (10B)
4	08:22		10:00 (WEA 07)	07:51		10:04 (WEA 07)	06:56		08:17 (WEA 06)	06:45		07:52 (SAB W3)	05:42		06:54 (9B)	05:01		05:39 (SAB W1)
	16:18	135	15:01 (WEA 12)	17:08	136	16:10 (WEA 13)	17:59	172	16:56 (19B)	19:52	249	18:58 (14B)	20:43	106	20:03 (11B)	21:26	97	20:47 (10B)
5	08:21		10:01 (WEA 07)	07:49		10:05 (WEA 07)	06:54		08:16 (WEA 06)	06:43		07:53 (SAB W3)	05:40		06:55 (9B)	05:00		05:39 (SAB W1)
	16:19	134	15:02 (WEA 12)	17:09	133	16:11 (WEA 13)	18:01	171	16:53 (19B)	19:54	236	18:57 (14B)	20:44	101	20:03 (11B)	21:27	100	20:47 (10B)
6	08:21		10:00 (WEA 07)	07:48		10:06 (WEA 07)	06:52		08:15 (WEA 06)	06:41		07:54 (SAB W3)	05:39		06:56 (9B)	04:59		05:38 (SAB W1)
	16:20	135	15:01 (WEA 12)	17:11	127	16:10 (WEA 13)	18:02	172	14:59 (WEA 10)	19:55	217	18:55 (14B)	20:46	94	20:04 (11B)	21:28	102	20:47 (10B)
7	08:21		10:01 (WEA 07)	07:46		10:06 (WEA 07)	06:49		08:13 (WEA 06)	06:39		07:55 (SAB W3)	05:37		06:59 (9B)	04:59		05:38 (SAB W1)
	16:22	135	15:02 (WEA 12)	17:13	121	16:10 (WEA 13)	18:04	175	14:59 (WEA 10)	19:57	195	18:53 (14B)	20:47	86	20:05 (11B)	21:29	104	20:48 (10B)
8	08:20		10:00 (WEA 07)	07:44		10:06 (WEA 07)	06:47		08:13 (WEA 06)	06:36		07:57 (SAB W3)	05:35		14:55 (WEA 10)	04:58		05:37 (SAB W1)
	16:23	134	15:01 (WEA 12)	17:15	116	16:09 (WEA 13)	18:06	179	15:00 (WEA 10)	19:59	168	16:07 (WEA 10)	20:49	71	20:05 (11B)	21:30	106	20:47 (10B)
9	08:20		10:01 (WEA 07)	07:42		10:07 (WEA 07)	06:45		08:12 (WEA 06)	06:34		08:00 (SAB W3)	05:33		14:58 (WEA 10)	04:58		05:37 (SAB W1)
	16:24	135	15:02 (WEA 12)	17:17	108	16:10 (20B)	18:08	182	15:01 (WEA 10)	20:01	151	16:07 (WEA 10)	20:51	67	20:05 (11B)	21:31	107	20:48 (10B)
10	08:19		10:01 (WEA 07)	07:41		10:08 (WEA 07)	06:43		08:12 (WEA 06)	06:32		07:04 (SAB W2)	05:32		15:02 (WEA 10)	04:57		05:37 (SAB W1)
	16:26	135	15:02 (WEA 12)	17:19	99	16:14 (20B)	18:09	186	15:03 (WEA 10)	20:02	149	16:06 (WEA 10)	20:52	63	20:06 (11B)	21:32	108	20:48 (10B)
11	08:19		10:01 (WEA 07)	07:39		10:10 (WEA 07)	06:40		08:11 (WEA 06)	06:30		07:00 (SAB W2)	05:30		15:06 (WEA 10)	04:57		05:36 (SAB W1)
	16:27	134	15:01 (WEA 12)	17:21	85	16:17 (20B)	18:11	188	15:03 (WEA 10)	20:04	150	16:05 (WEA 10)	20:54	56	20:05 (11B)	21:32	110	20:47 (10B)
12	08:18		10:01 (WEA 07)	07:37		10:10 (WEA 07)	06:38		07:05 (SAB W4)	06:27		06:58 (SAB W2)	05:28		15:11 (WEA 10)	04:56		05:37 (SAB W1)
	16:28	132	15:00 (WEA 12)	17:22	83	16:18 (20B)	18:13	202	15:04 (WEA 10)	20:06	153	16:05 (WEA 10)	20:55	49	20:06 (11B)	21:33	111	20:48 (10B)
13	08:17		10:01 (WEA 07)	07:35		10:12 (WEA 07)	06:36		07:02 (SAB W4)	06:25		06:56 (SAB W2)	05:27		15:17 (WEA 10)	04:56		05:37 (SAB W1)
	16:30	132	15:00 (WEA 12)	17:24	78	16:19 (20B)	18:15	210	15:05 (WEA 10)	20:07	155	16:05 (WEA 10)	20:57	37	20:05 (11B)	21:34	111	20:48 (10B)
14	08:17		10:01 (WEA 07)	07:33		10:13 (WEA 07)	06:34		07:00 (SAB W4)	06:23		06:54 (SAB W2)	05:25		19:41 (11B)	04:56		05:37 (SAB W1)
	16:31	131	14:59 (WEA 12)	17:26	73	16:20 (20B)	18:16	220	17:42 (18B)	20:09	156	16:04 (WEA 10)	20:59	25	20:06 (11B)	21:34	112	20:48 (10B)
15	08:16		10:01 (WEA 07)	07:31		10:14 (WEA 07)	06:31		06:58 (SAB W4)	06:21		06:53 (SAB W2)	05:23		19:41 (11B)	04:56		05:37 (SAB W1)
	16:33	126	14:57 (WEA 12)	17:28	68	16:21 (20B)	18:18	230	17:44 (18B)	20:11	156	16:04 (WEA 10)	21:00	24	20:05 (11B)	21:35	113	20:48 (10B)
16	08:15		10:01 (WEA 07)	07:29		10:16 (WEA 07)	06:29		06:57 (SAB W4)	06:19		06:52 (SAB W2)	05:22		19:41 (11B)	04:56		05:37 (SAB W1)
	16:35	121	14:26 (WEA 11)	17:30	65	16:21 (20B)	18:20	238	17:46 (18B)	20:12	157	16:04 (WEA 10)	21:02	24	20:05 (11B)	21:35	114	20:49 (10B)
17	08:14		10:01 (WEA 07)	07:27		10:18 (WEA 07)	06:27		06:56 (SAB W4)	06:17		06:52 (SAB W2)	05:20		19:42 (11B)	04:56		05:37 (SAB W1)
	16:36	122	14:26 (WEA 11)	17:32	62	16:22 (20B)	18:21	243	17:45 (18B)	20:14	155	16:03 (WEA 10)	21:03	23	20:05 (11B)	21:36	113	20:49 (10B)
18	08:13		10:01 (WEA 07)	07:25		10:21 (WEA 07)	06:24		06:55 (SAB W4)	06:14		06:50 (SAB W2)	05:19		19:42 (11B)	04:56		05:37 (SAB W1)
	16:38	120	14:25 (WEA 11)	17:33	56	16:22 (20B)	18:23	249	17:46 (18B)	20:16	155	16:02 (WEA 10)	21:05	22	20:04 (11B)	21:36	114	20:49 (10B)
19	08:12		10:01 (WEA 07)	07:23		10:23 (WEA 07)	06:22		06:55 (SAB W4)	06:12		06:50 (SAB W2)	05:18		19:43 (11B)	04:56		05:37 (SAB W1)
	16:39	126	15:53 (WEA 13)	17:35	63	16:21 (20B)	18:25	257	17:46 (18B)	20:17	152	16:01 (WEA 10)	21:06	21	20:04 (11B)	21:37	115	20:49 (10B)
20	08:11		10:01 (WEA 07)	07:21		08:46 (WEA 06)	06:20		06:54 (SAB W4)	06:10		06:49 (SAB W2)	05:16		19:18 (WEA 02)	04:56		05:37 (SAB W1)
	16:41	133	15:57 (WEA 13)	17:37	76	16:21 (20B)	18:27	267	17:44 (18B)	20:19	151	16:01 (WEA 10)	21:08	23	20:03 (11B)	21:37	115	20:49 (10B)
21	08:10		10:01 (WEA 07)	07:19		08:39 (WEA 06)	06:18		06:54 (SAB W4)	06:08		06:49 (SAB W2)	05:15		19:11 (WEA 02)	04:56		05:37 (SAB W1)
	16:43	139	16:00 (WEA 13)	17:39	89	16:20 (20B)	18:28	271	17:43 (18B)	20:21	147	16:00 (WEA 10)	21:09	37	20:03 (11B)	21:37	115	20:49 (10B)
22	08:09		10:02 (WEA 07)	07:17		08:35 (WEA 06)	06:15		06:54 (SAB W4)	06:06		06:49 (SAB W2)	05:14		19:07 (WEA 02)	04:56		05:37 (SAB W1)
	16:44	141	16:02 (WEA 13)	17:41	114	16:57 (19B)	18:30	272	17:42 (18B)	20:23	144	15:59 (WEA 10)	21:10	42	20:02 (11B)	21:37	115	20:49 (10B)
23	08:08		10:01 (WEA 07)	07:15		08:33 (WEA 06)	06:13		06:54 (SAB W3)	06:04		06:49 (SAB W2)	05:12		19:04 (WEA 02)	04:56		05:38 (SAB W1)
	16:46	144	16:03 (WEA 13)	17:43	129	16:59 (19B)	18:32	266	17:28 (15B)	20:24	149	19:56 (13B)	21:12	52	20:40 (10B)	21:38	115	20:50 (10B)
24	08:07		10:02 (WEA 07)	07:13		08:30 (WEA 06)	06:11		06:54 (SAB W3)	06:02		06:49 (SAB W2)	05:11		19:02 (WEA 02)	04:57		05:38 (SAB W1)
	16:48	145	16:04 (WEA 13)	17:44	141	17:00 (19B)	18:33	268	17:29 (15B)	20:26	150	19:58 (13B)	21:13	56	20:41 (10B)	21:38	115	20:50 (10B)
25	08:05		10:01 (WEA 07)	07:11		08:28 (WEA 06)	06:08		06:53 (SAB W3)	06:00		06:49 (SAB W2)	05:10		19:00 (WEA 02)	04:57		05:38 (SAB W1)
	16:50	147	16:05 (WEA 13)	17:46	149	17:01 (19B)	18:35	271	17:30 (15B)	20:28	148	19:59 (13B)	21:14	58	20:42 (10B)	21:38	113	20:50 (10B)
26	08:04		10:02 (WEA 07)	07:09		08:25 (WEA 06)	06:06		06:53 (SAB W3)	05:58		06:50 (SAB W2)	05:09		18:58 (WEA 02)	04:57		05:39 (SAB W1)
	16:51	148	16:06 (WEA 13)	17:48	155	17:01 (19B)	18:37	271	17:31 (15B)	20:29	145	19:59 (13B)	21:16	56	20:43 (10B)	21:38	114	20:51 (10B)
27	08:03		10:02 (WEA 07)	07:07		08:24 (WEA 06)	06:04		06:52 (SAB W3)	05:56		06:50 (SAB W2)	05:08		18:57 (WEA 02)	04:58		05:39 (SAB W1)
	16:53	149	16:08 (WEA 13)	17:50	156	17:01 (19B)	18:39	280	17:56 (14B)	20:31	141	19:59 (13B)	21:17	60	20:44 (10B)	21:38	113	20:50 (10B)
28	08:01		10:02 (WEA 07)	07:05		08:22 (WEA 06)	06:01		06:52 (SAB W3)	05:54		06:51 (9B)	05:07		18:57 (WEA 02)	04:58		05:40 (SAB W1)
	16:55	148	16:08 (WEA 13)	17:52	156	17:01 (19B)	18:40	282	17:58 (14B)	20:33	137	20:00 (13B)	21:18	63	20:45 (10B)	21:38	112	20:51 (10B)
29	08:00		10:02 (WEA 07)				06:59		07:52 (SAB W3)	05:52		06:51 (9B)	05:06		18:56 (WEA 02)	04:59		05:40 (SAB W1)
	16:57	148	16:08 (WEA 13)				19:42	283	19:00 (14B)	20:34	132	20:00 (13B)	21:20	66	20:46 (10B)	21:37	113	20:51 (10B)
30	07:59		10:03 (WEA 07)				06:57		07:51 (SAB W3)	05:50		06:51 (9B)	05:05		18:55 (WEA 02)	04:59		05:41 (SAB W1)
	16:58	147	16:09 (WEA 13)				19:44	282	19:00 (14B)	20:36	126	19:59 (13B)	21:21	68	20:46 (10B)	21:37	111	20:52 (10B)
31	07:57		10:03 (WEA 07)				06:55		07:51 (SAB W3)				05:04		05:44 (SAB W1)			
	17:00	145	16:09 (WEA 13)				19:45	279	19:00 (14B)				21:22	80	20:46 (10B)			
Sonnenscheinstunden	260			278			367			416			484			498		
astr.max.mögl.Beschattung		4221			3062			7065			5128			1879			3258	
Red.Sonnenscheinwahrsch.		0,21			0,32			0,27			0,36			0,43			0,35	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,59			0,63			0,66			0,66			0,67			0,68	
Gesamte Reduktion		0,12			0,19			0,17			0,22			0,27			0,22	
Met.wahrsch.Beschattung		508			579			1184			1143			509			732	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)		Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende	(WEA mit letztem Schatten)

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **Schattenrezeptor:** IO 50 - Reinstedt - Mitteldeutsche Baumschulen

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli			August			September			Oktober			November			Dezember		
1	05:00		05:40 (SAB W1)	05:36		15:20 (WEA 10)	06:26		07:00 (SAB W2)	07:14		07:43 (SAB W4)	07:08		09:37 (WEA 07)	07:58		09:43 (WEA 07)
	21:37	110	20:51 (10B)	21:05	51	20:16 (11B)	20:04	150	16:05 (WEA 10)	18:55	204	15:43 (WEA 10)	16:49	102	15:43 (20B)	16:09	134	14:43 (WEA 12)
2	05:01		05:41 (SAB W1)	05:38		15:15 (WEA 10)	06:27		07:02 (SAB W2)	07:16		08:49 (WEA 06)	07:09		09:37 (WEA 07)	08:00		09:44 (WEA 07)
	21:37	109	20:52 (10B)	21:04	59	20:16 (11B)	20:02	149	16:04 (WEA 10)	18:52	190	15:42 (WEA 10)	16:47	109	15:39 (20B)	16:08	135	14:45 (WEA 12)
3	05:01		05:42 (SAB W1)	05:39		15:11 (WEA 10)	06:29		07:58 (SAB W3)	07:17		08:50 (WEA 06)	07:11		09:36 (WEA 07)	08:01		09:44 (WEA 07)
	21:36	109	20:53 (10B)	21:02	64	20:16 (11B)	19:59	151	16:05 (WEA 10)	18:50	187	15:41 (WEA 10)	16:45	117	15:39 (WEA 13)	16:08	136	14:45 (WEA 12)
4	05:02		05:43 (SAB W1)	05:41		15:07 (WEA 10)	06:30		07:54 (SAB W3)	07:19		08:49 (WEA 06)	07:13		09:36 (WEA 07)	08:02		09:46 (WEA 07)
	21:36	106	20:53 (10B)	21:00	69	20:15 (11B)	19:57	168	16:04 (WEA 10)	18:48	185	15:39 (WEA 10)	16:43	123	15:40 (WEA 13)	16:07	133	14:46 (WEA 12)
5	05:03		05:43 (SAB W1)	05:42		07:11 (9B)	06:32		07:52 (SAB W3)	07:21		08:50 (WEA 06)	07:15		09:35 (WEA 07)	08:04		09:46 (WEA 07)
	21:35	106	20:53 (10B)	20:59	79	20:15 (11B)	19:55	195	18:50 (14B)	18:46	180	15:38 (WEA 10)	16:42	129	15:40 (WEA 13)	16:07	135	14:47 (WEA 12)
6	05:04		05:44 (SAB W1)	05:44		07:07 (9B)	06:34		07:50 (SAB W3)	07:22		08:50 (WEA 06)	07:16		09:35 (WEA 07)	08:05		09:46 (WEA 07)
	21:35	103	20:53 (10B)	20:57	90	20:14 (11B)	19:53	216	18:51 (14B)	18:43	177	15:36 (WEA 10)	16:40	132	15:40 (WEA 13)	16:06	135	14:47 (WEA 12)
7	05:05		05:45 (SAB W1)	05:45		07:06 (9B)	06:35		07:49 (SAB W3)	07:24		08:50 (WEA 06)	07:18		09:35 (WEA 07)	08:06		09:48 (WEA 07)
	21:34	101	20:54 (10B)	20:55	97	20:14 (11B)	19:50	236	18:53 (14B)	18:41	173	15:34 (WEA 10)	16:38	137	15:41 (WEA 13)	16:06	135	14:49 (WEA 12)
8	05:06		05:46 (SAB W1)	05:47		07:04 (9B)	06:37		07:47 (SAB W3)	07:26		08:50 (WEA 06)	07:20		09:35 (WEA 07)	08:07		09:48 (WEA 07)
	21:34	98	20:54 (10B)	20:53	103	20:13 (11B)	19:48	249	18:53 (14B)	18:39	169	15:33 (WEA 10)	16:37	140	15:41 (WEA 13)	16:05	134	14:49 (WEA 12)
9	05:06		05:47 (SAB W1)	05:49		07:02 (9B)	06:38		07:46 (SAB W3)	07:27		08:51 (WEA 06)	07:22		09:35 (WEA 07)	08:09		09:49 (WEA 07)
	21:33	96	20:54 (10B)	20:51	107	20:11 (11B)	19:46	257	18:53 (14B)	18:37	172	17:30 (19B)	16:35	142	15:41 (WEA 13)	16:05	134	14:50 (WEA 12)
10	05:07		05:48 (SAB W1)	05:50		07:01 (9B)	06:40		07:44 (SAB W3)	07:29		08:52 (WEA 06)	07:24		09:34 (WEA 07)	08:10		09:49 (WEA 07)
	21:32	92	20:54 (10B)	20:50	112	20:09 (11B)	19:43	268	18:52 (14B)	18:34	171	17:32 (19B)	16:33	146	15:41 (WEA 13)	16:05	133	14:50 (WEA 12)
11	05:08		05:49 (SAB W1)	05:52		07:00 (9B)	06:42		07:44 (SAB W3)	07:31		08:52 (WEA 06)	07:25		09:35 (WEA 07)	08:11		09:50 (WEA 07)
	21:32	89	20:54 (10B)	20:48	117	20:06 (11B)	19:41	274	18:53 (14B)	18:32	169	17:33 (19B)	16:32	145	15:41 (WEA 13)	16:05	133	14:51 (WEA 12)
12	05:10		05:51 (SAB W1)	05:53		06:59 (9B)	06:43		07:43 (SAB W3)	07:33		08:53 (WEA 06)	07:27		09:35 (WEA 07)	08:12		09:52 (WEA 07)
	21:31	82	20:54 (10B)	20:46	124	20:07 (13B)	19:39	277	18:52 (14B)	18:30	165	17:33 (19B)	16:30	147	15:41 (WEA 13)	16:05	132	14:52 (WEA 12)
13	05:11		05:54 (SAB W1)	05:55		06:58 (9B)	06:45		07:42 (SAB W3)	07:34		08:55 (WEA 06)	07:29		09:34 (WEA 07)	08:13		09:52 (WEA 07)
	21:30	75	20:54 (10B)	20:44	130	20:07 (13B)	19:36	283	18:51 (14B)	18:28	160	17:34 (19B)	16:29	148	15:40 (WEA 13)	16:05	132	14:53 (WEA 12)
14	05:12		19:04 (WEA 02)	05:56		06:58 (9B)	06:46		07:42 (SAB W3)	07:36		08:56 (WEA 06)	07:31		09:34 (WEA 07)	08:14		09:52 (WEA 07)
	21:29	67	20:54 (10B)	20:42	135	20:07 (13B)	19:34	283	18:50 (14B)	18:25	154	17:34 (19B)	16:27	148	15:40 (WEA 13)	16:05	132	14:52 (WEA 12)
15	05:13		19:05 (WEA 02)	05:58		06:57 (9B)	06:48		07:41 (SAB W3)	07:38		08:56 (WEA 06)	07:32		09:34 (WEA 07)	08:15		09:53 (WEA 07)
	21:28	64	20:54 (10B)	20:40	139	20:07 (13B)	19:32	282	18:48 (14B)	18:23	156	17:33 (19B)	16:26	149	15:40 (WEA 13)	16:05	131	14:53 (WEA 12)
16	05:14		19:06 (WEA 02)	06:00		06:57 (SAB W2)	06:50		07:41 (SAB W3)	07:39		08:58 (WEA 06)	07:34		09:35 (WEA 07)	08:16		09:54 (WEA 07)
	21:27	62	20:54 (10B)	20:38	143	20:07 (13B)	19:29	280	18:46 (14B)	18:21	152	17:33 (19B)	16:25	147	15:39 (WEA 13)	16:05	130	14:53 (WEA 12)
17	05:15		19:07 (WEA 02)	06:01		06:57 (SAB W2)	06:51		07:40 (SAB W3)	07:41		09:00 (WEA 06)	07:36		09:35 (WEA 07)	08:16		09:54 (WEA 07)
	21:26	59	20:53 (10B)	20:36	145	20:06 (13B)	19:27	271	18:18 (15B)	18:19	145	17:32 (19B)	16:23	147	15:39 (WEA 13)	16:05	131	14:54 (WEA 12)
18	05:17		19:09 (WEA 02)	06:03		06:56 (SAB W2)	06:53		07:41 (SAB W3)	07:43		09:02 (WEA 06)	07:38		09:36 (WEA 07)	08:17		09:55 (WEA 07)
	21:25	56	20:52 (10B)	20:34	147	20:05 (13B)	19:25	269	18:18 (15B)	18:17	138	17:31 (19B)	16:22	145	15:38 (WEA 13)	16:05	130	14:55 (WEA 12)
19	05:18		19:11 (WEA 02)	06:05		06:56 (SAB W2)	06:55		07:41 (SAB W3)	07:45		09:05 (WEA 06)	07:39		09:36 (WEA 07)	08:18		09:55 (WEA 07)
	21:24	57	20:52 (10B)	20:32	150	20:04 (13B)	19:22	270	18:17 (15B)	18:15	126	17:30 (19B)	16:21	144	15:38 (WEA 13)	16:05	130	14:55 (WEA 12)
20	05:19		19:13 (WEA 02)	06:06		06:55 (SAB W2)	06:56		07:41 (SAB W3)	07:46		09:08 (WEA 06)	07:41		09:37 (WEA 07)	08:19		09:56 (WEA 07)
	21:23	54	20:51 (10B)	20:30	148	20:01 (13B)	19:20	265	18:15 (15B)	18:13	107	17:27 (19B)	16:19	141	15:37 (WEA 13)	16:06	129	14:56 (WEA 12)
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	21:21	49	20:49 (10B)	20:28	145	16:05 (WEA 10)	19:18	273	18:27 (18B)	18:11	85	16:51 (20B)	16:18	139	15:35 (WEA 13)	16:06	130	14:57 (WEA 12)
22	05:22		19:18 (WEA 02)	06:09		06:54 (SAB W2)	06:59		07:39 (SAB W4)	07:50		10:57 (WEA 07)	07:44		09:37 (WEA 07)	08:20		09:57 (WEA 07)
	21:20	40	20:12 (11B)	20:26	148	16:05 (WEA 10)	19:16	273	18:28 (18B)	18:08	67	16:51 (20B)	16:17	133	15:33 (WEA 13)	16:07	130	14:57 (WEA 12)
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24	05:24		19:54 (11B)	06:13		06:53 (SAB W2)	07:03		07:39 (SAB W4)	07:53		10:49 (WEA 07)	07:48		09:39 (WEA 07)	08:21		09:58 (WEA 07)
	21:17	20	20:14 (11B)	20:21	153	16:05 (WEA 10)	19:11	261	18:29 (18B)	18:04	58	16:51 (20B)	16:15	120	14:03 (WEA 11)	16:08	129	14:58 (WEA 12)
25	05:26		19:53 (11B)	06:14		06:54 (SAB W2)	07:04		07:38 (SAB W4)	06:55		09:47 (WEA 07)	07:49		09:39 (WEA 07)	08:21		09:58 (WEA 07)
	21:16	21	20:14 (11B)	20:19	154	16:06 (WEA 10)	19:09	250	18:28 (18B)	17:02	62	15:51 (20B)	16:14	121	14:03 (WEA 11)	16:08	130	14:58 (WEA 12)
26	05:27		19:53 (11B)	06:16		06:54 (SAB W2)	07:06		07:38 (SAB W4)	06:57		09:45 (WEA 07)	07:51		09:39 (WEA 07)	08:21		09:58 (WEA 07)
	21:15	22	20:15 (11B)	20:17	155	16:05 (WEA 10)	19:06	246	18:28 (18B)	17:00	66	15:51 (20B)	16:13	121	14:04 (WEA 11)	16:09	131	14:58 (WEA 12)
27	05:29		19:52 (11B)	06:17		06:54 (SAB W2)	07:08		07:39 (SAB W4)	06:59		09:43 (WEA 07)	07:52		09:40 (WEA 07)	08:22		09:59 (WEA 07)
	21:13	24	20:16 (11B)	20:15	157	16:06 (WEA 10)	19:04	240	18:28 (18B)	16:58	69	15:50 (20B)	16:12	126	14:36 (WEA 12)	16:10	130	14:58 (WEA 12)
28	05:30		19:52 (11B)	06:19		06:54 (SAB W2)	07:09		07:39 (SAB W4)	07:00		09:42 (WEA 07)	07:54		09:40 (WEA 07)	08:22		10:00 (WEA 07)
	21:12	23	20:15 (11B)	20:13	157	16:05 (WEA 10)	19:02	233	18:26 (18B)	16:56	75	15:49 (20B)	16:11	131	14:38 (WEA 12)	16:11	131	15:00 (WEA 12)
29	05:32		19:52 (11B)	06:21		06:55 (SAB W2)	07:11		07:40 (SAB W4)	07:02		09:40 (WEA 07)	07:55		09:41 (WEA 07)	08:22		10:00 (WEA 07)
	21:10	24	20:16 (11B)	20:10	156	16:05 (WEA 10)	18:59	225	18:24 (18B)	16:55	80	15:48 (20B)	16:10	133	14:40 (WEA 12)	16:11	131	15:00 (WEA 12)
30	05:33		19:51 (11B)	06:22		06:56 (SAB W2)	07:12		07:41 (SAB W4)	07:04		09:39 (WEA 07)	07:57		09:43 (WEA 07)	08:22		10:00 (WEA 07)
	21:09	25	20:16 (11B)	20:08	155	16:05 (WEA 10)	18:57	212	15:45 (WEA 10)	16:53	82	15:46 (20B)	16:10	132	14:42 (WEA 12)	16:12	132	15:00 (WEA 12)
31	05:35		15:25 (WEA 10)	06:24		06:58 (SAB W2)				07:06		09:38 (WEA 07)				08:22		10:00 (WEA 07)
	21:07	42	20:16 (11B)	20:06	153	16:05 (WEA 10)				16:51	86	15:45 (20B)				16:13	132	15:00 (WEA 12)
Sonnenscheinstunden	501			453			381			332			267			245		
astr.max.mögl.Beschattung		2018			3892			7274			4061			4020			4090	
Red.Sonnenscheinwahrsch.		0,40			0,43			0,34			0,28			0,22			0,18	
Reduktion Betriebsdauer		0,96			0,96			0,96			0,96			0,96			0,96	
Reduktion Windrichtung		0,68			0,66			0,66			0,65			0,60			0,59	
Gesamte Reduktion		0,26			0,27			0,21			0,17			0,13			0,10	
Met.wahrsch.Beschattung		522			1047			1550			702			504			406	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang Zeitpunkt (SS:MM) Schattenende	(WEA mit erstem Schatten) (WEA mit letztem Schatten)

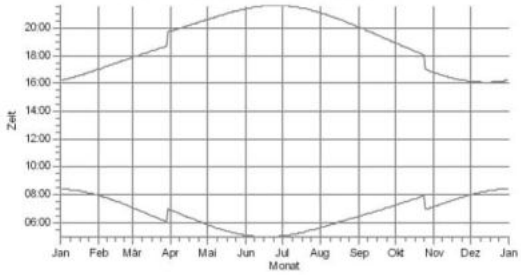
Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

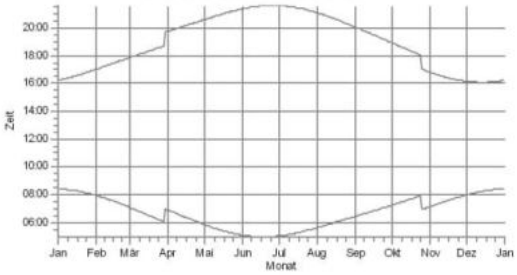
SHADOW - Grafischer Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

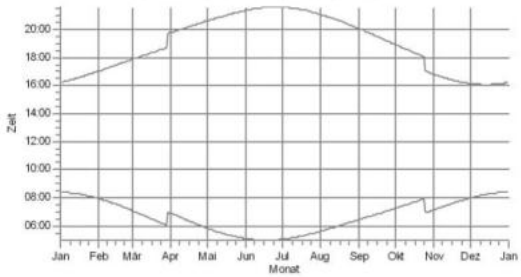
IO 01: Frose - Reinstedter Str. - Industrie



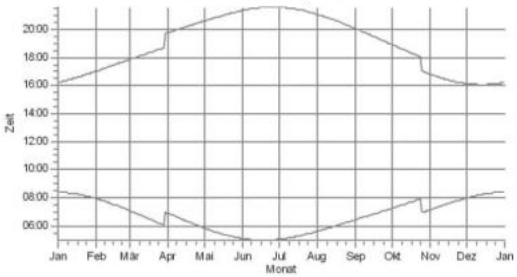
IO 02: Frose - Reinstedter Str. 1



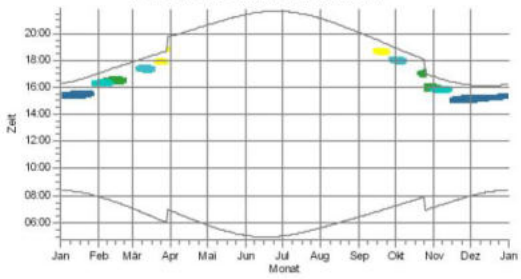
IO 03: Frose - Vor dem Bahnhof 274E



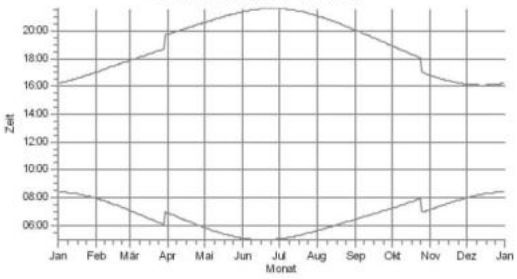
IO 04: Frose - Wohngebiet



IO 05: Aschersleben - Außenbereich



IO 06: Aschersleben - MAWEA



Projekt:
Reinstedt

Lizenzierter Anwender:
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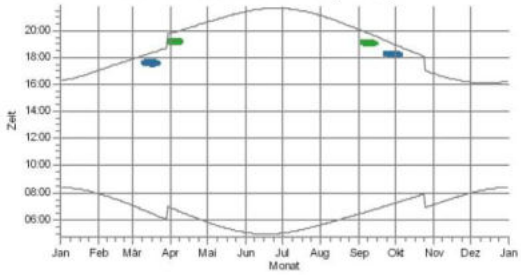
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

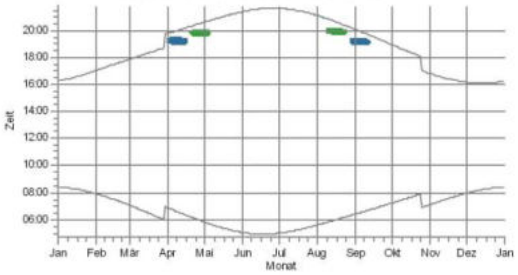
SHADOW - Grafischer Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

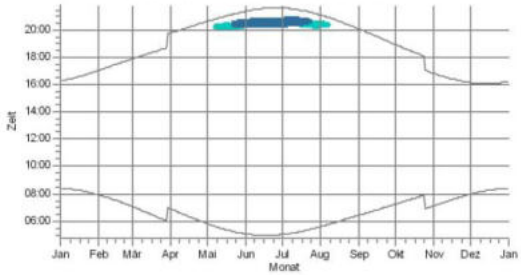
IO 07: Aschersleben - Am Hangelsberg



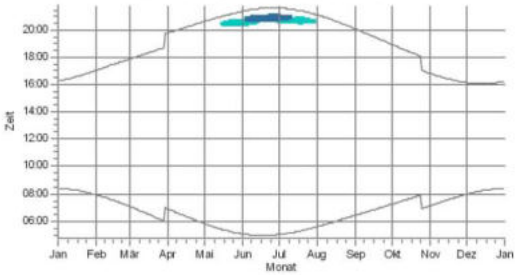
IO 08: Aschersleben - Am Chausee 23



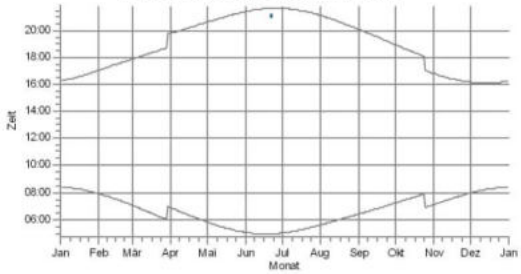
IO 09: Aschersleben - Am Harzblick 49



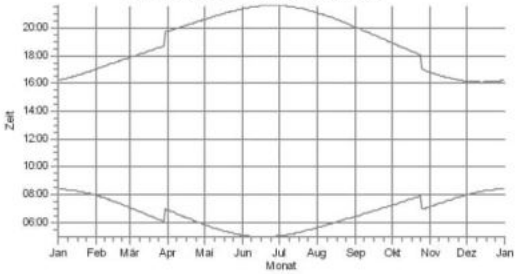
IO 10: Aschersleben - Am Harzblick 45



IO 11: Aschersleben - Über der Eine 18A



IO 12: Westdorf - Am Landgraben 1A



WEA

Projekt:
Reinstedt

Lizenzierter Anwender:
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Energie-Allee 1
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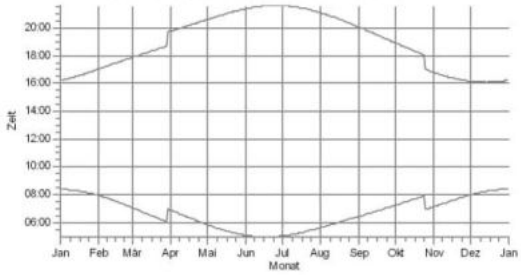
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

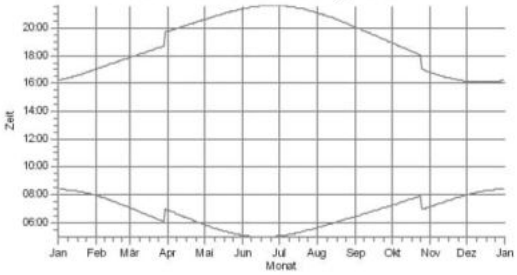
SHADOW - Grafischer Kalender

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

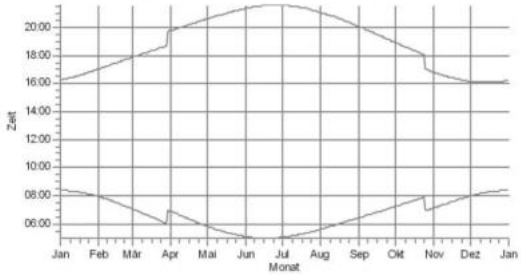
IO 13: Westdorf - Aschersleb ener Str. 2A



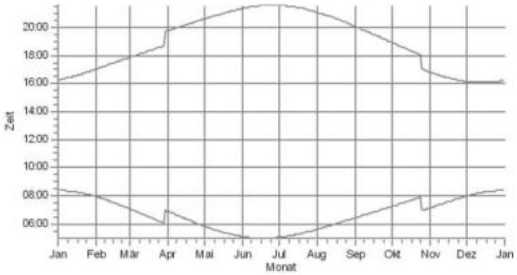
IO 14: Westdorf - Autoverw ertung Lorenz



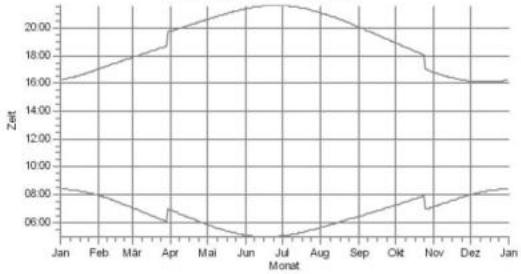
IO 15: Welbsleben - Außenbereich



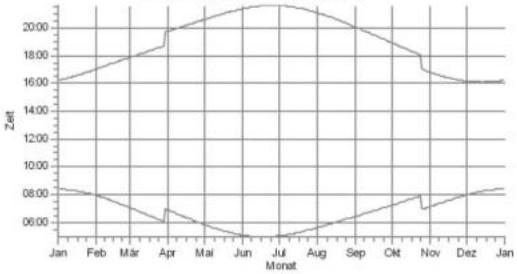
IO 16: Ermsleben - KFZ Werkstatt



IO 17: Ermsleben - Neue Str.



IO 18: Ermsleben - Am Mittelw eg



WEA

Projekt:
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Berechnet:
16.02.2024 15:17/3.6.366

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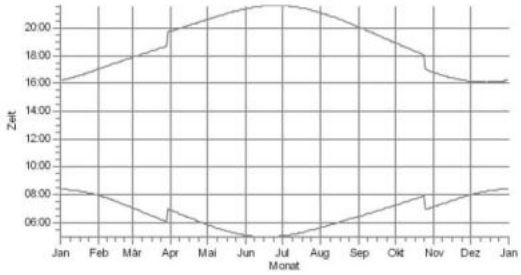
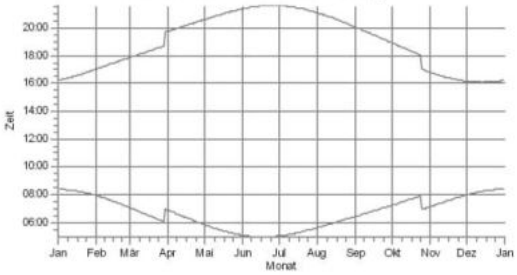
Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

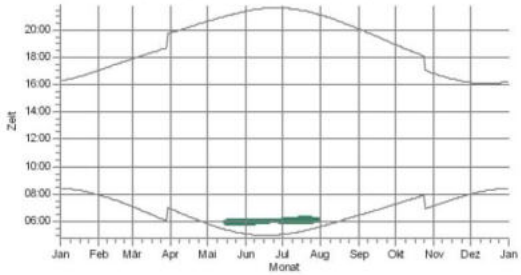
IO 19: Ermsleben - Mühlenstraße



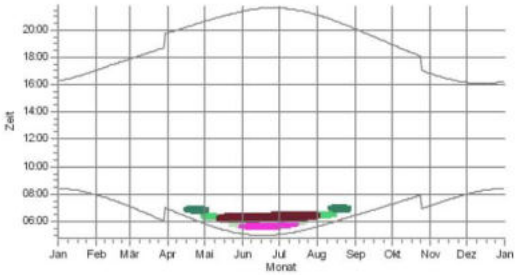
IO 20: Ermsleben - Radislebener Weg



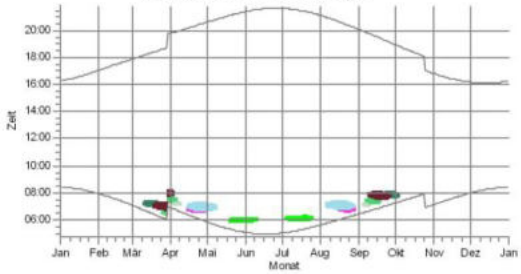
IO 21: Falkenstein - Mühlenstraße



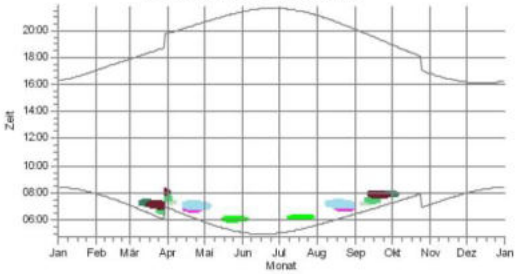
IO 22: Strommühle



IO 23: Reinstedt - Forellenw eg 10



IO 24: Reinstedt - Forellenw eg 8



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Berechnet:
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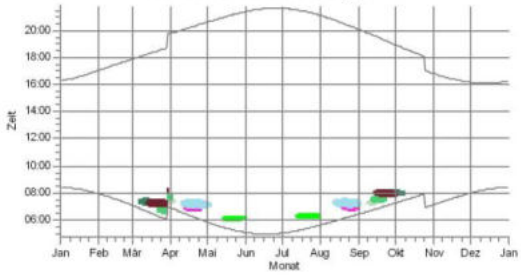
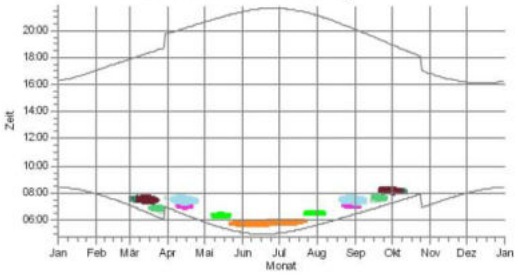
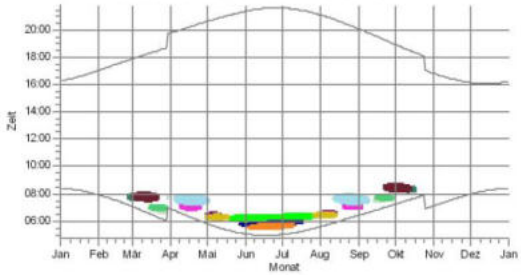
IO 25: Reinstedt - Forellenw eg 6



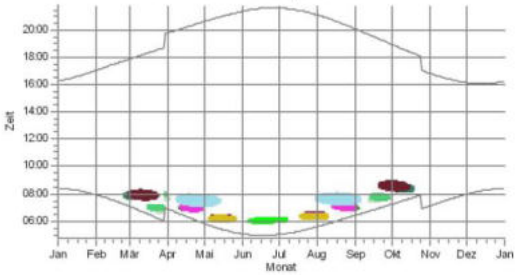
IO 26: Reinstedt - Forellenw eg 1



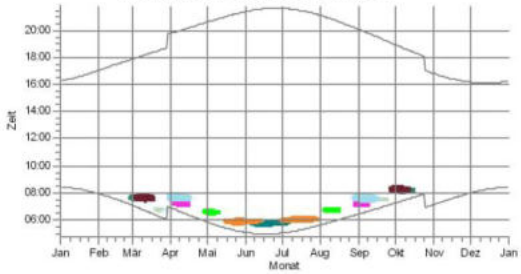
IO 27: Reinstedt - Ermslebener Straße 1



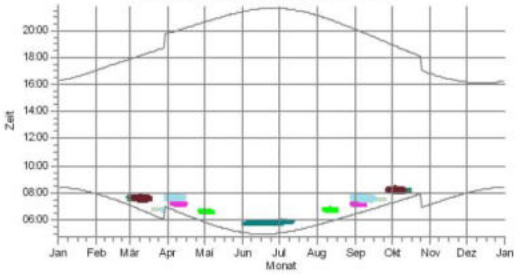
IO 28: Reinstedt - Alphabillard

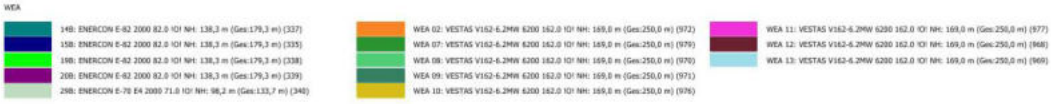


IO 29: Reinstedt - Ermslebener Straße 11



IO 30: Reinstedt - Ermslebener Straße 8





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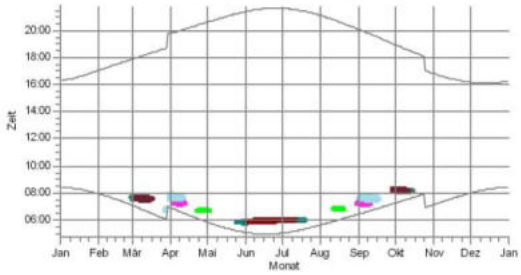
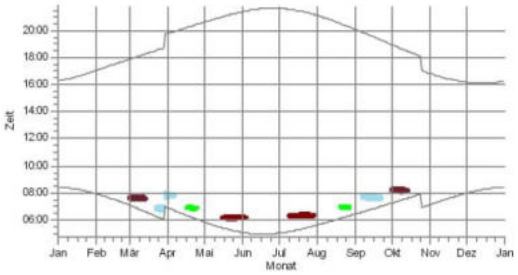
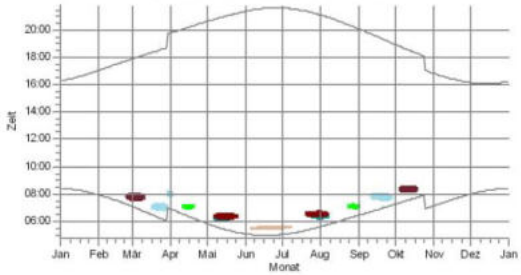
IO 31: Reinstedt - Ermslebener Straße 5B



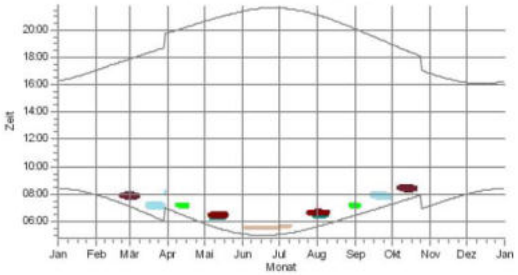
IO 32: Reinstedt - Schielestraße 1



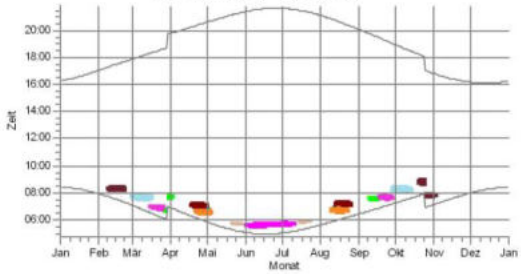
IO 33: Reinstedt - Schielestraße 4a



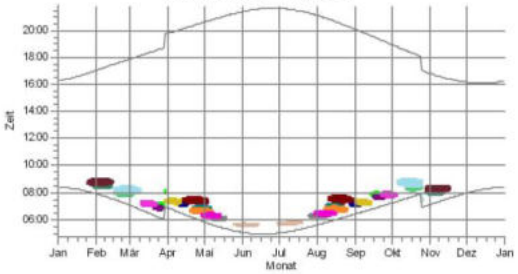
IO 34: Reinstedt - Schielestraße 6



IO 35: Reinstedt - Wiedemann



IO 36: Reinstedt - Solarpark



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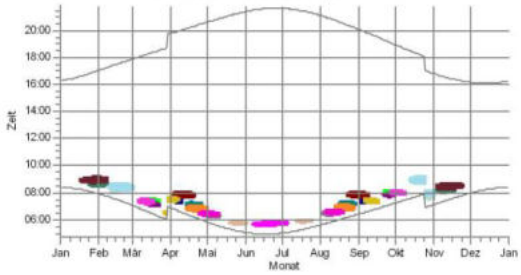
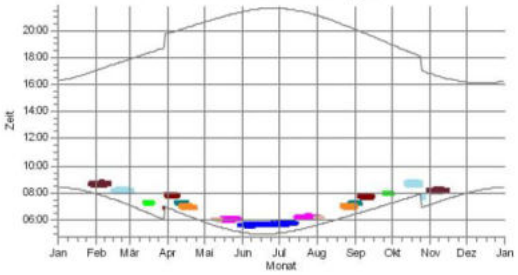
Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

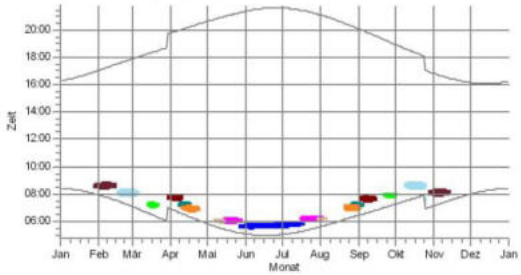
IO 37: Reinstedt - Fußballplatz



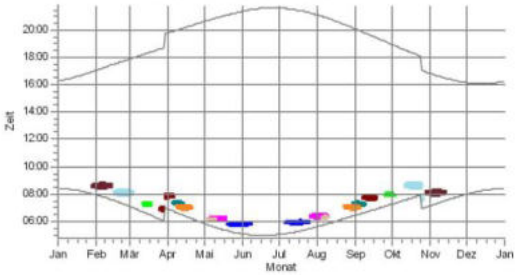
IO 38: Reinstedt - Neu-Seeland Agrar



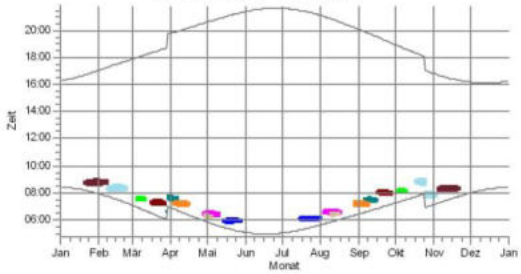
IO 39: Reinstedt - Unterdorf 66a



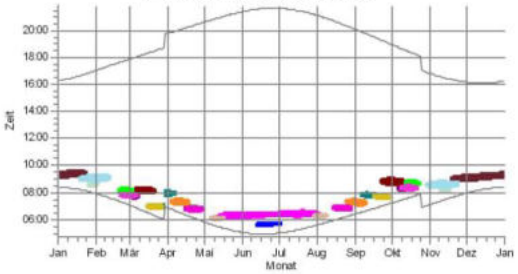
IO 40: Reinstedt - Schielestraße



IO 41: Reinstedt - Siedlung 15



IO 42: Reinstedt - Hotel Harz-Ring



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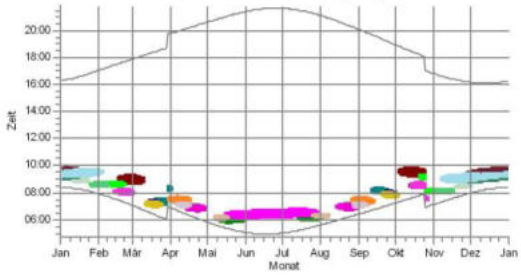
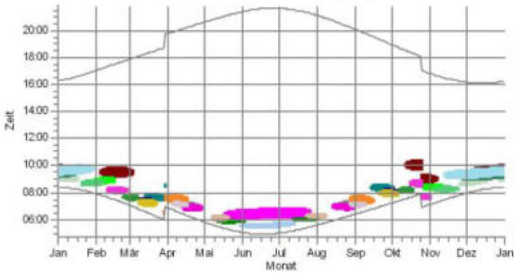
Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

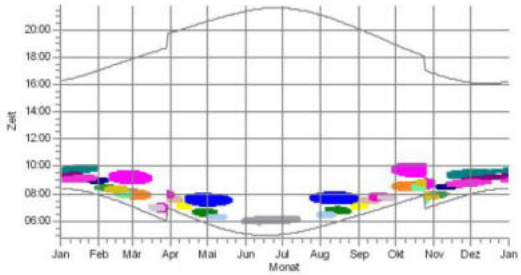
IO 43: Reinstedt - Bauschuttrecycling



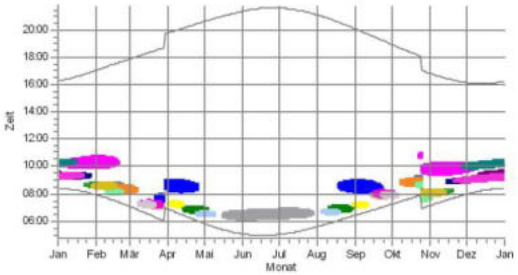
IO 44: Reinstedt - Bauschuttrecycling 2



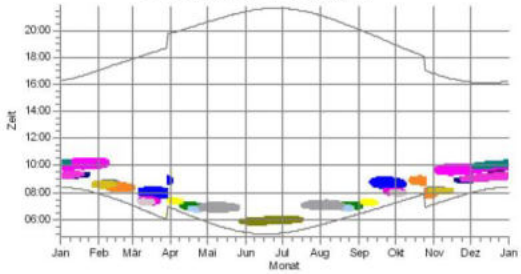
IO 46: Reinstedt - Solarpark



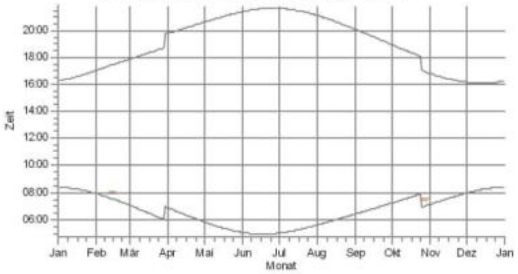
IO 47: Reinstedt - Metallbau Klug



IO 48: Reinstedt - ACZ Transport



IO 49: Reinstedt - Danpower Energie Service



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16.02.2024 15:17/3.6.366

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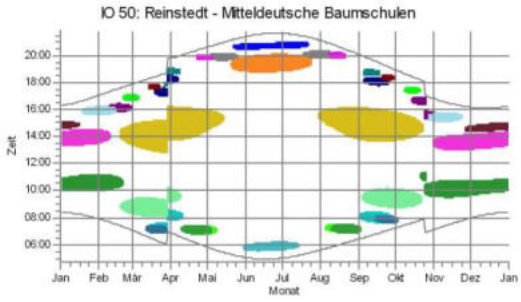

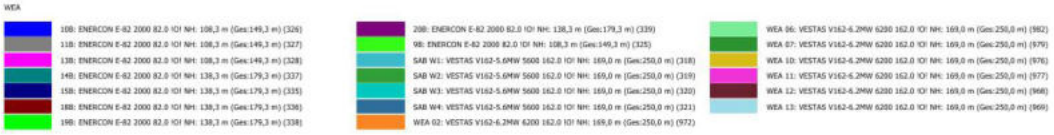

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Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 14 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (1574)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22 16:15	07:56 17:02	07:03 17:53	06:52 19:47	05:48 06:26-06:55/29 20:38	05:03 05:55-06:02/7 21:23	05:00 21:37	05:36 06:05-06:16/11 21:05	06:25 06:53-07:11/18 20:04	07:14 18:55	07:08 16:49	07:58 16:09
2	08:22 16:16	07:54 17:04	07:00 17:55	06:50 19:49	05:46 06:26-06:53/27 20:39	05:02 05:58-06:01/3 21:24	05:01 21:37	05:38 06:06-06:14/8 21:04	06:27 06:53-07:08/15 20:02	07:16 18:52	07:09 16:47	08:00 16:08
3	08:22 16:17	07:52 17:06	06:58 17:57	06:48 19:50	05:44 06:27-06:48/21 20:41	05:01 21:25	05:01 21:36	05:39 06:08-06:13/5 21:02	06:29 06:56-07:06/10 19:59	07:17 18:50	07:11 16:45	08:01 16:08
4	08:22 16:18	07:51 17:08	06:56 17:59	06:45 19:52	05:42 06:28-06:46/18 20:43	05:00 21:26	05:02 21:36	05:41 21:00	06:30 19:57	07:19 18:48	07:13 16:43	08:02 16:07
5	08:21 16:19	07:49 17:09	06:54 18:01	06:43 19:54	05:40 06:28-06:45/17 20:44	05:00 21:27	05:03 21:35	05:42 06:45-06:49/4 20:59	06:32 19:55	07:21 18:46	07:15 16:42	08:04 16:06
6	08:21 16:20	07:48 17:11	06:52 18:02	06:41 19:56	05:39 06:29-06:43/14 20:46	04:59 21:28	05:04 21:35	05:44 06:41-06:52/11 20:57	06:34 19:53	07:22 18:43	07:17 16:40	08:05 16:06
7	08:21 16:22	07:46 17:13	06:49 18:04	06:39 19:57	05:37 06:32-06:41/9 20:47	04:59 21:29	05:05 21:34	05:45 06:39-06:54/15 20:55	06:35 19:50	07:24 18:41	07:18 16:38	08:06 16:06
8	08:20 16:23	07:44 17:15	06:47 18:06	06:36 19:59	05:35 20:49	04:58 21:30	05:05 21:34	05:47 06:37-06:55/18 20:53	06:37 19:48	07:26 18:39	07:20 16:37	08:08 16:05
9	08:20 16:24	07:42 17:17	06:45 18:08	06:34 06:58-07:07/9 20:01	05:33 05:59-06:01/2 20:51	04:58 21:31	05:06 21:33	05:49 06:37-06:56/19 20:52	06:38 19:46	07:28 18:37	07:22 16:35	08:09 16:05
10	08:19 16:26	07:41 17:19	06:43 18:09	06:32 06:55-07:10/15 20:02	05:32 05:57-06:03/6 20:52	04:57 21:32	05:07 21:32	05:50 06:35-06:59/24 20:50	06:40 19:43	07:29 18:34	07:24 16:33	08:10 16:05
11	08:19 16:27	07:39 17:21	06:40 18:11	06:30 06:53-07:11/18 20:04	05:30 05:55-06:04/9 20:54	04:57 21:32	05:08 06:04-06:09/5 21:32	05:52 06:35-07:03/28 20:48	06:42 19:41	07:31 18:32	07:25 16:32	08:11 16:05
12	08:18 16:28	07:37 17:22	06:38 18:13	06:27 06:51-07:12/21 20:06	05:28 05:54-06:06/12 20:55	04:56 21:33	05:09 06:02-06:11/9 21:31	05:53 06:34-07:04/30 20:46	06:43 19:39	07:33 18:30	07:27 16:30	08:12 16:05
13	08:17 16:30	07:35 17:24	06:36 18:15	06:25 06:50-07:13/23 20:07	05:27 05:52-06:06/14 20:57	04:56 21:34	05:11 06:01-06:12/11 21:30	05:55 06:34-07:06/32 20:44	06:45 19:36	07:34 18:28	07:29 16:29	08:13 16:04
14	08:17 16:31	07:33 17:26	06:34 18:16	06:23 06:50-07:13/23 20:09	05:25 05:51-06:07/16 20:59	04:56 21:34	05:12 06:01-06:13/12 21:29	05:56 06:33-07:06/33 20:42	06:46 19:34	07:36 18:25	07:31 16:27	08:14 16:04
15	08:16 16:33	07:31 17:28	06:31 18:18	06:21 06:45-07:13/28 20:11	05:23 05:50-06:08/18 21:00	04:56 21:35	05:13 06:00-06:14/14 21:28	05:58 06:33-07:07/34 20:40	06:48 19:32	07:38 18:23	07:32 16:26	08:15 16:05
16	08:15 16:34	07:29 17:30	06:29 18:20	06:19 06:43-07:13/30 20:12	05:22 05:48-06:07/19 21:02	04:56 21:35	05:14 05:59-06:15/16 21:27	06:00 06:33-07:07/34 20:38	06:50 19:29	07:39 18:21	07:34 16:24	08:16 16:05
17	08:14 16:36	07:27 17:32	06:27 18:21	06:16 06:41-07:13/32 20:14	05:20 05:47-06:08/21 21:03	04:56 21:36	05:15 05:59-06:15/16 21:26	06:01 06:33-07:08/35 20:36	06:51 19:27	07:41 18:19	07:36 16:23	08:16 16:05
18	08:13 16:38	07:25 17:33	06:24 18:23	06:14 06:40-07:13/33 20:16	05:19 05:48-06:08/20 21:05	04:56 21:36	05:17 05:58-06:16/18 21:25	06:03 06:33-07:10/37 20:34	06:53 19:25	07:43 18:17	07:38 16:22	08:17 16:05
19	08:12 16:39	07:23 17:35	06:22 18:25	06:12 06:37-07:12/35 20:17	05:18 05:47-06:08/21 21:06	04:56 21:37	05:18 05:59-06:17/18 21:24	06:04 06:34-07:13/39 20:32	06:55 19:22	07:45 18:15	07:39 16:21	08:18 16:05
20	08:11 16:41	07:21 17:37	06:20 18:27	06:10 06:33-07:11/38 20:19	05:16 05:47-06:08/21 21:08	04:56 21:37	05:19 05:58-06:17/19 21:23	06:06 06:34-07:13/39 20:30	06:56 19:20	07:46 18:13	07:41 16:19	08:19 16:06
21	08:10 16:43	07:19 17:39	06:18 18:28	06:08 06:31-07:10/39 20:21	05:15 05:47-06:08/21 21:09	04:56 21:37	05:20 05:58-06:17/19 21:21	06:08 06:35-07:15/40 20:28	06:58 19:18	07:48 18:11	07:43 16:18	08:19 16:06
22	08:09 16:44	07:17 17:41	06:15 18:30	06:06 06:29-07:09/40 20:23	05:14 05:48-06:08/20 21:10	04:56 21:38	05:22 05:57-06:17/20 21:20	06:09 06:36-07:15/39 20:26	06:59 19:16	07:50 18:08	07:44 16:17	08:20 16:07
23	08:08 16:46	07:15 17:43	06:13 18:32	06:04 06:28-07:08/40 20:24	05:12 05:48-06:08/20 21:12	04:56 21:38	05:23 05:58-06:18/20 21:19	06:11 06:38-07:16/38 20:23	07:01 19:13	07:52 18:06	07:46 16:16	08:20 16:07
24	08:07 16:48	07:13 17:44	06:11 18:33	06:02 06:27-07:06/39 20:26	05:11 05:49-06:08/19 21:13	04:56 21:38	05:24 05:58-06:18/20 21:17	06:13 06:42-07:15/33 20:21	07:03 19:11	07:53 18:04	07:48 16:15	08:21 16:08
25	08:05 16:50	07:11 17:46	06:08 18:35	06:00 06:26-07:03/37 20:28	05:10 05:48-06:06/18 21:15	04:57 21:38	05:26 05:57-06:18/21 21:16	06:14 06:43-07:16/33 20:19	07:04 19:09	07:55 17:02	07:49 16:14	08:21 16:08
26	08:04 16:51	07:09 17:48	06:06 18:37	05:58 06:26-07:00/34 20:29	05:09 05:49-06:06/17 21:16	04:57 21:38	05:27 05:58-06:19/21 21:15	06:16 06:43-07:15/32 20:17	07:06 19:06	06:57 17:00	07:51 16:13	08:21 16:09
27	08:03 16:53	07:07 17:50	06:04 18:39	05:56 06:26-07:01/35 20:31	05:08 05:50-06:07/17 21:17	04:58 21:38	05:29 05:58-06:18/20 21:13	06:17 06:45-07:15/30 20:15	07:08 19:04	06:59 16:58	07:52 16:12	08:22 16:10
28	08:01 16:55	07:05 17:52	06:01 18:40	05:54 06:26-07:00/34 20:33	05:07 05:51-06:06/15 21:18	04:58 21:38	05:30 05:59-06:18/19 21:12	06:19 06:46-07:14/28 20:13	07:09 19:02	07:00 16:56	07:54 16:11	08:22 16:11
29	08:00 16:57		06:59 19:42	05:52 06:26-06:58/32 20:34	05:06 05:52-06:05/13 21:20	04:59 21:38	05:32 06:01-06:18/17 21:10	06:21 06:50-07:14/24 20:10	07:11 18:59	06:55 16:55	07:55 16:10	08:22 16:11
30	07:59 16:58		06:57 19:44	05:50 06:26-06:57/31 20:36	05:05 05:52-06:04/12 21:21	04:59 21:37	05:33 06:02-06:17/15 21:09	06:22 06:50-07:12/22 20:08	07:12 18:57	07:04 16:53	07:57 16:10	08:22 16:12
31	07:57 17:00		06:55 19:45		05:04 05:53-06:03/10 21:22		05:35 06:03-06:16/13 21:07	06:24 06:51-07:12/21 20:06		07:06 16:51		08:22 16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	666	496	10	343	796	43	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 15 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (1575)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:02	06:52 07:15-07:32/17	05:48	05:03	05:00	05:36	06:25 06:53-07:20/27	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50 07:13-07:32/19	05:46	05:02	05:01	05:38	06:27 06:53-07:20/27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48 07:10-07:31/21	05:44	05:01	05:01	05:39	06:29 06:55-07:21/26	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45 07:08-07:31/23	05:42	05:00	05:02	05:41	06:30 06:56-07:23/27	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43 07:06-07:30/24	05:40	05:00	05:03	05:42	06:32 06:58-07:25/27	07:21	07:15	08:04
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:06
6	08:21	07:48	06:52	06:41 07:04-07:30/26	05:38	04:59	05:04	05:44	06:34 06:59-07:25/26	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39 07:01-07:28/27	05:37	04:59	05:05	05:45	06:35 07:01-07:26/25	07:24	07:18	08:06
	16:21	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36 06:59-07:26/27	05:35	04:58	05:05	05:47	06:37 07:02-07:25/23	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34 06:57-07:23/26	05:33	04:58	05:06	05:48	06:38 07:04-07:25/21	07:27	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:51	19:46	18:36	16:35	16:05
10	08:19	07:41	06:43	06:32 06:55-07:22/27	05:32	04:57	05:07	05:50	06:40 07:06-07:25/19	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30 06:53-07:20/27	05:30	04:57	05:08	05:52	06:42 07:07-07:24/17	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27 06:53-07:18/25	05:28	04:56	05:09	05:53	06:43 07:09-07:23/14	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25 06:53-07:16/23	05:27	04:56	05:11	05:55	06:45 07:10-07:21/11	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34	06:23 06:54-07:11/17	05:25	04:56	05:12	05:56	06:46 07:12-07:20/8	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34 18:37-18:47/10	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21 06:54-07:10/16	05:23	04:56	05:13	05:58	06:48 07:13-07:16/3	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32 18:34-18:48/14	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19 06:55-07:09/14	05:22	04:56	05:14	06:00	06:50 18:33-18:49/16	07:39	07:34	08:16
	16:34	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:29	18:21	16:24	16:05
17	08:14	07:27	06:27	06:16 06:57-07:06/9	05:20	04:56	05:15	06:01	06:51 18:31-18:49/18	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:56	05:16	06:03	06:53 18:31-18:49/18	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22 17:50-17:59/9	06:12	05:18	04:56	05:18	06:04	06:55 18:30-18:48/18	07:45	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20 17:47-18:00/13	06:10	05:16	04:56	05:19	06:06	06:56 18:30-18:48/18	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18 17:46-18:02/16	06:08	05:15	04:56	05:20	06:08	06:58 18:30-18:48/18	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15 17:45-18:02/17	06:06	05:14	04:56	05:22	06:09	06:59 18:30-18:46/16	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13 17:43-18:02/19	06:04	05:12	04:56	05:23	06:11	07:01 18:31-18:45/14	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11 17:43-18:02/19	06:02	05:11	04:56	05:24	06:13	07:03 18:33-18:44/11	07:53	07:48	08:21
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08 17:43-18:02/19	06:00	05:10	04:57	05:26	06:14	07:04 18:35-18:40/5	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06 17:43-18:01/18	05:58	05:09	04:57	05:27	06:16 06:59-07:08/9	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04 17:43-18:00/17	05:56	05:08	04:58	05:29	06:17 06:57-07:10/13	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01 06:24-06:25/1	05:54	05:07	04:58	05:30	06:19 06:55-07:11/16	07:09	07:00	07:54	08:22
	16:55	17:52	18:40 17:45-17:59/14	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59 07:22-07:29/7	05:52	05:06	04:59	05:32	06:21 06:55-07:12/17	07:11	07:02	07:55	08:22
	16:57		19:42 18:45-18:56/11	20:34	21:20	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:59		06:57 07:19-07:30/11	05:50	05:05	04:59	05:33	06:22 06:54-07:16/22	07:12	07:04	07:57	08:22
	16:58		19:44 18:49-18:52/3	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55 07:17-07:31/14		05:04		05:35	06:24 06:53-07:18/25		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	208	368	0	0	0	102	477	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 10B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (326)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22	07:56	07:03	06:52 08:12-09:03/51	05:48 07:09-07:55/46	05:03 20:29-20:46/17
	16:15	17:02	17:53	19:47	20:38	21:23 05:31-05:51/20
2	08:22	07:54	07:00	06:50 08:11-09:02/51	05:46 07:09-07:54/45	05:02 20:30-20:47/17
	16:16	17:04	17:55	19:49	20:39	21:24 05:31-05:52/21
3	08:22	07:53	06:58	06:48 08:09-09:01/52	05:44 07:10-07:55/45	05:01 20:30-20:47/17
	16:17	17:06	17:57	19:50	20:41	21:25 05:30-05:51/21
4	08:22	07:51	06:56	06:45 08:09-09:02/53	05:42 07:10-07:54/44	05:01 20:29-20:47/18
	16:18	17:08	17:59	19:52	20:43	21:26 05:30-05:50/20
5	08:22	07:49	06:54	06:43 08:09-09:02/53	05:40 07:10-07:53/43	05:00 20:30-20:47/17
	16:19	17:09	18:01	19:54	20:44	21:27 05:30-05:50/20
6	08:21	07:48	06:52 07:57-08:11/14	06:41 08:08-09:02/54	05:39 07:10-07:52/42	04:59 20:30-20:47/17
	16:20	17:11	18:02	19:56	20:46	21:28 05:30-05:49/19
7	08:21	07:46	06:49 07:52-08:13/21	06:39 08:07-09:01/54	05:37 07:11-07:52/41	04:59 20:31-20:48/17
	16:22	17:13	18:04	19:57	20:48	21:29 05:30-05:49/19
8	08:20	07:44	06:47 07:50-08:16/26	06:36 08:07-09:00/53	05:35 07:11-07:51/40	04:58 20:30-20:47/17
	16:23	17:15	18:06	19:59	20:49	21:30 05:31-05:46/15
9	08:20	07:42	06:45 07:48-08:18/30	06:34 08:07-09:00/53	05:33 07:12-07:51/39	04:58 20:31-20:48/17
	16:24	17:17	18:08	20:01	20:51	21:31 05:30-05:45/15
10	08:19	07:41	06:43 07:46-08:19/33	06:32 08:07-09:00/53	05:32 07:12-07:50/38	04:57 20:32-20:48/16
	16:26	17:19	18:09	20:02	20:52	21:32 05:31-05:46/15
11	08:19	07:39	06:40 07:44-08:20/36	06:30 08:06-08:58/52	05:30 07:12-07:48/36	04:57 20:31-20:47/16
	16:27	17:21	18:11	20:04	20:54	21:32 05:31-05:46/15
12	08:18	07:37	06:38 07:43-08:21/38	06:28 08:06-08:58/52	05:28 07:14-07:48/34	04:57 20:32-20:48/16
	16:28	17:22	18:13	20:06	20:56	21:33 05:31-05:45/14
13	08:17	07:35	06:36 07:42-08:22/40	06:25 08:07-08:57/50	05:27 07:14-07:46/32	04:56 20:32-20:48/16
	16:30	17:24	18:15	20:07 07:30-07:42/12	20:57 05:52-05:58/6	21:34 05:31-05:46/15
14	08:17	07:33	06:34 07:40-08:21/41	06:23 08:07-08:56/49	05:25 07:15-07:45/30	04:56 20:33-20:48/15
	16:31	17:26	18:16	20:09 07:26-07:46/20	20:59 05:51-06:00/9	21:34 05:32-05:46/14
15	08:16	07:31	06:31 07:40-08:22/42	06:21 08:08-08:55/47	05:24 07:17-07:44/27	04:56 20:33-20:48/15
	16:33	17:28	18:18	20:11 07:23-07:49/26	21:00 05:50-06:01/11	21:35 05:32-05:46/14
16	08:15	07:29	06:29 07:39-08:23/44	06:19 08:08-08:54/46	05:22 07:18-07:42/24	04:56 20:33-20:49/16
	16:35	17:30	18:20	20:12 07:21-07:50/29	21:02 05:48-06:01/13	21:36 05:32-05:46/14
17	08:14	07:27	06:27 07:38-08:22/44	06:17 08:09-08:53/44	05:21 07:20-07:41/21	04:56 20:34-20:49/15
	16:36	17:32	18:22	20:14 07:19-07:52/33	21:03 05:48-06:02/14	21:36 05:32-05:47/15
18	08:13	07:25	06:25 07:38-08:22/44	06:14 08:10-08:51/41	05:19 07:22-07:39/17	04:56 20:34-20:49/15
	16:38	17:34	18:23	20:16 07:18-07:53/35	21:05 05:48-06:02/14	21:36 05:33-05:47/14
19	08:12	07:23	06:22 07:38-08:22/44	06:12 08:09-08:49/40	05:18 07:23-07:36/13 05:44-05:46/2	04:56 20:34-20:49/15
	16:39	17:35	18:25	20:18 07:16-07:53/37	21:06 05:48-06:02/14	21:37 05:33-05:47/14
20	08:11	07:21	06:20 07:37-08:21/44	06:10 08:10-08:47/37	05:16 07:29-07:31/2	04:56 20:34-20:49/15
	16:41	17:37	18:27	20:19 07:14-07:54/40	21:08 05:43-06:02/19	21:37 05:33-05:47/14
21	08:10	07:19	06:18 07:37-08:21/44	06:08 08:12-08:45/33	05:15 05:42-06:02/20	04:56 20:34-20:49/15
	16:43	17:39	18:28	20:21 07:13-07:54/41	21:09	21:37 05:33-05:47/14
22	08:09	07:17	06:15 07:32-08:20/48	06:06 08:13-08:43/30	05:14 05:41-06:02/21	04:56 20:34-20:49/15
	16:44	17:41	18:30	20:23 07:12-07:55/43	21:10	21:38 05:34-05:48/14
23	08:08	07:15	06:13 07:28-08:20/52	06:04 08:15-08:41/26	05:12 20:33-20:40/7	04:56 20:35-20:50/15
	16:46	17:43	18:32	20:24 07:12-07:55/43	21:12 05:40-06:02/22	21:38 05:34-05:48/14
24	08:07	07:13	06:11 07:24-08:18/54	06:02 08:17-08:38/21	05:11 20:32-20:41/9	04:57 20:35-20:50/15
	16:48	17:44	18:34	20:26 07:11-07:55/44	21:13 05:39-06:02/23	21:38 05:34-05:48/14
25	08:05	07:11	06:08 07:22-08:18/56	06:00 08:20-08:34/14	05:10 20:31-20:42/11	04:57 20:35-20:50/15
	16:50	17:46	18:35	20:28 07:10-07:56/46	21:15 05:39-06:01/22	21:38 05:34-05:49/15
26	08:04	07:09	06:06 07:20-08:17/57	05:58 07:10-07:55/45	05:09 20:30-20:43/13	04:57 20:35-20:51/16
	16:51	17:48	18:37	20:29	21:16 05:39-06:01/22	21:38 05:34-05:49/15
27	08:03	07:07	06:04 07:18-08:14/56	05:56 07:10-07:56/46	05:08 20:30-20:44/14	04:58 20:35-20:50/15
	16:53	17:50	18:39	20:31	21:17 05:36-06:00/24	21:38 05:34-05:48/14
28	08:01	07:05	06:02 07:16-08:13/57	05:54 07:10-07:56/46	05:07 20:30-20:45/15 05:35-05:52/17	04:58 20:36-20:51/15
	16:55	17:52	18:40	20:33	21:18 05:54-05:58/4	21:38 05:35-05:49/14
29	08:00		06:59 08:15-09:12/57	05:52 07:10-07:56/46	05:06 20:30-20:46/16	04:59 20:35-20:51/16
	16:57		19:42	20:34	21:20 05:34-05:52/18	21:38 05:34-05:49/15
30	07:59		06:57 08:13-09:09/56	05:50 07:09-07:55/46	05:05 20:30-20:46/16	04:59 20:36-20:52/16
	16:59		19:44	20:36	21:21 05:33-05:52/19	21:37 05:35-05:50/15
31	07:57		06:55 08:12-09:06/54		05:04 20:29-20:46/17	
	17:00		19:45		21:22 05:32-05:52/20	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	0	0	1132	1787	1111	949

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 10B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (326)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 20:35-20:51/16 21:37 05:35-05:50/15	05:36 07:24-07:59/35 21:06	06:26 08:06-08:58/52 20:04	07:14 08:21-09:00/39 18:55	07:08 16:49	07:58 16:09
2	05:01 20:36-20:52/16 21:37 05:35-05:50/15	05:38 07:22-07:59/37 21:04	06:27 08:05-08:58/53 20:02	07:16 08:22-08:59/37 18:52	07:09 16:47	08:00 16:08
3	05:01 20:36-20:53/17 21:36 05:36-05:50/14	05:39 07:22-08:00/38 21:02	06:29 08:05-08:58/53 19:59	07:18 08:24-08:58/34 18:50	07:11 16:45	08:01 16:08
4	05:02 20:37-20:53/16 21:36 05:36-05:51/15	05:41 07:21-08:01/40 21:01	06:30 08:04-08:57/53 19:57	07:19 08:24-08:56/32 18:48	07:13 16:44	08:02 16:07
5	05:03 20:36-20:53/17 05:36-05:50/14 21:36 05:51-05:54/3	05:42 07:21-08:02/41 20:59	06:32 08:04-08:58/54 19:55	07:21 08:26-08:54/28 18:46	07:15 16:42	08:04 16:07
6	05:04 20:36-20:53/17 21:35 05:36-05:55/19	05:44 07:20-08:02/42 20:57	06:34 08:03-08:57/54 19:53	07:23 08:28-08:52/24 18:43	07:17 16:40	08:05 16:06
7	05:05 20:36-20:54/18 21:34 05:36-05:56/20	05:45 07:20-08:03/43 20:55	06:35 08:04-08:57/53 19:50	07:24 08:30-08:48/18 18:41	07:18 16:38	08:06 16:06
8	05:06 20:37-20:54/17 21:34 05:37-05:57/20	05:47 07:19-08:03/44 20:53	06:37 08:03-08:56/53 19:48	07:26 08:34-08:43/9 18:39	07:20 16:37	08:08 16:05
9	05:06 20:37-20:54/17 21:33 05:37-05:58/21	05:49 07:19-08:04/45 20:52	06:38 08:04-08:56/52 19:46	07:28 18:37	07:22 16:35	08:09 16:05
10	05:07 20:37-20:54/17 21:32 05:38-05:59/21	05:50 07:18-08:03/45 20:50	06:40 08:04-08:55/51 19:43	07:29 18:34	07:24 16:33	08:10 16:05
11	05:09 20:37-20:54/17 21:32 05:39-06:00/21	05:52 07:18-08:04/46 20:48	06:42 08:04-08:55/51 19:41	07:31 18:32	07:25 16:32	08:11 16:05
12	05:10 20:38-20:54/16 21:31 05:40-06:00/20	05:53 07:18-08:04/46 20:46	06:43 08:04-08:58/54 19:39	07:33 18:30	07:27 16:30	08:12 16:05
13	05:11 20:38-20:54/16 21:30 05:41-06:00/19	05:55 07:18-08:04/46 20:44	06:45 08:04-09:00/56 19:36	07:34 18:28	07:29 16:29	08:13 16:05
14	05:12 20:38-20:54/16 21:29 05:42-06:01/19	05:57 07:17-08:03/46 20:42	06:47 08:05-09:02/57 19:34	07:36 18:26	07:31 16:27	08:14 16:05
15	05:13 20:39-20:54/15 05:43-06:01/18 21:28 06:03-06:06/3	05:58 07:18-08:04/46 20:40	06:48 08:05-09:02/57 19:32	07:38 18:23	07:32 16:26	08:15 16:05
16	05:14 20:39-20:54/15 21:27 05:44-06:08/24	06:00 07:17-08:03/46 20:38	06:50 08:07-09:04/57 19:30	07:39 18:21	07:34 16:25	08:16 16:05
17	05:15 20:39-20:53/14 05:45-05:46/1 21:26 05:47-06:09/22	06:01 07:17-08:03/46 20:36	06:51 08:08-09:05/57 19:27	07:41 18:19	07:36 16:23	08:16 16:05
18	05:17 20:40-20:52/12 21:25 05:48-06:11/23	06:03 08:26-08:41/15 20:34 07:17-08:02/45	06:53 08:09-09:05/56 19:25	07:43 18:17	07:38 16:22	08:17 16:05
19	05:18 20:42-20:52/10 21:24 05:48-06:11/23	06:05 08:23-08:45/22 20:32 07:18-08:02/44	06:55 08:11-09:06/55 19:23	07:45 18:15	07:39 16:21	08:18 16:05
20	05:19 20:43-20:51/8 21:23 05:49-06:11/22	06:06 08:20-08:47/27 20:30 07:17-08:01/44	06:56 08:13-09:05/52 19:20	07:46 18:13	07:41 16:19	08:19 16:06
21	05:20 20:45-20:49/4 21:21 05:50-06:12/22	06:08 08:18-08:49/31 20:28 07:18-08:00/42	06:58 08:16-09:06/50 19:18	07:48 18:11	07:43 16:18	08:19 16:06
22	05:22 05:51-06:12/21 21:20	06:09 08:16-08:50/34 20:26 07:18-07:59/41	06:59 08:22-09:06/44 19:16	07:50 18:09	07:44 16:17	08:20 16:07
23	05:23 05:53-06:13/20 21:19	06:11 08:15-08:52/37 20:24 07:19-07:58/39	07:01 08:21-09:05/44 19:13	07:52 18:06	07:46 16:16	08:20 16:07
24	05:25 07:36-07:45/9 21:18 05:54-06:13/19	06:13 08:13-08:53/40 20:21 07:19-07:57/38	07:03 08:21-09:06/45 19:11	07:53 18:04	07:48 16:15	08:21 16:08
25	05:26 07:33-07:48/15 21:16 05:58-06:12/14	06:14 08:12-08:54/42 20:19 07:21-07:56/35	07:04 08:20-09:05/45 19:09	06:55 17:02	07:49 16:14	08:21 16:08
26	05:27 07:31-07:51/20 21:15 05:59-06:13/14	06:16 08:10-08:55/45 20:17 07:21-07:54/33	07:06 08:21-09:05/44 19:06	06:57 17:00	07:51 16:13	08:21 16:09
27	05:29 07:29-07:52/23 21:13 05:59-06:12/13	06:17 08:10-08:56/46 20:15 07:23-07:52/29	07:08 08:21-09:04/43 19:04	06:59 16:58	07:52 16:12	08:22 16:10
28	05:30 07:27-07:53/26 21:12 05:59-06:11/12	06:19 08:08-08:56/48 20:13 07:24-07:49/25	07:09 08:20-09:03/43 19:02	07:01 16:57	07:54 16:11	08:22 16:11
29	05:32 07:27-07:55/28 21:10 06:01-06:11/10	06:21 08:08-08:57/49 20:11 07:27-07:47/20	07:11 08:21-09:02/41 18:59	07:02 16:55	07:55 16:10	08:22 16:11
30	05:33 07:25-07:56/31 21:09 06:02-06:10/8	06:22 08:07-08:57/50 20:08 07:31-07:43/12	07:13 08:22-09:02/40 18:57	07:04 16:53	07:57 16:10	08:22 16:12
31	05:35 07:24-07:57/33 21:07 06:04-06:08/4	06:24 08:06-08:57/51 20:06		07:06 16:51		08:22 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	1045	1716	1519	221	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 11B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (327)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 16:15	07:56 08:34-08:47/13 17:02	07:03 07:50-08:15/25 17:53	06:52 19:47	05:48 06:13-06:24/11 20:38	05:03 21:23
2	08:22 16:16	07:54 08:32-08:49/17 17:04	07:00 07:50-08:15/25 17:55	06:50 19:49	05:46 19:49-19:59/10 20:39 06:12-06:25/13	05:02 21:24
3	08:22 16:17	07:52 08:31-08:50/19 17:06	06:58 07:49-08:13/24 17:57	06:48 19:50	05:44 19:46-20:00/14 20:41 06:12-06:26/14	05:01 21:25
4	08:22 16:18	07:51 08:31-08:51/20 17:08	06:56 07:50-08:13/23 17:59	06:45 19:52	05:42 19:45-20:03/18 20:43 06:11-06:26/15	05:01 21:26
5	08:21 16:19	07:49 08:30-08:52/22 17:09	06:54 07:51-08:12/21 18:01	06:43 19:54	05:40 19:44-20:03/19 20:44 06:11-06:25/14	05:00 21:27
6	08:21 16:20	07:48 08:29-08:52/23 17:11	06:52 07:52-08:10/18 18:02	06:41 19:56	05:39 19:43-20:04/21 20:46 06:03-06:25/22	04:59 21:28
7	08:21 16:22	07:46 08:27-08:53/26 17:13	06:49 07:53-08:08/15 18:04	06:39 19:57	05:37 19:43-20:05/22 20:48 06:02-06:25/23	04:59 21:29
8	08:20 16:23	07:44 08:26-08:53/27 17:15	06:47 07:56-08:05/9 18:06	06:36 19:59	05:35 19:42-20:05/23 20:49 06:01-06:24/23	04:58 21:30
9	08:20 16:24	07:42 08:25-08:53/28 17:17	06:45 18:08	06:34 20:01	05:33 19:41-20:05/24 20:51 06:01-06:24/23	04:58 21:31
10	08:19 16:26	07:41 08:25-08:54/29 17:19	06:43 18:09	06:32 20:02	05:32 19:41-20:06/25 20:52 06:00-06:23/23	04:57 21:32
11	08:19 16:27	07:39 08:24-08:53/29 17:21	06:40 18:11	06:30 07:00-07:10/10 20:04	05:30 19:40-20:05/25 20:54 05:59-06:20/21	04:57 21:32
12	08:18 16:28	07:37 08:24-08:53/29 17:22	06:38 18:13	06:27 06:58-07:12/14 20:06	05:28 19:41-20:06/25 20:56 06:00-06:14/14	04:57 21:33
13	08:17 16:30	07:35 08:23-08:52/29 17:24	06:36 18:15	06:25 06:55-07:13/18 20:07	05:27 19:40-20:05/25 20:57 05:59-06:13/14	04:56 21:34
14	08:17 16:31	07:33 08:23-08:51/28 17:26	06:34 18:16	06:23 06:53-07:14/21 20:09	05:25 19:41-20:06/25 20:59 06:00-06:13/13	04:56 21:34
15	08:16 16:33	07:31 08:23-08:50/27 17:28	06:31 18:18	06:21 06:49-07:14/25 20:11	05:24 19:41-20:05/24 21:00 06:01-06:13/12	04:56 21:35
16	08:15 16:35	07:29 08:23-08:49/26 17:30	06:29 18:20	06:19 06:47-07:15/28 20:12	05:22 19:41-20:05/24 21:02 06:01-06:12/11	04:56 21:35
17	08:14 16:36	07:27 08:24-08:49/25 17:32	06:27 18:22	06:17 06:45-07:15/30 20:14	05:21 19:42-20:05/23 21:03 06:02-06:11/9	04:56 21:36
18	08:13 16:38	07:25 08:24-08:48/24 17:34	06:24 18:23	06:14 06:44-07:14/30 20:16	05:19 19:42-20:04/22 21:05 06:04-06:10/6	04:56 21:36
19	08:12 16:39	07:23 08:25-08:48/23 17:35	06:22 18:25	06:12 06:43-07:13/30 20:18	05:18 19:43-20:04/21 21:06	04:56 21:37
20	08:11 16:41	07:21 08:25-08:46/21 17:37 08:02-08:04/2	06:20 18:27	06:10 06:42-07:12/30 20:19	05:16 19:44-20:03/19 21:08	04:56 21:37
21	08:10 16:43	07:19 08:26-08:44/18 17:39 07:57-08:09/12	06:18 18:28	06:08 06:42-07:11/29 20:21	05:15 19:45-20:03/18 21:09	04:56 21:37
22	08:09 16:44	07:17 08:28-08:42/14 17:41 07:55-08:11/16	06:15 18:30	06:06 06:42-07:10/28 20:23	05:14 19:46-20:02/16 21:10	04:56 21:38
23	08:08 16:46	07:15 08:31-08:39/8 17:43 07:53-08:13/20	06:13 18:32	06:04 06:43-07:09/26 20:24	05:12 19:46-20:00/14 21:12	04:56 21:38
24	08:07 16:48	07:13 07:52-08:14/22 17:44	06:11 18:33	06:02 06:43-07:06/23 20:26	05:11 19:48-19:59/11 21:13	04:57 21:38
25	08:05 16:50	07:11 07:51-08:15/24 17:46	06:08 18:35	06:00 06:44-07:01/17 20:28	05:10 19:50-19:57/7 21:15	04:57 21:38
26	08:04 16:51	07:09 07:51-08:15/24 17:48	06:06 18:37	05:58 06:47-06:53/6 20:29	05:09 21:16	04:57 21:38
27	08:03 16:53	07:07 07:50-08:15/25 17:50	06:04 18:39	05:56 20:31	05:08 21:17	04:58 21:38
28	08:01 16:55	07:05 07:49-08:15/26 17:52	06:01 18:40	05:54 20:33	05:07 21:18	04:58 21:38
29	08:00 16:57		06:59 19:42	05:52 06:18-06:20/2 20:34	05:06 21:20	04:59 21:38
30	07:59 16:59		06:57 19:44	05:50 06:14-06:23/9 20:36	05:05 21:21	04:59 21:37
31	07:57 08:36-08:44/8 17:00		06:55 19:45		05:04 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	8	696	160	376	756	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 11B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (327)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember	
1	05:00		05:36	19:51-20:16/25	06:26	07:00-07:10/10	07:14		07:08	07:53-08:22/29	07:58	
	21:37		21:06	06:10-06:25/15	20:04		18:55		16:49		16:09	
2	05:01		05:38	19:51-20:16/25	06:27		07:16		07:09	07:54-08:22/28	08:00	
	21:37		21:04	06:10-06:31/21	20:02		18:52		16:47		16:08	
3	05:01		05:39	19:52-20:16/24	06:29		07:18		07:11	07:56-08:22/26	08:01	
	21:36		21:02	06:10-06:33/23	19:59		18:50		16:45		16:08	
4	05:02		05:41	19:51-20:15/24	06:30		07:19		07:13	07:57-08:22/25	08:02	
	21:36		21:00	06:10-06:34/24	19:57		18:48		16:44		16:07	
5	05:03		05:42	19:52-20:15/23	06:32		07:21	08:35-08:39/4	07:15	07:59-08:22/23	08:04	
	21:35		20:59	06:11-06:35/24	19:55		18:46		16:42		16:07	
6	05:04		05:44	19:52-20:14/22	06:34		07:23	08:31-08:43/12	07:17	08:00-08:22/22	08:05	
	21:35		20:57	06:12-06:35/23	19:53		18:43		16:40		16:06	
7	05:05		05:45	19:53-20:14/21	06:14-06:20/6		07:24	08:28-08:45/17	07:18	08:01-08:21/20	08:06	
	21:34		20:55	06:21-06:36/15	19:50		18:41		16:38		16:06	
8	05:06		05:47	19:54-20:13/19	06:37		07:26	08:26-08:46/20	07:20	08:02-08:20/18	08:08	
	21:34		20:53	06:20-06:35/15	19:48		18:39		16:37		16:05	
9	05:06		05:49	19:54-20:11/17	06:38		07:28	08:25-08:47/22	07:22	08:03-08:19/16	08:09	
	21:33		20:52	06:21-06:35/14	19:46		18:37		16:35		16:05	
10	05:07		05:50	19:56-20:09/13	06:40		07:29	08:25-08:48/23	07:24	08:05-08:18/13	08:10	
	21:32		20:50	06:20-06:34/14	19:43		18:34		16:33		16:05	
11	05:09		05:52	19:58-20:06/8	06:42		07:31	08:23-08:48/25	07:25	08:08-08:16/8	08:11	
	21:32		20:48	06:21-06:34/13	19:41		18:32		16:32		16:05	
12	05:10		05:53	06:22-06:32/10	06:43		07:33	08:23-08:48/25	07:27		08:12	
	21:31		20:46		19:39		18:30		16:30		16:05	
13	05:11		05:55	06:24-06:31/7	06:45		07:34	08:23-08:48/25	07:29		08:13	
	21:30		20:44		19:36		18:28		16:29		16:05	
14	05:12		05:57		06:47		07:36	08:23-08:48/25	07:31		08:14	
	21:29		20:42		19:34		18:26		16:27		16:05	
15	05:13		05:58		06:48		07:38	08:23-08:48/25	07:32		08:15	
	21:28		20:40		19:32		18:23		16:26		16:05	
16	05:14		06:00		06:50		07:39	08:22-08:46/24	07:34		08:16	
	21:27		20:38		19:30		18:21		16:25		16:05	
17	05:15		06:01	06:53-07:01/8	06:51		07:41	08:23-08:46/23	07:36		08:16	
	21:26		20:36		19:27		18:19		16:23		16:05	
18	05:17	20:02-20:05/3	06:03	06:51-07:09/18	06:53		07:43	08:24-08:45/21	07:38		08:17	
	21:25		20:34		19:25		18:17		16:22		16:05	
19	05:18	19:59-20:08/9	06:05	06:50-07:13/23	06:55		07:45	09:01-09:12/11	07:39		08:18	
	21:24		20:32		19:23		18:15	08:25-08:43/18	16:21		16:05	
20	05:19	19:58-20:10/12	06:06	06:48-07:15/27	06:56		07:46	08:59-09:14/15	07:41		08:19	
	21:23		20:30		19:20		18:13	08:27-08:42/15	16:19		16:06	
21	05:20	19:56-20:11/15	06:08	06:48-07:16/28	06:58		07:48	08:57-09:16/19	07:43		08:19	
	21:21		20:28		19:18		18:11	08:29-08:39/10	16:18		16:06	
22	05:22	19:55-20:12/17	06:09	06:47-07:16/29	06:59		07:50	08:55-09:16/21	07:44		08:20	
	21:20		20:26		19:16		18:09		16:17		16:07	
23	05:23	19:55-20:13/18	06:11	06:47-07:17/30	07:01		07:52	08:54-09:17/23	07:46		08:20	
	21:19		20:24		19:13		18:06		16:16		16:07	
24	05:25	19:54-20:14/20	06:13	06:47-07:17/30	07:03		07:53	08:53-09:18/25	07:48		08:21	
	21:17		20:21		19:11		18:04		16:15		16:08	
25	05:26	19:53-20:14/21	06:14	06:47-07:17/30	07:04		06:55	07:53-08:18/25	07:49		08:21	
	21:16	06:15-06:18/3	20:19		19:09		17:02		16:14		16:08	
26	05:27	19:53-20:15/22	06:16	06:47-07:16/29	07:06		06:57	07:53-08:19/26	07:51		08:21	
	21:15	06:14-06:21/7	20:17		19:06		17:00		16:13		16:09	
27	05:29	19:52-20:16/24	06:17	06:49-07:16/27	07:08		06:59	07:53-08:20/27	07:52		08:22	
	21:13	06:12-06:22/10	20:15		19:04		16:58		16:12		16:10	
28	05:30	19:52-20:15/23	06:19	06:50-07:15/25	07:09		07:00	07:53-08:21/28	07:54		08:22	
	21:12	06:11-06:23/12	20:13		19:02		16:57		16:11		16:11	
29	05:32	19:52-20:16/24	06:21	06:54-07:15/21	07:11		07:02	07:53-08:22/29	07:55		08:22	
	21:10	06:11-06:24/13	20:11		18:59		16:55		16:10		16:11	
30	05:33	19:51-20:16/25	06:22	06:56-07:14/18	07:13		07:04	07:53-08:23/30	07:57		08:22	
	21:09	06:10-06:24/14	20:08		18:57		16:53		16:10		16:12	
31	05:35	19:51-20:16/25	06:24	06:57-07:12/15			07:06	07:53-08:22/29			08:22	
	21:07	06:11-06:25/14	20:06				16:51				16:13	
Sonnenscheinstunden	501		453		381		332		267		245	
Anzahl Minuten mit Schatten	331		803		10		642		228		0	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 13B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (328)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 09:46-10:14/28 16:15	07:56 09:52-10:45/53 17:02	07:03 08:46-09:38/52 17:53	06:52 19:47	05:48 19:44-19:58/14 20:38 06:18-06:33/15	05:03 06:05-06:41/36 21:23 05:33-05:37/4
2	08:22 09:46-10:15/29 16:16	07:54 09:53-10:45/52 17:04	07:00 08:47-09:38/51 17:55	06:50 19:49	05:46 19:44-19:57/13 20:39 06:17-06:33/16	05:02 06:06-06:42/36 21:24 05:32-05:39/7
3	08:22 09:46-10:16/30 16:17	07:53 09:54-10:44/50 17:06	06:58 08:46-09:36/50 17:57	06:48 19:50	05:44 19:45-19:56/11 20:41 06:17-06:34/17	05:01 06:06-06:42/36 21:25 05:31-05:40/9
4	08:22 09:46-10:17/31 16:18	07:51 09:55-10:45/50 17:08	06:56 08:46-09:36/50 17:59	06:45 19:52	05:42 19:47-19:55/8 06:10-06:13/3 20:43 06:17-06:33/16	05:01 06:06-06:42/36 21:26 05:30-05:40/10
5	08:22 09:46-10:19/33 16:19	07:49 09:55-10:45/50 17:10	06:54 08:47-09:35/48 18:01	06:43 19:54	05:40 06:17-06:33/16 20:44 06:07-06:16/9	05:00 06:06-06:43/37 21:27 05:30-05:41/11
6	08:21 09:47-10:21/34 16:20	07:48 09:55-10:44/49 17:11	06:52 08:48-09:34/46 18:02	06:41 19:56	05:39 06:05-06:32/27 20:46	04:59 06:06-06:43/37 21:28 05:29-05:41/12
7	08:21 09:46-10:23/37 16:22	07:46 09:56-10:44/48 17:13	06:49 08:47-09:32/45 18:04	06:39 19:57	05:37 06:05-06:32/27 20:48	04:59 06:06-06:44/38 21:29 05:30-05:42/12
8	08:20 09:46-10:24/38 16:23	07:44 09:56-10:43/47 17:15	06:47 08:48-09:31/43 18:06	06:36 19:59	05:35 06:19-06:31/12 20:49 06:04-06:18/14	04:58 06:06-06:43/37 21:30 05:30-05:44/14
9	08:20 09:46-10:26/40 16:24	07:42 09:56-10:42/46 17:17	06:45 08:49-09:30/41 18:08	06:34 20:01	05:33 06:20-06:30/10 20:51 06:04-06:19/15	04:58 06:06-06:44/38 21:31 05:29-05:45/16
10	08:19 09:46-10:27/41 16:26	07:41 09:58-10:43/45 17:19 09:07-09:22/15	06:43 08:51-09:29/38 18:09	06:32 20:02	05:32 06:22-06:27/5 20:52 06:03-06:19/16	04:57 06:07-06:44/37 21:32 05:30-05:46/16
11	08:19 09:46-10:28/42 16:27	07:39 09:59-10:42/43 17:21 09:03-09:26/23	06:40 08:51-09:26/35 18:11	06:30 20:04	05:30 05:58-06:18/20 20:54	04:57 06:06-06:44/38 21:32 05:30-05:47/17
12	08:18 09:47-10:30/43 16:28	07:37 10:00-10:41/41 17:22 09:01-09:28/27	06:38 08:53-09:24/31 18:13	06:28 20:06	05:28 05:56-06:20/24 20:56	04:57 06:07-06:44/37 21:33 05:29-05:47/18
13	08:17 09:47-10:31/44 16:30	07:35 10:01-10:39/38 17:24 08:58-09:30/32	06:36 08:55-09:21/26 18:15	06:25 20:07	05:27 05:55-06:22/27 20:57	04:56 06:07-06:45/38 21:34 05:30-05:48/18
14	08:17 09:47-10:32/45 16:31	07:33 10:02-10:38/36 17:26 08:57-09:32/35	06:34 08:57-09:16/19 18:16	06:23 20:09	05:25 05:55-06:24/29 20:59	04:56 06:07-06:45/38 21:34 05:30-05:48/18
15	08:16 09:47-10:33/46 16:33	07:31 10:03-10:36/33 17:28 08:55-09:33/38	06:31 09:03-09:10/7 18:18	06:21 20:11	05:24 05:54-06:26/32 21:00	04:56 06:08-06:46/38 21:35 05:30-05:49/19
16	08:15 09:47-10:35/48 16:35	07:29 10:05-10:34/29 17:30 08:54-09:34/40	06:29 18:20	06:19 20:12	05:22 05:53-06:28/35 21:02	04:56 06:08-06:46/38 21:36 05:30-05:49/19
17	08:14 09:47-10:36/49 16:36	07:27 10:07-10:32/25 17:32 08:53-09:35/42	06:27 18:22	06:17 20:14	05:21 05:54-06:30/36 21:03	04:56 06:08-06:46/38 21:36 05:31-05:50/19
18	08:13 09:47-10:37/50 16:38	07:25 10:10-10:28/18 17:34 08:52-09:36/44	06:25 18:23	06:14 20:16	05:19 05:54-06:32/38 21:05	04:56 06:08-06:46/38 21:36 05:31-05:50/19
19	08:12 09:46-10:37/51 16:39	07:23 10:16-10:22/6 17:35 08:51-09:37/46	06:22 18:25	06:12 20:18	05:18 05:53-06:32/39 21:06	04:56 06:08-06:46/38 21:37 05:31-05:50/19
20	08:11 09:47-10:38/51 16:41	07:21 08:49-09:37/48 17:37	06:20 18:27	06:10 20:19	05:16 05:53-06:33/40 21:08	04:56 06:08-06:46/38 21:37 05:31-05:50/19
21	08:10 09:47-10:39/52 16:43	07:19 08:49-09:38/49 17:39	06:18 18:28	06:08 20:21	05:15 05:54-06:34/40 21:09	04:56 06:08-06:46/38 21:37 05:31-05:50/19
22	08:09 09:48-10:40/52 16:44	07:17 08:48-09:38/50 17:41	06:15 18:30	06:06 20:23	05:14 05:54-06:36/42 21:10	04:56 06:09-06:47/38 21:38 05:32-05:51/19
23	08:08 09:47-10:40/53 16:46	07:15 08:48-09:39/51 17:43	06:13 18:32	06:04 19:48-19:56/8 20:24	05:12 05:55-06:37/42 21:12	04:56 06:09-06:47/38 21:38 05:32-05:51/19
24	08:07 09:48-10:41/53 16:48	07:13 08:48-09:39/51 17:44	06:11 18:34	06:02 19:46-19:58/12 20:26	05:11 05:55-06:38/43 21:13	04:57 06:09-06:47/38 21:38 05:32-05:51/19
25	08:05 09:49-10:42/53 16:50	07:11 08:47-09:39/52 17:46	06:08 18:35	06:00 19:45-19:59/14 20:28	05:10 05:56-06:37/41 21:15	04:57 06:09-06:47/38 21:38 05:33-05:52/19
26	08:04 09:49-10:42/53 16:51	07:09 08:47-09:39/52 17:48	06:06 18:37	05:58 19:44-19:59/15 20:29	05:09 05:57-06:38/41 21:16	04:57 06:10-06:48/38 21:38 05:32-05:51/19
27	08:03 09:49-10:43/54 16:53	07:07 08:46-09:38/52 17:50	06:04 18:39	05:56 19:43-19:59/16 20:31 06:24-06:29/5	05:08 05:57-06:40/43 21:17	04:58 06:10-06:48/38 21:38 05:32-05:51/19
28	08:01 09:49-10:43/54 16:55	07:05 08:46-09:38/52 17:52	06:02 18:40	05:54 19:44-20:00/16 20:33 06:21-06:31/10	05:07 05:58-06:40/42 21:18	04:58 06:10-06:48/38 21:38 05:33-05:51/18
29	08:00 09:51-10:44/53 16:57		06:59 19:42	05:52 19:44-20:00/16 20:34 06:20-06:32/12	05:06 06:00-06:40/40 21:20	04:59 06:10-06:48/38 21:38 05:33-05:51/18
30	07:59 09:51-10:44/53 16:59		06:57 19:44	05:50 19:44-19:59/15 20:36 06:18-06:33/15	05:05 06:05-06:41/36 21:21 06:02-06:04/2	04:59 06:11-06:49/38 21:37 05:33-05:51/18
31	07:57 09:51-10:44/53 17:00		06:55 19:45		05:04 06:05-06:41/36 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	1393	1558	582	154	1032	1610

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 13B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (328)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 06:11-06:49/38	05:36 06:07-06:29/22	06:26	07:14 09:33-10:01/28	07:08 09:27-10:11/44	07:58 09:28-10:10/42
	21:37 05:34-05:51/17	21:06	20:04	18:55	16:49 08:36-08:50/14	16:09
2	05:01 06:11-06:49/38	05:38 06:09-06:29/20	06:27	07:16 09:31-10:04/33	07:09 09:26-10:12/46	08:00 09:29-10:10/41
	21:37 05:34-05:50/16	21:04	20:02	18:52	16:47	16:08
3	05:01 06:12-06:49/37	05:39 06:32-06:38/6	06:29	07:18 09:29-10:06/37	07:11 09:26-10:13/47	08:01 09:29-10:09/40
	21:36 05:35-05:50/15	21:02 06:14-06:29/15	19:59	18:50	16:45	16:08
4	05:02 06:12-06:50/38	05:41 06:29-06:40/11	06:30	07:19 09:27-10:06/39	07:13 09:25-10:14/49	08:02 09:31-10:09/38
	21:36 05:35-05:50/15	21:01 06:13-06:28/15	19:57	18:48	16:44	16:07
5	05:03 06:12-06:49/37	05:42 06:29-06:41/12	06:32	07:21 09:26-10:08/42	07:15 09:25-10:14/49	08:04 09:31-10:08/37
	21:36 05:35-05:48/13	20:59 06:14-06:28/14	19:55	18:46	16:42	16:07
6	05:04 06:12-06:49/37	05:44 06:14-06:42/28	06:34	07:23 09:25-10:09/44	07:17 09:25-10:14/49	08:05 09:33-10:08/35
	21:35 05:36-05:48/12	20:57	19:53	18:43	16:40	16:06
7	05:05 06:12-06:49/37	05:45 06:16-06:43/27	06:35	07:24 09:23-10:09/46	07:18 09:25-10:15/50	08:06 09:33-10:06/33
	21:34 05:36-05:48/12	20:55	19:50	18:41	16:38	16:06
8	05:06 06:13-06:50/37	05:47 19:59-20:01/2 06:17-06:25/8	06:37	07:26 09:22-10:10/48	07:20 09:24-10:15/51	08:08 09:34-10:05/31
	21:34 05:37-05:48/11	20:53 06:26-06:42/16	19:48	18:39	16:37	16:05
9	05:07 06:13-06:50/37	05:49 19:55-20:04/9	06:38	07:28 09:22-10:11/49	07:22 09:24-10:15/51	08:09 09:34-10:04/30
	21:33 05:38-05:47/9	20:52 06:27-06:43/16	19:46	18:37	16:35	16:05
10	05:08 06:14-06:50/36	05:50 19:54-20:06/12	06:40	07:29 09:21-10:11/50	07:24 09:23-10:16/53	08:10 09:35-10:04/29
	21:32 05:39-05:47/8	20:50 06:26-06:42/16	19:43	18:34	16:33	16:05
11	05:09 06:14-06:50/36	05:52 19:52-20:06/14	06:42	07:31 09:20-10:11/51	07:25 09:23-10:16/53	08:11 09:37-10:05/28
	21:32 05:40-05:46/6	20:48 06:26-06:43/17	19:41	18:32	16:32	16:05
12	05:10 06:14-06:50/36	05:53 19:52-20:07/15	06:43	07:33 09:20-10:11/51	07:27 09:23-10:16/53	08:12 09:38-10:05/27
	21:31	20:46 06:26-06:42/16	19:39	18:30	16:30	16:05
13	05:11 06:14-06:49/35	05:55 19:51-20:07/16	06:45	07:34 09:19-10:11/52	07:29 09:22-10:16/54	08:13 09:38-10:05/27
	21:30	20:44 06:27-06:41/14	19:36	18:28	16:29	16:05
14	05:12 06:09-06:49/40	05:57 19:51-20:07/16	06:47	07:36 09:19-10:11/52	07:31 09:21-10:15/54	08:14 09:39-10:05/26
	21:29	20:42 06:27-06:40/13	19:34	18:26	16:27	16:05
15	05:13 06:07-06:49/42	05:58 19:50-20:07/17	06:48	07:38 09:19-10:11/52	07:32 09:21-10:15/54	08:15 09:40-10:06/26
	21:28	20:40 06:29-06:38/9	19:32	18:23	16:26	16:05
16	05:14 06:06-06:48/42	06:00 19:51-20:07/16	06:50	07:39 09:18-10:10/52	07:34 09:21-10:15/54	08:16 09:40-10:05/25
	21:27	20:38 06:32-06:34/2	19:30	18:21	16:25	16:05
17	05:15 06:05-06:48/43	06:01 19:52-20:06/14	06:51	07:41 09:19-10:10/51	07:36 09:22-10:15/53	08:16 09:41-10:05/24
	21:26	20:36	19:27	18:19	16:23	16:05
18	05:17 06:06-06:47/41	06:03 19:52-20:05/13	06:53	07:43 09:19-10:10/51	07:38 09:22-10:15/53	08:17 09:42-10:06/24
	21:25	20:34	19:25	18:17	16:22	16:05
19	05:18 06:05-06:47/42	06:05 19:53-20:04/11	06:55	07:45 09:19-10:10/51	07:39 09:22-10:15/53	08:18 09:43-10:07/24
	21:24	20:32	19:23	18:15	16:21	16:05
20	05:19 06:05-06:47/42	06:06 19:54-20:01/7	06:56	07:46 09:20-10:09/49	07:41 09:23-10:15/52	08:19 09:43-10:06/23
	21:23	20:30	19:20	18:13	16:19	16:06
21	05:20 06:04-06:46/42	06:08	06:58	07:48 09:20-10:09/49	07:43 09:22-10:14/52	08:19 09:44-10:07/23
	21:21	20:28	19:18	18:11	16:18	16:06
22	05:22 06:04-06:44/40	06:09	06:59	07:50 09:20-10:07/47	07:44 09:23-10:14/51	08:20 09:44-10:07/23
	21:20	20:26	19:16	18:09	16:17	16:07
23	05:23 06:04-06:44/40	06:11	07:01	07:52 10:43-10:54/11	07:46 09:23-10:14/51	08:20 09:45-10:08/23
	21:19	20:24	19:13	18:07 09:21-10:06/45	16:16	16:07
24	05:25 06:04-06:43/39	06:13	07:03	07:53 10:39-10:59/20	07:48 09:24-10:14/50	08:21 09:45-10:09/24
	21:18	20:21	19:11	18:04 09:22-10:06/44	16:15	16:08
25	05:26 06:04-06:42/38	06:14	07:04	06:55 09:36-10:02/26	07:49 09:25-10:14/49	08:21 09:45-10:09/24
	21:16	20:19	19:09	17:02 08:23-09:05/42	16:14	16:08
26	05:27 06:04-06:41/37	06:16	07:06	06:57 09:34-10:04/30	07:51 09:25-10:13/48	08:21 09:45-10:09/24
	21:15	20:17	19:06	17:00 08:24-09:04/40	16:13	16:09
27	05:29 06:04-06:40/36	06:17	07:08	06:59 09:32-10:06/34	07:52 09:26-10:13/47	08:22 09:46-10:11/25
	21:13	20:15	19:04	16:58 08:25-09:02/37	16:12	16:10
28	05:30 06:04-06:37/33	06:19	07:09	07:01 09:31-10:08/37	07:54 09:27-10:12/45	08:22 09:46-10:11/25
	21:12	20:13	19:02	16:57 08:27-09:01/34	16:11	16:11
29	05:32 06:05-06:36/31	06:21	07:11 09:40-09:55/15	07:02 09:30-10:09/39	07:55 09:27-10:11/44	08:22 09:46-10:12/26
	21:10	20:11	18:59	16:55 08:28-08:59/31	16:10	16:12
30	05:33 06:05-06:34/29	06:22	07:13 09:36-09:59/23	07:04 09:29-10:11/42	07:57 09:28-10:11/43	08:22 09:46-10:13/27
	21:09	20:08	18:57	16:53 08:31-08:57/26	16:10	16:12
31	05:35 06:07-06:32/25	06:24		07:06 09:27-10:11/44		08:22 09:46-10:14/28
	21:07	20:06		16:51 08:32-08:54/22		16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	1295	459	38	1628	1516	882

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 14B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (337)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar	März		April		Mai		Juni	
1	08:22	10:01-10:28/27	07:56	07:03		06:52	18:41-19:00/19 07:47-08:08/21	05:48	06:35-06:58/23	05:03	05:39-05:56/17
	16:15	09:35-09:50/15	17:02	17:53		19:47	08:13-08:24/11 07:28-07:43/15	20:38		21:23	
2	08:22	10:02-10:28/26	07:54	07:00		06:50	18:40-18:59/19 07:28-07:43/15	05:46	06:37-06:57/20	05:02	05:39-05:57/18
	16:16	09:35-09:51/16	17:04	17:55		19:49	07:48-08:08/20	20:39		21:24	
3	08:22	10:03-10:29/26	07:52	06:58		06:48	18:40-18:59/19 07:28-07:41/13	05:44	06:43-06:56/13	05:01	05:38-05:56/18
	16:17	09:36-09:53/17	17:06	17:57		19:50	07:47-08:06/19	20:41		21:25	
4	08:22	10:03-10:28/25	07:51	06:56		06:45	18:41-18:58/17 07:28-07:41/13	05:42	06:44-06:55/11	05:01	05:38-05:57/19
	16:18	09:35-09:53/18	17:08	17:59		19:52	07:48-08:05/17 07:18-07:22/4	20:43		21:26	
5	08:21	10:05-10:29/24	07:49	06:54		06:43	18:42-18:57/15 07:30-07:39/9	05:40	06:46-06:52/6	05:00	05:38-05:57/19
	16:19	09:35-09:54/19	17:10	18:01		19:54	07:49-08:03/14 07:15-07:24/9	20:44	06:12-06:19/7	21:27	
6	08:21	10:06-10:29/23	07:48	06:52		06:41	18:42-18:55/13 07:32-07:36/4	05:39	06:10-06:20/10	04:59	05:37-05:56/19
	16:20	09:36-09:56/20	17:11	18:02		19:56	07:51-08:01/10 07:13-07:25/12	20:46		21:28	
7	08:21	10:07-10:29/22	07:46	06:49		06:39	18:44-18:53/9	05:37	06:09-06:21/12	04:59	05:37-05:57/20
	16:22	09:35-09:56/21	17:13	18:04		19:57	07:12-07:25/13	20:48		21:29	
8	08:20	10:08-10:29/21	07:44	06:47		06:36	07:09-07:25/16	05:35	06:06-06:21/15	04:58	05:37-05:57/20
	16:23	09:35-09:56/21	17:15	18:06		19:59		20:49		21:30	
9	08:20	10:10-10:29/19	07:42	06:45		06:34	07:07-07:25/18	05:33	06:06-06:22/16	04:58	05:36-05:57/21
	16:24	09:35-09:58/23	17:17	18:08		20:01		20:51		21:31	
10	08:19	10:10-10:29/19	07:41	06:43		06:32	07:06-07:25/19	05:32	06:05-06:22/17	04:57	05:36-05:57/21
	16:26	09:35-09:58/23	17:19	18:09		20:02		20:52		21:32	
11	08:19	10:11-10:28/17	07:39	06:40		06:30	07:05-07:24/19	05:30	06:04-06:21/17	04:57	05:36-05:57/21
	16:27	09:35-09:59/24	17:21	18:11		20:04		20:54		21:32	
12	08:18	10:13-10:28/15	07:37	06:38		06:28	07:04-07:21/17	05:28	06:04-06:21/17	04:57	05:35-05:57/22
	16:28	09:36-10:00/24	17:22	18:13		20:06		20:56		21:33	
13	08:17	10:15-10:27/12	07:35	06:36	07:33-07:45/12	06:25	07:04-07:21/17	05:27	06:03-06:20/17	04:56	05:35-05:57/22
	16:30	09:36-10:01/25	17:24	18:15		20:07		20:57		21:34	
14	08:17	10:17-10:26/9	07:33	06:34	07:30-07:47/17	06:23	07:04-07:20/16	05:25	06:04-06:20/16	04:56	05:36-05:57/21
	16:31	09:36-10:01/25	17:26	18:16		20:09		20:59		21:34	
15	08:16	10:20-10:23/3	07:31	06:31	07:28-07:48/20	06:21	07:02-07:19/17	05:24	06:05-06:19/14	04:56	05:36-05:57/21
	16:33	09:36-10:02/26	17:28	18:18		20:11		21:00		21:35	
16	08:15	09:36-10:02/26	07:29	06:29	07:27-07:50/23	06:19	07:01-07:17/16	05:22	06:05-06:17/12	04:56	05:36-05:57/21
	16:35		17:30	18:20		20:12		21:02		21:35	
17	08:14	09:37-10:03/26	07:27	06:27	07:25-07:49/24	06:17	07:00-07:17/17	05:21	06:06-06:15/9	04:56	05:36-05:57/21
	16:36		17:32	18:22		20:14		21:03		21:36	
18	08:13	09:37-10:03/26	07:25	06:25	07:18-07:50/32	06:14	06:59-07:17/18	05:19	06:07-06:15/8	04:56	05:36-05:57/21
	16:38		17:34	18:23		20:16		21:05		21:36	
19	08:12	09:36-10:03/27	07:23	06:22	07:16-07:50/34	06:12	06:57-07:16/19	05:18	06:08-06:12/4	04:56	05:36-05:57/21
	16:39		17:35	18:25		20:18		21:06		21:37	
20	08:11	09:37-10:03/26	07:21	06:20	07:14-07:50/36	06:10	06:57-07:16/19	05:16		04:56	05:36-05:57/21
	16:41		17:37	18:27		20:19		21:08		21:37	
21	08:10	09:38-10:04/26	07:19	06:18	07:12-07:50/38	06:08	06:57-07:16/19	05:15		04:56	05:36-05:57/21
	16:43		17:39	18:28		20:21		21:09		21:37	
22	08:09	09:39-10:04/25	07:17	06:15	07:11-07:49/38	06:06	06:57-07:15/18 06:39-06:45/6	05:14		04:56	05:37-05:58/21
	16:44		17:41	18:30		20:23	06:46-06:55/9	21:10		21:38	
23	08:08	09:39-10:03/24	07:15	06:13	07:10-07:49/39	06:04	06:37-07:15/38	05:12		04:56	05:37-05:58/21
	16:46		17:43	18:32		20:24		21:12		21:38	
24	08:07	09:40-10:03/23	07:13	06:11	07:09-07:47/38	06:02	06:35-07:13/38	05:11	05:46-05:52/6	04:57	05:37-05:58/21
	16:48		17:44	18:34		20:26		21:13		21:38	
25	08:05	09:41-10:04/23	07:11	06:08	07:09-07:47/38	06:00	06:34-07:12/38	05:10	05:45-05:53/8	04:57	05:38-05:59/21
	16:50		17:46	18:35	06:56-07:04/8	20:28		21:15		21:38	
26	08:04	09:41-10:03/22	07:09	06:06	07:09-07:45/36	05:58	07:01-07:11/10	05:09	05:44-05:54/10	04:57	05:38-05:59/21
	16:51		17:48	18:37	06:53-07:07/14	20:29	06:35-07:00/25	21:16		21:38	
27	08:03	09:43-10:02/19	07:07	06:04	17:47-17:56/9 06:51-07:07/16	05:56	06:34-07:00/26	05:08	05:44-05:55/11	04:58	05:38-05:59/21
	16:53		17:50	18:39	07:08-07:43/35	20:31		21:17		21:38	
28	08:01	09:43-10:01/18	07:05	06:02	17:45-17:58/13 06:50-07:08/18	05:54	06:34-07:00/26	05:07	05:43-05:55/12	04:58	05:39-06:00/21
	16:55		17:52	18:40	07:09-07:41/32 06:35-06:39/4	20:33		21:18		21:38	
29	08:00	09:46-10:00/14		06:59	18:44-19:00/16 07:32-07:42/10	05:52	06:34-06:59/25	05:06	05:43-05:56/13	04:59	05:39-06:00/21
	16:57			19:42	07:49-08:37/48	20:34		21:20		21:38	
30	07:59	09:48-09:58/10		06:57	18:42-19:00/18 07:47-08:08/21	05:50	06:35-06:59/24	05:05	05:42-05:56/14	04:59	05:39-06:01/22
	16:59			19:44	08:10-08:28/18 07:30-07:42/12	20:36		21:21		21:37	
31	07:57			06:55	18:41-19:00/19 07:47-08:08/21			05:04	05:42-05:56/14		
	17:00			19:45	08:11-08:27/16 07:29-07:43/14			21:22			
Sonnenscheinstunden	260		278	367		416		484		498	
Anzahl Minuten mit Schatten	940		0	787		860		352		615	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 14B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (337)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 05:40-06:02/22 21:37	05:36 06:14-06:32/18 21:06	06:26 07:04-07:23/19 20:04	07:14 08:14-08:22/8 18:55	07:08 16:49	07:58 09:53-10:10/17 16:09 09:17-09:41/24
2	05:01 05:40-06:01/21 21:37	05:38 06:14-06:32/18 21:04	06:27 07:04-07:23/19 20:02	07:16 18:52	07:09 16:47	08:00 09:54-10:12/18 16:08 09:18-09:41/23
3	05:01 05:41-06:02/21 21:36	05:39 06:15-06:32/17 21:02	06:29 07:05-07:23/18 19:59	07:18 18:50	07:11 16:45	08:01 09:53-10:12/19 16:08 09:19-09:41/22
4	05:02 05:42-06:03/21 21:36	05:41 06:15-06:32/17 21:00	06:30 07:06-07:22/16 19:57	07:19 18:48	07:13 16:44	08:02 09:53-10:14/21 16:07 09:20-09:42/22
5	05:03 05:43-06:03/20 21:35	05:42 06:17-06:32/15 20:59	06:32 18:41-18:50/9 19:55 07:09-07:22/13	07:21 18:46	07:15 16:42	08:04 09:52-10:14/22 16:07 09:20-09:41/21
6	05:04 05:43-06:03/20 21:35	05:44 06:19-06:31/12 20:57	06:34 18:38-18:51/13 07:28-07:31/3 19:53 07:46-07:56/10 07:08-07:20/12	07:23 18:43	07:17 16:40	08:05 09:52-10:16/24 16:06 09:22-09:42/20
7	05:05 05:44-06:03/19 21:34	05:45 06:21-06:30/9 20:55	06:35 18:37-18:53/16 07:25-07:34/9 19:50 07:44-07:59/15 07:10-07:19/9	07:24 18:41	07:18 16:38	08:06 09:52-10:16/24 16:06 09:22-09:41/19
8	05:06 05:45-06:04/19 21:34	05:47 06:54-07:02/8 20:53 06:22-06:28/6	06:37 18:35-18:53/18 07:23-07:35/12 19:48 07:42-07:59/17 07:11-07:16/5	07:26 18:39	07:20 16:37	08:08 09:51-10:16/25 16:05 09:23-09:41/18
9	05:07 05:45-06:04/19 21:33	05:49 06:53-07:05/12 20:52	06:38 18:35-18:53/18 07:22-07:36/14 19:46 07:41-08:00/19	07:28 18:37	07:22 16:35	08:09 09:51-10:17/26 16:05 09:24-09:41/17
10	05:08 05:46-06:04/18 21:32	05:50 06:51-07:05/14 20:50 06:48-06:50/2	06:40 18:33-18:52/19 07:22-07:36/14 19:43 07:41-08:01/20	07:29 18:34	07:24 16:33	08:10 09:51-10:17/26 16:05 09:25-09:40/15
11	05:09 05:47-06:04/17 21:32	05:52 06:46-07:07/21 20:48	06:42 18:33-18:53/20 07:40-08:00/20 19:41 08:06-08:16/10 07:21-07:35/14	07:31 18:32	07:25 16:32	08:11 09:52-10:19/27 16:05 09:26-09:41/15
12	05:10 05:49-06:04/15 21:31	05:53 06:44-07:07/23 20:46	06:43 18:34-18:52/18 07:39-08:00/21 19:39 08:03-08:19/16 07:21-07:35/14	07:33 18:30	07:27 09:19-09:30/11 16:30	08:12 09:52-10:19/27 16:05 09:27-09:41/14
13	05:11 05:51-06:04/13 21:30	05:55 06:43-07:07/24 20:44	06:45 18:33-18:51/18 07:39-07:59/20 19:36 08:01-08:19/18 07:21-07:33/12	07:34 18:28	07:29 09:17-09:32/15 16:29	08:13 09:52-10:20/28 16:05 09:28-09:41/13
14	05:12 05:51-06:04/13 21:29	05:57 06:42-07:07/25 20:42	06:47 18:34-18:50/16 08:00-08:21/21 07:22-07:32/10 19:34 08:23-08:25/2 07:39-07:59/20	07:36 18:26	07:31 09:15-09:33/18 16:27	08:14 09:53-10:20/27 16:05 09:29-09:41/12
15	05:13 05:51-06:04/13 21:28	05:58 06:42-07:07/25 20:40	06:48 18:34-18:48/14 07:23-07:29/6 19:32 07:39-08:29/50	07:38 18:23	07:32 09:15-09:34/19 16:26	08:15 09:53-10:20/27 16:05 09:29-09:40/11
16	05:14 05:52-06:03/11 21:27	06:00 07:10-07:15/5 20:38 06:41-07:06/25	06:50 18:36-18:46/10 07:40-07:57/17 19:30 07:58-08:32/34	07:39 18:21	07:34 09:14-09:36/22 16:25	08:16 09:53-10:21/28 16:05 09:31-09:40/9
17	05:15 05:52-06:03/11 21:26	06:01 07:08-07:18/10 20:36 06:41-07:06/25	06:51 07:57-08:33/36 19:27 07:41-07:55/14	07:41 18:19	07:36 09:14-09:37/23 16:23	08:16 09:53-10:21/28 16:05 09:32-09:40/8
18	05:17 05:54-06:03/9 21:25	06:03 06:41-07:19/38 20:34	06:53 07:56-08:34/38 19:25 07:42-07:52/10	07:43 18:17	07:38 09:14-09:37/23 16:22	08:17 09:54-10:22/28 16:05 09:33-09:41/8
19	05:18 05:55-06:02/7 21:24	06:05 07:05-07:20/15 20:32 06:42-07:04/22	06:55 07:56-08:35/39 19:23	07:45 18:15	07:39 09:14-09:38/24 16:21	08:18 09:55-10:23/28 16:05 09:34-09:41/7
20	05:19 05:57-06:00/3 21:23	06:06 07:03-07:20/17 20:30 06:43-07:02/19	06:56 07:56-08:34/38 19:20	07:46 18:13	07:41 09:14-09:39/25 16:19	08:19 09:54-10:23/29 16:06 09:34-09:41/7
21	05:20 21:21	06:08 07:03-07:21/18 06:45-06:50/5 20:28 06:53-07:01/8	06:58 07:56-08:35/39 19:18	07:48 18:11	07:43 09:13-09:39/26 16:18	08:19 09:55-10:24/29 16:06 09:35-09:41/6
22	05:22 21:20	06:09 07:02-07:21/19 20:26	06:59 07:57-08:35/38 19:16	07:50 18:09	07:44 09:13-09:39/26 16:17	08:20 09:55-10:24/29 16:07 09:35-09:41/6
23	05:23 21:19	06:11 07:02-07:21/19 20:24	07:01 07:57-08:34/37 19:13	07:52 18:06	07:46 09:14-09:40/26 16:16	08:20 09:56-10:25/29 16:07 09:36-09:43/7
24	05:25 21:17	06:13 07:01-07:20/19 20:21	07:03 07:59-08:34/35 19:11	07:53 18:04	07:48 09:14-09:40/26 16:15	08:21 09:56-10:25/29 16:08 09:36-09:43/7
25	05:26 06:18-06:24/6 21:16	06:14 07:02-07:20/18 20:19	07:04 08:00-08:33/33 19:09	06:55 17:02	07:49 09:15-09:41/26 16:14	08:21 09:57-10:25/28 16:08 09:36-09:43/7
26	05:27 06:17-06:26/9 21:15	06:16 07:02-07:18/16 20:17	07:06 08:05-08:32/27 19:06	06:57 17:00	07:51 09:14-09:40/26 16:13	08:21 09:57-10:25/28 16:09 09:36-09:44/8
27	05:29 06:16-06:26/10 21:13	06:17 07:03-07:19/16 20:15	07:08 08:08-08:32/24 19:04	06:59 16:58	07:52 09:59-10:02/3 16:12 09:15-09:41/26	08:22 09:58-10:26/28 16:10 09:37-09:46/9
28	05:30 06:15-06:28/13 21:12	06:19 07:03-07:20/17 20:13	07:09 08:08-08:30/22 19:02	07:00 16:57	07:54 09:57-10:06/9 16:11 09:16-09:41/25	08:22 09:59-10:27/28 16:11 09:36-09:47/11
29	05:32 06:15-06:30/15 21:10	06:21 07:05-07:21/16 20:11	07:11 08:10-08:28/18 18:59	07:02 16:55	07:55 09:55-10:07/12 16:10 09:16-09:41/25	08:22 09:59-10:27/28 16:12 09:36-09:48/12
30	05:33 06:14-06:31/17 21:09	06:22 07:05-07:22/17 20:08	07:13 08:12-08:26/14 18:57	07:04 16:53	07:57 09:55-10:09/14 16:10 09:17-09:41/24	08:22 10:00-10:28/28 16:12 09:36-09:49/13
31	05:35 06:15-06:32/17 21:07	06:24 07:04-07:21/17 20:06		07:06 16:51		08:22 10:01-10:28/27 16:13 09:36-09:50/14
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	399	647	1200	8	474	1215

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 15B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (335)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 09:09-09:15/6	07:56 08:49-09:08/19	07:03	06:52 18:01-18:27/26	05:48	05:03 05:40-05:52/12
	16:15	17:02	17:53	19:47	20:38	21:23
2	08:22 09:09-09:17/8	07:54 08:49-09:07/18	07:00	06:50 18:01-18:26/25	05:46	05:02 05:40-05:53/13
	16:16	17:04	17:55	19:49 07:22-07:27/5	20:39	21:24
3	08:22 09:09-09:18/9	07:52 08:49-09:07/18	06:58	06:48 18:02-18:24/22	05:44	05:01 05:40-05:53/13
	16:17	17:06	17:57	19:50 07:18-07:28/10	20:41	21:25
4	08:22 09:08-09:19/11	07:51 08:50-09:07/17	06:56	06:45 18:04-18:23/19	05:42	05:01 05:39-05:53/14
	16:18	17:08	17:59	19:52 07:17-07:29/12	20:43	21:26
5	08:21 09:08-09:20/12	07:49 08:51-09:06/15	06:54	06:43 18:06-18:21/15	05:40	05:00 05:40-05:54/14
	16:19	17:09	18:01	19:54 07:16-07:30/14	20:44	21:27
6	08:21 09:09-09:21/12	07:48 08:52-09:05/13	06:52	06:41 18:08-18:16/8	05:39	04:59 05:40-05:54/14
	16:20	17:11	18:02	19:56 07:16-07:30/14	20:46	21:28
7	08:21 09:08-09:22/14	07:46 08:54-09:03/9	06:49	06:39 07:15-07:29/14	05:37	04:59 05:40-05:55/15
	16:22	17:13	18:04	19:57	20:47	21:29
8	08:20 09:08-09:22/14	07:44	06:47	06:36 07:15-07:28/13	05:35	04:58 05:41-05:55/14
	16:23	17:15	18:06	19:59 07:07-07:14/7	20:49	21:30
9	08:20 09:09-09:24/15	07:42	06:45 07:23-07:31/8	06:34 07:16-07:27/11	05:33	04:58 05:40-05:55/15
	16:24	17:17	18:08	20:01 07:05-07:15/10	20:51	21:31
10	08:19 09:08-09:24/16	07:41	06:43 07:21-07:34/13	06:32 07:18-07:26/8	05:32	04:57 05:41-05:55/14
	16:26	17:19	18:09	20:02 07:04-07:16/12	20:52	21:32
11	08:19 09:08-09:25/17	07:39	06:40 07:19-07:34/15	06:30 07:03-07:17/14	05:30	04:57 05:41-05:56/15
	16:27	17:21	18:11	20:04	20:54	21:32
12	08:18 09:09-09:26/17	07:37	06:38 07:18-07:35/17	06:27 07:02-07:16/14	05:28	04:57 05:41-05:55/14
	16:28	17:22	18:13	20:06	20:55	21:33
13	08:17 09:09-09:26/17	07:35	06:36 07:13-07:35/22	06:25 07:02-07:15/13	05:27	04:56 05:41-05:55/14
	16:30	17:24	18:15	20:07	20:57	21:34
14	08:17 09:09-09:27/18	07:33	06:34 07:11-07:34/23	06:23 07:02-07:15/13	05:25	04:56 05:42-05:56/14
	16:31	17:26	18:16	20:09	20:59	21:34
15	08:16 09:09-09:27/18	07:31	06:31 07:09-07:34/25	06:21 07:03-07:14/11	05:24	04:56 05:42-05:56/14
	16:33	17:28	18:18	20:11	21:00	21:35
16	08:15 09:09-09:27/18	07:29	06:29 07:09-07:34/25	06:19 07:05-07:12/7	05:22	04:56 05:42-05:56/14
	16:35	17:30	18:20	20:12	21:02	21:35
17	08:14 09:09-09:28/19	07:27	06:27 07:08-07:32/24	06:17	05:21	04:56 05:43-05:56/13
	16:36	17:32	18:22	20:14	21:03	21:36
18	08:13 09:10-09:28/18	07:25	06:24 07:08-07:31/23	06:14	05:19	04:56 05:43-05:57/14
	16:38	17:34	18:23 07:00-07:03/3	20:16	21:05	21:36
19	08:12 09:09-09:28/19	07:23	06:22 17:15-17:21/6 06:57-07:06/9	06:12	05:18	04:56 05:43-05:57/14
	16:39	17:35	18:25 07:08-07:29/21	20:18	21:06	21:37
20	08:11 09:10-09:28/18	07:21	06:20 17:10-17:24/14 06:55-07:08/13	06:10	05:16	04:56 05:43-05:57/14
	16:41	17:37	18:27 07:09-07:23/14	20:19	21:08	21:37
21	08:10 09:11-09:29/18	07:19	06:18 17:08-17:27/19 06:53-07:08/15	06:08	05:15	04:56 05:43-05:57/14
	16:43	17:39	18:28 07:09-07:21/12	20:21	21:09	21:37
22	08:09 09:11-09:29/18	07:17	06:15 17:06-17:28/22 06:53-07:08/15	06:06	05:14	04:56 05:44-05:58/14
	16:44	17:41	18:30 07:10-07:19/9	20:23	21:10	21:37
23	08:08 09:11-09:28/17	07:15	06:13 17:04-17:28/24	06:04	05:12	04:56 05:44-05:58/14
	16:46	17:43	18:32 06:53-07:08/15	20:24	21:12	21:38
24	08:07 09:13-09:28/15	07:13	06:11 17:03-17:29/26	06:02	05:11	04:57 05:44-05:58/14
	16:48 08:52-09:00/8	17:44	18:33 06:52-07:07/15	20:26	21:13	21:38
25	08:05 09:14-09:28/14	07:11	06:08 17:02-17:30/28	06:00	05:10	04:57 05:45-05:58/13
	16:50 08:51-09:03/12	17:46	18:35 06:53-07:06/13	20:28	21:14	21:38
26	08:04 09:15-09:27/12	07:09	06:06 17:02-17:31/29	05:58	05:09	04:57 05:45-05:58/13
	16:51 08:50-09:03/13	17:48	18:37 06:54-07:05/11	20:29	21:16	21:38
27	08:03 09:17-09:26/9	07:07	06:04 17:01-17:30/29	05:56	05:08 05:44-05:48/4	04:58 05:44-05:58/14
	16:53 08:50-09:05/15	17:50	18:39 06:56-07:01/5	20:31	21:17	21:38
28	08:01 08:49-09:05/16	07:05	06:01 17:01-17:30/29	05:54	05:07 05:43-05:50/7	04:58 05:45-05:59/14
	16:55	17:52	18:40	20:33	21:18	21:38
29	08:00 08:49-09:07/18		06:59 18:01-18:30/29	05:52	05:06 05:42-05:51/9	04:59 05:45-05:59/14
	16:57		19:42	20:34	21:20	21:38
30	07:59 08:48-09:07/19		06:57 18:00-18:29/29	05:50	05:05 05:41-05:51/10	04:59 05:45-05:59/14
	16:59		19:44	20:36	21:21	21:37
31	07:57 08:48-09:07/19		06:55 18:01-18:28/27		05:04 05:40-05:52/12	
	17:00		19:45		21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	519	109	676	317	42	416

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 15B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (335)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 05:46-06:00/14 21:37	05:36 21:05	06:26 07:02-07:16/14 20:04	07:14 07:54-08:14/20 18:55	07:08 16:49	07:58 08:50-09:07/17 16:09
2	05:01 05:45-05:59/14 21:37	05:38 21:04	06:27 07:16-07:24/8 20:02 07:02-07:14/12	07:16 07:57-08:13/16 18:52	07:09 16:47	08:00 08:51-09:07/16 16:08
3	05:01 05:46-06:00/14 21:36	05:39 21:02	06:29 07:14-07:25/11 19:59 07:03-07:13/10	07:17 07:58-08:12/14 18:50	07:11 08:26-08:30/4 16:45	08:01 08:52-09:07/15 16:08
4	05:02 05:46-06:00/14 21:36	05:41 21:00	06:30 07:12-07:25/13 19:57 07:04-07:11/7	07:19 07:59-08:09/10 18:48	07:13 08:23-08:33/10 16:44	08:02 08:53-09:07/14 16:07
5	05:03 05:46-06:00/14 21:35	05:42 20:59	06:32 07:12-07:26/14 19:55	07:21 08:03-08:06/3 18:46	07:15 08:22-08:35/13 16:42	08:04 08:53-09:07/14 16:07
6	05:04 05:46-06:00/14 21:35	05:44 20:57	06:34 18:05-18:12/7 19:53 07:11-07:25/14	07:22 18:43	07:17 08:21-08:36/15 16:40	08:05 08:55-09:08/13 16:06
7	05:05 05:46-06:00/14 21:34	05:45 20:55	06:35 18:01-18:16/15 19:50 07:11-07:25/14	07:24 18:41	07:18 08:20-08:37/17 16:38	08:06 08:55-09:07/12 16:06
8	05:06 05:47-06:01/14 21:34	05:47 20:53	06:37 17:58-18:17/19 19:48 07:11-07:23/12	07:26 18:39	07:20 08:20-08:38/18 16:37	08:07 08:56-09:07/11 16:05
9	05:07 05:47-06:01/14 21:33	05:49 20:52	06:38 17:57-18:18/21 19:46 07:12-07:22/10	07:28 18:37	07:22 08:20-08:38/18 16:35	08:09 08:57-09:06/9 16:05
10	05:07 05:48-06:01/13 21:32	05:50 20:50	06:40 17:54-18:19/25 19:43 07:15-07:20/5	07:29 18:34	07:24 08:20-08:38/18 16:33	08:10 08:58-09:06/8 16:05
11	05:09 05:48-06:01/13 21:32	05:52 20:48	06:42 17:54-18:20/26 19:41	07:31 18:32	07:25 08:20-08:39/19 16:32	08:11 09:00-09:06/6 16:05
12	05:10 05:49-06:00/11 21:31	05:53 20:46	06:43 17:53-18:20/27 19:39	07:33 18:30	07:27 08:20-08:39/19 16:30	08:12 09:02-09:06/4 16:05
13	05:11 05:49-06:00/11 21:30	05:55 20:44	06:45 17:51-18:20/29 19:36	07:34 18:28	07:29 08:21-08:38/17 16:29	08:13 16:05
14	05:12 05:50-06:00/10 21:29	05:57 20:42	06:47 17:51-18:20/29 19:34	07:36 18:26	07:31 08:21-08:37/16 16:27	08:14 16:05
15	05:13 05:51-05:59/8 21:28	05:58 20:40	06:48 17:50-18:19/29 19:32	07:38 18:23	07:32 08:49-08:58/9 16:26 08:22-08:37/15	08:15 16:05
16	05:14 05:52-05:58/6 21:27	06:00 20:38	06:50 17:50-18:19/29 19:29 07:46-07:49/3	07:39 18:21	07:34 08:48-09:00/12 16:25 08:23-08:36/13	08:16 16:05
17	05:15 21:26	06:01 20:36	06:51 17:49-18:18/29 19:27 07:43-07:53/10	07:41 18:19	07:36 08:47-09:01/14 16:23 08:24-08:36/12	08:16 16:05
18	05:17 21:25	06:03 20:34	06:53 17:50-18:18/28 19:25 07:41-07:53/12	07:43 18:17	07:38 08:47-09:02/15 16:22 08:26-08:34/8	08:17 16:05
19	05:18 21:24	06:05 20:32	06:55 17:50-18:17/27 19:23 07:40-07:54/14	07:45 18:15	07:39 08:46-09:03/17 16:21	08:18 16:05
20	05:19 21:23	06:06 20:30	06:56 17:50-18:15/25 19:20 07:39-07:53/14	07:46 18:13	07:41 08:46-09:04/18 16:19	08:19 16:06
21	05:20 21:21	06:08 20:28	06:58 17:51-18:14/23 07:39-07:53/14 19:18 07:57-08:04/7	07:48 18:11	07:43 08:46-09:04/18 16:18	08:19 16:06
22	05:22 21:20	06:09 20:26	06:59 17:52-18:12/20 07:39-07:53/14 19:16 07:55-08:06/11	07:50 18:09	07:44 08:46-09:04/18 16:17	08:20 16:07
23	05:23 21:19	06:11 20:24	07:01 17:54-18:10/16 19:13 07:38-08:07/29	07:52 18:06	07:46 08:46-09:05/19 16:16	08:20 16:07
24	05:25 21:17	06:13 20:21	07:03 17:57-18:07/10 07:40-07:50/10 19:11 07:52-08:11/19	07:53 18:04	07:48 08:47-09:05/18 16:15	08:21 16:08
25	05:26 21:16	06:14 20:19	07:04 07:50-08:13/23 19:09 07:41-07:47/6	06:55 17:02	07:49 08:47-09:06/19 16:14	08:21 16:08
26	05:27 21:15	06:16 20:17	07:06 07:50-08:14/24 19:06	06:57 17:00	07:51 08:47-09:05/18 16:13	08:21 16:09
27	05:29 21:13	06:17 07:06-07:14/8 20:15	07:08 07:50-08:15/25 19:04	06:59 16:58	07:52 08:48-09:06/18 16:12	08:22 16:10
28	05:30 21:12	06:19 07:04-07:15/11 20:13	07:09 07:50-08:15/25 19:02	07:00 16:57	07:54 08:49-09:07/18 16:11	08:22 16:11
29	05:32 21:10	06:21 07:03-07:16/13 20:10	07:11 07:51-08:15/24 18:59	07:02 16:55	07:55 08:49-09:06/17 16:10	08:22 16:12
30	05:33 21:09	06:22 07:03-07:16/13 20:08	07:13 07:52-08:15/23 18:57	07:04 16:53	07:57 08:50-09:07/17 16:10	08:22 16:12
31	05:35 21:07	06:24 07:02-07:16/14 20:06		07:06 16:51		08:22 09:11-09:14/3 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	198	59	885	63	497	142

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 18B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (336)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 16:15	07:56 17:02	07:03 09:20-09:39/19 17:53 08:42-09:16/34	06:52 07:36-07:59/23 19:47	05:48 07:15-07:31/16 20:38	05:03 06:04-06:15/11 21:23 05:49-05:55/6
2	08:22 16:16	07:54 17:04	07:00 09:23-09:36/13 17:55 08:42-09:16/34	06:50 07:36-08:00/24 19:49	05:46 07:16-07:28/12 20:39	05:02 06:05-06:15/10 21:24 05:49-05:57/8
3	08:22 16:17	07:53 17:06	06:58 08:41-09:14/33 17:57	06:48 07:34-07:59/25 19:50	05:44 07:20-07:26/6 20:41	05:01 06:06-06:14/8 21:25 05:48-05:58/10
4	08:22 16:18	07:51 17:08	06:56 08:42-09:14/32 17:59 08:06-08:18/12	06:46 07:34-08:01/27 19:52	05:42 06:23-06:31/8 20:43	05:01 06:08-06:13/5 21:26 05:48-05:59/11
5	08:21 16:19	07:49 09:27-09:37/10 17:10	06:54 08:43-09:13/30 18:01 08:03-08:21/18	06:43 07:34-08:03/29 19:54	05:40 06:21-06:32/11 20:44	05:00 05:47-06:00/13 21:27
6	08:21 16:20	07:48 09:23-09:40/17 17:11	06:52 08:44-09:12/28 18:02 08:02-08:23/21	06:41 07:34-08:04/30 19:56	05:39 06:20-06:33/13 20:46	04:59 05:46-06:00/14 21:28
7	08:21 16:22	07:46 09:21-09:42/21 17:13	06:49 08:44-09:09/25 18:04 07:59-08:23/24	06:39 07:34-08:04/30 19:57	05:37 06:18-06:35/17 20:48	04:59 05:46-06:01/15 21:29
8	08:20 16:23	07:44 09:19-09:44/25 17:15	06:47 08:45-09:08/23 18:06 07:58-08:24/26	06:36 07:35-08:05/30 19:59	05:35 06:15-06:35/20 20:49	04:58 05:47-06:02/15 21:30
9	08:20 16:24	07:42 09:18-09:45/27 17:17	06:45 08:47-09:05/18 18:08 07:58-08:25/27	06:34 07:36-08:05/29 20:01	05:33 06:15-06:36/21 20:51	04:58 05:46-06:01/15 21:31
10	08:19 16:26	07:41 09:17-09:47/30 17:19	06:43 08:51-09:02/11 18:09 07:57-08:25/28	06:32 07:38-08:05/27 20:02	05:32 06:13-06:35/22 20:52	04:57 05:46-06:02/16 21:32
11	08:19 16:27	07:39 09:16-09:48/32 17:21	06:40 07:56-08:25/29 18:11	06:30 07:38-08:05/27 20:04	05:30 06:12-06:35/23 20:54	04:57 05:47-06:03/16 21:32
12	08:18 16:29	07:37 09:15-09:49/34 17:22	06:38 07:56-08:25/29 18:13	06:28 07:37-08:04/27 20:06	05:28 06:12-06:35/23 20:56	04:57 05:46-06:02/16 21:33
13	08:17 16:30	07:35 09:15-09:50/35 17:24	06:36 07:56-08:25/29 18:15	06:25 07:37-08:04/27 20:07	05:27 06:11-06:34/23 20:57	04:56 05:46-06:03/17 21:34
14	08:17 16:32	07:33 09:14-09:50/36 17:26	06:34 17:37-17:42/5 18:16 07:55-08:24/29	06:23 07:37-08:03/26 20:09 07:23-07:31/8	05:25 06:12-06:34/22 20:59 06:07-06:10/3	04:56 05:46-06:03/17 21:34
15	08:16 16:33	07:31 09:14-09:51/37 17:28	06:31 17:34-17:44/10 18:18 07:55-08:23/28	06:21 07:38-08:02/24 20:11 07:20-07:34/14	05:24 06:05-06:34/29 21:00	04:56 05:47-06:04/17 21:35
16	08:15 16:35	07:29 09:13-09:51/38 17:30	06:29 17:33-17:46/13 07:12-07:20/8 18:20 07:56-08:23/27	06:19 07:38-08:01/23 20:12 07:18-07:35/17	05:22 06:03-06:33/30 21:02	04:56 05:47-06:04/17 21:35
17	08:14 16:36	07:27 09:13-09:51/38 17:32 08:54-09:07/13	06:27 17:32-17:45/13 07:09-07:21/12 18:22 07:55-08:21/26	06:17 07:39-08:00/21 07:01-07:09/8 20:14 07:16-07:37/21	05:21 06:02-06:33/31 21:03	04:56 05:47-06:04/17 21:36
18	08:13 16:38	07:25 09:13-09:51/38 17:34 08:51-09:10/19	06:25 17:31-17:46/15 07:07-07:23/16 18:23 07:57-08:20/23	06:14 07:40-07:58/18 06:59-07:11/12 20:16 07:15-07:38/23	05:19 06:02-06:32/30 21:05	04:56 05:47-06:05/18 21:36
19	08:12 16:39	07:23 09:13-09:51/38 17:35 08:49-09:12/23	06:22 17:32-17:46/14 07:07-07:24/17 18:25 07:58-08:18/20	06:12 07:41-07:55/14 06:57-07:13/16 20:18 07:14-07:38/24	05:18 06:00-06:29/29 21:06	04:56 05:47-06:05/18 21:37
20	08:11 16:41	07:21 08:47-09:50/63 17:37	06:20 17:31-17:44/13 07:06-07:24/18 18:27 08:00-08:16/16	06:10 07:43-07:52/9 20:19 06:55-07:38/43	05:16 06:00-06:27/27 21:08	04:56 05:47-06:05/18 21:37
21	08:10 16:43	07:19 08:46-09:50/64 17:39	06:18 17:32-17:43/11 07:05-07:23/18 18:28 08:02-08:12/10	06:08 06:54-07:38/44 20:21	05:15 06:00-06:27/27 21:09	04:56 05:47-06:05/18 21:37
22	08:09 16:44	07:17 08:45-09:49/64 17:41	06:15 17:34-17:42/8 18:30 07:05-07:23/18	06:06 06:54-07:38/44 20:23	05:14 06:01-06:26/25 21:10	04:56 05:48-06:06/18 21:38
23	08:08 16:46	07:15 08:44-09:49/65 17:43	06:13 07:05-07:23/18 18:32	06:04 06:53-07:37/44 20:24	05:12 06:01-06:25/24 21:12	04:56 05:48-06:06/18 21:38
24	08:07 16:48	07:13 08:43-09:48/65 17:44	06:11 07:05-07:21/16 18:34	06:02 06:53-07:37/44 20:26	05:11 06:20-06:22/2 21:13 06:01-06:18/17	04:57 05:48-06:06/18 21:38
25	08:05 16:50	07:11 08:43-09:47/64 17:46	06:08 07:06-07:20/14 18:35 06:51-06:55/4	06:00 06:53-07:37/44 20:28	05:10 06:01-06:18/17 21:15	04:57 05:49-06:06/17 21:38
26	08:04 16:51	07:09 08:43-09:46/63 17:48	06:06 07:07-07:19/12 18:37 06:47-06:58/11	05:58 06:54-07:37/43 20:29	05:09 06:01-06:18/17 21:16	04:57 05:49-06:06/17 21:38
27	08:03 16:53	07:07 08:41-09:43/62 17:50	06:04 07:09-07:15/6 18:39 06:45-06:58/13	05:56 07:12-07:36/24 20:31 06:55-07:11/16	05:08 06:02-06:17/15 21:17	04:58 05:49-06:06/17 21:38
28	08:01 16:55	07:05 09:18-09:41/23 17:52 08:41-09:16/35	06:02 06:43-07:00/17 18:40	05:54 07:12-07:35/23 20:33 06:55-07:10/15	05:07 06:02-06:17/15 21:18	04:58 05:49-06:07/18 21:38
29	08:00 16:57		06:59 07:43-08:00/17 19:42	05:52 07:13-07:34/21 20:34 06:56-07:09/13	05:06 06:02-06:17/15 21:20	04:59 05:49-06:06/17 21:38
30	07:59 16:59		06:57 07:40-07:59/19 19:44	05:50 07:14-07:33/19 20:36 06:58-07:06/8	05:05 06:03-06:16/13 21:21	04:59 05:50-06:07/17 21:37
31	07:57 17:00		06:55 07:38-07:59/21 19:45		05:04 06:03-06:15/12 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	0	1079	1099	1078	615	503

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 18B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (336)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 05:51-06:07/16 21:37	05:36 06:23-06:46/23 21:06	06:26 07:37-08:04/27 20:04	07:14 08:34-09:04/30 18:55	07:08 08:46-09:16/30 16:49	07:58 16:09
2	05:01 05:50-06:07/17 21:37	05:38 06:23-06:45/22 21:04	06:27 07:36-08:03/27 20:02	07:16 08:35-09:04/29 18:52	07:09 08:47-09:15/28 16:47	08:00 16:08
3	05:01 05:51-06:07/16 21:36	05:39 06:24-06:46/22 21:02	06:29 07:34-08:03/29 19:59	07:18 09:31-09:37/6 18:50 08:35-09:03/28	07:11 08:49-09:13/24 16:45	08:01 16:08
4	05:02 05:52-06:07/15 21:36	05:41 06:25-06:45/20 21:01	06:30 07:32-08:02/30 19:57	07:19 09:26-09:41/15 18:48 08:34-09:02/28	07:13 08:51-09:11/20 16:44	08:02 16:07
5	05:03 05:52-06:07/15 21:36	05:42 06:27-06:45/18 20:59	06:32 07:31-08:01/30 19:55	07:21 09:23-09:44/21 18:46 08:35-09:01/26	07:15 08:54-09:09/15 16:42	08:04 16:07
6	05:04 05:52-06:06/14 21:35	05:44 06:29-06:44/15 20:57	06:34 07:29-07:59/30 19:53	07:23 09:21-09:46/25 18:43 08:36-09:00/24	07:17 08:57-09:06/9 16:40	08:05 16:06
7	05:05 05:53-06:06/13 21:34	05:45 06:30-06:43/13 20:55	06:35 07:29-07:58/29 19:50	07:24 09:19-09:46/27 18:41 08:36-08:58/22	07:18 16:38	08:06 16:06
8	05:06 06:15-06:19/4 21:34 05:54-06:06/12	05:47 06:31-06:41/10 20:53	06:37 07:28-07:56/28 19:48	07:26 09:18-09:47/29 18:39 08:37-08:57/20	07:20 16:37	08:08 16:05
9	05:07 06:14-06:21/7 21:33 05:55-06:06/11	05:49 06:34-06:40/6 20:52	06:38 07:28-07:53/25 19:46	07:28 09:17-09:48/31 18:37 08:40-08:55/15	07:22 16:35	08:09 16:05
10	05:08 06:13-06:22/9 21:32 05:56-06:05/9	05:50 07:27-07:36/9 20:50	06:40 07:29-07:53/24 19:43	07:29 09:17-09:49/32 18:34 08:43-08:51/8	07:24 16:33	08:10 16:05
11	05:09 06:12-06:23/11 21:32 05:57-06:04/7	05:52 07:25-07:39/14 20:48	06:42 07:29-07:52/23 19:41	07:31 10:00-10:05/5 18:32 09:15-09:49/34	07:25 16:32	08:11 16:05
12	05:10 06:12-06:24/12 21:31 05:59-06:02/3	05:53 07:23-07:40/17 20:46 07:09-07:11/2	06:43 07:30-07:52/22 19:39	07:33 09:55-10:10/15 18:30 09:15-09:49/34	07:27 16:30	08:12 16:05
13	05:11 06:12-06:24/12 21:30	05:55 07:22-07:41/19 20:44 07:06-07:15/9	06:45 07:30-07:51/21 19:36	07:34 09:52-10:13/21 18:28 09:15-09:49/34	07:29 16:29	08:13 16:05
14	05:12 06:11-06:25/14 21:29	05:57 07:20-07:42/22 20:42 07:03-07:17/14	06:47 07:33-07:51/18 19:34	07:36 09:50-10:15/25 18:26 09:15-09:49/34	07:31 16:27	08:14 16:05
15	05:13 06:11-06:25/14 21:28	05:58 07:20-07:43/23 20:40 07:03-07:18/15	06:48 07:33-07:49/16 19:32	07:38 09:15-10:17/62 18:23	07:32 16:26	08:15 16:05
16	05:14 06:10-06:26/16 21:27	06:00 07:01-07:43/42 20:38	06:50 08:00-08:02/2 19:30 07:34-07:48/14	07:39 09:14-10:17/63 18:21	07:34 16:25	08:16 16:05
17	05:15 06:10-06:26/16 21:26	06:01 07:01-07:44/43 20:36	06:51 07:56-08:07/11 19:27 07:35-07:47/12	07:41 09:14-10:19/65 18:19	07:36 16:23	08:16 16:05
18	05:17 06:11-06:27/16 21:25	06:03 07:00-07:43/43 20:34	06:53 07:54-08:07/13 19:25 07:37-07:43/6	07:43 09:15-10:19/64 18:17	07:38 16:22	08:17 16:05
19	05:18 06:10-06:27/17 21:24	06:05 07:00-07:44/44 20:32	06:55 07:53-08:09/16 19:23	07:45 09:15-10:20/65 18:15	07:39 16:21	08:18 16:06
20	05:19 06:28-06:33/5 21:23 06:10-06:27/17	06:06 06:59-07:43/44 20:30	06:56 07:51-08:08/17 19:20	07:46 09:16-10:21/65 18:13	07:41 16:19	08:19 16:06
21	05:21 06:10-06:35/25 21:21	06:08 06:59-07:43/44 20:28	06:58 18:20-18:27/7 19:18 07:50-08:09/19	07:48 09:17-10:21/64 18:11	07:43 16:18	08:19 16:06
22	05:22 06:10-06:36/26 21:20	06:09 06:59-07:42/43 20:26	06:59 18:17-18:28/11 07:50-08:09/19 19:16 08:48-08:56/8	07:50 09:18-10:20/62 18:09	07:44 16:17	08:20 16:07
23	05:23 06:11-06:37/26 21:19	06:11 07:47-07:58/11 20:24 07:00-07:42/42	07:01 18:16-18:29/13 07:50-08:08/18 19:13 08:44-08:59/15	07:52 09:42-10:20/38 18:07 09:19-09:41/22	07:46 16:16	08:20 16:07
24	05:25 06:11-06:38/27 21:18	06:13 07:44-08:00/16 07:00-07:15/15 20:21 07:17-07:41/24	07:03 18:15-18:29/14 07:50-08:08/18 19:11 08:42-09:01/19	07:53 09:42-10:21/39 18:04 09:21-09:39/18	07:48 16:15	08:21 16:08
25	05:26 06:11-06:41/30 21:16	06:14 07:43-08:01/18 07:02-07:14/12 20:19 07:18-07:40/22	07:04 18:14-18:28/14 07:50-08:06/16 19:09 08:40-09:02/22	06:55 08:43-09:20/37 17:02 08:24-08:36/12	07:49 16:14	08:21 16:08
26	05:27 06:12-06:43/31 21:15	06:16 07:41-08:02/21 07:03-07:11/8 20:17 07:18-07:38/20	07:06 18:14-18:28/14 07:51-08:05/14 19:06 08:38-09:03/25	06:57 08:43-09:20/37 17:00	07:51 16:13	08:21 16:09
27	05:29 06:13-06:43/30 21:13	06:18 07:40-08:03/23 20:15 07:20-07:37/17	07:08 18:15-18:28/13 07:53-08:03/10 19:04 08:38-09:04/26	06:59 08:43-09:20/37 16:59	07:52 16:12	08:22 16:10
28	05:30 06:14-06:44/30 21:12	06:19 07:38-08:03/25 20:13 07:21-07:34/13	07:09 18:15-18:26/11 19:02 08:36-09:04/28	07:00 08:44-09:20/36 16:57	07:54 16:11	08:22 16:11
29	05:32 06:16-06:45/29 21:10	06:21 07:38-08:04/26 20:11 07:24-07:31/7	07:11 18:16-18:24/8 18:59 08:36-09:04/28	07:02 08:44-09:19/35 16:55	07:55 16:10	08:22 16:12
30	05:33 06:22-06:45/23 21:09	06:22 07:38-08:05/27 20:08	07:13 08:35-09:05/30 18:57	07:04 08:45-09:18/33 16:53	07:57 16:10	08:22 16:12
31	05:35 06:23-06:46/23 21:07	06:24 07:37-08:04/27 20:06		07:06 08:45-09:17/32 16:51		08:22 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	618	970	890	1504	126	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 19B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (338)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22	07:56 08:49-09:01/12	07:03 16:43-17:01/18	06:52 07:34-07:47/13	05:48 06:26-06:45/19	05:03 05:51-06:21/30
	16:15	17:02	17:53 08:04-08:18/14	19:47	20:38	21:23
2	08:22	07:54 08:48-09:02/14	07:00 16:44-17:00/16	06:50 07:35-07:46/11	05:46 06:25-06:43/18	05:02 05:53-06:22/29
	16:16	17:04	17:55 08:06-08:16/10	19:49	20:39	21:24
3	08:22	07:52 08:46-09:03/17	06:58 16:44-16:58/14	06:48 07:36-07:43/7	05:44 06:26-06:42/16	05:01 05:53-06:22/29
	16:17	17:06	17:57	19:50	20:41	21:25
4	08:22	07:51 08:46-09:05/19	06:56 16:46-16:56/10	06:45	05:42 06:25-06:42/17	05:01 05:54-06:21/27
	16:18	17:08	17:59 07:28-07:36/8	19:52	20:43	21:26
5	08:21	07:49 08:45-09:06/21	06:54 16:49-16:53/4	06:43	05:40 06:25-06:40/15	05:00 05:54-06:22/28
	16:19	17:10	18:01 07:27-07:38/11	19:54	20:44	21:27
6	08:21	07:48 08:45-09:06/21	06:52 07:26-07:39/13	06:41	05:39 06:25-06:39/14	04:59 05:54-06:22/28
	16:20	17:11	18:02	19:56	20:46 06:17-06:20/3	21:28
7	08:21	07:46 08:45-09:06/21	06:49 07:24-07:38/14	06:39	05:37 06:27-06:39/12	04:59 05:56-06:22/26
	16:22	17:13	18:04	19:57	20:48 06:15-06:23/8	21:29
8	08:20	07:44 08:44-09:06/22	06:47 07:24-07:38/14	06:36 07:08-07:12/4	05:35 06:27-06:37/10	04:58 05:56-06:22/26
	16:23	17:15 08:35-08:42/7	18:06	19:59	20:49 06:13-06:24/11	21:30
9	08:20	07:42 08:33-09:06/33	06:45 07:25-07:38/13	06:34 07:05-07:14/9	05:33 06:29-06:36/7	04:58 05:55-06:22/27
	16:24	17:17	18:08	20:01	20:51 06:12-06:26/14	21:31
10	08:19	07:41 08:32-09:07/35	06:43 07:26-07:37/11	06:32 07:04-07:15/11	05:32 06:11-06:26/15	04:57 05:55-06:22/27
	16:26	17:19	18:09	20:02	20:52	21:32
11	08:19	07:39 08:31-09:06/35	06:40 07:26-07:34/8 07:22-07:25/3	06:30 07:01-07:16/15	05:30 06:10-06:26/16	04:57 05:55-06:22/27
	16:27	17:21	18:11 07:12-07:18/6	20:04	20:54	21:32
12	08:18	07:37 08:30-09:06/36	06:38 07:10-07:29/19	06:28 06:58-07:15/17	05:28 06:11-06:27/16	04:57 05:54-06:21/27
	16:29	17:22	18:13	20:06	20:55	21:33
13	08:17	07:35 08:30-09:05/35	06:36 07:09-07:31/22	06:25 06:57-07:15/18	05:27 06:10-06:26/16	04:56 05:54-06:22/28
	16:30	17:24	18:15	20:07	20:57 06:04-06:07/3	21:34
14	08:17	07:33 08:29-09:04/35	06:34 07:06-07:31/25	06:23 06:56-07:14/18	05:25 06:02-06:27/25	04:56 05:54-06:22/28
	16:31	17:26	18:16	20:09	20:59	21:34
15	08:16	07:31 08:29-09:02/33	06:31 07:05-07:31/26	06:21 06:56-07:13/17	05:24 06:01-06:27/26	04:56 05:54-06:22/28
	16:33	17:28	18:18	20:11	21:00	21:35
16	08:15	07:29 08:53-08:58/5	06:29 07:04-07:32/28	06:19 06:49-07:12/23	05:22 05:58-06:26/28	04:56 05:54-06:22/28
	16:35	17:30 08:29-08:50/21	18:20	20:12	21:02	21:35
17	08:14	07:27 08:30-08:49/19	06:27 07:03-07:31/28	06:17 06:48-07:08/20	05:21 05:57-06:26/29	04:56 05:54-06:22/28
	16:36	17:32	18:22	20:14	21:03	21:36
18	08:13	07:25 08:30-08:49/19	06:25 07:03-07:30/27	06:14 06:47-07:07/20	05:19 05:56-06:26/30	04:56 05:54-06:22/28
	16:38	17:34	18:23	20:16	21:05	21:36
19	08:12	07:23 08:31-08:48/17	06:22 07:03-07:30/27	06:12 06:46-07:05/19	05:18 05:54-06:24/30	04:56 05:54-06:22/28
	16:39	17:35 08:10-08:16/6	18:25	20:18	21:06	21:37
20	08:11	07:21 08:31-08:46/15	06:20 07:00-07:29/29	06:10 06:45-06:58/13	05:16 05:53-06:23/30	04:56 05:54-06:22/28
	16:41	17:37 08:06-08:17/11	18:27	20:19	21:08	21:37
21	08:10	07:19 08:33-08:44/11	06:18 06:58-07:13/15	06:08 06:45-06:57/12	05:15 05:52-06:22/30	04:56 05:54-06:22/28
	16:43	17:39 08:05-08:19/14	18:28 07:16-07:26/10	20:21	21:09	21:37
22	08:09	07:17 16:48-16:57/9 08:04-08:20/16	06:15 07:19-07:23/4	06:06 06:45-06:57/12	05:14 05:52-06:19/27	04:56 05:55-06:23/28
	16:44	17:41 08:36-08:40/4	18:30 06:57-07:14/17	20:23 06:39-06:42/3	21:10	21:37
23	08:08	07:15 16:46-16:59/13	06:13 06:57-07:14/17	06:04 06:46-06:56/10	05:12 05:51-06:20/29	04:56 05:55-06:23/28
	16:46	17:43 08:03-08:21/18	18:32	20:24 06:36-06:45/9	21:12	21:38
24	08:07	07:13 16:45-17:00/15	06:11 06:55-07:13/18	06:02 06:47-06:54/7	05:11 05:51-06:21/30	04:57 05:55-06:23/28
	16:48	17:44 08:03-08:21/18	18:34	20:26 06:35-06:46/11	21:13	21:38
25	08:05	07:11 16:44-17:01/17	06:08 06:56-07:13/17	06:00 06:34-06:47/13	05:10 05:51-06:21/30	04:57 05:56-06:24/28
	16:50	17:46 08:03-08:21/18	18:35	20:28	21:15	21:38
26	08:04	07:09 16:43-17:01/18	06:06 06:56-07:12/16	05:58 06:33-06:48/15	05:09 05:51-06:21/30	04:57 05:56-06:24/28
	16:51	17:48 08:03-08:21/18	18:37 06:39-06:47/8	20:29	21:16	21:38
27	08:03	07:07 16:42-17:01/19	06:04 06:56-07:11/15	05:56 06:31-06:48/17	05:08 05:51-06:22/31	04:58 05:56-06:24/28
	16:53	17:50 08:02-08:20/18	18:39 06:36-06:47/11	20:31	21:17	21:38
28	08:01	07:05 16:43-17:01/18	06:02 06:57-07:09/12	05:54 06:30-06:47/17	05:07 05:51-06:22/31	04:58 05:57-06:25/28
	16:55	17:52 08:03-08:19/16	18:40 06:35-06:48/13	20:33	21:18	21:38
29	08:00		06:59 07:59-08:07/8	05:52 06:28-06:47/19	05:06 05:51-06:22/31	04:59 05:57-06:25/28
	16:57		19:42 07:35-07:49/14	20:34	21:20	21:38
30	07:59		06:57 07:34-07:48/14	05:50 06:27-06:46/19	05:05 05:51-06:22/31	04:59 05:58-06:26/28
	16:59		19:44	20:36	21:21	21:37
31	07:57 08:51-08:58/7		06:55 07:34-07:48/14		05:04 05:51-06:22/31	
	17:00		19:45		21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	7	769	641	399	759	835

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 19B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (338)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 05:59-06:26/27 21:37	05:36 06:21-06:37/16 21:06	06:26 07:00-07:15/15 20:04	07:14 07:48-08:09/21 18:55	07:08 08:01-08:36/35 16:49	07:58 16:09
2	05:01 05:59-06:26/27 21:37	05:38 06:21-06:36/15 21:04	06:27 07:02-07:13/11 20:02	07:16 07:59-08:12/13 18:52 07:49-07:58/9	07:09 08:03-08:36/33 16:47	08:00 16:08
3	05:01 06:00-06:27/27 21:36	05:39 06:41-06:44/3 21:02 06:22-06:36/14	06:29 07:03-07:12/9 19:59	07:18 08:04-08:14/10 18:50 07:53-07:54/1	07:11 08:14-08:36/22 16:45 08:06-08:11/5	08:01 16:08
4	05:02 06:01-06:28/27 21:36	05:41 06:38-06:47/9 21:00 06:22-06:35/13	06:30 07:05-07:09/4 19:57	07:19 08:02-08:14/12 18:48	07:13 08:14-08:36/22 16:44	08:02 16:07
5	05:03 06:01-06:27/26 21:35	05:42 06:37-06:48/11 20:59 06:24-06:34/10	06:32 19:55	07:21 08:02-08:15/13 18:46	07:15 08:15-08:36/21 16:42	08:04 16:07
6	05:04 06:01-06:28/27 21:35	05:44 06:36-06:49/13 20:57 06:25-06:32/7	06:34 19:53	07:23 08:01-08:15/14 18:43	07:17 08:15-08:35/20 16:40	08:05 16:06
7	05:05 06:01-06:28/27 21:34	05:45 06:36-06:50/14 20:55	06:35 19:50	07:24 08:02-08:15/13 18:41	07:18 08:16-08:35/19 16:38	08:06 16:06
8	05:06 06:00-06:29/29 21:34	05:47 06:35-06:50/15 20:53	06:37 19:48	07:26 08:01-08:13/12 18:39	07:20 08:17-08:34/17 16:37	08:08 16:05
9	05:07 06:00-06:29/29 21:33	05:49 06:35-06:51/16 20:52	06:38 07:31-07:37/6 19:46	07:28 17:22-17:30/8 18:37 08:02-08:12/10	07:22 08:18-08:33/15 16:35	08:09 16:05
10	05:08 06:00-06:30/30 21:32	05:50 06:34-06:51/17 20:50	06:40 07:29-07:39/10 19:43	07:29 17:20-17:32/12 18:34 08:04-08:10/6	07:24 08:20-08:32/12 16:33	08:10 16:05
11	05:09 06:00-06:30/30 21:32	05:52 06:35-06:53/18 20:48	06:42 07:27-07:39/12 19:41	07:31 17:17-17:33/16 18:32 08:41-08:47/6	07:25 08:23-08:29/6 16:32	08:11 16:05
12	05:10 06:00-06:30/30 21:31	05:53 06:34-06:53/19 20:46	06:43 07:26-07:40/14 19:39	07:33 17:17-17:33/16 18:30 08:38-08:50/12	07:27 16:30	08:12 16:05
13	05:11 06:00-06:30/30 21:30	05:55 06:35-06:55/20 20:44	06:45 07:25-07:39/14 19:36	07:34 17:16-17:34/18 18:28 08:37-08:52/15	07:29 16:29	08:13 16:05
14	05:12 06:00-06:30/30 21:29	05:57 06:36-06:54/18 20:42	06:47 07:50-07:57/7 19:34 07:25-07:39/14	07:36 17:16-17:34/18 18:26 08:36-08:52/16	07:31 16:27	08:14 16:05
15	05:13 06:00-06:30/30 21:28	05:58 06:37-06:55/18 20:40	06:48 07:47-07:58/11 19:32 07:25-07:38/13	07:38 17:15-17:33/18 18:23 08:35-08:53/18	07:32 16:26	08:15 16:05
16	05:14 05:59-06:30/31 21:27	06:00 06:38-06:54/16 20:38	06:50 07:45-08:00/15 19:30 07:26-07:37/11	07:39 17:15-17:33/18 18:21 08:34-08:52/18	07:34 16:25	08:16 16:05
17	05:15 05:59-06:30/31 21:26	06:01 06:40-06:54/14 20:36	06:51 07:45-08:01/16 19:27 07:27-07:36/9	07:41 17:16-17:32/16 18:19 08:34-08:52/18	07:36 16:23	08:16 16:05
18	05:17 06:00-06:31/31 21:25	06:03 06:40-06:53/13 20:34	06:53 07:43-08:00/17 19:25	07:43 17:16-17:31/15 18:17 08:34-08:52/18	07:38 16:22	08:17 16:05
19	05:18 06:01-06:30/29 21:24	06:05 06:53-07:01/8 20:32 06:41-06:52/11	06:55 07:43-08:01/18 19:23	07:45 17:18-17:30/12 18:15 08:35-08:52/17	07:39 16:21	08:18 16:06
20	05:19 06:01-06:30/29 21:23	06:06 06:51-07:01/10 20:30 06:42-06:50/8	06:56 07:42-08:00/18 19:20	07:46 17:20-17:27/7 08:35-08:51/16 18:13 09:06-09:13/7	07:41 16:19	08:19 16:06
21	05:20 06:01-06:29/28 21:21	06:08 06:51-07:03/12 20:28	06:58 07:42-07:59/17 19:18	07:48 09:04-09:16/12 18:11 08:37-08:50/13	07:43 16:18	08:19 16:06
22	05:22 06:01-06:31/30 21:20	06:09 06:49-07:02/13 20:26	06:59 07:43-07:59/16 19:16 08:02-08:11/9	07:50 09:01-09:17/16 18:09 08:37-08:47/10	07:44 16:17	08:20 16:07
23	05:23 06:03-06:33/30 21:19	06:11 06:49-07:03/14 20:24	07:01 07:43-07:58/15 19:13 07:59-08:12/13	07:52 09:00-09:18/18 18:07 08:41-08:43/2	07:46 16:16	08:20 16:07
24	05:25 06:04-06:34/30 21:17	06:13 06:49-07:08/19 20:21	07:03 07:45-08:13/28 19:11	07:53 08:59-09:18/19 18:04	07:48 16:15	08:21 16:08
25	05:26 06:05-06:35/30 21:16	06:14 06:49-07:10/21 20:19	07:04 07:46-08:13/27 19:09	06:55 07:59-08:19/20 17:02	07:49 16:14	08:21 16:08
26	05:27 06:07-06:36/29 21:15	06:16 06:50-07:10/20 20:17	07:06 07:45-08:13/28 19:06	06:57 08:22-08:29/7 17:00 07:59-08:19/20	07:51 16:13	08:21 16:09
27	05:29 06:08-06:36/28 21:13	06:17 06:51-07:14/23 20:15	07:08 07:46-08:13/27 19:04	06:59 07:59-08:32/33 16:58	07:52 16:12	08:22 16:10
28	05:30 06:10-06:36/26 21:12	06:19 06:57-07:14/17 20:13	07:09 07:45-08:12/27 19:02	07:00 07:59-08:33/34 16:57	07:54 16:11	08:22 16:11
29	05:32 06:12-06:37/25 21:10	06:21 06:57-07:15/18 20:11	07:11 07:46-08:12/26 18:59	07:02 07:59-08:35/36 16:55	07:55 16:10	08:22 16:12
30	05:33 06:21-06:37/16 21:09 06:13-06:20/7	06:22 06:58-07:16/18 20:08	07:13 07:48-08:11/23 18:57	07:04 08:00-08:36/36 16:53	07:57 16:10	08:22 16:12
31	05:35 06:21-06:38/17 21:07	06:24 06:58-07:15/17 20:06		07:06 08:00-08:35/35 16:51		08:22 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	873	538	500	780	227	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 1B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (322)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03 05:43-06:00/17	05:00 05:46-06:11/25	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02 05:43-06:02/19	05:01 05:46-06:10/24	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44	05:01 05:42-06:02/20	05:01 05:47-06:10/23	05:39	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42	05:01 05:42-06:02/20	05:02 05:47-06:11/24	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40	05:00 05:42-06:03/21	05:03 05:47-06:10/23	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39	04:59 05:41-06:03/22	05:04 05:48-06:10/22	05:44	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59 05:42-06:04/22	05:05 05:48-06:10/22	05:45	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58 05:41-06:04/23	05:05 05:49-06:10/21	05:47	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58 05:41-06:05/24	05:06 05:49-06:10/21	05:49	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57 05:42-06:06/24	05:07 05:50-06:09/19	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57 05:41-06:05/24	05:08 05:51-06:09/18	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56 05:41-06:06/25	05:10 05:52-06:08/16	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56 05:42-06:06/24	05:11 05:53-06:08/15	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56 05:42-06:07/25	05:12 05:54-06:07/13	05:57	06:47	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:23	04:56 05:42-06:07/25	05:13 05:55-06:06/11	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56 05:42-06:07/25	05:14 05:57-06:03/6	06:00	06:50	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:20	04:56 05:43-06:08/25	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:56 05:43-06:08/25	05:17	06:03	06:53	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56 05:43-06:08/25	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56 05:43-06:08/25	05:19	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56 05:43-06:08/25	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56 05:43-06:08/25	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56 05:44-06:09/25	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57 05:44-06:09/25	05:24	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:33	20:26	21:13	21:38	21:18	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57 05:44-06:09/25	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57 05:44-06:10/26	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08 05:50-05:52/2	04:58 05:44-06:09/25	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07 05:47-05:56/9	04:58 05:45-06:10/25	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52	05:06 05:46-05:58/12	04:59 05:45-06:10/25	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05 05:45-05:59/14	04:59 05:46-06:10/24	05:33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04 05:44-06:00/16		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	0	53	710	303	0	0	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 20B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (339)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 09:34-09:40/6 16:15 09:09-09:24/15	07:56 17:02	07:03 07:55-08:03/8 17:53 07:36-07:48/12	06:52 19:47	05:48 06:21-06:31/10 20:38	05:03 21:23
2	08:22 09:36-09:39/3 16:16 09:10-09:25/15	07:54 17:04	07:00 07:36-07:49/13 17:55	06:50 19:49	05:46 06:20-06:32/12 20:39	05:02 21:24
3	08:22 09:10-09:26/16 16:17	07:52 17:06	06:58 07:34-07:48/14 17:57	06:48 19:50	05:44 06:20-06:33/13 20:41	05:01 21:25
4	08:22 09:10-09:26/16 16:18	07:51 17:08	06:56 07:34-07:48/14 17:59	06:45 19:52	05:42 06:19-06:33/14 20:43	05:01 21:26
5	08:21 09:11-09:27/16 16:19	07:49 17:10	06:54 07:35-07:48/13 18:01	06:43 19:54	05:40 06:18-06:33/15 20:44	05:00 21:27
6	08:21 09:12-09:28/16 16:20	07:48 17:11	06:52 07:36-07:47/11 18:02	06:41 19:56	05:39 06:17-06:32/15 20:46	04:59 21:28
7	08:21 09:12-09:28/16 16:22	07:46 17:13	06:49 07:36-07:45/9 18:04	06:39 19:57	05:37 06:14-06:33/19 20:47	04:59 21:29
8	08:20 09:12-09:28/16 16:23	07:44 17:15	06:47 18:06	06:36 19:59	05:35 06:12-06:32/20 20:49	04:58 21:30
9	08:20 09:13-09:29/16 16:24	07:42 16:04-16:10/6 17:17	06:45 18:08	06:34 20:01	05:33 06:12-06:32/20 20:51	04:58 21:31
10	08:19 09:13-09:29/16 16:26	07:41 16:01-16:14/13 17:19	06:43 18:09	06:32 20:02	05:32 06:11-06:30/19 20:52	04:57 21:32
11	08:19 09:13-09:28/15 16:27	07:39 16:00-16:17/17 17:21	06:40 18:11	06:30 20:04	05:30 06:10-06:28/18 20:54	04:57 21:32
12	08:18 09:15-09:29/14 16:28	07:37 15:58-16:18/20 17:22	06:38 18:13	06:27 20:06	05:28 06:10-06:26/16 20:55	04:57 21:33
13	08:17 09:15-09:29/14 16:30	07:35 15:57-16:19/22 17:24	06:36 18:15	06:25 20:07	05:27 06:09-06:25/16 20:57	04:56 21:34
14	08:17 09:16-09:29/13 16:31	07:33 15:56-16:20/24 17:26	06:34 07:05-07:07/2 18:16	06:23 20:09	05:25 06:10-06:26/16 20:59	04:56 21:34
15	08:16 09:17-09:29/12 16:33	07:31 15:56-16:21/25 17:28 08:09-08:13/4	06:31 07:01-07:10/9 18:18	06:21 20:11	05:24 06:10-06:26/16 21:00	04:56 21:35
16	08:15 09:18-09:28/10 16:35	07:29 15:55-16:21/26 17:30 08:06-08:16/10	06:29 07:00-07:12/12 18:20	06:19 20:12	05:22 06:10-06:25/15 21:02	04:56 21:35
17	08:14 09:20-09:28/8 16:36	07:27 15:55-16:22/27 17:32 08:05-08:17/12	06:27 06:58-07:11/13 18:22	06:17 20:14	05:21 06:11-06:25/14 21:03	04:56 21:36
18	08:13 09:23-09:26/3 16:38	07:25 15:55-16:22/27 17:34 08:04-08:18/14	06:24 06:58-07:12/14 18:23	06:14 20:16	05:19 06:12-06:25/13 21:05	04:56 21:36
19	08:12 16:39	07:23 15:54-16:21/27 17:35 08:03-08:19/16	06:22 06:58-07:11/13 18:25	06:12 20:17	05:18 06:12-06:23/11 21:06	04:56 21:37
20	08:11 16:41	07:21 15:54-16:21/27 17:37 07:57-08:18/21	06:20 06:59-07:11/12 18:27 06:51-06:56/5	06:10 20:19	05:16 06:13-06:23/10 21:08	04:56 21:37
21	08:10 16:43	07:19 15:55-16:20/25 17:39 07:55-08:18/23	06:18 06:59-07:09/10 18:28 06:47-06:57/10	06:08 20:21	05:15 06:15-06:21/6 21:09	04:56 21:37
22	08:09 16:44	07:17 15:55-16:20/25 17:41 07:54-08:18/24	06:15 07:01-07:07/6 18:30 06:46-06:58/12	06:06 20:23	05:14 21:10	04:56 21:37
23	08:08 16:46	07:15 15:56-16:19/23 17:43 07:53-08:17/24	06:13 06:46-06:59/13 18:32	06:04 20:24	05:12 21:12	04:56 21:38
24	08:07 16:48	07:13 15:57-16:18/21 17:44 07:53-08:16/23	06:11 06:45-06:58/13 18:33	06:02 20:26	05:11 21:13	04:57 21:38
25	08:05 16:50	07:11 15:59-16:17/18 17:46 07:52-08:14/22	06:08 06:45-06:58/13 18:35	06:00 20:28	05:10 21:14	04:57 21:38
26	08:04 16:51	07:09 16:00-16:14/14 17:48 07:53-08:08/15	06:06 06:46-06:57/11 18:37	05:58 20:29	05:09 21:16	04:57 21:38
27	08:03 16:53	07:07 16:04-16:10/6 07:41-07:43/2 17:50 07:52-08:06/14	06:04 06:46-06:55/9 18:39	05:56 20:31	05:08 21:17	04:58 21:38
28	08:01 16:55	07:05 07:53-08:05/12 17:52 07:38-07:47/9	06:01 18:40	05:54 20:33	05:07 21:18	04:58 21:38
29	08:00 16:57		06:59 19:42	05:52 20:34	05:06 21:20	04:59 21:37
30	07:59 16:59		06:57 19:44	05:50 06:23-06:30/7 20:36	05:05 21:21	04:59 21:37
31	07:57 17:00		06:55 19:45		05:04 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	256	638	271	7	308	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 20B - ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (339)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 21:37	05:36 06:20-06:37/17 21:05	06:26 20:04	07:14 18:55	07:08 15:31-15:43/12 16:49	07:58 08:55-09:11/16 16:09
2	05:01 21:37	05:38 06:20-06:39/19 21:04	06:27 20:02	07:16 18:52	07:09 15:35-15:39/4 16:47	08:00 08:56-09:12/16 16:08
3	05:01 21:36	05:39 06:21-06:41/20 21:02	06:29 19:59	07:17 18:50	07:11 16:45	08:01 08:56-09:12/16 16:08
4	05:02 21:36	05:41 06:22-06:41/19 21:00	06:30 19:57	07:19 18:48	07:13 16:44	08:02 08:57-09:13/16 16:07
5	05:03 21:35	05:42 06:23-06:43/20 20:59	06:32 19:55	07:21 18:46	07:15 16:42	08:04 08:57-09:13/16 16:07
6	05:04 21:35	05:44 06:24-06:42/18 20:57	06:34 19:53	07:22 08:14-08:21/7 18:43	07:17 16:40	08:05 08:58-09:14/16 16:06
7	05:05 21:34	05:45 06:28-06:43/15 20:55	06:35 19:50	07:24 08:11-08:22/11 18:41	07:18 16:38	08:06 08:58-09:14/16 16:06
8	05:06 21:34	05:47 06:28-06:42/14 20:53	06:37 19:48	07:26 08:10-08:23/13 18:39	07:20 16:37	08:07 08:58-09:14/16 16:05
9	05:07 21:33	05:49 06:28-06:43/15 20:52	06:38 19:46	07:28 08:10-08:23/13 18:37	07:22 16:35	08:09 08:59-09:14/15 16:05
10	05:08 21:32	05:50 06:28-06:41/13 20:50	06:40 19:43	07:29 08:09-08:23/14 18:34	07:24 16:33	08:10 09:25-09:28/3 16:05 08:59-09:14/15
11	05:09 21:32	05:52 06:29-06:41/12 20:48	06:42 19:41	07:31 08:09-08:22/13 18:32	07:25 16:32	08:11 09:25-09:31/6 16:05 09:00-09:15/15
12	05:10 21:31	05:53 06:30-06:39/9 20:46	06:43 19:39	07:33 08:30-08:35/5 18:30 08:09-08:22/13	07:27 16:30	08:12 09:25-09:32/7 16:05 09:01-09:15/14
13	05:11 21:30	05:55 06:32-06:37/5 20:44	06:45 19:36	07:34 08:27-08:37/10 18:28 08:10-08:21/11	07:29 16:29	08:13 09:25-09:33/8 16:05 09:01-09:16/15
14	05:12 21:29	05:57 20:42	06:47 19:34	07:36 08:26-08:39/13 18:26 08:12-08:19/7	07:31 16:27	08:14 09:25-09:34/9 16:05 09:02-09:16/14
15	05:13 21:28	05:58 20:40	06:48 19:32	07:38 16:34-16:44/10 18:23 08:25-08:40/15	07:32 16:26	08:15 09:24-09:34/10 16:05 09:02-09:15/13
16	05:14 21:27	06:00 20:38	06:50 07:36-07:44/8 19:29	07:39 16:32-16:47/15 18:21 08:24-08:43/19	07:34 16:25	08:16 09:24-09:35/11 16:05 09:03-09:16/13
17	05:15 21:26	06:01 20:36	06:51 07:34-07:45/11 19:27	07:41 16:30-16:48/18 18:19 08:24-08:46/22	07:36 16:23	08:16 09:25-09:36/11 16:05 09:03-09:16/13
18	05:17 21:25	06:03 20:34	06:53 07:33-07:45/12 19:25	07:43 16:28-16:50/22 18:17 08:24-08:48/24	07:38 16:22	08:17 09:26-09:36/10 16:05 09:04-09:17/13
19	05:18 21:24	06:05 20:32	06:55 07:32-07:45/13 19:23	07:45 16:27-16:51/24 18:15 08:24-08:49/25	07:39 16:21	08:18 09:26-09:37/11 16:05 09:05-09:18/13
20	05:19 21:23	06:06 20:30	06:56 07:31-07:44/13 19:20	07:46 16:26-16:51/25 18:13 08:25-08:49/24	07:41 16:19	08:19 09:26-09:37/11 16:06 09:05-09:18/13
21	05:20 21:21	06:08 20:28	06:58 07:48-07:51/3 19:18 07:32-07:44/12	07:48 16:25-16:51/26 18:11 08:27-08:50/23	07:43 16:18	08:19 09:27-09:38/11 16:06 09:06-09:19/13
22	05:22 06:26-06:30/4 21:20	06:09 20:26	06:59 07:45-07:54/9 19:16 07:33-07:43/10	07:50 16:25-16:51/26 08:30-08:31/1 18:09 08:32-08:49/17	07:44 16:17	08:20 09:27-09:38/11 16:07 09:06-09:18/12
23	05:23 06:24-06:33/9 21:19	06:11 20:23	07:01 07:43-07:54/11 19:13 07:33-07:41/8	07:52 16:24-16:51/27 18:06 08:33-08:48/15	07:46 16:16	08:20 09:28-09:39/11 16:07 09:07-09:20/13
24	05:25 06:23-06:34/11 21:17	06:13 20:21	07:03 07:42-07:55/13 19:11	07:53 16:24-16:51/27 18:04 08:33-08:48/15	07:48 09:00-09:03/3 16:15	08:21 09:28-09:39/11 16:08 09:07-09:20/13
25	05:26 06:22-06:34/12 21:16	06:14 20:19	07:04 07:41-07:54/13 19:09	06:55 15:25-15:51/26 17:02 07:34-07:47/13	07:49 08:58-09:06/8 16:14	08:21 09:28-09:39/11 16:08 09:07-09:20/13
26	05:27 06:22-06:36/14 21:15	06:16 20:17	07:06 07:41-07:54/13 19:06	06:57 15:25-15:51/26 17:00 07:36-07:45/9	07:51 08:56-09:06/10 16:13	08:21 09:29-09:40/11 16:09 09:07-09:20/13
27	05:29 06:21-06:36/15 21:13	06:17 20:15	07:08 07:42-07:54/12 19:04	06:59 15:25-15:50/25 16:58	07:52 08:56-09:08/12 16:12	08:22 09:30-09:41/11 16:10 09:08-09:22/14
28	05:30 06:20-06:36/16 21:12	06:19 20:13	07:09 07:42-07:52/10 19:02	07:00 15:26-15:49/23 16:57	07:54 08:56-09:09/13 16:11	08:22 09:31-09:41/10 16:11 09:09-09:22/13
29	05:32 06:21-06:37/16 21:10	06:21 20:10	07:11 07:44-07:50/6 18:59	07:02 15:26-15:48/22 16:55	07:55 08:56-09:09/13 16:10	08:22 09:32-09:41/9 16:12 09:09-09:23/14
30	05:33 06:20-06:36/16 21:09	06:22 20:08	07:13 18:57	07:04 15:27-15:46/19 16:53	07:57 08:56-09:10/14 16:10	08:22 09:32-09:41/9 16:12 09:09-09:23/14
31	05:35 06:21-06:37/16 21:07	06:24 20:06		07:06 15:29-15:45/16 16:51		08:22 09:33-09:41/8 16:13 09:10-09:24/14
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	129	196	177	729	89	650

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 27B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (334)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:02	06:52	05:48	05:03	05:00	05:36	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:47	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:45	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:49	06:38	07:27	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:51	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:07	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:09	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:57	05:10	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:57	06:46	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:25	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:29	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:27	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:26	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:47	08:21
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	0	0	0	0	0	0	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 28B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (329)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:02	06:52	05:48	05:03	05:00	05:36	06:25	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:42	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40	05:00	05:03	05:42	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:47	06:52	06:41	05:39	04:59	05:04	05:44	06:34	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37	04:59	05:05	05:45	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:06	05:47	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:49	06:38	07:27	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:51	19:46	18:37	16:35	16:05
10	08:19	07:40	06:43	06:32	05:32	04:57	05:07	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:31	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:10	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:56	06:46	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:58	21:34	21:29	20:42	19:34	18:25	16:27	16:05
15	08:16	07:31	06:31	06:21	05:23	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:29	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:20	04:56	05:15	06:01	06:51	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14	05:19	04:56	05:17	06:03	06:53	07:43	07:37	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18	04:56	05:18	06:05	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16	04:56	05:19	06:06	06:56	07:46	07:41	08:18
	16:41	17:37	18:27	20:19	21:07	21:37	21:22	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15	04:56	05:20	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14	04:56	05:22	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:26	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12	04:56	05:23	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02	05:11	04:57	05:25	06:13	07:03	07:53	07:47	08:21
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00	05:10	04:57	05:26	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58	05:09	04:57	05:27	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17	07:08	06:59	07:52	08:21
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07	04:58	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:19	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:58		06:57	05:50	05:05	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	0	0	0	0	0	0	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem
Annahmen für Schattenwurfberechnung

WEA: 29B - ENERCON E-70 E4 2000 71.0 !O! NH: 98,2 m (Ges:133,7 m) (340)

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22	08:53-08:59/6	07:56	08:31-08:40/9	07:03		06:52	07:39-07:40/1	05:48		05:03	05:36-05:46/10
	16:15		17:02		17:53		19:47	07:15-07:27/12	20:38		21:23	
2	08:22	08:53-09:00/7	07:54	08:32-08:38/6	07:00		06:50	07:13-07:27/14	05:46		05:02	05:37-05:46/9
	16:16		17:04		17:55		19:49		20:39		21:24	
3	08:22	08:53-09:01/8	07:52		06:58		06:48	07:10-07:25/15	05:44		05:01	05:38-05:45/7
	16:17		17:06		17:57		19:50		20:41		21:25	
4	08:22	08:52-09:01/9	07:51		06:56		06:45	07:08-07:22/14	05:42		05:01	05:39-05:45/6
	16:18		17:08		17:59		19:52		20:43		21:26	
5	08:21	08:52-09:02/10	07:49		06:54		06:43	07:06-07:20/14	05:40		05:00	05:40-05:44/4
	16:19		17:10		18:01		19:54		20:44		21:27	
6	08:21	08:52-09:03/11	07:48		06:52		06:41	07:07-07:18/11	05:39		04:59	
	16:20		17:11		18:02		19:56		20:46		21:28	
7	08:21	08:52-09:03/11	07:46		06:49		06:39	07:06-07:15/9	05:37		04:59	
	16:22		17:13		18:04		19:57		20:47		21:29	
8	08:20	08:51-09:03/12	07:44		06:47		06:36	07:08-07:13/5	05:35		04:58	
	16:23		17:15		18:06		19:59		20:49		21:30	
9	08:20	08:52-09:04/12	07:42		06:45		06:34		05:33		04:58	
	16:24		17:17		18:08		20:01		20:51		21:31	
10	08:19	08:53-09:05/12	07:41		06:43		06:32		05:32		04:57	
	16:26		17:19		18:09		20:02		20:52		21:32	
11	08:19	08:53-09:05/12	07:39	08:04-08:09/5	06:40		06:30		05:30		04:57	
	16:27	08:48-08:49/1	17:21		18:11		20:04		20:54		21:32	
12	08:18	08:54-09:06/12	07:37	08:02-08:10/8	06:38		06:28		05:28		04:57	
	16:29	08:48-08:52/4	17:22		18:13		20:06		20:55		21:33	
13	08:17	08:55-09:06/11	07:35	08:00-08:10/10	06:36		06:25		05:27		04:56	
	16:30	08:47-08:53/6	17:24		18:15		20:07		20:57		21:34	
14	08:17	08:55-09:06/11	07:33	08:00-08:11/11	06:34		06:23		05:25		04:56	
	16:31	08:46-08:54/8	17:26		18:16		20:09		20:59		21:34	
15	08:16	08:56-09:05/9	07:31	08:00-08:10/10	06:31		06:21		05:24		04:56	
	16:33	08:45-08:55/10	17:28		18:18		20:11		21:00		21:35	
16	08:15	08:58-09:05/7	07:29	08:01-08:10/9	06:29		06:19		05:22		04:56	
	16:35	08:45-08:55/10	17:30	07:54-07:57/3	18:20		20:12		21:02		21:35	
17	08:14	08:59-09:04/5	07:27	08:02-08:08/6	06:27		06:17		05:21		04:56	
	16:36	08:45-08:56/11	17:32	07:52-07:58/6	18:22		20:14		21:03		21:36	
18	08:13	08:45-08:57/12	07:25	07:50-07:59/9	06:24		06:14		05:19		04:56	
	16:38		17:34		18:23		20:16		21:05		21:36	
19	08:12	08:45-08:56/11	07:23	07:49-08:00/11	06:22	06:45-06:49/4	06:12		05:18		04:56	
	16:39		17:35		18:25		20:17		21:06		21:37	
20	08:11	08:45-08:56/11	07:21	07:48-07:59/11	06:20	06:43-06:50/7	06:10		05:16		04:56	
	16:41		17:37		18:27		20:19		21:08		21:37	
21	08:10	08:46-08:57/11	07:19	07:49-07:58/9	06:18	06:40-06:50/10	06:08		05:15	05:42-05:43/1	04:56	
	16:43		17:39		18:28		20:21		21:09		21:37	
22	08:09	08:47-08:57/10	07:17	07:50-07:57/7	06:15	06:39-06:50/11	06:06		05:14	05:41-05:45/4	04:56	
	16:44		17:41		18:30		20:23		21:10		21:37	
23	08:08	08:48-08:55/7	07:15	07:52-07:54/2	06:13	06:36-06:49/13	06:04		05:12	05:40-05:45/5	04:56	
	16:46		17:43		18:32		20:24		21:12		21:38	
24	08:07	08:50-08:54/4	07:13		06:11	06:33-06:47/14	06:02		05:11	05:39-05:46/7	04:57	
	16:48		17:44		18:33		20:26		21:13		21:38	
25	08:05	08:33-08:37/4	07:11		06:08	06:31-06:48/17	06:00		05:10	05:38-05:46/8	04:57	
	16:50		17:46		18:35		20:28		21:14		21:38	
26	08:04	08:31-08:38/7	07:09		06:06	06:30-06:48/18	05:58		05:09	05:37-05:47/10	04:57	
	16:51		17:48		18:37		20:29		21:16		21:38	
27	08:03	08:30-08:39/9	07:07		06:04	06:29-06:48/19	05:56		05:08	05:36-05:47/11	04:58	
	16:53		17:50		18:39		20:31		21:17		21:38	
28	08:01	08:29-08:39/10	07:05		06:01	06:30-06:48/18	05:54		05:07	05:35-05:47/12	04:58	
	16:55		17:52		18:40		20:33		21:18		21:38	
29	08:00	08:30-08:40/10			06:59	07:31-07:47/16	05:52		05:06	05:36-05:47/11	04:59	
	16:57				19:42	07:22-07:26/4	20:34		21:20		21:37	
30	07:59	08:29-08:40/11			06:57	07:34-07:45/11	05:50		05:05	05:36-05:46/10	04:59	
	16:59				19:44	07:19-07:26/7	20:36		21:21		21:37	
31	07:57	08:30-08:39/9			06:55	07:35-07:44/9			05:04	05:36-05:46/10		
	17:00				19:45	07:17-07:27/10			21:22			
Sonnenscheinstunden	260		278		367		416		484		498	
Anzahl Minuten mit Schatten	341		132		188		95		89		36	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 29B - ENERCON E-70 E4 2000 71.0 !O! NH: 98,2 m (Ges:133,7 m) (340)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00	05:36	06:26	07:14	07:08	07:58 08:35-08:47/12
	21:37	21:05	20:04	18:55	16:49	16:09 08:30-08:31/1
2	05:01	05:38	06:27	07:16	07:09	08:00 08:36-08:48/12
	21:37	21:04	20:02	18:52	16:47	16:08
3	05:01	05:39	06:29	07:17	07:11	08:01 08:36-08:48/12
	21:36	21:02	19:59	18:50	16:45	16:08
4	05:02	05:41	06:30 07:05-07:10/5	07:19	07:13	08:02 08:37-08:48/11
	21:36	21:00	19:57	18:48	16:44	16:07
5	05:03	05:42	06:32 07:04-07:12/8	07:21	07:15	08:04 08:37-08:48/11
	21:35	20:59	19:55	18:46	16:42	16:07
6	05:04	05:44	06:34 07:02-07:13/11	07:22	07:17	08:05 08:37-08:48/11
	21:35	20:57	19:53	18:43	16:40	16:06
7	05:05 05:47-05:50/3	05:45	06:35 07:02-07:15/13	07:24	07:18	08:06 08:39-08:49/10
	21:34	20:55	19:50	18:41	16:38	16:06
8	05:06 05:46-05:51/5	05:47	06:37 07:02-07:16/14	07:26	07:20	08:07 08:40-08:49/9
	21:34	20:53	19:48	18:39	16:37	16:05
9	05:07 05:45-05:52/7	05:49	06:38 07:04-07:19/15	07:28	07:22 08:03-08:09/6	08:09 08:41-08:49/8
	21:33	20:52	19:46	18:37	16:35	16:05
10	05:08 05:45-05:53/8	05:50	06:40 07:06-07:20/14	07:29	07:24 08:02-08:10/8	08:10 08:42-08:49/7
	21:32	20:50	19:43	18:34	16:33	16:05
11	05:09 05:45-05:54/9	05:52	06:42 07:07-07:19/12	07:31	07:25 08:01-08:11/10	08:11 08:44-08:50/6
	21:32	20:48	19:41	18:32	16:32	16:05
12	05:10 05:44-05:54/10	05:53	06:43 07:27-07:36/9	07:33	07:27 08:01-08:12/11	08:12 08:45-08:50/5
	21:31	20:46	19:39 07:09-07:19/10	18:30	16:30	16:05
13	05:11 05:44-05:55/11	05:55	06:45 07:25-07:36/11	07:34	07:29 08:01-08:12/11	08:13 08:46-08:50/4
	21:30	20:44	19:36 07:10-07:18/8	18:28	16:29	16:05
14	05:12 05:44-05:55/11	05:57	06:47 07:22-07:37/15	07:36	07:31 08:01-08:11/10	08:14 08:47-08:50/3
	21:29	20:42	19:34 07:12-07:17/5	18:26	16:27	16:05
15	05:13 05:44-05:55/11	05:58	06:48 07:19-07:37/18	07:38	07:32 08:02-08:11/9	08:15 08:47-08:49/2
	21:28	20:40	19:32	18:23	16:26	16:05
16	05:14 05:44-05:55/11	06:00	06:50 07:18-07:37/19	07:39	07:34 08:04-08:11/7	08:16 08:48-08:49/1
	21:27	20:38	19:29	18:21	16:25	16:05
17	05:15 05:45-05:55/10	06:01	06:51 07:18-07:37/19	07:41	07:36 08:06-08:10/4	08:16 08:49-08:50/1
	21:26	20:36	19:27	18:19	16:23	16:05
18	05:17 05:47-05:56/9	06:03	06:53 07:18-07:35/17	07:43	07:38 08:24-08:28/4	08:17
	21:25	20:34	19:25	18:17	16:22	16:05
19	05:18 05:48-05:56/8	06:05	06:55 07:20-07:35/15	07:45 08:22-08:27/5	07:39 08:23-08:30/7	08:18
	21:24	20:32	19:23	18:15	16:21	16:06
20	05:19 05:49-05:55/6	06:06	06:56 07:21-07:35/14	07:46 08:21-08:29/8	07:41 08:22-08:32/10	08:19
	21:23	20:30	19:20	18:13	16:19	16:06
21	05:20 05:50-05:55/5	06:08	06:58 07:24-07:35/11	07:48 08:20-08:30/10	07:43 08:21-08:32/11	08:19
	21:21	20:28	19:18	18:11	16:18	16:06
22	05:22 05:51-05:54/3	06:09	06:59 07:25-07:35/10	07:50 08:18-08:29/11	07:44 08:21-08:32/11	08:20
	21:20	20:26	19:16	18:09	16:17	16:07
23	05:23	06:11	07:01 07:26-07:34/8	07:52 08:18-08:29/11	07:46 08:22-08:33/11	08:20
	21:19	20:23	19:13	18:06	16:16	16:07
24	05:25	06:13	07:03 07:28-07:33/5	07:53 08:20-08:29/9	07:48 08:22-08:34/12	08:21
	21:17	20:21	19:11	18:04	16:15	16:08
25	05:26	06:14	07:04 07:29-07:30/1	06:55 07:31-07:38/7	07:49 08:38-08:42/4	08:21
	21:16	20:19	19:09	17:02 07:22-07:28/6	16:14 08:23-08:34/11	16:08
26	05:27	06:16	07:06	06:57 07:30-07:39/9	07:51 08:36-08:43/7	08:21
	21:15	20:17	19:06	17:00 07:24-07:25/1	16:13 08:23-08:34/11	16:09
27	05:29	06:17	07:08	06:59 07:30-07:40/10	07:52 08:35-08:44/9	08:22 08:54-08:55/1
	21:13	20:15	19:04	16:58	16:12 08:24-08:34/10	16:10
28	05:30	06:19	07:09	07:00 07:29-07:40/11	07:54 08:36-08:46/10	08:22 08:54-08:56/2
	21:12	20:13	19:02	16:57	16:11 08:26-08:34/8	16:11
29	05:32	06:21	07:11	07:02 07:30-07:40/10	07:55 08:35-08:46/11	08:22 08:54-08:57/3
	21:10	20:10	18:59	16:55	16:10 08:27-08:33/6	16:12
30	05:33	06:22	07:13	07:04 07:32-07:39/7	07:57 08:35-08:47/12	08:22 08:54-08:58/4
	21:09	20:08	18:57	16:53	16:10 08:29-08:33/4	16:12
31	05:35	06:24		07:06 07:33-07:37/4		08:22 08:54-08:59/5
	21:07	20:06		16:51		16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	127	0	287	119	245	141

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 2B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (323)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48 06:13-06:40/27	05:03 05:31-05:36/5	05:00 05:31-05:44/13	05:36 06:20-06:34/14	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46 06:11-06:40/29	05:02 05:31-05:37/6	05:01 05:31-05:44/13	05:38 06:19-06:34/15	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44 06:10-06:40/30	05:01 05:30-05:37/7	05:01 05:32-05:44/12	05:39 06:19-06:35/16	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42 06:09-06:39/30	05:01 05:29-05:37/8	05:02 05:33-05:45/12	05:41 06:38-06:41/3	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00 06:18-06:35/17	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40 06:08-06:38/30	05:00 05:29-05:38/9	05:03 05:33-05:44/11	05:42 06:36-06:45/9	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59 06:18-06:35/17	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39 06:08-06:37/29	04:59 05:28-05:38/10	05:04 05:34-05:44/10	05:44 06:18-06:46/28	06:34	07:22	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37 06:08-06:36/28	04:59 05:28-05:39/11	05:05 05:35-05:45/10	05:45 06:18-06:48/30	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35 06:26-06:34/8	04:58 05:27-05:39/12	05:05 05:36-05:45/9	05:47 06:18-06:48/30	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49 06:08-06:25/17	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33 06:08-06:25/17	04:58 05:27-05:39/12	05:06 05:37-05:45/8	05:49 06:19-06:49/30	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32 06:08-06:24/16	04:57 05:27-05:40/13	05:07 05:38-05:45/7	05:50 06:19-06:49/30	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30 06:08-06:23/15	04:57 05:26-05:39/13	05:08 05:39-05:44/5	05:52 06:21-06:49/28	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28 06:09-06:23/14	04:56 05:26-05:40/14	05:10 05:40-05:44/4	05:53 06:30-06:49/19	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46 06:22-06:29/7	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27 06:10-06:22/12	04:56 05:27-05:40/13	05:11 05:41-05:43/2	05:55 06:30-06:49/19	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25 06:12-06:21/9	04:56 05:27-05:40/13	05:12	05:56 06:30-06:48/18	06:46	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:25	16:27	16:05
15	08:16	07:31	06:31	06:21	05:23 06:14-06:19/5	04:56 05:27-05:41/14	05:13	05:58 06:51-06:57/6	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40 06:31-06:48/17	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19 06:44-06:53/9	05:22	04:56 05:28-05:41/13	05:14	06:00 06:48-06:58/10	06:50	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:36	21:27	20:38 06:31-06:46/15	19:29	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17 06:42-06:55/13	05:20	04:56 05:28-05:41/13	05:15	06:01 06:47-07:00/13	06:51	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36 06:32-06:45/13	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14 06:41-06:56/15	05:19	04:56 05:28-05:41/13	05:17	06:03 06:45-07:00/15	06:53	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34 06:33-06:43/10	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12 06:39-06:56/17	05:18	04:56 05:28-05:41/13	05:18	06:05 06:45-07:01/16	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06	21:37	21:24	20:32 06:36-06:40/4	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10 06:38-06:56/18	05:16	04:56 05:28-05:41/13	05:19	06:06 06:43-07:01/18	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08 06:38-06:56/18	05:15	04:56 05:28-05:41/13	05:20	06:08 06:43-07:01/18	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06 06:38-06:56/18	05:14	04:56 05:29-05:42/13	05:22	06:09 06:43-07:01/18	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	21:38	21:20	20:26	19:16	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04 06:38-06:55/17	05:12	04:56 05:29-05:42/13	05:23	06:11 06:43-07:01/18	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02 06:38-06:55/17	05:11	04:57 05:29-05:42/13	05:24	06:13 06:43-06:59/16	07:03	07:53	07:48	08:21
	16:48	17:44	18:33	20:26 06:29-06:35/6	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00 06:38-06:54/16	05:10	04:57 05:29-05:42/13	05:26	06:14 06:44-06:59/15	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28 06:26-06:37/11	21:15	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58 06:39-06:52/13	05:09	04:57 05:30-05:43/13	05:27	06:16 06:44-06:57/13	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29 06:24-06:38/14	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56 06:42-06:51/9	05:08	04:58 05:29-05:43/14	05:29	06:17 06:46-06:55/9	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31 06:24-06:40/16	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54 06:44-06:48/4	05:07	04:58 05:30-05:44/14	05:30	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33 06:23-06:40/17	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52 06:22-06:40/18	05:06	04:59 05:30-05:43/13	05:32 06:23-06:31/8	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50 06:22-06:40/18	05:05 05:33-05:34/1	04:59 05:30-05:44/14	05:33 06:21-06:32/11	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04 05:32-05:35/3		05:35 06:20-06:33/13	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	284	320	358	148	574	0	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 5B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (324)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48 06:39-07:11/32	05:03 05:52-06:44/52	05:00 05:53-06:52/59	05:36 06:47-07:22/35	06:26	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:06	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46 06:38-07:11/33	05:02 05:52-06:45/53	05:01 05:53-06:51/58	05:38 06:46-07:22/36	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:53	06:58	06:48	05:44 06:38-07:12/34	05:01 05:51-06:45/54	05:01 05:54-06:52/58	05:39 06:47-07:22/35	06:29	07:18	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42 06:38-07:12/34	05:01 05:50-06:45/55	05:02 05:55-06:52/57	05:41 06:46-07:22/36	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:01	19:57	18:48	16:44	16:07
5	08:22	07:49	06:54	06:43	05:40 06:37-07:12/35	05:00 05:50-06:46/56	05:03 05:54-06:51/57	05:42 06:47-07:23/36	06:32	07:21	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:36	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52	06:41	05:39 06:36-07:12/36	04:59 05:49-06:45/56	05:04 05:55-06:52/57	05:44 06:46-07:22/36	06:34	07:23	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37 06:37-07:13/36	04:59 05:49-06:46/57	05:05 05:56-06:52/56	05:45 06:47-07:22/35	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:48	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35 06:36-07:12/36	04:58 05:49-06:46/57	05:06 05:57-06:52/55	05:47 06:46-07:22/36	06:37	07:26	07:20	08:08
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33 06:36-07:12/36	04:58 05:49-06:46/57	05:06 05:58-06:52/54	05:49 06:47-07:22/35	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32 06:36-07:12/36	04:57 05:49-06:47/58	05:07 05:59-06:52/53	05:50 06:47-07:21/34	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30 06:36-07:11/35	04:57 05:48-06:46/58	05:08 06:00-06:52/52	05:52 06:48-07:20/32	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28 06:37-07:11/34	04:56 05:48-06:47/59	05:10 06:01-06:52/51	05:53 06:48-07:19/31	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:56	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27 06:37-07:11/34	04:56 05:49-06:47/58	05:11 06:02-06:52/50	05:55 06:49-07:19/30	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33	06:34	06:23	05:25 06:37-07:11/34	04:56 05:49-06:48/59	05:12 06:16-06:52/36	05:57 06:49-07:17/28	06:47	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29 06:04-06:13/9	20:42	19:34	18:26	16:27	16:05
15	08:16	07:31	06:31	06:21	05:24 06:38-07:10/32	04:56 05:49-06:48/59	05:13 06:16-06:52/36	05:58 06:51-07:16/25	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19	05:22 06:38-07:09/31	04:56 05:49-06:48/59	05:14 06:16-06:51/35	06:00 06:51-07:14/23	06:50	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02 06:19-06:30/11	21:36	21:27	20:38	19:30	18:21	16:25	16:05
17	08:14	07:27	06:27	06:17	05:21 06:39-07:09/30	04:56 05:49-06:48/59	05:15 07:00-07:06/6	06:01 06:53-07:13/20	06:51	07:41	07:36	08:16
	16:36	17:32	18:22	20:14	21:03 06:16-06:33/17	21:36	21:26 06:17-06:51/34	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:25	06:14	05:19 06:40-07:09/29	04:56 05:49-06:49/60	05:17 06:57-07:09/12	06:03 06:55-07:10/15	06:53	07:43	07:38	08:17
	16:38	17:34	18:23	20:16	21:05 06:15-06:35/20	21:36	21:25 06:17-06:50/33	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12	05:18 06:40-07:07/27	04:56 05:49-06:49/60	05:18 06:56-07:12/16	06:05 07:00-07:05/5	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:18	21:06 06:13-06:35/22	21:37	21:24 06:19-06:51/32	20:32	19:23	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10	05:16 06:41-07:07/26	04:56 05:50-06:49/59	05:19 06:55-07:13/18	06:06	06:56	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08 06:12-06:37/25	21:37	21:23 06:19-06:50/31	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08	05:15 06:42-07:06/24	04:56 05:50-06:49/59	05:20 06:53-07:14/21	06:08	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09 06:11-06:38/27	21:37	21:21 06:20-06:49/29	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06	05:14 06:43-07:05/22	04:56 05:50-06:49/59	05:21 06:52-07:15/23	06:09	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10 06:10-06:39/29	21:38	21:20 06:20-06:48/28	20:26	19:16	18:09	16:17	16:07
23	08:08	07:15	06:13	06:04	05:12 06:44-07:04/20	04:56 05:51-06:50/59	05:23 06:52-07:17/25	06:11	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12 06:10-06:40/30	21:38	21:19 06:22-06:48/26	20:24	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02 06:52-07:00/8	05:11 06:45-07:02/17	04:57 05:50-06:50/60	05:25 06:51-07:17/26	06:13	07:03	07:53	07:48	08:21
	16:48	17:44	18:34	20:26	21:13 06:08-06:40/32	21:38	21:18 06:23-06:47/24	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00 06:48-07:03/15	05:10 06:47-07:00/13	04:57 05:50-06:50/60	05:26 06:50-07:18/28	06:14	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:15 06:08-06:41/33	21:38	21:16 06:24-06:45/21	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58 06:45-07:06/21	05:09 06:49-06:58/9	04:57 05:51-06:50/59	05:27 06:50-07:19/29	06:16	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16 06:08-06:41/33	21:38	21:15 06:26-06:44/18	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56 06:44-07:08/24	05:08 06:07-06:42/35	04:58 05:51-06:50/59	05:29 06:49-07:20/31	06:17	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13 06:28-06:42/14	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54 06:43-07:09/26	05:07 06:08-06:43/35	04:58 05:52-06:51/59	05:30 06:48-07:20/32	06:19	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12 06:31-06:38/7	20:13	19:02	16:57	16:11	16:11
29	08:00		06:59	05:52 06:41-07:10/29	05:06 06:07-06:43/36	04:59 05:52-06:50/58	05:32 06:48-07:21/33	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20 05:57-06:03/6	21:38	21:10	20:11	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50 06:40-07:10/30	05:05 06:07-06:44/37	04:59 05:53-06:51/58	05:33 06:48-07:21/33	06:22	07:13	07:04	07:57	08:22
	16:58		19:44	20:36	21:21 05:55-06:05/10	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04 05:53-06:44/51		05:35 06:47-07:21/34	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	153	1254	1735	1497	563	0	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 6B - NEG MICON NM72-1500C 1500-400 72.0 IOI NH: 98,0 m (Ges:134,0 m) (333)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar		März		April		Mai		Juni	
1	08:22	07:56		07:03		06:52	07:25-07:45/20	05:48	06:12-06:20/8	05:03	05:44-05:45/1
	16:15	17:02		17:53		19:47		20:38		21:23	05:31-05:42/11
2	08:22	07:54		07:00		06:50	07:25-07:46/21	05:46	06:11-06:19/8	05:02	05:31-05:43/12
	16:16	17:04		17:55		19:49		20:39		21:24	
3	08:22	07:52		06:58		06:48	07:24-07:45/21	05:44	06:12-06:19/7	05:01	05:30-05:42/12
	16:17	17:06		17:57		19:50		20:41	06:09-06:10/1	21:25	
4	08:22	07:51		06:56		06:45	07:24-07:45/21	05:42	06:13-06:17/4	05:01	05:30-05:42/12
	16:18	17:08		17:59		19:52		20:43	06:07-06:11/4	21:26	
5	08:21	07:49		06:54		06:43	07:24-07:44/20	05:40	06:05-06:11/6	05:00	05:29-05:42/13
	16:19	17:09		18:01		19:54		20:44		21:27	
6	08:21	07:48		06:52		06:41	07:25-07:44/19	05:39	06:03-06:12/9	04:59	05:28-05:42/14
	16:20	17:11		18:02		19:56		20:46		21:28	
7	08:21	07:46		06:49		06:39	07:25-07:42/17	05:37	06:02-06:14/12	04:59	05:33-05:42/9
	16:22	17:13		18:04		19:57		20:48		21:29	05:28-05:32/4
8	08:20	07:44		06:47	07:19-07:25/6	06:36	07:26-07:40/14	05:35	06:00-06:14/14	04:58	05:34-05:42/8
	16:23	17:15		18:06		19:59		20:49		21:30	05:28-05:33/5
9	08:20	07:42		06:45	07:16-07:28/12	06:34	07:28-07:38/10	05:33	05:59-06:15/16	04:58	05:34-05:41/7
	16:24	17:17		18:08		20:01		20:51		21:31	05:27-05:32/5
10	08:19	07:41		06:43	07:14-07:30/16	06:32		05:32	05:57-06:15/18	04:57	05:35-05:41/6
	16:26	17:19		18:09		20:02		20:52		21:32	05:27-05:33/6
11	08:19	07:39		06:40	07:12-07:30/18	06:30		05:30	05:55-06:15/20	04:57	05:36-05:41/5
	16:27	17:21		18:11		20:04		20:54		21:32	05:27-05:33/6
12	08:18	07:37		06:38	07:11-07:31/20	06:27		05:28	05:55-06:15/20	04:56	05:36-05:40/4
	16:28	17:22		18:13		20:06		20:56		21:33	05:26-05:32/6
13	08:17	07:35	08:00-08:02/2	06:36	07:11-07:31/20	06:25		05:27	05:55-06:15/20	04:56	05:38-05:40/2
	16:30	17:24		18:15		20:07		20:57		21:34	05:26-05:32/6
14	08:17	07:33	07:58-08:02/4	06:34	07:10-07:31/21	06:23		05:25	05:57-06:15/18	04:56	05:26-05:32/6
	16:31	17:26		18:16		20:09		20:59		21:34	
15	08:16	07:31	07:56-08:02/6	06:31	07:10-07:31/21	06:21		05:24	06:00-06:15/15	04:56	05:26-05:32/6
	16:33	17:28		18:18		20:11		21:00		21:35	
16	08:15	07:29	07:55-08:01/6	06:29	07:03-07:30/27	06:19		05:22	06:00-06:14/14	04:56	05:26-05:32/6
	16:35	17:30		18:20		20:12		21:02		21:36	
17	08:14	07:27		06:27	06:59-07:29/30	06:17		05:21	06:01-06:14/13	04:56	05:26-05:32/6
	16:36	17:32		18:22		20:14		21:03		21:36	
18	08:13	07:25		06:24	06:58-07:28/30	06:14		05:19	06:02-06:13/11	04:56	05:26-05:32/6
	16:38	17:33		18:23		20:16		21:05	05:46-05:47/1	21:36	
19	08:12	07:23		06:22	06:56-07:26/30	06:12		05:18	06:02-06:12/10	04:56	05:26-05:32/6
	16:39	17:35		18:25		20:18		21:06	05:44-05:48/4	21:37	
20	08:11	07:21		06:20	06:55-07:23/28	06:10		05:16	06:04-06:10/6	04:56	05:26-05:31/5
	16:41	17:37		18:27		20:19		21:08	05:43-05:49/6	21:37	
21	08:10	07:19		06:18	06:54-07:16/22	06:08		05:15	05:42-05:49/7	04:56	05:26-05:31/5
	16:43	17:39		18:28		20:21		21:09		21:37	
22	08:09	07:17		06:15	06:54-07:16/22	06:06		05:14	05:41-05:50/9	04:56	05:27-05:32/5
	16:44	17:41		18:30		20:23		21:10		21:38	
23	08:08	07:15		06:13	06:54-07:16/22	06:04		05:12	05:40-05:50/10	04:56	05:27-05:33/6
	16:46	17:43		18:32		20:24		21:12		21:38	
24	08:07	07:13		06:11	06:53-07:15/22	06:02		05:11	05:39-05:50/11	04:57	05:27-05:33/6
	16:48	17:44		18:33		20:26		21:13		21:38	
25	08:05	07:11		06:08	06:53-07:15/22	06:00		05:10	05:38-05:51/13	04:57	05:28-05:34/6
	16:50	17:46		18:35		20:28		21:15		21:38	
26	08:04	07:09		06:06	06:54-07:14/20	05:58		05:09	05:37-05:50/13	04:57	05:28-05:34/6
	16:51	17:48		18:37		20:29		21:16		21:38	
27	08:03	07:07		06:04	06:54-07:12/18	05:56		05:08	05:36-05:50/14	04:58	05:28-05:34/6
	16:53	17:50		18:39		20:31		21:17		21:38	
28	08:01	07:05		06:01	06:55-07:11/16	05:54	06:18-06:20/2	05:07	05:35-05:50/15	04:58	05:29-05:35/6
	16:55	17:52		18:40	06:32-06:41/9	20:33		21:18		21:38	
29	08:00			06:59	07:57-08:09/12	05:52	06:16-06:21/5	05:06	05:34-05:49/15	04:59	05:29-05:35/6
	16:57			19:42	07:30-07:43/13	20:34		21:20		21:38	
30	07:59			06:57	08:00-08:03/3	05:50	06:14-06:21/7	05:05	05:33-05:48/15	04:59	05:41-05:44/3
	16:58			19:44	07:27-07:44/17	20:36		21:21		21:37	05:30-05:36/6
31	07:57			06:55	07:26-07:45/19			05:04	05:32-05:47/15		
	17:00			19:45				21:22			
Sonnenscheinstunden	260	278		367		416		484		498	
Anzahl Minuten mit Schatten		0	18		516		177		402		256

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 6B - NEG MICON NM72-1500C 1500-400 72.0 IOI NH: 98,0 m (Ges:134,0 m) (333)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November	Dezember
1	05:00	05:41-05:45/4	05:36	06:05-06:26/21	06:26		07:14	07:50-08:10/20	07:08	07:58
	21:37	05:31-05:37/6	21:06		20:04		18:55		16:49	16:09
2	05:01	05:40-05:45/5	05:38	06:06-06:25/19	06:27		07:16	07:51-08:09/18	07:09	08:00
	21:37	05:31-05:37/6	21:04		20:02		18:52		16:47	16:08
3	05:01	05:40-05:46/6	05:39	06:08-06:25/17	06:29	07:26-07:36/10	07:18	07:52-08:08/16	07:11	08:01
	21:36	05:32-05:37/5	21:02		19:59		18:50		16:45	16:08
4	05:02	05:40-05:47/7	05:41	06:09-06:24/15	06:30	07:23-07:37/14	07:19	07:52-08:06/14	07:13	08:02
	21:36	05:33-05:38/5	21:00		19:57		18:48		16:44	16:07
5	05:03	05:34-05:47/13	05:42	06:11-06:24/13	06:32	07:22-07:39/17	07:21	07:54-08:04/10	07:15	08:04
	21:36		20:59		19:55		18:46		16:42	16:07
6	05:04	05:39-05:48/9	05:44	06:12-06:23/11	06:34	07:20-07:39/19	07:23		07:17	08:05
	21:35	05:34-05:38/4	20:57		19:53		18:43		16:40	16:06
7	05:05	05:35-05:48/13	05:45	06:14-06:21/7	06:35	07:19-07:39/20	07:24		07:18	08:06
	21:34		20:55		19:50		18:41		16:38	16:06
8	05:06	05:36-05:49/13	05:47	06:15-06:20/5	06:37	07:18-07:39/21	07:26		07:20	08:08
	21:34		20:53		19:48		18:39		16:37	16:05
9	05:06	05:37-05:49/12	05:49	06:22-06:27/5	06:38	07:18-07:39/21	07:28		07:22	08:09
	21:33		20:52	06:17-06:20/3	19:46		18:37		16:35	16:05
10	05:07	05:38-05:50/12	05:50	06:20-06:28/8	06:40	07:18-07:39/21	07:29		07:24	08:10
	21:32		20:50	06:18-06:19/1	19:43		18:34		16:33	16:05
11	05:08	05:39-05:50/11	05:52	06:20-06:29/9	06:42	07:18-07:38/20	07:31		07:25	08:11
	21:32		20:48		19:41		18:32		16:32	16:05
12	05:10	05:51-05:55/4	05:53	06:21-06:29/8	06:43	07:18-07:37/19	07:33		07:27	08:12
	21:31	05:40-05:50/10	20:46		19:39		18:30		16:30	16:05
13	05:11	05:41-05:56/15	05:55	06:23-06:29/6	06:45	07:18-07:35/17	07:34		07:29	08:13
	21:30		20:44		19:36		18:28		16:29	16:05
14	05:12	05:42-05:57/15	05:57	06:24-06:28/4	06:47	07:48-07:59/11	07:36		07:31	08:14
	21:29		20:42		19:34	07:20-07:34/14	18:26		16:27	16:05
15	05:13	05:43-05:58/15	05:58	06:26-06:27/1	06:48	07:45-08:00/15	07:38		07:32	08:15
	21:28		20:40		19:32	07:21-07:31/10	18:23		16:26	16:05
16	05:14	05:44-05:58/14	06:00		06:50	07:43-08:01/18	07:39		07:34	08:16
	21:27		20:38		19:29		18:21		16:25	16:05
17	05:15	05:45-05:59/14	06:01		06:51	07:42-08:02/20	07:41		07:36	08:16
	21:26		20:36		19:27		18:19		16:23	16:05
18	05:17	05:46-05:59/13	06:03		06:53	07:41-08:02/21	07:43		07:38	08:17
	21:25		20:34		19:25		18:17		16:22	16:05
19	05:18	05:48-06:00/12	06:05		06:55	07:40-08:03/23	07:45		07:39	08:18
	21:24		20:32		19:23		18:15		16:21	16:05
20	05:19	05:49-06:00/11	06:06		06:56	07:39-08:02/23	07:46		07:41	08:19
	21:23		20:30		19:20		18:13		16:19	16:06
21	05:20	05:50-06:00/10	06:08		06:58	07:39-08:02/23	07:48		07:43	08:19
	21:21		20:28		19:18		18:11		16:18	16:06
22	05:22	05:51-05:59/8	06:09		06:59	07:39-08:02/23	07:50		07:44	08:20
	21:20		20:26		19:16		18:09		16:17	16:07
23	05:23	06:16-06:19/3	06:11		07:01	07:39-08:07/28	07:52		07:46	08:20
	21:19	05:53-06:00/7	20:24		19:13		18:06		16:16	16:07
24	05:25	06:14-06:22/8	06:13		07:03	07:40-08:10/30	07:53		07:48	08:21
	21:17	05:54-05:59/5	20:21		19:11		18:04		16:15	16:08
25	05:26	06:12-06:23/11	06:14		07:04	07:40-08:10/30	06:55	07:27-07:28/1	07:49	08:21
	21:16	05:55-05:58/3	20:19		19:09		17:02		16:14	16:08
26	05:27	06:12-06:24/12	06:16		07:06	07:41-08:11/30	06:57	07:24-07:30/6	07:51	08:21
	21:15		20:17		19:06		17:00		16:13	16:09
27	05:29	06:11-06:25/14	06:17		07:08	07:44-08:12/28	06:59	07:26-07:31/5	07:52	08:22
	21:13		20:15		19:04		16:58		16:12	16:10
28	05:30	06:10-06:25/15	06:19		07:09	07:51-08:11/20	07:00	07:28-07:32/4	07:54	08:22
	21:12		20:13		19:02		16:57		16:11	16:11
29	05:32	06:09-06:26/17	06:21		07:11	07:51-08:11/20	07:02	07:30-07:31/1	07:55	08:22
	21:10		20:11		18:59		16:55		16:10	16:11
30	05:33	06:06-06:26/20	06:22		07:13	07:51-08:11/20	07:04		07:57	08:22
	21:09		20:08		18:57		16:53		16:10	16:12
31	05:35	06:06-06:25/19	06:24				07:06			08:22
	21:07		20:06				16:51			16:13
Sonnenscheinstunden	501		453		381		332		267	245
Anzahl Minuten mit Schatten	406		153		606		95		0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** 9B - ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (325)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:02	06:52	05:48 06:51-07:18/27	05:03	05:00	05:36	06:25	07:14	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46 06:51-07:17/26	05:02	05:01	05:38	06:27	07:16	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44 06:52-07:16/24	05:01	05:01	05:39	06:29	07:17	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42 06:54-07:15/21	05:01	05:02	05:41	06:30	07:19	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54	06:43	05:40 06:55-07:14/19	05:00	05:03	05:42 07:11-07:17/6	06:32	07:21	07:15	08:04
	16:19	17:09	18:00	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:06
6	08:21	07:47	06:52	06:41	05:38 06:56-07:11/15	04:59	05:04	05:44 07:07-07:20/13	06:34	07:22	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49	06:39	05:37 06:59-07:10/11	04:59	05:05	05:45 07:06-07:22/16	06:35	07:24	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47	06:36	05:35	04:58	05:05	05:47 07:04-07:23/19	06:37	07:26	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45	06:34	05:33	04:58	05:06	05:49 07:02-07:24/22	06:38	07:27	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:51	19:46	18:36	16:35	16:05
10	08:19	07:41	06:43	06:32	05:32	04:57	05:07	05:50 07:01-07:26/25	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40	06:30	05:30	04:57	05:08	05:52 07:00-07:26/26	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38	06:27	05:28	04:56	05:10	05:53 06:59-07:27/28	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36	06:25	05:27	04:56	05:11	05:55 06:58-07:27/29	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34	06:23	05:25	04:56	05:12	05:56 06:58-07:28/30	06:46	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:25	16:27	16:04
15	08:16	07:31	06:31	06:21 07:04-07:13/9	05:23	04:56	05:13	05:58 06:57-07:27/30	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29	06:19 07:01-07:16/15	05:22	04:56	05:14	06:00 06:57-07:28/31	06:50	07:39	07:34	08:16
	16:34	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:29	18:21	16:24	16:05
17	08:14	07:27	06:27	06:16 06:58-07:18/20	05:20	04:56	05:15	06:01 06:57-07:28/31	06:51	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24	06:14 06:56-07:18/22	05:19	04:56	05:17	06:03 06:57-07:27/30	06:53	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22	06:12 06:54-07:19/25	05:18	04:56	05:18	06:04 06:57-07:28/31	06:55	07:45	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20	06:10 06:53-07:20/27	05:16	04:56	05:19	06:06 06:57-07:27/30	06:56	07:46	07:41	08:18
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18	06:08 06:52-07:20/28	05:15	04:56	05:20	06:08 06:57-07:26/29	06:58	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15	06:06 06:52-07:21/29	05:14	04:56	05:22	06:09 06:57-07:25/28	06:59	07:50	07:44	08:20
	16:44	17:41	18:30	20:22	21:10	21:37	21:20	20:26	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13	06:04 06:51-07:21/30	05:12	04:56	05:23	06:11 06:58-07:25/27	07:01	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11	06:02 06:50-07:21/31	05:11	04:57	05:24	06:13 06:58-07:23/25	07:03	07:53	07:47	08:21
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08	06:00 06:50-07:21/31	05:10	04:57	05:26	06:14 07:00-07:22/22	07:04	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:08	17:02	16:14	16:08
26	08:04	07:09	06:06	05:58 06:50-07:21/31	05:09	04:57	05:27	06:16 07:00-07:19/19	07:06	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56 06:50-07:20/30	05:08	04:58	05:29	06:17 07:03-07:18/15	07:08	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54 06:51-07:21/30	05:07	04:58	05:30	06:19 07:05-07:13/8	07:09	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52 06:51-07:20/29	05:06	04:59	05:32	06:21	07:11	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50 06:51-07:19/28	05:05	04:59	05:33	06:22	07:12	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	0	415	143	0	0	570	0	0	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** SAB W1 - VESTAS V162-5.6MW 5600 162.0 IO! NH: 169,0 m (Ges:250,0 m) (318)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22 16:15	07:56 17:02	07:02 17:53	06:52 19:47	05:48 20:38	05:03 05:42-05:55/13 21:23	05:00 05:40-06:07/27 21:37	05:36 21:05	06:25 20:04	07:14 17:49-18:12/23 18:55	07:08 16:49	07:58 16:09
2	08:22 16:16	07:54 17:04	07:00 17:55	06:50 19:49	05:46 20:39	05:02 05:41-05:57/16 21:24	05:01 05:41-06:08/27 21:37	05:38 21:04	06:27 20:02	07:16 17:49-18:12/23 18:52	07:09 16:47	08:00 16:08
3	08:22 16:17	07:52 17:06	06:58 17:57	06:48 19:50	05:44 20:41	05:01 05:40-05:58/18 21:25	05:01 05:42-06:08/26 21:36	05:39 21:02	06:29 19:59	07:17 17:48-18:11/23 18:50	07:11 16:45	08:01 16:08
4	08:22 16:18	07:51 17:08	06:56 17:20-17:27/7 17:59	06:45 19:52	05:42 20:43	05:00 05:39-05:58/19 21:26	05:02 05:43-06:08/25 21:36	05:41 21:00	06:30 19:57	07:19 17:48-18:11/23 18:48	07:13 16:43	08:02 16:07
5	08:21 16:19	07:49 17:09	06:54 17:17-17:30/13 18:00	06:43 19:54	05:40 20:44	05:00 05:39-06:00/21 21:27	05:03 05:43-06:07/24 21:35	05:42 20:59	06:32 19:55	07:21 17:49-18:10/21 18:45	07:15 16:42	08:04 16:06
6	08:21 16:20	07:47 17:11	06:52 17:14-17:31/17 18:02	06:41 19:55	05:38 20:46	04:59 05:38-06:00/22 21:28	05:04 05:44-06:07/23 21:35	05:44 20:57	06:34 19:52	07:22 17:49-18:09/20 18:43	07:16 16:40	08:05 16:06
7	08:21 16:21	07:46 17:13	06:49 17:13-17:32/19 18:04	06:39 19:57	05:37 20:47	04:59 05:38-06:01/23 21:29	05:05 05:45-06:06/21 21:34	05:45 20:55	06:35 19:50	07:24 17:49-18:07/18 18:41	07:18 16:38	08:06 16:06
8	08:20 16:23	07:44 17:15	06:47 17:12-17:33/21 18:06	06:36 19:59	05:35 20:49	04:58 05:37-06:01/24 21:30	05:05 05:46-06:06/20 21:34	05:47 20:53	06:37 19:48	07:26 17:51-18:06/15 18:39	07:20 16:37	08:07 16:05
9	08:20 16:24	07:42 17:17	06:45 17:12-17:34/22 18:08	06:34 20:01	05:33 20:51	04:58 05:37-06:02/25 21:31	05:06 05:47-06:06/19 21:33	05:48 20:51	06:38 19:46	07:27 17:53-18:04/11 18:36	07:22 16:35	08:09 16:05
10	08:19 16:26	07:41 17:19	06:43 17:10-17:33/23 18:09	06:32 20:02	05:31 20:52	04:57 05:37-06:03/26 21:32	05:07 05:48-06:05/17 21:32	05:50 20:50	06:40 19:43	07:29 18:34	07:24 16:33	08:10 16:05
11	08:19 16:27	07:39 17:20	06:40 17:10-17:33/23 18:11	06:30 20:04	05:30 20:54	04:57 05:36-06:03/27 21:32	05:08 05:49-06:04/15 21:32	05:52 20:48	06:42 19:41	07:31 18:32	07:25 16:32	08:11 16:05
12	08:18 16:28	07:37 17:22	06:38 17:10-17:33/23 18:13	06:27 20:06	05:28 20:55	04:56 05:37-06:04/27 21:33	05:09 05:51-06:02/11 21:31	05:53 20:46	06:43 19:39	07:33 18:30	07:27 16:30	08:12 16:04
13	08:17 16:30	07:35 17:24	06:36 17:10-17:32/22 18:15	06:25 20:07	05:27 20:57	04:56 05:37-06:04/27 21:34	05:11 05:54-06:00/6 21:33	05:55 20:44	06:45 19:36	07:34 18:28	07:29 16:29	08:13 16:04
14	08:17 16:31	07:33 17:26	06:34 17:10-17:31/21 18:16	06:23 20:09	05:25 20:59	04:56 05:37-06:05/28 21:34	05:12 21:29	05:56 20:42	06:46 19:34	07:36 18:25	07:31 16:27	08:14 16:04
15	08:16 16:33	07:31 17:28	06:31 17:11-17:30/19 18:18	06:21 20:11	05:23 21:00	04:56 05:37-06:06/29 21:35	05:13 21:28	05:58 20:40	06:48 19:32	07:38 18:23	07:32 16:26	08:15 16:05
16	08:15 16:34	07:29 17:30	06:29 17:13-17:29/16 18:20	06:19 20:12	05:22 21:02	04:56 05:37-06:06/29 21:35	05:14 21:27	06:00 20:38	06:50 19:29	07:39 18:21	07:34 16:24	08:16 16:05
17	08:14 16:36	07:27 17:32	06:27 17:14-17:26/12 18:21	06:16 20:14	05:20 21:03	04:56 05:37-06:06/29 21:36	05:15 21:26	06:01 20:36	06:51 19:27	07:41 18:19	07:36 16:23	08:16 16:05
18	08:13 16:38	07:25 17:33	06:24 17:17-17:23/6 18:23	06:14 20:16	05:19 21:05	04:56 05:37-06:07/30 21:36	05:16 21:25	06:03 20:34	06:53 19:25	07:43 18:17	07:38 16:22	08:17 16:05
19	08:12 16:39	07:23 17:35	06:22 18:25	06:12 20:17	05:18 21:06	04:56 05:37-06:07/30 21:37	05:18 21:24	06:04 20:32	06:54 19:22	07:45 18:15	07:39 16:21	08:18 16:05
20	08:11 16:41	07:21 17:37	06:20 18:27	06:10 20:19	05:16 21:08	04:56 05:37-06:07/30 21:37	05:19 21:23	06:06 20:30	06:56 19:20	07:46 18:13	07:41 16:19	08:18 16:06
21	08:10 16:43	07:19 17:39	06:18 18:28	06:08 20:21	05:15 21:09	04:56 05:37-06:07/30 21:37	05:20 21:21	06:08 20:28	06:58 19:18	07:48 18:10	07:43 16:18	08:19 16:06
22	08:09 16:44	07:17 17:41	06:15 18:30	06:06 20:22	05:14 21:10	04:56 05:37-06:07/30 21:37	05:22 21:20	06:09 20:26	06:59 19:15	07:50 18:08	07:44 16:17	08:20 16:07
23	08:08 16:46	07:15 17:43	06:13 18:32	06:04 20:24	05:12 21:12	04:56 05:38-06:08/30 21:38	05:23 21:19	06:11 20:23	07:01 19:13	07:52 18:06	07:46 16:16	08:20 16:07
24	08:07 16:48	07:13 17:44	06:11 18:33	06:02 20:26	05:11 21:13	04:56 05:38-06:08/30 21:38	05:24 21:17	06:13 20:21	07:03 19:11	07:53 18:04	07:47 16:15	08:21 16:08
25	08:05 16:49	07:11 17:46	06:08 18:35	06:00 20:28	05:10 21:14	04:57 05:38-06:07/29 21:38	05:26 21:16	06:14 20:19	07:04 19:08	06:55 17:02	07:49 16:14	08:21 16:08
26	08:04 16:51	07:09 17:48	06:06 18:37	05:58 20:29	05:09 21:16	04:57 05:39-06:08/29 21:38	05:27 21:15	06:16 20:17	07:06 17:57-18:08/11 19:06	06:57 17:00	07:51 16:13	08:21 16:09
27	08:03 16:53	07:07 17:50	06:04 18:38	05:56 20:31	05:08 21:17	04:58 05:39-06:08/29 21:38	05:29 21:13	06:17 20:15	07:08 17:54-18:09/15 19:04	06:59 16:58	07:52 16:12	08:22 16:10
28	08:01 16:55	07:05 17:52	06:01 18:40	05:54 20:33	05:07 21:18	04:58 05:40-06:08/28 21:38	05:30 21:12	06:19 20:13	07:09 17:52-18:11/19 19:02	07:00 16:56	07:54 16:11	08:22 16:11
29	08:00 16:57		06:59 19:42	05:52 20:34	05:06 21:20	04:59 05:40-06:08/28 21:37	05:32 21:10	06:21 20:10	07:11 17:51-18:12/21 18:59	07:02 16:54	07:55 16:10	08:22 16:11
30	07:59 16:58		06:57 19:44	05:50 20:36	05:05 21:21	04:59 05:41-06:08/27 21:37	05:33 21:09	06:22 20:08	07:12 17:50-18:11/21 18:57	07:04 16:53	07:57 16:09	08:22 16:12
31	07:57 17:00		06:55 19:45		05:04 05:44-05:53/9 21:22		05:35 21:07	06:24 20:06		07:06 16:51		08:22 16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	264	0	9	783	261	0	87	177	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** SAB W2 - VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (319)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 16:15	07:56 17:02	07:02 17:53	06:52 19:03-19:21/18 19:47	05:48 06:55-07:12/17 20:38 19:39-19:56/17	05:03 21:23
2	08:22 16:16	07:54 17:04	07:00 17:55	06:50 19:02-19:21/19 19:49	05:46 06:57-07:09/12 20:39 19:40-19:55/15	05:02 21:24
3	08:22 16:17	07:52 17:06	06:58 17:57	06:48 19:01-19:21/20 19:50	05:44 07:01-07:05/4 20:41 19:41-19:53/12	05:01 21:25
4	08:22 16:18	07:51 17:08	06:56 17:59	06:45 19:01-19:21/20 19:52	05:42 19:44-19:51/7 20:42	05:00 21:26
5	08:21 16:19	07:49 17:09	06:54 18:00	06:43 19:01-19:20/19 19:54	05:40 20:44	05:00 21:27
6	08:21 16:20	07:47 16:27-16:34/7 17:11	06:52 18:02	06:41 19:01-19:19/18 19:55	05:38 20:46	04:59 21:28
7	08:21 16:21	07:46 16:24-16:37/13 17:13	06:49 18:04	06:39 19:02-19:18/16 19:57	05:37 20:47	04:59 21:29
8	08:20 16:23	07:44 16:22-16:39/17 17:15	06:47 18:06	06:36 19:03-19:17/14 19:59	05:35 20:49	04:58 21:30
9	08:20 16:24	07:42 16:21-16:40/19 17:17	06:45 18:08	06:34 19:05-19:15/10 20:01	05:33 20:51	04:58 21:31
10	08:19 16:26	07:40 16:20-16:41/21 17:19	06:43 18:09	06:32 07:04-07:13/9 20:02	05:31 20:52	04:57 21:32
11	08:19 16:27	07:39 16:19-16:41/22 17:20	06:40 18:11	06:30 07:00-07:16/16 20:04	05:30 20:54	04:57 21:32
12	08:18 16:28	07:37 16:19-16:42/23 17:22	06:38 18:13	06:27 06:58-07:18/20 20:06	05:28 20:55	04:56 21:33
13	08:17 16:30	07:35 16:19-16:43/24 17:24	06:36 18:14	06:25 06:56-07:19/23 20:07	05:27 20:57	04:56 21:34
14	08:17 16:31	07:33 16:19-16:43/24 17:26	06:34 18:16	06:23 06:54-07:20/26 20:09	05:25 20:59	04:56 21:34
15	08:16 16:33	07:31 16:19-16:43/24 17:28	06:31 18:18	06:21 06:53-07:21/28 20:11	05:23 21:00	04:56 21:35
16	08:15 16:34	07:29 16:18-16:42/24 17:30	06:29 18:20	06:19 06:52-07:22/30 20:12	05:22 21:02	04:56 21:35
17	08:14 16:36	07:27 16:19-16:42/23 17:32	06:27 18:21	06:16 06:52-07:22/30 20:14	05:20 21:03	04:56 21:36
18	08:13 16:38	07:25 16:19-16:41/22 17:33	06:24 18:23	06:14 06:50-07:22/32 20:16	05:19 21:05	04:56 21:36
19	08:12 16:39	07:23 16:20-16:41/21 17:35	06:22 18:25	06:12 06:50-07:22/32 20:17 19:48-19:50/2	05:18 21:06	04:56 21:37
20	08:11 16:41	07:21 16:21-16:40/19 17:37	06:20 18:27	06:10 06:49-07:22/33 20:19 19:44-19:52/8	05:16 21:07	04:56 21:37
21	08:10 16:43	07:19 16:23-16:38/15 17:39	06:17 18:28	06:08 06:49-07:21/32 20:21 19:42-19:53/11	05:15 21:09	04:56 21:37
22	08:09 16:44	07:17 16:25-16:36/11 17:41	06:15 18:30	06:06 06:49-07:21/32 20:22 19:41-19:55/14	05:14 21:10	04:56 21:37
23	08:08 16:46	07:15 17:43	06:13 18:32	06:04 06:49-07:21/32 20:24 19:40-19:57/17	05:12 21:12	04:56 21:38
24	08:07 16:48	07:13 17:44	06:11 18:33	06:02 06:49-07:20/31 20:26 19:39-19:58/19	05:11 21:13	04:56 21:38
25	08:05 16:49	07:11 17:46	06:08 18:35	06:00 06:49-07:19/30 20:28 19:38-19:58/20	05:10 21:14	04:57 21:38
26	08:04 16:51	07:09 17:48	06:06 18:37	05:58 06:50-07:19/29 20:29 19:38-19:58/20	05:09 21:16	04:57 21:38
27	08:03 16:53	07:07 17:50	06:04 18:38	05:56 06:50-07:17/27 20:31 19:38-19:58/20	05:08 21:17	04:58 21:38
28	08:01 16:55	07:05 17:52	06:01 18:40	05:54 06:52-07:17/25 20:33 19:38-19:58/20	05:07 21:18	04:58 21:38
29	08:00 16:57		06:59 19:07-19:16/9 19:42	05:52 06:52-07:16/24 20:34 19:39-19:58/19	05:06 21:20	04:59 21:37
30	07:58 16:58		06:57 19:05-19:18/13 19:44	05:50 06:53-07:14/21 20:36 19:39-19:57/18	05:05 21:21	04:59 21:37
31	07:57 17:00		06:54 19:04-19:20/16 19:45		05:04 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	0	329	38	904	84	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** SAB W2 - VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (319)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00	05:36	06:25 07:00-07:16/16	07:14	07:07 15:50-16:10/20	07:58
	21:37	21:05	20:04	18:55	16:49	16:09
2	05:01	05:38	06:27 07:02-07:11/9	07:16	07:09 15:51-16:09/18	08:00
	21:37	21:04	20:01	18:52	16:47	16:08
3	05:01	05:39	06:29 19:02-19:12/10	07:17	07:11 15:52-16:08/16	08:01
	21:36	21:02	19:59	18:50	16:45	16:08
4	05:02	05:41	06:30 19:00-19:14/14	07:19	07:13 15:54-16:06/12	08:02
	21:36	21:00	19:57	18:48	16:43	16:07
5	05:03	05:42	06:32 18:59-19:15/16	07:21	07:15 15:57-16:03/6	08:04
	21:35	20:59	19:55	18:45	16:42	16:06
6	05:04	05:44	06:34 18:57-19:15/18	07:22	07:16	08:05
	21:35	20:57	19:52	18:43	16:40	16:06
7	05:05	05:45	06:35 18:57-19:16/19	07:24	07:18	08:06
	21:34	20:55	19:50	18:41	16:38	16:06
8	05:05	05:47	06:37 18:55-19:15/20	07:26	07:20	08:07
	21:34	20:53	19:48	18:39	16:37	16:05
9	05:06	05:48 19:52-20:01/9	06:38 18:55-19:15/20	07:27	07:22	08:09
	21:33	20:51	19:46	18:36	16:35	16:05
10	05:07	05:50 07:08-07:16/8	06:40 18:55-19:14/19	07:29	07:24	08:10
	21:32	20:50 19:50-20:03/13	19:43	18:34	16:33	16:05
11	05:08	05:52 07:04-07:19/15	06:42 18:55-19:14/19	07:31	07:25	08:11
	21:32	20:48 19:48-20:04/16	19:41	18:32	16:32	16:05
12	05:09	05:53 07:03-07:21/18	06:43 18:55-19:11/16	07:33	07:27	08:12
	21:31	20:46 19:48-20:05/17	19:39	18:30	16:30	16:05
13	05:11	05:55 07:01-07:22/21	06:45 18:56-19:09/13	07:34	07:29	08:13
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14	05:12	05:56 07:00-07:24/24	06:46 18:58-19:08/10	07:36	07:31	08:14
	21:29	20:42 19:46-20:06/20	19:34	18:25	16:27	16:04
15	05:13	05:58 06:58-07:24/26	06:48 19:02-19:04/2	07:38	07:32	08:15
	21:28	20:40 19:45-20:05/20	19:32	18:23	16:26	16:05
16	05:14	06:00 06:57-07:25/28	06:50	07:39	07:34	08:16
	21:27	20:38 19:45-20:06/21	19:29	18:21	16:24	16:05
17	05:15	06:01 06:57-07:26/29	06:51	07:41	07:36	08:16
	21:26	20:36 19:45-20:05/20	19:27	18:19	16:23	16:05
18	05:16	06:03 06:56-07:26/30	06:53	07:43	07:37	08:17
	21:25	20:34 19:45-20:05/20	19:25	18:17	16:22	16:05
19	05:18	06:04 06:56-07:27/31	06:54	07:45 17:00-17:04/4	07:39	08:18
	21:24	20:32 19:45-20:03/18	19:22	18:15	16:21	16:05
20	05:19	06:06 06:55-07:26/31	06:56	07:46 16:55-17:07/12	07:41	08:18
	21:22	20:30 19:45-20:02/17	19:20	18:13	16:19	16:06
21	05:20	06:08 06:55-07:27/32	06:58	07:48 16:53-17:09/16	07:43	08:19
	21:21	20:28 19:46-19:59/13	19:18	18:10	16:18	16:06
22	05:22	06:09 06:54-07:26/32	06:59	07:50 16:51-17:10/19	07:44	08:20
	21:20	20:26 19:47-19:58/11	19:15	18:08	16:17	16:07
23	05:23	06:11 06:54-07:26/32	07:01	07:52 16:50-17:11/21	07:46	08:20
	21:19	20:23 19:49-19:56/7	19:13	18:06	16:16	16:07
24	05:24	06:13 06:53-07:25/32	07:03	07:53 16:50-17:12/22	07:47	08:21
	21:17	20:21	19:11	18:04	16:15	16:08
25	05:26	06:14 06:54-07:25/31	07:04	06:55 15:49-16:12/23	07:49	08:21
	21:16	20:19	19:08	17:02	16:14	16:08
26	05:27	06:16 06:54-07:24/30	07:06	06:57 15:49-16:13/24	07:51	08:21
	21:15	20:17	19:06	17:00	16:13	16:09
27	05:29	06:17 06:54-07:24/30	07:07	06:59 15:49-16:13/24	07:52	08:22
	21:13	20:15	19:04	16:58	16:12	16:10
28	05:30	06:19 06:54-07:22/28	07:09	07:00 15:48-16:12/24	07:54	08:22
	21:12	20:13	19:02	16:56	16:11	16:11
29	05:32	06:21 06:55-07:21/26	07:11	07:02 15:48-16:12/24	07:55	08:22
	21:10	20:10	18:59	16:54	16:10	16:11
30	05:33	06:22 06:56-07:19/23	07:12	07:04 15:48-16:11/23	07:57	08:22
	21:09	20:08	18:57	16:53	16:09	16:12
31	05:35	06:24 06:58-07:18/20		07:06 15:49-16:11/22		08:22
	21:07	20:06		16:51		16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	818	221	258	72	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** SAB W3 - VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (320)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22		07:56	16:11-16:28/17	07:02		06:52	07:51-08:30/39	05:48		05:03	20:24-20:41/17
	16:15		17:02		17:53		19:47		20:38		21:23	
2	08:22		07:54	16:10-16:29/19	07:00		06:50	07:51-08:28/37	05:46		05:02	20:24-20:41/17
	16:16		17:04		17:55		19:49		20:39		21:24	
3	08:22		07:52	16:09-16:29/20	06:58		06:48	07:52-08:27/35	05:44		05:01	20:25-20:41/16
	16:17		17:06		17:57		19:50		20:41		21:25	
4	08:22		07:51	16:09-16:29/20	06:56		06:45	07:52-08:26/34	05:42		05:00	20:25-20:40/15
	16:18		17:08		17:59		19:52		20:43		21:26	
5	08:21		07:49	16:10-16:30/20	06:54		06:43	07:53-08:25/32	05:40		05:00	20:27-20:41/14
	16:19		17:09		18:00		19:54		20:44		21:27	
6	08:21		07:47	16:10-16:30/20	06:52		06:41	07:54-08:22/28	05:38	20:10-20:17/7	04:59	20:27-20:40/13
	16:20		17:11		18:02		19:55		20:46		21:28	
7	08:21		07:46	16:10-16:29/19	06:49		06:39	07:55-08:21/26	05:37	20:09-20:19/10	04:59	20:28-20:40/12
	16:22		17:13		18:04		19:57		20:47		21:29	
8	08:20		07:44	16:11-16:28/17	06:47		06:36	07:57-08:18/21	05:35	20:07-20:20/13	04:58	20:28-20:39/11
	16:23		17:15		18:06		19:59		20:49		21:30	
9	08:20		07:42	16:12-16:28/16	06:45		06:34	08:00-08:15/15	05:33	20:05-20:21/16	04:58	20:29-20:39/10
	16:24		17:17		18:08		20:01		20:51		21:31	
10	08:19		07:40	16:13-16:26/13	06:43		06:32	08:05-08:10/5	05:32	20:05-20:23/18	04:57	20:31-20:39/8
	16:26		17:19		18:09		20:02		20:52		21:32	
11	08:19		07:39	16:15-16:25/10	06:40		06:30		05:30	20:04-20:24/20	04:57	20:31-20:37/6
	16:27		17:21		18:11		20:04		20:54		21:32	
12	08:18		07:37	16:19-16:21/2	06:38		06:27		05:28	20:04-20:25/21	04:56	20:32-20:37/5
	16:28		17:22		18:13		20:06		20:55		21:33	
13	08:17		07:35		06:36		06:25		05:27	20:03-20:25/22	04:56	20:34-20:36/2
	16:30		17:24		18:15		20:07		20:57		21:34	
14	08:17		07:33		06:34		06:23		05:25	20:03-20:26/23	04:56	
	16:31		17:26		18:16		20:09		20:59		21:34	
15	08:16		07:31		06:31		06:21		05:23	20:27-20:29/2	04:56	
	16:33		17:28		18:18		20:11		21:00	20:03-20:25/22	21:35	
16	08:15		07:29		06:29	07:09-07:23/14	06:19		05:22	20:03-20:31/28	04:56	
	16:34		17:30		18:20		20:12		21:02		21:35	
17	08:14		07:27		06:27	07:04-07:25/21	06:16		05:20	20:03-20:33/30	04:56	
	16:36		17:32		18:21		20:14		21:03		21:36	
18	08:13		07:25		06:24	07:02-07:27/25	06:14		05:19	20:03-20:34/31	04:56	
	16:38		17:33		18:23		20:16		21:05		21:36	
19	08:12		07:23		06:22	07:00-07:29/29	06:12		05:18	20:03-20:35/32	04:56	
	16:39		17:35		18:25		20:17		21:06		21:37	
20	08:11		07:21		06:20	06:58-07:30/32	06:10		05:16	20:04-20:37/33	04:56	
	16:41		17:37		18:27		20:19		21:07		21:37	
21	08:10		07:19		06:18	06:57-07:31/34	06:08		05:15	20:05-20:38/33	04:56	
	16:43		17:39		18:28		20:21		21:09		21:37	
22	08:09		07:17		06:15	06:56-07:32/36	06:06		05:14	20:04-20:39/35	04:56	
	16:44		17:41		18:30		20:22		21:10		21:37	
23	08:08		07:15		06:13	06:54-07:32/38	06:04		05:12	20:05-20:40/35	04:56	
	16:46		17:43		18:32		20:24		21:12		21:38	
24	08:07		07:13		06:11	06:54-07:32/38	06:02		05:11	20:06-20:41/35	04:57	
	16:48		17:44		18:33		20:26		21:13		21:38	
25	08:05		07:11		06:08	06:53-07:33/40	06:00		05:10	20:07-20:41/34	04:57	
	16:50		17:46		18:35		20:28		21:14		21:38	
26	08:04		07:09		06:06	06:53-07:33/40	05:58		05:09	20:08-20:41/33	04:57	
	16:51		17:48		18:37		20:29		21:16		21:38	
27	08:03		07:07		06:04	06:52-07:32/40	05:56		05:08	20:22-20:41/19	04:58	
	16:53		17:50		18:38		20:31		21:17	20:09-20:21/12	21:38	
28	08:01	16:14-16:22/8	07:05		06:01	06:52-07:32/40	05:54		05:07	20:22-20:41/19	04:58	
	16:55		17:52		18:40		20:33		21:18	20:10-20:20/10	21:38	
29	08:00	16:12-16:24/12			06:59	07:52-08:32/40	05:52		05:06	20:23-20:42/19	04:59	
	16:57				19:42		20:34		21:20	20:13-20:19/6	21:37	
30	07:58	16:11-16:26/15			06:57	07:51-08:31/40	05:50		05:05	20:23-20:42/19	04:59	20:37-20:41/4
	16:58				19:44		20:36		21:21		21:37	
31	07:57	16:10-16:27/17			06:55	07:51-08:30/39			05:04	20:24-20:41/17		
	17:00				19:45				21:22			
Sonnenscheinstunden	260		278		367		416		484		498	
Anzahl Minuten mit Schatten	52		193		546		272		654		150	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** SAB W3 - VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (320)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember	
1	05:00	20:35-20:41/6	05:36	20:15-20:36/21	06:25		07:14		07:08	15:42-15:56/14	07:58	
	21:37		21:05		20:04		18:55		16:49		16:09	
2	05:01	20:35-20:43/8	05:38	20:15-20:34/19	06:27	08:03-08:08/5	07:16		07:09	15:41-15:57/16	08:00	
	21:37		21:04		20:02		18:52		16:47		16:08	
3	05:01	20:35-20:44/9	05:39	20:16-20:33/17	06:29	07:58-08:13/15	07:17		07:11	15:40-15:58/18	08:01	
	21:36		21:02		19:59		18:50		16:45		16:08	
4	05:02	20:34-20:44/10	05:41	20:16-20:31/15	06:30	07:54-08:15/21	07:19		07:13	15:40-15:59/19	08:02	
	21:36		21:00		19:57		18:48		16:43		16:07	
5	05:03	20:34-20:45/11	05:42	20:17-20:29/12	06:32	07:52-08:18/26	07:21		07:15	15:40-15:59/19	08:04	
	21:35		20:59		19:55		18:45		16:42		16:06	
6	05:04	20:33-20:46/13	05:44	20:19-20:28/9	06:34	07:50-08:18/28	07:22		07:16	15:40-16:00/20	08:05	
	21:35		20:57		19:52		18:43		16:40		16:06	
7	05:05	20:33-20:47/14	05:45	20:21-20:25/4	06:35	07:49-08:20/31	07:24		07:18	15:40-16:00/20	08:06	
	21:34		20:55		19:50		18:41		16:38		16:06	
8	05:05	20:33-20:47/14	05:47		06:37	07:47-08:20/33	07:26		07:20	15:40-16:00/20	08:07	
	21:34		20:53		19:48		18:39		16:37		16:05	
9	05:06	20:33-20:48/15	05:49		06:38	07:46-08:21/35	07:27		07:22	15:41-15:59/18	08:09	
	21:33		20:51		19:46		18:36		16:35		16:05	
10	05:07	20:33-20:49/16	05:50		06:40	07:44-08:21/37	07:29		07:24	15:41-15:59/18	08:10	
	21:32		20:50		19:43		18:34		16:33		16:05	
11	05:08	20:32-20:49/17	05:52		06:42	07:44-08:22/38	07:31		07:25	15:41-15:58/17	08:11	
	21:32		20:48		19:41		18:32		16:32		16:05	
12	05:09	20:32-20:50/18	05:53		06:43	07:43-08:22/39	07:33		07:27	15:42-15:57/15	08:12	
	21:31		20:46		19:39		18:30		16:30		16:05	
13	05:11	20:32-20:50/18	05:55		06:45	07:42-08:22/40	07:34		07:29	15:44-15:56/12	08:13	
	21:30		20:44		19:36		18:28		16:29		16:04	
14	05:12	20:32-20:50/18	05:56		06:46	07:42-08:22/40	07:36		07:31	15:46-15:54/8	08:14	
	21:29	20:24-20:25/1	20:42		19:34		18:25		16:27		16:04	
15	05:13	20:32-20:51/19	05:58		06:48	07:41-08:21/40	07:38		07:32		08:15	
	21:28	20:20-20:28/8	20:40		19:32		18:23		16:26		16:05	
16	05:14	20:32-20:51/19	06:00		06:50	07:41-08:21/40	07:39		07:34		08:16	
	21:27	20:19-20:30/11	20:38		19:29		18:21		16:24		16:05	
17	05:15	20:18-20:51/33	06:01		06:51	07:40-08:20/40	07:41		07:36		08:16	
	21:26		20:36		19:27		18:19		16:23		16:05	
18	05:17	20:17-20:51/34	06:03		06:53	07:41-08:20/39	07:43		07:37		08:17	
	21:25		20:34		19:25		18:17		16:22		16:05	
19	05:18	20:16-20:51/35	06:04		06:54	07:41-08:20/39	07:45		07:39		08:18	
	21:24		20:32		19:22		18:15		16:21		16:05	
20	05:19	20:16-20:51/35	06:06		06:56	07:41-08:18/37	07:46		07:41		08:18	
	21:22		20:30		19:20		18:13		16:19		16:06	
21	05:20	20:15-20:50/35	06:08		06:58	07:41-08:18/37	07:48		07:43		08:19	
	21:21		20:28		19:18		18:11		16:18		16:06	
22	05:22	20:15-20:49/34	06:09		06:59	07:41-08:16/35	07:50		07:44		08:20	
	21:20		20:26		19:15		18:08		16:17		16:07	
23	05:23	20:14-20:47/33	06:11		07:01	07:42-08:15/33	07:52		07:46		08:20	
	21:19		20:23		19:13		18:06		16:16		16:07	
24	05:24	20:14-20:47/33	06:13		07:03	07:44-08:13/29	07:53		07:47		08:21	
	21:17		20:21		19:11		18:04		16:15		16:08	
25	05:26	20:14-20:45/31	06:14		07:04	07:44-08:11/27	06:55		07:49		08:21	
	21:16		20:19		19:08		17:02		16:14		16:08	
26	05:27	20:13-20:43/30	06:16		07:06	07:46-08:09/23	06:57		07:51		08:21	
	21:15		20:17		19:06		17:00		16:13		16:09	
27	05:29	20:14-20:43/29	06:17		07:08	07:49-08:06/17	06:59		07:52		08:22	
	21:13		20:15		19:04		16:58		16:12		16:10	
28	05:30	20:37-20:41/4	06:19		07:09	07:53-08:00/7	07:00		07:54		08:22	
	21:12	20:13-20:36/23	20:13		19:02		16:56		16:11		16:11	
29	05:32	20:38-20:39/1	06:21		07:11		07:02		07:55		08:22	
	21:10	20:13-20:36/23	20:10		18:59		16:55		16:10		16:11	
30	05:33	20:14-20:36/22	06:22		07:12		07:04	15:47-15:52/5	07:57		08:22	
	21:09		20:08		18:57		16:53		16:10		16:12	
31	05:35	20:14-20:35/21	06:24				07:06	15:44-15:55/11			08:22	
	21:07		20:06				16:51				16:13	
Sonnenscheinstunden	501		453		381		332		267		245	
Anzahl Minuten mit Schatten	701		97		831		16		234		0	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** SAB W4 - VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (321)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar	März		April		Mai		Juni	
1	08:22	15:13-15:31/18	07:55	07:02		06:52	19:10-19:21/11	05:48		05:03	20:14-20:43/29
	16:15		17:02	17:53		19:47		20:38		21:23	
2	08:22	15:14-15:32/18	07:54	07:00		06:50	19:07-19:22/15	05:46		05:02	20:14-20:43/29
	16:16		17:04	17:55		19:49		20:39		21:24	
3	08:22	15:14-15:33/19	07:52	06:58		06:48	19:05-19:24/19	05:44		05:01	20:46-20:52/6
	16:17		17:06	17:57		19:50		20:41		21:25	20:14-20:44/30
4	08:22	15:14-15:33/19	07:51	06:56		06:45	19:04-19:25/21	05:42		05:00	20:14-20:53/39
	16:18		17:08	17:59		19:52		20:42		21:26	
5	08:21	15:14-15:34/20	07:49	06:54		06:43	19:03-19:25/22	05:40		05:00	20:14-20:55/41
	16:19		17:09	18:00		19:54		20:44		21:27	
6	08:21	15:14-15:34/20	07:47	06:51		06:41	19:02-19:25/23	05:38		04:59	20:14-20:55/41
	16:20		17:11	18:02		19:55		20:46		21:28	
7	08:21	15:14-15:36/22	07:46	06:49		06:39	19:01-19:25/24	05:37		04:59	20:14-20:56/42
	16:21		17:13	18:04		19:57		20:47		21:29	
8	08:20	15:14-15:36/22	07:44	06:47		06:36	19:01-19:25/24	05:35		04:58	20:14-20:57/43
	16:23		17:15	18:06		19:59		20:49		21:30	
9	08:20	15:15-15:37/22	07:42	06:45	17:32-17:41/9	06:34	19:01-19:25/24	05:33		04:58	20:14-20:58/44
	16:24		17:17	18:08		20:00		20:51		21:31	
10	08:19	15:15-15:38/23	07:40	06:43	17:28-17:42/14	06:32	19:01-19:23/22	05:31		04:57	20:15-20:59/44
	16:26		17:19	18:09		20:02		20:52		21:32	
11	08:19	15:15-15:38/23	07:39	06:40	17:27-17:44/17	06:30	19:01-19:23/22	05:30		04:57	20:14-20:59/45
	16:27		17:20	18:11		20:04		20:54		21:32	
12	08:18	15:15-15:38/23	07:37	06:38	07:05-07:15/10	06:27	19:02-19:22/20	05:28		04:56	20:15-21:00/45
	16:28		17:22	18:13	17:26-17:45/19	20:06		20:55		21:33	
13	08:17	15:15-15:39/24	07:35	06:36	07:02-07:18/16	06:25	19:03-19:21/18	05:27		04:56	20:15-21:00/45
	16:30		17:24	18:14	17:24-17:45/21	20:07		20:57		21:34	
14	08:17	15:16-15:40/24	07:33	06:34	07:00-07:19/19	06:23	19:04-19:19/15	05:25		04:56	20:15-21:01/46
	16:31		17:26	18:16	17:24-17:45/21	20:09		20:58		21:34	
15	08:16	15:16-15:40/24	07:31	06:31	06:58-07:20/22	06:21	19:06-19:17/11	05:23		04:56	20:16-21:02/46
	16:33		17:28	18:18	17:24-17:45/21	20:11		21:00		21:35	
16	08:15	15:17-15:41/24	07:29	06:29	06:57-07:21/24	06:19		05:22		04:56	20:16-21:02/46
	16:34		17:30	18:20	17:23-17:44/21	20:12		21:02		21:35	
17	08:14	15:16-15:40/24	07:27	06:27	06:56-07:21/25	06:16		05:20		04:56	20:16-21:02/46
	16:36		17:32	18:21	17:23-17:44/21	20:14		21:03		21:36	
18	08:13	15:17-15:40/23	07:25	06:24	06:55-07:21/26	06:14		05:19		04:56	20:16-21:03/47
	16:38		17:33	18:23	17:24-17:43/19	20:16		21:05		21:36	
19	08:12	15:17-15:41/24	07:23	06:22	06:55-07:22/27	06:12		05:18		04:56	20:16-21:03/47
	16:39		17:35	18:25	17:25-17:43/18	20:17		21:06		21:37	
20	08:11	15:18-15:41/23	07:21	06:20	06:54-07:21/27	06:10		05:16		04:56	20:16-21:03/47
	16:41		17:37	18:27	17:25-17:40/15	20:19		21:07		21:37	
21	08:10	15:19-15:41/22	07:19	06:17	06:54-07:20/26	06:08		05:15	20:24-20:32/8	04:56	20:16-21:04/48
	16:43		17:39	18:28	17:27-17:38/11	20:21		21:09		21:37	
22	08:09	15:19-15:40/21	07:17	06:15	06:54-07:20/26	06:06		05:14	20:20-20:33/13	04:56	20:16-21:03/47
	16:44		17:41	18:30	17:31-17:34/3	20:22		21:10		21:37	
23	08:08	15:21-15:40/19	07:15	06:13	06:54-07:19/25	06:04		05:12	20:19-20:35/16	04:56	20:17-21:04/47
	16:46		17:43	18:32		20:24		21:12		21:38	
24	08:07	15:22-15:40/18	07:13	06:11	06:55-07:18/23	06:02		05:11	20:18-20:37/19	04:56	20:17-21:04/47
	16:48		17:44	18:33		20:26		21:13		21:38	
25	08:05	15:23-15:39/16	07:11	06:08	06:56-07:17/21	06:00		05:10	20:17-20:38/21	04:57	20:17-21:03/46
	16:49		17:46	18:35		20:27		21:14		21:38	
26	08:04	15:25-15:38/13	07:09	06:06	06:57-07:15/18	05:58		05:09	20:16-20:39/23	04:57	20:18-21:04/46
	16:51		17:48	18:37		20:29		21:16		21:38	
27	08:03	15:27-15:36/9	07:07	06:04	06:58-07:12/14	05:56		05:08	20:16-20:39/23	04:58	20:18-21:04/46
	16:53		17:50	18:38		20:31		21:17		21:38	
28	08:01		07:05	06:01	07:02-07:09/7	05:54		05:07	20:15-20:40/25	04:58	20:19-21:04/45
	16:55		17:52	18:40		20:33		21:18		21:38	
29	08:00			06:59		05:52		05:06	20:16-20:42/26	04:59	20:18-21:04/46
	16:57			19:42		20:34		21:19		21:37	
30	07:58			06:57		05:50		05:05	20:15-20:42/27	04:59	20:19-21:04/45
	16:58			19:44		20:36		21:21		21:37	
31	07:57			06:54				05:04	20:15-20:42/27		
	17:00			19:45				21:22			
Sonnenscheinstunden	260		278	367		416		484		498	
Anzahl Minuten mit Schatten	557		0	586		291		228		1311	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM)	Schattenanfang-Zeitpunkt (SS:MM)	Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM)	Schattenanfang-Zeitpunkt (SS:MM)	Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** SAB W4 - VESTAS V162-5.6MW 5600 162.0 IO! NH: 169,0 m (Ges:250,0 m) (321)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 20:18-21:03/45 21:37	05:36 21:05	06:25 19:00-19:22/22 20:04	07:14 07:43-07:55/12 18:55 18:04-18:24/20	07:07 16:49	07:58 14:57-15:20/23 16:09
2	05:01 20:19-21:03/44 21:37	05:38 21:04	06:27 19:00-19:22/22 20:01	07:16 18:05-18:23/18 18:52	07:09 16:47	08:00 14:58-15:21/23 16:08
3	05:01 20:20-21:03/43 21:36	05:39 21:02	06:29 18:58-19:22/24 19:59	07:17 18:05-18:21/16 18:50	07:11 16:45	08:01 14:58-15:20/22 16:08
4	05:02 20:19-21:02/43 21:36	05:41 21:00	06:30 18:58-19:22/24 19:57	07:19 18:07-18:19/12 18:48	07:13 16:43	08:02 14:59-15:21/22 16:07
5	05:03 20:20-21:02/42 21:35	05:42 20:59	06:32 18:58-19:22/24 19:55	07:21 18:11-18:15/4 18:45	07:15 16:42	08:04 14:59-15:21/22 16:06
6	05:04 20:20-21:02/42 21:35	05:44 20:57	06:34 18:58-19:21/23 19:52	07:22 18:43	07:16 16:40	08:05 15:00-15:20/20 16:06
7	05:05 20:21-21:01/40 21:34	05:45 20:55	06:35 18:58-19:20/22 19:50	07:24 18:41	07:18 16:38	08:06 15:01-15:21/20 16:06
8	05:05 20:21-21:01/40 21:34	05:47 20:53	06:37 18:58-19:19/21 19:48	07:26 18:39	07:20 16:37	08:07 15:02-15:21/19 16:05
9	05:06 20:53-21:00/7 21:33 20:22-20:51/29	05:48 20:51	06:38 18:59-19:18/19 19:46	07:27 18:36	07:22 16:35	08:09 15:02-15:21/19 16:05
10	05:07 20:55-20:58/3 21:32 20:22-20:51/29	05:50 20:50	06:40 19:00-19:16/16 19:43	07:29 18:34	07:24 16:33	08:10 15:03-15:21/18 16:05
11	05:08 20:22-20:51/29 21:31	05:52 20:48	06:42 19:02-19:14/12 19:41	07:31 18:32	07:25 16:32	08:11 15:04-15:21/17 16:05
12	05:09 20:23-20:51/28 21:31	05:53 20:46	06:43 19:06-19:08/2 19:39	07:32 18:30	07:27 16:30	08:12 15:04-15:21/17 16:05
13	05:11 20:23-20:51/28 21:30	05:55 20:44	06:45 19:36	07:34 18:28	07:29 16:29	08:13 15:05-15:21/16 16:04
14	05:12 20:24-20:50/26 21:29	05:56 20:42	06:46 19:34	07:36 18:25	07:31 16:27	08:14 15:06-15:21/15 16:04
15	05:13 20:24-20:50/26 21:28	05:58 20:40	06:48 07:52-07:57/5 19:32	07:38 18:23	07:32 14:59-15:09/10 16:26	08:15 15:07-15:21/14 16:05
16	05:14 20:25-20:49/24 21:27	06:00 20:38	06:50 07:48-08:01/13 19:29	07:39 18:21	07:34 14:58-15:11/13 16:24	08:16 15:08-15:22/14 16:05
17	05:15 20:26-20:49/23 21:26	06:01 20:36	06:51 07:45-08:02/17 19:27	07:41 18:19	07:36 14:57-15:13/16 16:23	08:16 15:08-15:22/14 16:05
18	05:16 20:26-20:48/22 21:25	06:03 20:34	06:53 07:43-08:04/21 19:25	07:43 18:17	07:37 14:56-15:14/18 16:22	08:17 15:09-15:23/14 16:05
19	05:18 20:27-20:47/20 21:24	06:04 20:32	06:54 07:42-08:05/23 19:22	07:45 18:15	07:39 14:56-15:15/19 16:21	08:18 15:09-15:22/13 16:05
20	05:19 20:29-20:47/18 21:22	06:06 20:30	06:56 07:41-08:05/24 19:20	07:46 18:13	07:41 14:54-15:15/21 16:19	08:18 15:10-15:23/13 16:06
21	05:20 20:30-20:45/15 21:21	06:08 20:28	06:58 07:40-08:06/26 19:18	07:48 18:10	07:43 14:54-15:16/22 16:18	08:19 15:10-15:23/13 16:06
22	05:22 20:32-20:43/11 21:20	06:09 20:26	06:59 07:39-08:05/26 19:15 18:12-18:22/10	07:50 18:08	07:44 14:54-15:17/23 16:17	08:20 15:11-15:24/13 16:07
23	05:23 20:35-20:39/4 21:19	06:11 20:23	07:01 07:39-08:05/26 19:13 18:10-18:24/14	07:52 18:06	07:46 14:55-15:18/23 16:16	08:20 15:11-15:24/13 16:07
24	05:24 21:17	06:13 20:21	07:03 07:39-08:05/26 19:11 18:08-18:25/17	07:53 18:04	07:47 14:55-15:19/24 16:15	08:21 15:12-15:25/13 16:08
25	05:26 21:16	06:14 20:19	07:04 07:38-08:04/26 19:08 18:07-18:26/19	06:55 17:02	07:49 14:54-15:18/24 16:14	08:21 15:12-15:25/13 16:08
26	05:27 21:15	06:16 20:17	07:06 07:38-08:04/26 19:06 18:06-18:26/20	06:57 17:00	07:51 14:55-15:19/24 16:13	08:21 15:12-15:26/14 16:09
27	05:29 21:13	06:17 20:15	07:07 07:39-08:03/24 19:04 18:05-18:26/21	06:59 16:58	07:52 14:55-15:20/25 16:12	08:21 15:13-15:26/13 16:10
28	05:30 21:12	06:19 19:07-19:18/11 20:13	07:09 07:39-08:01/22 19:02 18:04-18:26/22	07:00 16:56	07:54 14:55-15:19/24 16:11	08:22 15:13-15:27/14 16:11
29	05:32 21:10	06:21 19:05-19:20/15 20:10	07:11 07:40-08:00/20 18:59 18:04-18:26/22	07:02 16:54	07:55 14:56-15:20/24 16:10	08:22 15:13-15:28/15 16:11
30	05:33 21:09	06:22 19:03-19:21/18 20:08	07:12 07:41-07:58/17 18:57 18:04-18:25/21	07:04 16:53	07:57 14:57-15:20/23 16:09	08:22 15:13-15:29/16 16:12
31	05:35 21:07	06:24 19:02-19:22/20 20:06		07:06 16:51		08:22 15:13-15:29/16 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	681	64	739	82	333	508

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 02 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (972)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 16:15	07:56 17:02	07:03 07:40-08:32/52 17:53	06:52 07:21-07:46/25 19:47	05:48 06:26-06:48/22 20:38	05:03 18:53-19:49/56 21:23 05:32-06:00/28
2	08:22 16:16	07:54 17:04	07:00 07:40-08:30/50 17:55	06:50 07:19-07:47/28 19:49	05:46 06:26-06:47/21 20:39	05:02 18:53-19:50/57 21:24 05:33-06:01/28
3	08:22 16:17	07:52 17:06	06:58 07:39-08:28/49 17:57	06:48 07:10-07:47/37 19:50	05:44 06:29-06:47/18 20:41	05:01 18:52-19:51/59 21:25 05:31-06:00/29
4	08:22 16:18	07:51 17:08	06:56 07:39-08:26/47 17:59	06:45 07:08-07:47/39 19:52	05:42 06:31-06:45/14 20:43	05:01 18:51-19:51/60 21:26 05:29-06:01/32
5	08:21 16:19	07:49 17:09	06:54 07:39-08:24/45 18:01	06:43 07:06-07:47/41 19:54	05:40 06:32-06:43/11 20:44	05:00 18:51-19:53/62 21:27 05:29-06:00/31
6	08:21 16:20	07:48 17:11	06:52 08:12-08:20/8 18:02 07:39-08:11/32	06:41 07:04-07:48/44 19:56	05:39 06:35-06:40/5 20:46	04:59 18:50-19:53/63 21:28 05:28-05:59/31
7	08:21 16:22	07:46 17:13	06:49 07:38-08:10/32 18:04	06:39 07:02-07:46/44 19:57	05:37 20:47	04:59 18:50-19:54/64 21:29 05:28-05:59/31
8	08:20 16:23	07:44 08:19-08:27/8 17:15	06:47 07:39-08:10/31 18:06	06:36 06:59-07:46/47 19:59	05:35 20:49	04:58 18:49-19:54/65 21:30 05:28-05:59/31
9	08:20 16:24	07:42 08:15-08:30/15 17:17	06:45 07:39-08:09/30 18:08	06:34 06:57-07:46/49 20:01	05:33 20:51	04:58 18:50-19:55/65 21:31 05:27-05:58/31
10	08:19 16:26	07:41 08:14-08:33/19 17:19	06:43 07:40-08:08/28 18:09	06:32 06:55-07:45/50 20:02	05:32 20:52	04:57 18:50-19:56/66 21:32 05:27-05:58/31
11	08:19 16:27	07:39 08:13-08:35/22 17:21	06:40 07:41-08:06/25 18:11	06:30 06:53-07:43/50 20:04	05:30 20:54	04:57 18:49-19:56/67 21:32 05:27-05:58/31
12	08:18 16:28	07:37 08:11-08:36/25 17:22	06:38 07:42-08:04/22 18:13	06:27 06:50-07:42/52 20:06	05:28 20:55	04:56 18:49-19:57/68 21:33 05:26-05:57/31
13	08:17 16:30	07:35 08:10-08:37/27 17:24	06:36 07:44-08:02/18 18:15	06:25 06:48-07:41/53 20:07	05:27 20:57	04:56 18:49-19:57/68 21:34 05:26-05:56/30
14	08:17 16:31	07:33 08:08-08:38/30 17:26	06:34 07:46-07:58/12 18:16	06:23 06:46-07:39/53 20:09	05:25 20:59	04:56 18:49-19:58/69 21:34 05:26-05:54/28
15	08:16 16:33	07:31 08:07-08:38/31 17:28	06:31 18:18	06:21 06:45-07:37/52 20:11	05:24 05:50-05:56/6 21:00	04:56 18:49-19:58/69 21:35 05:26-05:55/29
16	08:15 16:35	07:29 08:05-08:39/34 17:30	06:29 18:20	06:19 06:43-07:33/50 20:12	05:22 05:48-05:57/9 21:02	04:56 18:50-19:59/69 21:35 05:26-05:55/29
17	08:14 16:36	07:27 08:04-08:39/35 17:32	06:27 18:21	06:17 07:09-07:29/20 20:14 06:42-07:08/26	05:21 05:47-05:58/11 21:03	04:56 18:50-19:59/69 21:36 05:26-05:55/29
18	08:13 16:38	07:25 08:04-08:39/35 17:33	06:24 18:23	06:14 07:11-07:22/11 20:16 06:40-07:06/26	05:19 05:46-05:59/13 21:05	04:56 18:50-19:59/69 21:36 05:26-05:55/29
19	08:12 16:39	07:23 08:03-08:40/37 17:35	06:22 18:25	06:12 06:38-07:05/27 20:17	05:18 05:44-05:59/15 21:06	04:56 18:50-20:00/70 21:37 05:26-05:55/29
20	08:11 16:41	07:21 08:01-08:38/37 17:37	06:20 18:27	06:10 06:33-07:03/30 20:19	05:16 19:18-19:22/4 21:08 05:43-06:00/17	04:56 18:50-20:00/70 21:37 05:26-05:55/29
21	08:10 16:43	07:19 08:01-08:38/37 17:39	06:18 18:28	06:08 06:31-07:02/31 20:21	05:15 19:11-19:30/19 21:09 05:42-06:00/18	04:56 18:50-20:00/70 21:37 05:27-05:55/28
22	08:09 16:44	07:17 07:51-08:38/47 17:41	06:15 18:30	06:06 06:29-07:00/31 20:23	05:14 19:07-19:33/26 21:10 05:41-06:01/20	04:56 18:50-20:00/70 21:37 05:27-05:56/29
23	08:08 16:46	07:15 07:48-08:37/49 17:43	06:13 18:32	06:04 06:27-07:00/33 20:24	05:12 19:04-19:35/31 21:12 05:40-06:01/21	04:56 18:51-20:01/70 21:38 05:27-05:56/29
24	08:07 16:48	07:13 07:46-08:37/51 17:44	06:11 18:33	06:02 06:25-07:00/35 20:26	05:11 19:02-19:38/36 21:13 05:39-06:02/23	04:57 18:51-20:01/70 21:38 05:27-05:56/29
25	08:05 16:50	07:11 07:45-08:36/51 17:46	06:08 18:35	06:00 06:25-06:59/34 20:28	05:10 19:00-19:40/40 21:14 05:38-06:02/24	04:57 18:51-20:00/69 21:38 05:28-05:57/29
26	08:04 16:51	07:09 07:43-08:35/52 17:48	06:06 18:37	05:58 06:25-06:59/34 20:29	05:09 18:58-19:41/43 21:16 05:37-06:02/25	04:57 18:52-20:01/69 21:38 05:28-05:57/29
27	08:03 16:53	07:07 07:41-08:33/52 17:50	06:04 18:39	05:56 06:25-06:58/33 20:31	05:08 18:57-19:43/46 21:17 05:36-06:02/26	04:58 18:52-20:01/69 21:38 05:28-05:57/29
28	08:01 16:55	07:05 07:41-08:32/51 17:52	06:01 06:32-06:38/6 18:40	05:54 06:25-06:57/32 20:33	05:07 18:57-19:45/48 21:18 05:35-06:02/27	04:58 18:52-20:01/69 21:38 05:29-05:58/29
29	08:00 16:57		06:59 07:28-07:42/14 19:42	05:52 06:25-06:55/30 20:34	05:06 18:56-19:46/50 21:20 05:34-06:02/28	04:59 18:52-20:01/69 21:38 05:29-05:59/30
30	07:59 16:58		06:57 07:25-07:44/19 19:44	05:50 06:25-06:53/28 20:36	05:05 18:55-19:47/52 21:21 05:33-06:01/28	04:59 18:53-20:01/68 21:37 05:30-06:01/31
31	07:57 17:00		06:55 07:23-07:45/22 19:45		05:04 18:54-19:48/54 21:22 05:32-06:01/29	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	0	745	542	1175	880	2887

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 02 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (972)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember
1	05:00	18:53-20:00/67	05:36		06:26	06:52-07:43/51	07:14	08:22-08:42/20	07:08	07:43-08:02/19	07:58
	21:37	05:31-06:02/31	21:05		20:04		18:55		16:49		16:09
2	05:01	18:54-20:00/66	05:38		06:27	06:53-07:43/50	07:16	08:20-08:44/24	07:09	07:46-07:59/13	08:00
	21:37	05:31-06:02/31	21:04		20:02		18:52		16:47		16:08
3	05:01	18:55-20:01/66	05:39		06:29	06:55-07:44/49	07:17	08:19-08:45/26	07:11	07:50-07:56/6	08:01
	21:36	05:32-06:03/31	21:02		19:59		18:50		16:45		16:08
4	05:02	18:56-20:01/65	05:41		06:30	06:56-07:43/47	07:19	08:17-08:45/28	07:13		08:02
	21:36	05:33-06:04/31	21:00		19:57		18:48		16:44		16:07
5	05:03	18:55-20:00/65	05:42		06:32	06:59-07:43/44	07:21	08:16-08:46/30	07:15		08:04
	21:35	05:33-06:05/32	20:59		19:55		18:46		16:42		16:07
6	05:04	18:56-19:59/63	05:44		06:34	06:59-07:43/44	07:22	08:15-08:47/32	07:17		08:05
	21:35	05:34-06:05/31	20:57		19:53		18:43		16:40		16:06
7	05:05	18:57-19:59/62	05:45	06:44-06:51/7	06:35	07:01-07:43/42	07:24	08:14-08:46/32	07:18		08:06
	21:34	05:35-06:06/31	20:55		19:50		18:41		16:38		16:06
8	05:06	18:58-19:59/61	05:47	06:41-06:53/12	06:37	07:02-07:41/39	07:26	08:14-08:57/43	07:20		08:07
	21:34	05:36-06:07/31	20:53		19:48		18:39		16:37		16:05
9	05:06	18:59-19:59/60	05:49	06:39-06:55/16	06:38	07:04-07:41/37	07:28	08:14-09:00/46	07:22		08:09
	21:33	05:37-06:08/31	20:52		19:46		18:37		16:35		16:05
10	05:07	19:00-19:58/58	05:50	06:37-06:56/19	06:40	07:12-07:40/28	07:29	08:14-09:02/48	07:24		08:10
	21:32	05:40-06:08/28	20:50		19:43		18:34		16:33		16:05
11	05:08	19:01-19:58/57	05:52	06:36-06:57/21	06:42	07:13-07:39/26	07:31	08:13-09:03/50	07:25		08:11
	21:32	05:40-06:09/29	20:48		19:41		18:32		16:32		16:05
12	05:10	19:02-19:57/55	05:53	06:34-06:58/24	06:43	07:15-07:38/23	07:33	08:13-09:04/51	07:27		08:12
	21:31	05:41-06:09/28	20:46		19:39		18:30		16:30		16:05
13	05:11	19:03-19:56/53	05:55	06:34-07:02/28	06:45	07:16-07:35/19	07:34	08:14-09:05/51	07:29		08:13
	21:30	05:41-06:10/29	20:44		19:36		18:28		16:29		16:05
14	05:12	19:04-19:55/51	05:57	06:32-07:03/31	06:46	07:18-07:33/15	07:36	08:14-09:06/52	07:31		08:14
	21:29	05:42-06:10/28	20:42		19:34		18:25		16:27		16:05
15	05:13	19:05-19:54/49	05:58	06:32-07:05/33	06:48	07:21-07:29/8	07:38	08:15-09:06/51	07:32		08:15
	21:28	05:43-06:10/27	20:40		19:32		18:23		16:26		16:05
16	05:14	19:06-19:53/47	06:00	06:32-07:05/33	06:50		07:39	08:15-09:06/51	07:34		08:16
	21:27	05:44-06:10/26	20:38		19:29		18:21		16:25		16:05
17	05:15	19:07-19:52/45	06:01	06:32-07:06/34	06:51		07:41	08:16-09:08/52	07:36		08:16
	21:26	05:45-06:10/25	20:36		19:27		18:19		16:23		16:05
18	05:17	19:09-19:50/41	06:03	06:31-07:06/35	06:53		07:43	08:18-09:08/50	07:38		08:17
	21:25	05:47-06:11/24	20:34		19:25		18:17		16:22		16:05
19	05:18	19:11-19:49/38	06:05	06:32-07:06/34	06:55		07:45	08:20-09:09/49	07:39		08:18
	21:24	05:48-06:11/23	20:32		19:23		18:15		16:21		16:05
20	05:19	19:13-19:47/34	06:06	06:33-07:06/33	06:56		07:46	08:32-09:09/37	07:41		08:19
	21:23	05:49-06:11/22	20:30		19:20		18:13	08:25-08:31/6	16:19		16:06
21	05:20	19:15-19:45/30	06:08	06:35-07:06/31	06:58		07:48	08:33-09:10/37	07:43		08:19
	21:21	05:50-06:11/21	20:28		19:18		18:11		16:18		16:06
22	05:22	19:18-19:41/23	06:09	06:36-07:07/31	06:59		07:50	08:32-09:09/37	07:44		08:20
	21:20	05:51-06:10/19	20:26		19:16		18:09		16:17		16:07
23	05:23	19:23-19:38/15	06:11	06:38-07:08/30	07:01		07:52	08:33-09:09/36	07:46		08:20
	21:19	05:53-06:11/18	20:23		19:13		18:06		16:16		16:07
24	05:25	05:54-06:10/16	06:13	07:18-07:20/2	07:03		07:53	08:33-09:09/36	07:48		08:21
	21:17		20:21	06:42-07:08/26	19:11		18:04		16:15		16:08
25	05:26	05:55-06:09/14	06:14	07:13-07:25/12	07:04		06:55	07:34-08:09/35	07:49		08:21
	21:16		20:19	06:43-07:09/26	19:09		17:02		16:14		16:08
26	05:27	05:57-06:09/12	06:16	07:10-07:31/21	07:06		06:57	07:35-08:08/33	07:51		08:21
	21:15		20:17	06:44-07:09/25	19:06		17:00		16:13		16:09
27	05:29	05:58-06:08/10	06:17	06:45-07:35/50	07:08		06:59	07:37-08:08/31	07:52		08:22
	21:13		20:15		19:04		16:58		16:12		16:10
28	05:30	05:59-06:06/7	06:19	06:46-07:38/52	07:09		07:00	07:38-08:07/29	07:54		08:22
	21:12		20:13		19:02		16:57		16:11		16:11
29	05:32	06:01-06:05/4	06:21	06:47-07:40/53	07:11	08:29-08:37/8	07:02	07:40-08:06/26	07:55		08:22
	21:10		20:10		18:59		16:55		16:10		16:11
30	05:33		06:22	06:49-07:42/53	07:13	08:25-08:41/16	07:04	07:41-08:05/24	07:57		08:22
	21:09		20:08		18:57		16:53		16:10		16:12
31	05:35		06:24	06:50-07:42/52			07:06	07:42-08:03/21			08:22
	21:07		20:06				16:51				16:13
Sonnenscheinstunden	501		453		381		332		267		245
Anzahl Minuten mit Schatten	1861		824		546		1174		38		0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 03 - VESTAS V162-6.2MW 6200 162.0 IO! NH: 169,0 m (Ges:250,0 m) (973)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52 07:46-08:03/17	05:48 06:12-06:35/23	05:03	05:00	05:36 06:21-06:34/13	06:26	07:14 07:44-08:17/33	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50 07:48-08:01/13	05:46 06:10-06:34/24	05:02	05:01	05:38 06:19-06:34/15	06:27	07:16 07:46-08:16/30	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48 07:52-07:55/3	05:44 06:09-06:35/26	05:01	05:01	05:39 06:19-06:36/17	06:29	07:17 07:48-08:16/28	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45	05:42 06:08-06:34/26	05:01	05:02	05:41 06:18-06:38/20	06:30	07:19 07:50-08:14/24	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54 07:23-07:29/6	06:43	05:40 06:08-06:33/25	05:00	05:03	05:42 06:18-06:41/23	06:32	07:21 07:51-08:13/22	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:48	06:52 07:19-07:33/14	06:41	05:39 06:07-06:32/25	04:59	05:04	05:44 06:17-06:41/24	06:34	07:22 07:52-08:12/20	07:17	08:05
	16:20	17:11	18:02	19:56	20:46	21:28	21:35	20:57	19:53	18:43	16:40	16:06
7	08:21	07:46	06:49 07:16-07:34/18	06:39	05:37 06:08-06:31/23	04:59	05:05	05:45 06:18-06:43/25	06:35	07:24 07:53-08:09/16	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47 07:14-07:36/22	06:36	05:35 06:08-06:29/21	04:58	05:05	05:47 06:17-06:43/26	06:37	07:26 07:55-08:06/11	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45 07:13-07:37/24	06:34	05:33 06:09-06:28/19	04:58	05:06	05:49 06:18-06:44/26	06:38	07:28	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:52	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43 07:12-07:38/26	06:32	05:32 06:09-06:25/16	04:57	05:07	05:50 06:18-06:43/25	06:40 07:41-07:54/13	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40 07:08-07:37/29	06:30	05:30 06:09-06:23/14	04:57	05:08	05:52 06:20-06:44/24	06:42 07:38-07:55/17	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38 07:06-07:38/32	06:27 06:52-06:59/7	05:28 06:11-06:23/12	04:56	05:10	05:53 06:21-06:43/22	06:43 07:37-07:57/20	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36 07:05-07:38/33	06:25 06:49-07:02/13	05:27 06:12-06:21/9	04:56	05:11	05:55 06:23-06:44/21	06:45 07:35-07:57/22	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33	06:34 07:03-07:37/34	06:23 06:47-07:04/17	05:25	04:56	05:12	05:56 06:49-07:02/13	06:46 07:34-07:58/24	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42 06:24-06:43/19	19:34	18:25	16:27	16:05
15	08:16	07:31	06:31 07:02-07:37/35	06:21 06:44-07:05/21	05:23	04:56	05:13	05:58 06:47-07:06/19	06:48 07:32-07:58/26	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40 06:26-06:42/16	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29 07:02-07:36/34	06:19 06:42-07:05/23	05:22	04:56	05:14	06:00 06:45-07:07/22	06:50 07:32-08:05/33	07:39	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38 06:27-06:41/14	19:29	18:21	16:25	16:05
17	08:14	07:27	06:27 06:54-07:35/41	06:17 06:40-07:06/26	05:20	04:56	05:15	06:01 06:44-07:08/24	06:51 07:31-08:08/37	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36 06:29-06:40/11	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24 06:51-07:34/43	06:14 06:39-07:06/27	05:19	04:56	05:17	06:03 06:43-07:09/26	06:53 07:30-08:10/40	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34 06:30-06:38/8	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22 06:49-07:33/44	06:12 06:37-07:05/28	05:18	04:56	05:18	06:05 06:43-07:10/27	06:55 07:31-08:11/40	07:45	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32 06:32-06:35/3	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20 06:47-07:30/43	06:10 06:37-07:05/28	05:16	04:56	05:19	06:06 06:42-07:10/28	06:56 07:30-08:11/41	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18 06:46-07:28/42	06:08 06:36-07:05/29	05:15	04:56	05:20	06:08 06:42-07:10/28	06:58 07:30-08:12/42	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15 06:45-07:27/42	06:06 06:36-07:04/28	05:14	04:56	05:22	06:09 06:41-07:10/29	06:59 07:31-08:13/42	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:16	18:08	16:17	16:07
23	08:08	07:15	06:13 06:44-07:26/42	06:04 06:36-07:04/28	05:12	04:56	05:23	06:11 06:41-07:10/29	07:01 07:31-08:14/43	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11 06:43-07:24/41	06:02 06:36-07:03/27	05:11	04:57	05:24	06:13 06:41-07:09/28	07:03 07:32-08:16/44	07:53	07:48	08:21
	16:48	17:44	18:33	20:26 06:25-06:29/4	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08 06:43-07:23/40	06:00 06:36-07:02/26	05:10	04:57	05:26	06:14 06:42-07:09/27	07:04 07:33-08:16/43	06:55	07:49	08:21
	16:50	17:46	18:35	20:28 06:23-06:31/8	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06 06:43-07:21/38	05:58 06:38-07:01/23	05:09	04:57	05:27	06:16 06:42-07:08/26	07:06 07:35-08:17/42	06:57	07:51	08:21
	16:51	17:48	18:37	20:29 06:22-06:34/12	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04 06:42-07:16/34	05:56 06:39-07:00/21	05:08	04:58	05:29	06:17 06:44-07:07/23	07:08 07:43-08:18/35	06:59	07:52	08:22
	16:53	17:50	18:39	20:31 06:20-06:34/14	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01 06:43-07:09/26	05:54 06:40-06:57/17	05:07	04:58	05:30	06:19 06:45-07:05/20	07:09 07:43-08:17/34	07:00	07:54	08:22
	16:55	17:52	18:40	20:33 06:18-06:35/17	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59 07:43-08:08/25	05:52 06:42-06:52/10	05:06	04:59	05:32	06:21 06:48-07:04/16	07:11 07:43-08:18/35	07:02	07:55	08:22
	16:57		19:42	20:34 06:16-06:35/19	21:20	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:59		06:57 07:43-08:06/23	05:50 06:14-06:35/21	05:05	04:59	05:33 06:25-06:30/5	06:22 06:50-07:03/13	07:13 07:44-08:18/34	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55 07:44-08:05/21		05:04		05:35 06:23-06:33/10	06:24 06:52-06:59/7		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	490	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	852	527	263	0	15	757	707	184	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 04 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (978)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:03	06:52	05:48	05:03	05:00	05:36	06:25 06:55-07:16/21	07:14 07:41-08:08/27	07:08	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00	06:50	05:46	05:02	05:01	05:38	06:27 06:54-07:15/21	07:16 07:42-08:08/26	07:09	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58	06:48	05:44	05:01	05:01	05:39	06:29 06:55-07:16/21	07:17 07:43-08:08/25	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56	06:45 07:08-07:14/6	05:42	05:01	05:02	05:41	06:30 06:56-07:14/18	07:19 07:44-08:07/23	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54 07:17-07:25/8	06:43 07:06-07:16/10	05:40	05:00	05:03	05:42	06:32 06:58-07:14/16	07:21 07:46-08:06/20	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:06
6	08:21	07:48	06:52 07:15-07:28/13	06:41 07:04-07:17/13	05:39	04:59	05:04	05:44	06:34 06:59-07:12/13	07:22 07:48-08:06/18	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49 07:12-07:28/16	06:39 07:01-07:17/16	05:37	04:59	05:05	05:45	06:35 07:01-07:11/10	07:24 07:49-08:03/14	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47 07:10-07:29/19	06:36 06:59-07:17/18	05:35	04:58	05:05	05:47	06:37 07:02-07:08/6	07:26 07:51-08:02/11	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42	06:45 07:08-07:30/22	06:34 06:57-07:18/21	05:33	04:58	05:06	05:49	06:38	07:27 07:53-07:59/6	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:51	19:46	18:37	16:35	16:05
10	08:19	07:41	06:43 07:06-07:30/24	06:32 06:57-07:17/20	05:32	04:57	05:07	05:50	06:40	07:29	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39	06:40 07:03-07:29/26	06:30 06:55-07:16/21	05:30	04:57	05:08	05:52	06:42	07:31	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37	06:38 07:03-07:29/26	06:27 06:56-07:16/20	05:28	04:56	05:10	05:53	06:43	07:33	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35	06:36 07:02-07:29/27	06:25 06:56-07:15/19	05:27	04:56	05:11	05:55	06:45	07:34	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:04
14	08:17	07:33	06:34 06:56-07:27/31	06:23 06:57-07:13/16	05:25	04:56	05:12	05:56	06:46	07:36	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:25	16:27	16:05
15	08:16	07:31	06:31 06:54-07:26/32	06:21 06:58-07:12/14	05:23	04:56	05:13	05:58	06:48	07:38	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23	16:26	16:05
16	08:15	07:29	06:29 06:52-07:25/33	06:19 06:59-07:09/10	05:22	04:56	05:14	06:00	06:50	07:39	07:34	08:16
	16:34	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:29	18:21	16:25	16:05
17	08:14	07:27	06:27 06:49-07:22/33	06:16	05:20	04:56	05:15	06:01	06:51 07:41-07:49/8	07:41	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19	16:23	16:05
18	08:13	07:25	06:24 06:49-07:21/32	06:14	05:19	04:56	05:17	06:03	06:53 07:37-07:51/14	07:43	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17	16:22	16:05
19	08:12	07:23	06:22 06:48-07:20/32	06:12	05:18	04:56	05:18	06:04	06:55 07:36-07:53/17	07:45	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15	16:21	16:05
20	08:11	07:21	06:20 06:47-07:17/30	06:10	05:16	04:56	05:19	06:06	06:56 07:34-07:53/19	07:46	07:41	08:19
	16:41	17:37	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13	16:19	16:06
21	08:10	07:19	06:18 06:47-07:14/27	06:08	05:15	04:56	05:20	06:08	06:58 07:33-07:53/20	07:48	07:43	08:19
	16:43	17:39	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11	16:18	16:06
22	08:09	07:17	06:15 06:48-07:08/20	06:06	05:14	04:56	05:22	06:09	06:59 07:33-07:59/26	07:50	07:44	08:20
	16:44	17:41	18:30	20:23	21:10	21:37	21:20	20:26	19:15	18:08	16:17	16:07
23	08:08	07:15	06:13 06:48-07:07/19	06:04	05:12	04:56	05:23	06:11	07:01 07:32-08:01/29	07:52	07:46	08:20
	16:46	17:43	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13	06:11 06:48-07:05/17	06:02	05:11	04:57	05:24	06:13	07:03 07:32-08:03/31	07:53	07:48	08:21
	16:48	17:44	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11	06:08 06:50-07:04/14	06:00	05:10	04:57	05:26	06:14	07:04 07:31-08:03/32	06:55	07:49	08:21
	16:50	17:46	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09	06:06 06:52-07:02/10	05:58	05:09	04:57	05:27	06:16	07:06 07:32-08:04/32	06:57	07:51	08:21
	16:51	17:48	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07	06:04	05:56	05:08	04:58	05:29	06:17 07:01-07:11/10	07:08 07:33-08:06/33	06:59	07:52	08:22
	16:53	17:50	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58	16:12	16:10
28	08:01	07:05	06:01	05:54	05:07	04:58	05:30	06:19 06:58-07:13/15	07:09 07:34-08:07/33	07:00	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59	05:52	05:06	04:59	05:32	06:21 06:57-07:14/17	07:11 07:36-08:08/32	07:02	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:59		06:57	05:50	05:05	04:59	05:33	06:22 06:57-07:16/19	07:12 07:38-08:09/31	07:04	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55		05:04		05:35	06:24 06:55-07:16/21		07:06		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	0	511	204	0	0	0	82	483	170	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 06 - VESTAS V162-6.2MW 6200 162.0 IO! NH: 169,0 m (Ges:250,0 m) (982)
Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:22	07:56	07:02 08:21-09:19/58	06:52 09:12-10:05/53	05:48	05:03	05:00	05:36	06:25	07:14 08:49-10:03/74	07:08 07:35-07:41/6	07:58
	16:15	17:02	17:53	19:47	20:38	21:23	21:37	21:05	20:04	18:55	16:49	16:09
2	08:22	07:54	07:00 08:20-09:21/61	06:50 09:13-10:02/49	05:46	05:02	05:01	05:38	06:27	07:16 08:49-10:03/74	07:09 07:37-07:38/1	08:00
	16:16	17:04	17:55	19:49	20:39	21:24	21:37	21:04	20:02	18:52	16:47	16:08
3	08:22	07:52	06:58 08:18-09:21/63	06:48 09:14-09:59/45	05:44	05:01	05:01	05:39	06:29	07:17 08:50-10:03/73	07:11	08:01
	16:17	17:06	17:57	19:50	20:41	21:25	21:36	21:02	19:59	18:50	16:45	16:08
4	08:22	07:51	06:56 08:17-09:22/65	06:45 09:16-09:57/41	05:42	05:01	05:02	05:41	06:30 09:26-09:36/10	07:19 08:49-10:02/73	07:13	08:02
	16:18	17:08	17:59	19:52	20:43	21:26	21:36	21:00	19:57	18:48	16:43	16:07
5	08:21	07:49	06:54 08:16-09:23/67	06:43 09:18-09:54/36	05:40	05:00	05:03	05:42	06:32 09:20-09:43/23	07:21 08:50-10:01/71	07:15	08:04
	16:19	17:09	18:01	19:54	20:44	21:27	21:35	20:59	19:55	18:46	16:42	16:07
6	08:21	07:47	06:52 08:15-09:24/69	06:41 09:20-09:50/30	05:39	04:59	05:04	05:44	06:34 09:16-09:46/30	07:22 08:50-10:01/71	07:16	08:05
	16:20	17:11	18:02	19:55	20:46	21:28	21:35	20:57	19:52	18:43	16:40	16:06
7	08:21	07:46	06:49 08:13-09:23/70	06:39 09:23-09:46/23	05:37	04:59	05:05	05:45	06:35 09:13-09:49/36	07:24 08:50-09:59/69	07:18	08:06
	16:22	17:13	18:04	19:57	20:47	21:29	21:34	20:55	19:50	18:41	16:38	16:06
8	08:20	07:44	06:47 08:13-09:24/71	06:36 09:29-09:39/10	05:35	04:58	05:05	05:47	06:37 09:10-09:51/41	07:26 08:50-09:58/68	07:20	08:07
	16:23	17:15	18:06	19:59	20:49	21:30	21:34	20:53	19:48	18:39	16:37	16:05
9	08:20	07:42 08:07-08:09/2	06:45 08:12-09:24/72	06:34	05:33	04:58	05:06	05:49	06:38 09:08-09:53/45	07:27 08:51-09:57/66	07:22	08:09
	16:24	17:17	18:08	20:01	20:51	21:31	21:33	20:51	19:46	18:37	16:35	16:05
10	08:19	07:41 08:06-08:13/7	06:43 08:12-09:25/73	06:32	05:32	04:57	05:07	05:50	06:40 09:06-09:55/49	07:29 08:52-09:56/64	07:24	08:10
	16:26	17:19	18:09	20:02	20:52	21:32	21:32	20:50	19:43	18:34	16:33	16:05
11	08:19	07:39 08:04-08:15/11	06:40 08:11-09:24/73	06:30	05:30	04:57	05:08	05:52	06:42 09:05-09:57/52	07:31 08:52-09:54/62	07:25	08:11
	16:27	17:21	18:11	20:04	20:54	21:32	21:32	20:48	19:41	18:32	16:32	16:05
12	08:18	07:37 08:02-08:16/14	06:38 08:10-09:25/75	06:27	05:28	04:56	05:10	05:53	06:43 09:03-09:58/55	07:33 08:53-09:53/60	07:27	08:12
	16:28	17:22	18:13	20:06	20:55	21:33	21:31	20:46	19:39	18:30	16:30	16:05
13	08:17	07:35 08:00-08:16/16	06:36 08:10-09:25/75	06:25	05:27	04:56	05:11	05:55	06:45 09:01-09:59/58	07:34 08:55-09:52/57	07:29	08:13
	16:30	17:24	18:15	20:07	20:57	21:34	21:30	20:44	19:36	18:28	16:29	16:05
14	08:17	07:33 07:58-08:17/19	06:34 08:09-09:24/75	06:23	05:25	04:56	05:12	05:56	06:46 09:00-10:01/61	07:36 08:56-09:51/55	07:31	08:14
	16:31	17:26	18:16	20:09	20:59	21:34	21:29	20:42	19:34	18:25	16:27	16:05
15	08:16	07:31 07:56-08:17/21	06:31 08:09-09:24/75	06:21	05:23	04:56	05:13	05:58	06:48 08:59-10:01/62	07:38 08:56-09:48/52	07:32	08:15
	16:33	17:28	18:18	20:11	21:00	21:35	21:28	20:40	19:32	18:23 08:22-08:32/10	16:26	16:05
16	08:15	07:29 07:54-08:17/23	06:29 08:09-09:24/75	06:19	05:22	04:56	05:14	06:00	06:50 08:58-10:02/64	07:39 08:58-09:46/48	07:34	08:16
	16:35	17:30	18:20	20:12	21:02	21:35	21:27	20:38	19:29	18:21 08:19-08:33/14	16:25	16:05
17	08:14	07:27 07:52-08:17/25	06:27 08:08-09:23/75	06:17	05:20	04:56	05:15	06:01	06:51 08:56-10:02/66	07:41 09:00-09:44/44	07:36	08:16
	16:36	17:32	18:21	20:14	21:03	21:36	21:26	20:36	19:27	18:19 08:18-08:34/16	16:23	16:05
18	08:13	07:25 07:50-08:17/27	06:24 08:08-09:22/74	06:14	05:19	04:56	05:17	06:03	06:53 08:56-10:03/67	07:43 09:02-09:42/40	07:38	08:17
	16:38	17:33	18:23	20:16	21:05	21:36	21:25	20:34	19:25	18:17 08:17-08:35/18	16:22	16:05
19	08:12	07:23 07:48-08:16/28	06:22 08:08-09:22/74	06:12	05:18	04:56	05:18	06:05	06:55 08:55-10:04/69	07:45 09:05-09:40/35	07:39	08:18
	16:39	17:35	18:25	20:17	21:06	21:37	21:24	20:32	19:22	18:15 08:17-08:35/18	16:21	16:05
20	08:11	07:21 08:46-08:55/9	06:20 08:07-09:21/74	06:10	05:16	04:56	05:19	06:06	06:56 08:54-10:04/70	07:46 09:08-09:36/28	07:41	08:18
	16:41	17:37 07:45-08:14/29	18:27	20:19	21:08	21:37	21:23	20:30	19:20	18:13 08:17-08:42/25	16:19	16:06
21	08:10	07:19 08:39-09:02/23	06:18 08:07-09:20/73	06:08	05:15	04:56	05:20	06:08	06:58 08:53-10:05/72	07:48 09:11-09:31/20	07:43	08:19
	16:43	17:39 07:45-08:12/27	18:28	20:21	21:09	21:37	21:21	20:28	19:18	18:11 08:17-08:44/27	16:18	16:06
22	08:09	07:17 08:35-09:06/31	06:15 08:08-09:20/72	06:06	05:14	04:56	05:22	06:09	06:59 08:52-10:05/73	07:50 08:16-08:45/29	07:44	08:20
	16:44	17:41 07:45-08:10/25	18:32	20:22	21:10	21:37	21:20	20:26	19:15	18:08	16:17	16:07
23	08:08	07:15 08:33-09:09/36	06:13 08:07-09:18/71	06:04	05:12	04:56	05:23	06:11	07:01 08:52-10:05/73	07:52 08:18-08:46/28	07:46	08:20
	16:46	17:43 07:46-08:04/18	18:32	20:24	21:12	21:38	21:19	20:23	19:13	18:06	16:16	16:07
24	08:07	07:13 08:30-09:12/42	06:11 08:07-09:17/70	06:02	05:11	04:57	05:24	06:13	07:03 08:52-10:06/74	07:53 08:20-08:46/26	07:47	08:21
	16:48	17:44 07:46-08:03/17	18:33	20:26	21:13	21:38	21:17	20:21	19:11	18:04	16:15	16:08
25	08:05	07:11 08:28-09:14/46	06:08 08:08-09:16/68	06:00	05:10	04:57	05:26	06:14	07:04 08:50-10:05/75	06:55 07:22-07:47/25	07:49	08:21
	16:50	17:46 07:47-08:02/15	18:35	20:28	21:14	21:38	21:16	20:19	19:09	17:02	16:14	16:08
26	08:04	07:09 08:25-09:15/50	06:06 08:09-09:15/66	05:58	05:09	04:57	05:27	06:16	07:06 08:50-10:05/75	06:57 07:24-07:47/23	07:51	08:21
	16:51	17:48 07:49-08:01/12	18:37	20:29	21:16	21:38	21:15	20:17	19:06	17:00	16:13	16:09
27	08:03	07:07 08:24-09:17/53	06:04 08:08-09:13/65	05:56	05:08	04:58	05:29	06:17	07:08 08:50-10:05/75	06:59 07:28-07:47/19	07:52	08:22
	16:53	17:50 07:50-07:58/8	18:39	20:31	21:17	21:38	21:13	20:15	19:04	16:58 07:26-07:27/1	16:12	16:10
28	08:01	07:05 08:22-09:18/56	06:01 08:09-09:12/63	05:54	05:07	04:58	05:30	06:19	07:09 08:49-10:05/76	07:00 07:28-07:46/18	07:54	08:22
	16:55	17:52	18:40	20:33	21:18	21:38	21:12	20:13	19:02	16:56	16:11	16:11
29	08:00		06:59 09:10-10:11/61	05:52	05:06	04:59	05:32	06:21	07:11 08:50-10:05/75	07:02 07:30-07:46/16	07:55	08:22
	16:57		19:42	20:34	21:20	21:37	21:10	20:10	18:59	16:55	16:10	16:11
30	07:59		06:57 09:10-10:08/58	05:50	05:05	04:59	05:33	06:22	07:12 08:50-10:05/75	07:04 07:32-07:45/13	07:57	08:22
	16:58		19:44	20:36	21:21	21:37	21:09	20:08	18:57	16:53	16:10	16:12
31	07:57		06:55 09:11-10:06/55		05:04		05:35	06:24		07:06 07:33-07:43/10		08:22
	17:00		19:45		21:22		21:07	20:06		16:51		16:13
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	690	2136	287	0	0	0	0	1601	1540	7	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 07 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (979)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 10:00-10:50/50	07:56 10:04-11:08/64	07:02 07:29-07:47/18	06:52	05:48	05:03
	16:15	17:02 08:22-08:47/25	17:53	19:47	20:38	21:23
2	08:22 10:00-10:51/51	07:54 10:04-11:07/63	07:00 07:29-07:47/18	06:50	05:46	05:02
	16:16	17:04 08:20-08:46/26	17:55	19:49	20:39	21:24
3	08:22 10:01-10:52/51	07:52 10:04-11:07/63	06:58 07:28-07:46/18	06:48	05:44	05:01
	16:17	17:06 08:18-08:46/28	17:57	19:50	20:41	21:25
4	08:22 10:00-10:52/52	07:51 10:04-11:06/62	06:56 07:29-07:45/16	06:45	05:42	05:01
	16:18	17:08 08:17-08:46/29	17:59	19:52	20:43	21:26
5	08:21 10:01-10:53/52	07:49 10:05-11:07/62	06:54 07:30-07:44/14	06:43	05:40	05:00
	16:19	17:09 08:16-08:45/29	18:01	19:54	20:44	21:27
6	08:21 10:00-10:54/54	07:47 10:06-11:06/60	06:52 07:32-07:42/10	06:41	05:39	04:59
	16:20	17:11 08:15-08:44/29	18:02	19:55	20:46	21:28
7	08:21 10:01-10:55/54	07:46 10:06-11:05/59	06:49	06:39	05:37	04:59
	16:22	17:13 08:15-08:42/27	18:04	19:57	20:47	21:29
8	08:20 10:00-10:55/55	07:44 10:06-11:05/59 08:15-08:34/19	06:47	06:36	05:35	04:58
	16:23	17:15 08:36-08:38/2	18:06	19:59	20:49	21:30
9	08:20 10:01-10:57/56	07:42 10:07-11:04/57	06:45	06:34	05:33	04:58
	16:24	17:17 08:16-08:34/18	18:08	20:01	20:51	21:31
10	08:19 10:01-10:57/56	07:41 10:08-11:03/55	06:43	06:32 06:55-07:02/7	05:32	04:57
	16:26	17:19 08:17-08:34/17	18:09	20:02	20:52	21:32
11	08:19 10:01-10:58/57	07:39 10:10-11:03/53	06:40	06:30 06:52-07:03/11	05:30	04:57
	16:27	17:21 08:18-08:33/15	18:11	20:04	20:54	21:32
12	08:18 10:01-10:58/57	07:37 10:10-11:02/52	06:38	06:27 06:50-07:04/14	05:28	04:56
	16:28	17:22 08:19-08:32/13	18:13	20:06	20:55	21:33
13	08:17 10:01-11:00/59	07:35 10:12-11:00/48	06:36	06:25 06:48-07:05/17	05:27	04:56
	16:30	17:24 08:21-08:30/9	18:15	20:07	20:57	21:34
14	08:17 10:01-11:01/60	07:33 10:13-10:59/46	06:34	06:23 06:47-07:05/18	05:25	04:56
	16:31	17:26	18:16	20:09	20:59	21:34
15	08:16 10:01-11:01/60	07:31 10:14-10:57/43	06:31	06:21 06:46-07:05/19	05:23	04:56
	16:33	17:28	18:18	20:11	21:00	21:35
16	08:15 10:01-11:02/61	07:29 10:16-10:55/39	06:29	06:19 06:46-07:05/19	05:22	04:56
	16:35	17:30	18:20	20:12	21:02	21:35
17	08:14 10:01-11:03/62	07:27 10:18-10:53/35	06:27	06:17 06:46-07:04/18	05:20	04:56
	16:36	17:32	18:21	20:14	21:03	21:36
18	08:13 10:01-11:02/61	07:25 10:21-10:50/29	06:24	06:14 06:47-07:04/17	05:19	04:56
	16:38	17:33	18:23	20:16	21:05	21:36
19	08:12 10:01-11:03/62	07:23 10:23-10:45/22	06:22	06:12 06:46-07:02/16	05:18	04:56
	16:39	17:35	18:25	20:17	21:06	21:37
20	08:11 10:01-11:04/63	07:21 10:29-10:38/9	06:20	06:10 06:47-07:00/13	05:16	04:56
	16:41	17:37	18:27	20:19	21:08	21:37
21	08:10 10:01-11:05/64	07:19	06:18	06:08 06:49-06:58/9	05:15	04:56
	16:43	17:39	18:28	20:21	21:09	21:37
22	08:09 10:02-11:05/63	07:17	06:15	06:06	05:14	04:56
	16:44	17:41	18:30	20:22	21:10	21:37
23	08:08 10:01-11:05/64	07:15 07:39-07:41/2	06:13	06:04	05:12	04:56
	16:46 08:35-08:38/3	17:43	18:32	20:24	21:12	21:38
24	08:07 10:02-11:06/64	07:13 07:37-07:44/7	06:11	06:02	05:11	04:57
	16:48 08:34-08:40/6	17:44	18:33	20:26	21:13	21:38
25	08:05 10:01-11:06/65	07:11 07:35-07:46/11	06:08	06:00	05:10	04:57
	16:50 08:33-08:42/9	17:46	18:35	20:28	21:14	21:38
26	08:04 10:02-11:07/65	07:09 07:33-07:47/14	06:06	05:58	05:09	04:57
	16:51 08:31-08:43/12	17:48	18:37	20:29	21:16	21:38
27	08:03 10:02-11:07/65	07:07 07:30-07:47/17	06:04	05:56	05:08	04:58
	16:53 08:30-08:44/14	17:50	18:39	20:31	21:17	21:38
28	08:01 10:02-11:07/65	07:05 07:29-07:47/18	06:01	05:54	05:07	04:58
	16:55 08:28-08:45/17	17:52	18:40	20:33	21:18	21:38
29	08:00 10:02-11:07/65		06:59	05:52	05:06	04:59
	16:57 08:27-08:46/19		19:42	20:34	21:20	21:37
30	07:59 10:03-11:07/64 08:25-08:26/1		06:57	05:50	05:05	04:59
	16:58 08:27-08:46/19		19:44	20:36	21:21	21:37
31	07:57 10:03-11:07/64		06:55		05:04	
	17:00 08:23-08:46/23		19:45		21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	1964	1335	94	178	0	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 07 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (979)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00	05:36	06:26 06:52-07:03/11	07:14	07:08 09:37-10:33/56	07:58 09:43-10:40/57
	21:37	21:05	20:04	18:55	16:49 07:46-08:03/17	16:09
2	05:01	05:38	06:27 06:53-07:00/7	07:16	07:09 09:37-10:34/57	08:00 09:44-10:40/56
	21:37	21:04	20:02	18:52	16:47 07:45-08:03/18	16:08
3	05:01	05:39	06:29 06:55-06:56/1	07:17	07:11 09:36-10:35/59 07:45-08:04/19	08:01 09:44-10:40/56
	21:36	21:02	19:59	18:50	16:45 08:05-08:09/4	16:08
4	05:02	05:41	06:30	07:19	07:13 09:36-10:35/59	08:02 09:46-10:40/54
	21:36	21:00	19:57	18:48	16:43 07:45-08:12/27	16:07
5	05:03	05:42	06:32	07:21	07:15 09:35-10:36/61	08:04 09:46-10:40/54
	21:35	20:59	19:55	18:46	16:42 07:45-08:14/29	16:07
6	05:04	05:44	06:34	07:22	07:16 09:35-10:37/62	08:05 09:46-10:40/54
	21:35	20:57	19:52	18:43	16:40 07:45-08:15/30	16:06
7	05:05	05:45	06:35	07:24 08:08-08:16/8	07:18 09:35-10:37/62	08:06 09:48-10:41/53
	21:34	20:55	19:50	18:41	16:38 07:47-08:16/29	16:06
8	05:06	05:47	06:37	07:26 08:06-08:18/12	07:20 09:35-10:38/63	08:07 09:48-10:40/52
	21:34	20:53	19:48	18:39	16:37 07:49-08:17/28	16:05
9	05:06	05:49	06:38	07:27 08:05-08:20/15	07:22 09:35-10:38/63	08:09 09:49-10:40/51
	21:33	20:51	19:46	18:37	16:35 07:51-08:17/26	16:05
10	05:07	05:50	06:40	07:29 08:04-08:20/16	07:24 09:34-10:39/65	08:10 09:49-10:40/51
	21:32	20:50	19:43	18:34	16:33 07:53-08:18/25	16:05
11	05:08	05:52	06:42	07:31 08:02-08:20/18	07:25 09:35-10:39/64	08:11 09:50-10:40/50
	21:32	20:48	19:41	18:32	16:32 07:55-08:18/23	16:05
12	05:10	05:53	06:43	07:33 08:02-08:20/18	07:27 09:35-10:39/64 07:57-07:58/1	08:12 09:52-10:41/49
	21:31	20:46	19:39	18:30	16:30 07:59-08:18/19	16:05
13	05:11	05:55	06:45	07:34 08:02-08:20/18	07:29 09:34-10:39/65	08:13 09:52-10:41/49
	21:30	20:44	19:36	18:28	16:29 07:59-08:18/19	16:05
14	05:12	05:56	06:46	07:36 08:02-08:20/18	07:31 09:34-10:39/65	08:14 09:52-10:41/49
	21:29	20:42	19:34	18:25	16:27 08:00-08:17/17	16:05
15	05:13	05:58	06:48	07:38 08:04-08:20/16	07:32 09:34-10:39/65	08:15 09:53-10:41/48
	21:28	20:40	19:32	18:23	16:26 08:02-08:16/14	16:05
16	05:14	06:00	06:50	07:39 08:05-08:18/13	07:34 09:35-10:39/64	08:16 09:54-10:41/47
	21:27	20:38	19:29	18:21	16:25 08:04-08:16/12	16:05
17	05:15	06:01	06:51	07:41 08:07-08:16/9	07:36 09:35-10:40/65	08:16 09:54-10:42/48
	21:26	20:36	19:27	18:19	16:23 08:06-08:15/9	16:05
18	05:17	06:03	06:53	07:43 08:09-08:14/5	07:38 09:36-10:40/64	08:17 09:55-10:42/47
	21:25	20:34	19:25	18:17	16:22 08:08-08:14/6	16:05
19	05:18	06:05	06:55	07:45	07:39 09:36-10:40/64	08:18 09:55-10:42/47
	21:24	20:32	19:22	18:15	16:21 08:10-08:13/3	16:05
20	05:19	06:06	06:56	07:46	07:41 09:37-10:40/63	08:18 09:56-10:43/47
	21:23	20:30	19:20	18:13	16:19	16:06
21	05:20	06:08 06:58-07:00/2	06:58	07:48	07:43 09:36-10:40/64	08:19 09:57-10:44/47
	21:21	20:28	19:18	18:11	16:18	16:06
22	05:22	06:09 06:53-07:03/10	06:59	07:50 10:57-11:11/14	07:44 09:37-10:40/63	08:20 09:57-10:44/47
	21:20	20:26	19:15	18:08	16:17	16:07
23	05:23	06:11 06:52-07:05/13	07:01	07:52 10:52-11:16/24	07:46 09:38-10:40/62	08:20 09:57-10:44/47
	21:19	20:23	19:13	18:06	16:16	16:07
24	05:25	06:13 06:50-07:06/16	07:03	07:53 10:49-11:20/31	07:47 09:39-10:40/61	08:21 09:58-10:45/47
	21:17	20:21	19:11	18:04	16:15	16:08
25	05:26	06:14 06:49-07:06/17	07:04	06:55 09:47-10:23/36	07:49 09:39-10:40/61	08:21 09:58-10:45/47
	21:16	20:19	19:09	17:02	16:14	16:08
26	05:27	06:16 06:48-07:06/18	07:06	06:57 09:45-10:25/40	07:51 09:39-10:40/61	08:21 09:58-10:46/48
	21:15	20:17	19:06	17:00	16:13	16:09
27	05:29	06:17 06:48-07:07/19	07:08	06:59 09:43-10:27/44	07:52 09:40-10:40/60	08:22 09:59-10:46/47
	21:13	20:15	19:04	16:58	16:12	16:10
28	05:30	06:19 06:47-07:06/19	07:09	07:00 09:42-10:29/47	07:54 09:40-10:40/60	08:22 10:00-10:48/48
	21:12	20:13	19:02	16:56	16:11	16:11
29	05:32	06:21 06:47-07:06/19	07:11	07:02 09:40-10:29/49	07:55 09:41-10:40/59	08:22 10:00-10:48/48
	21:10	20:10	18:59	16:55 07:50-08:00/10	16:10	16:11
30	05:33	06:22 06:49-07:05/16	07:12	07:04 09:39-10:30/51	07:57 09:43-10:40/57	08:22 10:00-10:49/49
	21:09	20:08	18:57	16:53 07:49-08:02/13	16:10	16:12
31	05:35	06:24 06:50-07:04/14		07:06 09:38-10:32/54		08:22 10:00-10:49/49
	21:07	20:06		16:51 07:46-08:02/16		16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	163	19	595	2233	1543

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 08 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (970)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni
1	08:22		07:56	08:27-08:54/27	07:03	07:45-07:56/11	06:52	07:22-07:43/21	05:48	06:12-06:28/16	05:03
	16:15		17:02		17:53		19:47		20:38		21:23
2	08:22		07:54	08:27-08:54/27	07:00	07:48-07:52/4	06:50	07:23-07:41/18	05:46	06:10-06:29/19	05:02
	16:16		17:04		17:55		19:49		20:39		21:24
3	08:22		07:52	08:27-08:53/26	06:58		06:48	07:23-07:37/14	05:44	06:10-06:30/20	05:01
	16:17		17:06		17:57		19:50		20:41		21:25
4	08:22		07:51	08:28-08:53/25	06:56		06:45	07:24-07:35/11	05:42	06:09-06:30/21	05:01
	16:18		17:08		17:59		19:52		20:43		21:26
5	08:21		07:49	08:28-08:51/23	06:54		06:43	07:28-07:32/4	05:40	06:09-06:29/20	05:00
	16:19		17:09		18:01		19:54		20:44		21:27
6	08:21		07:48	08:29-08:48/19	06:52		06:41		05:39	06:09-06:29/20	04:59
	16:20		17:11		18:02		19:55		20:46		21:28
7	08:21		07:46	08:29-08:45/16	06:49		06:39		05:37	06:09-06:29/20	04:59
	16:22		17:13		18:04		19:57		20:47		21:29
8	08:20		07:44	08:30-08:44/14	06:47		06:36		05:35	06:09-06:29/20	04:58
	16:23		17:15		18:06		19:59		20:49		21:30
9	08:20		07:42	08:32-08:42/10	06:45		06:34		05:33	06:10-06:29/19	04:58
	16:24		17:17		18:08		20:01		20:51		21:31
10	08:19		07:41		06:43		06:32		05:32	06:10-06:28/18	04:57
	16:26		17:19		18:09		20:02		20:52		21:32
11	08:19		07:39		06:40		06:30		05:30	06:11-06:26/15	04:57
	16:27		17:21		18:11		20:04		20:54		21:32
12	08:18		07:37		06:38		06:27		05:28	06:12-06:26/14	04:57
	16:28		17:22		18:13		20:06		20:55		21:33
13	08:17		07:35		06:36		06:25		05:27	06:13-06:24/11	04:56
	16:30		17:24		18:15		20:07		20:57		21:34
14	08:17		07:33		06:34		06:23		05:25	06:15-06:22/7	04:56
	16:31		17:26		18:16		20:09		20:59		21:34
15	08:16		07:31		06:31	06:57-07:00/3	06:21		05:24		04:56
	16:33		17:28		18:18		20:11		21:00		21:35
16	08:15		07:29		06:29	06:53-07:05/12	06:19		05:22		04:56
	16:35		17:30		18:20		20:12		21:02		21:35
17	08:14		07:27		06:27	06:49-07:06/17	06:17		05:21		04:56
	16:36		17:32		18:21		20:14		21:03		21:36
18	08:13		07:25	07:50-07:55/5	06:24	06:47-07:08/21	06:14		05:19		04:56
	16:38		17:33		18:23		20:16		21:05		21:36
19	08:12		07:23	07:48-07:57/9	06:22	06:45-07:09/24	06:12		05:18		04:56
	16:39		17:35		18:25		20:17		21:06		21:37
20	08:11	08:39-08:46/7	07:21	07:45-07:58/13	06:20	06:43-07:09/26	06:10		05:16		04:56
	16:41		17:37		18:27		20:19		21:08		21:37
21	08:10	08:38-08:48/10	07:19	07:43-07:59/16	06:18	06:41-07:09/28	06:08		05:15		04:56
	16:43		17:39		18:28		20:21		21:09		21:37
22	08:09	08:37-08:49/12	07:17	07:42-08:00/18	06:15	06:38-07:10/32	06:06		05:14		04:56
	16:44		17:41		18:30		20:23		21:10		21:37
23	08:08	08:35-08:50/15	07:15	07:42-08:00/18	06:13	06:36-07:10/34	06:04		05:12		04:56
	16:46		17:43		18:32		20:24		21:12		21:38
24	08:07	08:34-08:51/17	07:13	07:42-08:00/18	06:11	06:33-07:09/36	06:02		05:11		04:57
	16:48		17:44		18:33		20:26		21:13		21:38
25	08:05	08:33-08:53/20	07:11	07:42-08:00/18	06:08	06:31-07:08/37	06:00		05:10		04:57
	16:50		17:46		18:35		20:28		21:14		21:38
26	08:04	08:31-08:53/22	07:09	07:42-08:00/18	06:06	06:29-07:07/38	05:58		05:09		04:57
	16:51		17:48		18:37		20:29		21:16		21:38
27	08:03	08:30-08:54/24	07:07	07:42-07:58/16	06:04	06:26-07:05/39	05:56		05:08		04:58
	16:53		17:50		18:39		20:31		21:17		21:38
28	08:01	08:28-08:54/26	07:05	07:43-07:57/14	06:01	06:24-07:04/40	05:54	06:18-06:25/7	05:07		04:58
	16:55		17:52		18:40		20:33		21:18		21:38
29	08:00	08:28-08:54/26			06:59	07:50-08:02/12	05:52	06:16-06:27/11	05:06		04:59
	16:57				19:42	07:23-07:48/25	20:34		21:20		21:37
30	07:59	08:27-08:54/27			06:57	07:54-07:56/2	05:50	06:14-06:28/14	05:05		04:59
	16:59				19:44	07:22-07:46/24	20:36		21:21		21:37
31	07:57	08:26-08:54/28			06:55	07:22-07:45/23			05:04		
	17:00				19:45				21:22		
Sonnenscheinstunden	260		278		367		416		484		498
Anzahl Minuten mit Schatten		234		350		488		100		240	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 08 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (970)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00	05:36 06:22-06:37/15	06:26	07:14	07:08 08:05-08:08/3	07:58
	21:37	21:05	20:04	18:55	16:49	16:09
2	05:01	05:38 06:21-06:37/16	06:27	07:16	07:09 08:01-08:12/11	08:00
	21:37	21:04	20:02	18:52	16:47	16:08
3	05:01	05:39 06:20-06:38/18	06:29	07:17	07:11 08:00-08:14/14	08:01
	21:36	21:02	19:59	18:50	16:45	16:08
4	05:02	05:41 06:19-06:38/19	06:30	07:19	07:13 07:59-08:15/16	08:02
	21:36	21:00	19:57	18:48	16:44	16:07
5	05:03	05:42 06:20-06:39/19	06:32	07:21	07:15 07:58-08:18/20	08:04
	21:35	20:59	19:55	18:46	16:42	16:07
6	05:04	05:44 06:19-06:39/20	06:34	07:22	07:16 07:58-08:21/23	08:05
	21:35	20:57	19:53	18:43	16:40	16:06
7	05:05	05:45 06:19-06:39/20	06:35 07:23-07:27/4	07:24	07:18 07:58-08:22/24	08:06
	21:34	20:55	19:50	18:41	16:38	16:06
8	05:06	05:47 06:18-06:39/21	06:37 07:19-07:29/10	07:26	07:20 07:57-08:24/27	08:07
	21:34	20:53	19:48	18:39	16:37	16:05
9	05:07	05:49 06:19-06:39/20	06:38 07:17-07:31/14	07:27	07:22 07:58-08:24/26	08:09
	21:33	20:51	19:46	18:37	16:35	16:05
10	05:08	05:50 06:19-06:38/19	06:40 07:16-07:34/18	07:29	07:24 07:58-08:25/27	08:10
	21:32	20:50	19:43	18:34	16:33	16:05
11	05:09	05:52 06:20-06:38/18	06:42 07:15-07:35/20	07:31	07:25 07:58-08:26/28	08:11
	21:32	20:48	19:41	18:32	16:32	16:05
12	05:10	05:53 06:21-06:37/16	06:43 07:14-07:37/23	07:33 08:19-08:27/8	07:27 07:59-08:26/27	08:12
	21:31	20:46	19:39	18:30	16:30	16:05
13	05:11	05:55 06:23-06:36/13	06:45 07:13-07:37/24	07:34 08:17-08:30/13	07:29 08:00-08:26/26	08:13
	21:30	20:44	19:36	18:28	16:29	16:05
14	05:12	05:57 06:24-06:34/10	06:46 07:41-07:52/11	07:36 08:16-08:31/15	07:31 08:00-08:26/26	08:14
	21:29	20:42	19:34 07:14-07:38/24	18:25	16:27	16:05
15	05:13	05:58 06:26-06:32/6	06:48 07:13-07:53/40	07:38 08:15-08:32/17	07:32 08:02-08:26/24	08:15
	21:28	20:40	19:32	18:23	16:26	16:05
16	05:14	06:00	06:50 07:15-07:55/40	07:39 08:13-08:31/18	07:34 08:04-08:26/22	08:16
	21:27	20:38	19:29	18:21	16:25	16:05
17	05:15	06:01	06:51 07:17-07:56/39	07:41 08:13-08:32/19	07:36 08:06-08:26/20	08:16
	21:26	20:36	19:27	18:19	16:23	16:05
18	05:17	06:03	06:53 07:18-07:55/37	07:43 08:13-08:32/19	07:38 08:08-08:25/17	08:17
	21:25	20:34	19:25	18:17	16:22	16:05
19	05:18	06:05	06:55 07:20-07:56/36	07:45 08:13-08:31/18	07:39 08:10-08:25/15	08:18
	21:24	20:32	19:22	18:15	16:21	16:05
20	05:19	06:06	06:56 07:21-07:55/34	07:46 08:14-08:31/17	07:41 08:12-08:24/12	08:18
	21:23	20:30	19:20	18:13	16:19	16:06
21	05:20	06:08	06:58 07:23-07:55/32	07:48 08:15-08:30/15	07:43 08:13-08:23/10	08:19
	21:21	20:28	19:18	18:11	16:18	16:06
22	05:22	06:09	06:59 07:25-07:55/30	07:50 08:16-08:28/12	07:44 08:15-08:22/7	08:20
	21:20	20:26	19:16	18:09	16:17	16:07
23	05:23	06:11	07:01 07:26-07:54/28	07:52 08:18-08:26/8	07:46 08:17-08:18/1	08:20
	21:19	20:23	19:13	18:06	16:16	16:07
24	05:25	06:13	07:03 07:28-07:53/25	07:53 08:21-08:22/1	07:47	08:21
	21:17	20:21	19:11	18:04	16:15	16:08
25	05:26	06:14	07:04 07:29-07:51/22	06:55	07:49	08:21
	21:16	20:19	19:09	17:02	16:14	16:08
26	05:27	06:16	07:06 07:31-07:50/19	06:57	07:51	08:21
	21:15	20:17	19:06	17:00	16:13	16:09
27	05:29	06:17	07:08 07:34-07:48/14	06:59	07:52	08:22
	21:13	20:15	19:04	16:58	16:12	16:10
28	05:30	06:19	07:09 07:36-07:43/7	07:00	07:54	08:22
	21:12	20:13	19:02	16:57	16:11	16:11
29	05:32	06:21	07:11	07:02	07:55	08:22
	21:10	20:10	18:59	16:55	16:10	16:12
30	05:33 06:25-06:33/8	06:22	07:12	07:04	07:57	08:22
	21:09	20:08	18:57	16:53	16:10	16:12
31	05:35 06:24-06:36/12	06:24		07:06		08:22
	21:07	20:06		16:51		16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	20	250	551	180	426	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 09 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (971)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar		Februar		März		April		Mai		Juni	
1	08:22	09:00-09:29/29	07:56	08:23-08:49/26	07:03	07:27-08:02/35	06:52		05:48	06:40-06:55/15	05:03	05:45-06:05/20
	16:15		17:02		17:53		19:47		20:38		21:23	
2	08:22	09:01-09:30/29	07:54	08:22-08:49/27	07:00	07:26-08:03/37	06:50		05:46	06:42-06:53/11	05:02	05:46-06:06/20
	16:16		17:04		17:55		19:49		20:39		21:24	
3	08:22	09:01-09:30/29	07:52	08:21-08:49/28	06:58	07:23-08:02/39	06:48		05:44	06:46-06:49/3	05:01	05:46-06:05/19
	16:17		17:06		17:57		19:50		20:41		21:25	
4	08:22	09:01-09:30/29	07:51	08:22-08:49/27	06:56	07:22-08:02/40	06:45		05:42		05:01	05:48-06:06/18
	16:18		17:08		17:59		19:52		20:43		21:26	
5	08:21	09:02-09:31/29	07:49	08:21-08:49/28	06:54	07:22-08:02/40	06:43		05:40		05:00	05:48-06:05/17
	16:19		17:10		18:01		19:54		20:44		21:27	
6	08:21	09:03-09:31/28	07:48	08:21-08:48/27	06:52	07:18-08:02/44	06:41		05:39		04:59	05:48-06:04/16
	16:20		17:11		18:02		19:56		20:46		21:28	
7	08:21	09:03-09:31/28	07:46	08:21-08:47/26	06:49	07:14-08:00/46	06:39		05:37		04:59	05:49-06:05/16
	16:22		17:13		18:04		19:57		20:47		21:29	
8	08:20	09:03-09:31/28	07:44	08:21-08:45/24	06:47	07:12-07:59/47	06:36		05:35		04:58	05:50-06:05/15
	16:23		17:15		18:06		19:59		20:49		21:30	
9	08:20	09:04-09:31/27	07:42	08:22-08:42/20	06:45	07:10-07:58/48	06:34		05:33		04:58	05:50-06:04/14
	16:24		17:17		18:08		20:01		20:51		21:31	
10	08:19	09:04-09:31/27	07:41	08:23-08:40/17	06:43	07:08-07:57/49	06:32		05:32		04:57	05:50-06:04/14
	16:26		17:19		18:09		20:02		20:52		21:32	
11	08:19	09:04-09:31/27	07:39	08:24-08:39/15	06:40	07:05-07:54/49	06:30		05:30		04:57	05:51-06:04/13
	16:27		17:21		18:11		20:04		20:54		21:32	
12	08:18	09:06-09:31/25	07:37	08:25-08:38/13	06:38	07:47-07:48/1	06:28		05:28		04:57	05:51-06:03/12
	16:29		17:22		18:13	07:03-07:37/34	20:06		20:55		21:33	
13	08:17	09:06-09:30/24	07:35	08:27-08:36/9	06:36	07:02-07:36/34	06:25		05:27		04:56	05:52-06:03/11
	16:30		17:24		18:15		20:07		20:57		21:34	
14	08:17	09:07-09:29/22	07:33		06:34	07:00-07:31/31	06:23		05:25	05:51-05:57/6	04:56	05:53-06:03/10
	16:32		17:26		18:16		20:09		20:59		21:34	
15	08:16	09:08-09:25/17	07:31		06:31	07:00-07:28/28	06:21	06:50-06:52/2	05:24	05:50-06:00/10	04:56	05:53-06:03/10
	16:33		17:28		18:18		20:11		21:00		21:35	
16	08:15	09:08-09:24/16	07:29		06:29	07:00-07:27/27	06:19	06:45-06:57/12	05:22	05:48-06:01/13	04:56	05:54-06:03/9
	16:35		17:30		18:20		20:12		21:02		21:35	
17	08:14	09:10-09:24/14	07:27		06:27	06:59-07:25/26	06:17	06:43-06:59/16	05:21	05:47-06:02/15	04:56	05:55-06:03/8
	16:36		17:32		18:22		20:14		21:03		21:36	
18	08:13	09:11-09:24/13	07:25		06:24	06:59-07:23/24	06:14	06:41-07:00/19	05:19	05:46-06:03/17	04:56	05:55-06:03/8
	16:38		17:34		18:23		20:16		21:05		21:36	
19	08:12	09:12-09:22/10	07:23		06:22	07:00-07:20/20	06:12	06:40-07:01/21	05:18	05:45-06:03/18	04:56	05:55-06:03/8
	16:39		17:35		18:25		20:17		21:06		21:37	
20	08:11	09:15-09:20/5	07:21		06:20	07:00-07:18/18	06:10	06:38-07:01/23	05:16	05:45-06:04/19	04:56	05:56-06:03/7
	16:41		17:37		18:27		20:19		21:08		21:37	
21	08:10		07:19		06:18	07:01-07:15/14	06:08	06:38-07:01/23	05:15	05:44-06:05/21	04:56	05:56-06:03/7
	16:43		17:39		18:28		20:21		21:09		21:37	
22	08:09		07:17		06:15	07:03-07:13/10	06:06	06:37-07:01/24	05:14	05:44-06:05/21	04:56	05:57-06:04/7
	16:44		17:41		18:30		20:23		21:10		21:37	
23	08:08		07:15		06:13		06:04	06:37-07:01/24	05:12	05:44-06:06/22	04:56	05:56-06:04/8
	16:46		17:43		18:32		20:24		21:12		21:38	
24	08:07	08:35-08:40/5	07:13	07:45-07:57/12	06:11		06:02	06:36-07:01/25	05:11	05:44-06:06/22	04:57	05:56-06:04/8
	16:48		17:44		18:33		20:26		21:13		21:38	
25	08:05	08:33-08:43/10	07:11	07:41-07:59/18	06:08		06:00	06:36-07:00/24	05:10	05:44-06:06/22	04:57	05:57-06:05/8
	16:50		17:46		18:35		20:28		21:14		21:38	
26	08:04	08:31-08:44/13	07:09	07:35-08:01/26	06:06		05:58	06:37-07:01/24	05:09	05:45-06:06/21	04:57	05:56-06:05/9
	16:51		17:48		18:37		20:29		21:16		21:38	
27	08:03	08:31-08:46/15	07:07	07:30-08:01/31	06:04		05:56	06:37-07:00/23	05:08	05:45-06:06/21	04:58	05:56-06:05/9
	16:53		17:50		18:39		20:31		21:17		21:38	
28	08:01	08:30-08:46/16	07:05	07:28-08:02/34	06:01		05:54	06:38-06:59/21	05:07	05:45-06:06/21	04:58	05:56-06:06/10
	16:55		17:52		18:40		20:33		21:18		21:38	
29	08:00	08:30-08:48/18			06:59		05:52	06:38-06:58/20	05:06	05:45-06:06/21	04:59	05:55-06:06/11
	16:57				19:42		20:34		21:20		21:37	
30	07:59	08:26-08:48/22			06:57		05:50	06:39-06:57/18	05:05	05:45-06:06/21	04:59	05:56-06:07/11
	16:59				19:44		20:36		21:21		21:37	
31	07:57	08:24-08:48/24			06:55				05:04	05:45-06:06/21		
	17:00				19:45				21:22			
Sonnenscheinstunden	260		278		367		416		484		498	
Anzahl Minuten mit Schatten	579		408		741		319		361		353	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 09 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (971)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 05:56-06:08/12 21:37	05:36 21:05	06:26 20:04	07:14 07:41-08:16/35 18:55	07:08 07:52-08:09/17 16:49	07:58 08:46-09:13/27 16:09
2	05:01 05:55-06:08/13 21:37	05:38 21:04	06:27 20:02	07:16 07:43-08:31/48 18:52	07:09 07:51-08:13/22 16:47	08:00 08:47-09:14/27 16:08
3	05:01 05:55-06:09/14 21:36	05:39 21:02	06:29 19:59	07:17 07:45-08:34/49 18:50	07:11 07:51-08:15/24 16:45	08:01 08:47-09:14/27 16:08
4	05:02 05:55-06:10/15 21:36	05:41 21:00	06:30 19:57	07:19 07:46-08:35/49 18:48	07:13 07:51-08:17/26 16:44	08:02 08:48-09:16/28 16:07
5	05:03 05:55-06:11/16 21:35	05:42 20:59	06:32 19:55	07:21 07:48-08:36/48 18:46	07:15 07:51-08:18/27 16:42	08:04 08:48-09:16/28 16:07
6	05:04 05:54-06:11/17 21:35	05:44 20:57	06:34 19:53	07:22 07:50-08:37/47 18:43	07:16 07:51-08:19/28 16:40	08:05 08:49-09:17/28 16:06
7	05:05 05:54-06:11/17 21:34	05:45 20:55	06:35 19:50	07:24 07:51-08:37/46 18:41	07:18 07:52-08:19/27 16:38	08:06 08:49-09:18/29 16:06
8	05:06 05:54-06:12/18 21:34	05:47 20:53	06:37 19:48	07:26 07:56-08:37/41 18:39	07:20 07:52-08:20/28 16:37	08:07 08:49-09:18/29 16:05
9	05:07 05:54-06:12/18 21:33	05:49 20:51	06:38 19:46	07:28 07:57-08:37/40 18:37	07:22 07:53-08:20/27 16:35	08:09 08:49-09:19/30 16:05
10	05:08 05:54-06:13/19 21:32	05:50 06:53-07:00/7 20:50	06:40 19:43	07:29 07:58-08:37/39 18:34	07:24 07:54-08:20/26 16:33	08:10 08:50-09:19/29 16:05
11	05:09 05:54-06:13/19 21:32	05:52 06:51-07:03/12 20:48	06:42 19:41	07:31 07:58-08:36/38 18:32	07:25 07:56-08:20/24 16:32	08:11 08:51-09:20/29 16:05
12	05:10 05:54-06:14/20 21:31	05:53 06:48-07:04/16 20:46	06:43 19:39	07:33 08:00-08:36/36 18:30	07:27 07:58-08:20/22 16:30	08:12 08:52-09:21/29 16:05
13	05:11 05:54-06:14/20 21:30	05:55 06:47-07:06/19 20:44	06:45 19:36	07:34 08:01-08:35/34 18:28	07:29 08:02-08:20/18 16:29	08:13 08:52-09:21/29 16:05
14	05:12 05:53-06:14/21 21:29	05:57 06:46-07:06/20 20:42	06:47 19:34	07:36 08:02-08:35/33 18:26	07:31 08:02-08:18/16 16:27	08:14 08:53-09:22/29 16:05
15	05:13 05:53-06:15/22 21:28	05:58 06:45-07:07/22 20:40	06:48 19:32	07:38 08:04-08:34/30 18:23	07:32 08:03-08:18/15 16:26	08:15 08:52-09:21/29 16:05
16	05:14 05:53-06:15/22 21:27	06:00 06:44-07:07/23 20:38	06:50 19:29	07:39 08:10-08:31/21 18:21	07:34 08:04-08:17/13 16:25	08:16 08:53-09:22/29 16:05
17	05:15 05:53-06:15/22 21:26	06:01 06:44-07:08/24 20:36	06:51 19:27	07:41 08:14-08:30/16 18:19	07:36 08:06-08:16/10 16:23	08:16 08:54-09:23/29 16:05
18	05:17 05:54-06:16/22 21:25	06:03 06:43-07:07/24 20:34	06:53 19:25	07:43 08:18-08:27/9 18:17	07:38 08:09-08:14/5 16:22	08:17 08:55-09:23/28 16:05
19	05:18 05:54-06:16/22 21:24	06:05 06:43-07:07/24 20:32	06:55 19:22	07:45 18:15	07:39 16:21	08:18 08:54-09:23/29 16:06
20	05:19 05:54-06:15/21 21:23	06:06 06:42-07:07/25 20:30	06:56 19:20	07:46 18:13	07:41 16:19	08:18 08:55-09:24/29 16:06
21	05:21 05:54-06:15/21 21:21	06:08 06:43-07:07/24 20:28	06:58 07:49-07:57/8 19:18	07:48 18:11	07:43 16:18	08:19 08:56-09:25/29 16:06
22	05:22 05:54-06:15/21 21:20	06:09 06:42-07:06/24 20:26	06:59 07:47-08:00/13 19:16	07:50 18:09	07:44 08:51-08:56/5 16:17	08:20 08:56-09:25/29 16:07
23	05:23 05:55-06:15/20 21:19	06:11 06:43-07:05/22 20:23	07:01 07:44-08:01/17 19:13	07:52 18:06	07:46 08:49-08:59/10 16:16	08:20 08:57-09:26/29 16:07
24	05:25 05:55-06:14/19 21:17	06:13 06:43-07:04/21 20:21	07:03 07:43-08:03/20 19:11	07:53 18:04	07:47 08:48-09:01/13 16:15	08:21 08:57-09:26/29 16:08
25	05:26 05:55-06:14/19 21:16	06:14 06:44-07:03/19 20:19	07:04 07:42-08:04/22 19:09	06:55 17:02	07:49 08:48-09:02/14 16:14	08:21 08:57-09:26/29 16:08
26	05:27 05:57-06:14/17 21:15	06:16 06:45-07:00/15 20:17	07:06 07:41-08:07/26 19:06	06:57 17:00	07:51 08:47-09:02/15 16:13	08:21 08:58-09:27/29 16:09
27	05:29 05:58-06:12/14 21:13	06:17 06:47-06:59/12 20:15	07:08 07:41-08:08/27 19:04	06:59 16:58	07:52 08:47-09:04/17 16:12	08:22 08:59-09:28/29 16:10
28	05:30 05:59-06:11/12 21:12	06:19 20:13	07:09 07:40-08:08/28 19:02	07:00 16:57	07:54 08:47-09:09/22 16:11	08:22 08:59-09:28/29 16:11
29	05:32 06:01-06:10/9 21:10	06:21 20:10	07:11 07:41-08:09/28 18:59	07:02 07:56-08:06/10 16:55	07:55 08:46-09:10/24 16:10	08:22 09:00-09:29/29 16:12
30	05:33 06:04-06:05/1 21:09	06:22 20:08	07:13 07:41-08:14/33 18:57	07:04 07:55-08:08/13 16:53	07:57 08:47-09:12/25 16:10	08:22 09:00-09:29/29 16:12
31	05:35 21:07	06:24 20:06		07:06 07:52-08:08/16 16:51		08:22 09:00-09:30/30 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	523	353	222	698	520	891

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 10 - VESTAS V162-6.2MW 6200 162.0 IO! NH: 169,0 m (Ges:250,0 m) (976)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 16:15	07:56 08:25-08:48/23 17:02	07:03 13:25-14:51/86 17:53	06:52 13:50-16:09/139 19:47 07:15-07:40/25	05:48 14:32-15:52/80 20:38 06:12-06:23/11	05:03 21:23
2	08:22 16:16	07:54 08:24-08:48/24 17:04	07:00 13:23-14:53/90 17:55	06:50 13:49-16:08/139 19:49 07:13-07:40/27	05:46 14:35-15:51/76 20:39 06:10-06:24/14	05:02 21:24
3	08:22 16:17	07:52 08:23-08:48/25 17:06	06:58 13:21-14:54/93 17:57	06:48 13:50-16:08/138 19:50 07:11-07:38/27	05:44 14:38-15:50/72 20:41 06:09-06:26/17	05:01 21:25
4	08:22 16:18	07:51 08:23-08:49/26 17:08	06:56 13:19-14:56/97 17:59	06:45 13:50-16:08/138 19:52 07:11-07:38/27	05:42 14:42-15:49/67 20:43 06:07-06:26/19	05:01 21:26
5	08:21 16:19	07:49 08:22-08:49/27 17:09	06:54 13:17-14:57/100 18:01	06:43 13:50-16:08/138 19:54 07:11-07:36/25	05:40 14:45-15:48/63 20:44 06:05-06:26/21	05:00 21:27
6	08:21 16:20	07:48 08:22-08:49/27 17:11	06:52 13:16-14:59/103 18:02	06:41 13:49-16:07/138 19:56 07:11-07:35/24	05:39 14:48-15:46/58 20:46 06:03-06:26/23	04:59 21:28
7	08:21 16:22	07:46 08:13-08:49/36 17:13	06:49 13:14-14:59/105 18:04	06:39 13:50-16:07/137 19:57 07:10-07:31/21	05:37 14:52-15:45/53 20:47 06:02-06:27/25	04:59 21:29
8	08:20 16:23	07:44 08:11-08:49/38 17:15	06:47 13:12-15:00/108 18:06 07:12-07:20/8	06:36 13:50-16:07/137 19:59 07:10-07:28/18	05:35 14:55-15:43/48 20:49 06:01-06:26/25	04:58 21:30
9	08:20 16:24	07:42 08:09-08:48/39 17:17	06:45 13:11-15:01/110 18:08 07:09-07:23/14	06:34 13:51-16:07/136 20:01 07:11-07:27/16	05:33 14:58-15:41/43 20:51 06:01-06:27/26	04:58 21:31
10	08:19 16:26	07:41 08:09-08:48/39 17:19	06:43 13:10-15:03/113 18:09 07:07-07:25/18	06:32 13:51-16:06/135 20:02 07:13-07:25/12	05:32 15:02-15:40/38 20:52 06:00-06:26/26	04:57 21:32
11	08:19 16:27	07:39 08:08-08:47/39 17:21	06:40 13:08-15:03/115 18:11 07:05-07:25/20	06:30 13:51-16:05/134 20:04 07:15-07:23/8	05:30 15:06-15:37/31 20:54 05:59-06:25/26	04:57 21:32
12	08:18 16:28	07:37 08:07-08:47/40 17:22	06:38 13:07-15:04/117 18:13 07:02-07:26/24	06:27 13:52-16:05/133 20:06	05:28 15:11-15:35/24 20:55 05:59-06:25/26	04:56 21:33
13	08:17 16:30	07:35 08:07-08:46/39 17:24	06:36 13:06-15:05/119 18:15 07:01-07:27/26	06:25 13:53-16:05/132 20:07	05:27 15:17-15:29/12 20:57 05:58-06:24/26	04:56 21:34
14	08:17 16:31	07:33 08:06-08:45/39 17:26	06:34 13:04-15:05/121 18:16 06:59-07:26/27	06:23 13:54-16:04/130 20:09	05:25 05:59-06:24/25 20:59	04:56 21:34
15	08:16 16:33	07:31 08:06-08:43/37 17:28	06:31 13:03-15:06/123 18:18 06:55-07:26/31	06:21 13:56-16:04/128 20:11	05:24 05:59-06:23/24 21:00	04:56 21:35
16	08:15 16:35	07:29 08:06-08:42/36 17:30	06:29 13:02-15:06/124 18:20 06:52-07:26/34	06:19 13:57-16:04/127 20:12	05:22 05:59-06:21/22 21:02	04:56 21:35
17	08:14 16:36	07:27 08:06-08:38/32 17:32	06:27 13:00-15:06/126 18:21 06:50-07:25/35	06:17 13:58-16:03/125 20:14	05:21 05:59-06:21/22 21:03	04:56 21:36
18	08:13 16:38	07:25 08:07-08:31/24 17:33	06:24 12:59-15:07/128 18:23 06:49-07:24/35	06:14 13:59-16:02/123 20:16	05:19 06:00-06:21/21 21:05	04:56 21:36
19	08:12 16:39	07:23 14:02-14:16/14 17:35 08:07-08:30/23	06:22 12:59-15:08/129 18:25 06:48-07:23/35	06:12 14:01-16:01/120 20:17	05:18 06:00-06:20/20 21:06	04:56 21:37
20	08:11 16:41	07:21 13:54-14:25/31 17:37 08:07-08:28/21	06:20 12:57-15:07/130 18:27 06:48-07:21/33	06:10 14:03-16:01/118 20:19	05:16 06:01-06:19/18 21:08	04:56 21:37
21	08:10 16:43	07:19 13:49-14:30/41 17:39 08:08-08:27/19	06:18 12:57-15:08/131 18:28 06:47-07:20/33	06:08 14:05-16:00/115 20:21	05:15 06:01-06:19/18 21:09	04:56 21:37
22	08:09 16:44	07:17 13:45-14:34/49 17:41 08:09-08:26/17	06:15 12:56-15:08/132 18:30 06:47-07:17/30	06:06 14:07-15:59/112 20:23	05:14 06:02-06:18/16 21:10	04:56 21:37
23	08:08 16:46	07:15 13:41-14:38/57 17:43 08:11-08:24/13	06:13 12:55-15:08/133 18:32 06:47-07:14/27	06:04 14:10-15:59/109 20:24	05:12 06:03-06:18/15 21:12	04:56 21:38
24	08:07 16:48	07:13 13:38-14:41/63 17:44 08:15-08:21/6	06:11 12:54-15:08/134 18:33 06:47-07:10/23	06:02 14:12-15:58/106 20:26	05:11 06:05-06:17/12 21:13	04:57 21:38
25	08:05 16:50	07:11 13:35-14:43/68 17:46	06:08 12:54-15:09/135 18:35 06:48-07:05/17	06:00 14:15-15:57/102 20:28	05:10 06:06-06:16/10 21:14	04:57 21:38
26	08:04 16:51	07:09 13:32-14:45/73 17:48	06:06 12:53-15:09/136 06:29-06:37/8 18:37 06:49-07:03/14	05:58 14:17-15:56/99 20:29	05:09 06:08-06:13/5 21:16	04:57 21:38
27	08:03 08:31-08:41/10 16:53	07:07 13:29-14:47/78 17:50	06:04 12:52-15:09/137 06:26-06:38/12 18:39 06:50-07:00/10	05:56 14:20-15:55/95 20:31	05:08 21:17	04:58 21:38
28	08:01 08:29-08:43/14 16:55	07:05 13:27-14:49/82 17:52	06:01 12:52-15:09/137 18:40 06:24-06:39/15	05:54 14:24-15:55/91 20:33	05:07 21:18	04:58 21:38
29	08:00 08:28-08:45/17 16:57		06:59 13:52-16:09/137 19:42 07:22-07:40/18	05:52 14:27-15:54/87 20:34	05:06 21:20	04:59 21:37
30	07:59 08:27-08:46/19 16:58		06:57 13:51-16:08/137 19:44 07:19-07:40/21	05:50 14:30-15:53/83 20:36 06:14-06:21/7	05:05 21:21	04:59 21:37
31	07:57 08:25-08:46/21 17:00		06:55 13:50-16:09/139 19:45 07:17-07:40/23		05:04 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	81	1245	4316	3881	1178	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 10 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (976)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 21:37	05:36 15:20-15:46/26 21:05 06:10-06:36/26	06:26 13:51-16:05/134 20:04 07:14-07:22/8	07:14 13:45-15:43/118 18:55 07:40-08:05/25	07:08 07:38-08:17/39 16:49	07:58 16:09
2	05:01 21:37	05:38 15:15-15:49/34 21:04 06:09-06:36/27	06:27 13:49-16:04/135 20:02 07:11-07:23/12	07:16 13:46-15:42/116 18:52 07:42-08:04/22	07:09 07:39-08:18/39 16:47	08:00 16:08
3	05:01 21:36	05:39 15:11-15:51/40 21:02 06:10-06:37/27	06:29 13:49-16:05/136 19:59 07:09-07:25/16	07:17 13:47-15:41/114 18:50 07:45-08:03/18	07:11 07:41-08:18/37 16:45	08:01 16:08
4	05:02 21:36	05:41 15:07-15:52/45 21:00 06:10-06:36/26	06:30 13:47-16:04/137 19:57 07:08-07:25/17	07:19 13:47-15:39/112 18:48 07:45-08:01/16	07:13 07:44-08:19/35 16:44	08:02 16:07
5	05:03 21:35	05:42 15:04-15:54/50 20:59 06:11-06:37/26	06:32 13:47-16:04/137 19:55 07:07-07:28/21	07:21 13:49-15:38/109 18:46 07:47-07:59/12	07:15 07:52-08:19/27 16:42	08:04 16:07
6	05:04 21:35	05:44 15:00-15:55/55 20:57 06:12-06:36/24	06:34 13:45-16:03/138 19:53 07:06-07:30/24	07:22 13:50-15:36/106 18:43	07:16 07:52-08:19/27 16:40	08:05 16:06
7	05:05 21:34	05:45 14:57-15:57/60 20:55 06:14-06:36/22	06:35 13:45-16:03/138 19:50 07:06-07:32/26	07:24 13:50-15:34/104 18:41	07:18 07:53-08:19/26 16:38	08:06 16:06
8	05:06 21:34	05:47 14:53-15:58/65 20:53 06:15-06:35/20	06:37 13:44-16:02/138 19:48 07:05-07:32/27	07:26 13:52-15:33/101 18:39	07:20 07:54-08:19/25 16:37	08:07 16:05
9	05:06 21:33	05:49 14:50-15:58/68 20:51 06:17-06:35/18	06:38 13:44-16:02/138 19:46 07:05-07:33/28	07:28 13:53-15:31/98 18:37	07:22 07:54-08:19/25 16:35	08:09 16:05
10	05:07 21:32	05:50 14:47-15:59/72 20:50 06:18-06:34/16	06:40 13:43-16:01/138 19:43 07:06-07:33/27	07:29 13:55-15:30/95 18:34	07:24 07:56-08:19/23 16:33	08:10 16:05
11	05:08 21:32	05:52 14:43-16:00/77 20:48 06:20-06:33/13	06:42 13:43-16:01/138 19:41 07:07-07:32/25	07:31 13:56-15:27/91 18:32	07:25 07:57-08:18/21 16:32	08:11 16:05
12	05:10 21:31	05:53 14:40-16:01/81 20:46 06:21-06:31/10	06:43 13:43-16:01/138 19:39 07:09-07:32/23	07:33 13:57-15:26/89 18:30	07:27 07:59-08:17/18 16:30	08:12 16:05
13	05:11 21:30	05:55 14:36-16:01/85 20:44 06:23-06:29/6	06:45 13:42-16:00/138 19:36 07:10-07:31/21	07:34 13:59-15:24/85 18:28	07:29 08:00-08:17/17 16:29	08:13 16:05
14	05:12 21:29	05:57 14:33-16:02/89 20:42	06:46 13:42-15:59/137 19:34 07:13-07:31/18	07:36 14:01-15:22/81 18:25	07:31 08:01-08:14/13 16:27	08:14 16:05
15	05:13 21:28	05:58 14:30-16:02/92 20:40	06:48 13:41-15:58/137 19:32 07:13-07:29/16	07:38 14:03-15:19/76 18:23	07:32 08:03-08:13/10 16:26	08:15 16:05
16	05:14 21:27	06:00 14:27-16:03/96 20:38	06:50 13:41-15:58/137 07:15-07:28/13 19:29 07:40-07:49/9	07:39 14:05-15:16/71 18:21	07:34 16:25	08:16 16:05
17	05:15 21:26	06:01 14:24-16:04/100 20:36	06:51 13:41-15:57/136 07:17-07:26/9 19:27 07:38-07:51/13	07:41 14:07-15:14/67 18:19	07:36 16:23	08:16 16:05
18	05:17 06:16-06:23/7 21:25	06:03 14:21-16:04/103 20:34	06:53 13:41-15:56/135 19:25 07:35-07:52/17	07:43 14:10-15:11/61 18:17 08:44-08:54/10	07:38 16:22	08:17 16:05
19	05:18 06:15-06:26/11 21:24	06:05 14:18-16:05/107 20:32	06:55 13:41-15:56/135 19:22 07:34-07:57/23	07:45 14:13-15:08/55 18:15 08:42-08:56/14	07:39 16:21	08:18 16:05
20	05:19 06:14-06:27/13 21:23	06:06 14:15-16:04/109 20:30	06:56 13:41-15:54/133 19:20 07:33-07:59/26	07:46 14:17-15:04/47 18:13 08:40-08:58/18	07:41 16:19	08:19 16:06
21	05:20 06:12-06:28/16 21:21	06:08 14:12-16:05/113 20:28	06:58 13:41-15:54/133 19:18 07:32-08:01/29	07:48 14:20-14:59/39 18:11 08:39-08:59/20	07:43 16:18	08:19 16:06
22	05:22 06:11-06:28/17 21:20	06:09 14:09-16:05/116 20:26	06:59 13:41-15:53/132 19:16 07:32-08:05/33	07:50 14:26-14:53/27 18:08 08:37-08:59/22	07:44 16:17	08:20 16:07
23	05:23 06:12-06:30/18 21:19	06:11 14:07-16:05/118 20:23	07:01 13:42-15:52/130 19:13 07:31-08:05/34	07:52 08:36-09:00/24 18:06	07:46 16:16	08:20 16:07
24	05:25 06:11-06:30/19 21:17	06:13 14:04-16:05/121 20:21	07:03 13:42-15:51/129 19:11 07:32-08:07/35	07:53 08:36-09:00/24 18:04	07:48 16:15	08:21 16:08
25	05:26 06:10-06:30/20 21:16	06:14 14:03-16:06/123 20:19	07:04 13:42-15:50/128 19:09 07:31-08:07/36	06:55 07:36-08:09/33 17:02	07:49 16:14	08:21 16:08
26	05:27 06:10-06:31/21 21:15	06:16 14:00-16:05/125 20:17	07:06 13:43-15:49/126 19:06 07:32-08:07/35	06:57 07:36-08:12/36 17:00	07:51 16:13	08:21 16:09
27	05:29 06:10-06:31/21 21:13	06:17 13:59-16:06/127 20:15	07:08 13:43-15:48/125 19:04 07:34-08:08/34	06:59 07:36-08:13/37 16:58	07:52 16:12	08:22 16:10
28	05:30 06:09-06:32/23 21:12	06:19 13:56-16:05/129 20:13	07:09 13:43-15:47/124 19:02 07:35-08:07/32	07:00 07:36-08:15/39 16:56	07:54 16:11	08:22 16:11
29	05:32 06:10-06:34/24 21:10	06:21 13:55-16:05/130 20:10	07:11 13:44-15:46/122 18:59 07:39-08:07/28	07:02 07:36-08:16/40 16:55	07:55 16:10	08:22 16:11
30	05:33 06:09-06:35/26 21:09	06:22 13:53-16:05/132 20:08	07:13 13:45-15:45/120 18:57 07:40-08:07/27	07:04 07:37-08:16/39 16:53	07:57 16:10	08:22 16:12
31	05:35 15:25-15:42/17 21:07 06:10-06:36/26	06:24 13:52-16:05/133 20:06		07:06 07:37-08:16/39 16:51		08:22 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	279	3082	4744	2350	382	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 11 - VESTAS V162-6.2MW 6200 162.0 IO! NH: 169,0 m (Ges:250,0 m) (977)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 13:20-14:17/57	07:56 13:36-14:25/49	07:03 07:38-08:06/28	06:52	05:48	05:03 05:31-05:40/9
	16:15 08:53-09:27/34	17:02	17:53	19:47	20:38	21:23
2	08:22 13:21-14:18/57	07:54 13:37-14:24/47	07:00 07:39-07:59/20	06:50 07:13-07:20/7	05:46	05:02 05:31-05:41/10
	16:16 08:53-09:28/35	17:04	17:55	19:49	20:39	21:24
3	08:22 13:22-14:19/57	07:52 13:38-14:23/45	06:58 07:39-07:57/18	06:48 07:10-07:21/11	05:44	05:01 05:30-05:42/12
	16:17 08:54-09:28/34	17:06	17:57	19:50	20:41	21:25
4	08:22 13:21-14:19/58	07:51 13:39-14:22/43	06:56 07:40-07:56/16	06:45 07:08-07:22/14	05:42	05:01 05:30-05:43/13
	16:18 08:53-09:28/35	17:08	17:59	19:52	20:43	21:26
5	08:21 13:22-14:20/58	07:49 13:41-14:21/40	06:54 07:42-07:54/12	06:43 07:06-07:23/17	05:40	05:00 05:29-05:43/14
	16:19 08:53-09:29/36	17:09	18:01 07:17-07:26/9	19:54	20:44	21:27
6	08:21 13:22-14:20/58	07:48 13:43-14:20/37	06:52 07:45-07:51/6	06:41 07:04-07:23/19	05:39	04:59 05:28-05:43/15
	16:20 08:53-09:30/37	17:11	18:02 07:15-07:28/13	19:56	20:46	21:28
7	08:21 13:23-14:21/58	07:46 13:45-14:18/33	06:49 07:13-07:29/16	06:39 07:02-07:22/20	05:37	04:59 05:28-05:44/16
	16:22 08:53-09:30/37	17:13	18:04	19:57	20:47	21:29
8	08:20 13:23-14:21/58	07:44 13:47-14:16/29	06:47 07:12-07:30/18	06:36 06:59-07:22/23	05:35	04:58 05:28-05:45/17
	16:23 08:53-09:30/37	17:15	18:06	19:59	20:49	21:30
9	08:20 13:24-14:22/58	07:42 13:50-14:13/23	06:45 07:11-07:31/20	06:34 06:57-07:22/25	05:33	04:58 05:27-05:44/17
	16:24 08:53-09:31/38	17:17	18:08	20:01	20:51	21:31
10	08:19 13:24-14:23/59	07:41 13:55-14:08/13	06:43 07:06-07:31/25	06:32 06:55-07:21/26	05:32	04:57 05:27-05:45/18
	16:26 08:53-09:31/38	17:19 08:09-08:15/6	18:09	20:02	20:52	21:32
11	08:19 13:24-14:23/59	07:39 08:06-08:18/12	06:40 07:03-07:30/27	06:30 06:54-07:20/26	05:30	04:57 05:27-05:46/19
	16:27 08:53-09:31/38	17:21	18:11	20:04	20:54	21:32
12	08:18 13:24-14:23/59	07:37 08:04-08:20/16	06:38 07:02-07:30/28	06:27 06:50-07:18/28	05:28	04:57 05:26-05:45/19
	16:28 08:54-09:32/38	17:22	18:13	20:06	20:55	21:33
13	08:17 13:25-14:24/59	07:35 08:02-08:21/19	06:36 07:01-07:30/29	06:25 06:48-07:17/29	05:27	04:56 05:26-05:46/20
	16:30 08:54-09:32/38	17:24	18:15	20:07	20:57	21:34
14	08:17 13:25-14:25/60	07:33 08:01-08:22/21	06:34 07:00-07:28/28	06:23 06:46-07:16/30	05:25	04:56 05:26-05:46/20
	16:31 08:54-09:32/38	17:26	18:16	20:09	20:59	21:34
15	08:16 13:25-14:25/60	07:31 07:58-08:23/25	06:31 06:54-07:27/33	06:21 06:44-07:14/30	05:24	04:56 05:26-05:46/20
	16:33 08:54-09:31/37	17:28	18:18	20:11	21:00	21:35
16	08:15 13:26-14:26/60	07:29 07:56-08:23/27	06:29 06:52-07:26/34	06:19 06:42-07:14/32	05:22	04:56 05:27-05:47/20
	16:35 08:54-09:31/37	17:30	18:20	20:12	21:02	21:35
17	08:14 13:26-14:26/60	07:27 07:55-08:24/29	06:27 06:49-07:23/34	06:17 06:40-07:13/33	05:21	04:56 05:27-05:47/20
	16:36 08:54-09:31/37	17:32	18:21	20:14	21:03	21:36
18	08:13 13:26-14:25/59	07:25 07:54-08:24/30	06:24 06:47-07:18/31	06:14 06:38-07:13/35	05:19	04:56 05:27-05:47/20
	16:38 08:55-09:31/36	17:33	18:23	20:16	21:05	21:36
19	08:12 13:26-14:26/60	07:23 07:53-08:24/31	06:22 06:46-07:18/32	06:12 06:36-07:12/36	05:18	04:56 05:27-05:47/20
	16:39 08:54-09:29/35	17:35	18:25	20:17	21:06	21:37
20	08:11 13:27-14:26/59	07:21 07:52-08:23/31	06:20 06:46-07:16/30	06:10 06:34-07:10/36	05:16	04:56 05:27-05:47/20
	16:41 08:55-09:28/33	17:37	18:27	20:19	21:08	21:37
21	08:10 13:28-14:27/59 08:56-09:19/23	07:19 07:44-08:22/38	06:18 06:45-07:14/29	06:08 06:34-07:10/36	05:15	04:56 05:27-05:47/20
	16:43 09:20-09:26/6	17:39	18:28	20:21	21:09	21:37
22	08:09 13:28-14:27/59	07:17 07:42-08:22/40	06:15 07:05-07:10/5	06:06 06:34-07:09/35	05:14	04:56 05:28-05:48/20
	16:44 08:57-09:19/22	17:41	18:30 06:45-07:02/17	20:23	21:10	21:37
23	08:08 13:28-14:27/59	07:15 07:41-08:21/40	06:13 06:45-07:02/17	06:04 06:34-07:08/34	05:12	04:56 05:28-05:48/20
	16:46 08:57-09:18/21	17:43	18:32	20:24	21:12	21:38
24	08:07 13:29-14:27/58	07:13 07:40-08:19/39	06:11 06:45-07:00/15	06:02 06:34-07:08/34	05:11	04:57 05:28-05:48/20
	16:48 08:58-09:18/20	17:44	18:33	20:26	21:13	21:38
25	08:05 13:29-14:26/57	07:11 07:39-08:18/39	06:08 06:47-06:58/11	06:00 06:34-07:06/32	05:10	04:57 05:29-05:49/20
	16:50 08:59-09:18/19	17:46	18:35	20:28	21:14	21:38
26	08:04 13:30-14:27/57	07:09 07:39-08:14/35	06:06 06:50-06:55/5	05:58 06:36-07:06/30	05:09	04:57 05:29-05:49/20
	16:51 09:00-09:17/17	17:48	18:37	20:29	21:16	21:38
27	08:03 13:31-14:27/56	07:07 07:38-08:11/33	06:04	05:56 06:37-07:04/27	05:08	04:58 05:29-05:48/19
	16:53 09:01-09:17/16	17:50	18:39	20:31	21:17	21:38
28	08:01 13:32-14:26/54	07:05 07:38-08:09/31	06:01	05:54 06:51-07:02/11	05:07	04:58 05:29-05:49/20
	16:55 09:03-09:15/12	17:52	18:40	20:33 06:39-06:47/8	21:18	21:38
29	08:00 13:32-14:26/54		06:59	05:52	05:06 05:34-05:37/3	04:59 05:29-05:49/20
	16:57 09:06-09:13/7		19:42	20:34	21:20	21:37
30	07:59 13:33-14:26/53		06:57	05:50	05:05 05:33-05:38/5	04:59 05:30-05:49/19
	16:59		19:44	20:36	21:21	21:37
31	07:57 13:34-14:25/51		06:55		05:04 05:32-05:39/7	
	17:00		19:45		21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	2681	901	606	724	15	537

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 11 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (977)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 05:31-05:50/19 21:37	05:36 21:05	06:26 06:53-07:19/26 20:04	07:14 07:40-08:09/29 18:55	07:08 13:24-13:39/15 16:49 07:38-07:43/5	07:58 13:06-14:05/59 16:09 08:35-09:13/38
2	05:01 05:31-05:49/18 21:37	05:38 21:04	06:27 06:53-07:19/26 20:02	07:16 07:41-08:09/28 18:52	07:09 13:19-13:43/24 16:47	08:00 13:07-14:06/59 16:08 08:36-09:14/38
3	05:01 05:32-05:50/18 21:36	05:39 21:02	06:29 06:55-07:20/25 19:59	07:17 07:43-08:09/26 18:50	07:11 13:16-13:46/30 16:45	08:01 13:07-14:06/59 16:08 08:36-09:14/38
4	05:02 05:33-05:50/17 21:36	05:41 21:00	06:30 06:56-07:19/23 19:57	07:19 07:45-08:08/23 18:48	07:13 13:14-13:48/34 16:44	08:02 13:08-14:06/58 16:07 08:38-09:15/37
5	05:03 05:34-05:50/16 21:35	05:42 20:59	06:32 06:59-07:19/20 19:55	07:21 07:48-08:07/19 18:46	07:15 13:12-13:50/38 16:42	08:04 13:08-14:06/58 16:07 08:38-09:15/37
6	05:04 05:34-05:49/15 21:35	05:44 20:57	06:34 06:59-07:18/19 19:53	07:22 07:49-08:06/17 18:43	07:16 13:11-13:51/40 16:40	08:05 13:08-14:06/58 16:06 08:40-09:16/36
7	05:05 05:35-05:49/14 21:34	05:45 20:55	06:35 07:01-07:18/17 19:50	07:24 07:49-08:04/15 18:41	07:18 13:09-13:53/44 16:38	08:06 13:09-14:07/58 16:06 08:40-09:16/36
8	05:06 05:36-05:49/13 21:34	05:47 20:53	06:37 07:02-07:17/15 19:48	07:26 08:18-08:28/10 18:39 07:51-08:02/11	07:20 13:08-13:54/46 16:37	08:07 13:09-14:07/58 16:05 08:41-09:16/35
9	05:07 05:37-05:49/12 21:33	05:49 20:51	06:38 07:04-07:16/12 19:46	07:28 08:16-08:30/14 18:37 07:55-07:58/3	07:22 13:07-13:55/48 16:35	08:09 13:10-14:07/57 16:05 08:42-09:16/34
10	05:07 05:38-05:49/11 21:32	05:50 20:50	06:40 07:06-07:14/8 19:43	07:29 08:15-08:31/16 18:34	07:24 13:06-13:56/50 16:33	08:10 13:10-14:07/57 16:05 08:42-09:17/35
11	05:09 05:39-05:49/10 21:32	05:52 20:48	06:42 07:07-07:09/2 19:41	07:31 08:13-08:31/18 18:32	07:25 13:06-13:57/51 16:32	08:11 13:11-14:08/57 16:05 08:44-09:18/34
12	05:10 05:40-05:48/8 21:31	05:53 20:46	06:43 19:39	07:33 08:12-08:32/20 18:30	07:27 13:05-13:58/53 16:30	08:12 13:12-14:09/57 16:05 08:45-09:18/33
13	05:11 05:41-05:47/6 21:30	05:55 20:44	06:45 19:36	07:34 08:11-08:41/30 18:28	07:29 13:04-13:58/54 16:29 08:38-08:45/7	08:13 13:13-14:09/56 16:05 08:46-09:19/33
14	05:12 05:42-05:46/4 21:29	05:57 07:01-07:06/5 20:42	06:46 19:34	07:36 08:11-08:43/32 18:25	07:31 13:04-13:58/54 16:27 08:35-08:47/12	08:14 13:12-14:09/57 16:05 08:48-09:19/31
15	05:13 05:43-05:45/2 21:28	05:58 06:58-07:10/12 20:40 06:46-06:55/9	06:48 19:32	07:38 08:11-08:44/33 18:23	07:32 13:03-13:59/56 16:26 08:33-08:49/16	08:15 13:13-14:09/56 08:48-08:54/6 16:05 08:55-09:19/24
16	05:14 21:27	06:00 06:43-07:11/28 20:38	06:50 19:29	07:39 08:10-08:47/37 18:21	07:34 13:03-14:00/57 16:25 08:33-08:50/17	08:16 13:13-14:10/57 08:49-08:54/5 16:05 08:56-09:19/23
17	05:15 21:26	06:01 06:42-07:13/31 20:36	06:51 07:40-07:42/2 19:27	07:41 08:11-08:50/39 18:19	07:36 13:03-14:00/57 16:23 08:32-08:51/19	08:16 13:14-14:10/56 08:51-08:54/3 16:05 08:57-09:20/23
18	05:17 21:25	06:03 06:41-07:13/32 20:34	06:53 07:35-07:45/10 19:25	07:43 08:12-08:51/39 18:17	07:38 13:03-14:01/58 16:22 08:32-08:52/20	08:17 13:15-14:11/56 16:05 08:58-09:20/22
19	05:18 21:24	06:05 06:40-07:14/34 20:32	06:55 07:33-07:47/14 19:22	07:45 08:13-08:52/39 18:15	07:39 13:03-14:02/59 16:21 08:32-08:53/21	08:18 13:15-14:11/56 16:05 08:58-09:21/23
20	05:19 21:23	06:06 06:39-07:14/35 20:30	06:56 07:31-07:47/16 19:20	07:46 08:14-08:53/39 18:13	07:41 13:03-14:02/59 16:19 08:32-08:54/22	08:18 13:16-14:11/55 16:06 08:58-09:21/23
21	05:20 21:21	06:08 06:39-07:15/36 20:28	06:58 07:31-07:48/17 19:18	07:48 08:17-08:54/37 18:11	07:43 13:03-14:02/59 08:31-08:54/23 16:18 08:55-09:01/6	08:19 13:17-14:12/55 16:06 08:59-09:22/23
22	05:22 21:20	06:09 06:39-07:14/35 20:26	06:59 07:30-07:58/28 19:16	07:50 08:22-08:53/31 18:09	07:44 13:03-14:02/59 16:17 08:31-09:04/33	08:20 13:17-14:12/55 16:07 08:59-09:22/23
23	05:23 21:19	06:11 06:39-07:15/36 20:23	07:01 07:29-08:00/31 19:13	07:52 08:23-08:53/30 18:06	07:46 13:03-14:03/60 16:16 08:31-09:06/35	08:20 13:17-14:12/55 16:07 09:00-09:23/23
24	05:25 21:17	06:13 06:39-07:15/36 20:21	07:03 07:29-08:01/32 19:11	07:53 08:24-08:53/29 18:04	07:48 13:04-14:03/59 16:15 08:32-09:08/36	08:21 13:18-14:13/55 16:08 09:00-09:23/23
25	05:26 21:16	06:14 06:41-07:16/35 20:19	07:04 07:29-08:01/32 19:09	06:55 07:25-07:53/28 17:02	07:49 13:03-14:03/60 16:14 08:32-09:09/37	08:21 13:18-14:14/56 16:08 09:01-09:23/22
26	05:27 21:15	06:16 06:42-07:15/33 20:17	07:06 07:31-08:04/33 19:06	06:57 07:26-07:53/27 17:00	07:51 13:04-14:04/60 16:13 08:32-09:09/37	08:21 13:18-14:14/56 08:56-08:57/1 16:09 09:01-09:24/23
27	05:29 21:13	06:17 06:44-07:15/31 20:15	07:08 07:33-08:07/34 19:04	06:59 07:28-07:52/24 16:58	07:52 13:04-14:04/60 16:12 08:33-09:10/37	08:22 13:18-14:14/56 08:56-09:00/4 16:10 09:02-09:25/23
28	05:30 21:12	06:19 06:45-07:15/30 20:13	07:09 07:34-08:08/34 19:02	07:00 07:31-07:52/21 16:57	07:54 13:04-14:04/60 16:11 08:34-09:12/38	08:22 13:20-14:16/56 08:55-09:01/6 16:11 09:02-09:25/23
29	05:32 21:10	06:21 06:47-07:17/30 20:10	07:11 07:40-08:09/29 18:59	07:02 07:32-07:51/19 16:55	07:55 13:05-14:05/60 16:10 08:34-09:12/38	08:22 13:20-14:16/56 08:55-09:02/7 16:12 09:03-09:26/23
30	05:33 21:09	06:22 06:49-07:18/29 20:08	07:13 07:41-08:09/28 18:57	07:04 07:34-07:49/15 16:53	07:57 13:06-14:05/59 16:10 08:35-09:13/38	08:22 13:20-14:17/57 16:12 08:54-09:26/32
31	05:35 21:07	06:24 06:50-07:18/28 20:06		07:06 07:35-07:46/11 16:51		08:22 13:20-14:17/57 16:13 08:54-09:27/33
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	183	545	533	809	2020	2694

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 12 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (968)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 14:35-15:00/25 16:15 09:07-10:00/53	07:56 08:25-09:10/45 17:02	07:03 07:30-08:06/36 17:53	06:52 07:48-08:07/19 19:47	05:48 20:38	05:03 05:57-06:30/33 21:23
2	08:22 14:35-15:01/26 16:16 09:08-10:00/52	07:54 08:25-09:10/45 17:04	07:00 07:29-08:09/40 17:55	06:50 07:50-08:05/15 19:49	05:46 20:39	05:02 05:58-06:30/32 21:24
3	08:22 14:36-15:02/26 16:17 09:08-10:00/52	07:52 08:24-09:09/45 17:06	06:58 07:28-08:09/41 17:57	06:48 07:52-08:01/9 19:50	05:44 20:41	05:01 05:58-06:30/32 21:25
4	08:22 14:36-15:01/25 16:18 09:08-09:59/51	07:51 08:24-09:09/45 17:08	06:56 07:26-08:11/45 17:59	06:45 19:52	05:42 20:43	05:01 05:59-06:31/32 21:26
5	08:21 14:38-15:02/24 16:19 09:09-09:58/49	07:49 08:24-09:08/44 17:10	06:54 07:24-08:12/48 18:01	06:43 19:54	05:40 20:44	05:00 05:59-06:30/31 21:27
6	08:21 14:38-15:01/23 16:20 09:09-09:54/45	07:48 08:24-09:07/43 17:11	06:52 07:24-08:13/49 18:02	06:41 19:56	05:39 20:46	04:59 05:59-06:30/31 21:28
7	08:21 14:39-15:02/23 16:22 09:09-09:53/44	07:46 08:24-09:05/41 17:13	06:49 07:22-08:13/51 18:04	06:39 19:57	05:37 20:47	04:59 05:59-06:30/31 21:29
8	08:20 14:40-15:01/21 16:23 09:09-09:53/44	07:44 08:24-09:02/38 17:15 08:14-08:21/7	06:47 07:20-08:13/53 18:06	06:36 19:59	05:35 20:49	04:58 06:00-06:31/31 21:30
9	08:20 14:41-15:02/21 09:10-09:35/25 16:24 09:36-09:53/17	07:42 08:12-08:59/47 17:17	06:45 07:19-08:14/55 18:08	06:34 20:01	05:33 20:51	04:58 06:00-06:30/30 21:31
10	08:19 14:42-15:02/20 09:10-09:35/25 16:26 09:36-09:53/17	07:41 08:11-08:59/48 17:19	06:43 07:18-08:14/56 18:09	06:32 20:02	05:32 20:52	04:57 06:00-06:30/30 21:32
11	08:19 14:43-15:01/18 09:11-09:35/24 16:27 09:37-09:52/15	07:39 08:10-08:58/48 17:21	06:40 07:16-08:13/57 18:11	06:30 20:04	05:30 06:07-06:17/10 20:54	04:57 06:01-06:31/30 21:32
12	08:18 14:44-15:00/16 09:12-09:36/24 16:29 09:40-09:52/12	07:37 08:09-08:56/47 17:22	06:38 07:14-08:13/59 18:13	06:28 20:06	05:28 06:05-06:20/15 20:55	04:57 06:01-06:30/29 21:33
13	08:17 14:46-15:00/14 09:12-09:36/24 16:30 09:42-09:51/9	07:35 08:08-08:54/46 17:24	06:36 07:09-08:13/64 18:15	06:25 20:07	05:27 06:03-06:21/18 20:57	04:56 06:01-06:30/29 21:34
14	08:17 14:48-14:59/11 09:13-09:36/23 16:32 09:45-09:48/3	07:33 08:31-08:39/8 08:08-08:30/22 17:26 08:46-08:49/3	06:34 07:05-08:11/66 18:16	06:23 20:09	05:25 06:02-06:23/21 20:59	04:56 06:02-06:31/29 21:34
15	08:16 14:51-14:57/6 16:33 09:13-09:37/24	07:31 08:07-08:30/23 17:28	06:31 07:04-08:11/67 18:18	06:21 20:11	05:24 06:01-06:25/24 21:00	04:56 06:02-06:31/29 21:35
16	08:15 09:14-09:37/23 16:35	07:29 08:07-08:30/23 17:30	06:29 07:01-08:10/69 18:20	06:19 20:12	05:22 06:00-06:25/25 21:02	04:56 06:02-06:31/29 21:35
17	08:14 09:15-09:37/22 16:36 08:52-08:57/5	07:27 08:07-08:30/23 17:32	06:27 06:58-08:09/71 18:22	06:17 20:14	05:21 05:59-06:26/27 21:03	04:56 06:03-06:31/28 21:36
18	08:13 09:15-09:37/22 16:38 08:50-09:00/10	07:25 08:08-08:30/22 17:34	06:24 06:56-08:07/71 18:23	06:14 20:16	05:19 05:59-06:27/28 21:05	04:56 06:03-06:31/28 21:36
19	08:12 09:15-09:36/21 16:39 08:47-09:01/14	07:23 08:08-08:29/21 17:35	06:22 06:54-08:06/72 18:25	06:12 20:17	05:18 05:58-06:27/29 21:06	04:56 06:03-06:31/28 21:37
20	08:11 09:17-09:35/18 16:41 08:47-09:03/16	07:21 08:08-08:27/19 17:37	06:20 06:52-08:04/72 18:27	06:10 20:19	05:16 05:58-06:27/29 21:08	04:56 06:03-06:31/28 21:37
21	08:10 09:18-09:35/17 16:43 08:40-09:04/24	07:19 08:09-08:26/17 17:39 07:49-07:53/4	06:18 07:37-08:02/25 18:28 06:50-07:35/45	06:08 20:21	05:15 05:57-06:28/31 21:09	04:56 06:03-06:31/28 21:37
22	08:09 09:20-09:34/14 16:44 08:39-09:06/27	07:17 08:11-08:25/14 17:41 07:45-07:57/12	06:15 07:43-07:59/16 18:30 06:49-07:33/44	06:06 20:23	05:14 05:57-06:29/32 21:10	04:56 06:04-06:32/28 21:37
23	08:08 09:21-09:32/11 16:46 08:37-09:06/29	07:15 08:13-08:22/9 17:43 07:43-07:59/16	06:13 07:48-07:54/6 18:32 06:48-07:28/40	06:04 20:24	05:12 05:57-06:29/32 21:12	04:56 06:04-06:32/28 21:38
24	08:07 09:24-09:30/6 16:48 08:37-09:07/30	07:13 07:42-08:00/18 17:44	06:11 06:47-07:24/37 18:33	06:02 20:26	05:11 05:57-06:29/32 21:13	04:57 06:04-06:32/28 21:38
25	08:05 08:37-09:08/31 16:50	07:11 07:39-08:01/22 17:46	06:08 06:46-07:23/37 18:35	06:00 20:28	05:10 05:57-06:30/33 21:14	04:57 06:05-06:33/28 21:38
26	08:04 08:36-09:09/33 16:51	07:09 07:38-08:02/24 17:48	06:06 06:46-07:22/36 18:37	05:58 20:29	05:09 05:57-06:30/33 21:16	04:57 06:04-06:33/29 21:38
27	08:03 08:34-09:10/36 16:53	07:07 07:36-08:01/25 17:50	06:04 06:45-07:20/35 18:39	05:56 20:31	05:08 05:57-06:30/33 21:17	04:58 06:04-06:33/29 21:38
28	08:01 08:32-09:09/37 16:55	07:05 07:33-08:03/30 17:52	06:01 06:46-07:18/32 18:40	05:54 20:33	05:07 05:57-06:30/33 21:18	04:58 06:05-06:34/29 21:38
29	08:00 08:29-09:10/41 16:57		06:59 07:46-08:14/28 19:42	05:52 20:34	05:06 05:57-06:30/33 21:20	04:59 06:04-06:33/29 21:37
30	07:59 08:27-09:10/43 16:59		06:57 07:46-08:11/25 19:44	05:50 20:36	05:05 05:57-06:30/33 21:21	04:59 06:05-06:34/29 21:37
31	07:57 08:26-09:10/44 17:00		06:55 07:47-08:09/22 19:45		05:04 05:57-06:30/33 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	1505	944	1570	43	584	885

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 12 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (968)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 06:05-06:35/30 21:37	05:36 06:16-06:30/14 21:05	06:26 20:04	07:14 07:50-08:52/62 18:55	07:08 07:40-08:28/48 16:49	07:58 14:25-14:43/18 08:53-09:17/24 16:09 09:20-09:34/14
2	05:01 06:05-06:35/30 21:37	05:38 06:19-06:26/7 21:04	06:27 20:02	07:16 07:54-08:52/58 18:52	07:09 07:54-08:28/34 16:47 07:42-07:53/11	08:00 14:25-14:45/20 08:53-09:18/25 16:08 09:20-09:36/16
3	05:01 06:05-06:35/30 21:36	05:39 21:02	06:29 19:59	07:18 07:55-08:52/57 18:50	07:11 07:54-08:33/39 16:45 07:45-07:50/5	08:01 14:24-14:45/21 08:53-09:18/25 16:08 09:19-09:36/17
4	05:02 06:05-06:36/31 21:36	05:41 21:00	06:30 19:57	07:19 07:55-08:51/56 18:48	07:13 07:54-08:35/41 16:44	08:02 14:25-14:46/21 16:07 08:54-09:38/44
5	05:03 06:06-06:36/30 21:35	05:42 20:59	06:32 19:55	07:21 07:56-08:50/54 18:46	07:15 07:54-08:37/43 16:42	08:04 14:24-14:47/23 16:07 08:54-09:38/44
6	05:04 06:05-06:36/31 21:35	05:44 20:57	06:34 19:53	07:23 07:58-08:50/52 18:43	07:17 07:54-08:38/44 16:40	08:05 14:24-14:47/23 16:06 08:56-09:40/44
7	05:05 06:05-06:36/31 21:34	05:45 20:55	06:35 19:50	07:24 07:58-08:48/50 18:41	07:18 07:54-08:39/45 16:38	08:06 14:25-14:49/24 16:06 08:56-09:45/49
8	05:06 06:05-06:37/32 21:34	05:47 20:53	06:37 19:48	07:26 07:59-08:47/48 18:39	07:20 07:55-08:40/45 16:37	08:07 14:25-14:49/24 16:05 08:56-09:47/51
9	05:07 06:05-06:37/32 21:33	05:49 20:52	06:38 07:47-07:55/8 19:46	07:28 08:00-08:46/46 18:37	07:22 07:55-08:41/46 16:35	08:09 14:24-14:50/26 16:05 08:56-09:48/52
10	05:08 06:05-06:38/33 21:32	05:50 20:50	06:40 07:43-07:58/15 19:43	07:29 08:01-08:45/44 18:34	07:24 07:56-08:41/45 16:33	08:10 14:25-14:50/25 16:05 08:57-09:49/52
11	05:09 06:06-06:38/32 21:32	05:52 20:48	06:42 07:41-07:59/18 19:41	07:31 08:01-08:43/42 18:32	07:25 07:58-08:42/44 16:32	08:11 14:25-14:51/26 16:05 08:58-09:51/53
12	05:10 06:06-06:38/32 21:31	05:53 20:46	06:43 07:39-08:01/22 19:39	07:33 08:02-08:41/39 18:30	07:27 07:59-08:42/43 16:30	08:12 14:26-14:52/26 16:05 08:59-09:52/53
13	05:11 06:06-06:38/32 21:30	05:55 20:44	06:45 07:37-08:02/25 19:36	07:34 08:04-08:38/34 18:28	07:29 08:01-08:42/41 16:29	08:13 14:26-14:53/27 16:05 08:59-09:53/54
14	05:12 06:06-06:38/32 21:29	05:57 20:42	06:47 07:37-08:04/27 19:34	07:36 08:09-08:35/26 18:26	07:31 08:04-08:41/37 16:27	08:14 14:26-14:52/26 16:05 09:00-09:54/54
15	05:13 06:06-06:38/32 21:28	05:58 20:40	06:48 07:35-08:06/31 19:32	07:38 08:09-08:34/25 18:23	07:32 08:06-08:41/35 16:26	08:15 14:26-14:53/27 16:05 09:00-09:54/54
16	05:14 06:06-06:38/32 21:27	06:00 20:38	06:50 07:35-08:09/34 19:29	07:39 08:10-08:33/23 18:21	07:34 08:09-08:41/32 16:25	08:16 14:27-14:53/26 16:05 09:00-09:54/54
17	05:15 06:06-06:38/32 21:26	06:01 20:36	06:51 07:35-08:10/35 19:27	07:41 08:11-08:32/21 18:19	07:36 08:10-08:41/31 16:23	08:16 14:27-14:54/27 16:05 09:01-09:55/54
18	05:17 06:07-06:39/32 21:25	06:03 20:34	06:53 07:34-08:10/36 19:25	07:43 08:14-08:31/17 18:17	07:38 08:58-09:04/6 16:22 08:11-08:41/30	08:17 14:28-14:55/27 16:05 09:02-09:56/54
19	05:18 06:07-06:39/32 21:24	06:05 20:32	06:55 07:34-08:11/37 19:23	07:45 08:43-08:55/12 18:15 08:15-08:30/15	07:39 08:56-09:07/11 16:21 08:12-08:41/29	08:18 14:28-14:55/27 16:06 09:03-09:56/53
20	05:19 06:07-06:39/32 21:23	06:06 20:30	06:56 07:33-08:11/38 19:20	07:46 08:41-08:57/16 18:13 08:18-08:27/9	07:41 08:55-09:09/14 16:19 08:14-08:41/27	08:19 14:29-14:56/27 16:06 09:03-09:57/54
21	05:21 06:07-06:38/31 21:21	06:08 20:28	06:58 08:29-08:43/14 19:18 07:34-08:17/43	07:48 08:40-08:58/18 18:11	07:43 08:53-09:10/17 16:18 08:15-08:39/24	08:19 14:29-14:57/28 16:06 09:04-09:58/54
22	05:22 06:07-06:38/31 21:20	06:09 20:26	06:59 08:24-08:46/22 19:16 07:35-08:20/45	07:50 08:38-08:58/20 18:09	07:44 08:53-09:11/18 16:17 08:23-08:39/16	08:20 14:29-14:57/28 16:07 09:04-09:58/54
23	05:23 06:08-06:38/30 21:19	06:11 20:23	07:01 07:35-08:48/73 19:13	07:52 08:37-08:59/22 18:07	07:46 08:53-09:13/20 16:16 08:24-08:38/14	08:20 14:29-14:57/28 16:07 09:05-09:59/54
24	05:25 06:08-06:38/30 21:17	06:13 20:21	07:03 07:37-08:49/72 19:11	07:53 08:37-08:59/22 18:04	07:48 08:53-09:14/21 16:15 08:27-08:37/10	08:21 14:31-14:58/27 16:08 09:05-09:59/54
25	05:26 06:08-06:37/29 21:16	06:14 20:19	07:04 07:38-08:50/72 19:09	06:55 07:37-07:59/22 17:02	07:49 08:53-09:15/22 16:14 08:30-08:35/5	08:21 14:31-14:58/27 16:09 09:05-09:59/54
26	05:27 06:10-06:37/27 21:15	06:16 20:17	07:06 07:40-08:51/71 19:06	06:57 07:37-08:00/23 17:00	07:51 08:52-09:15/23 16:13	08:21 14:31-14:58/27 16:09 09:05-09:59/54
27	05:29 06:10-06:36/26 21:13	06:18 20:15	07:08 07:42-08:52/70 19:04	06:59 07:37-07:59/22 16:59	07:52 14:30-14:36/6 16:12 08:52-09:16/24	08:22 14:31-14:58/27 16:10 09:06-10:00/54
28	05:30 06:10-06:35/25 21:12	06:19 20:13	07:09 07:44-08:52/68 19:02	07:00 08:00-08:09/9 07:37-07:59/22 16:57 08:14-08:21/7	07:54 14:27-14:38/11 08:53-09:17/24 16:11 09:25-09:27/2	08:22 14:33-15:00/27 16:11 09:06-10:01/55
29	05:32 06:12-06:35/23 21:10	06:21 20:10	07:11 07:45-08:52/67 18:59	07:02 07:38-08:24/46 16:55	07:55 14:26-14:40/14 08:52-09:16/24 16:10 09:22-09:31/9	08:22 14:33-15:00/27 16:12 09:07-10:01/54
30	05:33 06:13-06:33/20 21:09	06:22 20:08	07:13 07:47-08:52/65 18:57	07:04 07:38-08:26/48 16:53	07:57 14:26-14:42/16 08:53-09:17/24 16:10 09:21-09:33/12	08:22 14:34-15:00/26 16:12 09:07-10:01/54
31	05:35 06:15-06:32/17 21:07	06:24 20:06	 	07:06 07:38-08:26/48 16:51	 	08:22 14:34-15:00/26 16:13 09:08-10:01/53
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	919	21	1008	1135	1182	2377

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
Juwi GmbH
Energie-Allee 1
DE-55286 Wörrstadt
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 13 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (969)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:22 09:11-09:52/41 16:15	07:56 15:39-16:10/31 08:50-09:20/30 17:02 09:21-09:42/21	07:03 07:52-08:31/39 17:53 07:34-07:49/15	06:52 07:27-08:01/34 19:47	05:48 06:42-07:50/68 20:38	05:03 21:23
2	08:22 09:11-09:53/42 16:16	07:54 15:39-16:10/31 08:50-09:20/30 17:04 09:22-09:40/18	07:00 07:53-08:26/33 17:55 07:32-07:51/19	06:50 07:27-07:59/32 19:49	05:46 06:43-07:49/66 20:39	05:02 21:24
3	08:22 09:11-09:54/43 16:17	07:52 15:39-16:10/31 08:50-09:20/30 17:06 09:24-09:38/14	06:58 07:54-08:25/31 17:57 07:31-07:52/21	06:48 07:24-07:57/33 19:50	05:44 06:44-07:49/65 20:41	05:01 21:25
4	08:22 09:10-09:54/44 16:18	07:51 15:39-16:10/31 08:51-09:21/30 17:08 09:29-09:35/6	06:56 07:55-08:23/28 17:59 07:29-07:52/23	06:45 07:20-07:55/35 19:52	05:42 07:09-07:48/39 20:43 06:45-07:07/22	05:01 21:26
5	08:21 09:11-09:55/44 16:19	07:49 15:40-16:11/31 17:10 08:51-09:20/29	06:54 07:58-08:22/24 18:01 07:28-07:53/25	06:43 07:18-07:55/37 19:54	05:40 07:10-07:47/37 20:44 06:46-07:05/19	05:00 21:27
6	08:21 09:11-09:56/45 16:20	07:48 15:40-16:10/30 17:11 08:51-09:20/29	06:52 08:00-08:20/20 18:02 07:28-07:53/25	06:41 07:17-07:55/38 19:56	05:39 07:10-07:45/35 20:46 06:47-07:03/16	04:59 21:28
7	08:21 09:11-09:56/45 16:22	07:46 15:41-16:10/29 17:13 08:52-09:19/27	06:49 08:01-08:17/16 18:04 07:26-07:53/27	06:39 07:14-07:53/39 19:57	05:37 07:12-07:45/33 20:47 06:50-07:01/11	04:59 21:29
8	08:20 09:10-09:56/46 16:23	07:44 15:41-16:09/28 08:15-08:23/8 17:15 08:52-09:18/26	06:47 08:04-08:14/10 18:06 07:26-07:53/27	06:36 07:13-07:53/40 19:59	05:35 07:13-07:43/30 20:49	04:58 21:30
9	08:20 09:11-09:57/46 16:24	07:42 15:42-16:08/26 08:13-08:30/17 17:17 08:53-09:17/24	06:45 07:26-07:53/27 18:08	06:34 07:12-07:53/41 20:01	05:33 07:15-07:42/27 20:51	04:58 21:31
10	08:19 09:11-09:57/46 16:26	07:41 15:43-16:07/24 08:12-08:34/22 17:19 08:56-09:16/20	06:43 07:27-07:52/25 18:09	06:32 07:08-07:52/44 20:02	05:32 07:16-07:40/24 20:52	04:57 21:32
11	08:19 09:10-09:57/47 16:27	07:39 15:45-16:07/22 08:10-08:36/26 17:21 08:57-09:15/18	06:40 07:26-07:51/25 18:11	06:30 07:04-07:53/49 20:04	05:30 07:17-07:37/20 20:54	04:57 21:32
12	08:18 09:11-09:59/48 16:29	07:37 15:47-16:06/19 08:09-08:38/29 17:22 09:00-09:12/12	06:38 07:27-07:50/23 18:13	06:28 07:01-07:53/52 20:06	05:28 07:20-07:35/15 20:55	04:57 21:33
13	08:17 09:11-09:59/48 16:30	07:35 15:49-16:04/15 17:24 08:09-08:39/30	06:36 07:28-07:49/21 18:15	06:25 06:59-07:53/54 20:07	05:27 07:24-07:30/6 20:57	04:56 21:34
14	08:17 09:11-09:59/48 16:32	07:33 15:53-16:00/7 17:26 08:08-08:40/32	06:34 07:28-07:47/19 18:16 07:04-07:12/8	06:23 06:56-07:53/57 20:09	05:25 20:59	04:56 21:34
15	08:16 09:11-09:59/48 16:33	07:31 08:03-08:41/38 17:28	06:31 07:30-07:45/15 18:18 07:01-07:15/14	06:21 06:54-07:53/59 20:11	05:24 21:00	04:56 21:35
16	08:15 09:11-09:59/48 16:35	07:29 08:00-08:41/41 17:30	06:29 07:33-07:42/9 18:20 06:59-07:17/18	06:19 06:52-07:54/62 20:12	05:22 21:02	04:56 21:35
17	08:14 09:12-10:00/48 16:36	07:27 07:57-08:42/45 17:32	06:27 06:56-07:17/21 18:22	06:17 06:50-07:54/64 20:14	05:21 21:03	04:56 21:36
18	08:13 09:12-10:00/48 16:38 08:58-09:06/8	07:25 07:56-08:42/46 17:34	06:25 06:53-07:18/25 18:23	06:14 06:48-07:55/67 20:16	05:19 21:05	04:56 21:36
19	08:12 15:49-15:53/4 08:55-09:08/13 16:39 09:11-09:59/48	07:23 07:55-08:42/47 17:35	06:22 06:52-07:19/27 18:25	06:12 06:47-07:54/67 20:18	05:18 21:06	04:56 21:37
20	08:11 15:46-15:57/11 08:54-09:10/16 16:41 09:12-09:59/47	07:21 07:53-08:41/48 17:37	06:20 06:51-07:19/28 18:27	06:10 06:45-07:54/69 20:19	05:16 21:08	04:56 21:37
21	08:10 15:44-16:00/16 16:43 08:53-09:59/66	07:19 07:52-08:41/49 17:39	06:18 06:49-07:19/30 18:28	06:08 06:44-07:54/70 20:21	05:15 21:09	04:56 21:37
22	08:09 15:43-16:02/19 16:44 08:52-09:59/67	07:17 07:51-08:41/50 17:41	06:15 06:45-07:19/34 18:30	06:06 06:43-07:54/71 20:23	05:14 21:10	04:56 21:37
23	08:08 15:42-16:03/21 16:46 08:51-09:58/67	07:15 07:51-08:40/49 17:43	06:13 06:42-07:19/37 18:32	06:04 06:42-07:54/72 20:24	05:12 21:12	04:56 21:38
24	08:07 15:41-16:04/23 16:48 08:51-09:58/67	07:13 07:51-08:40/49 17:44	06:11 06:40-07:17/37 18:34	06:02 06:42-07:54/72 20:26	05:11 21:13	04:57 21:38
25	08:05 15:40-16:05/25 16:50 08:51-09:58/67	07:11 07:51-08:39/48 17:46	06:08 06:39-07:17/38 18:35	06:00 06:41-07:53/72 20:28	05:10 21:14	04:57 21:38
26	08:04 15:40-16:06/26 16:51 08:50-09:56/66	07:09 07:51-08:38/47 17:48	06:06 06:38-07:16/38 18:37	05:58 06:42-07:54/72 20:29	05:09 21:16	04:57 21:38
27	08:03 15:40-16:08/28 16:53 08:50-09:55/65	07:07 07:50-08:35/45 17:50	06:04 06:34-07:13/39 18:39	05:56 06:42-07:53/71 20:31	05:08 21:17	04:58 21:38
28	08:01 15:39-16:08/29 16:55 08:49-09:53/64	07:05 07:51-08:34/43 17:52 07:37-07:46/9	06:02 06:33-07:12/39 18:40	05:54 06:42-07:53/71 20:33	05:07 21:18	04:58 21:38
29	08:00 15:39-16:08/29 16:57 08:50-09:51/61		06:59 07:31-08:09/38 19:42	05:52 06:42-07:52/70 20:34	05:06 21:20	04:59 21:37
30	07:59 15:39-16:09/30 16:59 08:49-09:44/55		06:57 07:29-08:06/37 19:44	05:50 06:42-07:51/69 20:36	05:05 21:21	04:59 21:37
31	07:57 15:39-16:09/30 17:00 08:49-09:42/53		06:55 07:28-08:04/36 19:45		05:04 21:22	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	1946	1537	1091	1683	533	0

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender
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4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

SHADOW - Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem **WEA:** WEA 13 - VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (969)

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BRAUNLAGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,79	3,15	3,19	4,96	6,71	5,78	6,50	6,30	4,33	3,02	1,97	1,39

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
400	289	353	530	513	407	442	794	1.182	1.385	1.357	722	8.373

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:00 21:37	05:36 07:29-07:47/18 21:05	06:26 07:03-07:52/49 20:04	07:14 08:06-08:29/23 18:55	07:08 15:12-15:37/25 07:41-08:03/22 16:49 08:24-08:45/21	07:58 08:52-09:40/48 16:09
2	05:01 21:37	05:38 07:27-07:49/22 21:04	06:27 07:06-07:50/44 20:02	07:16 08:05-08:30/25 18:52	07:09 15:11-15:38/27 07:43-07:59/16 16:47 08:23-08:47/24	08:00 08:54-09:40/46 16:08
3	05:01 21:36	05:39 07:26-07:51/25 21:02	06:29 07:10-07:51/41 19:59	07:18 08:05-08:30/25 18:50	07:11 15:11-15:39/28 07:46-07:52/6 16:45 08:22-08:48/26	08:01 08:54-09:40/46 16:08
4	05:02 21:36	05:41 07:24-07:52/28 21:00	06:30 07:10-07:50/40 19:57	07:19 08:03-08:30/27 18:48	07:13 15:10-15:40/30 16:44 08:21-08:49/28	08:02 08:55-09:41/46 16:07
5	05:03 21:35	05:42 07:23-07:54/31 20:59 07:03-07:08/5	06:32 07:11-07:50/39 19:55	07:21 08:45-08:46/1 18:46 08:03-08:30/27	07:15 15:10-15:40/30 16:42 08:21-08:49/28	08:04 08:56-09:41/45 16:07
6	05:04 21:35	05:44 07:21-07:55/34 20:57 06:58-07:11/13	06:34 07:12-07:50/38 19:53	07:23 08:39-08:53/14 18:43 08:03-08:30/27	07:17 15:10-15:40/30 16:40 08:21-08:50/29	08:05 08:57-09:41/44 16:06
7	05:05 21:34	05:45 07:21-07:56/35 20:55 06:57-07:14/17	06:35 07:13-07:50/37 19:50	07:24 08:36-08:54/18 18:41 08:03-08:29/26	07:18 15:10-15:41/31 08:20-08:50/30 16:38 08:58-09:05/7	08:06 08:58-09:42/44 16:06
8	05:06 21:34	05:47 07:19-07:57/38 20:53 06:55-07:15/20	06:37 07:14-07:49/35 19:48	07:26 08:34-08:56/22 18:39 08:03-08:28/25	07:20 15:10-15:41/31 08:20-08:51/31 16:37 08:54-09:09/15	08:07 08:58-09:42/44 16:05
9	05:07 21:33	05:49 07:19-07:58/39 20:52 06:54-07:17/23	06:38 07:18-07:51/33 19:46	07:28 08:32-08:57/25 18:37 08:03-08:27/24	07:22 15:10-15:41/31 08:20-08:51/31 16:35 08:53-09:11/18	08:09 08:59-09:42/43 16:05
10	05:08 21:32	05:50 06:52-07:58/66 20:50	06:40 07:20-07:52/32 19:43	07:29 08:29-08:58/29 18:34 08:04-08:27/23	07:24 15:10-15:41/31 16:33 08:21-09:13/52	08:10 09:00-09:42/42 16:05
11	05:09 21:32	05:52 06:52-07:59/67 20:48	06:42 07:19-07:52/33 19:41	07:31 08:27-08:58/31 18:32 08:04-08:24/20	07:25 15:11-15:41/30 16:32 08:21-09:14/53	08:11 09:02-09:43/41 16:05
12	05:10 21:31	05:53 06:51-07:59/68 20:46	06:43 07:20-07:56/36 19:39	07:33 08:25-09:01/36 18:30 08:06-08:23/17	07:27 15:11-15:41/30 16:30 08:21-09:16/55	08:12 09:02-09:44/42 16:05
13	05:11 21:30	05:55 06:50-08:00/70 20:44	06:45 07:20-07:57/37 19:36	07:34 08:24-09:05/41 18:28 08:08-08:21/13	07:29 15:11-15:40/29 16:29 08:22-09:23/61	08:13 09:03-09:44/41 16:05
14	05:12 21:29	05:57 06:49-08:00/71 20:42	06:47 07:21-07:59/38 19:34	07:36 08:24-09:08/44 18:26 08:12-08:16/4	07:31 15:11-15:40/29 16:27 08:21-09:25/64	08:14 09:04-09:44/40 16:05
15	05:13 21:28	05:58 06:49-08:00/71 20:40	06:48 07:22-08:01/39 19:32	07:38 08:23-09:09/46 18:23	07:32 15:12-15:40/28 16:26 08:22-09:27/65	08:15 09:04-09:44/40 16:05
16	05:14 21:27	06:00 06:49-08:00/71 20:38	06:50 07:23-08:03/40 19:30	07:39 08:22-09:09/47 18:21	07:34 15:13-15:39/26 16:25 08:23-09:29/66	08:16 09:05-09:44/39 16:05
17	05:15 21:26	06:01 06:49-08:01/72 20:36	06:51 07:25-08:04/39 19:27	07:41 08:22-09:10/48 18:19	07:36 15:14-15:39/25 16:23 08:24-09:31/67	08:16 09:06-09:45/39 16:05
18	05:17 21:25	06:03 06:48-08:00/72 20:34	06:53 07:26-08:04/38 19:25	07:43 08:22-09:11/49 18:17	07:38 15:15-15:38/23 16:22 08:25-09:32/67	08:17 09:07-09:46/39 16:05
19	05:18 21:24	06:05 06:48-08:00/72 20:32	06:55 07:27-08:05/38 19:23	07:45 08:22-09:12/50 18:15	07:39 15:17-15:38/21 16:21 08:26-09:33/67	08:18 09:07-09:45/38 16:06
20	05:19 21:23	06:06 06:48-08:00/72 20:30	06:56 07:27-08:04/37 19:20	07:46 08:23-09:12/49 18:13	07:41 15:18-15:37/19 16:19 08:27-09:34/67	08:19 09:08-09:46/38 16:06
21	05:21 21:21	06:08 06:49-08:00/71 20:28	06:58 07:29-08:04/35 19:18	07:48 08:24-09:12/48 18:11	07:43 15:19-15:35/16 16:18 08:28-09:34/66	08:19 09:09-09:47/38 16:06
22	05:22 21:20	06:09 06:48-07:59/71 20:26	06:59 07:33-08:04/31 19:16	07:50 08:24-09:11/47 18:09	07:44 15:22-15:33/11 08:30-08:46/16 16:17 08:48-09:35/47	08:20 09:09-09:47/38 16:07
23	05:23 21:19	06:11 06:49-07:59/70 20:24	07:01 07:34-08:03/29 19:13	07:52 08:25-09:11/46 18:07	07:46 15:26-15:30/4 08:32-08:45/13 16:16 08:48-09:36/48	08:20 09:10-09:48/38 16:07
24	05:25 21:17	06:13 06:50-07:58/68 20:21	07:03 07:35-08:03/28 19:11	07:53 08:26-09:11/45 18:04	07:48 08:49-09:37/48 16:15 08:35-08:43/8	08:21 09:10-09:48/38 16:08
25	05:26 21:16	06:14 06:51-07:57/66 20:19	07:04 07:35-08:01/26 19:09	06:55 07:27-08:11/44 17:02	07:49 08:50-09:38/48 16:14	08:21 09:10-09:48/38 16:08
26	05:27 21:15	06:16 06:52-07:56/64 20:17	07:06 07:37-08:00/23 19:06	06:57 07:30-08:11/41 17:00	07:51 08:49-09:38/49 16:13	08:21 09:10-09:49/39 16:09
27	05:29 21:13	06:18 06:54-07:55/61 20:15	07:08 08:17-08:21/4 19:04 07:40-07:59/19	06:59 07:34-08:10/36 16:59	07:52 08:50-09:38/48 16:12	08:22 09:11-09:50/39 16:10
28	05:30 21:12	06:19 06:55-07:54/59 20:13	07:09 08:12-08:25/13 19:02 07:41-07:57/16	07:00 15:21-15:31/10 16:57 07:38-08:09/31	07:54 08:51-09:39/48 16:11	08:22 09:11-09:51/40 16:11
29	05:32 21:10	06:21 06:57-07:54/57 20:11	07:11 08:10-08:27/17 18:59 07:43-07:54/11	07:02 15:17-15:33/16 07:38-08:08/30 16:55 08:32-08:38/6	07:55 08:51-09:39/48 16:10	08:22 09:11-09:51/40 16:12
30	05:33 21:09	06:22 07:00-07:54/54 20:08	07:13 08:08-08:29/21 18:57	07:04 15:15-15:35/20 07:39-08:07/28 16:53 08:29-08:42/13	07:57 08:52-09:40/48 16:10	08:22 09:11-09:52/41 16:12
31	05:35 07:33-07:44/11 21:07	06:24 07:01-07:52/51 20:06		07:06 15:13-15:36/23 07:39-08:05/26 16:51 08:25-08:44/19		08:22 09:11-09:52/41 16:13
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	11	1812	1036	1385	2136	1275

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM) Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten Zeitpunkt (SS:MM) Schattenanfang-Zeitpunkt (SS:MM) Schattenende/Minuten mit Schatten

Projekt:
Reinstedt

Lizenzierter Anwender:
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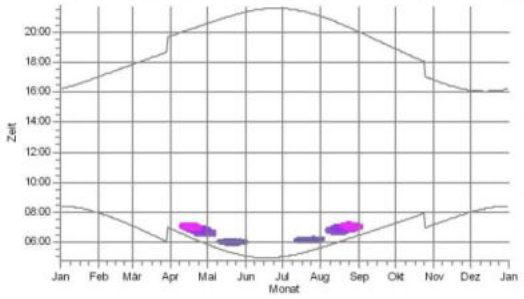
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

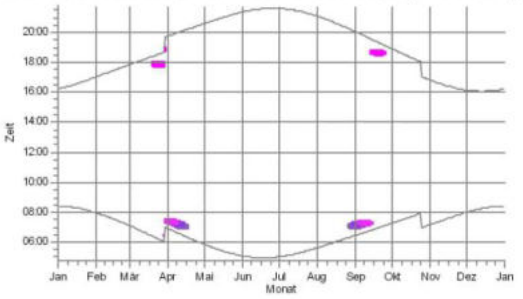
SHADOW - Grafischer Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

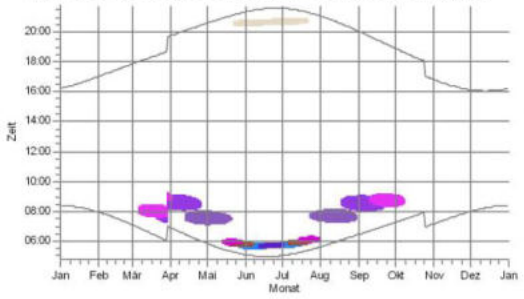
WEA 14: VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



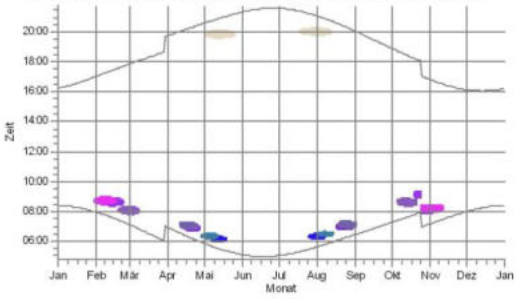
WEA 15: VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



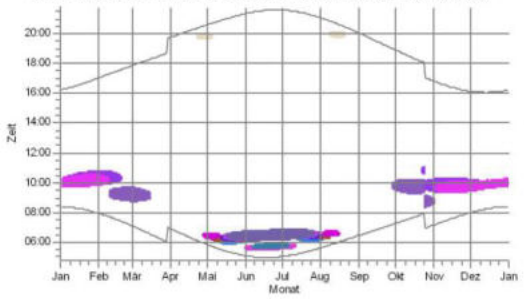
10B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (326)



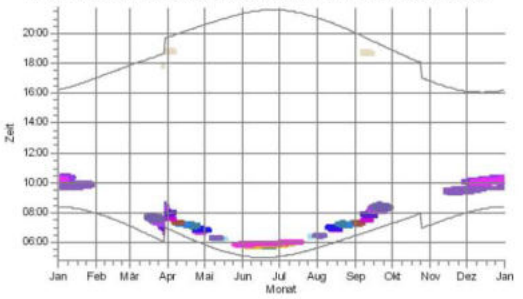
11B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (327)



13B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (328)



14B: ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (337)



Schattenrezeptoren

Projekt:
Reinstedt

Lizenzierter Anwender:
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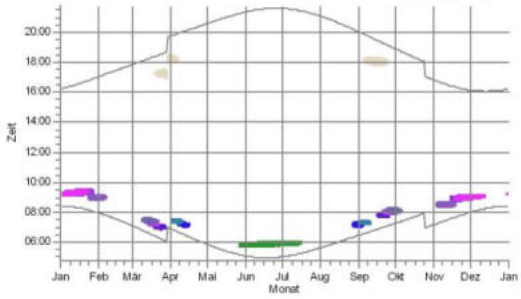
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

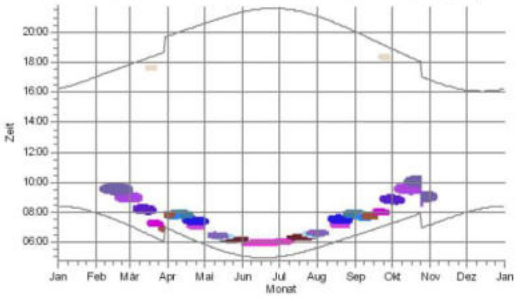
SHADOW - Grafischer Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

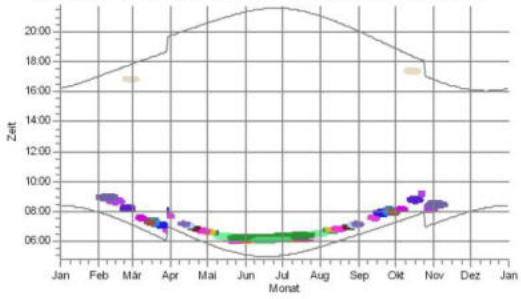
15B: ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (335)



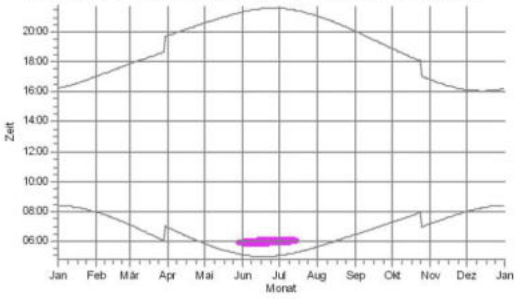
18B: ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (336)



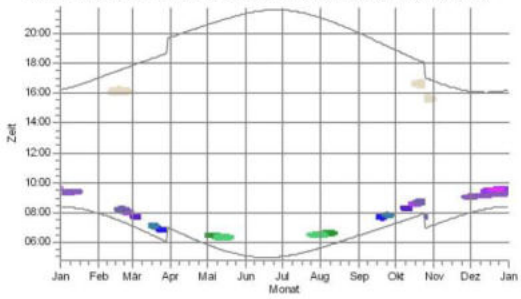
19B: ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (338)



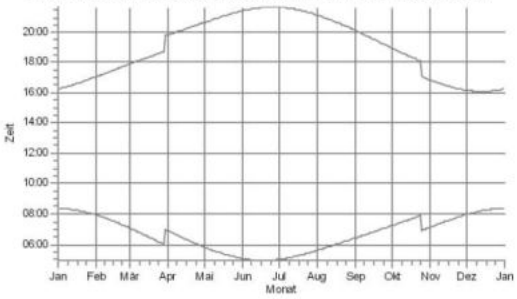
1B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (322)



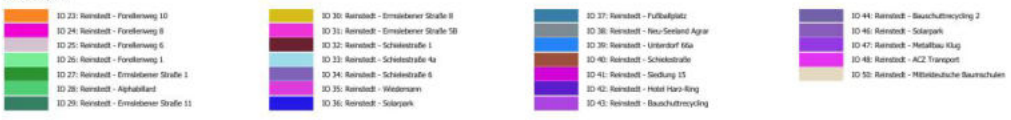
20B: ENERCON E-82 2000 82.0 !O! NH: 138,3 m (Ges:179,3 m) (339)



27B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (334)



Schattenrezeptoren



Projekt:
Reinstedt

Lizenzierter Anwender:
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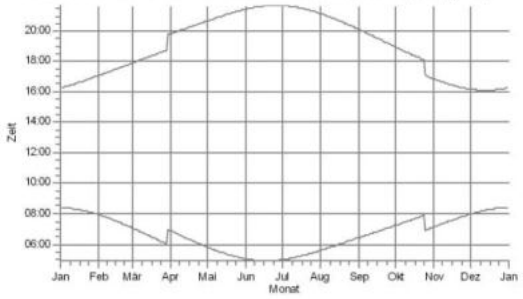
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

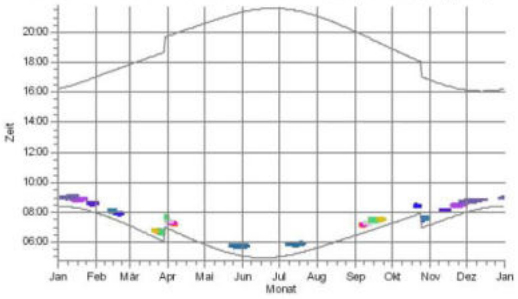
SHADOW - Grafischer Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

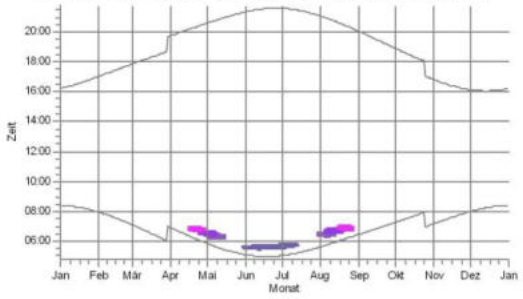
28B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (329)



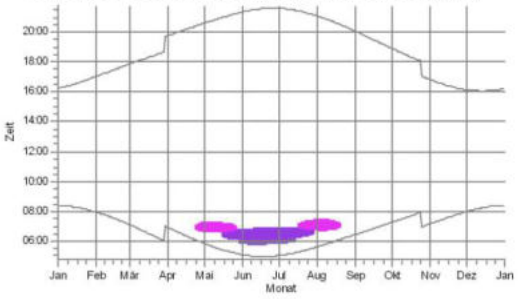
29B: ENERCON E-70 E4 2000 71.0 !O! NH: 98,2 m (Ges:133,7 m) (340)



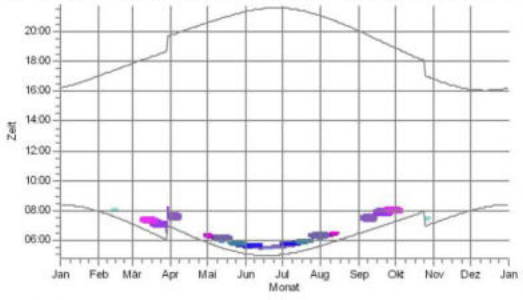
2B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (323)



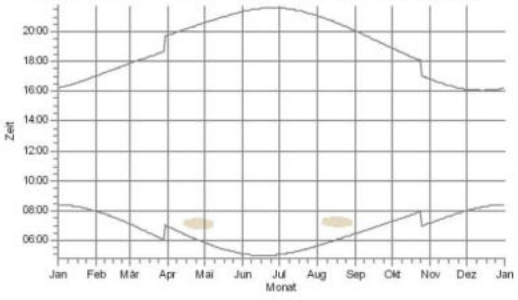
5B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (324)



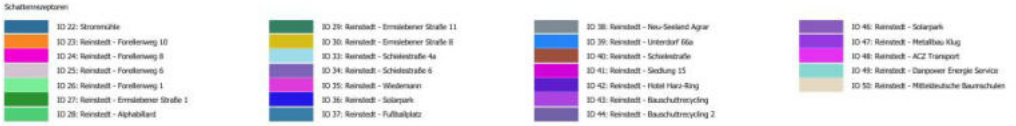
6B: NEG MICON NM72-1500C 1500-400 72.0 !O! NH: 98,0 m (Ges:134,0 m) (



9B: ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (325)



Schattenrezeptoren



Projekt:
Reinstedt

Lizenzierter Anwender:
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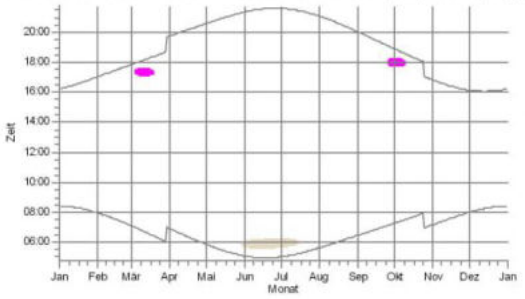
4967329657-2111
Marius Petry / marius.petry@juwi.de
Berechnet:
16.02.2024 15:17/3.6.366

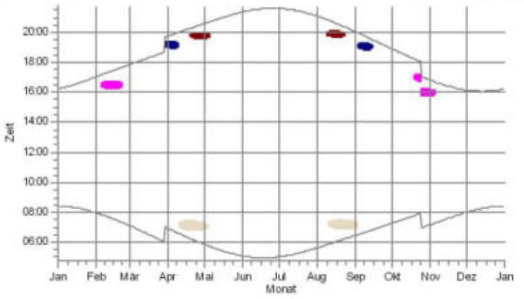
SHADOW - Grafischer Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

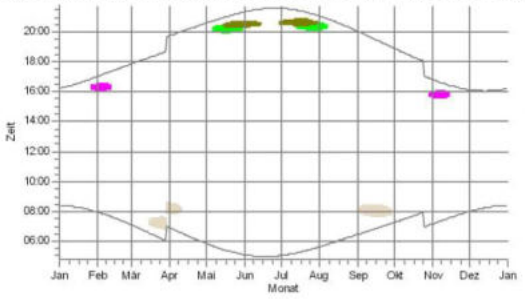
SAB WI: VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



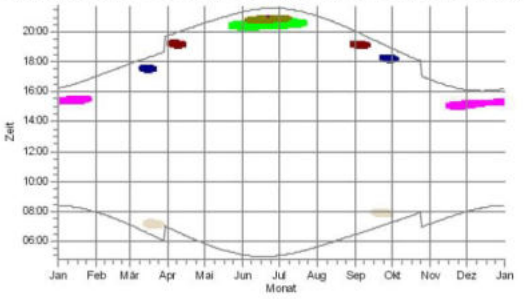
SAB W2: VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



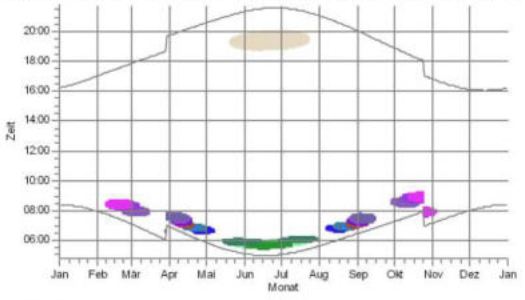
SAB W3: VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



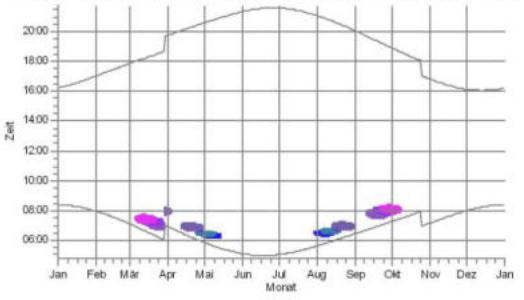
SAB W4: VESTAS V162-5.6MW 5600 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



WEA 02: VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



WEA 03: VESTAS V162-6.2MW 6200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (



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SHADOW - Grafischer Kalender pro WEA

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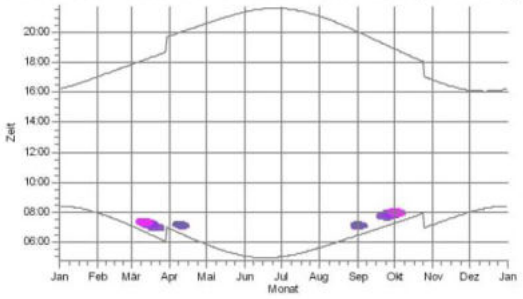
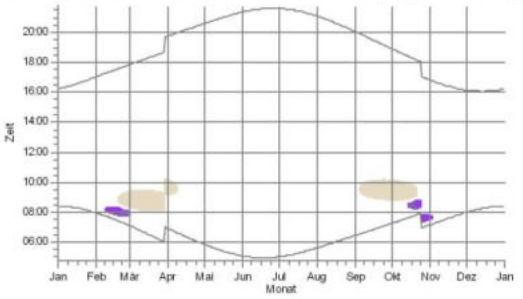
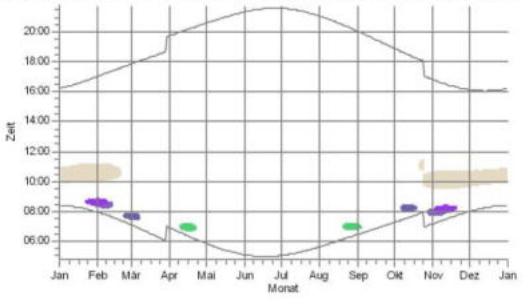
WEA 04: VESTAS V162-6.2MW 6200 162.0 !O! NH 169,0 m (Ges:250,0 m) (



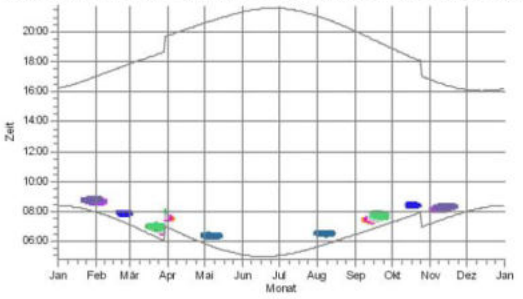
WEA 06: VESTAS V162-6.2MW 6200 162.0 !O! NH 169,0 m (Ges:250,0 m) (



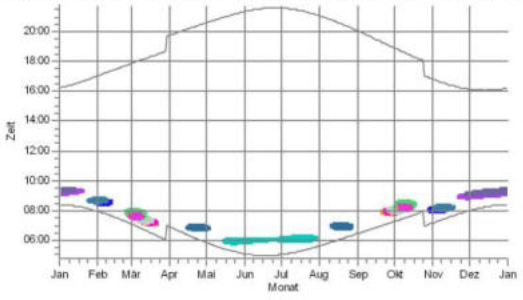
WEA 07: VESTAS V162-6.2MW 6200 162.0 !O! NH 169,0 m (Ges:250,0 m) (



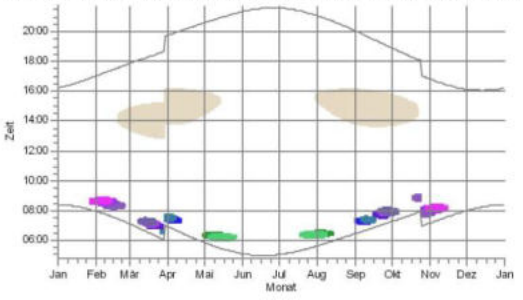
WEA 08: VESTAS V162-6.2MW 6200 162.0 !O! NH 169,0 m (Ges:250,0 m) (



WEA 09: VESTAS V162-6.2MW 6200 162.0 !O! NH 169,0 m (Ges:250,0 m) (



WEA 10: VESTAS V162-6.2MW 6200 162.0 !O! NH 169,0 m (Ges:250,0 m) (



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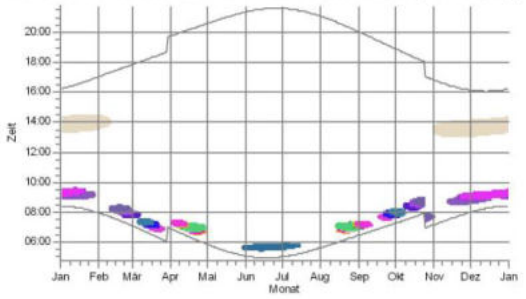
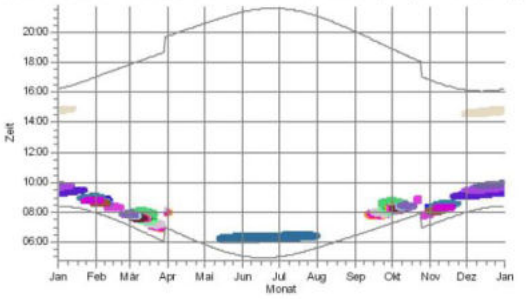
SHADOW - Grafischer Kalender pro WEA

Berechnung: 240216_Schatten_Reinstedt Nord_GB_pem

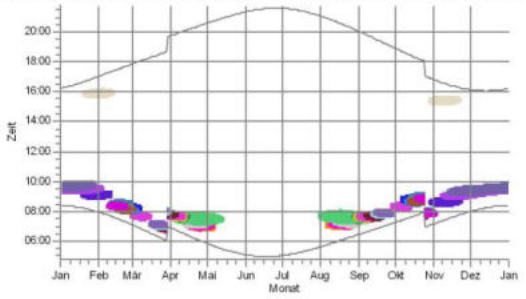
WEA 11: VESTAS V162-6.2MW 6200 162.0 !O! NH 169,0 m (Ges:250,0 m) (



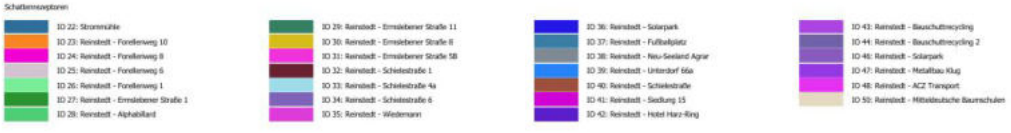
WEA 12: VESTAS V162-6.2MW 6200 162.0 !O! NH 169,0 m (Ges:250,0 m) (



WEA 13: VESTAS V162-6.2MW 6200 162.0 !O! NH 169,0 m (Ges:250,0 m) (



Schattenrezeptoren



5.3 Stellungnahme

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Kassel, 17.12.2013

Berechnung der meteorologisch wahrscheinlichen Beschattungsdauer in WindPRO

Sehr geehrte Damen und Herren,

Die Berechnung der meteorologisch wahrscheinlichen Beschattungsdauer in WindPRO findet auf Basis der astronomisch maximal möglichen Beschattungsdauer sowie von statistischen Reduktionsfaktoren bezüglich der Windrichtungsverteilung, Stillstandswahrscheinlichkeit und Sonnenschein-wahrscheinlichkeit statt.

Der Reduktionsfaktor zur Stillstandswahrscheinlichkeit ergibt sich aus der angenommenen Verteilung der Windgeschwindigkeiten und der Einschaltwindgeschwindigkeit der WEA entsprechend deren technischer Spezifikation. Werden in einer Berechnung unterschiedliche WEA-Typen verwendet, so wird ein einheitlicher Wert für die Einschaltwindgeschwindigkeit verwendet. Dieser berechnet sich als Mittelwert aller in der Berechnung berücksichtigten WEA und wird nicht immissionsortspezifisch vorgenommen.

Eine mögliche Konsequenz ist, dass bei Berechnung von Vor-, Zusatz- und Gesamtbelastung mit Beteiligung unterschiedlicher WEA-Typen unterschiedliche Reduktionsfaktoren für die Stillstandswahrscheinlichkeit an einem Immissionsort ermittelt werden können, auch wenn die dort Schatten verursachenden WEA identisch sind, und sich somit auch die berechneten meteorologisch wahrscheinlichen Beschattungsdauern unterscheiden.

Mit freundlichen Grüßen

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