

Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-LF

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmschöler Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO01 - Giershagen, Adorfer Weg 37

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with 12 columns (Januar to Dezember) and 61 rows of hourly data. Includes summary statistics at the bottom for solar radiation (astr. max. mögl. Besch., Red. Sonneneinstrahlung, Reduktion Betriebsdauersch., Reduktion Wertschöpfung, Gesamte Reduktion, Met. wärsch. Beschattung) and wind speed.

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)    Schattendecke (WEA mit letztem Schatten)



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO02 - Giershagen, Adorfer Weg 41

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with columns for months (Januar to Dezember) and rows for each day of the year (1 to 31), containing wind direction and speed data.

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

Table with 4 columns: Tag im Monat, Sonnenaufgang (SS:MM), Zeitpunkt (SS:MM) Schattenanfang, Zeitpunkt (SS:MM) Schattenende. Includes sub-headers for 'Minuten mit Schatten' and 'Schattenanfang (WEA mit erstem Schatten)', 'Schattenende (WEA mit letztem Schatten)'.





Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
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Lizenzierter Anwender:  
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DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO04 - Giershagen, Adorfer Weg 60

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with 12 columns (Januar to Dezember) and multiple rows of data. Includes a summary table at the bottom with columns: Sonnenscheindauer, Zeitpunkt, etc.

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)    Minuten mit Schatten    Zeitpunkt (SS:MM)    Schatteneende (WEA mit letztem Schatten)







### SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO05 - Giershagen, Beringhof 1

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with columns for months (Januar to Dezember) and rows for each day (1 to 31). Each cell contains a time range (e.g., 08:28-09:28) and a sector code (e.g., WEA07). Summary rows at the bottom show 'Sonnenscheinstunden', 'astr. max. mögl. Beschattung', 'Red. Sonnenscheinwahrsch.', 'Reduktion Betriebsdauer', 'Reduktion Windrichtung', 'Gesamte Reduktion', and 'Met. wahrsch. Beschattung'.

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

Table with 4 columns: Tag im Monat, Sonnenaufgang (SS:MM), Sonnenuntergang (SS:MM), and Minuten mit Schatten. It also includes labels for 'Zeitpunkt (SS:MM) Schattenanfang' and 'Zeitpunkt (SS:MM) Schatteneende'.



Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
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49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO06 - Giershagen, Hintern Hagen 2

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember								
1   08:28			15:07 (WEA03)   08:03	16:33 (WEA02)   07:02	19:06 (WEA01)   05:58	05:13	05:09	05:44	06:33	18:59 (WEA01)   07:21	17:59 (WEA06)   07:13	14:46 (WEA03)   08:03	14:47 (WEA03)							
2   16:24	26	15:08 (WEA03)   17:10	75	16:37 (WEA05)   18:00	36	17:09 (WEA02)   19:53	23	19:29 (WEA01)   20:43	21:28	21:43	21:13	20:13	29	19:28 (WEA01)   19:05	28	18:27 (WEA06)   16:59	50	16:03 (WEA05)   16:19	39	15:26 (WEA03)
3   08:28		15:08 (WEA03)   08:02		15:07 (WEA03)   07:09		16:33 (WEA02)   07:00		19:04 (WEA01)   05:56	05:13	05:10	05:46	06:34	30	18:58 (WEA01)   07:22	28	17:58 (WEA06)   07:15	51	14:44 (WEA03)   08:05	48	14:48 (WEA03)
4   16:26	27	15:25 (WEA03)   17:12	75	16:37 (WEA05)   18:02	35	17:08 (WEA02)   19:55	25	19:29 (WEA01)   20:45	21:31	21:43	21:12	20:11	30	19:28 (WEA01)   19:02	28	18:26 (WEA06)   16:57	57	16:05 (WEA05)   16:18	38	15:26 (WEA03)
5   08:28		15:07 (WEA03)   08:00		15:08 (WEA03)   07:07		16:34 (WEA02)   06:58		19:03 (WEA01)   05:55	05:12	05:11	05:47	06:36	31	18:57 (WEA01)   07:24	27	17:58 (WEA06)   07:17	58	14:43 (WEA03)   08:06	44	14:48 (WEA03)
6   16:26	28	15:38 (WEA03)   17:13	74	16:37 (WEA05)   18:04	33	17:07 (WEA02)   19:57	27	19:30 (WEA01)   20:46	21:21	21:40	21:10	20:08	31	19:28 (WEA01)   19:00	28	18:26 (WEA06)   16:56	61	16:06 (WEA05)   16:18	37	15:25 (WEA03)
7   08:28		15:07 (WEA03)   07:59		15:09 (WEA03)   07:05		16:34 (WEA02)   06:55		19:02 (WEA01)   05:53	05:11	05:11	05:49	06:38	32	18:56 (WEA01)   07:26	28	17:58 (WEA06)   07:18	62	14:42 (WEA03)   08:08	48	14:50 (WEA03)
8   16:27	30	15:37 (WEA03)   17:15	73	16:38 (WEA05)   18:06	42	17:40 (WEA06)   19:58	29	19:31 (WEA01)   20:48	21:32	21:42	21:08	20:06	32	19:28 (WEA01)   18:58	28	18:26 (WEA06)   16:54	65	16:07 (WEA05)   16:17	36	15:26 (WEA03)
9   08:28		15:07 (WEA03)   07:57		15:09 (WEA03)   07:03		16:35 (WEA02)   06:56		19:04 (WEA01)   05:57	05:13	05:13	05:50	06:39	33	18:56 (WEA01)   07:20	28	17:57 (WEA06)   07:20	66	14:41 (WEA03)   08:09	49	14:50 (WEA03)
10   16:28	31	15:38 (WEA03)   17:17	73	16:38 (WEA05)   18:07	46	17:43 (WEA06)   20:00	30	19:31 (WEA01)   20:50	21:33	21:42	21:07	20:04	32	19:28 (WEA01)   18:55	28	18:25 (WEA06)   16:52	66	16:06 (WEA05)   16:17	35	15:25 (WEA03)
11   08:27		15:06 (WEA03)   07:56		15:10 (WEA03)   07:01		16:37 (WEA02)   06:51		19:00 (WEA01)   05:49	05:10	05:13	05:53	06:41	33	18:55 (WEA01)   07:29	27	17:20 (WEA06)   07:22	67	14:40 (WEA03)   08:10	49	14:52 (WEA03)
12   16:29	32	15:38 (WEA03)   17:19	70	16:37 (WEA05)   18:09	46	17:45 (WEA06)   20:02	31	19:31 (WEA01)   20:51	21:34	21:41	21:05	20:02	32	19:27 (WEA01)   18:53	38	18:24 (WEA06)   16:50	70	16:07 (WEA05)   16:16	34	15:26 (WEA03)
13   08:27		15:07 (WEA03)   07:54		15:10 (WEA03)   06:59		16:38 (WEA02)   06:49		18:59 (WEA01)   05:47	05:09	05:14	05:54	06:42	34	18:56 (WEA01)   07:30	30	17:17 (WEA06)   07:24	71	14:39 (WEA03)   08:11	47	14:58 (WEA03)
14   16:31	33	15:40 (WEA03)   17:21	68	16:37 (WEA05)   18:11	46	17:46 (WEA06)   20:12	32	19:31 (WEA01)   20:53	21:34	21:41	21:03	19:59	31	19:27 (WEA01)   18:51	42	18:23 (WEA06)   16:49	71	16:07 (WEA05)   16:14	32	15:25 (WEA03)
15   08:27		15:06 (WEA03)   07:52		15:12 (WEA03)   06:56		16:40 (WEA02)   06:47		18:59 (WEA01)   05:46	05:08	05:15	05:55	06:44	34	18:55 (WEA01)   07:32	30	17:14 (WEA06)   07:25	72	14:39 (WEA03)   08:12	47	14:53 (WEA03)
16   16:31	34	15:40 (WEA03)   17:22	65	16:37 (WEA05)   18:13	42	17:46 (WEA06)   20:05	32	19:31 (WEA01)   20:54	21:35	21:40	21:01	19:57	31	19:26 (WEA01)   18:49	45	18:21 (WEA06)   16:47	73	16:08 (WEA05)   16:15	32	15:25 (WEA03)
17   08:26		15:07 (WEA03)   07:51		15:13 (WEA03)   06:54		16:43 (WEA02)   06:44		18:59 (WEA01)   05:44	05:08	05:16	05:57	06:46	34	18:56 (WEA01)   07:34	30	17:12 (WEA06)   07:27	73	14:39 (WEA03)   08:14	47	14:55 (WEA03)
18   16:33	35	15:42 (WEA03)   17:24	61	16:36 (WEA05)   18:14	38	17:47 (WEA06)   20:07	32	19:31 (WEA01)   20:56	21:36	21:40	21:00	19:55	29	19:25 (WEA01)   18:47	46	18:20 (WEA06)   16:45	73	16:08 (WEA05)   16:15	30	15:25 (WEA03)
19   08:26		15:06 (WEA03)   07:49		15:14 (WEA03)   06:52		17:20 (WEA02)   06:42		18:59 (WEA01)   05:42	05:07	05:17	05:58	06:47	35	18:55 (WEA01)   07:35	30	17:10 (WEA06)   07:29	74	14:38 (WEA03)   08:15	46	14:56 (WEA03)
20   16:34	36	15:47 (WEA03)   17:26	57	16:35 (WEA05)   18:16	28	17:48 (WEA06)   20:08	31	19:30 (WEA01)   20:58	21:37	21:39	20:58	19:53	29	19:24 (WEA01)   18:44	46	18:18 (WEA06)   16:44	75	16:08 (WEA05)   16:15	29	15:25 (WEA03)
21   08:25		15:06 (WEA03)   07:47		15:15 (WEA03)   06:50		17:20 (WEA02)   06:40		18:59 (WEA01)   05:40	05:07	05:18	06:00	06:49	36	18:56 (WEA01)   07:37	31	17:08 (WEA06)   07:31	76	14:38 (WEA03)   08:16	44	14:57 (WEA03)
22   16:35	37	15:43 (WEA03)   17:28	53	16:34 (WEA05)   18:18	28	17:48 (WEA06)   20:10	31	19:30 (WEA01)   20:59	21:38	21:38	20:56	19:50	27	19:23 (WEA01)   18:42	42	18:14 (WEA06)   16:42	74	16:08 (WEA05)   16:15	28	15:25 (WEA03)
23   08:25		15:06 (WEA03)   07:45		15:17 (WEA03)   06:48		17:19 (WEA02)   06:38		18:59 (WEA01)   05:39	05:07	05:19	06:01	06:50	37	18:57 (WEA01)   07:39	30	17:07 (WEA06)   07:32	75	14:38 (WEA03)   08:17	43	14:58 (WEA03)
24   16:38	39	15:45 (WEA03)   17:30	45	16:32 (WEA05)   18:20	28	17:47 (WEA06)   20:12	29	19:28 (WEA01)   21:01	21:39	21:37	20:54	19:48	25	19:22 (WEA01)   18:40	34	17:41 (WEA06)   16:41	75	16:08 (WEA05)   16:14	27	15:25 (WEA03)
25   08:24		15:06 (WEA03)   07:43		15:19 (WEA03)   06:45		17:19 (WEA02)   06:35		18:59 (WEA01)   05:37	05:06	05:20	06:03	06:52	37	18:58 (WEA01)   07:40	30	17:07 (WEA06)   07:34	76	14:38 (WEA03)   08:18	42	14:59 (WEA03)
26   16:38	39	15:45 (WEA03)   17:32	47	16:56 (WEA05)   18:21	28	17:47 (WEA06)   20:13	29	19:28 (WEA01)   21:02	21:39	21:37	20:52	19:46	22	19:20 (WEA01)   18:38	34	17:41 (WEA06)   16:39	74	16:08 (WEA05)   16:14	26	15:25 (WEA03)
27   08:23		15:06 (WEA03)   07:42		15:21 (WEA03)   06:43		17:19 (WEA02)   06:33		19:00 (WEA01)   05:36	05:06	05:21	06:04	06:54	38	19:00 (WEA01)   07:42	30	17:06 (WEA06)   07:36	74	14:39 (WEA03)   08:19	41	14:59 (WEA03)
28   16:40	40	15:46 (WEA03)   17:33	39	17:00 (WEA05)   18:23	28	17:47 (WEA06)   20:15	27	19:27 (WEA01)   21:04	21:40	21:36	20:50	19:44	18	19:18 (WEA01)   18:36	36	17:42 (WEA06)   16:38	74	16:08 (WEA05)   16:14	26	15:25 (WEA03)
29   08:23		15:05 (WEA03)   07:40		15:25 (WEA03)   06:41		17:19 (WEA02)   06:31		19:01 (WEA01)   05:34	05:06	05:22	06:06	06:55	39	19:02 (WEA01)   07:44	36	17:05 (WEA06)   07:38	75	16:08 (WEA05)   16:14	25	15:25 (WEA03)
30   16:41	42	15:47 (WEA03)   17:35	36	17:02 (WEA05)   18:25	28	17:47 (WEA06)   20:17	24	19:25 (WEA01)   21:05	21:40	21:35	20:48	19:41	18	19:14 (WEA01)   18:33	36	17:41 (WEA06)   16:36	73	16:08 (WEA05)   16:14	25	15:25 (WEA03)
31   08:22		15:05 (WEA03)   07:38		16:39 (WEA05)   06:39		17:19 (WEA02)   06:29		19:02 (WEA01)   05:33	05:06	05:23	06:08	06:57	40	19:04 (WEA01)   07:46	37	17:04 (WEA06)   07:39	76	14:38 (WEA03)   08:21	41	15:01 (WEA03)
32   16:43	43	15:48 (WEA03)   17:37	25	17:04 (WEA05)   18:26	26	17:45 (WEA06)   20:18	22	19:24 (WEA01)   21:07	21:41	21:34	20:46	19:39	18	19:13 (WEA01)   18:31	37	17:41 (WEA06)   16:35	71	16:06 (WEA05)   16:14	24	15:25 (WEA03)
33   08:21		15:05 (WEA03)   07:36		16:38 (WEA05)   06:36		17:20 (WEA02)   06:27		19:04 (WEA01)   05:31	05:06	05:24	06:09	06:58	41	19:04 (WEA01)   07:47	37	17:04 (WEA06)   07:41	74	14:38 (WEA03)   08:22	40	15:02 (WEA03)
34   16:44	43	15:48 (WEA03)   17:39	27	17:05 (WEA05)   18:28	25	17:45 (WEA06)   20:20	18	19:22 (WEA01)   21:08	21:41	21:33	20:44	19:37	18	19:13 (WEA01)   18:30	37	17:42 (WEA06)   16:33	70	16:05 (WEA05)   16:15	23	15:25 (WEA03)
35   08:20		15:05 (WEA03)   07:34		16:36 (WEA05)   06:34		17:21 (WEA02)   06:25		19:07 (WEA01)   05:30	05:06	05:25	06:11	07:00	42	19:05 (WEA01)   07:49	38	17:04 (WEA06)   07:43	75	14:39 (WEA03)   08:23	39	15:25 (WEA03)
36   16:46	44	15:49 (WEA03)   17:41	30	17:06 (WEA05)   18:30	23	17:44 (WEA06)   20:22	19	19:19 (WEA01)   21:10	21:42	21:32	20:42	19:34	18	19:14 (WEA01)   18:32	36	17:42 (WEA06)   16:32	76	16:03 (WEA05)   16:15	22	15:24 (WEA03)
37   08:19		15:05 (WEA03)   07:32		16:35 (WEA05)   06:32		17:21 (WEA02)   06:23		19:05 (WEA01)   05:28	05:06	05:27	06:12	07:01	43	19:06 (WEA01)   07:51	38	17:04 (WEA06)   07:44	76	14:39 (WEA03)   08:23	38	15:03 (WEA03)
38   16:47	45	15:50 (WEA03)   17:43	32	17:07 (WEA05)   18:32	20	17:41 (WEA06)   20:23	21	19:21 (WEA01)   21:11	21:42	21:31	20:40	19:32	18	19:13 (WEA01)   18:32	37	17:41 (WEA06)   16:31	76	16:02 (WEA05)   16:15	22	15:25 (WEA03)
39   08:18		15:05 (WEA03)   07:30		16:36 (WEA05)   06:30		17:23 (WEA02)   06:20		19:07 (WEA01)   05:27	05:06	05:28	06:14	07:03	44	19:07 (WEA01)   07:52	38	17:04 (WEA06)   07:46	77	14:40 (WEA03)   08:24	37	15:05 (WEA03)
40   16:49	46	15:51 (WEA03)   17:44	33	17:08 (WEA05)   18:33	16	17:39 (WEA06)   20:25	21	19:23 (WEA01)   21:13	21:43	21:30	20:38	19:30	18	19:13 (WEA01)   18:33	37	17:41 (WEA06)   16:30	79	16:01 (WEA05)   16:15	20	15:25 (WEA03)
41   08:17		15:05 (WEA03)   07:28		16:34 (WEA05)   06:27		17:26														

Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
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DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



### SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO07 - Giershagen, Hintern Hagen 2 a  
Annahmen für Schattenwurfberechnung  
Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with 12 columns (Januar to Dezember) and multiple rows of data including solar coordinates, wind speed, and shading percentages.

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)      Schattende (WEA mit letztem Schatten)

Summary table with 12 columns (Januar to Dezember) and rows for: astr. max. mögl. Beschattung, Red. Sonnenscheinwahrsch., Reduktion Betriebsdauer, Reduktion Wertschöpfung, Gesamte Reduktion, Met.wahrsch. Beschattung.

Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Umlizierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO08 - Giershagen, Hintern Hagen 14

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with columns for months (Januar to Dezember) and rows for various metrics including solar radiation, shadow reduction, and wind speed. The table contains a large amount of numerical data organized in a grid format.

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)    Schattendecke (WEA mit letztem Schatten)



Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
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Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO09 - Giershagen, Hintern Hagen 16

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with 12 columns (Januar to Dezember) and multiple rows of data. Includes a summary table at the bottom with columns for 'astr max mögl Beschattung', 'Red. Sonnenscheinwahrsch.', 'Reduktion Betriebsdauer', 'Reduktion Windschattung', 'Gesamte Reduktion', and '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)    Schatteneende (WEA mit letztem Schatten)



Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



## SHADOW - Kalender

Berechnung: 2024-10-0 Giershagen GB Schattenrezeptor: IO10 - Giershagen, Hinterm Hagen 24

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsstunden je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember												
1	08:23	14:39 (WEA03)	08:03	14:56 (WEA03)	07:12	17:05 (WEA06)	07:02	18:41 (WEA01)	05:58	05:13	05:09	05:44	06:33	07:13	15:43 (WEA02)	08:03	14:23 (WEA02)							
2	08:28	14:39 (WEA03)	08:02	14:58 (WEA03)	07:09	17:04 (WEA06)	07:00	18:41 (WEA01)	05:56	05:13	05:10	05:46	06:34	07:13	15:43 (WEA02)	08:05	14:24 (WEA02)							
3	08:28	14:39 (WEA03)	08:00	15:00 (WEA03)	07:07	17:04 (WEA06)	06:58	18:41 (WEA01)	05:55	05:12	05:11	05:47	06:36	07:24	15:44 (WEA02)	08:06	14:25 (WEA02)							
4	08:28	14:39 (WEA03)	07:59	15:04 (WEA03)	07:05	17:03 (WEA06)	06:55	18:42 (WEA01)	05:53	05:11	05:11	05:49	06:38	07:24	15:44 (WEA02)	08:08	14:25 (WEA02)							
5	08:28	14:40 (WEA03)	07:57	15:02 (WEA03)	07:03	17:03 (WEA06)	06:53	18:43 (WEA01)	05:51	05:10	05:12	05:50	06:39	07:27	15:45 (WEA02)	08:09	14:25 (WEA02)							
6	08:27	14:40 (WEA03)	07:56	15:05 (WEA03)	07:01	17:03 (WEA06)	06:51	18:43 (WEA01)	05:49	05:10	05:13	05:52	06:41	07:27	15:45 (WEA02)	08:10	14:26 (WEA02)							
7	08:27	14:41 (WEA03)	07:54	15:16 (WEA03)	06:59	17:03 (WEA06)	06:49	18:45 (WEA01)	05:47	05:09	05:14	05:53	06:42	07:27	15:45 (WEA02)	08:11	14:26 (WEA02)							
8	08:27	14:40 (WEA03)	07:52	15:15 (WEA03)	06:56	17:03 (WEA06)	06:47	18:48 (WEA01)	05:46	05:08	05:15	05:55	06:44	07:27	15:46 (WEA02)	08:13	14:27 (WEA02)							
9	08:26	14:41 (WEA03)	07:51	15:14 (WEA03)	06:54	17:04 (WEA06)	06:44	19:01 (WEA01)	05:44	05:08	05:16	05:57	06:46	07:27	15:47 (WEA02)	08:14	14:28 (WEA02)							
10	08:26	14:41 (WEA03)	07:49	15:14 (WEA03)	06:52	17:05 (WEA06)	06:42	19:03 (WEA01)	05:42	05:07	05:17	05:58	06:47	07:27	15:48 (WEA02)	08:15	14:28 (WEA02)							
11	08:25	14:41 (WEA03)	07:47	15:15 (WEA03)	06:50	17:06 (WEA06)	06:40	19:05 (WEA01)	05:40	05:07	05:18	06:00	06:49	07:27	15:49 (WEA02)	08:16	14:29 (WEA02)							
12	08:25	14:42 (WEA03)	07:45	15:16 (WEA03)	06:48	17:07 (WEA06)	06:38	19:07 (WEA01)	05:39	05:07	05:19	06:01	06:50	07:27	15:50 (WEA02)	08:17	14:29 (WEA02)							
13	08:24	14:42 (WEA03)	07:43	15:17 (WEA03)	06:46	17:08 (WEA06)	06:36	19:09 (WEA01)	05:37	05:06	05:20	06:03	06:52	07:27	15:51 (WEA02)	08:18	14:30 (WEA02)							
14	08:23	14:43 (WEA03)	07:42	15:18 (WEA03)	06:44	17:09 (WEA06)	06:34	19:11 (WEA01)	05:35	05:05	05:21	06:04	06:54	07:27	15:52 (WEA02)	08:19	14:30 (WEA02)							
15	08:23	14:43 (WEA03)	07:40	15:19 (WEA03)	06:42	17:10 (WEA06)	06:32	19:13 (WEA01)	05:33	05:04	05:22	06:06	06:55	07:27	15:53 (WEA02)	08:20	14:31 (WEA02)							
16	08:22	14:43 (WEA03)	07:38	15:20 (WEA03)	06:40	17:11 (WEA06)	06:30	19:15 (WEA01)	05:31	05:03	05:23	06:08	06:57	07:27	15:54 (WEA02)	08:21	14:32 (WEA02)							
17	08:21	14:44 (WEA03)	07:36	15:21 (WEA03)	06:38	17:12 (WEA06)	06:28	19:17 (WEA01)	05:29	05:02	05:24	06:10	06:59	07:27	15:55 (WEA02)	08:22	14:32 (WEA02)							
18	08:20	14:44 (WEA03)	07:34	15:22 (WEA03)	06:36	17:13 (WEA06)	06:26	19:19 (WEA01)	05:27	05:01	05:25	06:12	07:00	07:27	15:56 (WEA02)	08:23	14:33 (WEA02)							
19	08:19	14:45 (WEA03)	07:32	15:23 (WEA03)	06:34	17:14 (WEA06)	06:24	19:21 (WEA01)	05:25	05:00	05:26	06:14	07:03	07:27	15:57 (WEA02)	08:24	14:34 (WEA02)							
20	08:18	14:45 (WEA03)	07:30	15:24 (WEA03)	06:32	17:15 (WEA06)	06:22	19:23 (WEA01)	05:23	04:59	05:27	06:16	07:04	07:27	15:58 (WEA02)	08:25	14:34 (WEA02)							
21	08:17	14:46 (WEA03)	07:28	15:25 (WEA03)	06:30	17:16 (WEA06)	06:20	19:25 (WEA01)	05:21	04:58	05:28	06:18	07:05	07:27	15:59 (WEA02)	08:26	14:35 (WEA02)							
22	08:16	14:46 (WEA03)	07:26	15:26 (WEA03)	06:28	17:17 (WEA06)	06:18	19:27 (WEA01)	05:19	04:57	05:29	06:20	07:06	07:27	15:60 (WEA02)	08:27	14:35 (WEA02)							
23	08:15	14:47 (WEA03)	07:24	15:27 (WEA03)	06:26	17:18 (WEA06)	06:16	19:29 (WEA01)	05:17	04:56	05:30	06:22	07:06	07:27	15:61 (WEA02)	08:28	14:36 (WEA02)							
24	08:14	14:48 (WEA03)	07:22	15:28 (WEA03)	06:24	17:19 (WEA06)	06:14	19:31 (WEA01)	05:15	04:55	05:31	06:24	07:07	07:27	15:62 (WEA02)	08:29	14:36 (WEA02)							
25	08:13	14:48 (WEA03)	07:20	15:29 (WEA03)	06:22	17:20 (WEA06)	06:12	19:33 (WEA01)	05:13	04:54	05:32	06:26	07:08	07:27	15:63 (WEA02)	08:30	14:37 (WEA02)							
26	08:12	14:49 (WEA03)	07:18	15:30 (WEA03)	06:20	17:21 (WEA06)	06:10	19:35 (WEA01)	05:11	04:53	05:33	06:28	07:09	07:27	15:64 (WEA02)	08:31	14:37 (WEA02)							
27	08:10	14:49 (WEA03)	07:16	15:31 (WEA03)	06:18	17:22 (WEA06)	06:08	19:37 (WEA01)	05:09	04:52	05:34	06:30	07:10	07:27	15:65 (WEA02)	08:32	14:38 (WEA02)							
28	08:09	14:51 (WEA03)	07:14	15:32 (WEA03)	06:16	17:23 (WEA06)	06:06	19:39 (WEA01)	05:07	04:51	05:35	06:32	07:11	07:27	15:66 (WEA02)	08:33	14:38 (WEA02)							
29	08:08	14:53 (WEA03)	07:12	15:33 (WEA03)	06:14	17:24 (WEA06)	06:04	19:41 (WEA01)	05:05	04:50	05:36	06:34	07:12	07:27	15:67 (WEA02)	08:34	14:39 (WEA02)							
30	08:06	14:53 (WEA03)	07:10	15:34 (WEA03)	06:12	17:25 (WEA06)	06:02	19:43 (WEA01)	05:03	04:49	05:37	06:36	07:13	07:27	15:68 (WEA02)	08:35	14:39 (WEA02)							
31	08:05	14:54 (WEA03)	07:08	15:35 (WEA03)	06:10	17:26 (WEA06)	06:00	19:45 (WEA01)	05:01	04:48	05:38	06:38	07:14	07:27	15:69 (WEA02)	08:36	14:40 (WEA02)							
1	17:08	58	16:20 (WEA05)	17:57	34	17:29 (WEA06)	19:45	31	19:13 (WEA01)	20:37	21:22	21:44	21:21	20:24	19:14	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
2	17:06	58	16:20 (WEA05)	17:55	34	17:29 (WEA06)	19:43	31	19:13 (WEA01)	20:38	21:24	21:44	21:19	20:22	19:11	18:07	36	17:17 (WEA02)	16:21	64	15:52 (WEA05)	16:20	40	15:17 (WEA03)
3	17:06	58	16:20 (WEA05)	17:53	34	17:29 (WEA06)	19:41	31	19:13 (WEA01)	20:38	21:26	21:44	21:21	20:24	19:14	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
4	17:06	58	16:20 (WEA05)	17:51	34	17:29 (WEA06)	19:39	31	19:13 (WEA01)	20:38	21:28	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
5	17:06	58	16:20 (WEA05)	17:49	34	17:29 (WEA06)	19:37	31	19:13 (WEA01)	20:38	21:30	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
6	17:06	58	16:20 (WEA05)	17:47	34	17:29 (WEA06)	19:35	31	19:13 (WEA01)	20:38	21:32	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
7	17:06	58	16:20 (WEA05)	17:45	34	17:29 (WEA06)	19:33	31	19:13 (WEA01)	20:38	21:34	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
8	17:06	58	16:20 (WEA05)	17:43	34	17:29 (WEA06)	19:31	31	19:13 (WEA01)	20:38	21:36	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
9	17:06	58	16:20 (WEA05)	17:41	34	17:29 (WEA06)	19:29	31	19:13 (WEA01)	20:38	21:38	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
10	17:06	58	16:20 (WEA05)	17:39	34	17:29 (WEA06)	19:27	31	19:13 (WEA01)	20:38	21:40	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
11	17:06	58	16:20 (WEA05)	17:37	34	17:29 (WEA06)	19:25	31	19:13 (WEA01)	20:38	21:42	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
12	17:06	58	16:20 (WEA05)	17:35	34	17:29 (WEA06)	19:23	31	19:13 (WEA01)	20:38	21:44	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
13	17:06	58	16:20 (WEA05)	17:33	34	17:29 (WEA06)	19:21	31	19:13 (WEA01)	20:38	21:46	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
14	17:06	58	16:20 (WEA05)	17:31	34	17:29 (WEA06)	19:19	31	19:13 (WEA01)	20:38	21:48	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
15	17:06	58	16:20 (WEA05)	17:29	34	17:29 (WEA06)	19:17	31	19:13 (WEA01)	20:38	21:50	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
16	17:06	58	16:20 (WEA05)	17:27	34	17:29 (WEA06)	19:15	31	19:13 (WEA01)	20:38	21:52	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
17	17:06	58	16:20 (WEA05)	17:25	34	17:29 (WEA06)	19:13	31	19:13 (WEA01)	20:38	21:54	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
18	17:06	58	16:20 (WEA05)	17:23	34	17:29 (WEA06)	19:11	31	19:13 (WEA01)	20:38	21:56	21:44	21:19	20:22	19:11	18:09	36	17:17 (WEA02)	16:22	64	15:52 (WEA05)	16:19	40	15:17 (WEA03)
19	17:06	58	16:20 (WEA05)	17:21	34	17:29 (WEA06)	19:09																	



Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
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49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



### SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO11 - Giershagen, Hinterm Hagen 26

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsbereich je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with 12 columns (Januar to Dezember) and multiple rows of shadow data. Includes a summary table at the bottom with columns for 'Sommerstunden', 'astr. max. mögl. Beschattung', 'Red. Sonnencheinwahrsch.', 'Reduktion Betriebsdauer', 'Reduktion Windrichtung', 'Gesamte Reduktion', and '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)    Schatteneende (WEA mit letztem Schatten)



Projekt:

Giershagen

Beschreibung:

2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L F

Lizenzierter Anwender:

anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO12 - Giershagen, Hinterm Hagen 30

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember					
1	08:28	14:33 (WEA03)	08:03	15:55 (WEA05)	07:12	16:56 (WEA06)	07:02	18:36 (WEA01)	05:58	15:13	05:09	05:44	06:33	07:21	15:34 (WEA02)	08:03	14:19 (WEA02)
2	08:28	14:34 (WEA03)	08:02	15:56 (WEA05)	07:09	16:57 (WEA06)	07:00	18:37 (WEA01)	05:56	15:13	05:10	05:46	06:34	07:22	15:34 (WEA02)	08:05	14:20 (WEA02)
3	08:28	14:34 (WEA03)	08:00	15:59 (WEA05)	07:07	16:57 (WEA06)	06:58	18:40 (WEA01)	05:55	15:12	05:11	05:47	06:36	07:24	15:35 (WEA02)	08:06	14:20 (WEA02)
4	08:28	14:34 (WEA03)	07:59	16:00 (WEA05)	07:05	16:56 (WEA06)	06:55	18:40 (WEA01)	05:55	15:11	05:11	05:48	06:38	07:26	15:35 (WEA02)	08:08	14:20 (WEA02)
5	08:28	14:35 (WEA03)	07:57	16:06 (WEA05)	07:03	16:57 (WEA06)	06:53	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
6	08:28	14:35 (WEA03)	07:57	16:06 (WEA05)	07:03	16:57 (WEA06)	06:53	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
7	08:27	14:34 (WEA03)	07:54	16:06 (WEA05)	07:02	16:58 (WEA06)	06:52	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
8	08:27	14:36 (WEA03)	07:52	16:05 (WEA05)	06:56	16:58 (WEA06)	06:50	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
9	08:26	14:37 (WEA03)	07:51	16:05 (WEA05)	06:54	16:58 (WEA06)	06:49	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
10	08:26	14:37 (WEA03)	07:49	16:05 (WEA05)	06:52	16:58 (WEA06)	06:47	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
11	08:25	14:37 (WEA03)	07:47	16:04 (WEA05)	06:50	16:58 (WEA06)	06:40	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
12	08:25	14:38 (WEA03)	07:45	16:04 (WEA05)	06:48	16:58 (WEA06)	06:38	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
13	08:24	14:38 (WEA03)	07:43	16:04 (WEA05)	06:45	16:58 (WEA06)	06:35	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
14	08:23	14:39 (WEA03)	07:42	16:05 (WEA05)	06:43	16:58 (WEA06)	06:33	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
15	08:23	14:39 (WEA03)	07:40	16:05 (WEA05)	06:41	16:58 (WEA06)	06:31	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
16	08:22	14:40 (WEA03)	07:38	16:06 (WEA05)	06:39	16:58 (WEA06)	06:29	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
17	08:21	14:40 (WEA03)	07:36	16:06 (WEA05)	06:36	16:58 (WEA06)	06:27	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
18	08:20	14:41 (WEA03)	07:34	16:07 (WEA05)	06:34	16:58 (WEA06)	06:25	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
19	08:19	14:42 (WEA03)	07:32	16:08 (WEA05)	06:32	16:58 (WEA06)	06:23	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
20	08:18	14:43 (WEA03)	07:30	16:10 (WEA05)	06:30	16:58 (WEA06)	06:20	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
21	08:17	14:44 (WEA03)	07:28	16:12 (WEA05)	06:27	16:58 (WEA06)	06:18	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
22	08:16	14:44 (WEA03)	07:26	16:14 (WEA05)	06:25	16:58 (WEA06)	06:16	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
23	08:15	14:45 (WEA03)	07:24	16:16 (WEA05)	06:23	16:58 (WEA06)	06:14	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
24	08:14	14:46 (WEA03)	07:22	16:19 (WEA05)	06:20	16:58 (WEA06)	06:12	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
25	08:13	14:47 (WEA03)	07:20	16:22 (WEA05)	06:18	16:58 (WEA06)	06:10	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
26	08:12	14:49 (WEA03)	07:18	16:26 (WEA05)	06:16	16:58 (WEA06)	06:08	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
27	08:10	14:49 (WEA03)	07:16	16:29 (WEA05)	06:14	16:58 (WEA06)	06:06	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
28	08:09	14:52 (WEA03)	07:14	16:34 (WEA05)	06:11	16:58 (WEA06)	06:04	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
29	08:08	14:54 (WEA03)	07:12	16:39 (WEA05)	06:09	16:58 (WEA06)	06:02	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
30	08:06	14:56 (WEA03)	07:10	16:44 (WEA05)	06:07	16:58 (WEA06)	06:00	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
31	08:05	15:01 (WEA03)	07:08	16:50 (WEA05)	06:05	16:58 (WEA06)	05:59	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
32	08:04	15:03 (WEA03)	07:06	16:56 (WEA05)	06:03	16:58 (WEA06)	05:57	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)
33	08:03	15:05 (WEA03)	07:04	17:02 (WEA05)	06:01	16:58 (WEA06)	05:55	18:40 (WEA01)	05:55	15:10	05:12	05:50	06:39	07:27	15:34 (WEA02)	08:09	14:20 (WEA02)

	260	277	282	366	619	414	482	496	500	454	382	485	334	690	269	1456	247	1380
Sonnenscheinstunden	1690	0.32	0.28	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Red. max mögl. Beschattung	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Reduktion Betriebsdauer	0.67	0.22	0.22	0.19	0.24	0.24	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Gesamte Reduktion	205	189	189	117	117	12	103	103	103	103	103	103	103	103	103	103	103	103
Met. wahrsch. Beschattung	205	189	189	117	117	12	103	103	103	103	103	103	103	103	103	103	103	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 (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO13 - Giershagen, Northolter Str. 6  
Annahmen für Schattenwurfberechnung  
Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
329	297	385	475	490	447	746	1,015	1,180	1,431	1,093	567	8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:28 16:24 16:25 08:28 16:26 4 08:28 16:27 5 08:28 16:28 6 08:27 7 08:27 8 08:27 9 08:26 10 08:26 11 08:25 12 08:25 13 08:24 14 08:23 15 08:23 16 08:22 17 08:21 18 08:20 19 08:19 20 08:18 21 08:17 22 08:16 23 08:15 24 08:14 25 08:13 26 08:12 27 08:11 28 08:09 29 08:08 30 08:06 31 08:05 17:08	14:15 (WEA03) 08:03 15:51 (WEA05) 17:10 14:16 (WEA03) 08:02 15:52 (WEA05) 17:12 14:15 (WEA03) 08:00 15:52 (WEA05) 17:13 14:16 (WEA03) 07:59 15:53 (WEA05) 17:15 14:17 (WEA03) 07:57 15:48 (WEA05) 17:17 14:17 (WEA03) 07:56 15:54 (WEA05) 17:19 14:18 (WEA03) 07:54 15:55 (WEA05) 17:21 14:18 (WEA03) 07:52 15:56 (WEA05) 17:23 14:19 (WEA03) 07:51 15:57 (WEA05) 17:24 14:20 (WEA03) 07:49 15:58 (WEA05) 17:26 14:20 (WEA03) 07:47 15:58 (WEA05) 17:28 14:22 (WEA03) 07:45 15:58 (WEA05) 17:30 14:23 (WEA03) 07:43 15:59 (WEA05) 17:32 14:23 (WEA03) 07:42 15:59 (WEA05) 17:33 14:24 (WEA03) 07:40 15:59 (WEA05) 17:35 14:25 (WEA03) 07:38 15:59 (WEA05) 17:37 14:26 (WEA03) 07:36 16:00 (WEA05) 17:39 14:27 (WEA03) 07:34 16:00 (WEA05) 17:41 14:29 (WEA03) 07:32 16:00 (WEA05) 17:43 14:31 (WEA03) 07:30 16:01 (WEA05) 17:44 14:33 (WEA03) 07:28 16:01 (WEA05) 17:46 14:34 (WEA03) 07:26 16:02 (WEA05) 17:48 14:37 (WEA03) 07:24 16:03 (WEA05) 17:50 14:38 (WEA03) 07:22 16:04 (WEA05) 17:52 14:39 (WEA03) 07:20 16:05 (WEA05) 17:54 14:41 (WEA03) 07:18 16:06 (WEA05) 17:56 14:42 (WEA03) 07:16 16:07 (WEA05) 17:57 14:44 (WEA03) 07:14 16:08 (WEA05) 17:59 14:46 (WEA03) 07:12 16:09 (WEA05) 18:01 14:48 (WEA03) 07:10 16:10 (WEA05) 18:02 14:50 (WEA03) 07:08 16:11 (WEA05) 18:03 14:52 (WEA03) 07:06 16:12 (WEA05) 18:04 14:54 (WEA03) 07:04 16:13 (WEA05) 18:05 14:56 (WEA03) 07:02 16:14 (WEA05) 18:06 14:58 (WEA03) 07:00 16:15 (WEA05) 18:07 14:59 (WEA03) 06:58 16:16 (WEA05) 18:08 15:01 (WEA05) 18:09 15:02 (WEA05) 18:10 15:03 (WEA05) 18:11 15:04 (WEA05) 18:12 15:05 (WEA05) 18:13 15:06 (WEA05) 18:14 15:07 (WEA05) 18:15 15:08 (WEA05) 18:16 15:09 (WEA05) 18:17 15:10 (WEA05) 18:18 15:11 (WEA05) 18:19 15:12 (WEA05) 18:20 15:13 (WEA05) 18:21 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16:04 (WEA05) 19:12 16:05 (WEA05) 19:13 16:06 (WEA05) 19:14 16:07 (WEA05) 19:15 16:08 (WEA05) 19:16 16:09 (WEA05) 19:17 16:10 (WEA05) 19:18 16:11 (WEA05) 19:19 16:12 (WEA05) 19:20 16:13 (WEA05) 19:21 16:14 (WEA05) 19:22 16:15 (WEA05) 19:23 16:16 (WEA05) 19:24 16:17 (WEA05) 19:25 16:18 (WEA05) 19:26 16:19 (WEA05) 19:27 16:20 (WEA05) 19:28 16:21 (WEA05) 19:29 16:22 (WEA05) 19:30 16:23 (WEA05) 19:31 16:24 (WEA05) 19:32 16:25 (WEA05) 19:33 16:26 (WEA05) 19:34 16:27 (WEA05) 19:35 16:28 (WEA05) 19:36 16:29 (WEA05) 19:37 16:30 (WEA05) 19:38 16:31 (WEA05) 19:39 16:32 (WEA05) 19:40 16:33 (WEA05) 19:41 16:34 (WEA05) 19:42 16:35 (WEA05) 19:43 16:36 (WEA05) 19:44 16:37 (WEA05) 19:45 16:38 (WEA05) 19:46 16:39 (WEA05) 19:47 16:40 (WEA05) 19:48 16:41 (WEA05) 19:49 16:42 (WEA05) 19:50 16:43 (WEA05) 19:51 16:44 (WEA05) 19:52 16:45 (WEA05) 19:53 16:46 (WEA05) 19:54 16:47 (WEA05) 19:55 16:48 (WEA05) 19:56 16:49 (WEA05) 19:57 16:50 (WEA05) 19:58 16:51 (WEA05) 19:59 16:52 (WEA05) 20:00 16:53 (WEA05) 20:01 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Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
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DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO14 - Giershagen, Northolter Str. 10

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPPSRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1   08:28	14:11 (WEA03) 08:03	15:44 (WEA02) 07:12	16:45 (WEA06) 07:02	16:58 (WEA06) 07:02	16:58 (WEA06) 07:02	16:58 (WEA06) 07:02	16:58 (WEA06) 07:02	16:58 (WEA06) 07:02	16:58 (WEA06) 07:02	16:58 (WEA06) 07:02	16:58 (WEA06) 07:02	16:58 (WEA06) 07:02
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23   08:15	14:42 (WEA03) 07:24	16:43 (WEA02) 06:23	17:20 (WEA07) 06:14	17:20 (WEA07) 06:14	17:20 (WEA07) 06:14	17:20 (WEA07) 06:14	17:20 (WEA07) 06:14	17:20 (WEA07) 06:14	17:20 (WEA07) 06:14	17:20 (WEA07) 06:14	17:20 (WEA07) 06:14	17:20 (WEA07) 06:14
24   08:14	14:47 (WEA03) 07:22	16:43 (WEA02) 06:20	17:20 (WEA07) 06:12	17:20 (WEA07) 06:12	17:20 (WEA07) 06:12	17:20 (WEA07) 06:12	17:20 (WEA07) 06:12	17:20 (WEA07) 06:12	17:20 (WEA07) 06:12	17:20 (WEA07) 06:12	17:20 (WEA07) 06:12	17:20 (WEA07) 06:12
25   08:13	14:53 (WEA03) 07:20	16:43 (WEA02) 06:18	17:21 (WEA07) 06:10	17:21 (WEA07) 06:10	17:21 (WEA07) 06:10	17:21 (WEA07) 06:10	17:21 (WEA07) 06:10	17:21 (WEA07) 06:10	17:21 (WEA07) 06:10	17:21 (WEA07) 06:10	17:21 (WEA07) 06:10	17:21 (WEA07) 06:10
26   08:12	15:00 (WEA03) 07:18	16:43 (WEA02) 06:16	17:21 (WEA07) 06:08	17:21 (WEA07) 06:08	17:21 (WEA07) 06:08	17:21 (WEA07) 06:08	17:21 (WEA07) 06:08	17:21 (WEA07) 06:08	17:21 (WEA07) 06:08	17:21 (WEA07) 06:08	17:21 (WEA07) 06:08	17:21 (WEA07) 06:08
27   08:10	15:08 (WEA03) 07:16	16:43 (WEA02) 06:14	17:21 (WEA07) 06:06	17:21 (WEA07) 06:06	17:21 (WEA07) 06:06	17:21 (WEA07) 06:06	17:21 (WEA07) 06:06	17:21 (WEA07) 06:06	17:21 (WEA07) 06:06	17:21 (WEA07) 06:06	17:21 (WEA07) 06:06	17:21 (WEA07) 06:06
28   08:09	15:17 (WEA03) 07:14	16:44 (WEA02) 06:12	17:21 (WEA07) 06:04	17:21 (WEA07) 06:04	17:21 (WEA07) 06:04	17:21 (WEA07) 06:04	17:21 (WEA07) 06:04	17:21 (WEA07) 06:04	17:21 (WEA07) 06:04	17:21 (WEA07) 06:04	17:21 (WEA07) 06:04	17:21 (WEA07) 06:04
29   08:08	15:27 (WEA03) 07:12	16:44 (WEA02) 06:10	17:22 (WEA07) 06:02	17:22 (WEA07) 06:02	17:22 (WEA07) 06:02	17:22 (WEA07) 06:02	17:22 (WEA07) 06:02	17:22 (WEA07) 06:02	17:22 (WEA07) 06:02	17:22 (WEA07) 06:02	17:22 (WEA07) 06:02	17:22 (WEA07) 06:02
30   08:06	15:38 (WEA03) 07:10	16:44 (WEA02) 06:08	17:23 (WEA07) 06:00	17:23 (WEA07) 06:00	17:23 (WEA07) 06:00	17:23 (WEA07) 06:00	17:23 (WEA07) 06:00	17:23 (WEA07) 06:00	17:23 (WEA07) 06:00	17:23 (WEA07) 06:00	17:23 (WEA07) 06:00	17:23 (WEA07) 06:00
31   08:05	15:49 (WEA03) 07:08	16:44 (WEA02) 06:06	17:24 (WEA07) 05:58	17:24 (WEA07) 05:58	17:24 (WEA07) 05:58	17:24 (WEA07) 05:58	17:24 (WEA07) 05:58	17:24 (WEA07) 05:58	17:24 (WEA07) 05:58	17:24 (WEA07) 05:58	17:24 (WEA07) 05:58	17:24 (WEA07) 05:58
Sonnenscheinstunden	260	277	366	414	482	496	500	454	382	421	334	269
astr. max. mögl. Beschattung	1588	818	749	749	749	749	749	749	749	749	749	749
Red. Sonnenscheinwahrsch.	0.19	0.32	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Reduktion Betriebsdauer	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Reduktion Windrichtung	0.67	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Gesamte Reduktion	0.12	0.22	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Mat.wahrsch.Beschattung	192	176	141	141	141	141	141	141	141	141	141	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 (WEA mit erstem Schatten)    Sonnenuntergang (SS:MM)    Minuten mit Schatten    Zeitpunkt (SS:MM)    Schatteneende (WEA mit letztem Schatten)





# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO15 - Giershagen, Northolter Str. 14

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1.58	3.21	3.35	5.03	6.68	5.58	6.26	5.85	4.04	3.08	2.01	1.34

Betriebsdauer je Sektor

N	NO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
329	297	385	475	490	447	746	1,015	1,180	1,431	1,093	567	8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1   08:28	14:07 (WEA03) 08:03	15:40 (WEA02) 07:12	16:44 (WEA06) 07:02	16:44 (WEA06) 07:02	16:44 (WEA06) 07:02	16:44 (WEA06) 07:02	16:44 (WEA06) 07:02	16:44 (WEA06) 07:02	16:44 (WEA06) 07:02	16:44 (WEA06) 07:02	16:44 (WEA06) 07:02	16:44 (WEA06) 07:02
2   08:28	14:07 (WEA03) 08:02	15:40 (WEA02) 07:09	16:46 (WEA06) 07:00	16:46 (WEA06) 07:00	16:46 (WEA06) 07:00	16:46 (WEA06) 07:00	16:46 (WEA06) 07:00	16:46 (WEA06) 07:00	16:46 (WEA06) 07:00	16:46 (WEA06) 07:00	16:46 (WEA06) 07:00	16:46 (WEA06) 07:00
3   08:28	14:07 (WEA03) 08:00	15:40 (WEA02) 07:07	16:49 (WEA06) 06:58	16:49 (WEA06) 06:58	16:49 (WEA06) 06:58	16:49 (WEA06) 06:58	16:49 (WEA06) 06:58	16:49 (WEA06) 06:58	16:49 (WEA06) 06:58	16:49 (WEA06) 06:58	16:49 (WEA06) 06:58	16:49 (WEA06) 06:58
4   08:28	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13
5   08:28	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13	16:26 63 15:48 (WEA05) 17:13
6   08:27	14:09 (WEA03) 07:56	15:42 (WEA02) 07:01	17:20 (WEA07) 06:51	17:20 (WEA07) 06:51	17:20 (WEA07) 06:51	17:20 (WEA07) 06:51	17:20 (WEA07) 06:51	17:20 (WEA07) 06:51	17:20 (WEA07) 06:51	17:20 (WEA07) 06:51	17:20 (WEA07) 06:51	17:20 (WEA07) 06:51
7   08:27	14:11 (WEA03) 07:54	15:43 (WEA02) 06:59	17:20 (WEA07) 06:49	17:20 (WEA07) 06:49	17:20 (WEA07) 06:49	17:20 (WEA07) 06:49	17:20 (WEA07) 06:49	17:20 (WEA07) 06:49	17:20 (WEA07) 06:49	17:20 (WEA07) 06:49	17:20 (WEA07) 06:49	17:20 (WEA07) 06:49
8   08:27	14:11 (WEA03) 07:52	15:43 (WEA02) 06:56	17:19 (WEA07) 06:47	17:19 (WEA07) 06:47	17:19 (WEA07) 06:47	17:19 (WEA07) 06:47	17:19 (WEA07) 06:47	17:19 (WEA07) 06:47	17:19 (WEA07) 06:47	17:19 (WEA07) 06:47	17:19 (WEA07) 06:47	17:19 (WEA07) 06:47
9   08:26	14:12 (WEA03) 07:51	15:44 (WEA02) 06:54	17:18 (WEA07) 06:44	17:18 (WEA07) 06:44	17:18 (WEA07) 06:44	17:18 (WEA07) 06:44	17:18 (WEA07) 06:44	17:18 (WEA07) 06:44	17:18 (WEA07) 06:44	17:18 (WEA07) 06:44	17:18 (WEA07) 06:44	17:18 (WEA07) 06:44
10   08:26	14:13 (WEA03) 07:49	15:45 (WEA02) 06:52	17:18 (WEA07) 06:42	17:18 (WEA07) 06:42	17:18 (WEA07) 06:42	17:18 (WEA07) 06:42	17:18 (WEA07) 06:42	17:18 (WEA07) 06:42	17:18 (WEA07) 06:42	17:18 (WEA07) 06:42	17:18 (WEA07) 06:42	17:18 (WEA07) 06:42
11   08:25	14:14 (WEA03) 07:47	15:46 (WEA02) 06:50	17:17 (WEA07) 06:40	17:17 (WEA07) 06:40	17:17 (WEA07) 06:40	17:17 (WEA07) 06:40	17:17 (WEA07) 06:40	17:17 (WEA07) 06:40	17:17 (WEA07) 06:40	17:17 (WEA07) 06:40	17:17 (WEA07) 06:40	17:17 (WEA07) 06:40
12   08:25	14:15 (WEA03) 07:45	15:48 (WEA02) 06:48	17:18 (WEA07) 06:38	17:18 (WEA07) 06:38	17:18 (WEA07) 06:38	17:18 (WEA07) 06:38	17:18 (WEA07) 06:38	17:18 (WEA07) 06:38	17:18 (WEA07) 06:38	17:18 (WEA07) 06:38	17:18 (WEA07) 06:38	17:18 (WEA07) 06:38
13   08:24	14:16 (WEA03) 07:43	15:50 (WEA02) 06:45	17:19 (WEA07) 06:35	17:19 (WEA07) 06:35	17:19 (WEA07) 06:35	17:19 (WEA07) 06:35	17:19 (WEA07) 06:35	17:19 (WEA07) 06:35	17:19 (WEA07) 06:35	17:19 (WEA07) 06:35	17:19 (WEA07) 06:35	17:19 (WEA07) 06:35
14   08:23	14:17 (WEA03) 07:42	15:52 (WEA02) 06:43	17:20 (WEA07) 06:33	17:20 (WEA07) 06:33	17:20 (WEA07) 06:33	17:20 (WEA07) 06:33	17:20 (WEA07) 06:33	17:20 (WEA07) 06:33	17:20 (WEA07) 06:33	17:20 (WEA07) 06:33	17:20 (WEA07) 06:33	17:20 (WEA07) 06:33
15   08:23	14:18 (WEA03) 07:40	16:00 (WEA02) 06:41	17:20 (WEA07) 06:31	17:20 (WEA07) 06:31	17:20 (WEA07) 06:31	17:20 (WEA07) 06:31	17:20 (WEA07) 06:31	17:20 (WEA07) 06:31	17:20 (WEA07) 06:31	17:20 (WEA07) 06:31	17:20 (WEA07) 06:31	17:20 (WEA07) 06:31
16   08:23	14:19 (WEA03) 07:38	16:02 (WEA02) 06:39	17:19 (WEA07) 06:29	17:19 (WEA07) 06:29	17:19 (WEA07) 06:29	17:19 (WEA07) 06:29	17:19 (WEA07) 06:29	17:19 (WEA07) 06:29	17:19 (WEA07) 06:29	17:19 (WEA07) 06:29	17:19 (WEA07) 06:29	17:19 (WEA07) 06:29
17   08:21	14:21 (WEA03) 07:36	16:04 (WEA02) 06:37	17:18 (WEA07) 06:27	17:18 (WEA07) 06:27	17:18 (WEA07) 06:27	17:18 (WEA07) 06:27	17:18 (WEA07) 06:27	17:18 (WEA07) 06:27	17:18 (WEA07) 06:27	17:18 (WEA07) 06:27	17:18 (WEA07) 06:27	17:18 (WEA07) 06:27
18   08:21	14:22 (WEA03) 07:35	16:06 (WEA02) 06:35	17:17 (WEA07) 06:25	17:17 (WEA07) 06:25	17:17 (WEA07) 06:25	17:17 (WEA07) 06:25	17:17 (WEA07) 06:25	17:17 (WEA07) 06:25	17:17 (WEA07) 06:25	17:17 (WEA07) 06:25	17:17 (WEA07) 06:25	17:17 (WEA07) 06:25
19   08:19	14:23 (WEA03) 07:34	16:08 (WEA02) 06:33	17:16 (WEA07) 06:23	17:16 (WEA07) 06:23	17:16 (WEA07) 06:23	17:16 (WEA07) 06:23	17:16 (WEA07) 06:23	17:16 (WEA07) 06:23	17:16 (WEA07) 06:23	17:16 (WEA07) 06:23	17:16 (WEA07) 06:23	17:16 (WEA07) 06:23
20   08:18	14:24 (WEA03) 07:33	16:10 (WEA02) 06:32	17:15 (WEA07) 06:22	17:15 (WEA07) 06:22	17:15 (WEA07) 06:22	17:15 (WEA07) 06:22	17:15 (WEA07) 06:22	17:15 (WEA07) 06:22	17:15 (WEA07) 06:22	17:15 (WEA07) 06:22	17:15 (WEA07) 06:22	17:15 (WEA07) 06:22
21   08:17	14:25 (WEA03) 07:32	16:12 (WEA02) 06:31	17:14 (WEA07) 06:21	17:14 (WEA07) 06:21	17:14 (WEA07) 06:21	17:14 (WEA07) 06:21	17:14 (WEA07) 06:21	17:14 (WEA07) 06:21	17:14 (WEA07) 06:21	17:14 (WEA07) 06:21	17:14 (WEA07) 06:21	17:14 (WEA07) 06:21
22   08:16	14:26 (WEA03) 07:31	16:14 (WEA02) 06:30	17:13 (WEA07) 06:20	17:13 (WEA07) 06:20	17:13 (WEA07) 06:20	17:13 (WEA07) 06:20	17:13 (WEA07) 06:20	17:13 (WEA07) 06:20	17:13 (WEA07) 06:20	17:13 (WEA07) 06:20	17:13 (WEA07) 06:20	17:13 (WEA07) 06:20
23   08:15	14:27 (WEA03) 07:30	16:16 (WEA02) 06:29	17:12 (WEA07) 06:19	17:12 (WEA07) 06:19	17:12 (WEA07) 06:19	17:12 (WEA07) 06:19	17:12 (WEA07) 06:19	17:12 (WEA07) 06:19	17:12 (WEA07) 06:19	17:12 (WEA07) 06:19	17:12 (WEA07) 06:19	17:12 (WEA07) 06:19
24   08:14	14:28 (WEA03) 07:29	16:18 (WEA02) 06:28	17:11 (WEA07) 06:18	17:11 (WEA07) 06:18	17:11 (WEA07) 06:18	17:11 (WEA07) 06:18	17:11 (WEA07) 06:18	17:11 (WEA07) 06:18	17:11 (WEA07) 06:18	17:11 (WEA07) 06:18	17:11 (WEA07) 06:18	17:11 (WEA07) 06:18
25   08:13	14:29 (WEA03) 07:28	16:20 (WEA02) 06:27	17:10 (WEA07) 06:17	17:10 (WEA07) 06:17	17:10 (WEA07) 06:17	17:10 (WEA07) 06:17	17:10 (WEA07) 06:17	17:10 (WEA07) 06:17	17:10 (WEA07) 06:17	17:10 (WEA07) 06:17	17:10 (WEA07) 06:17	17:10 (WEA07) 06:17
26   08:12	14:30 (WEA03) 07:27	16:22 (WEA02) 06:26	17:09 (WEA07) 06:16	17:09 (WEA07) 06:16	17:09 (WEA07) 06:16	17:09 (WEA07) 06:16	17:09 (WEA07) 06:16	17:09 (WEA07) 06:16	17:09 (WEA07) 06:16	17:09 (WEA07) 06:16	17:09 (WEA07) 06:16	17:09 (WEA07) 06:16
27   08:10	14:31 (WEA03) 07:26	16:24 (WEA02) 06:25	17:08 (WEA07) 06:15	17:08 (WEA07) 06:15	17:08 (WEA07) 06:15	17:08 (WEA07) 06:15	17:08 (WEA07) 06:15	17:08 (WEA07) 06:15	17:08 (WEA07) 06:15	17:08 (WEA07) 06:15	17:08 (WEA07) 06:15	17:08 (WEA07) 06:15
28   08:09	14:32 (WEA03) 07:25	16:26 (WEA02) 06:24	17:07 (WEA07) 06:14	17:07 (WEA07) 06:14	17:07 (WEA07) 06:14	17:07 (WEA07) 06:14	17:07 (WEA07) 06:14	17:07 (WEA07) 06:14	17:07 (WEA07) 06:14	17:07 (WEA07) 06:14	17:07 (WEA07) 06:14	17:07 (WEA07) 06:14
29   08:08	14:33 (WEA03) 07:24	16:28 (WEA02) 06:23	17:06 (WEA07) 06:13	17:06 (WEA07) 06:13	17:06 (WEA07) 06:13	17:06 (WEA07) 06:13	17:06 (WEA07) 06:13	17:06 (WEA07) 06:13	17:06 (WEA07) 06:13	17:06 (WEA07) 06:13	17:06 (WEA07) 06:13	17:06 (WEA07) 06:13
30   08:06	14:34 (WEA03) 07:23	16:30 (WEA02) 06:22	17:05 (WEA07) 06:12	17:05 (WEA07) 06:12	17:05 (WEA07) 06:12	17:05 (WEA07) 06:12	17:05 (WEA07) 06:12	17:05 (WEA07) 06:12	17:05 (WEA07) 06:12	17:05 (WEA07) 06:12	17:05 (WEA07) 06:12	17:05 (WEA07) 06:12
31   08:05	14:35 (WEA03) 07:22	16:32 (WEA02) 06:21	17:04 (WEA07) 06:11	17:04 (WEA07) 06:11	17:04 (WEA07) 06:11	17:04 (WEA07) 06:11	17:04 (WEA07) 06:11	17:04 (WEA07) 06:11	17:04 (WEA07) 06:11	17:04 (WEA07) 06:11	17:04 (WEA07) 06:11	17:04 (WEA07) 06:11
astr. max. mögl. Beschattung	1538	803	736	414	482	496	500	454	382	407	786	1150
Red. Sonnenscheinwahrsch.	0.19	0.32	0.28							0.32	0.29	0.22
Reduktion Betriebsdauer	0.96	0.96	0.96							0.96	0.96	0.96
Reduktion Windrichtung	0.67	0.69	0.69							0.68	0.70	0.66
Gesamte Reduktion	0.12	0.22	0.19							0.19	0.19	0.11
Mat. wahrsch. Beschattung	185	173	138							86	152	203

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:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO16 - Giershagen, Northolter Str. 20  
Annahmen für Schattenwurfberechnung  
Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPPSPRINGE]  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember	
1   08:28	13:50 (WEA03)   08:03	15:24 (WEA02)   07:12	17:13 (WEA07)   07:02	06:58	05:13	05:09	05:44	06:33	07:21	17:46 (WEA01)   07:13	15:59 (WEA06)   08:03	14:57 (WEA05)   08:05	14:57 (WEA05)
2   08:28	13:51 (WEA03)   08:02	15:24 (WEA02)   07:09	17:12 (WEA07)   07:00	06:56	05:13	05:10	05:46	06:35	19:05	35 18:21 (WEA01)   16:59	16:24 (WEA06)   16:19	34 15:31 (WEA02)   16:23	
3   08:28	13:51 (WEA03)   08:00	15:25 (WEA02)   07:07	17:12 (WEA07)   06:58	06:55	05:12	05:11	05:47	06:36	19:02	35 18:20 (WEA01)   16:57	16:23 (WEA06)   16:18	35 15:31 (WEA02)   16:23	
4   08:28	13:51 (WEA03)   08:00	15:25 (WEA02)   07:07	17:12 (WEA07)   06:58	06:55	05:12	05:11	05:47	06:36	19:00	34 18:19 (WEA01)   16:56	16:22 (WEA06)   16:18	40 15:31 (WEA02)   16:22	
5   08:28	13:52 (WEA03)   07:59	15:27 (WEA02)   07:05	17:10 (WEA07)   06:55	06:53	05:11	05:11	05:49	06:38	18:55	33 18:18 (WEA01)   16:52	16:22 (WEA06)   16:18	49 15:30 (WEA02)   16:22	
6   08:27	13:54 (WEA03)   07:56	15:29 (WEA02)   07:01	17:10 (WEA07)   06:51	06:49	05:10	05:13	05:52	06:41	18:51	30 18:16 (WEA01)   16:49	16:22 (WEA06)   16:16	53 15:30 (WEA02)   16:22	
7   08:27	13:54 (WEA03)   07:56	15:29 (WEA02)   07:01	17:10 (WEA07)   06:51	06:49	05:10	05:13	05:52	06:41	18:51	30 18:16 (WEA01)   16:49	16:22 (WEA06)   16:16	53 15:30 (WEA02)   16:22	
8   08:27	13:56 (WEA03)   07:54	15:32 (WEA02)   06:59	17:10 (WEA07)   06:49	06:47	05:09	05:14	05:54	06:42	18:48	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
9   08:26	14:00 (WEA03)   07:51	16:32 (WEA06)   06:54	17:09 (WEA07)   06:44	06:44	05:08	05:16	05:57	06:46	18:49	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
10   08:26	14:02 (WEA03)   07:49	16:31 (WEA06)   06:52	17:08 (WEA07)   06:42	06:42	05:07	05:17	05:58	06:47	18:47	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
11   08:25	15:13 (WEA05)   07:47	16:30 (WEA06)   06:50	17:07 (WEA07)   06:40	06:40	05:07	05:18	06:00	06:49	18:44	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
12   08:25	15:14 (WEA05)   07:45	16:29 (WEA06)   06:48	17:06 (WEA07)   06:38	06:39	05:07	05:19	06:01	06:50	18:43	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
13   08:24	15:15 (WEA05)   07:43	16:28 (WEA06)   06:45	17:06 (WEA07)   06:35	06:37	05:06	05:20	06:03	06:52	18:40	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
14   08:23	15:16 (WEA05)   07:42	16:28 (WEA06)   06:43	17:06 (WEA07)   06:33	06:36	05:06	05:21	06:04	06:54	18:38	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
15   08:23	15:17 (WEA05)   07:40	16:27 (WEA06)   06:41	17:06 (WEA07)   06:31	06:34	05:06	05:22	06:06	06:55	18:37	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
16   08:22	15:18 (WEA05)   07:38	16:27 (WEA06)   06:39	17:05 (WEA07)   06:29	06:33	05:06	05:23	06:08	06:57	18:36	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
17   08:21	15:18 (WEA05)   07:36	16:27 (WEA06)   06:36	17:06 (WEA07)   06:27	06:31	05:06	05:24	06:09	06:58	18:35	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
18   08:20	15:19 (WEA05)   07:34	16:27 (WEA06)   06:34	17:06 (WEA07)   06:25	06:30	05:06	05:25	06:11	07:00	18:34	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
19   08:19	15:19 (WEA05)   07:32	16:27 (WEA06)   06:32	17:06 (WEA07)   06:23	06:28	05:06	05:27	06:12	07:01	18:33	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
20   08:18	15:19 (WEA05)   07:30	16:28 (WEA06)   06:30	17:07 (WEA07)   06:20	06:27	05:06	05:28	06:14	07:03	18:32	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
21   08:17	15:19 (WEA05)   07:28	16:28 (WEA06)   06:27	17:08 (WEA07)   06:18	06:25	05:06	05:29	06:15	07:05	18:31	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
22   08:16	15:19 (WEA05)   07:26	16:29 (WEA06)   06:25	17:08 (WEA07)   06:16	06:24	05:06	05:30	06:17	07:06	18:30	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
23   08:15	15:19 (WEA05)   07:24	16:30 (WEA06)   06:23	17:10 (WEA07)   06:14	06:23	05:06	05:32	06:19	07:08	18:29	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
24   08:14	15:20 (WEA05)   07:22	16:31 (WEA06)   06:20	17:13 (WEA07)   06:12	06:22	05:06	05:33	06:20	07:09	18:28	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
25   08:13	15:20 (WEA05)   07:20	16:32 (WEA06)   06:18	17:18 (WEA07)   06:10	06:20	05:07	05:34	06:22	07:11	18:27	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
26   08:12	15:20 (WEA05)   07:18	16:36 (WEA06)   06:16	17:23 (WEA07)   06:08	06:18	05:07	05:36	06:23	07:13	18:26	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
27   08:11	15:21 (WEA05)   07:16	16:41 (WEA07)   06:14	17:30 (WEA07)   06:06	06:18	05:07	05:37	06:25	07:14	18:25	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
28   08:10	15:21 (WEA05)   07:14	16:42 (WEA07)   06:12	17:31 (WEA07)   06:04	06:17	05:08	05:39	06:27	07:16	18:24	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
29   08:09	15:21 (WEA05)   07:12	16:43 (WEA07)   06:10	17:32 (WEA07)   06:02	06:16	05:08	05:40	06:28	07:17	18:23	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
30   08:08	15:22 (WEA05)   07:10	16:44 (WEA07)   06:08	17:33 (WEA07)   06:00	06:15	05:09	05:42	06:30	07:19	18:22	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
31   08:07	15:22 (WEA05)   07:08	16:45 (WEA07)   06:06	17:34 (WEA07)   05:58	06:14	05:10	05:44	06:31	07:20	18:21	29 18:14 (WEA01)   16:47	16:22 (WEA06)   16:16	55 15:30 (WEA02)   16:22	
astr. max. mögl. Beschattung	1276	715	492	414	482	496	500	454	382	298	966	1681	
Red. Sonnenscheinwahrsch.	0.19	0.32	0.28							0.32	0.29	0.22	0.17
Reduktion Betriebsdauer	0.96	0.96	0.96							0.96	0.96	0.96	0.96
Reduktion Windrichtung	0.67	0.69	0.69							0.67	0.68	0.66	0.66
Gesamte Reduktion	0.12	0.22	0.19							0.19	0.15	0.11	0.11
Met. wahrsch. Beschattung	154	154	130							63	159	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)    Schatteneende (WEA mit letztem Schatten)





Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lienszierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO17 - Giershagen, Rennebusch 5

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember	
1   08:28	13:53 (WEA03)   08:03	15:46 (WEA05)   07:12	16:55 (WEA06)   07:02	16:55 (WEA06)   07:02	18:39 (WEA01)   05:58	05:13	05:09	05:44	06:33	18:43 (WEA01)   07:21	17:47 (WEA06)   07:13	15:19 (WEA02)   08:03	13:40 (WEA03)
2   08:28	13:53 (WEA03)   08:02	15:46 (WEA05)   07:09	16:55 (WEA06)   06:58	16:55 (WEA06)   06:58	18:38 (WEA01)   05:56	05:13	05:10	05:46	06:35	18:41 (WEA01)   07:22	17:40 (WEA06)   07:15	15:19 (WEA02)   08:05	13:40 (WEA03)
3   08:28	13:53 (WEA03)   08:00	15:46 (WEA05)   07:07	16:55 (WEA06)   06:56	16:55 (WEA06)   06:56	18:38 (WEA01)   05:55	05:12	05:11	05:47	06:36	18:39 (WEA01)   07:24	17:38 (WEA06)   07:17	15:19 (WEA02)   08:06	13:41 (WEA03)
4   08:28	13:53 (WEA03)   07:59	15:46 (WEA05)   07:05	16:55 (WEA06)   06:55	16:55 (WEA06)   06:55	18:38 (WEA01)   05:53	05:11	05:12	05:49	06:38	18:37 (WEA01)   07:26	17:36 (WEA06)   07:18	15:19 (WEA02)   08:08	13:41 (WEA03)
5   08:28	13:53 (WEA03)   07:57	15:46 (WEA05)   07:03	16:55 (WEA06)   06:53	16:55 (WEA06)   06:53	18:38 (WEA01)   05:51	05:10	05:13	05:50	06:39	18:36 (WEA01)   07:27	17:35 (WEA06)   07:20	15:19 (WEA02)   08:09	13:41 (WEA03)
6   08:27	13:53 (WEA03)   07:56	15:46 (WEA05)   07:01	16:55 (WEA06)   06:51	16:55 (WEA06)   06:51	18:38 (WEA01)   05:49	05:10	05:13	05:51	06:41	18:35 (WEA01)   07:29	17:33 (WEA06)   07:22	15:19 (WEA02)   08:10	13:41 (WEA03)
7   08:27	13:53 (WEA03)   07:54	15:46 (WEA05)   06:59	16:55 (WEA06)   06:49	16:55 (WEA06)   06:49	18:38 (WEA01)   05:47	05:09	05:14	05:54	06:42	18:34 (WEA01)   07:31	17:32 (WEA06)   07:24	15:19 (WEA02)   08:11	13:41 (WEA03)
8   08:27	13:53 (WEA03)   07:52	15:46 (WEA05)   06:56	16:55 (WEA06)   06:46	16:55 (WEA06)   06:46	18:39 (WEA01)   05:46	05:08	05:15	05:55	06:44	18:33 (WEA01)   07:32	17:30 (WEA06)   07:25	15:19 (WEA02)   08:13	13:41 (WEA03)
9   08:26	13:53 (WEA03)   07:51	15:46 (WEA05)   06:54	16:55 (WEA06)   06:44	16:55 (WEA06)   06:44	18:40 (WEA01)   05:44	05:08	05:16	05:57	06:46	18:32 (WEA01)   07:34	17:29 (WEA06)   07:27	15:19 (WEA02)   08:14	13:41 (WEA03)
10   08:26	13:53 (WEA03)   07:49	15:46 (WEA05)   06:52	16:55 (WEA06)   06:42	16:55 (WEA06)   06:42	18:41 (WEA01)   05:42	05:07	05:17	05:58	06:47	18:31 (WEA01)   07:35	17:29 (WEA06)   07:29	15:19 (WEA02)   08:15	13:41 (WEA03)
11   08:25	13:53 (WEA03)   07:47	15:46 (WEA05)   06:50	16:55 (WEA06)   06:40	16:55 (WEA06)   06:40	18:42 (WEA01)   05:40	05:07	05:18	05:59	06:49	18:30 (WEA01)   07:37	17:28 (WEA06)   07:31	15:19 (WEA02)   08:16	13:41 (WEA03)
12   08:25	13:53 (WEA03)   07:45	15:46 (WEA05)   06:48	16:55 (WEA06)   06:38	16:55 (WEA06)   06:38	18:42 (WEA01)   05:39	05:07	05:19	06:01	06:50	18:29 (WEA01)   07:39	17:28 (WEA06)   07:32	15:19 (WEA02)   08:17	13:41 (WEA03)
13   08:24	13:53 (WEA03)   07:43	15:46 (WEA05)   06:46	16:55 (WEA06)   06:36	16:55 (WEA06)   06:36	18:43 (WEA01)   05:37	05:06	05:20	06:03	06:52	18:28 (WEA01)   07:40	17:28 (WEA06)   07:34	15:19 (WEA02)   08:18	13:41 (WEA03)
14   08:23	13:53 (WEA03)   07:42	15:46 (WEA05)   06:44	16:55 (WEA06)   06:34	16:55 (WEA06)   06:34	18:44 (WEA01)   05:35	05:05	05:21	06:04	06:54	18:27 (WEA01)   07:42	17:29 (WEA06)   07:36	15:19 (WEA02)   08:19	13:41 (WEA03)
15   08:23	13:53 (WEA03)   07:40	15:46 (WEA05)   06:42	16:55 (WEA06)   06:32	16:55 (WEA06)   06:32	18:45 (WEA01)   05:33	05:04	05:22	06:05	06:55	18:26 (WEA01)   07:44	17:29 (WEA06)   07:38	15:19 (WEA02)   08:20	13:41 (WEA03)
16   08:22	13:53 (WEA03)   07:38	15:46 (WEA05)   06:40	16:55 (WEA06)   06:30	16:55 (WEA06)   06:30	18:46 (WEA01)   05:31	05:03	05:23	06:06	06:57	18:25 (WEA01)   07:46	17:29 (WEA06)   07:39	15:19 (WEA02)   08:21	13:41 (WEA03)
17   08:21	13:53 (WEA03)   07:37	15:46 (WEA05)   06:38	16:55 (WEA06)   06:28	16:55 (WEA06)   06:28	18:47 (WEA01)   05:29	05:02	05:24	06:07	06:58	18:24 (WEA01)   07:47	17:28 (WEA06)   07:41	15:19 (WEA02)   08:22	13:41 (WEA03)
18   08:20	13:53 (WEA03)   07:36	15:46 (WEA05)   06:36	16:55 (WEA06)   06:26	16:55 (WEA06)   06:26	18:48 (WEA01)   05:27	05:01	05:25	06:08	06:59	18:23 (WEA01)   07:49	17:28 (WEA06)   07:43	15:19 (WEA02)   08:23	13:41 (WEA03)
19   08:19	13:53 (WEA03)   07:35	15:46 (WEA05)   06:34	16:55 (WEA06)   06:24	16:55 (WEA06)   06:24	18:49 (WEA01)   05:25	05:00	05:26	06:09	07:00	18:22 (WEA01)   07:51	17:28 (WEA06)   07:45	15:19 (WEA02)   08:24	13:41 (WEA03)
20   08:18	13:53 (WEA03)   07:34	15:46 (WEA05)   06:32	16:55 (WEA06)   06:22	16:55 (WEA06)   06:22	18:50 (WEA01)   05:23	04:59	05:27	06:10	07:01	18:21 (WEA01)   07:53	17:28 (WEA06)   07:47	15:19 (WEA02)   08:25	13:41 (WEA03)
21   08:17	13:53 (WEA03)   07:33	15:46 (WEA05)   06:30	16:55 (WEA06)   06:20	16:55 (WEA06)   06:20	18:51 (WEA01)   05:21	04:58	05:28	06:11	07:02	18:20 (WEA01)   07:55	17:28 (WEA06)   07:49	15:19 (WEA02)   08:26	13:41 (WEA03)
22   08:16	13:53 (WEA03)   07:32	15:46 (WEA05)   06:28	16:55 (WEA06)   06:18	16:55 (WEA06)   06:18	18:52 (WEA01)   05:19	04:57	05:29	06:12	07:03	18:19 (WEA01)   07:57	17:28 (WEA06)   07:51	15:19 (WEA02)   08:27	13:41 (WEA03)
23   08:15	13:53 (WEA03)   07:31	15:46 (WEA05)   06:26	16:55 (WEA06)   06:16	16:55 (WEA06)   06:16	18:53 (WEA01)   05:17	04:56	05:30	06:13	07:04	18:18 (WEA01)   07:59	17:28 (WEA06)   07:53	15:19 (WEA02)   08:28	13:41 (WEA03)
24   08:14	13:53 (WEA03)   07:30	15:46 (WEA05)   06:24	16:55 (WEA06)   06:14	16:55 (WEA06)   06:14	18:54 (WEA01)   05:15	04:55	05:31	06:14	07:05	18:17 (WEA01)   08:01	17:28 (WEA06)   07:55	15:19 (WEA02)   08:29	13:41 (WEA03)
25   08:13	13:53 (WEA03)   07:29	15:46 (WEA05)   06:22	16:55 (WEA06)   06:12	16:55 (WEA06)   06:12	18:55 (WEA01)   05:13	04:54	05:32	06:15	07:06	18:16 (WEA01)   08:03	17:28 (WEA06)   07:57	15:19 (WEA02)   08:30	13:41 (WEA03)
26   08:12	13:53 (WEA03)   07:28	15:46 (WEA05)   06:20	16:55 (WEA06)   06:10	16:55 (WEA06)   06:10	18:56 (WEA01)   05:11	04:53	05:33	06:16	07:07	18:15 (WEA01)   08:05	17:28 (WEA06)   07:59	15:19 (WEA02)   08:31	13:41 (WEA03)
27   08:11	13:53 (WEA03)   07:27	15:46 (WEA05)   06:18	16:55 (WEA06)   06:08	16:55 (WEA06)   06:08	18:57 (WEA01)   05:09	04:52	05:34	06:17	07:08	18:14 (WEA01)   08:07	17:28 (WEA06)   08:01	15:19 (WEA02)   08:32	13:41 (WEA03)
28   08:10	13:53 (WEA03)   07:26	15:46 (WEA05)   06:16	16:55 (WEA06)   06:06	16:55 (WEA06)   06:06	18:58 (WEA01)   05:07	04:51	05:35	06:18	07:09	18:13 (WEA01)   08:09	17:28 (WEA06)   08:03	15:19 (WEA02)   08:33	13:41 (WEA03)
29   08:09	13:53 (WEA03)   07:25	15:46 (WEA05)   06:14	16:55 (WEA06)   06:04	16:55 (WEA06)   06:04	18:59 (WEA01)   05:05	04:50	05:36	06:19	07:10	18:12 (WEA01)   08:11	17:28 (WEA06)   08:05	15:19 (WEA02)   08:34	13:41 (WEA03)
30   08:08	13:53 (WEA03)   07:24	15:46 (WEA05)   06:12	16:55 (WEA06)   06:02	16:55 (WEA06)   06:02	19:00 (WEA01)   05:03	04:49	05:37	06:20	07:11	18:11 (WEA01)   08:13	17:28 (WEA06)   08:07	15:19 (WEA02)   08:35	13:41 (WEA03)
31   08:05	13:53 (WEA03)   07:23	15:46 (WEA05)   06:10	16:55 (WEA06)   06:00	16:55 (WEA06)   06:00	19:01 (WEA01)   05:01	04:48	05:38	06:21	07:12	18:10 (WEA01)   08:15	17:28 (WEA06)   08:09	15:19 (WEA02)   08:36	13:41 (WEA03)
astr. max. mögl. Beschattung	260	277	366	414	482	496	500	454	382	334	269	1723	2258
Red. Sonnenscheinwahrsch.	0.19	0.32	0.56	0.68	0.86	0.89	0.90	0.88	0.82	0.79	0.62	0.22	0.17
Reduktion Betriebsdauer	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Reduktion Windrichtung	0.68	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.65
Gesamte Reduktion	0.12	0.22	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.15	0.11
Met. wahrsch. Beschattung	263	237	181	106			7		203	208	251	240	

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)    Schattendecke (WEA mit letztem Schatten)



Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO18 - Giershagen, Rennebusch 8

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with columns for months (Januar to Dezember) and rows for various solar radiation metrics including astr. max. mögl. Beschattung, Red. Sonneneinstrahlung, Reduktion Windrichtung, Gesamte Reduktion, and Met. wahrsch. Beschattung. Each cell contains numerical values representing radiation levels.

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)    Schattende (WEA mit letztem Schatten)



Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO19 - Giershagen, Rennebusch 17

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPPSRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with columns for months (Januar to Dezember) and rows for various solar radiation metrics (astr. max. mögl. Beschattung, Red. Sonneneinstrahlung, etc.) and wind speed data.

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)    Schattendecke (WEA mit letztem Schatten)



Projekt:

Giershagen

Beschreibung:

2024-11-Anhang
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L F

Lizenzierter Anwender:

anemos GmbH für Umweltmeteorologie mbH
Böhmsholzer Weg 3
DE-21391 Reppenstedt
49(0)4131-8308-100
Daniel Baudach / daniel.baudach@anemos.de
Berechnet:
25.10.2024 09:02/4.0.540



SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO20 - Giershagen, Rennfeld 14

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with columns for months (Januar to Dezember) and rows for each day of the year, showing shadow cast times and solar radiation data.

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) Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten) Schattenende (WEA mit letztem Schatten)



Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
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49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



### SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO21 - Giershagen, Rennfeld 16  
Annahmen für Schattenwurfberechnung  
Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with columns for months (Januar to Dezember) and rows for each day of the year (1 to 31), containing solar position data (azimuth, elevation) and shadow cast data (start/end times, duration).

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)    Schatteneende (WEA mit letztem Schatten)



Projekt: Giershagen  
Beschreibung: 2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L F

Ulznerter Anwender:  
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Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



## SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO22 - Giershagen, Rennefeld 17

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.2 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember						
1	08:28	14:57 (WEA02)	08:03	15:14 (WEA02)	07:12	17:05 (WEA07)	07:02	06:58	05:13	05:09	05:44	06:33	07:21	17:36 (WEA01)	07:13	15:47 (WEA06)	08:03	14:42 (WEA02)
2	08:24	14:58 (WEA02)	08:02	15:16 (WEA02)	07:09	17:04 (WEA07)	07:00	06:56	05:10	05:10	05:46	06:35	07:22	17:35 (WEA01)	07:15	15:47 (WEA06)	08:05	14:42 (WEA02)
3	08:28	14:57 (WEA02)	08:00	15:18 (WEA02)	07:07	17:04 (WEA07)	06:58	06:55	05:12	05:11	05:47	06:36	07:24	17:35 (WEA01)	07:17	15:47 (WEA06)	08:06	14:43 (WEA02)
4	08:28	14:58 (WEA02)	07:59	15:22 (WEA02)	07:13	17:31 (WEA01)	19:57	20:46	21:31	21:43	21:10	20:08	19:00	18:12 (WEA01)	16:56	16:10	16:18	15:20 (WEA02)
5	08:28	14:58 (WEA02)	07:59	15:22 (WEA02)	07:13	17:31 (WEA01)	19:57	20:46	21:31	21:43	21:10	20:08	19:00	18:12 (WEA01)	16:56	16:10	16:18	15:20 (WEA02)
6	08:27	14:58 (WEA02)	07:56	15:20 (WEA02)	07:03	17:00 (WEA01)	06:53	06:51	05:10	05:12	05:50	06:39	07:27	17:34 (WEA01)	07:20	16:48	16:16	15:21 (WEA02)
7	08:27	14:59 (WEA02)	07:54	15:19 (WEA02)	07:01	17:00 (WEA01)	06:51	06:49	05:10	05:13	05:52	06:41	07:29	17:34 (WEA01)	07:22	16:48	16:16	15:21 (WEA02)
8	08:27	14:59 (WEA02)	07:54	15:19 (WEA02)	07:01	17:00 (WEA01)	06:51	06:49	05:10	05:13	05:52	06:41	07:29	17:34 (WEA01)	07:22	16:48	16:16	15:21 (WEA02)
9	08:26	14:59 (WEA02)	07:51	15:18 (WEA02)	06:54	16:57 (WEA01)	06:44	06:44	05:08	05:16	05:57	06:46	07:34	17:35 (WEA01)	07:27	16:48	16:16	15:21 (WEA02)
10	08:26	14:59 (WEA02)	07:49	15:18 (WEA02)	06:52	16:57 (WEA01)	06:42	06:42	05:07	05:17	05:58	06:47	07:35	17:36 (WEA01)	07:29	16:48	16:16	15:21 (WEA02)
11	08:25	14:59 (WEA02)	07:47	15:17 (WEA02)	06:50	16:57 (WEA01)	06:40	06:40	05:07	05:18	06:00	06:49	07:37	17:36 (WEA01)	07:31	16:48	16:16	15:21 (WEA02)
12	08:25	15:00 (WEA02)	07:45	15:17 (WEA02)	06:48	16:56 (WEA01)	06:38	06:39	05:07	05:19	06:01	06:50	07:39	17:37 (WEA01)	07:33	16:48	16:16	15:21 (WEA02)
13	08:24	15:00 (WEA02)	07:43	15:17 (WEA02)	06:45	16:56 (WEA01)	06:35	06:37	05:06	05:20	06:03	06:52	07:40	17:38 (WEA01)	07:34	16:48	16:16	15:21 (WEA02)
14	08:23	15:00 (WEA02)	07:42	15:17 (WEA02)	06:43	16:57 (WEA01)	06:33	06:36	05:06	05:21	06:04	06:54	07:42	17:38 (WEA01)	07:36	16:48	16:16	15:21 (WEA02)
15	08:23	15:01 (WEA02)	07:40	15:17 (WEA02)	06:41	16:57 (WEA01)	06:31	06:34	05:06	05:22	06:06	06:55	07:44	17:37 (WEA01)	07:38	16:48	16:16	15:21 (WEA02)
16	08:21	15:01 (WEA02)	07:36	15:18 (WEA02)	06:36	16:58 (WEA01)	06:27	06:31	05:06	05:24	06:09	06:58	07:47	17:39 (WEA01)	07:41	16:48	16:16	15:21 (WEA02)
17	08:21	15:01 (WEA02)	07:36	15:18 (WEA02)	06:36	16:58 (WEA01)	06:27	06:31	05:06	05:24	06:09	06:58	07:47	17:39 (WEA01)	07:41	16:48	16:16	15:21 (WEA02)
18	08:20	15:02 (WEA02)	07:34	15:18 (WEA02)	06:34	16:59 (WEA01)	06:25	06:30	05:06	05:25	06:11	07:00	07:49	17:41 (WEA01)	07:43	16:48	16:16	15:21 (WEA02)
19	08:19	15:02 (WEA02)	07:32	15:19 (WEA02)	06:32	16:59 (WEA01)	06:23	06:28	05:06	05:27	06:12	07:01	07:51	17:43 (WEA01)	07:45	16:48	16:16	15:21 (WEA02)
20	08:18	15:03 (WEA02)	07:30	15:20 (WEA02)	06:30	17:01 (WEA01)	06:20	06:27	05:06	05:28	06:14	07:03	07:52	17:45 (WEA01)	07:46	16:48	16:16	15:21 (WEA02)
21	08:17	15:04 (WEA02)	07:28	15:21 (WEA02)	06:27	17:03 (WEA01)	06:18	06:25	05:06	05:29	06:15	07:05	07:54	17:46 (WEA01)	07:48	16:48	16:16	15:21 (WEA02)
22	08:16	15:03 (WEA02)	07:26	15:22 (WEA02)	06:25	17:05 (WEA01)	06:16	06:24	05:06	05:30	06:17	07:06	07:54	17:46 (WEA01)	07:49	16:48	16:16	15:21 (WEA02)
23	08:15	15:04 (WEA02)	07:24	15:23 (WEA02)	06:23	17:11 (WEA01)	06:14	06:23	05:06	05:32	06:19	07:08	07:50	17:47 (WEA01)	07:51	16:48	16:16	15:21 (WEA02)
24	08:14	15:05 (WEA02)	07:22	15:24 (WEA02)	06:20	17:12 (WEA01)	06:12	06:22	05:06	05:33	06:20	07:09	07:46	17:48 (WEA01)	07:53	16:48	16:16	15:21 (WEA02)
25	08:13	15:05 (WEA02)	07:20	15:25 (WEA02)	06:18	17:10 (WEA01)	06:10	06:21	05:07	05:34	06:22	07:11	07:44	17:44 (WEA01)	08:01	16:48	16:16	15:21 (WEA02)
26	08:12	15:06 (WEA02)	07:18	15:26 (WEA02)	06:16	17:09 (WEA01)	06:08	06:20	05:07	05:36	06:23	07:13	07:42	17:44 (WEA01)	08:03	16:48	16:16	15:21 (WEA02)
27	08:10	15:08 (WEA02)	07:16	15:27 (WEA02)	06:14	17:08 (WEA01)	06:06	06:18	05:07	05:37	06:25	07:14	07:40	17:40 (WEA01)	08:04	16:48	16:16	15:21 (WEA02)
28	08:09	15:08 (WEA02)	07:14	15:28 (WEA02)	06:12	17:08 (WEA01)	06:04	06:16	05:07	05:39	06:27	07:16	07:39	17:40 (WEA01)	08:06	16:48	16:16	15:21 (WEA02)
29	08:08	15:10 (WEA02)	07:13	15:29 (WEA02)	06:11	17:09 (WEA01)	06:03	06:15	05:08	05:40	06:28	07:17	07:38	17:40 (WEA01)	08:07	16:48	16:16	15:21 (WEA02)
30	08:06	15:10 (WEA02)	07:11	15:30 (WEA02)	06:09	17:09 (WEA01)	06:01	06:13	05:09	05:42	06:30	07:19	07:37	17:40 (WEA01)	08:08	16:48	16:16	15:21 (WEA02)
31	08:05	15:12 (WEA02)	07:09	15:31 (WEA02)	06:07	17:09 (WEA01)	06:00	06:12	05:10	05:45	06:31	07:20	07:36	17:40 (WEA01)	08:09	16:48	16:16	15:21 (WEA02)
Summe	260	277	366	414	482	496	500	454	382	231	334	877	269	945	142	1622	38	1530 (WEA02)
astr. max. mögl. Beschattung	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199
Red. Sonnenscheinwahrsch.	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Reduktion Betriebsdauer	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Reduktion Windrichtung	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Gesamte Reduktion	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Met. wahrsch. Beschattung	134	154	130	130	130	130	130	130	130	130	130	130	130	130	130	130	130	130

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)	Schattenende (WEA mit letztem Schatten)
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Projekt:

Giershagen

Beschreibung:

2024-11-Anhang
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L F

Lizenzierter Anwender:

anemos GmbH für Umweltmeteorologie mbH
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49(0)4131-8308-100
Daniel Baudach / daniel.baudach@anemos.de
Berechnet:
25.10.2024 09:02/4.0.540



SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO23 - Giershagen, unbebaute Fläche B-Plan Nr. 8 "Rennfeld"
Annahmen für Schattenwurfberechnung
Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with columns for months (Januar to Dezember) and rows for each day of the year, containing solar position data (WEA) and shadow cast information.

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

Summary table with columns: Tag im Monat, Sonnenaufgang (SS:MM), Sonnenuntergang (SS:MM), Minuten mit Schatten, Zeitpunkt (SS:MM) Schattenanfang, Zeitpunkt (SS:MM) Schattende, (WEA mit erstem Schatten), (WEA mit letztem Schatten).

Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
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Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO24 - Giershagen, Zum Eckfeld 1

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember																	
1	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
2	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
3	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
4	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
5	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
6	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
7	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
8	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
9	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
10	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
11	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
12	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
13	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
14	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
15	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
16	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
17	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
18	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
19	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
20	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
21	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
22	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
23	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
24	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
25	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
26	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
27	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
28	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
29	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
30	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
31	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
32	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
33	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
34	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
35	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
36	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
37	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:10	05:44	19:54	WEA013	06:33	18:27	WEA013	07:13	16:13	WEA013	07:13	15:22	WEA013	08:03	15:25	WEA043
38	08:28	15:48	WEA043	07:12	15:32	WEA033	07:02	18:08	WEA023	05:58	19:49	WEA013	05:13	05:1															

Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
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49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO25 - Giershagen, Zum Eckefeld 9

Annahmen für Schattenwurfberechnung  
Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with 12 columns (Januar to Dezember) and 31 rows of hourly data. Each row contains time, azimuth, and elevation for each month. A summary table at the bottom shows monthly totals for azimuth, elevation, and wind speed.

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)    Schatteneende (WEA mit letztem Schatten)



Projekt: Giershagen  
 Beschreibung: 2024-11-Anhang  
 Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L F

Lizenzierter Anwender:  
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 Daniel Baudach / daniel.baudach@anemos.de  
 Berechnet:  
 25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO26 - Giershagen, Zur alten Wiese 7  
 Annahmen für Schattenwurfberechnung  
 Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
 Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
 1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
 329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
 Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1   08:28	14:23 (WEA03)   08:03	15:57 (WEA02)   07:12	16:50 (WEA06)   07:02	16:50 (WEA06)   07:02	16:50 (WEA06)   07:02	16:50 (WEA06)   07:02	16:50 (WEA06)   07:02	16:50 (WEA06)   07:02	16:50 (WEA06)   07:02	16:50 (WEA06)   07:02	16:50 (WEA06)   07:02	16:50 (WEA06)   07:02
Sonnenscheinstunden	260	277	366	414	482	496	500	454	382	466	334	269
astr. max. mögl. Beschattung	1693	835	614	614	614	614	614	614	614	614	614	614
Red. Sonnenscheinwahrsch.	0.19	0.32	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Reduktion Betriebsdauer	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Reduktion Windrichtung	0.67	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Gesamte Reduktion	0.12	0.22	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Met. wahrsch. Beschattung	205	181	116	116	116	116	116	116	116	116	116	116

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)	Schattendecke (WEA mit letztem Schatten)
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Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
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Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



## SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO27 - Giershagen, Zur alten Wiese 14

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember	
1	08:28	15:26 (WEA04) 18:03	15:15 (WEA03) 07:12	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
2	08:28	15:26 (WEA04) 18:03	15:15 (WEA03) 07:12	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
3	08:28	15:26 (WEA04) 18:03	15:15 (WEA03) 07:12	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
4	08:28	15:26 (WEA04) 18:03	15:15 (WEA03) 07:12	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
5	08:28	15:26 (WEA04) 18:03	15:15 (WEA03) 07:12	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
6	08:28	15:26 (WEA04) 18:03	15:15 (WEA03) 07:12	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
7	08:27	15:27 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
8	08:27	15:27 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
9	08:26	15:28 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
10	08:26	15:28 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
11	08:26	15:28 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
12	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
13	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
14	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
15	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
16	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
17	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
18	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
19	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
20	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
21	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
22	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
23	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
24	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
25	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
26	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
27	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
28	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
29	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
30	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
31	08:25	15:29 (WEA04) 17:19	16:44 (WEA05) 18:09	16:41 (WEA02) 07:02	18:55 (WEA07) 05:58	18:13	05:09	05:03	06:33	19:06 (WEA01) 07:21	17:32 (WEA02) 07:13	14:48 (WEA03) 08:03	15:02 (WEA03)
astr. max. mögl. Beschattung	1231	1576	1069	413	577	482	496	500	454	270	382	806	787
Red. Sonnenscheinwahrsch.	0.19	0.32	0.28	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Reduktion Betriebsdauer	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Reduktion Windrichtung	0.67	0.68	0.69	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.67
Gesamte Reduktion	0.12	0.21	0.19	0.24	0.19	0.26	0.21	0.26	0.21	0.19	0.21	0.19	0.11
Met. wahrsch. Beschattung	150	336	203	137	137	137	137	137	137	137	137	137	137

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:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO28 - Giershagen, Zur Wilhelmsruh 13

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1   08:28	14:31 (WEA02) 08:03	15:56 (WEA06) 07:12	16:34 (WEA07) 07:02	16:34 (WEA07) 07:02	16:34 (WEA07) 07:02	16:34 (WEA07) 07:02	16:34 (WEA07) 07:02	16:34 (WEA07) 07:02	16:34 (WEA07) 07:02	16:34 (WEA07) 07:02	16:34 (WEA07) 07:02	16:34 (WEA07) 07:02
2   08:28	14:31 (WEA02) 08:02	15:55 (WEA06) 07:09	16:33 (WEA07) 07:00	16:33 (WEA07) 07:00	16:33 (WEA07) 07:00	16:33 (WEA07) 07:00	16:33 (WEA07) 07:00	16:33 (WEA07) 07:00	16:33 (WEA07) 07:00	16:33 (WEA07) 07:00	16:33 (WEA07) 07:00	16:33 (WEA07) 07:00
3   08:28	14:31 (WEA02) 08:00	15:55 (WEA06) 07:07	16:33 (WEA07) 06:58	16:33 (WEA07) 06:58	16:33 (WEA07) 06:58	16:33 (WEA07) 06:58	16:33 (WEA07) 06:58	16:33 (WEA07) 06:58	16:33 (WEA07) 06:58	16:33 (WEA07) 06:58	16:33 (WEA07) 06:58	16:33 (WEA07) 06:58
4   08:28	14:31 (WEA02) 07:59	15:56 (WEA06) 07:05	16:34 (WEA07) 06:55	16:34 (WEA07) 06:55	16:34 (WEA07) 06:55	16:34 (WEA07) 06:55	16:34 (WEA07) 06:55	16:34 (WEA07) 06:55	16:34 (WEA07) 06:55	16:34 (WEA07) 06:55	16:34 (WEA07) 06:55	16:34 (WEA07) 06:55
5   08:28	14:33 (WEA02) 07:57	15:56 (WEA06) 07:03	16:34 (WEA07) 06:53	16:34 (WEA07) 06:53	16:34 (WEA07) 06:53	16:34 (WEA07) 06:53	16:34 (WEA07) 06:53	16:34 (WEA07) 06:53	16:34 (WEA07) 06:53	16:34 (WEA07) 06:53	16:34 (WEA07) 06:53	16:34 (WEA07) 06:53
6   08:27	14:33 (WEA02) 07:56	15:56 (WEA06) 07:01	16:34 (WEA07) 06:51	16:34 (WEA07) 06:51	16:34 (WEA07) 06:51	16:34 (WEA07) 06:51	16:34 (WEA07) 06:51	16:34 (WEA07) 06:51	16:34 (WEA07) 06:51	16:34 (WEA07) 06:51	16:34 (WEA07) 06:51	16:34 (WEA07) 06:51
7   08:27	14:34 (WEA02) 07:54	15:57 (WEA06) 06:59	16:35 (WEA07) 06:49	16:35 (WEA07) 06:49	16:35 (WEA07) 06:49	16:35 (WEA07) 06:49	16:35 (WEA07) 06:49	16:35 (WEA07) 06:49	16:35 (WEA07) 06:49	16:35 (WEA07) 06:49	16:35 (WEA07) 06:49	16:35 (WEA07) 06:49
8   08:27	14:34 (WEA02) 07:52	15:57 (WEA06) 06:56	16:35 (WEA07) 06:47	16:35 (WEA07) 06:47	16:35 (WEA07) 06:47	16:35 (WEA07) 06:47	16:35 (WEA07) 06:47	16:35 (WEA07) 06:47	16:35 (WEA07) 06:47	16:35 (WEA07) 06:47	16:35 (WEA07) 06:47	16:35 (WEA07) 06:47
9   08:26	14:35 (WEA02) 07:51	15:58 (WEA06) 06:54	16:36 (WEA07) 06:44	16:36 (WEA07) 06:44	16:36 (WEA07) 06:44	16:36 (WEA07) 06:44	16:36 (WEA07) 06:44	16:36 (WEA07) 06:44	16:36 (WEA07) 06:44	16:36 (WEA07) 06:44	16:36 (WEA07) 06:44	16:36 (WEA07) 06:44
10   08:26	14:36 (WEA02) 07:49	15:58 (WEA06) 06:52	16:37 (WEA07) 06:42	16:37 (WEA07) 06:42	16:37 (WEA07) 06:42	16:37 (WEA07) 06:42	16:37 (WEA07) 06:42	16:37 (WEA07) 06:42	16:37 (WEA07) 06:42	16:37 (WEA07) 06:42	16:37 (WEA07) 06:42	16:37 (WEA07) 06:42
11   08:25	14:36 (WEA02) 07:47	15:59 (WEA06) 06:50	16:37 (WEA07) 06:40	16:37 (WEA07) 06:40	16:37 (WEA07) 06:40	16:37 (WEA07) 06:40	16:37 (WEA07) 06:40	16:37 (WEA07) 06:40	16:37 (WEA07) 06:40	16:37 (WEA07) 06:40	16:37 (WEA07) 06:40	16:37 (WEA07) 06:40
12   08:25	14:37 (WEA02) 07:45	16:00 (WEA06) 06:48	16:40 (WEA07) 06:38	16:40 (WEA07) 06:38	16:40 (WEA07) 06:38	16:40 (WEA07) 06:38	16:40 (WEA07) 06:38	16:40 (WEA07) 06:38	16:40 (WEA07) 06:38	16:40 (WEA07) 06:38	16:40 (WEA07) 06:38	16:40 (WEA07) 06:38
13   08:24	14:38 (WEA02) 07:43	16:01 (WEA06) 06:45	16:43 (WEA07) 06:35	16:43 (WEA07) 06:35	16:43 (WEA07) 06:35	16:43 (WEA07) 06:35	16:43 (WEA07) 06:35	16:43 (WEA07) 06:35	16:43 (WEA07) 06:35	16:43 (WEA07) 06:35	16:43 (WEA07) 06:35	16:43 (WEA07) 06:35
14   08:23	14:38 (WEA02) 07:42	16:03 (WEA06) 06:43	16:47 (WEA07) 06:31	16:47 (WEA07) 06:31	16:47 (WEA07) 06:31	16:47 (WEA07) 06:31	16:47 (WEA07) 06:31	16:47 (WEA07) 06:31	16:47 (WEA07) 06:31	16:47 (WEA07) 06:31	16:47 (WEA07) 06:31	16:47 (WEA07) 06:31
15   08:23	14:39 (WEA02) 07:40	16:05 (WEA06) 06:41	16:56 (WEA07) 06:25	16:56 (WEA07) 06:25	16:56 (WEA07) 06:25	16:56 (WEA07) 06:25	16:56 (WEA07) 06:25	16:56 (WEA07) 06:25	16:56 (WEA07) 06:25	16:56 (WEA07) 06:25	16:56 (WEA07) 06:25	16:56 (WEA07) 06:25
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17   08:21	14:41 (WEA02) 07:36	16:15 (WEA06) 06:36	17:18 (WEA07) 06:15	17:18 (WEA07) 06:15	17:18 (WEA07) 06:15	17:18 (WEA07) 06:15	17:18 (WEA07) 06:15	17:18 (WEA07) 06:15	17:18 (WEA07) 06:15	17:18 (WEA07) 06:15	17:18 (WEA07) 06:15	17:18 (WEA07) 06:15
18   08:20	14:42 (WEA02) 07:34	16:17 (WEA06) 06:34	17:32 (WEA07) 06:11	17:32 (WEA07) 06:11	17:32 (WEA07) 06:11	17:32 (WEA07) 06:11	17:32 (WEA07) 06:11	17:32 (WEA07) 06:11	17:32 (WEA07) 06:11	17:32 (WEA07) 06:11	17:32 (WEA07) 06:11	17:32 (WEA07) 06:11
19   08:19	14:43 (WEA02) 07:32	16:18 (WEA06) 06:32	17:46 (WEA07) 06:07	17:46 (WEA07) 06:07	17:46 (WEA07) 06:07	17:46 (WEA07) 06:07	17:46 (WEA07) 06:07	17:46 (WEA07) 06:07	17:46 (WEA07) 06:07	17:46 (WEA07) 06:07	17:46 (WEA07) 06:07	17:46 (WEA07) 06:07
20   08:18	14:45 (WEA02) 07:30	16:22 (WEA06) 06:30	18:00 (WEA07) 06:03	18:00 (WEA07) 06:03	18:00 (WEA07) 06:03	18:00 (WEA07) 06:03	18:00 (WEA07) 06:03	18:00 (WEA07) 06:03	18:00 (WEA07) 06:03	18:00 (WEA07) 06:03	18:00 (WEA07) 06:03	18:00 (WEA07) 06:03
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22   08:16	14:47 (WEA02) 07:26	16:24 (WEA06) 06:26	18:28 (WEA07) 05:55	18:28 (WEA07) 05:55	18:28 (WEA07) 05:55	18:28 (WEA07) 05:55	18:28 (WEA07) 05:55	18:28 (WEA07) 05:55	18:28 (WEA07) 05:55	18:28 (WEA07) 05:55	18:28 (WEA07) 05:55	18:28 (WEA07) 05:55
23   08:15	14:48 (WEA02) 07:24	16:25 (WEA06) 06:24	18:42 (WEA07) 05:51	18:42 (WEA07) 05:51	18:42 (WEA07) 05:51	18:42 (WEA07) 05:51	18:42 (WEA07) 05:51	18:42 (WEA07) 05:51	18:42 (WEA07) 05:51	18:42 (WEA07) 05:51	18:42 (WEA07) 05:51	18:42 (WEA07) 05:51
24   08:14	14:50 (WEA02) 07:22	16:27 (WEA06) 06:22	18:56 (WEA07) 05:47	18:56 (WEA07) 05:47	18:56 (WEA07) 05:47	18:56 (WEA07) 05:47	18:56 (WEA07) 05:47	18:56 (WEA07) 05:47	18:56 (WEA07) 05:47	18:56 (WEA07) 05:47	18:56 (WEA07) 05:47	18:56 (WEA07) 05:47
25   08:13	14:51 (WEA02) 07:20	16:28 (WEA06) 06:20	19:10 (WEA07) 05:43	19:10 (WEA07) 05:43	19:10 (WEA07) 05:43	19:10 (WEA07) 05:43	19:10 (WEA07) 05:43	19:10 (WEA07) 05:43	19:10 (WEA07) 05:43	19:10 (WEA07) 05:43	19:10 (WEA07) 05:43	19:10 (WEA07) 05:43
26   08:12	14:52 (WEA02) 07:18	16:29 (WEA06) 06:18	19:24 (WEA07) 05:39	19:24 (WEA07) 05:39	19:24 (WEA07) 05:39	19:24 (WEA07) 05:39	19:24 (WEA07) 05:39	19:24 (WEA07) 05:39	19:24 (WEA07) 05:39	19:24 (WEA07) 05:39	19:24 (WEA07) 05:39	19:24 (WEA07) 05:39
27   08:11	14:53 (WEA02) 07:16	16:30 (WEA06) 06:16	19:38 (WEA07) 05:35	19:38 (WEA07) 05:35	19:38 (WEA07) 05:35	19:38 (WEA07) 05:35	19:38 (WEA07) 05:35	19:38 (WEA07) 05:35	19:38 (WEA07) 05:35	19:38 (WEA07) 05:35	19:38 (WEA07) 05:35	19:38 (WEA07) 05:35
28   08:10	14:54 (WEA02) 07:14	16:31 (WEA06) 06:14	19:52 (WEA07) 05:31	19:52 (WEA07) 05:31	19:52 (WEA07) 05:31	19:52 (WEA07) 05:31	19:52 (WEA07) 05:31	19:52 (WEA07) 05:31	19:52 (WEA07) 05:31	19:52 (WEA07) 05:31	19:52 (WEA07) 05:31	19:52 (WEA07) 05:31
29   08:09	14:55 (WEA02) 07:12	16:32 (WEA06) 06:12	20:06 (WEA07) 05:27	20:06 (WEA07) 05:27	20:06 (WEA07) 05:27	20:06 (WEA07) 05:27	20:06 (WEA07) 05:27	20:06 (WEA07) 05:27	20:06 (WEA07) 05:27	20:06 (WEA07) 05:27	20:06 (WEA07) 05:27	20:06 (WEA07) 05:27
30   08:08	14:56 (WEA02) 07:10	16:33 (WEA06) 06:10	20:20 (WEA07) 05:23	20:20 (WEA07) 05:23	20:20 (WEA07) 05:23	20:20 (WEA07) 05:23	20:20 (WEA07) 05:23	20:20 (WEA07) 05:23	20:20 (WEA07) 05:23	20:20 (WEA07) 05:23	20:20 (WEA07) 05:23	20:20 (WEA07) 05:23
31   08:05	14:58 (WEA02) 07:08	16:35 (WEA06) 06:08	20:34 (WEA07) 05:19	20:34 (WEA07) 05:19	20:34 (WEA07) 05:19	20:34 (WEA07) 05:19	20:34 (WEA07) 05:19	20:34 (WEA07) 05:19	20:34 (WEA07) 05:19	20:34 (WEA07) 05:19	20:34 (WEA07) 05:19	20:34 (WEA07) 05:19
17:08	14:59 (WEA02) 07:06	16:36 (WEA06) 06:06	20:48 (WEA07) 05:15	20:48 (WEA07) 05:15	20:48 (WEA07) 05:15	20:48 (WEA07) 05:15	20:48 (WEA07) 05:15	20:48 (WEA07) 05:15	20:48 (WEA07) 05:15	20:48 (WEA07) 05:15	20:48 (WEA07) 05:15	20:48 (WEA07) 05:15
Sonnenscheinstunden	260	277	366	414	482	496	500	454	382	334	269	247
astr. max. mögl. Beschattung	983	811	437	228	116	61	33	18	10	6	4	3
Red. Sonnenscheinwahrsch.	0.19	0.32	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Reduktion Betriebsdauer	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Reduktion Windrichtung	0.67	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.66
Gesamte Reduktion	0.12	0.22	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.11
Met. wahrsch. Beschattung	119	176	84	84	84	84	84	84	84	84	84	124

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)	Schattenende (WEA mit letztem Schatten)
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Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



# SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO29 - Giershagen, Zur Wilhelmsruh 24

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember		
1	08:28 16:24	14:42 (WEA02) 14:43 (WEA02)	08:03 08:02	15:20 (WEA06) 16:07 (WEA06)	18:00 07:09	34	16:47 (WEA01) 16:46 (WEA01)	07:02 07:00	05:58 05:56	05:13 05:10	05:09 05:10	05:44 05:46	06:33 06:35	
2	08:28 16:25	14:43 (WEA02) 15:20 (WEA02)	08:02 17:12	15:20 (WEA06) 16:34 (WEA06)	18:02 18:04	36	17:22 (WEA01) 17:23 (WEA01)	19:55 19:57	20:45 20:46	21:29 21:43	21:43 21:10	20:11 20:08	06:33 06:35	
3	08:28 16:26	14:43 (WEA02) 15:20 (WEA02)	08:03 17:13	15:20 (WEA06) 16:34 (WEA06)	18:04 18:04	37	17:23 (WEA01) 17:23 (WEA01)	19:57 19:57	20:46 20:45	21:29 21:43	21:43 21:10	20:08 20:08	06:33 06:35	
4	08:28 16:27	14:43 (WEA02) 15:21 (WEA02)	08:03 17:15	15:21 (WEA06) 16:35 (WEA06)	18:06 18:06	38	17:22 (WEA01) 17:22 (WEA01)	19:58 19:58	20:48 20:48	21:32 21:42	21:08 21:08	20:06 20:06	06:33 06:35	
5	08:28 16:28	14:44 (WEA02) 15:22 (WEA02)	08:03 17:17	15:22 (WEA06) 16:36 (WEA06)	18:07 18:07	38	17:22 (WEA01) 17:22 (WEA01)	20:00 20:00	20:50 20:50	21:33 21:42	21:07 21:07	20:04 20:04	06:33 06:35	
6	08:27 16:29	14:44 (WEA02) 15:22 (WEA02)	08:03 17:19	15:22 (WEA06) 16:36 (WEA06)	18:09 18:09	38	17:22 (WEA01) 17:22 (WEA01)	20:02 20:02	20:51 20:51	21:34 21:41	21:02 21:02	20:02 20:02	06:33 06:35	
7	08:27 16:30	14:45 (WEA02) 15:23 (WEA02)	08:03 17:21	15:23 (WEA06) 16:37 (WEA06)	18:11 18:11	38	17:22 (WEA01) 17:22 (WEA01)	20:03 20:03	20:53 20:53	21:35 21:41	21:03 21:03	20:02 20:02	06:33 06:35	
8	08:27 16:31	14:45 (WEA02) 15:23 (WEA02)	08:03 17:22	15:23 (WEA06) 16:37 (WEA06)	18:13 18:13	37	17:21 (WEA01) 17:21 (WEA01)	20:05 20:05	20:55 20:55	21:35 21:40	21:01 21:01	20:02 20:02	06:33 06:35	
9	08:26 16:33	14:46 (WEA02) 15:24 (WEA02)	08:03 17:24	15:24 (WEA06) 16:38 (WEA06)	18:14 18:14	37	17:21 (WEA01) 17:21 (WEA01)	20:07 20:07	20:56 20:56	21:36 21:40	21:00 21:00	20:06 20:06	06:33 06:35	
10	08:26 16:34	14:46 (WEA02) 15:23 (WEA02)	08:03 17:26	15:23 (WEA06) 16:37 (WEA06)	18:16 18:16	35	17:20 (WEA01) 17:20 (WEA01)	20:08 20:08	20:58 20:58	21:37 21:39	20:58 20:58	20:02 20:02	06:33 06:35	
11	08:25 16:35	14:47 (WEA02) 15:24 (WEA02)	08:03 17:28	15:24 (WEA06) 16:38 (WEA06)	18:18 18:18	35	17:20 (WEA01) 17:20 (WEA01)	20:10 20:10	20:59 20:59	21:38 21:38	20:56 20:56	20:02 20:02	06:33 06:35	
12	08:25 16:37	14:47 (WEA02) 15:25 (WEA02)	08:03 17:30	15:25 (WEA06) 16:39 (WEA06)	18:20 18:20	33	17:18 (WEA01) 17:18 (WEA01)	20:12 20:12	21:01 21:01	21:39 21:37	20:54 20:54	20:02 20:02	06:33 06:35	
13	08:24 16:38	14:48 (WEA02) 15:25 (WEA02)	08:03 17:32	15:25 (WEA06) 16:40 (WEA06)	18:21 18:21	31	17:17 (WEA01) 17:17 (WEA01)	20:13 20:13	21:02 21:02	21:39 21:37	20:52 20:52	20:02 20:02	06:33 06:35	
14	08:23 16:40	14:48 (WEA02) 15:25 (WEA02)	08:03 17:35	15:25 (WEA06) 16:40 (WEA06)	18:23 18:23	28	17:16 (WEA01) 17:16 (WEA01)	20:15 20:15	21:04 21:04	21:40 21:36	20:50 20:50	20:02 20:02	06:33 06:35	
15	08:23 16:41	14:48 (WEA02) 15:25 (WEA02)	08:03 17:37	15:25 (WEA06) 16:41 (WEA06)	18:25 18:25	25	17:14 (WEA01) 17:14 (WEA01)	20:17 20:17	21:05 21:05	21:40 21:35	20:48 20:48	20:02 20:02	06:33 06:35	
16	08:22 16:43	14:49 (WEA02) 15:25 (WEA02)	08:03 17:39	15:25 (WEA06) 16:42 (WEA06)	18:26 18:26	21	17:11 (WEA01) 17:11 (WEA01)	20:18 20:18	21:07 21:07	21:41 21:34	20:46 20:46	20:02 20:02	06:33 06:35	
17	08:21 16:44	14:50 (WEA02) 15:25 (WEA02)	08:03 17:41	15:25 (WEA06) 16:43 (WEA06)	18:30 18:30	15	17:08 (WEA01) 17:08 (WEA01)	20:20 20:20	21:08 21:08	21:33 21:33	20:44 20:44	20:02 20:02	06:33 06:35	
18	08:20 16:46	14:50 (WEA02) 15:25 (WEA02)	08:03 17:43	15:25 (WEA06) 16:44 (WEA06)	18:32 18:32	10	17:06 (WEA01) 17:06 (WEA01)	20:22 20:22	21:10 21:10	21:42 21:32	20:42 20:42	20:02 20:02	06:33 06:35	
19	08:19 16:47	14:51 (WEA02) 15:25 (WEA02)	08:03 17:45	15:25 (WEA06) 16:45 (WEA06)	18:34 18:34	6	17:03 (WEA01) 17:03 (WEA01)	20:24 20:24	21:11 21:11	21:42 21:31	20:40 20:40	20:02 20:02	06:33 06:35	
20	08:18 16:49	14:52 (WEA02) 15:25 (WEA02)	08:03 17:47	15:25 (WEA06) 16:46 (WEA06)	18:36 18:36	2	17:00 (WEA01) 17:00 (WEA01)	20:26 20:26	21:12 21:12	21:43 21:29	20:38 20:38	20:02 20:02	06:33 06:35	
21	08:17 16:51	14:53 (WEA02) 15:25 (WEA02)	08:03 17:49	15:25 (WEA06) 16:47 (WEA06)	18:38 18:38	0	17:00 (WEA01) 17:00 (WEA01)	20:27 20:27	21:14 21:14	21:43 21:29	20:36 20:36	20:02 20:02	06:33 06:35	
22	08:16 16:52	14:53 (WEA02) 15:25 (WEA02)	08:03 17:51	15:25 (WEA06) 16:48 (WEA06)	18:40 18:40	0	17:00 (WEA01) 17:00 (WEA01)	20:28 20:28	21:16 21:16	21:43 21:27	20:34 20:34	20:02 20:02	06:33 06:35	
23	08:15 16:54	14:54 (WEA02) 15:25 (WEA02)	08:03 17:53	15:25 (WEA06) 16:49 (WEA06)	18:42 18:42	0	17:00 (WEA01) 17:00 (WEA01)	20:29 20:29	21:18 21:18	21:43 21:26	20:32 20:32	20:02 20:02	06:33 06:35	
24	08:14 16:56	14:55 (WEA02) 15:25 (WEA02)	08:03 17:55	15:25 (WEA06) 16:50 (WEA06)	18:44 18:44	0	17:00 (WEA01) 17:00 (WEA01)	20:30 20:30	21:20 21:20	21:44 21:26	20:30 20:30	20:02 20:02	06:33 06:35	
25	08:13 16:57	14:55 (WEA02) 15:25 (WEA02)	08:03 17:57	15:25 (WEA06) 16:51 (WEA06)	18:46 18:46	0	17:00 (WEA01) 17:00 (WEA01)	20:31 20:31	21:22 21:22	21:44 21:26	20:28 20:28	20:02 20:02	06:33 06:35	
26	08:12 16:59	14:56 (WEA02) 15:25 (WEA02)	08:03 17:59	15:25 (WEA06) 16:52 (WEA06)	18:48 18:48	0	17:00 (WEA01) 17:00 (WEA01)	20:32 20:32	21:24 21:24	21:44 21:26	20:26 20:26	20:02 20:02	06:33 06:35	
27	08:10 17:01	15:01 (WEA02) 16:35 (WEA06)	08:03 17:57	15:26 (WEA06) 16:53 (WEA06)	18:50 18:50	0	17:00 (WEA01) 17:00 (WEA01)	20:33 20:33	21:26 21:26	21:44 21:26	20:24 20:24	20:02 20:02	06:33 06:35	
28	08:09 17:03	15:03 (WEA02) 16:36 (WEA06)	08:03 17:59	15:26 (WEA06) 16:54 (WEA06)	18:52 18:52	0	17:00 (WEA01) 17:00 (WEA01)	20:34 20:34	21:28 21:28	21:44 21:26	20:22 20:22	20:02 20:02	06:33 06:35	
29	08:08 17:04	15:05 (WEA02) 16:37 (WEA06)	08:03 18:01	15:26 (WEA06) 16:55 (WEA06)	18:54 18:54	0	17:00 (WEA01) 17:00 (WEA01)	20:35 20:35	21:30 21:30	21:44 21:26	20:20 20:20	20:02 20:02	06:33 06:35	
30	08:06 17:06	15:07 (WEA02) 16:38 (WEA06)	08:03 18:03	15:26 (WEA06) 16:56 (WEA06)	18:56 18:56	0	17:00 (WEA01) 17:00 (WEA01)	20:36 20:36	21:32 21:32	21:44 21:26	20:18 20:18	20:02 20:02	06:33 06:35	
31	08:05 17:08	15:09 (WEA02) 16:39 (WEA06)	08:03 18:05	15:26 (WEA06) 16:57 (WEA06)	18:58 18:58	0	17:00 (WEA01) 17:00 (WEA01)	20:37 20:37	21:34 21:34	21:44 21:26	20:16 20:16	20:02 20:02	06:33 06:35	
Sonnenscheinstunden	260	277	366	414	482	496	500	454	382	67	900	269	911	1150
astr. max. mögl. Beschattung	1036	729	556	414	482	496	500	454	382	67	900	269	911	1150
Red. Sonnenscheinwahrsch.	0.19	0.32	0.28	0.19	0.32	0.28	0.19	0.32	0.28	0.19	0.32	0.28	0.19	0.32
Reduktion Betriebsdauer	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Reduktion Windrichtung	0.67	0.70	0.70	0.67	0.70	0.70	0.67	0.70	0.70	0.67	0.70	0.70	0.67	0.70
Gesamte Reduktion	0.12	0.22	0.19	0.12	0.22	0.19	0.12	0.22	0.19	0.12	0.22	0.19	0.12	0.22
Met. wahrsch. Beschattung	126	158	106	126	158	106	126	158	106	126	158	106	126	158

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)    Schatteneende (WEA mit letztem Schatten)





## SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO30 - Giershagen, Zur Wilhelmsruh 26  
 Annahmen für Schattenwurfberechnung  
 Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
 Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
 1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
 329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
 Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember							
1	08:28	14:38 (WEA02)	08:03	16:03 (WEA06)	07:12	16:41 (WEA01)	07:02	06:58	05:13	05:09	05:44	06:33	07:21	17:26 (WEA01)	07:13	15:33 (WEA06)	08:03	14:25 (WEA02)	
2	16:24	15:15 (WEA02)	17:10	16:02 (WEA06)	08:02	16:41 (WEA01)	07:00	06:56	05:13	05:10	05:46	06:35	17:05	23	17:23 (WEA01)	07:15	15:32 (WEA06)	08:05	14:25 (WEA02)
3	08:28	14:38 (WEA02)	08:03	16:03 (WEA06)	07:12	16:41 (WEA01)	07:00	06:56	05:13	05:10	05:46	06:35	17:05	23	17:23 (WEA01)	07:15	15:32 (WEA06)	08:05	14:25 (WEA02)
4	08:28	14:38 (WEA02)	08:03	16:03 (WEA06)	07:12	16:41 (WEA01)	07:00	06:56	05:13	05:10	05:46	06:35	17:05	23	17:23 (WEA01)	07:15	15:32 (WEA06)	08:05	14:25 (WEA02)
5	08:28	14:38 (WEA02)	08:03	16:03 (WEA06)	07:12	16:41 (WEA01)	07:00	06:56	05:13	05:10	05:46	06:35	17:05	23	17:23 (WEA01)	07:15	15:32 (WEA06)	08:05	14:25 (WEA02)
6	08:27	14:40 (WEA02)	07:56	16:01 (WEA06)	07:01	16:40 (WEA01)	06:51	06:49	05:10	05:13	05:52	06:41	07:29	31	17:18 (WEA01)	07:22	15:31 (WEA06)	08:10	14:26 (WEA02)
7	08:27	14:41 (WEA02)	07:54	16:02 (WEA06)	06:59	16:40 (WEA01)	06:49	06:47	05:09	05:14	05:54	06:42	07:31	31	17:17 (WEA01)	07:24	15:31 (WEA06)	08:11	14:26 (WEA02)
8	08:27	14:41 (WEA02)	07:52	16:02 (WEA06)	06:56	16:40 (WEA01)	06:47	06:46	05:08	05:15	05:55	06:44	07:32	31	17:16 (WEA01)	07:26	15:32 (WEA06)	08:13	14:26 (WEA02)
9	08:26	14:42 (WEA02)	07:51	16:02 (WEA06)	06:54	16:41 (WEA01)	06:44	06:44	05:08	05:16	05:57	06:46	07:34	31	17:15 (WEA01)	07:27	15:32 (WEA06)	08:14	14:28 (WEA02)
10	08:26	14:42 (WEA02)	07:49	16:02 (WEA06)	06:52	16:41 (WEA01)	06:42	06:42	05:07	05:17	05:58	06:47	07:35	31	17:15 (WEA01)	07:29	15:33 (WEA06)	08:15	14:28 (WEA02)
11	08:25	14:43 (WEA02)	07:47	16:03 (WEA06)	06:50	16:42 (WEA01)	06:40	06:40	05:07	05:18	06:00	06:49	07:37	31	17:14 (WEA01)	07:31	15:33 (WEA06)	08:16	14:28 (WEA02)
12	08:25	14:43 (WEA02)	07:45	16:03 (WEA06)	06:48	16:43 (WEA01)	06:38	06:39	05:07	05:19	06:01	06:50	07:39	31	17:14 (WEA01)	07:33	15:34 (WEA06)	08:17	14:28 (WEA02)
13	08:24	14:44 (WEA02)	07:43	16:04 (WEA06)	06:45	16:44 (WEA01)	06:35	06:37	05:06	05:20	06:03	06:52	07:40	31	17:14 (WEA01)	07:34	15:35 (WEA06)	08:18	14:29 (WEA02)
14	08:23	14:45 (WEA02)	07:42	16:05 (WEA06)	06:43	16:46 (WEA01)	06:33	06:36	05:06	05:21	06:04	06:54	07:42	31	17:14 (WEA01)	07:36	15:36 (WEA06)	08:19	14:29 (WEA02)
15	08:23	14:45 (WEA02)	07:40	16:05 (WEA06)	06:41	16:49 (WEA01)	06:31	06:34	05:06	05:22	06:06	06:55	07:44	31	17:14 (WEA01)	07:38	15:37 (WEA06)	08:20	14:30 (WEA02)
16	08:23	14:45 (WEA02)	07:38	16:06 (WEA06)	06:39	17:09 (WEA01)	06:29	06:33	05:06	05:23	06:08	06:57	07:46	31	17:15 (WEA01)	07:39	15:38 (WEA06)	08:21	14:30 (WEA02)
17	08:21	14:46 (WEA02)	07:36	16:11 (WEA06)	06:36	17:06 (WEA01)	06:27	06:31	05:06	05:24	06:09	06:58	07:47	31	17:15 (WEA01)	07:41	15:39 (WEA06)	08:22	14:31 (WEA02)
18	08:20	14:47 (WEA02)	07:34	16:16 (WEA06)	06:34	17:07 (WEA01)	06:25	06:30	05:06	05:25	06:11	07:00	07:46	31	17:16 (WEA01)	07:43	15:40 (WEA06)	08:23	14:31 (WEA02)
19	08:19	14:48 (WEA02)	07:32	16:19 (WEA06)	06:32	17:08 (WEA01)	06:23	06:28	05:06	05:27	06:12	07:01	07:51	31	17:17 (WEA01)	07:45	15:41 (WEA06)	08:24	14:32 (WEA02)
20	08:18	14:49 (WEA02)	07:30	16:24 (WEA06)	06:29	17:09 (WEA01)	06:21	06:26	05:06	05:28	06:14	07:03	07:52	31	17:18 (WEA01)	07:46	15:42 (WEA06)	08:25	14:32 (WEA02)
21	08:17	14:50 (WEA02)	07:28	16:29 (WEA06)	06:27	17:10 (WEA01)	06:19	06:24	05:06	05:29	06:15	07:05	07:54	31	17:19 (WEA01)	07:48	15:43 (WEA06)	08:26	14:33 (WEA02)
22	08:16	14:51 (WEA02)	07:26	16:34 (WEA06)	06:25	17:11 (WEA01)	06:17	06:22	05:06	05:30	06:17	07:06	07:56	31	17:20 (WEA01)	07:49	15:44 (WEA06)	08:27	14:33 (WEA02)
23	08:15	14:52 (WEA02)	07:24	16:39 (WEA06)	06:23	17:12 (WEA01)	06:15	06:20	05:06	05:32	06:19	07:08	07:58	31	17:21 (WEA01)	07:51	15:45 (WEA06)	08:28	14:34 (WEA02)
24	08:14	14:53 (WEA02)	07:22	16:44 (WEA06)	06:21	17:13 (WEA01)	06:13	06:18	05:06	05:34	06:22	07:11	07:59	31	17:22 (WEA01)	07:53	15:46 (WEA06)	08:29	14:34 (WEA02)
25	08:13	14:54 (WEA02)	07:20	16:49 (WEA06)	06:19	17:14 (WEA01)	06:11	06:16	05:06	05:36	06:24	07:13	08:01	31	17:23 (WEA01)	07:54	15:47 (WEA06)	08:30	14:35 (WEA02)
26	08:12	14:55 (WEA02)	07:18	16:54 (WEA06)	06:17	17:15 (WEA01)	06:09	06:14	05:06	05:38	06:26	07:15	08:04	31	17:24 (WEA01)	07:56	15:48 (WEA06)	08:31	14:35 (WEA02)
27	08:10	14:56 (WEA02)	07:16	16:59 (WEA06)	06:15	17:16 (WEA01)	06:07	06:12	05:06	05:40	06:28	07:17	08:04	31	17:25 (WEA01)	07:58	15:49 (WEA06)	08:32	14:36 (WEA02)
28	08:09	14:57 (WEA02)	07:14	17:04 (WEA06)	06:13	17:17 (WEA01)	06:05	06:10	05:06	05:42	06:30	07:19	08:04	31	17:26 (WEA01)	07:59	15:50 (WEA06)	08:33	14:36 (WEA02)
29	08:08	14:58 (WEA02)	07:12	17:09 (WEA06)	06:11	17:18 (WEA01)	06:03	06:08	05:06	05:44	06:32	07:21	08:04	31	17:27 (WEA01)	08:01	15:51 (WEA06)	08:34	14:37 (WEA02)
30	08:06	14:59 (WEA02)	07:10	17:14 (WEA06)	06:09	17:19 (WEA01)	06:01	06:06	05:06	05:46	06:34	07:23	08:04	31	17:28 (WEA01)	08:03	15:52 (WEA06)	08:35	14:37 (WEA02)
31	08:05	14:59 (WEA02)	07:08	17:19 (WEA06)	06:07	17:20 (WEA01)	05:59	06:04	05:06	05:48	06:36	07:25	08:04	31	17:29 (WEA01)	08:05	15:53 (WEA06)	08:36	14:38 (WEA02)
Sonnenscheinstunden	260	277	366	414	482	496	500	454	382	28	334	269	888	906	888	888	888	888	1156
astr. max. mögl. Beschattung	1010	757	506	255	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106
Red. Sonnenscheinwahrsch.	0.19	0.32	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.17
Reduktion Betriebsdauer	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Reduktion Windrichtung	0.67	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.67
Gesamte Reduktion	0.12	0.22	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.11
Mat. wahrsch. Beschattung	123	164	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	125

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)	Schattende (WEA mit letztem Schatten)
--------------	-----------------------	-------------------------	----------------------	-------------------	--	---------------------------------------



Projekt: Giershagen  
 Beschreibung: 2024-11-Anhang  
 Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L F

Lizenzierter Anwender:  
 anemos GmbH für Umweltmeteorologie mbH  
 Böhmsholzer Weg 3  
 DE-21391 Reppenstedt  
 49(0)4131-8308-100  
 Daniel Baudach / daniel.baudach@anemos.de  
 Berechnet:  
 25.10.2024 09:02/4.0.540



## SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO31 - Padberg, Niedermühle 8

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
 1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	Marz	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:28	08:04	07:12	08:18 (WEA06) 07:02	08:17 (WEA01) 05:58	05:13	05:10	05:45	06:33	07:21	09:03 (WEA07) 07:13	08:04
2	16:24	17:10	18:01	08:49 (WEA07) 19:53	08:43 (WEA01) 20:43	21:29	21:43	21:13	20:13	19:05	40 09:43 (WEA07) 16:59	16:19
3	08:28	08:02	07:10	08:18 (WEA06) 07:00	08:18 (WEA01) 05:57	05:13	05:10	05:46	06:35	07:22	09:02 (WEA07) 07:15	08:05
4	16:25	17:12	18:02	08:55 (WEA07) 19:55	08:43 (WEA01) 20:45	21:30	21:43	21:12	20:11	19:02	40 09:42 (WEA07) 16:58	16:18
5	08:28	08:01	07:07	08:17 (WEA06) 06:58	08:18 (WEA01) 05:58	05:12	05:11	05:48	06:36	07:24	09:03 (WEA07) 07:17	08:06
6	16:26	17:14	18:04	08:57 (WEA07) 19:57	08:40 (WEA01) 20:47	21:31	21:43	21:10	20:09	19:00	39 09:42 (WEA07) 16:56	16:18
7	08:28	07:59	07:05	08:19 (WEA06) 06:56	08:19 (WEA01) 05:53	05:11	05:12	05:49	06:38	07:26	09:00 (WEA06) 07:19	08:08
8	16:27	17:15	18:06	08:59 (WEA07) 19:58	08:39 (WEA01) 20:48	21:32	21:42	21:08	20:06	18:58	42 09:42 (WEA07) 16:54	16:11
9	08:28	07:57	07:03	08:17 (WEA06) 06:53	08:21 (WEA01) 05:51	05:10	05:12	05:51	06:39	07:27	08:57 (WEA06) 07:20	08:09
10	16:28	17:17	18:08	09:00 (WEA07) 20:00	08:37 (WEA01) 20:50	21:33	21:42	21:07	20:04	18:56	43 09:40 (WEA07) 16:52	16:17
11	08:28	07:56	07:01	08:17 (WEA06) 06:51	08:23 (WEA01) 05:49	05:10	05:13	05:52	06:41	07:29	08:56 (WEA06) 07:22	08:10
12	16:29	17:19	18:09	09:01 (WEA07) 20:02	08:33 (WEA01) 20:51	21:34	21:41	21:05	20:02	18:53	44 09:40 (WEA07) 16:50	16:16
13	08:27	07:54	06:59	08:18 (WEA06) 06:49	08:18 (WEA01) 05:47	05:09	05:14	05:54	06:43	07:31	08:55 (WEA06) 07:24	08:12
14	16:30	17:21	18:11	09:02 (WEA07) 20:03	08:23 (WEA01) 20:53	21:35	21:41	21:03	20:00	1 08:24 (WEA01) 18:51	44 09:39 (WEA07) 16:49	16:16
15	08:27	07:52	06:57	08:18 (WEA06) 06:47	08:18 (WEA01) 05:46	05:09	05:15	05:55	06:44	07:32	08:53 (WEA06) 07:26	08:13
16	16:32	17:23	18:13	09:03 (WEA07) 20:05	08:23 (WEA01) 20:55	21:36	21:40	21:02	19:57	13 08:30 (WEA01) 18:49	45 09:38 (WEA07) 16:47	16:15
17	08:27	07:51	06:54	08:19 (WEA06) 06:44	08:19 (WEA01) 05:44	05:08	05:16	05:57	06:46	07:34	08:52 (WEA06) 07:27	08:14
18	16:33	17:24	18:15	09:03 (WEA07) 20:07	08:33 (WEA01) 20:56	21:36	21:40	21:00	19:55	18 08:32 (WEA01) 18:47	45 09:37 (WEA07) 16:45	16:15
19	08:26	07:49	06:52	08:20 (WEA06) 06:42	08:20 (WEA01) 05:42	05:08	05:17	05:58	06:47	07:36	08:52 (WEA06) 07:29	08:15
20	16:34	17:26	18:16	09:03 (WEA07) 20:08	08:23 (WEA01) 20:58	21:37	21:39	20:58	19:53	21 08:34 (WEA01) 18:44	43 09:35 (WEA07) 16:44	16:15
21	08:26	07:47	06:50	08:22 (WEA06) 06:40	08:22 (WEA01) 05:41	05:07	05:18	06:00	06:49	07:37	08:52 (WEA06) 07:31	08:16
22	16:35	17:28	18:18	09:04 (WEA07) 20:10	08:23 (WEA01) 20:59	21:38	21:38	20:56	19:51	24 08:34 (WEA01) 18:42	42 09:34 (WEA07) 16:42	16:15
23	08:25	07:45	06:48	08:25 (WEA06) 06:38	08:25 (WEA01) 05:39	05:07	05:19	06:01	06:50	07:39	08:51 (WEA06) 07:33	08:17
24	16:37	17:30	18:20	09:04 (WEA07) 20:12	08:23 (WEA01) 20:58	21:39	21:38	20:54	19:48	25 08:35 (WEA01) 18:40	40 09:31 (WEA07) 16:41	16:15
25	08:24	07:44	06:45	08:23 (WEA06) 06:36	08:23 (WEA01) 05:37	05:07	05:20	06:03	06:52	07:41	08:51 (WEA06) 07:34	08:18
26	16:38	17:32	18:21	09:03 (WEA07) 20:13	08:23 (WEA01) 20:58	21:39	21:37	20:52	19:46	27 08:35 (WEA01) 18:38	37 09:28 (WEA07) 16:39	16:14
27	08:24	07:42	06:43	08:23 (WEA06) 06:33	08:23 (WEA01) 05:36	05:06	05:21	06:05	06:54	07:42	08:51 (WEA06) 07:36	08:19
28	16:40	17:34	18:23	09:03 (WEA07) 20:15	08:23 (WEA01) 20:58	21:40	21:36	20:50	19:44	28 08:36 (WEA01) 18:36	33 09:24 (WEA07) 16:38	16:14
29	08:23	07:40	06:41	08:23 (WEA06) 06:31	08:23 (WEA01) 05:34	05:06	05:22	06:06	06:55	07:44	08:52 (WEA06) 07:38	08:20
30	16:41	17:35	18:25	09:03 (WEA07) 20:17	08:23 (WEA01) 20:58	21:41	21:35	20:48	19:41	29 08:35 (WEA01) 18:34	27 09:19 (WEA06) 16:36	16:14
31	08:22	07:38	06:39	08:23 (WEA06) 06:29	08:23 (WEA01) 05:33	05:06	05:23	06:08	06:57	07:46	08:51 (WEA06) 07:40	08:21
32	16:43	17:37	18:27	09:01 (WEA07) 20:18	08:23 (WEA01) 20:58	21:41	21:34	20:47	19:39	29 08:35 (WEA01) 18:31	26 09:17 (WEA06) 16:35	16:15
33	08:21	07:36	06:36	08:23 (WEA06) 06:27	08:23 (WEA01) 05:33	05:06	05:24	06:09	06:58	07:47	08:52 (WEA06) 07:41	08:22
34	16:44	17:39	18:28	09:01 (WEA07) 20:20	08:23 (WEA01) 20:58	21:42	21:33	20:45	19:37	30 08:35 (WEA01) 18:29	24 09:16 (WEA06) 16:34	16:15
35	08:20	07:34	06:34	08:24 (WEA06) 06:25	08:24 (WEA01) 05:30	05:06	05:26	06:11	07:00	07:49	08:53 (WEA06) 07:43	08:23
36	16:46	17:41	18:30	09:00 (WEA07) 20:22	08:24 (WEA01) 20:59	21:42	21:32	20:43	19:34	29 08:35 (WEA01) 18:27	22 09:15 (WEA06) 16:32	16:15
37	08:19	07:32	06:32	08:24 (WEA06) 06:23	08:24 (WEA01) 05:33	05:06	05:27	06:12	07:02	07:51	08:51 (WEA06) 07:45	08:24
38	16:48	17:43	18:32	09:01 (WEA07) 20:23	08:24 (WEA01) 20:59	21:42	21:31	20:41	19:32	28 08:34 (WEA01) 18:25	19 09:14 (WEA06) 16:31	16:15
39	08:18	07:30	06:30	08:24 (WEA06) 06:21	08:24 (WEA01) 05:33	05:06	05:28	06:14	07:03	07:52	08:51 (WEA06) 07:46	08:24
40	16:49	17:44	18:33	09:01 (WEA07) 20:25	08:24 (WEA01) 20:59	21:43	21:30	20:39	19:30	42 09:33 (WEA07) 18:23	15 09:12 (WEA06) 16:30	16:15
41	08:17	07:28	06:27	08:25 (WEA06) 06:19	08:25 (WEA01) 05:32	05:06	05:29	06:16	07:05	07:54	08:59 (WEA06) 07:48	08:25
42	16:51	17:46	18:35	09:01 (WEA07) 20:27	08:25 (WEA01) 20:59	21:44	21:33	20:36	19:28	47 09:36 (WEA07) 18:21	8 09:07 (WEA06) 16:29	16:16
43	08:16	07:26	06:25	08:25 (WEA06) 06:16	08:25 (WEA01) 05:31	05:06	05:31	06:17	07:06	07:56	08:50 (WEA06) 07:50	08:25
44	16:53	17:48	18:37	09:02 (WEA07) 20:28	08:25 (WEA01) 20:59	21:43	21:27	20:34	19:25	48 09:37 (WEA07) 18:19	1 16:27	16:16
45	08:15	07:24	06:23	08:26 (WEA06) 06:14	08:26 (WEA01) 05:30	05:06	05:32	06:19	07:08	07:58	08:53 (WEA06) 07:43	08:26
46	16:54	17:50	18:38	09:03 (WEA07) 20:30	08:26 (WEA01) 20:59	21:44	21:26	20:32	19:23	49 09:39 (WEA07) 18:17	16:26	16:17
47	08:14	07:22	06:21	08:24 (WEA06) 06:12	08:24 (WEA01) 05:33	05:06	05:33	06:20	07:10	08:09 (WEA01) 07:59	07:53	08:26
48	16:56	17:52	18:40	09:04 (WEA07) 20:32	08:26 (WEA01) 20:59	21:44	21:25	20:30	19:21	48 09:40 (WEA07) 18:15	16:25	16:17
49	08:13	07:20	06:18	08:22 (WEA06) 06:10	08:22 (WEA01) 05:33	05:07	05:35	06:22	07:11	08:01	08:54 (WEA06) 07:47	08:27
50	16:58	17:53	18:42	09:04 (WEA07) 20:33	08:26 (WEA01) 20:59	21:44	21:24	20:28	19:18	46 09:41 (WEA07) 18:13	16:24	16:18
51	08:12	07:18	06:16	08:21 (WEA06) 06:08	08:21 (WEA01) 05:33	05:07	05:36	06:24	07:13	08:03	08:54 (WEA06) 07:48	08:27
52	16:59	17:55	18:43	09:04 (WEA07) 20:35	08:26 (WEA01) 20:59	21:44	21:22	20:26	19:16	35 09:42 (WEA07) 18:11	16:23	16:18
53	08:10	07:16	06:14	08:20 (WEA06) 06:06	08:20 (WEA01) 05:33	05:08	05:37	06:25	07:14	08:05	08:54 (WEA06) 07:50	08:28
54	17:01	17:57	18:45	09:04 (WEA07) 20:37	08:26 (WEA01) 20:59	21:44	21:21	20:24	19:14	37 09:42 (WEA07) 18:09	16:22	16:19
55	08:09	07:14	06:11	08:18 (WEA06) 06:04	08:18 (WEA01) 05:33	05:08	05:39	06:27	07:16	08:06	08:59 (WEA06) 07:59	08:28
56	17:03	17:59	18:45	09:04 (WEA07) 20:38	08:26 (WEA01) 20:59	21:44	21:19	20:22	19:11	38 09:43 (WEA07) 18:07	16:21	16:20
57	08:08	07:13	06:10	08:17 (WEA06) 06:03	08:17 (WEA01) 05:33	05:09	05:40	06:28	07:18	08:04 (WEA07) 07:08	08:01	08:28
58	17:05	17:51	18:38	09:04 (WEA07) 20:40	08:26 (WEA01) 20:59	21:44	21:18	20:20	19:09	38 09:42 (WEA07) 17:05	16:21	16:21
59	08:06	07:11	06:08	08:16 (WEA06) 06:00	08:16 (WEA01) 05:33	05:09	05:42	06:30	07:19	08:03 (WEA07) 07:10	08:02	08:28
60	17:06	17:52	18:39	09:04 (WEA07) 20:42	08:26 (WEA01) 20:59	21:44	21:16	20:17	19:07	40 09:43 (WEA07) 17:03	16:22	16:22
61	08:05	07:05	06:02	08:16 (WEA06) 05:59	08:16 (WEA01) 05:33	05:14	05:43	06:31	07:20	08:04 (WEA07) 07:12	08:03	08:28
62	17:08	17:54	18:41	09:04 (WEA07) 20:43	08:26 (WEA01) 20:59	21:44	21:15	20:15	19:05	41 09:43 (WEA07) 17:01	16:22	16:22
63	08:04	07:04	06:01	08:15 (WEA06) 05:58	08:15 (WEA01) 05:33	05:13	05:42	06:30	07:19	08:03 (WEA07) 07:11	08:02	08:28
64	17:09	17:55	18:42	09:04 (WEA07) 20:44	08:26 (WEA01) 20:59	21:44	21:15	20:15	19:05	42 09:43 (WEA07) 17:01	16:22	16:22
65	08:03	07:03	06:00	08:15 (WEA06) 05:57	08:15 (WEA01) 05:33	05:13	05:42	06:30	07:19	08:03 (WEA07) 07:11	08:02	08:28
66	17:10	17:56	18:43	09:04 (WEA07) 20								

Projekt: Beschreibung:  
 Giershagen 2024-11-Anhang  
 Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
 F

Lizenzierter Anwender:  
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 49(0)4131-8308-100  
 Daniel Baudach / daniel.baudach@anemos.de  
 Berechnet:  
 25.10.2024 09:02/4.0.540



## SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO32 - Padberg, Niedermühle 12

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPPSRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
 1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	Marz	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:28	08:04	07:12	08:20 (WEA06) 07:02	08:17 (WEA01) 05:58	05:13	05:10	05:45	06:33	07:21	09:07 (WEA07) 07:13	08:04
2	16:24	17:10	18:01	08:57 (WEA07) 19:53	08:45 (WEA01) 20:43	21:29	21:43	21:13	20:13	19:05	09:48 (WEA07) 16:59	16:19
3	08:28	08:02	07:10	08:20 (WEA06) 07:00	08:18 (WEA01) 05:57	05:13	05:10	05:46	06:35	07:22	09:06 (WEA07) 07:15	08:05
4	16:25	17:12	18:02	09:00 (WEA07) 19:55	08:45 (WEA01) 20:45	21:30	21:43	21:12	20:11	19:02	09:47 (WEA07) 16:58	16:18
5	08:28	08:01	07:07	08:20 (WEA06) 06:58	08:18 (WEA01) 05:55	05:12	05:11	05:48	06:36	07:24	09:06 (WEA07) 07:17	08:06
6	16:26	17:14	18:04	09:03 (WEA07) 19:57	08:43 (WEA01) 20:47	21:31	21:43	21:10	20:09	19:00	09:47 (WEA07) 16:56	16:18
7	08:28	07:59	07:05	08:20 (WEA06) 06:56	08:19 (WEA01) 05:53	05:11	05:12	05:49	06:38	07:26	09:03 (WEA06) 07:19	08:08
8	16:27	17:15	18:06	09:05 (WEA07) 19:58	08:41 (WEA01) 20:48	21:32	21:42	21:08	20:06	18:58	09:47 (WEA07) 16:54	16:17
9	08:28	07:57	07:03	08:19 (WEA06) 06:53	08:20 (WEA01) 05:51	05:10	05:12	05:51	06:39	07:27	09:00 (WEA06) 07:20	08:09
10	16:28	17:17	18:08	09:05 (WEA07) 20:00	19 08:39 (WEA01) 20:50	21:33	21:42	21:07	20:04	18:56	09:45 (WEA07) 16:52	16:17
11	08:28	07:56	07:01	08:19 (WEA06) 06:51	08:22 (WEA01) 05:49	05:10	05:13	05:52	06:41	07:29	08:58 (WEA06) 07:22	08:10
12	16:29	17:19	18:09	09:06 (WEA07) 20:02	15 08:37 (WEA01) 20:51	21:34	21:41	21:05	20:02	18:53	09:45 (WEA07) 16:50	16:16
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14	16:30	17:21	18:11	09:07 (WEA07) 20:03	7 08:32 (WEA01) 20:53	21:35	21:41	21:03	20:00	11 08:30 (WEA01) 18:51	09:44 (WEA07) 16:49	16:16
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16	16:32	17:23	18:13	09:08 (WEA07) 20:05	20:55	21:36	21:40	21:02	19:57	16 08:33 (WEA01) 18:49	09:43 (WEA07) 16:47	16:15
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18	16:33	17:24	18:15	09:08 (WEA07) 20:07	20:56	21:36	21:40	21:00	19:55	20 08:34 (WEA01) 18:47	09:42 (WEA07) 16:45	16:15
19	08:26	07:49	06:52	08:22 (WEA06) 06:42	05:42	05:08	05:17	05:58	06:47	07:36	08:54 (WEA06) 07:29	08:15
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25	08:24	07:44	06:45	08:27 (WEA07) 06:36	05:37	05:07	05:20	06:03	06:52	07:41	08:53 (WEA06) 07:34	08:18
26	16:38	17:32	18:21	09:08 (WEA07) 20:13	21:02	21:39	21:37	20:52	19:46	28 08:37 (WEA01) 18:38	09:34 (WEA07) 16:39	16:14
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41	08:17	07:28	06:27	07:26 (WEA07) 06:19	05:26	05:06	05:29	06:16	07:05	07:54	09:00 (WEA06) 07:48	08:25
42	16:51	17:46	18:35	09:01 (WEA07) 20:27	21:14	21:43	21:29	20:36	19:28	49 09:41 (WEA07) 18:21	09:12 (WEA06) 16:29	16:16
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46	16:54	17:50	18:38	08:57 (WEA07) 20:30	21:17	21:44	21:26	20:32	19:23	51 09:44 (WEA07) 18:17	16:26	16:17
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48	16:56	17:52	18:40	08:54 (WEA07) 20:32	21:19	21:44	21:25	20:30	19:21	50 09:45 (WEA07) 18:15	16:25	16:17
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50	16:58	17:53	18:42	08:51 (WEA07) 20:33	21:20	21:44	21:24	20:28	19:18	46 09:46 (WEA07) 18:13	16:24	16:18
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52	16:59	17:55	18:43	08:49 (WEA07) 20:35	21:21	21:44	21:22	20:26	19:16	37 09:47 (WEA07) 18:11	16:23	16:18
53	08:10	07:16	06:14	08:18 (WEA07) 06:06	05:18	05:08	05:37	06:25	07:14	09:09 (WEA07) 08:05	07:58	08:28
54	17:01	17:57	18:45	08:48 (WEA07) 20:37	21:22	21:44	21:21	20:24	19:14	38 09:47 (WEA07) 18:09	16:22	16:19
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56	17:03	17:59	18:46	08:48 (WEA07) 20:38	21:24	21:44	21:19	20:22	19:11	40 09:48 (WEA07) 18:07	16:21	16:20
57	08:08	07:13	06:10	08:18 (WEA07) 06:02	05:16	05:09	05:40	06:28	07:18	09:07 (WEA07) 07:08	08:01	08:28
58	17:05	17:51	18:38	08:48 (WEA07) 20:40	21:25	21:44	21:18	20:20	19:09	40 09:47 (WEA07) 17:05	16:21	16:21
59	08:06	07:11	06:08	08:17 (WEA07) 06:00	05:15	05:09	05:42	06:30	07:19	09:07 (WEA07) 07:10	08:02	08:28
60	17:06	17:52	18:39	08:46 (WEA07) 20:42	21:26	21:44	21:16	20:17	19:07	41 09:48 (WEA07) 17:03	16:22	16:22
61	08:05	07:10	06:07	08:17 (WEA07) 06:00	05:14	05:09	05:43	06:31	07:20	09:07 (WEA07) 07:12	08:02	08:28
62	17:08	17:54	18:41	08:46 (WEA07) 20:43	21:27	21:45	21:15	20:15	19:07	41 09:48 (WEA07) 17:03	16:22	16:22
63	08:04	07:09	06:06	08:16 (WEA07) 06:00	05:13	05:08	05:41	06:30	07:19	09:07 (WEA07) 07:11	08:01	08:28
64	17:09	17:55	18:42	08:46 (WEA07) 20:44	21:28	21:46	21:17	20:17	19:08	41 09:48 (WEA07) 17:04	16:23	16:23
65	08:03	07:08	06:05	08:16 (WEA07) 06:00	05:12	05:07	05:40	06:30	07:19	09:07 (WEA07) 07:10	08:01	08:28
66	17:10	17:56	18:43	08:46 (WEA07) 20:45	21:29	21:47	21:18	20:18	19:09	41 09:48 (WEA07) 17:05	16:24	16:24
67	08:02	07:07	06:04	08:15 (WEA07) 06:00	05:11	05:06	05:39	06:30	07:19	09:07 (WEA07) 07:10	08:01	08:28
68	17:11	17:57	18:44	08:46 (WEA07) 20:46	21:30	21:48	21:19	20:18	19:10	41 09:48 (WEA07) 17:06	16:25	16:25
69	08:01	07:06	06:03	08:14 (WEA07) 06:00	05:10	05:05	05:38	06:30	07:19	09:07 (WEA07) 07:10	08:01	08:28
70	17:12	17:58	18:45	08:46 (WEA07) 20:47	21:31	21:49	21:2					

Projekt: Giershagen  
 Beschreibung: 2024-11-Anhang  
 Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L F

Lizenzierter Anwender:  
 anemos GmbH für Umweltmeteorologie mbH  
 Böhmsholzer Weg 3  
 DE-21391 Reppenstedt  
 49(0)4131-8308-100  
 Daniel Baudach / daniel.baudach@anemos.de  
 Berechnet:  
 25.10.2024 09:02/4.0.540



## SHADOW - Kalender

Berechnung: 2024-10 Giershagen GB Schattenrezeptor: IO33 - Padberg, Niedermühle 16

Annahmen für Schattenwurfberechnung

Referenzjahr für Kalender

2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPPSRINGE]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
 1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	Marz	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember	
1	08:28	08:04	07:12	08:56 (WEA07) 07:02	08:26 (WEA01) 05:58	05:13	05:10	05:45	06:33	07:21	09:28 (WEA07) 07:13	08:04	
2	16:24	17:10	18:01	09:31 (WEA07) 19:53	08:56 (WEA01) 20:43	21:28	21:43	21:13	20:13	19:05	44 10:12 (WEA07) 16:59	16:19	
3	08:28	08:02	07:10	08:55 (WEA07) 07:00	08:27 (WEA01) 05:57	05:13	05:10	05:46	06:35	07:22	09:27 (WEA07) 07:15	08:05	
4	16:25	17:12	18:02	38 09:33 (WEA07) 19:55	28 08:55 (WEA01) 20:45	21:30	21:43	21:12	20:11	19:02	44 10:11 (WEA07) 16:57	16:18	
5	08:28	08:01	07:07	08:54 (WEA07) 06:58	08:27 (WEA01) 05:55	05:12	05:11	05:48	06:36	07:24	09:27 (WEA07) 07:17	08:06	
6	16:26	17:14	18:04	39 09:33 (WEA07) 19:57	26 08:53 (WEA01) 20:47	21:31	21:43	21:10	20:09	19:00	45 10:12 (WEA07) 16:56	16:18	
7	08:28	07:59	07:05	08:53 (WEA07) 06:56	08:28 (WEA01) 05:53	05:11	05:12	05:49	06:38	07:26	09:27 (WEA07) 07:19	08:08	
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10	16:28	17:17	18:08	43 09:34 (WEA07) 20:00	21 08:50 (WEA01) 20:50	21:33	21:42	21:07	20:04	18:56	45 10:11 (WEA07) 16:52	16:17	
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35	08:20	07:34	06:34	07:40 (WEA01) 06:25	05:30	05:06	05:26	06:11	07:00	08:15 (WEA01) 07:49	09:36 (WEA07) 07:43	08:23	
36	16:46	17:41	18:30	49 09:27 (WEA07) 20:22	21:10	21:42	21:32	20:43	19:34	33 08:48 (WEA01) 18:27	20 09:56 (WEA07) 16:32	16:15	
37	08:19	07:32	06:32	07:56 (WEA01) 06:23	05:28	05:06	05:27	06:12	07:02	08:15 (WEA01) 07:51	09:40 (WEA07) 07:45	08:24	
38	16:48	17:43	18:32	53 09:25 (WEA07) 20:23	21:12	21:42	21:31	20:41	19:32	32 08:47 (WEA01) 18:25	12 09:52 (WEA07) 16:31	16:15	
39	08:18	07:30	06:30	07:34 (WEA01) 06:21	05:27	05:06	05:28	06:14	07:03	08:14 (WEA01) 07:52	07:46	08:24	
40	16:49	17:44	18:33	54 09:23 (WEA07) 20:25	21:13	21:43	21:30	20:39	19:30	32 08:46 (WEA01) 18:23	16:30	16:15	
41	08:17	07:28	06:27	07:32 (WEA01) 06:18	05:26	05:06	05:29	06:16	07:05	08:15 (WEA01) 07:54	07:48	08:25	
42	16:51	17:46	18:35	54 09:21 (WEA07) 20:27	21:14	21:43	21:29	20:36	19:28	41 09:57 (WEA07) 18:21	16:29	16:16	
43	08:16	07:26	06:25	07:31 (WEA01) 06:16	05:24	05:06	05:31	06:17	07:06	08:15 (WEA01) 07:56	07:50	08:25	
44	16:53	17:48	18:37	52 09:19 (WEA07) 20:28	21:16	21:43	21:27	20:34	19:25	49 10:01 (WEA07) 18:19	16:27	16:16	
45	08:15	07:24	06:23	07:29 (WEA01) 06:14	05:23	05:06	05:32	06:19	07:08	08:16 (WEA01) 07:58	07:51	08:26	
46	16:54	17:50	18:38	49 09:15 (WEA07) 20:30	21:17	21:44	21:26	20:32	19:23	52 10:04 (WEA07) 18:17	16:26	16:17	
47	08:14	07:22	06:21	07:28 (WEA01) 06:12	05:22	05:07	05:33	06:20	07:10	08:16 (WEA01) 07:59	07:53	08:26	
48	16:56	17:52	18:40	38 09:09 (WEA07) 20:32	21:19	21:44	21:25	20:30	19:21	54 10:05 (WEA07) 18:15	16:25	16:17	
49	08:13	07:20	06:18	07:28 (WEA01) 06:10	05:21	05:07	05:35	06:22	07:11	08:18 (WEA01) 08:01	07:54	08:27	
50	16:58	17:53	18:42	32 08:00 (WEA01) 20:33	21:20	21:44	21:24	20:28	19:18	53 10:07 (WEA07) 18:13	16:24	16:18	
51	08:12	07:18	06:16	07:16 09:02 (WEA07)	05:19	05:07	05:36	06:24	07:13	08:20 (WEA01) 08:03	07:56	08:27	
52	16:59	17:55	18:43	33 08:59 (WEA01) 20:35	21:21	21:44	21:22	20:26	19:16	53 10:09 (WEA07) 18:11	16:23	16:18	
53	08:10	07:16	06:14	08:26 (WEA01) 06:06	05:18	05:08	05:37	06:25	07:14	08:22 (WEA01) 08:05	07:58	08:28	
54	17:01	17:57	18:45	33 08:59 (WEA01) 20:37	21:22	21:44	21:21	20:24	19:14	49 10:09 (WEA07) 18:09	16:22	16:19	
55	08:09	07:14	06:11	08:26 (WEA01) 06:04	05:17	05:08	05:39	06:27	07:16	08:31 (WEA01) 08:06	07:59	08:28	
56	17:03	17:59	18:47	33 08:59 (WEA01) 20:38	21:24	21:44	21:19	20:22	19:11	39 10:10 (WEA07) 18:07	16:21	16:20	
57	08:08	07:13	06:10	08:26 (WEA01) 06:02	05:16	05:08	05:40	06:28	07:18	09:29 (WEA07) 07:08	08:01	08:28	
58	17:05	17:51	18:39	33 08:59 (WEA01) 20:40	21:25	21:44	21:18	20:20	19:09	41 10:10 (WEA07) 17:05	16:21	16:21	
59	08:06	07:11	06:08	08:25 (WEA01) 06:00	05:15	05:09	05:42	06:30	07:19	09:28 (WEA07) 07:10	08:02	08:28	
60	17:06	17:52	18:40	32 08:57 (WEA01) 20:42	21:26	21:44	21:16	20:17	19:07	43 10:11 (WEA07) 17:03	16:22	16:22	
61	08:05	07:05	06:02	07:05 08:25 (WEA01)	05:14	05:05	05:43	06:31	07:20	09:29 (WEA07) 07:12	08:02	08:28	
62	17:08	17:54	18:42	32 08:57 (WEA01)	21:27	21:45	21:15	20:15	19:05	43 10:11 (WEA07) 17:01	16:22	16:22	
63	08:04	07:04	06:01	07:04 08:57 (WEA01)	414	482	496	500	454	382	334	269	247
64	Sonnenscheinstunden	260	277	366	414	482	496	500	454	382	334	269	247
65	astr. max. mögl. Beschattung		116	1297	153					868	721		
66	Red. Sonnenscheinwahrsch.		0.32	0.28	0.36					0.32	0.29		
67	Reduktion Betriebsdauer		0.96	0.96	0.96					0.96	0.96		
68	Reduktion Windrichtung		0.62	0.63	0.65					0.64	0.62		
69	Gesamte Reduktion		0.19	0.17	0.23					0.20	0.17		
70	Met. wahrsch. Beschattung		22	223	35					171	124		

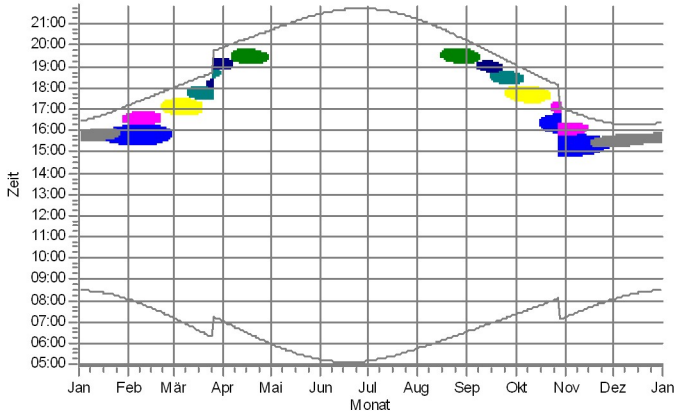
Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

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

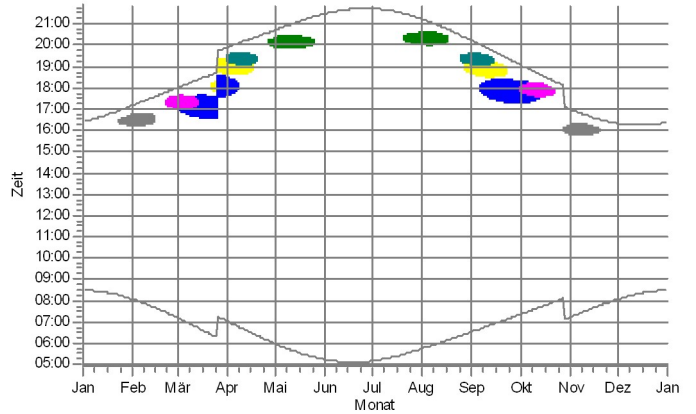
## SHADOW - Grafischer Kalender

Berechnung: 2024-10 Giershagen GB

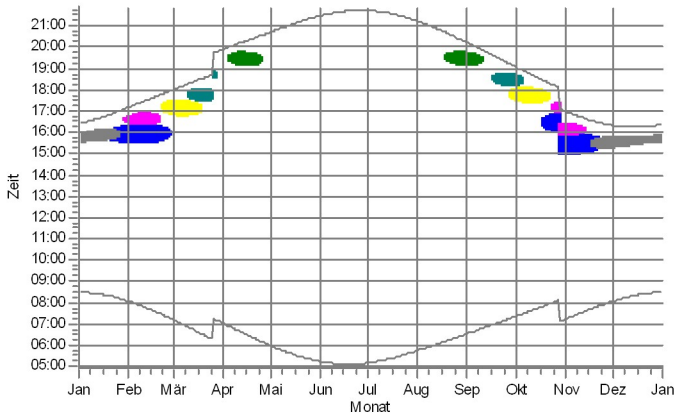
IO01: Giershagen, Adorfer Weg 37



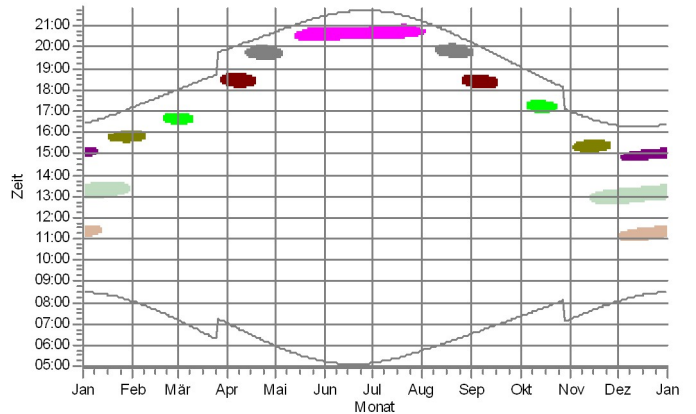
IO02: Giershagen, Adorfer Weg 41



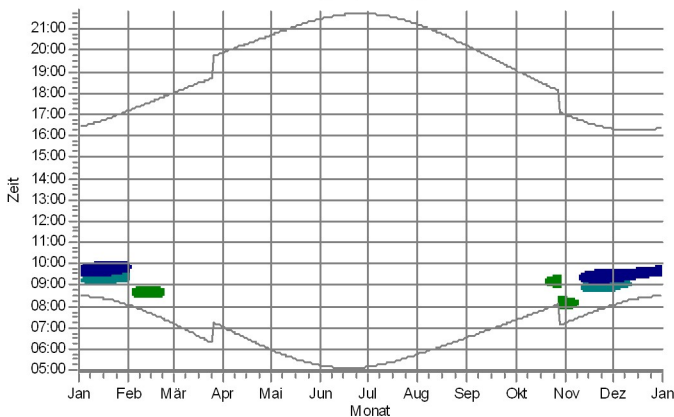
IO03: Giershagen, Adorfer Weg 44



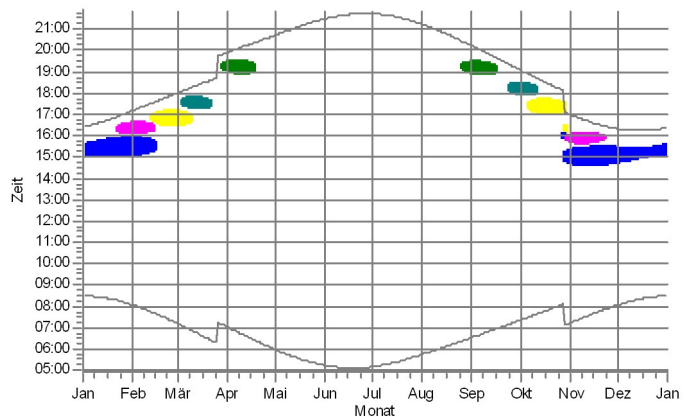
IO04: Giershagen, Adorfer Weg 60



IO05: Giershagen, Beringhof 1



IO06: Giershagen, Hinterm Hagen 2



WEA

- WEA01: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (9)
- WEA02: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (10)
- WEA03: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (11)
- WEA04: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (12)
- WEA05: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (13)
- WEA06: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (14)
- WEA07: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (15)

- E824350: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (641)
- E824351: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (642)
- E824352: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (644)
- E824353: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (647)
- E824356: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (643)
- E824359: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (645)



Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

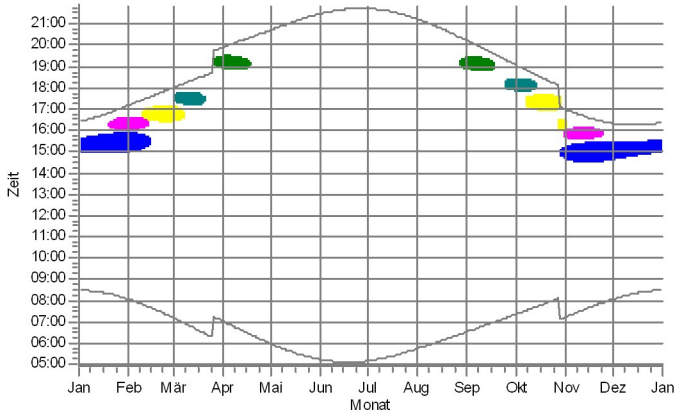
Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



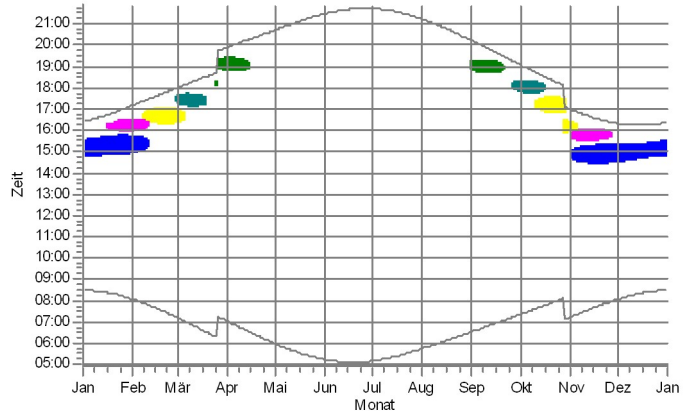
## SHADOW - Grafischer Kalender

Berechnung: 2024-10 Giershagen GB

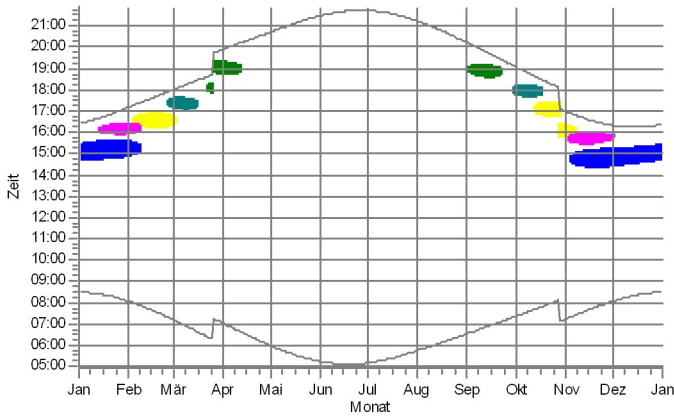
IO07: Giershagen, Hinterm Hagen 2 a



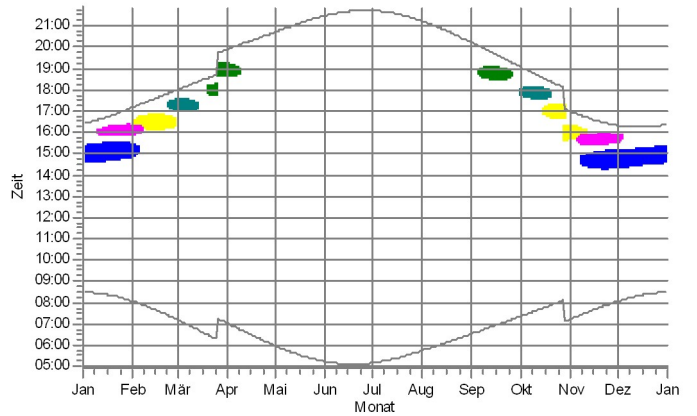
IO08: Giershagen, Hinterm Hagen 14



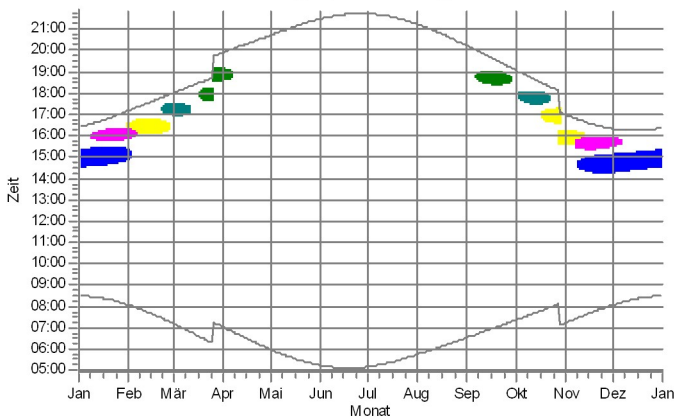
IO09: Giershagen, Hinterm Hagen 16



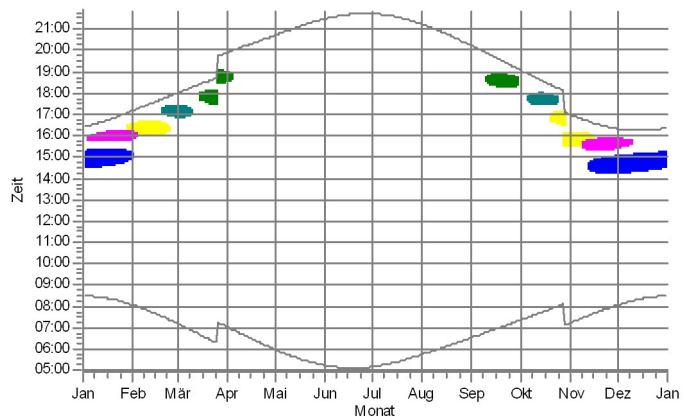
IO10: Giershagen, Hinterm Hagen 24



IO11: Giershagen, Hinterm Hagen 26



IO12: Giershagen, Hinterm Hagen 30



WEA

- WEA01: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (9)
- WEA02: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (10)
- WEA03: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (11)

- WEA05: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (13)
- WEA06: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (14)

Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

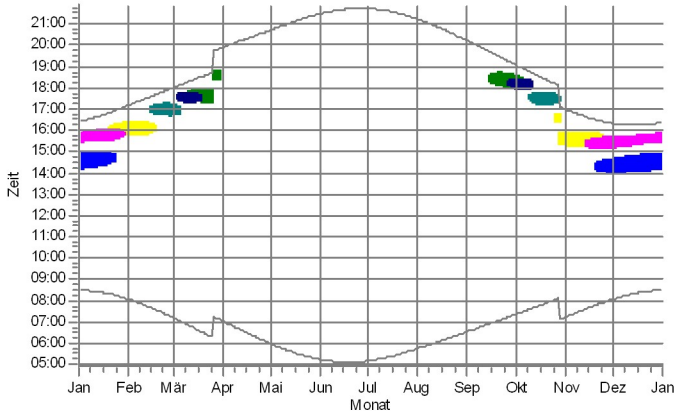
Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



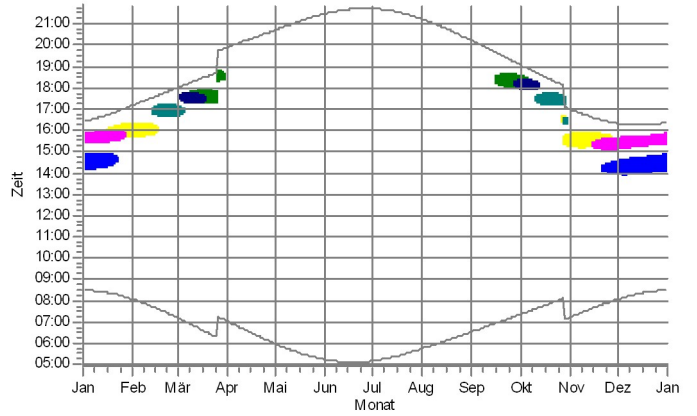
## SHADOW - Grafischer Kalender

Berechnung: 2024-10 Giershagen GB

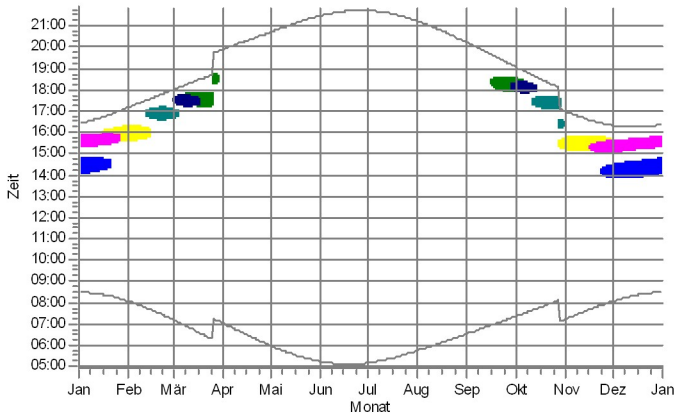
IO13: Giershagen, Northolter Str. 6



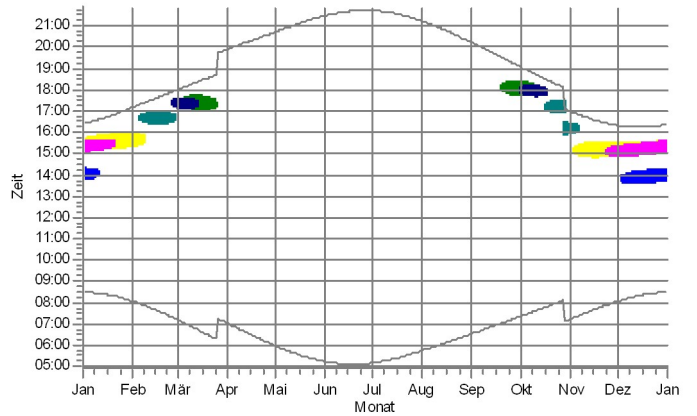
IO14: Giershagen, Northolter Str. 10



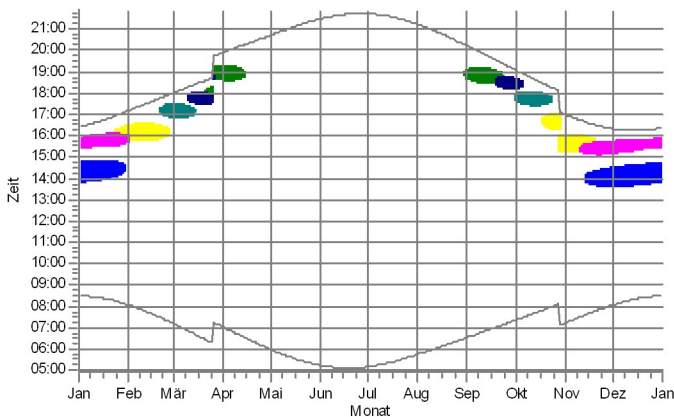
IO15: Giershagen, Northolter Str. 14



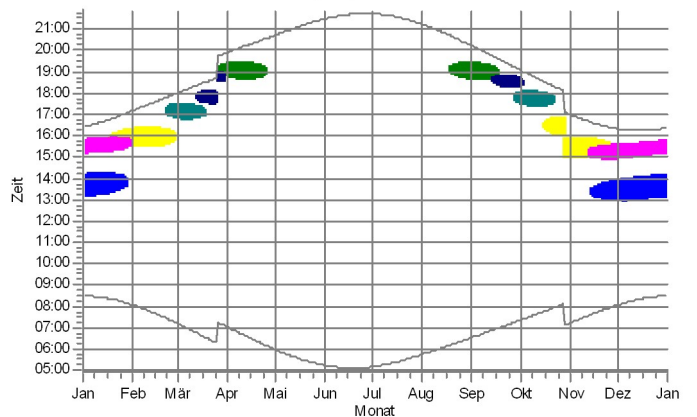
IO16: Giershagen, Northolter Str. 20



IO17: Giershagen, Rennebusch 5



IO18: Giershagen, Rennebusch 8



WEA

- WEA01: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (9)
- WEA02: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (10)
- WEA03: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (11)

- WEA05: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (13)
- WEA06: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (14)
- WEA07: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (15)

Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

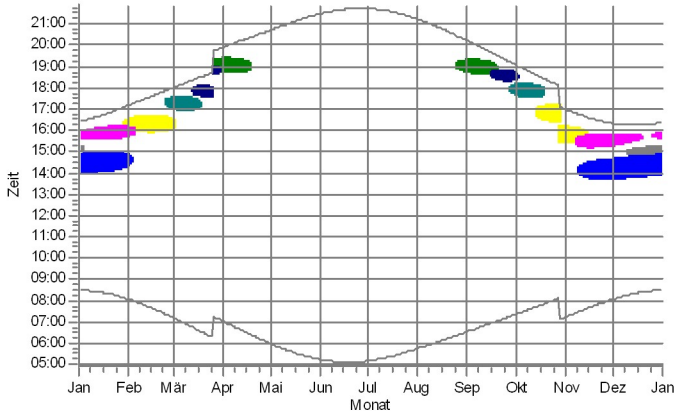
Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



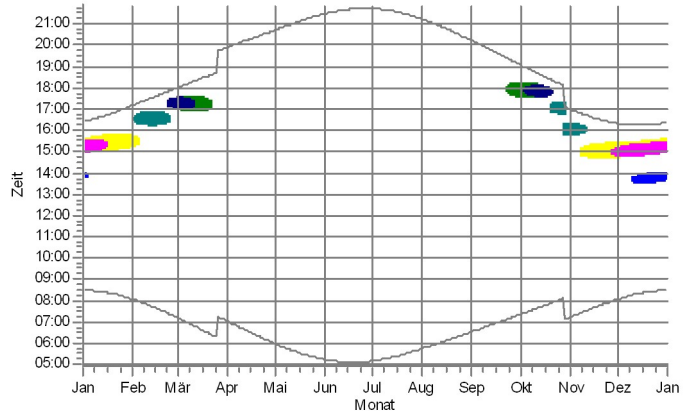
## SHADOW - Grafischer Kalender

Berechnung: 2024-10 Giershagen GB

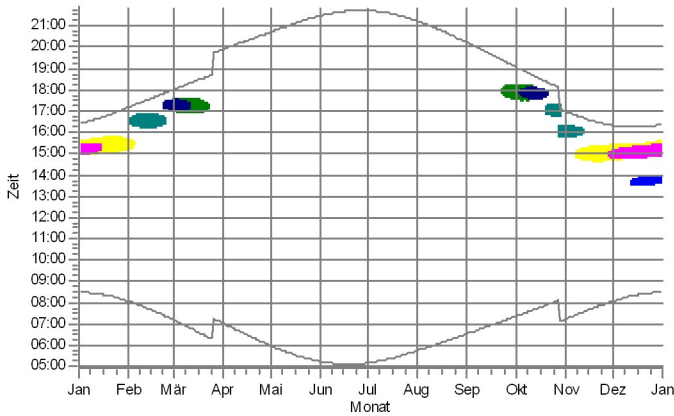
IO19: Giershagen, Rennebusch 17



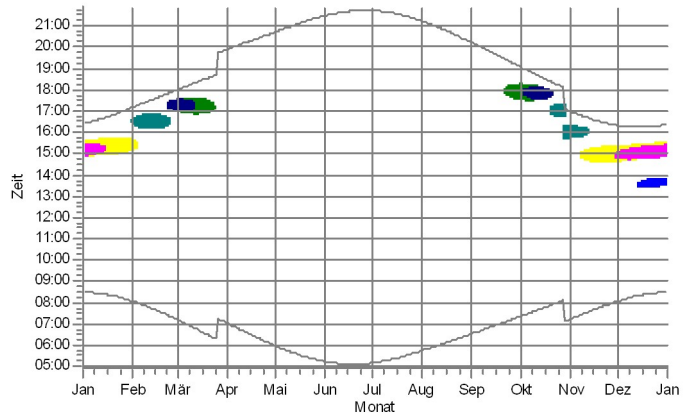
IO20: Giershagen, Rennefeld 14



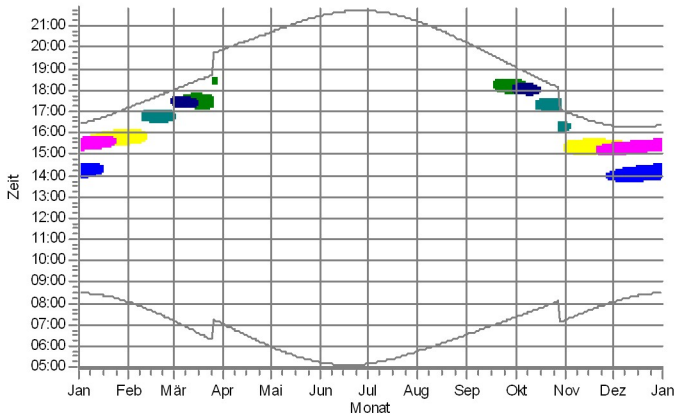
IO21: Giershagen, Rennefeld 16



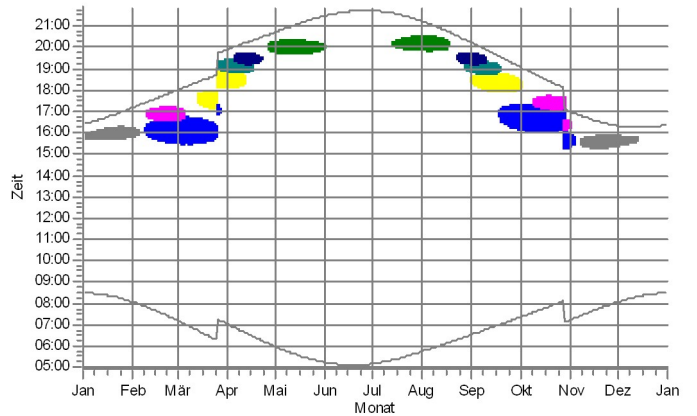
IO22: Giershagen, Rennefeld 17



IO23: Giershagen, unbebaute Fläche B-Plan Nr. 8 "Rennefeld"



IO24: Giershagen, Zum Eckefeld 1



WEA

- WEA01: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (9)
- WEA02: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (10)
- WEA03: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (11)
- WEA04: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (12)

- WEA05: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (13)
- WEA06: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (14)
- WEA07: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (15)

Projekt:  
Giershagen

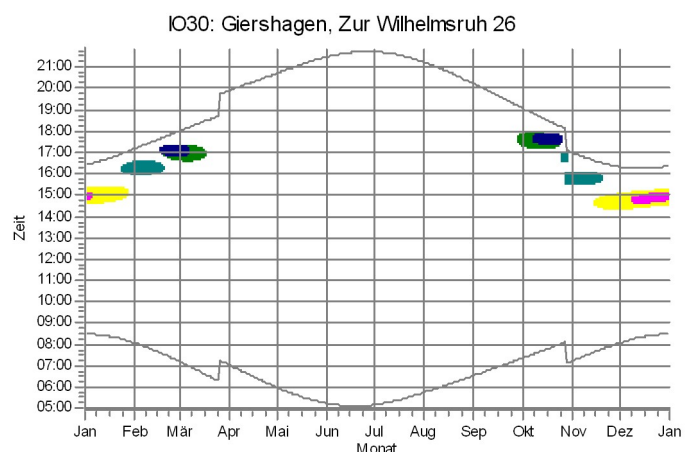
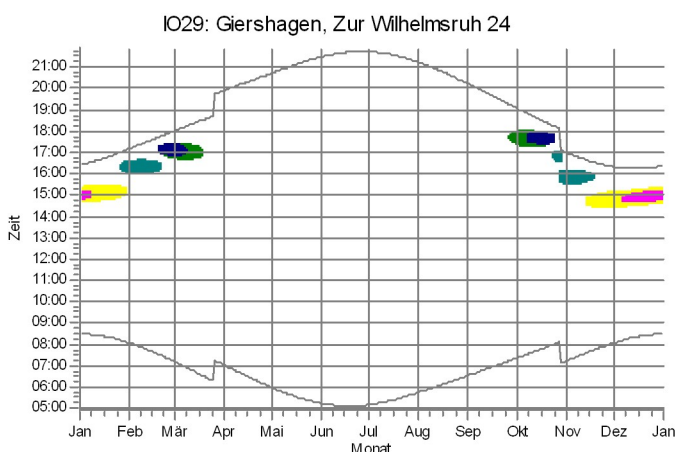
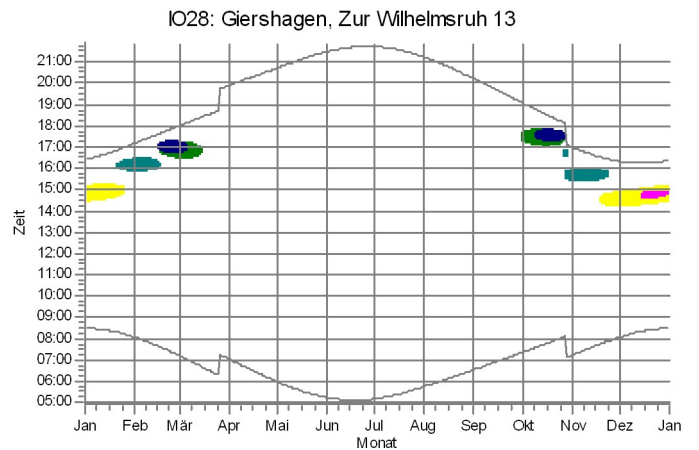
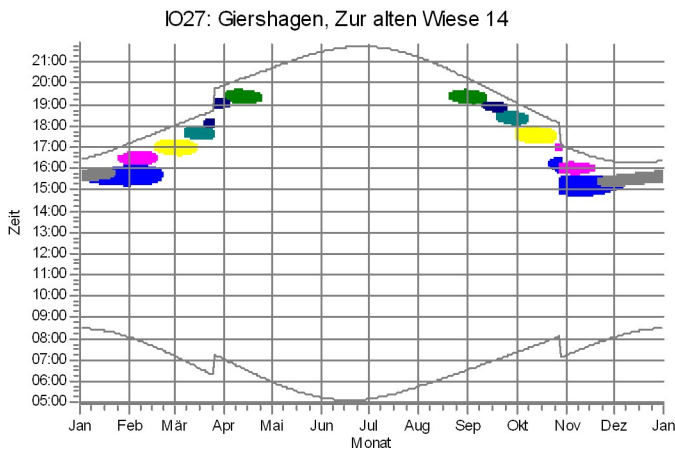
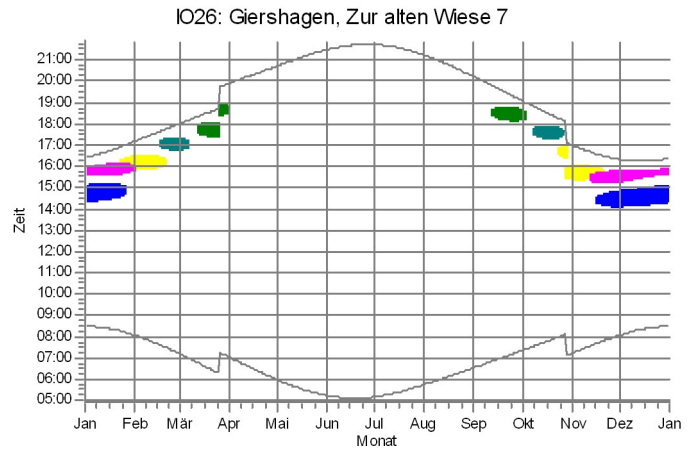
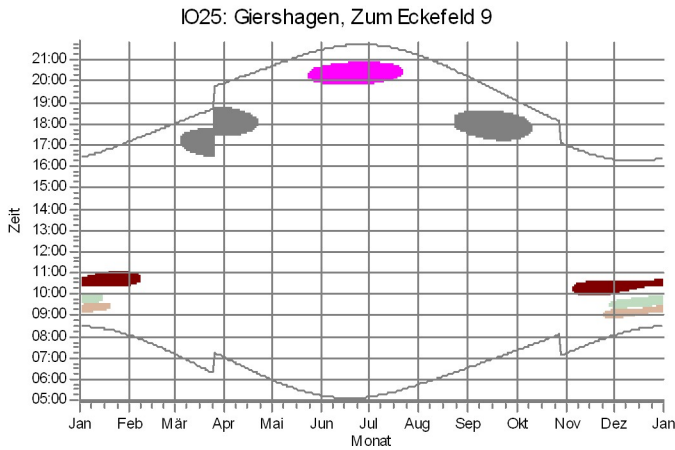
Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



## SHADOW - Grafischer Kalender

Berechnung: 2024-10 Giershagen GB



### WEA

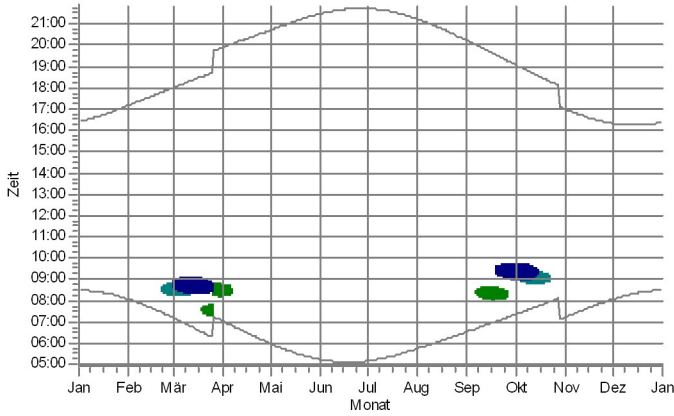
- WEA01: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (9)
- WEA02: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (10)
- WEA03: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (11)
- WEA04: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (12)
- WEA05: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (13)

- WEA06: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (14)
- WEA07: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (15)
- E824350: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (641)
- E824356: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (643)
- E824359: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (645)

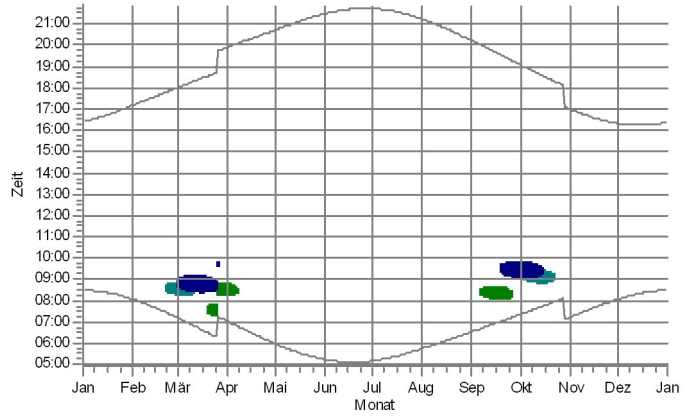
## SHADOW - Grafischer Kalender

Berechnung: 2024-10 Giershagen GB

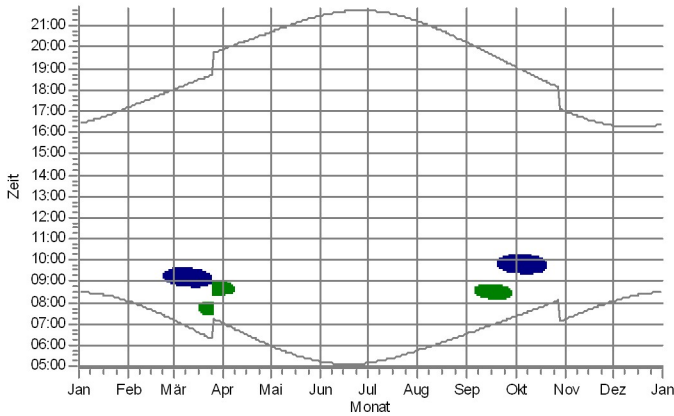
IO31: Padberg, Niedermühle 8





IO32: Padberg, Niedermühle 12



IO33: Padberg, Niedermühle 16



### WEA

-  WEA01: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (9)
-  WEA06: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (14)

-  WEA07: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (15)





SHADOW - Kalender pro WEA

Berechnung: 2024-10 Giershagen GB WEA: WEA01 - ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (9)  
Annahmen für Schattenwurfberechnung Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
Jan Feb Mar Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor  
N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Table with 12 columns (Januar to Dezember) and 120 rows of hourly data. Columns contain start/end times in HH:MM format. Last row summarizes 'Sonnenscheinstunden' (277) and 'Anzahl Minuten mit Schatten' (767).

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

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





# SHADOW - Kalender pro WEA

Berechnung: 2024-10 Giershagen GB WEA: WEA02 - ENERCON E-175 EP5 6000 175.0 !O! NH: 162.0 m (Ges:249.5 m) (10)  
 Annahmen für Schattenwurfberechnung  
 Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
 Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
 1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor  
 N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
 329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
 Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:28 14:31-15:39/68 16:24	08:03 15:14-16:32/78 17:10	07:12 16:12-17:28/76 18:00	07:02 18:08-19:19/71 19:53	05:58 20:43 21:28	05:13 21:43 21:13	05:10 21:13 21:13	05:45 21:13 21:13	06:33 18:27-18:28/1 20:13 18:43-19:11/28	07:21 17:29-18:02/33 19:05 18:11-18:21/10	07:13 15:02-16:24/82 16:59	08:03 14:19-15:36/77 16:19
2	08:28 14:32-15:40/68 16:25	08:03 15:16-16:34/78 17:12	07:09 16:29-17:28/59 18:02	07:00 18:08-19:19/71 19:55	05:57 20:45 21:29	05:13 21:43 21:13	05:10 21:13 21:13	05:46 21:13 21:12	06:35 18:19-18:35/16 20:11 18:41-19:11/30	07:22 17:27-18:02/35 19:02	07:15 15:02-16:22/80 16:57	08:05 14:19-15:35/76 16:18
3	08:28 14:31-15:40/69 16:26	08:00 15:18-16:36/78 17:13	07:07 16:31-17:29/58 18:04	06:58 18:08-19:19/71 19:57	05:55 20:46 21:31	05:11 21:43 21:10	05:10 21:10 21:10	05:48 21:10 21:10	06:36 18:16-18:38/22 20:08 18:40-19:12/32	07:24 17:25-18:03/38 19:00	07:17 15:02-16:20/78 16:56	08:06 14:19-15:34/75 16:18
4	08:28 14:32-15:41/69 16:27	07:59 15:25-16:39/74 17:15	07:05 16:32-17:28/56 18:06	06:56 18:09-19:19/70 19:58	05:53 20:48 21:32	05:12 21:42 21:08	05:10 21:08 21:08	05:49 21:08 21:08	06:38 18:12-19:12/60 20:06	07:26 17:23-18:04/41 19:50	07:18 15:02-16:18/76 16:54	08:08 14:19-15:33/74 16:17
5	08:28 14:33-15:43/70 16:28	07:57 15:28-16:40/72 17:17	07:03 16:34-17:28/54 18:08	06:53 18:10-19:19/69 20:00	05:51 20:50 21:33	05:10 21:42 21:07	05:10 21:07 21:07	05:51 21:07 21:07	06:39 18:10-19:13/63 20:04	07:27 17:20-18:04/44 18:56	07:20 15:01-16:15/74 16:52	08:09 14:19-15:32/73 16:17
6	08:27 14:34-15:45/71 16:29	07:56 15:29-16:42/73 17:19	07:01 16:36-17:28/52 18:09	06:51 18:10-19:17/67 20:02	05:49 20:51 21:34	05:10 21:41 21:05	05:10 21:05 21:05	05:54 21:05 21:05	06:41 18:08-19:13/65 20:02	07:29 17:19-18:04/45 18:53	07:22 15:00-16:13/73 16:50	08:10 14:20-15:31/71 16:16
7	08:27 14:34-15:45/71 16:30	07:54 15:32-16:45/73 18:11	06:59 16:38-17:28/50 18:11	06:49 18:11-19:17/66 20:03	05:47 20:50 21:35	05:11 21:41 21:03	05:11 21:03 21:03	05:54 21:03 21:03	06:42 18:07-19:13/66 20:04	07:31 17:17-18:04/47 18:51	07:24 15:08-16:11/73 16:49	08:11 14:20-15:30/70 16:16
8	08:27 14:34-15:46/72 16:32	07:52 15:32-16:47/75 18:13	06:56 16:40-17:27/47 18:13	06:47 18:12-19:16/64 20:05	05:46 20:55 21:35	05:15 21:40 21:01	05:15 21:01 21:01	05:55 21:01 21:01	06:44 18:05-19:13/68 20:02	07:32 17:14-18:03/49 18:53	07:25 14:57-16:09/72 16:50	08:13 14:20-15:30/70 16:16
9	08:26 14:35-15:49/74 16:33	07:51 15:32-16:49/77 18:14	06:54 16:42-17:27/45 18:14	06:44 18:14-19:16/62 20:07	05:44 20:58 21:36	05:16 21:40 21:00	05:16 21:00 21:00	05:57 21:00 21:00	06:46 18:04-19:13/69 20:04	07:34 17:12-18:04/52 18:47	07:27 14:51-16:08/77 16:45	08:14 14:21-15:30/69 16:15
10	08:26 14:36-15:50/74 16:34	07:49 15:32-16:52/80 18:16	06:52 16:43-17:27/44 18:16	06:42 18:16-19:15/59 20:08	05:42 20:58 21:37	05:17 21:40 21:01	05:17 21:01 21:01	05:58 21:01 21:01	06:47 18:02-19:12/70 20:05	07:36 17:09-18:03/54 18:44	07:29 14:48-16:06/78 16:41	08:15 14:21-15:30/69 16:15
11	08:25 14:36-15:51/75 16:36	07:47 15:32-16:53/81 18:18	06:50 16:45-17:26/41 18:18	06:40 18:19-18:38/19 20:10	05:41 20:59 21:38	05:18 21:38 21:06	05:18 21:06 21:06	05:58 21:06 21:06	06:49 18:01-19:12/71 20:05	07:37 17:07-18:02/55 18:42	07:31 14:46-16:04/78 16:42	08:16 14:21-15:30/69 16:15
12	08:25 14:37-15:53/76 16:37	07:45 15:32-16:56/84 18:20	06:48 16:46-17:24/38 18:20	06:38 18:22-18:33/11 21:01	05:39 20:58 21:37	05:19 21:37 21:04	05:19 21:04 21:04	06:01 21:04 21:04	06:50 18:01-19:12/71 20:06	07:39 17:04-18:02/58 18:44	07:33 14:44-16:03/79 16:41	08:17 14:21-15:29/68 16:14
13	08:24 14:38-15:55/77 16:38	07:43 15:32-16:58/86 18:21	06:45 16:48-17:23/35 18:21	06:36 18:43-19:10/27 21:02	05:37 20:56 21:39	05:20 21:37 21:03	05:20 21:03 21:03	06:03 21:03 21:03	06:52 18:00-19:11/71 20:06	07:41 17:02-18:02/60 18:38	07:34 14:43-16:01/78 16:39	08:18 14:22-15:29/67 16:14
14	08:23 14:38-15:56/78 16:40	07:42 15:32-17:00/88 18:23	06:43 16:49-17:22/33 18:23	06:33 18:45-19:08/23 20:15	05:36 21:04 21:40	05:21 21:36 21:04	05:21 21:04 21:04	06:04 21:04 21:04	06:54 17:59-19:10/71 20:06	07:42 17:00-18:01/61 18:36	07:36 14:42-15:59/77 16:38	08:19 14:22-15:29/67 16:14
15	08:23 14:39-15:57/78 16:41	07:40 15:33-17:02/89 18:25	06:41 17:26-17:46/20 18:25	06:31 18:47-19:06/19 20:17	05:34 21:05 21:40	05:22 21:35 21:04	05:22 21:04 21:04	06:06 21:04 21:04	06:55 17:58-19:09/71 20:06	07:44 16:41-17:59/78 18:33	07:38 14:37-15:56/79 16:36	08:20 14:23-15:29/66 16:14
16	08:22 14:40-16:00/80 16:43	07:38 15:33-17:04/91 18:26	06:39 17:22-17:48/26 18:26	06:29 18:50-19:03/13 21:07	05:33 21:05 21:41	05:23 21:34 21:04	05:23 21:04 21:04	06:08 21:04 21:04	06:57 17:58-19:08/70 20:06	07:46 16:38-17:58/80 18:31	07:39 14:34-15:55/81 16:35	08:21 14:23-15:29/66 16:14
17	08:21 14:41-16:02/81 16:44	07:36 15:34-17:05/91 18:29	06:36 17:20-17:50/30 18:29	06:27 19:50-19:03/13 21:08	05:31 21:08 21:42	05:06 21:33 21:04	05:06 21:04 21:04	06:09 21:04 21:04	06:58 17:57-19:06/69 20:06	07:47 16:29-17:57/97 18:29	07:41 14:32-15:54/82 16:34	08:22 14:24-15:29/65 16:15
18	08:20 14:42-16:02/81 16:46	07:34 15:35-17:06/91 18:30	06:34 17:18-17:52/34 18:30	06:25 18:30-17:12/15 20:22	05:30 21:10 21:42	05:25 21:32 21:02	05:25 21:02 21:02	06:11 21:02 21:02	07:00 17:57-19:05/68 20:07	07:49 16:17-17:56/99 18:27	07:43 14:30-15:52/82 16:32	08:23 14:25-15:28/63 16:15
19	08:19 14:43-16:06/83 16:48	07:32 15:35-17:09/94 18:32	06:32 17:16-17:52/36 18:32	06:23 18:30-17:12/15 20:23	05:28 21:11 21:42	05:12 21:31 21:04	05:12 21:04 21:04	06:12 21:04 21:04	07:02 17:56-19:02/66 20:07	07:51 16:14-17:54/100 18:25	07:45 14:29-15:51/82 16:31	08:23 14:24-15:29/65 16:15
20	08:18 14:45-16:08/83 16:49	07:30 15:37-17:12/95 18:33	06:30 17:15-17:53/38 18:33	06:21 18:33-17:12/15 20:25	05:27 21:13 21:43	05:10 21:30 21:03	05:10 21:03 21:03	06:14 21:03 21:03	07:03 17:57-19:00/63 20:08	07:52 16:11-17:50/99 18:23	07:46 14:26-15:49/83 16:30	08:24 14:25-15:29/64 16:15
21	08:17 14:46-16:10/84 16:51	07:28 15:38-17:14/96 18:35	06:27 17:14-17:54/40 18:35	06:18 20:27 21:14	05:26 21:14 21:43	05:16 21:29 21:06	05:16 21:06 21:06	06:16 21:06 21:06	07:05 17:57-18:58/61 20:07	07:54 16:10-17:47/97 18:21	07:48 14:24-15:48/84 16:29	08:25 14:25-15:29/64 16:16
22	08:16 14:47-16:11/84 16:52	07:26 15:39-17:15/96 18:37	06:25 17:12-17:54/42 18:37	06:16 20:28 21:16	05:24 21:16 21:43	05:11 21:27 21:04	05:11 21:04 21:04	06:17 21:04 21:04	07:06 17:57-18:40/43 20:08	07:56 16:08-17:44/96 18:19	07:49 14:22-15:46/84 16:27	08:25 14:26-15:30/64 16:16
23	08:15 14:50-16:13/83 16:54	07:24 15:41-17:19/98 18:50	06:23 17:11-17:55/44 18:50	06:14 20:30 21:17	05:23 21:17 21:43	05:12 21:26 21:03	05:12 21:03 21:03	06:19 21:03 21:03	07:08 17:58-18:40/42 20:09	07:58 16:07-17:43/96 18:17	07:51 14:21-15:45/84 16:26	08:26 14:26-15:30/64 16:17
24	08:14 14:53-16:15/82 16:56	07:22 15:43-17:22/99 18:40	06:20 17:11-18:12/61 18:40	06:12 20:32 21:18	05:22 21:18 21:44	05:10 21:25 21:02	05:10 21:02 21:02	06:20 21:02 21:02	07:09 17:57-18:38/41 20:11	07:59 16:06-17:41/95 18:15	07:53 14:21-15:44/83 16:25	08:27 14:27-15:31/64 16:17
25	08:13 14:55-16:17/82 16:58	07:20 15:45-17:24/99 18:53	06:18 17:10-18:14/64 18:53	06:10 20:33 21:20	05:21 21:20 21:44	05:10 21:24 21:03	05:10 21:03 21:03	06:20 21:03 21:03	07:11 17:58-18:37/39 20:11	08:01 16:05-17:38/93 18:13	07:54 14:20-15:43/83 16:24	08:27 14:27-15:31/64 16:18
26	08:12 14:58-16:20/82 16:59	07:18 15:48-17:26/98 18:55	06:16 18:09-19:15/66 18:55	06:08 20:35 21:21	05:19 21:21 21:44	05:06 21:22 21:06	05:06 21:06 21:06	06:23 21:06 21:06	07:13 17:59-18:35/36 20:08	08:03 16:05-17:35/90 18:11	07:56 14:19-15:41/82 16:23	08:27 14:27-15:32/65 16:18
27	08:10 15:01-16:21/80 17:01	07:16 16:06-17:26/80 18:57	06:14 18:09-19:17/68 18:57	06:06 20:37 21:22	05:18 21:22 21:44	05:07 21:21 21:04	05:07 21:04 21:04	06:25 21:04 21:04	07:14 18:00-18:33/33 20:11	08:04 16:03-17:34/91 18:09	07:57 14:19-15:40/81 16:22	08:27 14:29-15:33/64 16:19
28	08:09 15:03-16:23/80 17:03	07:14 16:08-17:27/79 18:59	06:11 18:09-19:18/69 19:47	06:04 20:38 21:24	05:17 21:24 21:44	05:09 21:27 21:09	05:09 21:09 21:09	06:25 21:09 21:09	07:16 18:02-18:31/29 20:11	08:06 16:03-17:32/89 18:07	07:59 14:19-15:39/80 16:21	08:28 14:29-15:34/65 16:20
29	08:08 15:07-16:26/79 17:05	07:09 18:08-19:18/70 19:48	06:02 19:48 20:40	06:02 20:40 21:25	05:16 21:25 21:44	05:08 21:18 21:09	05:08 21:09 21:09	06:25 21:09 21:09	07:18 18:03-18:28/25 20:19	07:08 15:02-16:30/88 17:05	08:00 14:19-15:36/77 16:21	08:28 14:29-15:35/66 16:21
30	08:06 15:10-16:28/78 17:06	07:07 18:08-19:18/70 19:50	06:00 20:42 21:26	06:00 21:26 21:43	05:15 21:26 21:43	05:09 21:16 21:06	05:09 21:06 21:06	06:25 21:06 21:06	07:19 18:06-18:25/19 20:19	07:10 15:02-16:28/86 17:03	08:02 14:19-15:36/77 16:20	08:28 14:30-15:36/66 16:21
31	08:05 15:12-16:30/78 17:08	07:05 18:08-19:19/71 19:52	06:00 20:42 21:26	06:00 21:26 21:43	05:14 21:27 21:44	05:10 21:15 21:05	05:10 21:05 21:05	06:25 21:05 21:05	07:05 18:08-19:19/71 20:15	07:11 15:02-16:26/84 		



# SHADOW - Kalender pro WEA

Berechnung: 2024-10 Giershagen GB WEA: WEA03 - ENERCON E-175 EP5 6000 175.0 !O! NH: 162.0 m (Ges:249.5 m) (11)  
 Annahmen für Schattenwurfberechnung  
 Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
 Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
 1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

## Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
 329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
 Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:28 13:12-15:34/142 16:24	08:03 14:56-16:19/83	07:12 15:32-16:42/70	07:02 17:43-18:26/43	05:58 20:43	05:13 05:10	05:05 05:45	06:33	07:21 16:13-17:17/64	07:13 14:46-15:53/67	08:03 13:01-15:29/148	
2	08:28 13:13-15:35/142 16:25	08:02 14:58-16:20/82	07:09 15:31-16:42/71	07:00 17:43-18:23/40	05:56 20:45	05:12 05:10	05:05 05:46	06:35	07:22 16:11-17:17/66	07:15 14:44-15:52/68	08:05 13:01-15:29/148	
3	08:28 13:13-15:35/142 16:26	08:00 14:59-16:20/81	07:07 15:31-16:43/72	06:58 17:45-18:21/36	05:55 20:45	05:12 05:11	05:07 05:47	06:36	07:24 16:10-17:18/68	07:17 14:42-15:52/70	08:06 13:01-15:28/147	
4	08:28 13:13-15:37/144 16:27	07:59 15:01-16:21/80	07:05 15:30-16:42/72	06:56 17:47-18:19/32	05:53 20:46	05:11 05:12	05:09 05:48	06:38	07:26 16:09-17:18/69	07:18 14:41-15:52/71	08:08 13:01-15:27/146	
5	08:28 13:14-15:38/144 16:28	07:57 15:03-16:21/78	07:03 15:30-16:42/72	06:53 17:50-18:17/27	05:51 20:50	05:10 05:12	05:05 05:49	06:39	07:27 16:08-17:17/69	07:20 14:38-15:51/73	08:09 13:00-15:26/146	
6	08:27 13:14-15:38/144 16:29	07:56 15:05-16:21/76	07:01 15:31-16:42/71	06:51 17:52-18:13/21	05:49 20:51	05:10 05:13	05:05 05:52	06:41	07:29 16:07-17:18/71	07:22 14:36-15:51/75	08:10 13:01-15:26/145	
7	08:27 13:15-15:40/145 16:30	07:54 15:07-16:21/74	06:59 15:31-16:42/71	06:49 17:57-18:08/11	05:47 20:52	05:09 05:14	05:04 06:42	06:42	07:31 16:07-17:18/71	07:24 14:34-15:51/77	08:11 13:01-15:25/144	
8	08:27 13:16-15:40/144 16:32	07:52 15:10-16:22/72	06:56 15:30-16:41/71	06:47 20:53	05:46 20:53	05:09 05:15	05:05 05:55	06:44	07:32 16:06-17:17/71	07:25 14:32-15:51/79	08:12 13:01-15:25/144	
9	08:26 13:17-15:43/146 16:33	07:51 15:12-16:22/70	06:54 15:30-16:41/71	06:44 20:54	05:45 20:56	05:08 05:16	05:07 06:46	06:45	07:33 16:06-17:17/71	07:27 14:31-15:51/80	08:14 13:02-15:25/143	
10	08:26 13:17-15:44/147 16:34	07:49 15:14-16:22/68	06:52 15:31-16:40/69	06:42 20:55	05:44 20:58	05:08 05:17	05:08 06:47	06:47	07:34 16:06-17:17/71	07:29 14:29-15:51/82	08:15 13:02-15:25/143	
11	08:25 13:18-15:45/147 16:36	07:47 15:15-16:22/67	06:50 15:31-16:40/69	06:40 20:56	05:43 20:59	05:07 05:18	06:00 06:49	06:49	07:35 16:04-17:16/72	07:31 14:28-15:50/82	08:16 13:02-15:25/143	
12	08:25 13:19-15:48/149 16:37	07:45 15:17-16:25/68	06:48 15:31-16:39/68	06:38 20:57	05:42 21:01	05:07 05:19	06:01 06:50	06:50	07:36 16:05-17:16/71	07:32 14:27-15:50/83	08:17 13:02-15:25/143	
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14	08:23 13:20-15:50/150 16:40	07:42 15:21-16:29/68	06:43 15:33-16:38/65	06:33 21:02	05:40 21:17	05:06 05:21	06:04 06:54	06:54	07:38 16:04-17:17/71	07:36 14:25-15:50/84	08:19 13:03-15:25/142	
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31	08:05 14:54-16:18/84 17:08	07:05 17:41-18:27/46	06:04 19:52	06:00 21:19	05:23 23:46	05:06 05:43	06:31 07:19	07:19	07:55 16:04-17:16/71	07:53 14:08-15:50/84	08:36 13:15-15:27/139	
Sonnenscheinstunden	260	277	366	413	482	496	500	454	382	304	269	247
Anzahl Minuten mit Schatten	4515	2048	3003	210	0	0	0	0	1744	2665	3624	4404

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)    Schattende/Minuten mit Schatten  
 Sonnenuntergang (SS:MM)    Zeitpunkt (SS:MM)    Schattenanfang-Zeitpunkt (SS:MM)    Schattende/Minuten mit Schatten





## SHADOW - Kalender pro WEA

Berechnung: 2024-10 Giershagen GB WEA: WEA04 - ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges.:249.5 m) (12)  
 Annahmen für Schattenwurfberechnung  
 Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
 Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
 1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

### Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
 329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
 Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:28 15:26-15:52/26	08:03 15:51-16:12/21	07:12 18:01	07:02 17:30-18:42/72	05:58 19:34-19:55/21	05:13 20:13	05:10 21:13	05:45 20:13	06:33 17:36-18:30/54	07:21 17:22-18:19/57	07:13 15:52-16:12/20	08:03 15:12-15:48/36
2	16:24 15:04-15:13/9	17:10 16:19-16:43/24	18:01 07:09	07:00 17:30-18:40/70	05:57 19:36-19:53/17	05:13 20:13	05:10 20:46	05:45 20:11	06:35 17:34-18:31/57	07:22 17:23-18:17/54	07:15 15:51-16:14/23	08:05 15:13-15:48/35
3	16:25 15:05-15:13/8	17:12 16:18-16:44/26	18:02 07:07	19:55 17:30-18:40/70	20:45 05:55 19:37-19:51/14	21:29 20:13	21:12 05:12 05:11	05:48 20:08	06:36 17:33-18:32/59	07:24 17:24-18:15/51	07:17 15:51-16:15/24	08:06 15:13-15:47/34
4	16:26 15:07-15:11/4	17:14 16:18-16:45/27	18:04 07:05	19:57 17:31-18:40/69	20:46 05:53 19:40-19:48/8	21:31 21:43	21:10 05:11 05:12	05:49 20:06	06:38 17:31-18:32/61	07:26 17:26-18:13/47	07:18 15:50-16:15/25	08:08 15:14-15:47/33
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37	16:59 17:50 16:46-17:13/21	17:50 16:46-17:13/21	18:40 07:01	20:33 17:56-18:58/112	21:18 05:59	22:03 21:59	20:52 05:06 05:44	06:27 19:18-20:05/47	06:59 17:18-18:32/73	08:09 18:09-18:24/16	07:55 15:40-15:67/67	08:43 15:40-15:46/6
38	17:00 17:51 16:47-17:14/19	17:51 16:47-17:14/19	18:41 07:01	20:34 17:57-18:59/114	21:19 05:59	22:04 22:00	20:52 05:06 05:45	06:28 19:17-20:05/48	06:59 17:18-18:32/73	08:10 18:10-18:25/16	07:56 15:41-15:68/69	08:44 15:41-15:46/5
39	17:01 17:52 16:48-17:15/17	17:52 16:48-17:15/17	18:42 07:01	20:35 17:58-19:00/116	21:20 05:59	22:05 22:01	20:52 05:06 05:46	06:29 19:16-20:05/49	06:59 17:18-18:32/73	08:11 18:11-18:26/16	07:57 15:42-15:69/71	08:45 15:42-15:46/4
40	17:02 17:53 16:49-17:16/15	17:53 16:49-17:16/15	18:43 07:01	20:36 17:59-19:01/118	21:21 05:59	22:06 22:02	20:52 05:06 05:47	06:30 19:15-20:05/50	06:59 17:18-18:32/73	08:12 18:12-18:27/16	07:58 15:43-15:70/73	08:46 15:43-15:46/3
41												

Projekt: Giershagen  
 Beschreibung: 2024-11-Anhang  
 Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-LF

Lizenzierter Anwender:  
 anemos GmbH für Umweltmeteorologie mbH  
 Böhmsholzer Weg 3  
 DE-21391 Reppenstedt  
 49(0)4131-8308-100  
 Daniel Baudach / daniel.baudach@anemos.de  
 Berechnet:  
 25.10.2024 09:02/4.0.540



## SHADOW - Kalender pro WEA

Berechnung: 2024-10 Giershagen GB WEA: WEA05 - ENERCON E-175 EP5 6000 175.0 !OI! NH: 162.0 m (Ges:249.5 m) (13)  
 Annahmen für Schattenwurfberechnung  
 Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
 Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
 1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor  
 N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
 329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
 Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:28 14:51-15:52/61	08:03 15:46-16:43/57	07:12 16:39-17:35/56	07:02 18:01	05:58 19:53	05:13 20:00-20:51/51	05:10 21:43	05:45 20:44-20:46/2	06:33 07:21	07:13 15:45-16:29/44	08:03 14:51-15:48/57	
2	16:24	17:10	18:01	19:53	20:43	21:28	21:43	21:13	20:13	19:05	16:19	
3	08:28 14:52-15:54/62	08:02 15:48-16:44/56	07:09 16:40-17:04/24	07:00 05:57	05:57 05:57	05:13 19:59-20:50/51	05:10 19:59-20:55/56	05:46 05:46	06:35 07:22 17:54-18:00/6	07:15 15:43-16:23/40	08:05 14:50-15:48/58	
4	16:25	17:12	18:02 17:06-17:35/29	19:55 20:45	21:29	21:43	21:12	21:08	20:11 19:02	16:57	16:18	
5	08:28 14:53-15:54/61	08:00 15:49-16:46/57	07:07 16:42-17:03/21	06:58 05:55	05:55 05:55	05:12 19:58-20:50/52	05:11 19:59-20:55/56	05:48 05:48	06:36 07:24 17:50-18:04/14	07:17 15:41-16:23/42	08:06 14:49-15:48/59	
6	16:26	17:14	18:04 17:06-17:34/30	19:57 20:46	21:31	21:43	21:10	21:08	20:08 19:00	16:57	16:18	
7	08:28 14:55-15:55/60	07:59 15:52-16:49/57	07:05 16:43-17:00/17	06:56 05:53	05:53 05:53	05:11 19:58-20:51/53	05:12 20:00-20:56/56	05:49 05:49	06:38 07:26 17:47-18:06/19	07:18 15:39-16:23/44	08:08 14:48-15:47/59	
8	16:27	17:15	18:06 17:05-17:35/30	19:58 20:48	21:32	21:42	21:08	21:08	20:06 18:58	16:54	16:17	
9	08:28 14:56-15:57/61	07:57 16:02-16:50/48	07:03 16:47-16:56/9	06:53 05:51	05:51 05:51	05:10 19:57-20:50/53	05:12 20:01-20:56/55	05:51 05:51	06:39 07:27 17:44-18:07/22	07:20 15:36-16:22/46	08:09 14:48-15:46/58	
10	16:28	17:17	18:08 17:05-17:34/29	20:00 20:00	20:50 20:50	21:33	21:42	21:07	20:04 18:56	16:52	16:17	
11	08:27 14:57-15:58/61	07:56 16:04-16:52/48	07:01 17:05-17:34/29	06:51 05:49	05:49 05:49	05:10 19:57-20:51/54	05:13 20:02-20:57/55	05:52 05:52	06:41 07:29 17:44-18:08/24	07:22 15:34-16:22/48	08:10 14:48-15:46/58	
12	16:29	17:19	18:09 20:02	20:02 20:02	20:51 20:51	21:34	21:41	21:05	20:02 18:53	16:50	16:16	
13	08:27 15:00-15:59/59	07:54 16:06-16:52/46	06:59 17:06-17:34/28	06:49 05:47	05:47 05:47	05:09 19:56-20:50/54	05:14 20:02-20:56/54	05:54 05:54	06:42 07:31 17:43-18:09/26	07:24 15:33-16:21/48	08:11 14:45-15:45/60	
14	16:30	17:21	18:11 20:03	20:03 20:03	20:53 20:53	21:34	21:41	21:03	19:59 18:51	16:49	16:16	
15	08:27 15:03-16:00/57	07:52 16:09-16:53/44	06:56 17:06-17:32/26	06:47 05:46	05:46 05:46	05:09 19:56-20:51/55	05:15 20:03-20:57/54	05:55 05:55	06:44 07:32 17:41-18:09/28	07:26 15:24-16:19/55	08:13 14:44-15:44/60	
16	16:32	17:23	18:13 20:05	20:05 20:05	21:35 21:35	21:35	21:40	21:01	19:57 18:49	16:47	16:15	
17	08:26 15:04-16:02/58	07:51 16:11-16:54/43	06:54 17:07-17:31/24	06:44 05:44	05:44 05:44	05:08 19:55-20:50/55	05:16 20:04-20:57/53	05:57 05:57	06:46 07:34 17:40-18:09/29	07:27 15:21-16:18/57	08:14 14:44-15:44/60	
18	16:33	17:24	18:14 20:07	20:07 20:07	21:36 21:36	21:40	21:40	21:00	19:55 18:47	16:45	16:15	
19	08:26 15:05-16:03/58	07:49 16:13-16:54/41	06:52 17:08-17:30/22	06:42 05:42	05:42 05:42	05:08 19:55-20:51/56	05:17 20:05-20:58/53	05:58 05:58	06:47 07:36 17:22-17:31/9	07:29 15:19-16:16/57	08:15 14:43-15:44/61	
20	16:34	17:26	18:16 20:08	20:08 20:08	21:37 21:37	21:37	21:39	20:58	19:53 18:44 17:40-18:10/30	16:44	16:15	
21	08:25 15:06-16:05/59	07:47 16:15-16:58/43	06:50 17:09-17:28/19	06:40 05:41	05:41 05:41	05:07 19:55-20:51/56	05:18 20:06-20:58/52	06:00 06:00	06:49 07:37 17:17-17:34/17	07:31 15:18-16:14/56	08:16 14:42-15:43/61	
22	16:36	17:28	18:18 20:10	20:10 20:10	20:59 20:59	21:38 21:38	21:38	20:56	19:50 18:42 17:39-18:09/30	16:42	16:15	
23	08:25 15:09-16:07/58	07:45 16:17-17:01/44	06:48 17:11-17:25/14	06:38 05:39	05:39 05:39	05:07 19:54-20:50/56	05:19 20:07-20:58/51	06:01 06:01	06:50 07:39 17:15-17:36/21	07:33 15:16-16:13/57	08:17 14:42-15:43/61	
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35	08:20 15:20-16:16/56	07:34 16:27-17:08/41	06:34 17:13-17:27/14	06:25 05:30 20:25-20:42/17	05:30 05:30	05:06 19:55-20:51/56	05:25 20:16-20:59/43	06:11 06:11	07:00 07:49 17:08-17:41/33	07:43 14:59-16:03/64	08:23 14:41-15:43/62	
36	16:46	17:41	18:30 20:22	20:22 21:10	21:10 21:10	21:42 21:42	21:32	20:42	19:34 18:27 17:42-18:01/19	16:32	16:15	
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38	16:48	17:43	18:32 20:23	20:23 21:11	21:11 21:11	21:42 21:42	21:31	20:40	19:32 18:25 17:43-18:01/19	16:31	16:15	
39	08:18 15:21-16:20/59	07:30 16:33-17:09/36	06:30 17:14-17:28/14	06:21 05:27 20:24-20:45/21	05:27 05:27	05:06 19:55-20:51/56	05:28 20:24-20:31/7	06:14 06:14	07:03 07:52 17:07-17:40/33	07:46 14:59-16:01/62	08:24 14:41-15:44/63	
40	16:49	17:44	18:33 20:25	20:25 21:13	21:13 21:13	21:43 21:43	21:30 20:32-21:00/28	20:38 20:38	19:30 18:23 17:44-17:56/12	16:30	16:15	
41	08:17 15:22-16:22/60	07:28 16:36-17:10/34	06:27 17:11-17:25/14	06:18 05:26 20:23-20:46/23	05:26 05:26	05:06 19:55-20:51/56	05:29 20:32-20:59/27	06:16 06:16	07:05 07:54 17:07-17:40/33	07:48 14:58-16:00/62	08:25 14:41-15:44/63	
42	16:51	17:46	18:35 20:27	20:27 21:14	21:14 21:14	21:43 21:43	21:29	20:36	19:27 18:21 17:47-17:54/7	16:29	16:16	
43	08:16 15:22-16:23/61	07:26 16:36-17:10/34	06:25 17:12-17:26/14	06:16 05:24 20:23-20:47/24	05:24 05:24	05:06 19:55-20:51/56	05:31 20:32-20:59/27	06:17 06:17	07:06 07:56 17:07-17:40/33	07:49 14:57-15:58/61	08:25 14:42-15:44/62	
44	16:53	17:48 17:18-17:24/6	18:37 20:28	20:28 21:16	21:16 21:16	21:43 21:43	21:27	20:34	19:25 18:19 17:40-18:10/30	16:27	16:16	
45	08:15 15:23-16:25/62	07:24 16:36-17:10/34	06:23 17:13-17:27/14	06:14 05:23 20:22-20:49/27	05:23 05:23	05:06 19:56-20:52/56	05:32 20:33-20:57/24	06:19 06:19	07:08 07:58 17:07-17:40/33	07:51 14:58-15:57/59	08:26 14:42-15:44/62	
46	16:54	17:50 17:14-17:26/12	18:38 20:30	20:30 21:17	21:17 21:17	21:43 21:43	21:26	20:32	19:23 18:17 17:40-18:10/30	16:26	16:17	
47	08:14 15:25-16:27/62	07:22 16:36-17:10/34	06:20 17:14-17:28/14	06:12 05:22 20:22-20:49/27	05:22 05:22	05:07 19:56-20:52/56	05:33 20:34-20:57/23	06:20 06:20	07:10 07:59 17:00-17:40/40	07:53 14:58-15:56/58	08:26 14:43-15:46/63	
48	16:56	17:52 17:12-17:28/16	18:40 20:32	20:32 21:18	21:18 21:18	21:44 21:44	21:25	20:30	19:21 18:15 17:40-18:10/30	16:25	16:17	
49	08:13 15:25-16:29/64	07:20 16:37-17:09/32	06:18 17:13-17:27/14	06:10 05:21 20:14-20:21/7	05:21 05:21	05:07 19:56-20:52/56	05:35 20:34-20:55/21	06:22 06:22	07:11 08:01 16:58-17:39/41	07:54 14:58-15:55/57	08:27 14:43-15:46/63	
50	16:58	17:53 17:11-17:30/19	18:42 20:33	20:33 21:20 20:22-20:50/28	21:20 21:20	21:44 21:44	21:24	20:28	19:18 18:13 17:40-18:10/30	16:24	16:18	
51	08:12 15:27-16:31/64	07:18 16:37-17:32/55	07:16 17:13-17:27/14	06:08 05:19 20:10-20:50/40	05:19 05:19	05:07 19:57-20:53/56	05:36 20:34-20:54/20	06:23 06:23	07:13 08:03 16:55-17:38/43	07:56 14:57-15:53/56	08:27 14:44-15:46/62	
52	16:59	17:55 17:15-17:33/56	18:43 20:35	20:35 21:21	21:21 21:21	21:44 21:44	21:22	2				



# SHADOW - Kalender pro WEA

Berechnung: 2024-10 Giershagen GB WEA: WEA06 - ENERCON E-175 EP5 6000 175.0 !O! NH: 162.0 m (Ges:249.5 m) (14)  
 Annahmen für Schattenwurfberechnung  
 Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
 Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
 1.58 3.21 3.35 5.03 6.68 5.82 6.26 5.85 4.04 3.08 2.01 1.34

## Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
 329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
 Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:28 16:24 16:25	08:03 17:30 17:12	07:12 18:01 18:02	07:02 18:55 19:30/35	05:58 20:43 20:45	05:13 21:28 21:43	05:10 21:43 21:43	05:45 21:13 21:12	06:33 18:53 19:35/42	07:21 17:35 18:39/64	07:13 15:29 16:27/58	08:03 08:50 09:10/20
31	08:05 17:08 17:08	07:05 19:52 19:52	07:05 18:56 19:23/27	06:00 20:42 20:42	05:15 21:25 21:44	05:09 21:44 21:44	05:09 21:44 21:44	05:09 21:44 21:44	07:19 17:36 18:40/64	07:10 15:31 16:31/60	08:02 08:48 09:10/22	08:28 16:22 16:22
Sonnenscheinstunden 240 277 366 413 482 500 500 454 165 382 1170 2232 269 1231 150												
Anzahl Minuten mit Schatten 800 1663 1718 702 482 0 0 500 165 1170 2232 269 1231 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: Giershagen  
 Beschreibung: 2024-11-Anhang  
 Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L F

Li-zentrierter Anwender:  
 anemos GmbH für Umweltmeteorologie mbH  
 Böhmsholzer Weg 3  
 DE-21391 Reppenstedt  
 49(0)4131-8308-100  
 Daniel Baudach / daniel.baudach@anemos.de  
 Berechnet:  
 25.10.2024 09:02/4.0.540



### SHADOW - Kalender pro WEA

Berechnung: 2024-10 Giershagen GB WEA: WEA07 - ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m) (15)  
 Annahmen für Schattenwurfberechnung  
 Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPPSRINGE]  
 Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
 1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

#### Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
 329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
 Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:28 09:28-09:52/24 16:24	08:03 09:44-09:56/12 17:10	07:12 08:43-09:31/48 18:01 16:50-17:34/44	07:02 08:55-19:21/26 19:53	05:58 05:13 20:43 21:28	05:10 05:10 21:43 21:13	05:45 05:45 21:13	06:33 19:17-19:41/24 20:13	06:33 19:17-19:41/24 20:13	06:33 19:17-19:41/24 20:13	06:33 19:17-19:41/24 20:13	06:33 19:17-19:41/24 20:13
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Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



### SHADOW - Kalender pro WEA

Berechnung: 2024-10 Giershagen GB WEA: E824351 - ENERCON E-82 E2 2300 82.0 !O! NH: 138.4 m (Ges:179.4 m) (642)  
Annahmen für Schattenwurfberechnung  
Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPPSPRINGE]  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

#### Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:28 16:24	08:03 17:10	07:12 18:00	16:27-16:52/25 19:53	07:02 20:43	05:58 21:28	05:13 21:43	05:10 21:13	05:45 21:13	06:33 20:13	07:21 19:05	07:13 16:59
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24	08:14 16:56	07:22 17:52	06:20 18:40	06:12 20:32	05:22 21:18	05:07 21:44	05:33 21:25	06:20 20:30	07:09 19:21	07:59 18:15	16:59-17:25/19 18:15	07:53 16:25
25	08:13 16:58	07:20 17:53	06:18 18:42	06:10 20:33	05:21 21:20	05:07 21:44	05:35 21:23	06:22 20:28	07:11 19:18	08:01 18:13	16:59-17:25/21 18:13	07:54 16:24
26	08:12 16:59	07:18 17:55	06:16 19:43	06:08 20:35	05:19 21:21	05:07 21:44	05:36 21:22	06:23 20:26	07:13 19:16	08:03 18:11	16:59-17:25/21 18:11	07:56 16:23
27	08:10 17:01	07:16 17:57	06:14 19:45	06:06 20:37	05:18 21:22	05:08 21:44	05:37 21:21	06:25 20:24	07:14 19:14	08:04 18:09	16:59-17:25/21 18:09	07:57 16:22
28	08:09 17:03	07:14 17:59	06:11 19:47	06:04 20:38	05:17 21:24	05:08 21:44	05:39 21:19	06:27 20:22	07:16 19:11	08:06 18:07	16:59-17:25/21 18:07	07:59 16:21
29	08:08 17:05	07:14 17:59	06:10 19:48	06:03 20:40	05:16 21:25	05:08 21:43	05:40 21:18	06:28 20:19	07:17 19:09	08:07 17:05	16:59-17:25/21 17:05	08:00 16:21
30	08:06 17:06	07:14 17:59	06:09 19:50	06:00 20:42	05:15 21:26	05:09 21:43	05:42 21:16	06:30 20:17	07:19 19:07	08:10 17:03	16:59-17:25/21 17:03	08:02 16:20
31	08:05 17:08	07:14 17:59	06:08 19:52	06:00 20:42	05:14 21:27	05:09 21:43	05:43 21:15	06:31 20:15	07:19 17:01	08:11 17:01	16:59-17:25/21 17:01	08:02 16:22
Sonnenscheinstunden	260	277	366	413	482	496	500	454	382	334	269	247
Anzahl Minuten mit Schatten	0	146	188	0	0	0	0	0	0	342	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





## SHADOW - Kalender pro WEA

Berechnung: 2024-10 Giershagen GB WEA: E824352 - ENERCON E-82 E2 2300 82.0 !O! NH: 138.4 m (Ges:179.4 m) (644)  
 Annahmen für Schattenwurfberechnung  
 Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPPSPRINGE]  
 Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
 1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

### Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
 329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
 Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:28 16:24	08:03 17:10	15:38-16:01/23 18:00	07:12 19:53	07:02 20:43	05:58 21:28	05:13 21:43	05:10 21:13	05:45 21:13	06:33 20:13	07:21 19:05	07:13 16:59
2	08:28 16:25	08:02 17:12	15:38-16:01/23 18:02	07:09 19:55	07:00 20:45	05:57 21:29	05:13 21:43	05:10 21:12	05:46 20:11	06:35 19:02	07:22 16:57	07:15 16:18
3	08:28 16:26	08:00 17:14	15:38-16:00/22 18:04	07:07 19:57	06:58 20:46	05:55 21:30	05:12 21:42	05:11 21:10	05:48 20:08	06:36 19:00	07:24 16:56	07:17 16:18
4	08:28 16:27	07:59 17:15	15:40-16:00/20 18:06	07:05 19:58	06:56 20:48	05:53 21:31	05:11 21:42	05:12 21:08	05:49 20:06	06:38 18:58	07:26 16:54	15:18-15:20/2 16:17
5	08:28 16:28	07:57 17:17	15:41-15:59/18 18:07	07:03 20:00	06:53 20:50	05:51 21:32	05:10 21:42	05:12 21:07	05:51 20:04	06:39 18:55	07:27 16:52	15:14-15:25/11 16:17
6	08:27 16:29	07:56 17:19	15:42-15:58/16 18:09	07:01 20:02	06:51 20:51	05:49 21:33	05:10 21:41	05:13 21:05	05:52 20:02	06:41 18:53	07:29 16:50	15:12-15:27/15 16:16
7	08:27 16:30	07:54 17:21	15:43-15:56/13 18:11	06:59 20:03	06:49 20:53	05:47 21:34	05:09 21:41	05:14 21:03	05:54 19:59	06:42 18:51	07:31 16:49	15:11-15:28/17 16:16
8	08:27 16:32	07:52 17:23	15:47-15:54/7 18:13	06:56 20:05	06:47 20:54	05:46 21:35	05:09 21:40	05:15 21:01	05:55 19:57	06:44 18:49	07:32 16:47	15:10-15:30/20 16:15
9	08:26 16:33	07:50 17:24	06:54 18:14	06:44 20:07	06:44 20:56	05:44 21:36	05:08 21:40	05:16 21:01	05:57 19:57	06:46 18:49	07:34 16:47	15:09-15:30/21 16:15
10	08:26 16:34	07:49 17:26	06:52 18:16	06:42 20:08	06:42 20:58	05:42 21:37	05:08 21:39	05:17 20:58	05:58 19:53	06:47 18:44	07:35 16:44	15:09-15:31/22 16:15
11	08:25 16:36	07:47 17:28	06:50 18:18	06:40 20:10	06:40 20:59	05:41 21:38	05:07 21:38	05:18 20:56	06:00 19:50	06:49 18:42	07:37 16:42	15:09-15:32/23 16:15
12	08:25 16:37	07:45 17:30	06:48 18:20	06:38 20:12	06:38 21:01	05:39 21:38	05:07 21:37	05:19 20:54	06:01 19:48	06:50 18:40	07:39 16:41	15:09-15:32/23 16:14
13	08:24 16:38	07:43 17:32	06:45 18:21	06:36 20:13	06:36 21:02	05:37 21:39	05:07 21:37	05:20 20:52	06:03 19:46	06:52 18:38	07:40 16:39	15:09-15:33/24 16:14
14	08:23 16:40	07:42 17:33	06:43 18:23	06:33 20:15	06:33 21:04	05:36 21:40	05:06 21:36	05:21 20:50	06:04 19:44	06:54 18:36	07:42 16:36	15:09-15:33/24 16:14
15	08:23 16:41	07:40 17:35	06:41 18:25	06:31 20:17	06:31 21:05	05:34 21:40	05:06 21:35	05:22 20:48	06:06 19:41	06:55 18:33	07:44 16:36	15:08-15:32/24 16:14
16	08:22 16:43	07:38 17:37	06:39 18:26	06:29 20:18	06:29 21:07	05:33 21:41	05:06 21:34	05:23 20:46	06:08 19:39	06:57 18:31	07:46 16:35	15:09-15:32/23 16:15
17	08:21 16:44	07:36 17:39	06:36 18:28	06:27 20:20	06:27 21:08	05:31 21:41	05:06 21:33	05:24 20:44	06:09 19:37	06:58 18:29	07:47 16:34	15:09-15:32/23 16:15
18	08:20 16:46	15:44-15:48/4 17:41	07:34 18:30	06:34 20:22	06:25 21:10	05:30 21:42	05:06 21:32	05:26 20:42	06:11 19:34	07:00 18:27	07:49 16:32	15:10-15:32/22 16:15
19	08:19 16:48	15:41-15:51/10 17:43	07:32 18:32	06:32 20:23	06:23 21:11	05:28 21:42	05:06 21:31	05:27 20:40	06:12 19:32	07:01 18:25	07:51 16:31	15:11-15:32/21 16:15
20	08:18 16:49	15:40-15:53/13 17:44	07:30 18:33	06:30 20:25	06:21 21:13	05:27 21:43	05:06 21:30	05:28 20:38	06:14 19:30	07:03 18:23	07:52 16:30	15:12-15:32/20 16:15
21	08:17 16:51	15:38-15:54/16 17:46	07:28 18:35	06:18 20:27	06:18 21:14	05:26 21:43	05:06 21:28	05:29 20:36	06:16 19:27	07:05 18:21	07:54 16:29	15:13-15:32/19 16:16
22	08:16 16:53	15:38-15:55/17 17:48	07:26 18:37	06:16 20:28	06:16 21:16	05:24 21:43	05:06 21:27	05:31 20:34	06:17 19:25	07:06 18:19	07:56 16:27	15:14-15:30/16 16:16
23	08:15 16:54	15:38-15:57/19 17:50	07:24 18:38	06:14 20:30	06:14 21:17	05:23 21:43	05:06 21:26	05:32 20:32	06:19 19:23	07:08 18:17	07:57 16:26	15:15-15:30/15 16:17
24	08:14 16:56	15:37-15:58/21 17:52	07:22 18:40	06:12 20:32	06:12 21:18	05:22 21:43	05:07 21:25	05:33 20:30	06:20 19:21	07:09 18:15	07:59 16:25	15:17-15:29/12 16:17
25	08:13 16:58	15:37-15:58/21 17:53	07:20 18:42	06:10 20:33	06:10 21:20	05:21 21:44	05:07 21:23	05:35 20:28	06:22 19:18	07:11 18:13	08:01 16:24	15:19-15:27/8 16:18
26	08:12 16:59	15:37-15:59/22 17:55	07:18 19:43	06:08 20:35	06:08 21:21	05:19 21:44	05:07 21:22	05:36 20:26	06:23 19:16	07:13 18:11	08:03 16:23	07:56 16:23
27	08:10 17:01	15:36-15:59/23 17:57	07:16 19:45	06:06 20:37	06:06 21:22	05:18 21:44	05:08 21:21	05:37 20:24	06:25 19:14	07:14 18:09	08:04 16:22	07:57 16:19
28	08:09 17:03	15:37-16:00/23 17:59	07:14 19:47	06:04 20:38	06:04 21:24	05:17 21:44	05:08 21:19	05:39 20:22	06:27 19:11	07:16 18:07	08:06 16:21	07:59 16:20
29	08:08 17:05	15:36-16:00/24 17:05	07:09 19:48	06:02 20:40	06:02 21:25	05:16 21:43	05:09 21:18	05:40 20:19	06:28 19:09	07:17 17:05	08:00 16:21	07:58 16:21
30	08:06 17:06	15:37-16:01/24 17:06	07:07 19:50	06:00 20:42	06:00 21:26	05:15 21:43	05:09 21:16	05:42 20:17	06:30 19:07	07:19 17:03	08:02 16:20	07:57 16:22
31	08:05 17:08	15:37-16:00/23 17:08	07:05 19:52	06:00 20:42	06:00 21:27	05:14 21:27	05:09 21:15	05:43 20:15	06:31 19:07	07:11 17:01	08:01 16:20	07:57 16:22
Sonnenscheinstunden	260	277	366	413	482	496	500	454	382	334	269	247
Anzahl Minuten mit Schatten	260	142	0	0	0	0	0	0	0	0	405	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:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



### SHADOW - Kalender pro WEA

Berechnung: 2024-10 Giershagen GB WEA: E824353 - ENERCON E-82 E2 2300 82.0 !O! NH: 138.4 m (Ges:179.4 m) (647)  
Annahmen für Schattenwurfberechnung  
Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor  
N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:28 14:55-15:12/17 16:24	08:03 17:10	07:12 18:00	07:02 19:53	05:58 20:43	05:13 21:28	05:10 21:43	05:45 21:13	06:33 20:13	07:21 19:05	07:13 16:59	08:03 16:19
2	08:28 14:55-15:11/16 16:25	08:02 17:15	07:09 18:06	07:00 19:58	05:57 20:48	05:13 21:29	05:10 21:43	05:46 21:12	06:35 20:11	07:22 19:02	07:15 16:57	08:05 16:18
3	08:28 14:56-15:11/15 16:26	08:00 17:14	07:07 18:04	06:58 19:57	05:55 20:46	05:12 21:30	05:11 21:42	05:48 21:10	06:36 20:08	07:24 19:00	07:17 16:56	08:06 16:18
4	08:28 14:57-15:12/15 16:27	07:59 17:15	07:05 18:06	06:56 19:58	05:53 20:48	05:11 21:31	05:12 21:42	05:49 21:08	06:38 20:06	07:26 18:58	07:18 16:54	08:07 16:17
5	08:28 14:58-15:12/14 16:28	07:57 17:17	07:03 18:07	06:53 20:00	05:51 20:50	05:10 21:32	05:12 21:42	05:51 21:07	06:39 20:04	07:27 18:55	07:20 16:52	08:09 16:17
6	08:27 14:59-15:11/12 16:29	07:56 17:19	07:01 18:09	06:51 20:02	05:49 20:51	05:10 21:33	05:13 21:41	05:52 21:05	06:41 20:02	07:29 18:53	07:22 16:50	08:10 16:16
7	08:27 15:00-15:12/12 16:30	07:54 17:21	06:59 18:11	06:49 20:03	05:47 20:53	05:09 21:34	05:14 21:41	05:54 21:03	06:42 19:59	07:31 18:51	07:24 16:49	08:11 16:16
8	08:27 15:01-15:11/10 16:32	07:52 17:23	06:56 18:13	06:47 20:05	05:46 20:54	05:09 21:35	05:15 21:40	05:55 21:01	06:44 19:57	07:32 18:49	07:25 16:47	08:13 16:15
9	08:26 15:04-15:10/6 16:33	07:50 17:24	06:54 18:14	06:44 20:07	05:44 20:56	05:08 21:36	05:16 21:40	05:57 21:00	06:46 19:55	07:34 18:47	07:27 16:45	08:14 16:15
10	08:26 16:34	07:49 17:26	06:52 18:16	06:42 20:08	05:42 20:58	05:08 21:37	05:17 21:39	05:58 20:58	06:47 19:53	07:35 18:44	07:29 16:44	08:15 16:15
11	08:25 16:36	07:47 17:28	06:50 18:18	06:40 20:10	05:41 20:59	05:07 21:38	05:18 21:38	06:00 20:56	06:49 19:50	07:37 18:42	07:31 16:42	08:16 16:15
12	08:25 16:37	07:45 17:30	06:48 18:20	06:38 20:12	05:39 21:01	05:07 21:38	05:19 21:37	06:01 20:54	06:50 19:48	07:39 18:40	07:32 16:41	08:17 16:15
13	08:24 16:38	07:43 17:32	06:45 18:21	06:36 20:13	05:37 21:02	05:07 21:39	05:20 21:37	06:03 20:52	06:52 19:46	07:40 18:38	07:34 16:39	08:18 16:14
14	08:23 16:40	07:42 17:34	06:43 18:23	06:33 20:15	05:36 21:04	05:06 21:40	05:21 21:36	06:04 20:50	06:54 19:44	07:42 18:36	07:36 16:38	08:19 16:14
15	08:23 16:41	07:40 17:35	06:41 18:25	06:31 20:17	05:34 21:05	05:06 21:40	05:22 21:35	06:06 20:48	06:55 19:41	07:44 18:33	07:38 16:36	08:20 16:14
16	08:22 16:43	07:38 17:37	06:39 18:26	06:29 20:18	05:33 21:07	05:06 21:41	05:23 21:34	06:08 20:46	06:57 19:39	07:46 18:31	07:39 16:35	08:21 16:15
17	08:21 16:44	07:36 17:39	06:36 18:28	06:27 20:20	05:31 21:08	05:06 21:41	05:24 21:33	06:09 20:44	06:58 19:37	07:47 18:29	07:41 16:34	08:22 16:15
18	08:20 16:46	07:34 17:41	06:34 18:30	06:25 20:22	05:30 21:10	05:06 21:42	05:26 21:32	06:11 20:42	07:00 19:34	07:49 18:27	07:43 16:32	08:23 16:15
19	08:19 16:48	07:32 17:43	06:32 18:32	06:23 20:23	05:28 21:11	05:06 21:42	05:27 21:31	06:12 20:40	07:01 19:32	07:51 18:25	07:44 16:31	08:23 16:15
20	08:18 16:49	07:30 17:44	06:30 18:33	06:21 20:25	05:27 21:13	05:06 21:43	05:28 21:30	06:14 20:38	07:03 19:30	07:52 18:23	07:46 16:30	08:24 16:15
21	08:17 16:51	07:28 17:46	06:27 18:35	06:18 20:27	05:26 21:14	05:06 21:43	05:29 21:28	06:16 20:36	07:05 19:27	07:54 18:21	07:48 16:29	08:25 16:16
22	08:16 16:53	07:26 17:48	06:25 18:37	06:16 20:28	05:24 21:16	05:06 21:43	05:31 21:27	06:17 20:34	07:06 19:25	07:56 18:19	07:49 16:27	08:25 16:16
23	08:15 16:54	07:24 17:50	06:23 18:38	06:14 20:30	05:23 21:17	05:06 21:43	05:32 21:26	06:19 20:32	07:08 19:23	07:57 18:17	07:51 16:26	08:26 16:17
24	08:14 16:56	07:22 17:52	06:20 18:40	06:12 20:32	05:22 21:18	05:07 21:43	05:33 21:25	06:20 20:30	07:09 19:21	07:59 18:15	07:53 16:25	08:26 16:17
25	08:13 16:58	07:20 17:53	06:18 18:42	06:10 20:33	05:21 21:20	05:07 21:44	05:35 21:23	06:22 20:28	07:11 19:18	08:01 18:13	07:54 16:24	08:27 16:18
26	08:12 16:59	07:18 17:55	06:16 19:43	06:08 20:35	05:19 21:21	05:07 21:44	05:36 21:22	06:23 20:26	07:13 19:16	08:03 18:11	07:56 16:23	08:27 16:18
27	08:10 17:01	07:16 17:57	06:14 19:45	06:06 20:37	05:18 21:22	05:08 21:44	05:37 21:21	06:25 20:24	07:14 19:14	08:04 18:09	07:57 16:22	08:27 16:19
28	08:09 17:03	07:14 17:59	06:04 19:47	06:04 20:38	05:17 21:24	05:08 21:44	05:39 21:19	06:27 20:22	07:16 19:11	08:06 18:07	07:59 16:21	08:28 16:20
29	08:08 17:05	07:09 19:48	06:02 20:40	06:02 21:25	05:16 21:43	05:09 21:43	05:40 21:18	06:28 20:19	07:17 19:09	07:08 17:05	08:00 16:21	08:28 16:21
30	08:06 17:06	07:07 19:50	06:00 20:41	06:00 21:26	05:15 21:43	05:09 21:43	05:42 21:16	06:30 20:17	07:19 19:07	07:10 17:03	08:02 16:20	08:28 16:22
31	08:05 17:08	07:05 19:52	06:00 20:41	06:00 21:27	05:14 21:43	05:09 21:43	05:43 21:15	06:31 20:15	07:11 17:01	07:11 17:01	08:02 16:22	08:28 16:22
Sonnenscheinstunden	260	277	366	413	482	495	500	454	382	334	269	247
Anzahl Minuten mit Schatten	117	0	0	0	0	0	0	0	0	0	0	449

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: Giershagen  
Beschreibung: 2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-LF

Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



## SHADOW - Kalender pro WEA

Berechnung: 2024-10 Giershagen GB WEA: E824356 - ENERCON E-82 E2 2300 82.0 !O! NH: 138.4 m (Ges:179.4 m) (643)  
Annahmen für Schattenwurfberechnung  
Referenzjahr für Kalender 2023

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
Jan Feb Mar Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

### Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember		
1	08:28 09:36-09:53/17	08:03	07:12	07:02	05:58	05:13	05:10	05:45	06:33	07:21	07:13	08:03	09:25-09:35/10	
2	16:24 12:57-13:31/34	17:10	18:00	19:53	20:43	21:28	21:43	21:13	20:13	19:05	16:59	16:19	12:42-13:17/35	
3	08:28 09:37-09:54/17	08:02	07:09	07:00	05:57	05:13	05:10	05:46	06:35	07:22	07:15	08:05	09:25-09:37/12	
4	16:25 12:56-13:30/34	17:12	18:02	19:55	20:45	21:29	21:43	21:12	20:11	19:02	16:57	16:18	12:42-13:18/36	
5	08:28 09:37-09:53/16	08:00	07:07	06:58	05:55	05:12	05:11	05:48	06:36	07:24	07:17	08:06	09:24-09:37/13	
6	16:26 12:57-13:31/34	17:13	18:04	19:57	20:46	21:30	21:42	21:10	20:08	19:00	16:56	16:18	12:42-13:18/36	
7	08:28 09:38-09:54/16	07:59	07:05	06:55	05:53	05:11	05:12	05:49	06:38	07:26	07:18	08:07	09:25-09:39/14	
8	16:27 12:57-13:32/35	17:15	18:06	19:58	20:48	21:31	21:42	21:08	20:06	18:58	16:54	16:17	12:43-13:18/35	
9	08:28 09:38-09:54/16	07:57	07:03	06:53	05:51	05:10	05:12	05:51	06:39	07:27	07:20	08:09	09:25-09:41/16	
10	16:28 12:58-13:33/35	17:17	18:07	20:00	20:50	21:32	21:42	21:07	20:04	18:55	16:52	16:17	12:43-13:18/35	
11	08:27 09:38-09:54/16	07:56	07:01	06:51	05:49	05:10	05:13	05:52	06:41	07:29	07:22	08:10	09:25-09:40/15	
12	16:29 12:58-13:33/35	17:19	18:09	20:02	20:51	21:33	21:41	21:05	20:02	18:53	16:50	16:16	12:44-13:19/35	
13	08:27 09:39-09:55/16	07:54	06:59	06:49	05:47	05:09	05:14	05:54	06:42	07:30	07:24	08:11	09:25-09:41/16	
14	16:30 12:59-13:34/35	17:21	18:11	20:03	20:53	21:34	21:41	21:03	19:59	18:51	16:49	16:16	12:44-13:19/35	
15	08:27 09:40-09:55/15	07:52	06:56	06:47	05:46	05:09	05:15	05:55	06:44	07:32	07:25	08:13	09:25-09:41/16	
16	16:32 12:59-13:34/35	17:23	18:13	20:05	20:54	21:35	21:40	21:01	19:57	18:49	16:47	16:15	12:45-13:19/34	
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18	16:33 13:00-13:35/35	17:24	18:14	20:07	20:56	21:36	21:39	21:00	19:55	18:47	16:45	16:15	12:45-13:20/35	
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22	16:36 13:00-13:35/35	17:28	18:18	20:10	20:59	21:38	21:38	20:56	19:50	18:42	16:42	16:15	12:47-13:21/34	
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24	16:37 13:00-13:35/35	17:30	18:20	20:12	21:01	21:38	21:37	20:54	19:48	18:40	16:41	16:14	12:47-13:21/34	
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31	08:22 13:02-13:37/35	07:38	06:39	06:29	05:33	05:06	05:23	06:08	06:57	07:45	07:39	12:47-13:04/17	08:21	09:29-09:45/16
32	16:43	17:37	18:26	20:18	21:07	21:41	21:34	20:46	19:39	18:31	16:35	16:14	12:49-13:23/34	
33	08:21 13:03-13:37/34	07:36	06:36	06:27	05:31	05:06	05:24	06:09	06:58	07:47	07:41	12:45-13:06/21	08:22	09:29-09:46/17
34	16:44	17:39	18:28	20:20	21:08	21:41	21:33	20:44	19:37	18:29	16:34	16:15	12:50-13:23/33	
35	08:20 13:04-13:37/33	07:34	06:34	06:25	05:30	05:06	05:25	06:11	07:00	07:49	07:43	12:44-13:08/24	08:23	09:29-09:46/17
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37	08:19 13:04-13:37/33	07:32	06:32	06:23	05:28	05:06	05:27	06:12	07:01	07:51	07:44	12:44-13:09/25	08:23	09:30-09:46/16
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43	08:16 13:06-13:36/30	07:26	06:25	06:16	05:24	05:06	05:31	06:17	07:06	07:56	07:49	12:41-13:12/31	08:25	09:31-09:48/17
44	16:52	17:48	18:37	20:28	21:16	21:43	21:27	20:34	19:25	18:19	16:27	16:16	12:52-13:25/33	
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46	16:54	17:50	18:38	20:30	21:17	21:43	21:26	20:32	19:23	18:17	16:26	16:17	12:52-13:25/33	
47	08:14 13:09-13:36/27	07:22	06:20	06:12	05:22	05:06	05:33	06:20	07:09	07:59	07:53	12:41-13:14/33	08:26	09:32-09:49/17
48	16:56	17:52	18:40	20:32	21:18	21:43	21:25	20:30	19:21	18:15	16:25	16:17	12:53-13:26/33	
49	08:13 13:10-13:34/24	07:20	06:18	06:10	05:21	05:07	05:35	06:22	07:11	08:01	07:54	12:42-13:15/33	08:27	09:33-09:49/16
50	16:58	17:53	18:42	20:33	21:20	21:44	21:23	20:28	19:18	18:13	16:24	16:18	12:53-13:26/33	
51	08:12 13:12-13:34/22	07:18	06:16	06:08	05:19	05:07	05:36	06:23	07:13	08:03	07:56	12:41-13:14/33	08:27	09:33-09:49/16
52	16:59	17:55	18:43	20:35	21:21	21:44	21:22	20:26	19:16	18:11	16:23	16:18	12:54-13:27/33	
53	08:10 13:13-13:32/19	07:16	06:14	06:06	05:18	05:08	05:37	06:25	07:14	08:04	07:57	12:41-13:15/34	08:27	09:34-09:51/17
54	17:01	17:57	18:45	20:37	21:22	21:44	21:21	20:24	19:14	18:09	16:22	16:19	12:55-13:28/33	
55	08:09 13:16-13:30/14	07:14	06:11	06:04	05:17	05:08	05:39	06:27	07:16	08:06	07:59	12:42-13:16/34	08:28	09:34-09:51/17
56	17:03	17:59	18:47	20:38	21:23	21:44	21:19	20:21	19:11	18:07	16:21	16:20	12:55-13:28/33	
57	08:08 13:20-13:26/6		07:09	06:02	05:16	05:08	05:40	06:28	07:17	08:08	08:00	09:28-09:31/3	08:28	09:35-09:51/16
58	17:05		19:48	20:40	21:25	21:43	21:18	20:19	19:09	17:05	16:21	12:41-13:16/35	16:21	12:55-13:29/34
59	08:06		07:07	06:00	05:15	05:09	05:42	06:30	07:19	08:10	08:02	09:26-09:34/8	08:28	09:35-09:52/17
60	17:06		19:50	20:41	21:26	21:43	21:16	20:17	19:07	17:03	16:20	12:42-13:17/35	16:21	12:56-13:29/33
61	08:05		07:05		05:14		05:43	06:31		07:11		08:28	09:36-09:52/16	
62	17:08		19:52		21:27		21:15	20:15		17:01		16:22	12:56-13:30/34	
Sonnenscheinstunden 260														
Anzahl Minuten mit Schatten 1085 0 0 0 413 0 482 0 496 0 500 454 382 0 334 269 465 247 1542														

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
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Projekt:

Giershagen

Beschreibung:

2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

Lizenzierter Anwender:

anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



### SHADOW - Kalender pro WEA

Berechnung: 2024-10 Giershagen GB WEA: E824359 - ENERCON E-82 E2 2300 82.0 !O! NH: 138.4 m (Ges:179.4 m) (645)  
Annahmen für Schattenwurfberechnung  
Referenzjahr für Kalender 2023  
Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [BAD LIPSPRINGE]  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1.58 3.21 3.35 5.03 6.68 5.58 6.26 5.85 4.04 3.08 2.01 1.34

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
329 297 385 475 490 447 746 1,015 1,180 1,431 1,093 567 8,453  
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:28 09:13-09:24/11	08:03	07:12	07:02	05:58	05:13	05:10	05:45	06:33	07:21	07:13	08:03 08:58-09:11/13
2	16:24 11:10-11:33/23	17:10	18:00	19:53	20:43	21:28	21:43	21:13	20:13	19:04	16:59	16:19
3	08:28 09:14-09:25/11	08:02	07:09	07:00	05:56	05:13	05:10	05:46	06:35	07:22	07:15	08:05 08:59-09:12/13
4	16:25 11:10-11:33/23	17:12	18:02	19:55	20:45	21:29	21:43	21:12	20:11	19:02	16:57	16:18 11:05-11:11/16
5	08:28 09:13-09:25/12	08:00	07:07	06:58	05:55	05:12	05:11	05:47	06:36	07:24	07:17	08:06 08:58-09:12/14
6	16:26 11:11-11:33/22	17:13	18:04	19:57	20:46	21:30	21:42	21:10	20:08	19:00	16:56	16:18 11:03-11:13/10
7	08:28 09:14-09:26/12	07:59	07:05	06:55	05:53	05:11	05:12	05:49	06:38	07:26	07:18	08:07 08:59-09:13/14
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44	16:52	17:48	18:37	20:28	21:16	21:43	21:27	20:34	19:25	18:19	16:27	16:16 11:04-11:29/25
45	08:15	07:24	06:23	06:14	05:23	05:06	05:32	06:19	07:08	07:57	07:51	08:26 09:10-09:18/8
46	16:54	17:50	18:38	20:30	21:17	21:43	21:26	20:32	19:23	18:17	16:26	16:17 11:04-11:29/25
47	08:14	07:22	06:20	06:12	05:22	05:06	05:33	06:20	07:09	07:59	07:53	08:26 09:11-09:19/8
48	16:56	17:52	18:40	20:32	21:18	21:43	21:25	20:30	19:21	18:15	16:25	16:17 11:05-11:30/25
49	08:13	07:20	06:18	06:10	05:21	05:07	05:35	06:22	07:11	08:01	07:54 09:03-09:04/1	08:27 09:11-09:19/8
50	16:58	17:53	18:42	20:33	21:20	21:44	21:23	20:28	19:18	18:13	16:24	16:18 11:05-11:31/26
51	08:11	07:18	06:16	06:08	05:19	05:07	05:36	06:23	07:13	08:03	07:56 08:59-09:06/7	08:27 09:11-09-19/8
52	16:59	17:55	18:43	20:35	21:21	21:44	21:22	20:26	19:16	18:11	16:23	16:18 11:05-11:31/26
53	08:10	07:16	06:14	06:06	05:18	05:08	05:37	06:25	07:14	08:04	07:57 08:59-09:08/9	08:27 09:12-09:21/9
54	17:01	17:57	18:45	20:37	21:22	21:44	21:21	20:24	19:14	18:09	16:22	16:19 11:07-11:32/25
55	08:09	07:14	06:11	06:04	05:17	05:08	05:39	06:27	07:16	08:06	07:59 08:59-09:09/10	08:28 09:13-09:21/8
56	17:03	17:59	18:47	20:38	21:23	21:44	21:19	20:21	19:11	18:07	16:21	16:20 11:07-11:32/25
57	08:08		07:09	06:02	05:16	05:08	05:40	06:28	07:17	08:08	08:00 08:58-09:10/12	08:28 09:13-09-22/9
58	17:05		19:48	20:40	21:25	21:43	21:18	20:19	19:09	17:05	16:21	16:21 11:08-11:32/24
59	08:06		07:07	06:00	05:15	05:09	05:42	06:30	07:19	08:10	08:02 08:58-09:11/13	08:28 09:13-09-23/10
60	17:06		19:50	20:41	21:26	21:43	21:16	20:17	19:07	17:03	16:20	16:21 11:08-11:33/25
61	08:05		07:05		05:14		05:43	06:31		07:11		08:28 09:13-09-23/10
62	17:08		19:52		21:27		21:15	20:15		17:01		16:22 11:09-11:33/24
Sonnenscheinstunden	260	277	366	413	482	496	500	454	382	334	269	247
Anzahl Minuten mit Schatten	407	0	0	0	0	0	0	0	0	0	52	983

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

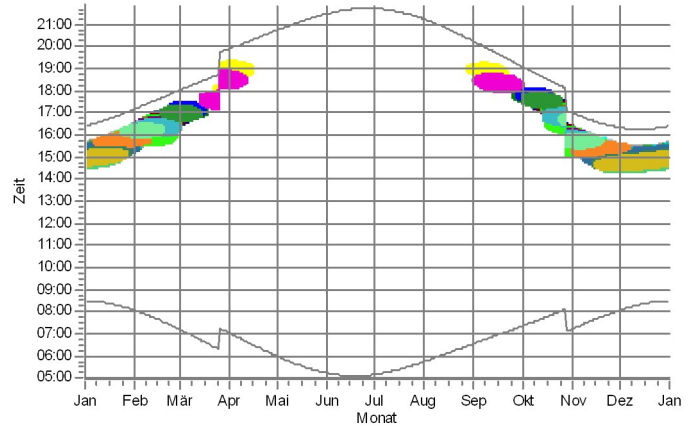
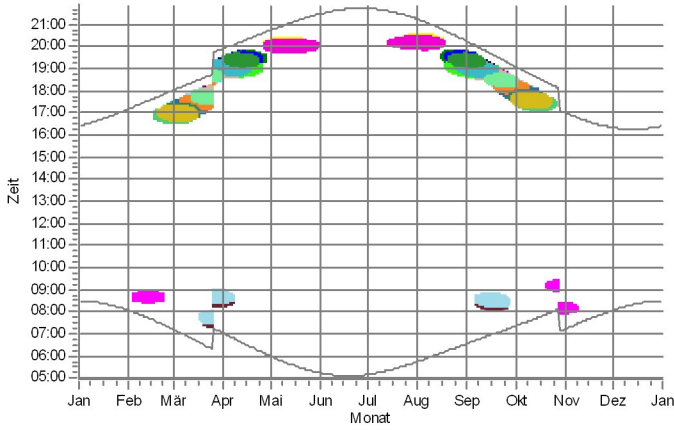




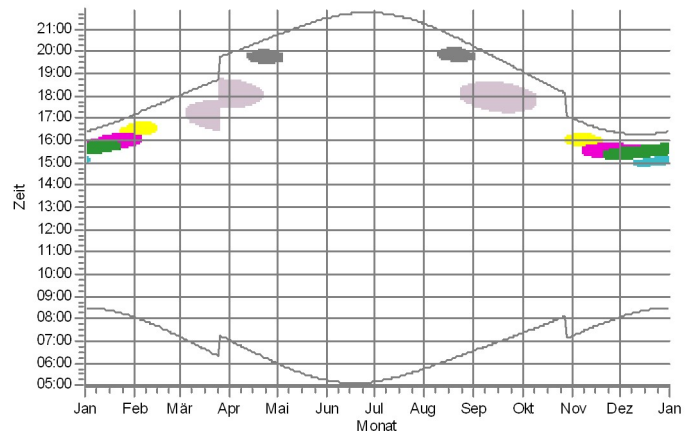
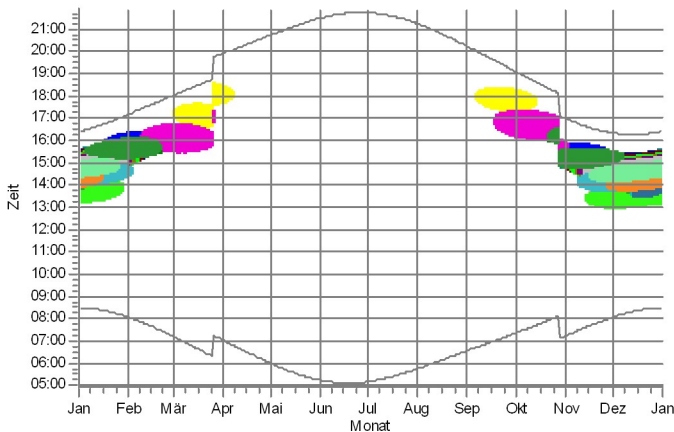
## SHADOW - Grafischer Kalender pro WEA

Berechnung: 2024-10 Giershagen GB

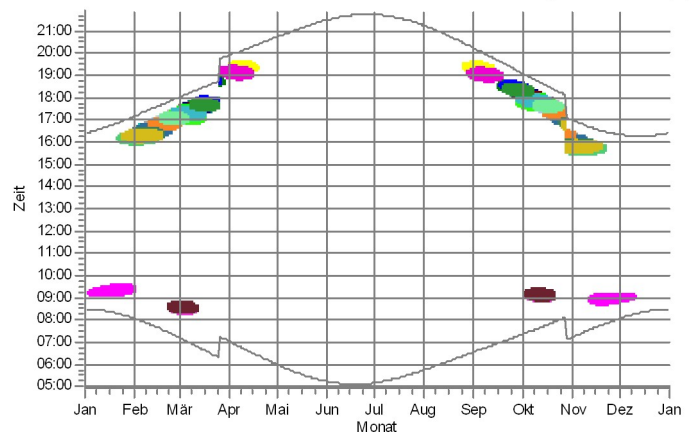
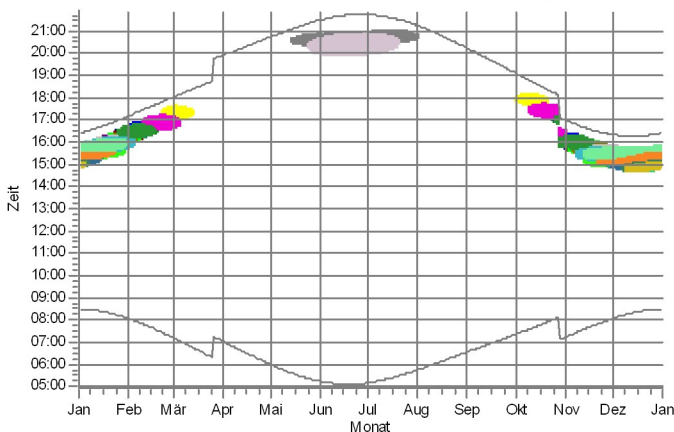
WEA01: ENERCON E-175 EP5 6000 175.0 !O! NH: 162.0 m (Ges:249.5 m) ( WEA02: ENERCON E-175 EP5 6000 175.0 !O! NH: 162.0 m (Ges:249.5 m) (



WEA03: ENERCON E-175 EP5 6000 175.0 !O! NH: 162.0 m (Ges:249.5 m) ( WEA04: ENERCON E-175 EP5 6000 175.0 !O! NH: 162.0 m (Ges:249.5 m) (



WEA05: ENERCON E-175 EP5 6000 175.0 !O! NH: 162.0 m (Ges:249.5 m) ( WEA06: ENERCON E-175 EP5 6000 175.0 !O! NH: 162.0 m (Ges:249.5 m) (



### Schattenrezeptoren

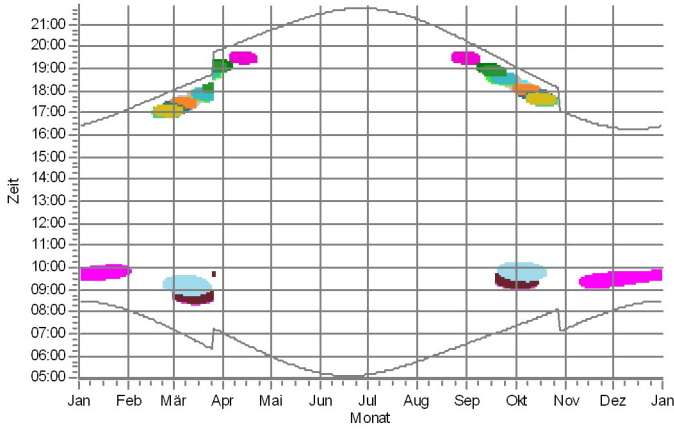
<ul style="list-style-type: none"> <li>IO01: Giershagen, Adorfer Weg 37</li> <li>IO02: Giershagen, Adorfer Weg 41</li> <li>IO03: Giershagen, Adorfer Weg 44</li> <li>IO04: Giershagen, Adorfer Weg 60</li> <li>IO05: Giershagen, Beringhof 1</li> <li>IO06: Giershagen, Hinterm Hagen 2</li> <li>IO07: Giershagen, Hinterm Hagen 2 a</li> <li>IO08: Giershagen, Hinterm Hagen 14</li> <li>IO09: Giershagen, Hinterm Hagen 16</li> <li>IO10: Giershagen, Hinterm Hagen 24</li> <li>IO11: Giershagen, Hinterm Hagen 26</li> </ul>	<ul style="list-style-type: none"> <li>IO12: Giershagen, Hinterm Hagen 30</li> <li>IO13: Giershagen, Northolter Str. 6</li> <li>IO14: Giershagen, Northolter Str. 10</li> <li>IO15: Giershagen, Northolter Str. 14</li> <li>IO16: Giershagen, Northolter Str. 20</li> <li>IO17: Giershagen, Rennebusch 5</li> <li>IO18: Giershagen, Rennebusch 8</li> <li>IO19: Giershagen, Rennebusch 17</li> <li>IO20: Giershagen, Rennefeld 14</li> <li>IO21: Giershagen, Rennefeld 16</li> <li>IO22: Giershagen, Rennefeld 17</li> </ul>	<ul style="list-style-type: none"> <li>IO23: Giershagen, unbebaute Fläche B-Plan Nr. 8 "Rennefeld"</li> <li>IO24: Giershagen, Zum Eckefeld 1</li> <li>IO25: Giershagen, Zum Eckefeld 9</li> <li>IO26: Giershagen, Zur alten Wiese 7</li> <li>IO27: Giershagen, Zur alten Wiese 14</li> <li>IO28: Giershagen, Zur Wilhelmsruh 13</li> <li>IO29: Giershagen, Zur Wilhelmsruh 24</li> <li>IO30: Giershagen, Zur Wilhelmsruh 26</li> <li>IO31: Padberg, Niedermühle 8</li> <li>IO32: Padberg, Niedermühle 12</li> <li>IO33: Padberg, Niedermühle 16</li> </ul>
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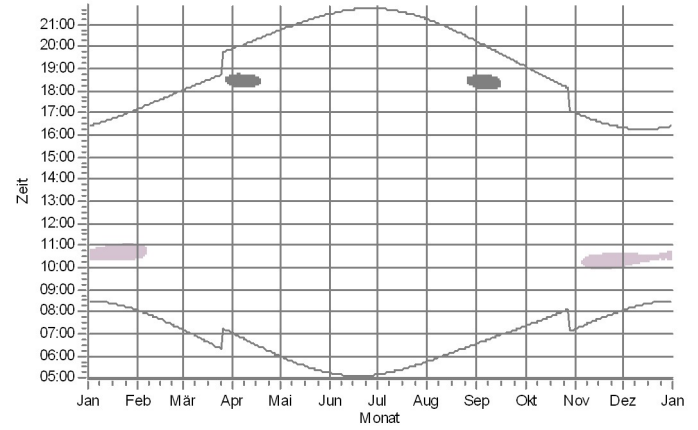
## SHADOW - Grafischer Kalender pro WEA

Berechnung: 2024-10 Giershagen GB

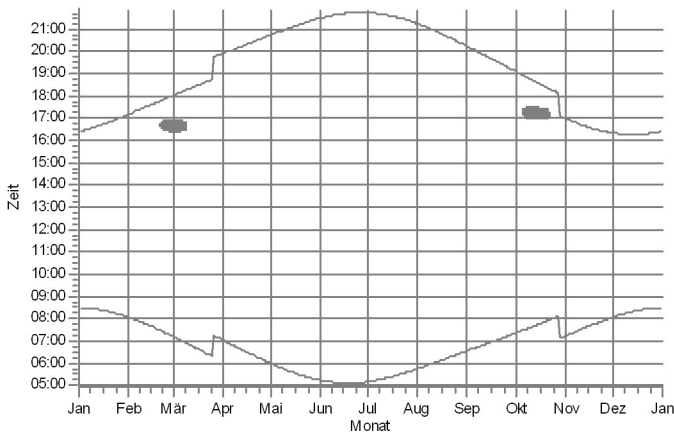
WEA07: ENERCON E-175 EP5 6000 175.0 IO! NH: 162.0 m (Ges:249.5 m)



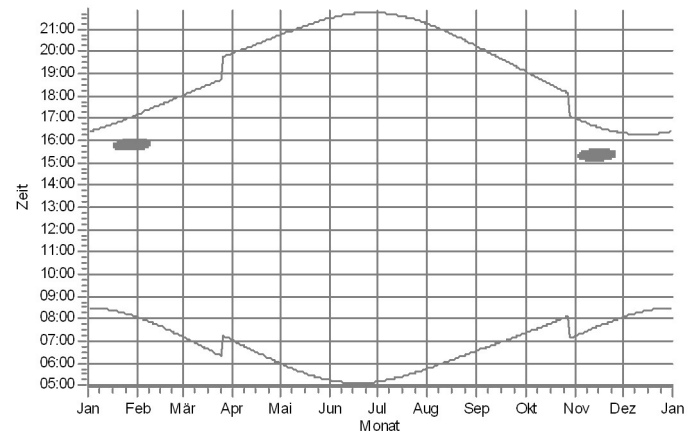
E824350: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (64



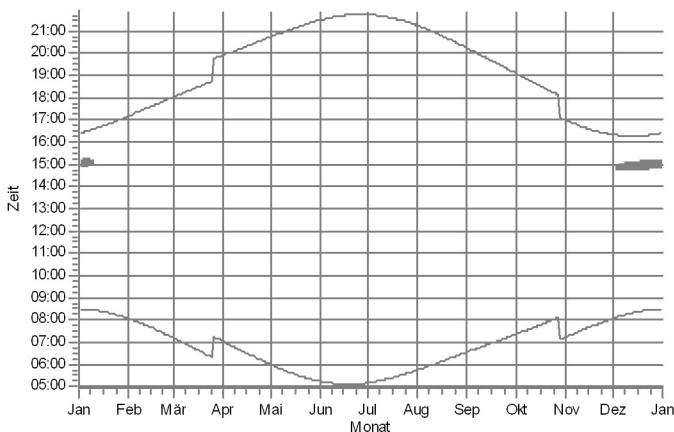
E824351: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (64



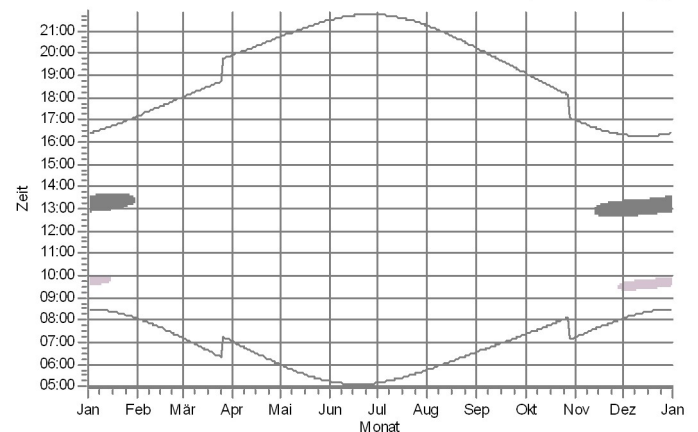
E824352: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (64



E824353: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (64



E824356: ENERCON E-82 E2 2300 82.0 IO! NH: 138.4 m (Ges:179.4 m) (64



### Schattenrezeptoren


Projekt:  
Giershagen

Beschreibung:  
2024-11-Anhang  
Schattenwurfkalender\_zu\_24-707-7241473-Rev.00-SW-L  
F

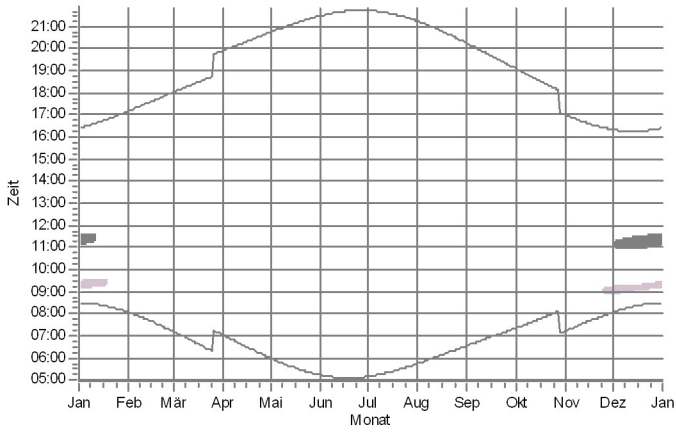
Lizenzierter Anwender:  
anemos GmbH für Umweltmeteorologie mbH  
Böhmsholzer Weg 3  
DE-21391 Reppenstedt  
49(0)4131-8308-100  
Daniel Baudach / daniel.baudach@anemos.de  
Berechnet:  
25.10.2024 09:02/4.0.540



## SHADOW - Grafischer Kalender pro WEA

Berechnung: 2024-10 Giershagen GB

E824359: ENERCON E-82 E2 2300 82.0 !O! NH: 138.4 m (Ges:179.4 m) (64



Schattenrezeptoren

IO04: Giershagen, Adorfer Weg 60

IO25: Giershagen, Zum Eckefeld 9