

SHADOW - Kalender

Berechnung: GB KeimbergSchattenrezeptor: SR A - Dune 1A, 33184 Altenbeken
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
Die Windenergieanlage/n ist/sind immer in Betrieb

Table with columns for months (Januar to Juni) and rows for each day, showing solar position and shadow data. Includes summary rows for 'Sonnenscheinstunden' and 'astr.max.mögl.Beschattung'.

astr.max.mögl.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), Minuten mit Schatten, Zeitpunkt (SS:MM) Schattenanfang / Zeitpunkt (SS:MM) Schattende (WEA mit erstem/letztem Schatten)

### SHADOW - Kalender

Berechnung: GB KeimbergSchattenrezeptor: SR A - Dune 1A, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

Juli		August		September		Oktober		November		Dezember	
1	05:10	06:34 (WEA 07)	05:46	06:45 (WEA 07)	06:36	08:25 (40422-20(42764-17))	07:24	07:17	08:53 (WEA3)	08:08	14:29 (40353-16,42370-15(V))
2	05:11	06:33 (WEA 07)	05:48	19:56 (202035-10-14 (1))	21:15	19:16 (2535-09-14)	19:05	16:59	16:06 (42613-14, 41973-18)	16:19	14:47 (40353-16,42370-15(V))
3	05:11	06:33 (WEA 07)	05:49	07:12 (00560-10-14)	06:37	08:23 (40422-20(42764-17))	07:26	07:19	08:52 (WEA3)	08:09	14:29 (40353-16,42370-15(V))
4	05:12	06:33 (WEA 07)	05:51	19:55 (202035-10-14 (2))	20:11	19:17 (2535-09-14)	19:02	16:57	16:03 (42613-14, 41973-18)	16:18	14:47 (40353-16,42370-15(V))
5	05:13	06:32 (WEA 07)	05:52	07:12 (00560-10-14)	06:40	08:21 (40422-20(42764-17))	07:27	07:21	08:51 (WEA3)	08:11	14:32 (40353-16,42370-15(V))
6	05:14	06:33 (WEA 07)	05:54	19:54 (202035-10-14 (2))	20:09	19:17 (2535-09-14)	19:00	16:55	14:43 (00223-10-14)	16:18	14:47 (40353-16,42370-15(V))
7	05:15	06:33 (WEA 07)	05:55	07:12 (00560-10-14)	06:42	08:19 (40422-20(42764-17))	07:29	07:23	10:37 (40769-19)	08:12	14:30 (40353-16,42370-15(V))
8	05:16	06:33 (WEA 07)	05:57	19:51 (202035-10-14 (2))	20:07	19:16 (2535-09-14)	18:58	16:52	14:45 (40223-10-14)	16:17	14:47 (40353-16,42370-15(V))
9	05:17	06:33 (WEA 07)	05:59	07:12 (00560-10-14)	06:44	08:18 (40422-20(42764-17))	07:31	07:28	08:45 (WEA1)	08:14	14:32 (40353-16,42370-15(V))
10	05:18	06:33 (WEA 07)	06:00	19:54 (202035-10-14 (2))	20:15	19:16 (2535-09-14)	18:55	16:52	14:47 (00223-10-14)	16:17	14:48 (40353-16,42370-15(V))
11	05:19	06:33 (WEA 07)	06:02	07:12 (00560-10-14)	06:44	08:17 (40422-20(42764-17))	07:32	07:30	08:50 (WEA3)	08:15	14:32 (40353-16,42370-15(V))
12	05:20	06:33 (WEA 07)	06:03	19:54 (202035-10-14 (2))	20:20	19:14 (2535-09-14)	18:53	16:50	14:48 (00223-10-14)	16:16	14:48 (40353-16,42370-15(V))
13	05:21	06:33 (WEA 07)	06:05	07:13 (00560-10-14)	06:45	08:16 (40422-20(42764-17))	07:34	07:32	08:50 (WEA3)	08:16	14:32 (40353-16,42370-15(V))
14	05:22	06:33 (WEA 07)	06:07	19:54 (202035-10-14 (2))	20:25	19:16 (2535-09-14)	18:52	16:50	14:48 (00223-10-14)	16:16	14:48 (40353-16,42370-15(V))
15	05:23	06:33 (WEA 07)	06:08	07:12 (00560-10-14)	06:47	08:15 (40422-20(42764-17))	07:36	07:34	08:42 (WEA1)	08:17	14:34 (40353-16,42370-15(V))
16	05:24	06:33 (WEA 07)	06:10	19:51 (202035-10-14 (2))	20:33	18:58 (2696-09-14)	18:49	16:52	14:49 (00223-10-14)	16:15	14:48 (40353-16,42370-15(V))
17	05:25	06:33 (WEA 07)	06:11	07:13 (00560-10-14)	06:48	08:14 (40422-20(42764-17))	07:37	07:35	08:41 (WEA1)	08:18	14:34 (40353-16,42370-15(V))
18	05:27	06:33 (WEA 07)	06:13	19:54 (202035-10-14 (2))	20:35	18:58 (2696-09-14)	18:46	16:42	14:49 (00223-10-14)	16:15	14:48 (40353-16,42370-15(V))
19	05:28	06:33 (WEA 07)	06:15	07:14 (00560-10-14)	06:50	08:13 (40422-20(42764-17))	07:41	07:38	08:50 (WEA3)	08:20	14:35 (40353-16,42370-15(V))
20	05:29	06:33 (WEA 07)	06:16	19:54 (202035-10-14 (2))	20:40	18:56 (2696-09-14)	18:44	16:50	14:49 (00223-10-14)	16:15	14:48 (40353-16,42370-15(V))
21	05:31	06:33 (WEA 07)	06:18	07:15 (00560-10-14)	06:52	08:13 (40422-20(42764-17))	07:41	07:35	08:38 (WEA1)	08:21	14:35 (40353-16,42370-15(V))
22	05:32	06:33 (WEA 07)	06:19	19:54 (202035-10-14 (2))	20:45	18:54 (2696-09-14)	18:42	16:42	14:49 (00223-10-14)	16:15	14:48 (40353-16,42370-15(V))
23	05:33	06:35 (WEA 07)	06:21	07:17 (00560-10-14)	06:53	08:13 (40422-20(42764-17))	07:42	07:37	08:50 (WEA3)	08:22	14:36 (40353-16,42370-15(V))
24	05:35	06:35 (WEA 07)	06:23	19:59 (40497-19, 41371-20)	19:49	18:51 (2696-09-14)	18:40	16:40	15:16 (40751-16)	16:15	14:48 (40353-16,42370-15(V))
25	05:36	06:39 (WEA 07)	06:24	08:12 (40422-20(42764-17))	07:48	08:12 (40422-20(42764-17))	07:44	07:39	08:51 (WEA3)	08:23	14:37 (40353-16,42370-15(V))
26	05:37	06:36 (WEA 07)	06:26	19:54 (202035-10-14 (2))	20:50	08:15 (40422-20(42764-17))	07:46	07:42	15:17 (40751-16)	16:15	14:48 (40353-16,42370-15(V))
27	05:39	06:36 (WEA 07)	06:27	08:12 (40422-20(42764-17))	07:50	08:15 (40422-20(42764-17))	07:48	07:44	08:52 (WEA3)	08:24	14:38 (40353-16,42370-15(V))
28	05:40	06:37 (WEA 07)	06:29	19:54 (202035-10-14 (2))	20:55	08:14 (40422-20(42764-17))	07:49	07:45	15:18 (40751-16)	16:15	14:49 (40353-16,42370-15(V))
29	05:42	06:39 (WEA 07)	06:31	08:12 (40422-20(42764-17))	07:53	08:14 (40422-20(42764-17))	07:51	07:47	08:53 (WEA3)	08:25	14:39 (40353-16,42370-15(V))
30	05:43	06:39 (WEA 07)	06:32	19:54 (202035-10-14 (2))	20:58	08:11 (40422-20(42764-17))	07:51	07:46	15:20 (40751-16)	16:15	14:49 (40353-16,42370-15(V))
31	05:45	06:41 (WEA 07)	06:34	08:12 (40422-20(42764-17))	07:55	08:11 (40422-20(42764-17))	07:52	07:48	08:54 (WEA3)	08:26	14:40 (40353-16,42370-15(V))
Sonnenscheinstunden   501											
astr.max.mögl.Beschattung   1412											
				501	453	381	332	267	245	377	

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

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
1	05:10	19:56	110	06:36	19:05	08:53	14:29
2	05:11	19:16	109	06:37	19:05	08:52	14:47
3	05:11	19:17	109	06:37	19:02	08:51	14:29
4	05:12	19:17	109	06:38	19:00	08:51	14:47
5	05:13	19:16	109	06:38	18:58	08:50	14:32
6	05:14	19:17	109	06:39	18:55	08:50	14:47
7	05:15	19:16	109	06:39	18:53	08:45	14:34
8	05:16	19:16	109	06:40	18:52	08:42	14:49
9	05:17	19:16	109	06:40	18:51	08:41	14:34
10	05:18	19:16	109	06:41	18:50	08:38	14:35
11	05:19	19:16	109	06:41	18:49	08:38	14:49
12	05:20	19:16	109	06:42	18:48	08:37	14:36
13	05:21	19:16	109	06:42	18:48	08:37	14:48
14	05:22	19:16	109	06:43	18:47	08:37	14:38
15	05:23	19:16	109	06:43	18:46	08:36	14:40
16	05:24	19:16	109	06:44	18:45	08:36	14:40
17	05:25	19:16	109	06:44	18:44	08:36	14:40
18	05:27	19:16	109	06:45	18:43	08:35	14:50
19	05:28	19:16	109	06:45	18:42	08:35	14:45
20	05:29	19:16	109	06:46	18:41	08:35	14:45
21	05:31	19:16	109	06:46	18:40	08:35	14:45
22	05:32	19:16	109	06:47	18:39	08:35	14:45
23	05:33	19:16	109	06:47	18:38	08:35	14:45
24	05:35	19:16	109	06:48	18:37	08:35	14:45
25	05:36	19:16	109	06:48	18:36	08:35	14:45
26	05:37	19:16	109	06:49	18:35	08:35	14:45
27	05:39	19:16	109	06:49	18:34	08:35	14:45
28	05:40	19:16	109	06:50	18:33	08:35	14:45
29	05:42	19:16	109	06:50	18:32	08:35	14:45
30	05:43	19:16	109	06:51	18:31	08:35	14:45
31	05:45	19:16	109	06:51	18:30	08:35	14:45

# SHADOW - Kalender

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- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:32	14:41 (40353-16,42370-15(W))	08:05	09:23 (WEA3)	07:12	06:30 (WEA 07)
2	16:25	14:56 (40353-16,42370-15(W))	17:12	15:12 (00223-10-14)	18:03	20:11 (02035-10-14 (1))
3	16:26	14:57 (40353-16,42370-15(W))	17:14	15:13 (00223-10-14)	18:05	20:11 (02035-10-14 (1))
4	16:27	14:58 (40353-16,42370-15(W))	17:16	15:14 (00223-10-14)	18:07	20:11 (02035-10-14 (1))
5	16:29	14:59 (40353-16,42370-15(W))	17:20	15:16 (00223-10-14)	18:11	20:11 (02035-10-14 (1))
6	16:31	14:42 (40353-16,42370-15(W))	17:57	16:01 (00223-10-14)	19:01	20:11 (02035-10-14 (1))
7	16:30	14:59 (40353-16,42370-15(W))	17:21	15:16 (00223-10-14)	18:12	20:11 (02035-10-14 (1))
8	16:32	14:43 (40353-16,42370-15(W))	17:56	16:30 (42613-14, 41973-18)	18:14	20:11 (02035-10-14 (1))
9	16:33	14:44 (40353-16,42370-15(W))	17:54	16:33 (42613-14, 41973-18)	18:16	20:11 (02035-10-14 (1))
10	16:34	14:43 (40353-16,42370-15(W))	17:52	16:36 (42613-14, 41973-18)	18:19	20:11 (02035-10-14 (1))
11	16:36	14:44 (40353-16,42370-15(W))	17:49	16:35 (42613-14, 41973-18)	18:19	20:11 (02035-10-14 (1))
12	16:39	14:45 (40353-16,42370-15(W))	17:47	16:36 (42613-14, 41973-18)	18:23	20:11 (02035-10-14 (1))
13	16:42	14:45 (40353-16,42370-15(W))	17:44	16:36 (42613-14, 41973-18)	18:25	20:11 (02035-10-14 (1))
14	16:42	14:46 (40353-16,42370-15(W))	17:43	16:37 (40422-20(42764-17))	18:26	20:11 (02035-10-14 (1))
15	16:42	15:01 (40353-16,42370-15(W))	17:41	16:37 (40422-20(42764-17))	18:26	20:11 (02035-10-14 (1))
16	16:43	15:02 (40353-16,42370-15(W))	17:38	16:37 (40422-20(42764-17))	18:28	20:11 (02035-10-14 (1))
17	16:43	15:03 (40353-16,42370-15(W))	17:36	16:38 (40422-20(42764-17))	18:30	20:11 (02035-10-14 (1))
18	16:43	15:04 (40353-16,42370-15(W))	17:34	16:38 (40422-20(42764-17))	18:32	20:11 (02035-10-14 (1))
19	16:43	15:05 (40353-16,42370-15(W))	17:32	16:39 (40422-20(42764-17))	18:34	20:11 (02035-10-14 (1))
20	16:43	15:06 (40353-16,42370-15(W))	17:30	16:39 (40422-20(42764-17))	18:36	20:11 (02035-10-14 (1))
21	16:43	15:07 (40353-16,42370-15(W))	17:28	16:40 (40422-20(42764-17))	18:38	20:11 (02035-10-14 (1))
22	16:43	15:08 (40353-16,42370-15(W))	17:26	16:40 (40422-20(42764-17))	18:40	20:11 (02035-10-14 (1))
23	16:43	15:09 (40353-16,42370-15(W))	17:24	16:41 (40422-20(42764-17))	18:42	20:11 (02035-10-14 (1))
24	16:43	15:10 (40353-16,42370-15(W))	17:22	16:41 (40422-20(42764-17))	18:44	20:11 (02035-10-14 (1))
25	16:43	15:11 (40353-16,42370-15(W))	17:20	16:42 (40422-20(42764-17))	18:46	20:11 (02035-10-14 (1))
26	16:43	15:12 (40353-16,42370-15(W))	17:18	16:42 (40422-20(42764-17))	18:48	20:11 (02035-10-14 (1))
27	16:43	15:13 (40353-16,42370-15(W))	17:16	16:43 (40422-20(42764-17))	18:50	20:11 (02035-10-14 (1))
28	16:43	15:14 (40353-16,42370-15(W))	17:14	16:43 (40422-20(42764-17))	18:52	20:11 (02035-10-14 (1))
29	16:43	15:15 (40353-16,42370-15(W))	17:12	16:44 (40422-20(42764-17))	18:54	20:11 (02035-10-14 (1))
30	16:43	15:16 (40353-16,42370-15(W))	17:10	16:44 (40422-20(42764-17))	18:56	20:11 (02035-10-14 (1))
31	16:43	15:17 (40353-16,42370-15(W))	17:08	16:45 (40422-20(42764-17))	18:58	20:11 (02035-10-14 (1))
Sonnenscheinstunden	260	278	367	416	484	498
astr.max.mögl.Beschattung	1071	2000	1162	875	1229	727

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

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: GB KeimbergSchattenrezeptor: SR B - Dune 1, 33184 Altenbeken
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
Die Windenergieanlage/n ist/sind immer in Betrieb

Table with columns for months (Juli to Dezember) and rows for days, showing solar position and shadow 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), Sonnenuntergang (SS:MM), Zeitpunkt (SS:MM) Schattenanfang, Zeitpunkt (SS:MM) Schattende.

## SHADOW - Kalender

Berechnung: GB KeimbergSchattenrezeptor: SR C - Dune 1, 33100 Paderborn  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni		
1	08:32 16:25	08:06 17:12	07:13 18:03	07:02 19:57	05:58 20:48	05:13 21:33		
2	08:32 16:26	08:04 17:14	07:10 18:05	07:00 19:59	05:56 20:49	05:12 21:34		
3	08:32 16:27	08:02 17:16	07:08 18:07	06:58 20:00	05:54 20:51	05:11 21:35		
4	08:32 16:28	08:01 17:18	07:06 18:09	06:55 20:02	05:52 20:53	05:11 21:36		
5	08:31 16:29	07:59 17:20	07:04 18:11	06:53 20:04	05:50 20:54	05:10 21:37		
6	08:31 16:30	07:58 17:21	07:02 18:12	06:51 20:06	05:49 20:56	05:09 21:38		
7	08:31 16:32	07:56 17:23	06:59 18:14	06:49 20:07	05:47 20:57	05:09 21:39		
8	08:30 16:33	07:54 17:25	08:51 (WEA 01) 08:59 (WEA 01)	06:57 18:16	08:04 (WEA 02) 08:15 (WEA 02)	06:46 20:09	05:45 20:59	05:08 21:40
9	08:30 16:34	07:52 17:27	08:48 (WEA 01) 09:01 (WEA 01)	06:55 18:18	08:02 (WEA 02) 08:18 (WEA 02)	06:44 20:11	05:43 21:01	05:08 21:41
10	08:29 16:36	07:51 17:29	08:47 (WEA 01) 09:02 (WEA 01)	06:53 18:19	08:01 (WEA 02) 08:19 (WEA 02)	06:42 20:12	05:42 21:02	05:07 21:42
11	08:29 16:37	07:49 17:31	08:47 (WEA 01) 09:04 (WEA 01)	06:50 18:21	07:59 (WEA 02) 08:19 (WEA 02)	06:40 20:14	05:40 21:04	05:07 21:42
12	08:28 16:39	07:47 17:32	08:46 (WEA 01) 09:05 (WEA 01)	06:48 18:23	07:58 (WEA 02) 08:20 (WEA 02)	06:38 20:16	05:38 21:05	05:07 21:43
13	08:27 16:40	07:45 17:34	08:46 (WEA 01) 09:05 (WEA 01)	06:46 18:25	07:58 (WEA 02) 08:20 (WEA 02)	06:35 20:17	05:37 21:07	05:06 21:44
14	08:27 16:42	07:43 17:36	08:45 (WEA 01) 09:06 (WEA 01)	06:44 18:26	07:56 (WEA 02) 08:20 (WEA 02)	06:33 20:19	05:35 21:09	05:06 21:44
15	08:26 16:43	07:41 17:38	08:45 (WEA 01) 09:06 (WEA 01)	06:41 18:28	07:56 (WEA 02) 08:20 (WEA 02)	06:31 20:21	05:34 21:10	05:06 21:45
16	08:25 16:45	07:39 17:40	08:45 (WEA 01) 09:05 (WEA 01)	06:39 18:30	07:57 (WEA 02) 08:19 (WEA 02)	06:29 20:22	05:32 21:12	05:06 21:45
17	08:24 16:46	07:37 17:42	08:46 (WEA 01) 09:05 (WEA 01)	06:37 18:32	07:56 (WEA 02) 08:18 (WEA 02)	06:27 20:24	05:31 21:13	05:06 21:46
18	08:23 16:48	07:35 17:44	08:46 (WEA 01) 09:04 (WEA 01)	06:34 18:33	07:57 (WEA 02) 08:17 (WEA 02)	06:24 20:26	05:29 21:15	05:06 21:46
19	08:22 16:49	07:33 17:45	08:46 (WEA 01) 09:03 (WEA 01)	06:32 18:35	07:58 (WEA 02) 08:16 (WEA 02)	06:22 20:27	05:28 21:16	05:06 21:47
20	08:21 16:51	07:31 17:47	08:48 (WEA 01) 09:01 (WEA 01)	06:30 18:37	07:58 (WEA 02) 08:13 (WEA 02)	06:20 20:29	05:26 21:18	05:06 21:47
21	08:20 16:53	07:29 17:49	08:50 (WEA 01) 08:59 (WEA 01)	06:28 18:38	08:00 (WEA 02) 08:11 (WEA 02)	06:18 20:31	05:25 21:19	05:06 21:47
22	08:19 16:54	07:27 17:51	06:25 18:40	06:16 20:33	05:24 21:20	05:06 21:47		
23	08:18 16:56	07:25 17:53	06:23 18:42	06:14 20:34	05:22 21:22	05:06 21:48		
24	08:17 16:58	07:23 17:54	06:21 18:43	06:12 20:36	05:21 21:23	05:07 21:48		
25	08:15 17:00	07:21 17:56	06:18 18:45	06:10 20:38	05:20 21:24	05:07 21:48		
26	08:14 17:01	07:19 17:58	06:16 18:47	06:08 20:39	05:19 21:26	05:07 21:48		
27	08:13 17:03	07:17 18:00	06:14 18:49	06:06 20:41	05:18 21:27	05:08 21:48		
28	08:11 17:05	07:15 18:02	06:11 18:50	06:04 20:43	05:17 21:28	05:08 21:48		
29	08:10 17:07		07:09 19:52	06:02 20:44	05:16 21:30	05:09 21:47		
30	08:09 17:09		07:07 19:54	06:00 20:46	05:15 21:31	05:09 21:47		
31	08:07 17:10		07:05 19:55		05:14 21:32			
Sonnenscheinstunden	260	278	367	416	484	498		
astr.max.mögl.Beschattung		229	265					

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

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

Berechnung: GB KeimbergSchattenrezeptor: SR C - Dune 1, 33100 Paderborn  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September		Oktober		November		Dezember
1	05:10 21:47	05:46 21:15	06:36 20:14		07:24 19:05	08:37 (WEA 02)	07:18 16:59	08:17 (WEA 01)	08:08 16:19
2	05:11 21:47	05:48 21:14	06:37 20:12		07:26 19:02	08:37 (WEA 02)	07:19 16:57	08:18 (WEA 01)	08:10 16:18
3	05:11 21:46	05:49 21:12	06:39 20:09		07:28 19:00	08:38 (WEA 02)	07:21 16:55	08:21 (WEA 01)	08:11 16:18
4	05:12 21:46	05:51 21:10	06:40 20:07		07:29 18:58	08:38 (WEA 02)	07:23 16:54		08:12 16:17
5	05:13 21:45	05:52 21:09	06:42 20:05		07:31 18:56	08:40 (WEA 02)	07:25 16:52		08:14 16:17
6	05:14 21:45	05:54 21:07	06:44 20:03		07:32 18:53	08:43 (WEA 02)	07:27 16:50		08:15 16:16
7	05:15 21:44	05:55 21:05	06:45 20:00		07:34 18:51		07:28 16:48		08:16 16:16
8	05:16 21:44	05:57 21:03	06:47 19:58		07:36 18:49		07:30 16:47		08:17 16:15
9	05:17 21:43	05:59 21:01	06:48 19:56		07:38 18:47		07:32 16:45		08:19 16:15
10	05:18 21:42	06:00 21:00	06:50 19:53		07:39 18:44		07:34 16:43		08:20 16:15
11	05:19 21:42	06:02 20:58	06:52 19:51		07:41 18:42		07:35 16:42		08:21 16:15
12	05:20 21:41	06:03 20:56	06:53 19:49		07:43 18:40		07:37 16:40		08:22 16:15
13	05:21 21:40	06:05 20:54	06:55 19:46		07:44 18:38		07:39 16:39		08:23 16:15
14	05:22 21:39	06:07 20:52	06:57 19:44		07:46 18:36		07:41 16:37		08:24 16:15
15	05:23 21:38	06:08 20:50	06:58 19:42		07:48 18:33		07:42 16:36		08:25 16:15
16	05:24 21:37	06:10 20:48	07:00 19:39		07:49 18:31		07:44 16:35		08:26 16:15
17	05:25 21:36	06:11 20:46	07:01 19:37		07:51 18:29		07:46 16:33		08:26 16:15
18	05:27 21:35	06:13 20:44	07:03 19:35		07:53 18:27		07:48 16:32		08:27 16:15
19	05:28 21:34	06:15 20:42	07:05 19:32		07:55 18:25		07:49 16:31		08:28 16:16
20	05:29 21:33	06:16 20:40	07:06 19:30		07:56 18:23	09:24 (WEA 01)	07:51 16:29		08:28 16:16
21	05:31 21:31	06:18 20:38	07:08 19:28		07:58 18:21	09:27 (WEA 01)	07:53 16:28		08:29 16:16
22	05:32 21:30	06:19 20:36	07:09 19:26	08:46 (WEA 02)	08:00 18:19	09:18 (WEA 01)	07:54 16:27		08:30 16:17
23	05:33 21:29	06:21 20:33	07:11 19:23	08:43 (WEA 02)	08:02 18:16	09:16 (WEA 01)	07:56 16:26		08:30 16:17
24	05:35 21:27	06:23 20:31	07:13 19:21	08:42 (WEA 02)	08:03 18:14	09:16 (WEA 01)	07:58 16:25		08:31 16:18
25	05:36 21:26	06:24 20:29	07:14 19:19	08:40 (WEA 02)	07:05 17:12	08:15 (WEA 01)	07:59 16:24		08:31 16:19
26	05:37 21:25	06:26 20:27	07:16 19:16	08:39 (WEA 02)	07:07 17:10	08:15 (WEA 01)	08:01 16:23		08:31 16:19
27	05:39 21:23	06:28 20:25	07:18 19:14	08:38 (WEA 02)	07:09 17:08	08:15 (WEA 01)	08:02 16:22		08:32 16:20
28	05:40 21:22	06:29 20:23	07:19 19:12	09:01 (WEA 02)	07:10 17:07	08:15 (WEA 01)	08:04 16:21		08:32 16:21
29	05:42 21:20	06:31 20:20	07:21 19:09	08:37 (WEA 02)	07:12 17:05	08:14 (WEA 01)	08:05 16:20		08:32 16:22
30	05:43 21:19	06:32 20:18	07:23 19:07	09:00 (WEA 02)	07:14 17:03	08:15 (WEA 01)	08:07 16:20		08:32 16:22
31	05:45 21:17	06:34 20:16		09:00 (WEA 02)	07:16 17:01	08:16 (WEA 01)			08:32 16:23
Sonnenscheinstunden	501	453	381		332		267		245
astr.max.mögl.Beschattung			172		297		34		

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

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

Berechnung: GB KeimbergSchattenrezeptor: SR D - Am Hammer 20, 33184 Altenbeken  
 Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:32	08:05	10:08 (WEA 05)	07:12	07:02	05:58
	16:25	17:12	56 11:04 (WEA 04)	18:03	19:57	19:40 (41908-15 (3))
2	08:32	08:04	10:08 (WEA 05)	07:10	07:00	05:56
	16:26	17:14	56 11:04 (WEA 04)	18:05	19:59	19:41 (41908-15 (3))
3	08:32	08:02	10:09 (WEA 05)	07:08	06:58	05:54
	16:27	17:16	55 11:04 (WEA 04)	18:07	20:00	19:48 (41908-15 (3))
4	08:32	08:01	10:10 (WEA 05)	07:06	06:55	05:52
	16:28	17:18	54 11:04 (WEA 04)	18:09	20:02	19:49 (41908-15 (3))
5	08:31	07:59	10:12 (WEA 05)	07:04	06:53	05:50
	16:29	17:19	53 11:05 (WEA 04)	18:10	20:04	19:50 (41908-15 (3))
6	08:31	07:57	10:14 (WEA 05)	07:01	06:51	05:48
	16:30	17:21	51 11:05 (WEA 04)	18:12	20:05	19:51 (41908-15 (3))
7	08:31	07:56	10:18 (WEA 05)	06:59	06:49	05:47
	16:32	17:23	42 11:04 (WEA 04)	18:14	20:07	19:52 (41908-15 (3))
8	08:30	07:54	10:27 (WEA 04)	06:57	06:46	05:45
	16:33	17:25	37 11:04 (WEA 04)	18:16	20:09	19:53 (41908-15 (3))
9	08:30	07:52	10:27 (WEA 04)	06:55	06:44	05:43
	16:34	17:27	36 11:03 (WEA 04)	18:18	20:11	19:54 (41908-15 (3))
10	08:29	07:50	10:27 (WEA 04)	06:53	06:42	05:42
	16:36	17:29	36 11:03 (WEA 04)	18:19	20:12	19:55 (41908-15 (3))
11	08:29	10:12 (WEA 05)	07:49	10:28 (WEA 04)	06:50	06:40
	16:37	5 10:17 (WEA 05)	17:31	11:02 (WEA 04)	18:21	20:14
12	08:28	10:10 (WEA 05)	07:47	10:30 (WEA 04)	06:48	06:37
	16:38	9 10:19 (WEA 05)	17:32	11:02 (WEA 04)	18:23	20:16
13	08:27	10:08 (WEA 05)	07:45	10:31 (WEA 04)	06:46	06:35
	16:40	13 10:21 (WEA 05)	17:34	11:01 (WEA 04)	18:25	20:17
14	08:27	10:08 (WEA 05)	07:43	10:32 (WEA 04)	06:44	06:33
	16:41	16 10:24 (WEA 05)	17:36	11:00 (WEA 04)	18:26	20:19
15	08:26	10:07 (WEA 05)	07:41	10:33 (WEA 04)	06:41	06:31
	16:43	18 10:25 (WEA 05)	17:38	10:58 (WEA 04)	18:28	20:21
16	08:25	10:07 (WEA 05)	07:39	10:35 (WEA 04)	06:39	06:29
	16:44	20 10:27 (WEA 05)	17:40	10:56 (WEA 04)	18:30	20:22
17	08:24	10:06 (WEA 05)	07:37	10:37 (WEA 04)	06:37	06:26
	16:46	22 10:28 (WEA 05)	17:42	10:52 (WEA 04)	18:31	20:24
18	08:23	10:05 (WEA 05)	07:35	06:34	06:24	05:29
	16:48	23 10:28 (WEA 05)	17:43	18:33	20:26	21:15
19	08:22	10:05 (WEA 05)	07:33	06:32	06:22	05:28
	16:49	33 10:46 (WEA 04)	17:45	18:35	20:27	21:16
20	08:21	10:05 (WEA 05)	07:31	06:30	06:20	05:26
	16:51	39 10:49 (WEA 04)	17:47	18:37	20:29	21:17
21	08:20	10:05 (WEA 05)	07:29	06:27	06:18	05:25
	16:53	45 10:52 (WEA 04)	17:49	18:38	20:31	21:19
22	08:19	10:05 (WEA 05)	07:27	06:25	06:16	05:24
	16:54	49 10:54 (WEA 04)	17:51	18:40	20:32	6 19:43 (41908-15 (3))
23	08:18	10:05 (WEA 05)	07:25	06:23	06:14	05:22
	16:56	50 10:55 (WEA 04)	17:53	18:42	20:34	10 19:41 (41908-15 (3))
24	08:17	10:05 (WEA 05)	07:23	06:21	06:12	05:21
	16:58	52 10:57 (WEA 04)	17:54	18:43	20:36	12 19:52 (41908-15 (3))
25	08:15	10:04 (WEA 05)	07:21	06:18	06:10	05:20
	17:00	53 10:57 (WEA 04)	17:56	18:45	20:38	13 19:39 (41908-15 (3))
26	08:14	10:05 (WEA 05)	07:19	06:16	06:08	05:19
	17:01	54 10:59 (WEA 04)	17:58	18:47	20:39	15 19:53 (41908-15 (3))
27	08:13	10:05 (WEA 05)	07:17	06:14	06:06	05:18
	17:03	55 11:00 (WEA 04)	18:00	18:49	20:41	14 19:38 (41908-15 (3))
28	08:11	10:06 (WEA 05)	07:15	06:11	06:04	05:17
	17:05	55 11:01 (WEA 04)	18:02	18:50	20:43	14 19:39 (41908-15 (3))
29	08:10	10:05 (WEA 05)	07:13	06:09	06:02	05:16
	17:07	56 11:01 (WEA 04)	18:04	19:52	20:44	13 19:52 (41908-15 (3))
30	08:08	10:06 (WEA 05)	07:11	06:07	06:00	05:15
	17:08	57 11:03 (WEA 04)	18:06	19:54	20:46	12 19:51 (41908-15 (3))
31	08:07	10:07 (WEA 05)	07:09	06:05	05:58	05:14
	17:10	56 11:03 (WEA 04)	18:08	19:55	20:47	21:31
Sonnenscheinstunden	260	278	367	416	484	498
astr. max. mögl. Beschattung	780	661	109	17		

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

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

Berechnung: GB KeimbergSchattenrezeptor: SR D - Am Hammer 20, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember
1	05:10 21:47	05:46 21:15	06:35 20:14	07:24 19:05	07:18 16:59	08:08 16:19
2	05:11 21:47	05:48 21:14	06:37 20:11	07:26 19:02	36 16:57	5 09:54 (WEA 05) 09:59 (WEA 05)
3	05:11 21:46	05:49 21:12	06:39 20:09	07:27 19:00	36 16:55	08:10 16:18
4	05:12 21:46	05:51 21:10	06:40 20:07	07:29 18:58	38 16:53	08:11 16:17
5	05:13 21:45	05:52 21:09	06:42 20:05	07:31 18:55	45 16:52	08:12 16:16
6	05:14 21:45	05:54 21:07	06:44 20:02	07:32 18:53	50 16:50	08:13 16:16
7	05:15 21:44	05:55 21:05	06:45 20:00	07:34 18:51	53 16:48	08:14 16:16
8	05:15 21:44	05:57 21:03	06:47 19:58	07:36 18:49	54 16:47	08:15 16:15
9	05:16 21:43	05:59 21:01	06:48 19:56	07:37 18:46	55 16:45	08:16 16:15
10	05:17 21:42	06:00 21:00	19:53 (41908-15 (3)) 06:50	07:39 18:44	56 16:43	08:17 16:15
11	05:18 21:41	06:02 20:58	19:54 (41908-15 (3)) 19:49 (41908-15 (3))	06:52 19:51	56 16:42	08:18 16:15
12	05:20 21:41	06:03 20:56	19:57 (41908-15 (3)) 19:48 (41908-15 (3))	06:53 19:49	57 16:42	08:19 16:15
13	05:21 21:40	06:05 20:54	19:59 (41908-15 (3)) 19:46 (41908-15 (3))	06:55 19:46	57 16:40	08:20 16:15
14	05:22 21:39	06:06 20:52	19:59 (41908-15 (3)) 20:00 (41908-15 (3))	06:56 19:44	56 16:39	08:21 16:15
15	05:23 21:38	06:08 20:50	19:45 (41908-15 (3)) 20:00 (41908-15 (3))	06:58 19:42	56 16:37	08:22 16:15
16	05:24 21:37	06:10 20:48	19:45 (41908-15 (3)) 20:00 (41908-15 (3))	07:00 19:39	54 16:36	08:23 16:15
17	05:25 21:36	06:11 20:46	19:45 (41908-15 (3)) 19:59 (41908-15 (3))	07:01 19:37	54 16:34	08:24 16:15
18	05:27 21:35	06:13 20:44	19:45 (41908-15 (3)) 19:59 (41908-15 (3))	07:03 19:35	53 16:33	08:25 16:15
19	05:28 21:34	06:14 20:42	19:46 (41908-15 (3)) 19:58 (41908-15 (3))	07:04 19:32	52 16:32	08:26 16:15
20	05:29 21:32	06:16 20:40	19:47 (41908-15 (3)) 19:56 (41908-15 (3))	07:06 19:30	50 16:31	08:27 16:15
21	05:30 21:31	06:18 20:38	19:49 (41908-15 (3)) 19:54 (41908-15 (3))	07:08 19:28	49 16:29	08:28 16:16
22	05:32 21:30	06:19 20:36	19:28 19:25	07:09 18:18	45 16:28	08:29 16:16
23	05:33 21:29	06:21 20:33	19:11 19:23	08:02 18:16	40 16:27	08:30 16:17
24	05:34 21:27	06:23 20:31	07:13 19:21	08:03 18:14	33 16:26	08:31 16:18
25	05:36 21:26	06:24 20:29	07:14 19:18	07:05 17:12	23 16:25	08:32 16:18
26	05:37 21:25	06:26 20:27	07:16 19:16	07:07 17:10	22 16:24	08:33 16:19
27	05:39 21:23	06:27 20:25	07:18 19:14	07:09 17:08	22 16:23	08:34 16:20
28	05:40 21:22	06:29 20:23	07:19 19:12	07:10 17:06	18 16:22	08:35 16:21
29	05:42 21:20	06:31 20:20	07:21 19:09	07:12 17:04	16 16:21	08:36 16:21
30	05:43 21:19	06:32 20:18	07:22 19:07	07:14 17:03	13 16:20	08:37 16:22
31	05:45 21:17	06:34 20:16	07:16 17:01	07:16 17:01	10 16:19	08:38 16:23
	Sonnenscheinstunden astr.max.mögl.Beschattung	501 453	381	332	267	245
		131		197	1256	5

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

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

Berechnung: GB Keimberg Schattenrezeptor: SR E - Am Hammer 16, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mal	Juni	Juli	August	September	Oktober	November	Dezember
1	08:32	10:47 (WEA 05)	08:05	07:12	07:02	05:58	05:13	05:10	05:46	06:35	07:24	07:17
2	16:25	56 11:50 (WEA 04)	17:12	18:03	19:57	20:48	21:33	21:47	21:15	20:14	19:05	16:59
3	08:32	10:49 (WEA 05)	08:02	07:08	06:58	05:54	05:11	05:11	05:49	06:39	07:27	07:21
4	16:27	54 11:51 (WEA 04)	17:16	18:07	19:59	20:50	21:35	21:46	21:12	20:09	19:00	16:55
5	08:31	10:51 (WEA 05)	07:59	07:04	06:53	05:50	05:10	05:13	05:52	06:42	07:31	07:25
6	16:29	51 11:52 (WEA 04)	17:19	18:10	20:04	20:54	21:37	21:45	21:09	20:05	18:55	16:52
7	08:31	10:51 (WEA 05)	07:57	07:01	06:51	05:48	05:09	05:14	05:54	06:44	07:32	07:26
8	16:30	51 11:52 (WEA 04)	17:21	18:12	20:05	20:56	21:38	21:45	21:07	20:02	18:53	16:50
9	08:31	10:52 (WEA 05)	07:56	06:59	06:49	05:47	05:09	05:15	05:55	06:45	07:34	07:28
10	16:32	50 11:52 (WEA 04)	17:23	18:14	20:07	20:57	21:39	21:44	21:05	20:00	18:51	16:48
11	08:30	10:53 (WEA 05)	07:54	06:57	06:46	05:45	05:08	05:15	05:57	06:47	07:36	07:30
12	16:33	48 11:52 (WEA 04)	17:25	18:16	20:09	20:59	21:40	21:44	21:03	19:58	18:49	16:47
13	08:30	10:55 (WEA 05)	07:52	06:55	06:44	05:43	05:08	05:16	05:59	06:48	07:37	07:32
14	16:34	47 11:53 (WEA 04)	17:27	18:18	20:11	21:01	21:41	21:43	21:01	19:56	18:46	16:45
15	08:29	10:56 (WEA 05)	07:50	06:53	06:42	05:41	05:07	05:17	06:00	06:50	07:39	07:34
16	16:36	44 11:53 (WEA 04)	17:29	18:19	20:12	21:02	21:42	21:42	21:00	19:53	18:44	16:43
17	08:29	10:57 (WEA 05)	07:49	06:50	06:40	05:40	05:07	05:18	06:02	06:52	07:41	07:35
18	16:37	41 11:52 (WEA 04)	17:31	18:21	20:14	21:04	21:42	21:41	20:58	19:51	18:42	16:42
19	08:28	10:59 (WEA 05)	07:47	06:48	06:37	05:38	05:06	05:19	06:03	06:53	07:43	07:37
20	16:38	37 11:52 (WEA 04)	17:32	18:23	20:16	21:05	21:43	21:41	20:56	19:49	18:40	16:40
21	08:27	11:02 (WEA 05)	07:45	06:46	06:35	05:37	05:06	05:21	06:05	06:55	07:44	07:39
22	16:40	31 11:52 (WEA 04)	17:34	18:25	20:17	21:07	21:44	21:40	20:54	19:46	18:38	16:39
23	08:27	11:26 (WEA 04)	07:43	06:44	06:33	05:35	05:06	05:22	06:06	06:56	07:46	07:41
24	16:41	27 11:53 (WEA 04)	17:36	18:26	20:19	21:09	21:44	21:39	20:52	19:44	18:35	16:37
25	08:26	11:27 (WEA 04)	07:41	06:41	06:31	05:33	05:06	05:23	06:08	06:58	07:48	07:42
26	16:43	26 11:53 (WEA 04)	17:38	18:28	20:21	21:10	21:45	21:38	20:50	19:42	18:33	16:36
27	08:25	11:28 (WEA 04)	07:39	06:39	06:29	05:32	05:06	05:24	06:10	07:00	07:49	07:44
28	16:44	24 11:52 (WEA 04)	17:40	18:30	20:22	21:12	21:45	21:37	20:48	19:39	18:31	16:34
29	08:24	11:29 (WEA 04)	07:37	06:37	06:26	05:30	05:06	05:25	06:11	07:01	07:51	07:46
30	16:46	23 11:52 (WEA 04)	17:42	18:31	20:24	21:13	21:46	21:36	20:46	19:37	18:29	16:33
31	08:23	11:29 (WEA 04)	07:35	06:34	06:24	05:29	05:06	05:27	06:13	07:03	07:53	07:47
32	16:48	21 11:50 (WEA 04)	17:43	18:33	20:26	21:15	21:46	21:35	20:44	19:35	18:27	16:32
33	08:22	11:31 (WEA 04)	07:33	06:32	06:22	05:28	05:06	05:28	06:14	07:04	07:55	07:49
34	16:49	18 11:49 (WEA 04)	17:45	18:35	20:27	21:16	21:47	21:34	20:42	19:32	18:25	16:31
35	08:21	11:33 (WEA 04)	07:31	06:30	06:20	05:26	05:06	05:29	06:16	07:06	07:56	07:51
36	16:51	15 11:48 (WEA 04)	17:47	18:37	20:29	21:17	21:47	21:32	20:40	19:30	18:23	16:29
37	08:20	11:36 (WEA 04)	07:29	06:27	06:18	05:25	05:06	05:30	06:18	07:08	07:58	07:53
38	16:53	10 11:46 (WEA 04)	17:49	18:38	20:31	21:19	21:47	21:31	20:38	19:28	18:20	16:28
39	08:19		07:27	06:25	06:16	05:24	05:06	05:32	06:19	07:09	08:00	07:54
40	16:54		17:51	18:40	20:32	21:20	21:47	21:30	20:36	19:25	18:18	16:27
41	08:18		07:25	06:23	06:14	05:22	05:06	05:33	06:21	07:11	08:02	07:56
42	16:56		17:53	18:42	20:34	21:22	21:48	21:29	20:33	19:23	18:16	16:26
43	08:17		07:23	06:21	06:12	05:21	05:06	05:34	06:23	07:13	08:03	07:57
44	16:58		17:54	18:43	20:36	21:23	21:48	21:27	20:31	19:21	18:14	16:25
45	08:15		07:21	06:18	06:10	05:20	05:07	05:36	06:24	07:14	08:05	07:59
46	17:00		17:56	18:45	20:38	21:24	21:48	21:26	20:29	19:18	18:12	16:24
47	08:14		07:19	06:16	06:08	05:19	05:07	05:37	06:26	07:16	08:07	08:01
48	17:01		17:58	18:47	20:39	21:26	21:48	21:25	20:27	19:16	18:10	16:23
49	08:13		07:17	06:14	06:06	05:18	05:08	05:39	06:27	07:18	08:09	08:02
50	17:03		18:00	18:48	20:41	21:27	21:48	21:23	20:25	19:14	18:08	16:22
51	08:11		07:15	06:11	06:04	05:17	05:08	05:40	06:29	07:19	08:10	08:04
52	17:05		18:02	18:50	20:43	21:28	21:48	21:22	20:23	19:12	18:06	16:21
53	08:10			07:09	06:02	05:16	05:09	05:42	06:31	07:21	08:12	08:05
54	17:07			19:52	20:44	21:29	21:47	21:20	20:20	19:09	18:04	16:20
55	08:08			07:07	06:00	05:15	05:09	05:43	06:32	07:22	08:14	08:07
56	17:08			19:54	20:46	21:31	21:47	21:19	20:18	19:07	18:03	16:20
57	08:07			07:04	06:00	05:14	05:05	05:45	06:34	07:24	08:16	08:09
58	17:10			19:55		21:32		21:17	20:16		17:01	
59	Sonnenscheinstunden	260										
60	astr.max.mögl.Beschattung	783	278	367	416	484	498	501	453	381	332	267
61											228	1676

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

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

### SHADOW - Kalender

Berechnung: GB KeimbergSchattenrezeptor: SR F - Am Hammer 18, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:32	10:33 (WEA 05)	08:05	07:12	07:02	05:58	05:13	05:10	05:46	06:35	07:24	07:18
2	16:25	58 11:34 (WEA 04)	17:12	18:03	19:57	20:48	21:33	21:47	21:15	20:14	19:05	16:59
3	08:32	10:34 (WEA 05)	08:04	07:10	07:00	05:56	05:12	05:11	05:48	06:37	07:26	07:19
4	16:26	57 11:34 (WEA 04)	17:14	18:05	19:59	20:49	21:34	21:47	21:14	20:11	19:02	16:57
5	08:32	10:35 (WEA 05)	08:02	07:08	06:58	05:54	05:11	05:11	05:49	06:39	07:27	07:21
6	16:27	57 11:35 (WEA 04)	17:16	18:07	20:00	20:51	21:35	21:46	21:12	20:09	19:00	16:55
7	08:32	10:35 (WEA 05)	08:01	07:06	06:55	05:52	05:10	05:12	05:51	06:40	07:29	07:23
8	16:28	57 11:35 (WEA 04)	17:18	18:09	20:02	20:52	21:36	21:46	21:10	20:07	18:58	16:53
9	08:31	10:36 (WEA 05)	07:59	07:04	06:53	05:50	05:10	05:13	05:52	06:42	07:31	07:25
10	16:29	57 11:36 (WEA 04)	17:19	18:10	20:04	20:54	21:37	21:45	21:09	20:05	18:55	16:52
11	08:31	10:36 (WEA 05)	07:57	07:01	06:51	05:48	05:09	05:14	05:54	06:44	07:32	07:26
12	16:30	57 11:36 (WEA 04)	17:21	18:12	20:05	20:56	21:38	21:45	21:07	20:02	18:53	16:50
13	08:31	10:37 (WEA 05)	07:56	06:59	06:49	05:47	05:09	05:15	05:55	06:45	07:34	07:28
14	16:32	57 11:37 (WEA 04)	17:23	18:14	20:07	20:57	21:39	21:44	21:05	20:00	18:51	16:48
15	08:30	10:37 (WEA 05)	07:54	06:57	06:46	05:45	05:08	05:15	05:57	06:47	07:36	07:30
16	16:33	57 11:37 (WEA 04)	17:25	18:16	20:09	20:59	21:40	21:44	21:03	19:58	18:49	16:47
17	08:30	10:38 (WEA 05)	07:52	06:55	06:44	05:43	05:08	05:16	05:59	06:48	07:37	07:32
18	16:34	57 11:38 (WEA 04)	17:27	18:18	20:11	21:01	21:41	21:43	21:01	19:56	18:46	16:45
19	08:29	10:39 (WEA 05)	07:50	06:53	06:42	05:41	05:07	05:17	06:00	06:50	07:39	07:34
20	16:36	55 11:38 (WEA 04)	17:29	18:19	20:12	21:02	21:42	21:42	21:00	19:53	18:44	16:43
21	08:29	10:39 (WEA 05)	07:49	06:50	06:40	05:40	05:07	05:18	06:02	06:52	07:41	07:35
22	16:37	54 11:38 (WEA 04)	17:31	18:21	20:14	21:04	21:42	21:41	20:58	19:51	18:42	16:42
23	08:28	10:40 (WEA 05)	07:47	06:48	06:37	05:38	05:06	05:20	06:03	06:53	07:43	07:37
24	16:38	53 11:38 (WEA 04)	17:32	18:23	20:16	21:05	21:43	21:41	20:56	19:49	18:40	16:40
25	08:27	10:41 (WEA 05)	07:45	06:46	06:35	05:37	05:06	05:21	06:05	06:55	07:44	07:39
26	16:40	51 11:38 (WEA 04)	17:34	18:25	20:17	21:07	21:44	21:40	20:54	19:46	18:38	16:39
27	08:27	10:43 (WEA 05)	07:43	06:44	06:33	05:35	05:06	05:22	06:06	06:56	07:46	07:41
28	16:41	49 11:39 (WEA 04)	17:36	18:26	20:19	21:09	21:44	21:39	20:52	19:44	18:35	16:37
29	08:26	10:44 (WEA 05)	07:41	06:41	06:31	05:33	05:06	05:23	06:08	06:58	07:48	07:42
30	16:43	47 11:39 (WEA 04)	17:38	18:28	20:21	21:10	21:45	21:38	20:50	19:42	18:33	16:36
31	08:25	10:45 (WEA 05)	07:39	06:39	06:29	05:32	05:06	05:24	06:10	07:00	07:49	07:44
32	16:44	45 11:39 (WEA 04)	17:40	18:30	20:22	21:12	21:45	21:37	20:48	19:39	18:31	16:34
33	08:24	10:47 (WEA 05)	07:37	06:37	06:26	05:30	05:06	05:25	06:11	07:01	07:51	07:46
34	16:46	41 11:39 (WEA 04)	17:42	18:31	20:24	21:13	21:46	21:36	20:46	19:37	18:29	16:33
35	08:23	10:49 (WEA 05)	07:35	06:34	06:24	05:29	05:06	05:27	06:13	07:03	07:53	07:47
36	16:48	36 11:38 (WEA 04)	17:43	18:33	20:26	21:15	21:46	21:35	20:44	19:35	18:27	16:32
37	08:22	11:10 (WEA 04)	07:33	06:32	06:22	05:28	05:06	05:28	06:14	07:04	07:55	07:49
38	16:49	28 11:38 (WEA 04)	17:45	18:35	20:27	21:16	21:47	21:34	20:42	19:32	18:25	16:31
39	08:21	11:12 (WEA 04)	07:31	06:30	06:20	05:26	05:06	05:29	06:16	07:06	07:56	07:51
40	16:51	26 11:38 (WEA 04)	17:47	18:37	20:29	21:17	21:47	21:32	20:40	19:30	18:23	16:29
41	08:20	11:13 (WEA 04)	07:29	06:27	06:18	05:25	05:06	05:30	06:18	07:08	07:58	07:53
42	16:53	25 11:38 (WEA 04)	17:49	18:38	20:31	21:19	21:47	21:31	20:38	19:28	18:20	16:28
43	08:19	11:14 (WEA 04)	07:27	06:25	06:16	05:24	05:06	05:32	06:19	07:09	08:00	07:54
44	16:54	24 11:38 (WEA 04)	17:51	18:40	20:32	21:20	21:47	21:30	20:36	19:25	18:18	16:27
45	08:18	11:15 (WEA 04)	07:25	06:23	06:14	05:22	05:06	05:33	06:21	07:11	08:02	07:56
46	16:56	21 11:36 (WEA 04)	17:53	18:42	20:34	21:22	21:48	21:29	20:33	19:23	18:16	16:26
47	08:17	11:17 (WEA 04)	07:23	06:21	06:12	05:21	05:07	05:34	06:23	07:13	08:03	07:57
48	16:58	18 11:35 (WEA 04)	17:54	18:43	20:36	21:23	21:48	21:27	20:31	19:21	18:14	16:25
49	08:15	11:18 (WEA 04)	07:21	06:18	06:10	05:20	05:07	05:36	06:24	07:14	08:05	07:59
50	17:00	15 11:33 (WEA 04)	17:56	18:45	20:38	21:24	21:48	21:26	20:29	19:18	18:11	16:24
51	08:14	11:22 (WEA 04)	07:19	06:16	06:08	05:19	05:07	05:37	06:26	07:16	08:07	08:01
52	17:01	9 11:31 (WEA 04)	17:58	18:47	20:39	21:26	21:48	21:25	20:27	19:16	18:09	17:02
53	08:13	07:17	16:14	06:06	05:18	05:08	05:39	06:27	07:18	08:09	08:02	07:47
54	17:03	18:00	18:48	20:41	21:27	21:48	21:23	20:25	19:14	18:07	16:22	47 11:18 (WEA 04)
55	08:11	07:15	16:04	06:04	05:17	05:08	05:40	06:29	07:19	08:10	08:04	48 11:22 (WEA 05)
56	17:05	18:02	18:50	20:43	21:28	21:48	21:22	20:23	19:12	18:06	16:21	49 11:18 (WEA 04)
57	08:10	07:09	06:02	05:16	05:09	05:42	06:31	07:21	08:12	09:05	10:00	11:05
58	17:07		19:52	20:44	21:29	21:47	21:20	20:20	19:09	18:04	17:04	50 11:19 (WEA 04)
59	08:08	07:07	06:00	05:15	05:09	05:43	06:32	07:22	08:14	09:07	10:02	11:07
60	17:08	19:54	20:46	21:31	21:47	21:19	20:18	19:07	18:04	17:03	16:20	51 11:20 (WEA 04)
61	08:07	07:04	06:03	05:14	05:08	05:45	06:34	07:24	08:16	09:11	10:06	11:11
62	17:10	19:55	21:32			21:17	20:16		17:01			52 16:23
63	08:06											53 11:33 (WEA 04)
64	17:11	260										1111
65	astr.max.mögl.Beschattung		278	416	484	498	501	453	381	332	267	488
66												1760

Sonnenscheinstunden 260  
astr.max.mögl.Beschattung 1111

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)

# SHADOW - Kalender

Berechnung: GB Keimberg Schattenrezeptor: SR G - Am Hammer 17, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mal	Juni	Juli	August	September	Oktober	November	Dezember
1	08:32	10:56 (WEA 05)	08:05	07:12	07:02	05:58	05:13	05:10	05:46	06:35	07:24	08:08
	16:25	11:45 (WEA 04)	17:12	18:03	19:57	20:48	21:33	21:47	21:15	20:14	19:05	16:19
2	08:32	10:57 (WEA 05)	08:04	07:10	07:00	05:56	05:12	05:11	05:48	06:37	07:26	08:10
	16:26	11:46 (WEA 04)	17:14	18:05	19:59	20:49	21:34	21:47	21:14	20:11	19:02	16:18
3	08:32	10:59 (WEA 05)	08:02	07:08	06:58	05:54	05:11	05:11	05:49	06:39	07:27	08:11
	16:27	11:46 (WEA 04)	17:16	18:07	20:00	20:51	21:35	21:46	21:12	20:09	19:00	16:18
4	08:32	11:22 (WEA 04)	08:01	07:06	06:55	05:52	05:10	05:12	05:51	06:40	07:29	08:12
	16:28	11:46 (WEA 04)	17:18	18:09	20:02	20:52	21:36	21:46	21:10	20:07	18:58	16:17
5	08:31	11:24 (WEA 04)	07:59	07:04	06:53	05:50	05:10	05:13	05:52	06:42	07:31	08:14
	16:29	11:46 (WEA 04)	17:19	18:10	20:04	20:54	21:37	21:45	21:09	20:05	18:55	16:16
6	08:31	11:24 (WEA 04)	07:57	07:01	06:51	05:48	05:09	05:14	05:54	06:44	07:32	08:15
	16:30	11:45 (WEA 04)	17:21	18:12	20:05	20:56	21:38	21:45	21:07	20:02	18:53	16:16
7	08:31	11:25 (WEA 04)	07:56	06:59	06:49	05:47	05:09	05:15	05:55	06:45	07:34	08:16
	16:32	11:46 (WEA 04)	17:23	18:14	20:07	20:57	21:39	21:44	21:05	20:00	18:51	16:16
8	08:30	11:26 (WEA 04)	07:54	06:57	06:46	05:45	05:08	05:15	05:57	06:47	07:36	08:17
	16:33	11:45 (WEA 04)	17:25	18:16	20:09	20:59	21:40	21:44	21:03	19:58	18:49	16:15
9	08:30	11:28 (WEA 04)	07:52	06:55	06:44	05:43	05:08	05:16	05:59	06:48	07:37	08:19
	16:34	11:45 (WEA 04)	17:27	18:18	20:11	21:01	21:41	21:43	21:01	19:56	18:46	16:15
10	08:29	11:29 (WEA 04)	07:50	06:53	06:42	05:41	05:07	05:17	06:00	06:50	07:39	08:20
	16:36	11:44 (WEA 04)	17:29	18:19	20:12	21:02	21:42	21:42	21:00	19:53	18:44	16:15
11	08:29	11:30 (WEA 04)	07:49	06:50	06:40	05:40	05:07	05:18	06:02	06:52	07:41	08:21
	16:37	11:43 (WEA 04)	17:31	18:21	20:14	21:04	21:42	21:41	20:58	19:51	18:42	16:15
12	08:28	11:32 (WEA 04)	07:47	06:48	06:37	05:38	05:06	05:19	06:03	06:53	07:43	08:22
	16:38	11:42 (WEA 04)	17:32	18:23	20:16	21:05	21:43	21:41	20:56	19:49	18:40	16:15
13	08:27		07:45	06:46	06:35	05:37	05:06	05:21	06:05	06:55	07:44	08:23
	16:40		17:34	18:25	20:17	21:07	21:44	21:40	20:54	19:46	18:38	16:14
14	08:27		07:43	06:44	06:33	05:35	05:06	05:22	06:06	06:56	07:46	08:24
	16:41		17:36	18:26	20:19	21:09	21:44	21:39	20:52	19:44	18:35	16:14
15	08:26		07:41	06:41	06:31	05:33	05:08	05:23	06:08	06:58	07:48	08:25
	16:43		17:38	18:28	20:21	21:10	21:45	21:38	20:50	19:42	18:33	16:15
16	08:25		07:39	06:39	06:29	05:32	05:06	05:24	06:10	07:00	07:49	08:26
	16:44		17:40	18:30	20:22	21:12	21:45	21:37	20:48	19:39	18:31	16:15
17	08:24		07:37	06:37	06:26	05:30	05:06	05:25	06:11	07:01	07:51	08:26
	16:46		17:42	18:31	20:24	21:13	21:46	21:36	20:46	19:37	18:29	16:15
18	08:23		07:35	06:34	06:24	05:29	05:06	05:26	06:13	07:03	07:53	08:27
	16:48		17:43	18:33	20:26	21:15	21:46	21:35	20:44	19:35	18:27	16:15
19	08:22		07:33	06:32	06:22	05:28	05:06	05:28	06:14	07:04	07:55	08:28
	16:49		17:45	18:35	20:27	21:16	21:47	21:34	20:42	19:32	18:25	16:15
20	08:21		07:31	06:30	06:20	05:26	05:06	05:29	06:16	07:06	07:56	08:28
	16:51		17:47	18:37	20:29	21:17	21:47	21:32	20:40	19:30	18:23	16:16
21	08:20		07:29	06:27	06:18	05:25	05:06	05:30	06:18	07:08	07:58	08:29
	16:53		17:49	18:38	20:31	21:19	21:47	21:31	20:38	19:28	18:20	16:16
22	08:19		07:27	06:25	06:16	05:24	05:06	05:32	06:19	07:09	08:00	08:30
	16:54		17:51	18:40	20:32	21:20	21:47	21:30	20:36	19:25	18:18	16:17
23	08:18		07:25	06:23	06:14	05:22	05:06	05:33	06:21	07:11	08:02	08:30
	16:56		17:53	18:42	20:34	21:22	21:48	21:29	20:33	19:23	18:16	16:17
24	08:17		07:23	06:21	06:12	05:21	05:06	05:34	06:23	07:13	08:03	08:31
	16:58		17:54	18:43	20:36	21:23	21:48	21:27	20:31	19:21	18:14	16:18
25	08:15		07:21	06:18	06:10	05:20	05:07	05:36	06:24	07:14	08:05	08:31
	17:00		17:56	18:45	20:38	21:24	21:48	21:26	20:29	19:18	18:12	16:18
26	08:14		07:19	06:16	06:08	05:19	05:07	05:37	06:26	07:16	08:07	08:31
	17:01		17:58	18:47	20:39	21:26	21:48	21:25	20:27	19:16	18:10	16:19
27	08:13		07:17	06:14	06:06	05:18	05:08	05:39	06:27	07:18	08:09	08:31
	17:03		18:00	18:48	20:41	21:27	21:48	21:23	20:25	19:14	18:08	16:20
28	08:11		07:15	06:11	06:04	05:17	05:08	05:40	06:29	07:19	08:10	08:32
	17:05		18:02	18:50	20:43	21:28	21:48	21:22	20:23	19:12	18:06	16:21
29	08:10			07:09	06:02	05:16	05:09	05:42	06:31	07:21	08:12	08:32
	17:07			19:52	20:44	21:30	21:47	21:20	20:20	19:09	18:04	16:21
30	08:08			07:07	06:00	05:15	05:09	05:43	06:32	07:22	08:14	08:32
	17:08			19:54	20:46	21:31	21:47	21:19	20:18	19:07	18:03	16:20
31	08:07			07:04		05:14		05:45	06:34		07:16	08:32
	17:10			19:55		21:32		21:17	20:16		17:01	16:23
												245
Sonnenscheinstunden	260											
astr.max.mögl.Beschattung	258	278	367	416	484	498	501	453	381	332	267	1061

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

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

Berechnung: GB KeimbergSchattenrezeptor: SR I - Am Keimberg 64, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

Januar		Februar		März		April		Mai		Juni	
1	08:32	15:19 (WEA2)	08:05	15:29 (WEA2)	07:12	16:34 (WEA 07)	07:02	18:59 (WEA 08)	05:58	19:43 (WEA 06)	05:13
	16:25	15:43 (WEA2)	17:12	15:54 (WEA2)	18:03	17:08 (WEA 07)	19:57	19:22 (00090-11-14)	20:47	20:09 (WEA 06)	21:33
2	08:32	15:20 (WEA2)	08:04	15:31 (WEA2)	07:10	16:33 (WEA 07)	07:00	19:02 (00090-11-14)	05:56	19:42 (WEA 06)	05:12
	16:26	15:44 (WEA2)	17:14	15:53 (WEA2)	18:05	17:39 (1868-98-06)	19:59	19:22 (00090-11-14)	20:49	20:09 (WEA 06)	21:34
3	08:32	15:19 (WEA2)	08:02	15:32 (WEA2)	07:08	16:34 (WEA 07)	06:58	19:00 (00090-11-14)	05:54	19:42 (WEA 06)	05:11
	16:27	15:44 (WEA2)	17:16	15:52 (WEA2)	18:07	17:41 (1868-98-06)	20:00	19:24 (00090-11-14)	20:51	20:09 (WEA 06)	21:35
4	08:31	15:19 (WEA2)	08:01	15:35 (WEA2)	07:06	16:35 (WEA 07)	06:55	19:00 (00090-11-14)	05:52	19:42 (WEA 06)	05:10
	16:28	15:46 (WEA2)	17:18	15:49 (WEA2)	18:09	16:36 (WEA 07)	06:53	19:24 (00090-11-14)	20:52	20:10 (WEA 06)	21:36
5	08:31	15:20 (WEA2)	07:59	15:39 (WEA2)	07:04	16:36 (WEA 07)	06:53	18:59 (00090-11-14)	05:50	19:41 (WEA 06)	05:10
	16:29	15:47 (WEA2)	17:19	16:48 (00560-10-14)	18:10	17:45 (1868-98-06)	20:04	19:25 (00090-11-14)	20:54	20:10 (WEA 06)	21:37
6	08:31	15:19 (WEA2)	07:57	16:38 (00560-10-14)	07:01	16:37 (WEA 07)	06:51	18:57 (00090-11-14)	05:48	19:41 (WEA 06)	05:09
	16:30	15:47 (WEA2)	17:21	16:49 (00560-10-14)	18:12	17:09 (02501-12-14)	20:05	19:24 (00090-11-14)	20:56	20:09 (WEA 06)	21:38
7	08:30	15:20 (WEA2)	07:56	16:37 (00560-10-14)	06:59	16:38 (WEA 07)	06:48	18:57 (00090-11-14)	05:47	19:42 (WEA 06)	05:09
	16:31	15:48 (WEA2)	17:23	16:50 (00560-10-14)	18:14	17:10 (02501-12-14)	20:07	19:25 (00090-11-14)	20:57	20:10 (WEA 06)	21:39
8	08:30	15:19 (WEA2)	07:54	16:37 (00560-10-14)	06:57	16:41 (WEA 07)	06:46	18:57 (00090-11-14)	05:45	19:41 (WEA 06)	05:08
	16:33	15:49 (WEA2)	17:25	16:50 (00560-10-14)	18:16	17:11 (02501-12-14)	20:09	19:25 (00090-11-14)	20:59	20:09 (WEA 06)	21:40
9	08:30	15:19 (WEA2)	07:52	16:36 (00560-10-14)	06:55	16:42 (02501-12-14)	06:44	18:57 (00090-11-14)	05:43	19:41 (WEA 06)	05:08
	16:34	15:49 (WEA2)	17:27	16:50 (00560-10-14)	18:17	17:11 (02501-12-14)	20:10	19:25 (00090-11-14)	21:00	20:09 (WEA 06)	21:41
10	08:29	15:20 (WEA2)	07:50	16:37 (00560-10-14)	06:52	16:40 (02501-12-14)	06:42	18:56 (00090-11-14)	05:41	19:42 (WEA 06)	05:07
	16:36	15:51 (WEA2)	17:29	16:50 (00560-10-14)	18:19	17:11 (02501-12-14)	20:12	19:45 (WEA 07)	21:02	20:09 (WEA 06)	21:41
11	08:28	15:20 (WEA2)	07:48	16:37 (00560-10-14)	06:50	16:40 (02501-12-14)	06:40	18:56 (00090-11-14)	05:40	19:42 (WEA 06)	05:07
	16:37	15:51 (WEA2)	17:30	16:49 (00560-10-14)	18:21	17:11 (02501-12-14)	20:14	19:47 (WEA 07)	21:04	20:08 (WEA 06)	21:42
12	08:28	15:19 (WEA2)	07:47	16:38 (00560-10-14)	06:48	16:40 (02501-12-14)	06:37	18:57 (00090-11-14)	05:38	19:43 (WEA 06)	05:06
	16:38	15:52 (WEA2)	17:32	16:48 (00560-10-14)	18:23	17:11 (02501-12-14)	20:15	19:49 (WEA 07)	21:05	20:08 (WEA 06)	21:43
13	08:27	15:19 (WEA2)	07:45	16:40 (00560-10-14)	06:46	16:39 (02501-12-14)	06:35	18:58 (00090-11-14)	05:37	19:43 (WEA 06)	05:06
	16:40	15:52 (WEA2)	17:34	16:47 (00560-10-14)	18:24	17:11 (02501-12-14)	20:17	19:51 (WEA 07)	21:07	20:07 (WEA 06)	21:43
14	08:26	15:19 (WEA2)	07:43	16:46 (WEA 07)	06:43	16:39 (02501-12-14)	06:33	18:59 (00090-11-14)	05:35	19:44 (WEA 06)	05:06
	16:41	15:53 (WEA2)	17:36	16:57 (WEA 07)	18:26	17:10 (02501-12-14)	20:19	19:52 (WEA 07)	21:08	20:06 (WEA 06)	21:44
15	08:26	15:20 (WEA2)	07:41	16:43 (WEA 07)	06:41	16:40 (02501-12-14)	06:31	19:00 (00090-11-14)	05:33	19:45 (WEA 06)	05:06
	16:43	15:53 (WEA2)	17:38	17:00 (WEA 07)	18:28	17:10 (02501-12-14)	20:21	19:52 (WEA 07)	21:10	20:35 (WEA 05)	21:45
16	08:25	15:20 (WEA2)	07:39	16:41 (WEA 07)	06:39	16:39 (02501-12-14)	06:29	19:01 (00090-11-14)	05:32	19:46 (WEA 06)	05:06
	16:44	15:54 (WEA2)	17:40	17:02 (WEA 07)	18:30	17:09 (02501-12-14)	20:22	19:51 (WEA 07)	21:11	20:38 (WEA 05)	21:45
17	08:24	15:20 (WEA2)	07:37	16:39 (WEA 07)	06:37	16:40 (02501-12-14)	06:26	19:03 (00090-11-14)	05:30	19:48 (WEA 06)	05:06
	16:46	15:55 (WEA2)	17:42	17:04 (WEA 07)	18:31	17:08 (02501-12-14)	20:24	19:51 (WEA 07)	21:13	20:40 (WEA 05)	21:46
18	08:23	15:20 (WEA2)	07:35	16:38 (WEA 07)	06:34	16:41 (02501-12-14)	06:24	19:29 (WEA 07)	05:29	19:49 (WEA 06)	05:06
	16:48	15:55 (WEA2)	17:43	17:05 (WEA 07)	18:33	17:07 (02501-12-14)	20:26	19:51 (WEA 07)	21:14	20:40 (WEA 05)	21:46
19	08:22	15:21 (WEA2)	07:33	16:36 (WEA 07)	06:32	16:43 (02501-12-14)	06:22	19:29 (WEA 07)	05:28	19:52 (WEA 06)	05:06
	16:49	16:17 (40422-20(42764-17))	17:45	17:07 (WEA 07)	18:35	18:10 (WEA 08)	20:27	19:50 (WEA 07)	21:16	20:44 (WEA 08)	21:46
20	08:21	15:21 (WEA2)	07:31	16:36 (WEA 07)	06:30	16:43 (02501-12-14)	06:20	19:29 (WEA 07)	05:26	20:23 (WEA 05)	05:06
	16:51	16:19 (40422-20(42764-17))	17:47	17:07 (WEA 07)	18:36	18:11 (WEA 08)	20:29	19:49 (WEA 07)	21:17	20:47 (WEA 08)	21:47
21	08:20	15:22 (WEA2)	07:29	16:35 (WEA 07)	06:27	16:46 (02501-12-14)	06:18	19:30 (WEA 07)	05:25	20:22 (WEA 05)	05:06
	16:53	16:21 (40422-20(42764-17))	17:49	17:08 (WEA 07)	18:38	18:13 (WEA 08)	20:31	19:48 (WEA 07)	21:19	20:48 (WEA 08)	21:47
22	08:19	15:21 (WEA2)	07:27	16:34 (WEA 07)	06:25	16:50 (02501-12-14)	06:16	19:31 (WEA 07)	05:24	20:22 (WEA 05)	05:06
	16:54	16:22 (40422-20(42764-17))	17:51	17:09 (WEA 07)	18:40	18:14 (WEA 08)	20:32	19:47 (WEA 07)	21:20	20:50 (WEA 08)	21:47
23	08:18	15:22 (WEA2)	07:25	16:34 (WEA 07)	06:23	17:54 (WEA 08)	06:14	19:32 (WEA 07)	05:22	20:21 (WEA 05)	05:06
	16:56	16:24 (40422-20(42764-17))	17:52	17:09 (WEA 07)	18:42	18:14 (WEA 08)	20:34	19:45 (WEA 07)	21:21	20:50 (WEA 08)	21:47
24	08:16	15:23 (WEA2)	07:23	16:34 (WEA 07)	06:20	17:53 (WEA 08)	06:12	19:34 (WEA 07)	05:21	20:21 (WEA 05)	05:06
	16:58	16:27 (40422-20(42764-17))	17:54	17:10 (WEA 07)	18:43	18:15 (WEA 08)	20:36	19:43 (WEA 07)	21:23	20:51 (WEA 08)	21:47
25	08:15	15:23 (WEA2)	07:21	16:33 (WEA 07)	06:18	17:53 (WEA 08)	06:10	19:35 (WEA 06)	05:20	20:21 (WEA 05)	05:07
	16:59	16:28 (40422-20(42764-17))	17:56	17:09 (WEA 07)	18:45	18:15 (WEA 08)	20:37	19:44 (WEA 07)	21:24	20:53 (WEA 08)	21:47
26	08:14	15:24 (WEA2)	07:19	16:33 (WEA 07)	06:16	17:52 (WEA 08)	06:08	19:49 (WEA 06)	05:19	20:21 (WEA 05)	05:07
	17:01	16:30 (40422-20(42764-17))	17:58	17:09 (WEA 07)	18:47	18:14 (WEA 08)	20:39	20:04 (WEA 06)	21:26	20:24 (WEA 05)	21:47
27	08:12	15:24 (WEA2)	07:17	16:33 (WEA 07)	06:14	17:52 (WEA 08)	06:06	19:47 (WEA 06)	05:18	20:20 (WEA 05)	05:08
	17:03	16:32 (40422-20(42764-17))	18:00	17:09 (WEA 07)	18:48	18:13 (WEA 08)	20:41	20:05 (WEA 06)	21:27	20:55 (WEA 08)	21:47
28	08:11	15:25 (WEA2)	07:14	16:33 (WEA 07)	06:11	18:13 (WEA 08)	06:04	19:45 (WEA 06)	05:17	20:19 (WEA 08)	05:08
	17:05	16:34 (40422-20(42764-17))	18:01	17:09 (WEA 07)	18:50	18:13 (WEA 08)	20:42	20:06 (WEA 06)	21:28	20:55 (WEA 08)	21:47
29	08:10	15:26 (WEA2)	07:12	16:33 (WEA 07)	06:09	18:53 (WEA 08)	06:02	19:45 (WEA 06)	05:16	20:20 (WEA 08)	05:09
	17:07	16:34 (40422-20(42764-17))	18:01	17:09 (WEA 07)	18:52	18:13 (WEA 08)	20:44	20:08 (WEA 06)	21:29	20:57 (WEA 08)	21:47
30	08:08	15:27 (WEA2)	07:10	16:33 (WEA 07)	06:07	18:54 (WEA 08)	06:00	19:44 (WEA 06)	05:15	20:19 (WEA 08)	05:09
	17:08	16:33 (40422-20(42764-17))	18:00	17:09 (WEA 07)	18:53	19:10 (WEA 08)	20:46	20:09 (WEA 06)	21:30	20:57 (WEA 08)	21:47
31	08:07	15:28 (WEA2)	07:08	16:33 (WEA 07)	06:05	18:56 (WEA 08)	05:59	19:44 (WEA 06)	05:14	20:19 (WEA 08)	05:09
	17:10	16:31 (40422-20(42764-17))	18:01	17:09 (WEA 07)	18:55	19:19 (00090-11-14)	20:46	21:32	39	20:58 (WEA 08)	21:47
Sonnenscheinstunden	260		278		367		416		484		498
astr.max.mögl.Beschattung	1100		642		879		770		901		1306

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)



## SHADOW - Kalender

Berechnung: GB KeimbergSchattenrezeptor: SR K - Am Hammer 11, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März		April	Mai	Juni			
1	08:32	10:35 (Keimberg E160)	08:05	07:12		07:02	05:58	05:13		
	16:25	76	12:49 (WEA 04)	17:12		19:57	20:48	21:33		
2	08:32	10:36 (Keimberg E160)	08:04	07:10		07:00	05:56	05:12		
	16:26	75	12:50 (WEA 04)	17:14		19:59	20:49	21:34		
3	08:32	10:37 (Keimberg E160)	08:02	07:08		07:57 (02149-13-14)	06:58	05:54	05:11	
	16:27	74	12:51 (WEA 04)	17:16	18:07	6	08:03 (02149-13-14)	20:00	20:51	21:35
4	08:32	10:37 (Keimberg E160)	08:01	07:06		07:55 (02149-13-14)	06:55	05:52	05:10	
	16:28	71	12:50 (WEA 04)	17:18	18:09	10	08:05 (02149-13-14)	20:02	20:52	21:36
5	08:31	10:38 (Keimberg E160)	07:59	07:04		07:54 (02149-13-14)	06:53	05:50	05:10	
	16:29	69	12:51 (WEA 04)	17:19	18:10	12	08:06 (02149-13-14)	20:04	20:54	21:37
6	08:31	10:38 (Keimberg E160)	07:57	07:01		07:54 (02149-13-14)	06:51	05:48	05:09	
	16:30	68	12:51 (WEA 04)	17:21	18:12	12	08:06 (02149-13-14)	20:05	20:56	21:38
7	08:31	10:39 (Keimberg E160)	07:56	06:59		07:53 (02149-13-14)	06:49	05:47	05:09	
	16:31	64	12:52 (WEA 04)	17:23	18:14	12	08:05 (02149-13-14)	20:07	20:57	21:39
8	08:30	10:40 (Keimberg E160)	07:54	06:57		07:54 (02149-13-14)	06:46	05:45	05:08	
	16:33	60	12:52 (WEA 04)	17:25	18:16	11	08:05 (02149-13-14)	20:09	20:59	21:40
9	08:30	10:41 (Keimberg E160)	07:52	06:55		07:55 (02149-13-14)	06:44	05:43	05:08	
	16:34	52	12:53 (WEA 04)	17:27	18:18	9	08:04 (02149-13-14)	20:11	21:01	21:41
10	08:29	10:42 (Keimberg E160)	07:50	06:53		07:56 (02149-13-14)	06:42	05:41	05:07	
	16:36	49	12:52 (WEA 04)	17:29	18:19	4	08:00 (02149-13-14)	20:12	21:02	21:42
11	08:29	10:43 (Keimberg E160)	07:49	06:50			06:40	05:40	05:07	
	16:37	46	12:52 (WEA 04)	17:30	18:21		20:14	21:04	21:42	
12	08:28	10:44 (Keimberg E160)	07:47	06:48			06:37	05:38	05:06	
	16:38	44	12:52 (WEA 04)	17:32	18:23		20:16	21:05	21:43	
13	08:27	10:46 (Keimberg E160)	07:45	06:46			06:35	05:37	05:06	
	16:40	40	12:52 (WEA 04)	17:34	18:24		20:17	21:07	21:44	
14	08:27	10:49 (Keimberg E160)	07:43	06:43			06:33	05:35	05:06	
	16:41	35	12:53 (WEA 04)	17:36	18:26		20:19	21:08	21:44	
15	08:26	09:07 (2772-91-06 D)	07:41	06:41			06:31	05:33	05:06	
	16:43	29	12:53 (WEA 04)	17:38	18:28		20:21	21:10	21:45	
16	08:25	09:06 (2772-91-06 D)	07:39	06:39			06:29	05:32	05:06	
	16:44	30	12:53 (WEA 04)	17:40	18:30		20:22	21:12	21:45	
17	08:24	09:05 (2772-91-06 D)	07:37	06:37			06:26	05:30	05:06	
	16:46	28	12:51 (WEA 04)	17:42	18:31		20:24	21:13	21:46	
18	08:23	09:06 (2772-91-06 D)	07:35	06:34			06:24	05:29	05:06	
	16:48	26	12:51 (WEA 04)	17:43	18:33		20:26	21:15	21:46	
19	08:22	12:29 (WEA 04)	07:33	06:32			06:22	05:28	05:06	
	16:49	21	12:50 (WEA 04)	17:45	18:35		20:27	21:16	21:47	
20	08:21	12:30 (WEA 04)	07:31	06:30			06:20	05:26	05:06	
	16:51	19	12:49 (WEA 04)	17:47	18:37		20:29	21:17	21:47	
21	08:20	12:33 (WEA 04)	07:29	06:27			06:18	05:25	05:06	
	16:53	15	12:48 (WEA 04)	17:49	18:38		20:31	21:19	21:47	
22	08:19	12:35 (WEA 04)	07:27	06:25			06:16	05:24	05:06	
	16:54	10	12:45 (WEA 04)	17:51	18:40		20:32	21:20	21:47	
23	08:18		07:25	06:23			06:14	05:22	05:06	
	16:56		17:53	18:42			20:34	21:22	21:48	
24	08:17		07:23	06:21			06:12	05:21	05:06	
	16:58		17:54	18:43			20:36	21:23	21:48	
25	08:15		07:21	06:18			06:10	05:20	05:07	
	16:59		17:56	18:45			20:37	21:24	21:48	
26	08:14		07:19	06:16			06:08	05:19	05:07	
	17:01		17:58	18:47			20:39	21:26	21:48	
27	08:13		07:17	06:14			06:06	05:18	05:08	
	17:03		18:00	18:48			20:41	21:27	21:48	
28	08:11		07:15	06:11			06:04	05:17	05:08	
	17:05		18:02	18:50			20:43	21:28	21:48	
29	08:10			07:09			06:02	05:16	05:09	
	17:07			19:52			20:44	21:29	21:47	
30	08:08			07:07			06:00	05:15	05:09	
	17:08			19:54			20:46	21:31	21:47	
31	08:07			07:04				05:14		
	17:10			19:55				21:32		
Sonnenscheinstunden	260		278	367		416	484	498		
astr.max.mögl.Beschattung	1001			76						

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

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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## SHADOW - Kalender

Berechnung: GB Keimberg Schattenrezeptor: SR K - Am Hammer 11, 33184 Altenbeken  
 Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Juli	August	September	Oktober	November	Dezember
1	05:10 21:47	05:46 21:15	06:35 20:14	07:24 19:05	07:17 16:59	08:08 16:19
2	05:11 21:47	05:48 21:14	06:37 20:11	07:26 19:02	07:19 16:57	08:10 16:18
3	05:11 21:46	05:49 21:12	06:39 20:09	07:27 19:00	07:21 16:55	08:11 16:18
4	05:12 21:46	05:51 21:10	06:40 20:07	07:29 18:58	07:23 16:53	08:12 16:17
5	05:13 21:45	05:52 21:09	06:42 20:05	07:31 18:55	07:25 16:52	08:14 16:16
6	05:14 21:45	05:54 21:07	06:44 20:02	07:32 18:53	07:26 16:50	08:15 16:16
7	05:15 21:44	05:55 21:05	06:45 20:00	07:34 18:51	07:28 16:48	08:16 16:16
8	05:15 21:44	05:57 21:03	06:47 19:58	07:36 18:49	07:30 16:47	08:17 16:15
9	05:16 21:43	05:58 21:01	06:48 19:56	07:37 18:46	07:32 16:45	08:19 16:15
10	05:17 21:42	06:00 21:00	06:50 19:53	07:39 18:44	07:34 16:43	08:20 16:15
11	05:18 21:41	06:02 20:58	06:52 19:51	07:41 18:42	07:35 16:42	08:21 16:15
12	05:19 21:41	06:03 20:56	06:53 19:49	07:43 18:40	07:37 16:40	08:22 16:15
13	05:21 21:40	06:05 20:54	06:55 19:46	07:44 18:38	07:39 16:39	08:23 16:14
14	05:22 21:39	06:06 20:52	06:56 19:44	07:46 18:35	07:41 16:37	08:24 16:14
15	05:23 21:38	06:08 20:50	06:58 19:42	07:48 18:33	07:42 16:36	08:25 16:15
16	05:24 21:37	06:10 20:48	07:00 19:39	07:49 18:31	07:44 16:34	08:26 16:15
17	05:25 21:36	06:11 20:46	07:01 19:37	07:51 18:29	07:46 16:33	08:26 16:15
18	05:26 21:35	06:13 20:44	07:03 19:35	07:53 18:27	07:47 16:32	08:27 16:15
19	05:28 21:34	06:14 20:42	07:04 19:32	07:55 18:25	07:49 16:31	08:28 16:15
20	05:29 21:32	06:16 20:40	07:06 19:30	07:56 18:23	07:51 16:29	08:28 16:16
21	05:30 21:31	06:18 20:38	07:08 19:28	07:58 18:20	07:53 16:28	08:29 16:16
22	05:32 21:30	06:19 20:35	07:09 19:25	08:00 18:18	07:54 16:27	08:30 16:17
23	05:33 21:29	06:21 20:33	07:11 19:23	08:02 18:16	07:56 16:26	08:30 16:17
24	05:34 21:27	06:23 20:31	07:13 19:21	08:03 18:14	07:57 16:25	08:30 16:18
25	05:36 21:26	06:24 20:29	07:14 19:18	07:05 17:12	07:59 16:24	08:31 16:18
26	05:37 21:25	06:26 20:27	07:16 19:16	07:07 17:10	08:01 16:23	08:31 16:19
27	05:39 21:23	06:27 20:25	07:17 19:14	07:09 17:08	08:02 16:22	08:31 16:20
28	05:40 21:22	06:29 20:23	07:19 19:11	07:10 17:06	08:04 16:21	08:32 16:21
29	05:42 21:20	06:31 20:20	07:21 19:09	07:12 17:04	08:05 16:20	08:32 16:21
30	05:43 21:19	06:32 20:18	07:22 19:07	07:14 17:03	08:07 16:19	08:32 16:22
31	05:45 21:17	06:34 20:16	07:24 19:05	07:16 17:01	08:09 16:18	08:33 16:23
Sonnenscheinstunden	501	453	381	332	267	245
astr.max.mögl.Beschattung				77	295	2303

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

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

Berechnung: GB KeimbergSchattenrezeptor: SR L - Am Hammer 12, 33184 Altenbeken  
 Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:32 16:25 37	09:48 (WEA 10) 14:25 (WEA 04)   17:12	08:05 17:12	07:12 18:03	07:02 19:57	05:58 20:47
2	08:32 16:26 39	09:47 (WEA 10) 14:26 (WEA 04)   17:14	08:04 17:14	09:19 (01847-12-14) 07:10	07:00 19:59	05:56 20:49
3	08:32 16:27 41	09:47 (WEA 10) 14:27 (WEA 04)   17:16	08:02 17:16	09:16 (01847-12-14) 07:08	06:58 20:00	05:54 20:51
4	08:32 16:28 43	09:46 (WEA 10) 14:27 (WEA 04)   17:18	08:01 17:18	09:15 (01847-12-14) 07:06	06:55 20:02	05:52 20:52
5	08:31 16:29 44	09:46 (WEA 10) 14:27 (WEA 04)   17:19	07:59 17:19	09:15 (01847-12-14) 07:04	06:53 20:04	05:50 20:54
6	08:31 16:30 45	09:46 (WEA 10) 14:27 (WEA 04)   17:21	07:57 17:21	09:28 (01847-12-14) 18:10	07:01 20:05	05:48 20:56
7	08:31 16:31 46	09:46 (WEA 10) 14:28 (WEA 04)   17:23	07:56 17:23	09:14 (01847-12-14) 06:59	06:49 20:07	05:47 20:57
8	08:30 16:33 48	09:45 (WEA 10) 14:28 (WEA 04)   17:25	07:54 17:25	09:29 (01847-12-14) 18:16	06:46 20:09	05:45 20:59
9	08:30 16:34 48	09:46 (WEA 10) 14:29 (WEA 04)   17:27	07:52 17:27	09:14 (01847-12-14) 06:55	06:44 20:10	05:43 21:01
10	08:29 16:35 48	09:46 (WEA 10) 14:29 (WEA 04)   17:29	07:50 17:29	09:28 (01847-12-14) 18:19	06:42 20:12	05:41 21:02
11	08:29 16:37 50	09:45 (WEA 10) 14:29 (WEA 04)   17:30	07:49 17:30	09:15 (01847-12-14) 06:50	06:40 20:14	05:40 21:04
12	08:28 16:38 51	09:45 (WEA 10) 14:30 (WEA 04)   17:32	07:47 17:32	09:27 (01847-12-14) 18:21	06:37 20:14	05:38 21:04
13	08:27 16:40 51	09:45 (WEA 10) 14:30 (WEA 04)   17:34	07:45 17:34	09:17 (01847-12-14) 06:48	06:35 20:16	05:37 21:05
14	08:27 16:41 51	09:46 (WEA 10) 14:31 (WEA 04)   17:36	07:43 17:36	09:21 (01847-12-14) 06:46	06:33 20:17	05:35 21:07
15	08:26 16:43 51	09:46 (WEA 10) 14:31 (WEA 04)   17:38	07:41 17:38	09:23 (01847-12-14) 18:24	06:31 20:19	05:33 21:08
16	08:25 16:44 51	09:46 (WEA 10) 14:31 (WEA 04)   17:40	07:39 17:40	08:51 (02149-13-14) 06:41	06:29 20:21	05:32 21:10
17	08:24 16:46 51	09:45 (WEA 10) 14:30 (WEA 04)   17:42	07:37 17:42	08:59 (02149-13-14) 18:28	06:27 20:22	05:30 21:12
18	08:23 16:48 50	09:46 (WEA 10) 14:30 (WEA 04)   17:43	07:35 17:43	08:48 (02149-13-14) 06:39	06:26 20:24	05:29 21:13
19	08:22 16:49 47	09:46 (WEA 10) 14:29 (WEA 04)   17:45	07:33 17:45	08:47 (02149-13-14) 06:37	06:24 20:26	05:29 21:15
20	08:21 16:51 47	09:46 (WEA 10) 14:29 (WEA 04)   17:47	07:31 17:47	09:01 (02149-13-14) 18:31	06:22 20:27	05:28 21:16
21	08:20 16:53 44	09:47 (WEA 10) 14:29 (WEA 04)   17:49	07:29 17:49	08:46 (02149-13-14) 06:34	06:18 20:27	05:25 21:16
22	08:19 16:54 42	09:47 (WEA 10) 14:27 (WEA 04)   17:51	07:27 17:51	08:45 (02149-13-14) 06:27	06:16 20:31	05:25 21:19
23	08:18 16:56 37	09:48 (WEA 10) 14:26 (WEA 04)   17:52	07:25 17:52	09:03 (02149-13-14) 18:35	06:14 20:32	05:22 21:20
24	08:16 16:58 31	09:49 (WEA 10) 14:24 (WEA 04)   17:54	07:23 17:54	08:46 (02149-13-14) 06:23	06:12 20:34	05:22 21:22
25	08:15 16:59 23	09:49 (WEA 10) 10:12 (WEA 10)   17:56	07:21 17:56	09:02 (02149-13-14) 18:42	06:10 20:36	05:20 21:23
26	08:14 17:01 22	09:50 (WEA 10) 10:12 (WEA 10)   17:58	07:19 17:58	08:49 (02149-13-14) 06:18	06:08 20:37	05:19 21:24
27	08:13 17:03 21	09:50 (WEA 10) 10:11 (WEA 10)   18:00	07:17 18:00	08:59 (02149-13-14) 18:45	06:06 20:39	05:18 21:26
28	08:11 17:05 18	09:52 (WEA 10) 10:10 (WEA 10)   18:02	07:15 18:02	08:55 (02149-13-14) 18:47	06:11 20:41	05:17 21:27
29	08:10 17:07 16	09:53 (WEA 10) 10:09 (WEA 10)		06:14 18:48	06:04 20:42	05:16 21:28
30	08:08 17:08 13	09:55 (WEA 10) 10:08 (WEA 10)		07:09 19:52	06:02 20:44	05:15 21:29
31	08:07 17:10 7	09:58 (WEA 10) 10:05 (WEA 10)		07:07 19:54	06:00 20:46	05:15 21:31
	Sonnenscheinstunden   260		278	367	416	484
	astr.max.mögl.Beschattung   1213		293			498

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

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

Berechnung: GB KeimbergSchattenrezeptor: SR L - Am Hammer 12, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember	
1	05:10 21:47	05:46 21:15	06:35 20:14	07:24 19:05		07:17 16:59	08:44 (01847-12-14) 13 08:57 (01847-12-14)	08:08 16:19	09:27 (WEA 10) 51 14:12 (WEA 04)
2	05:11 21:47	05:48 21:14	06:37 20:11	07:26 19:02		07:19 16:57	08:44 (01847-12-14) 14 08:58 (01847-12-14)	08:10 16:18	09:29 (WEA 10) 48 14:12 (WEA 04)
3	05:11 21:46	05:49 21:12	06:39 20:09	07:27 19:00		07:21 16:55	08:44 (01847-12-14) 14 08:58 (01847-12-14)	08:11 16:17	09:29 (WEA 10) 49 14:12 (WEA 04)
4	05:12 21:46	05:51 21:10	06:40 20:07	07:29 18:58		07:23 16:53	08:44 (01847-12-14) 14 08:58 (01847-12-14)	08:12 16:17	09:30 (WEA 10) 48 14:13 (WEA 04)
5	05:13 21:45	05:52 21:09	06:42 20:05	07:31 18:55		07:25 16:52	08:44 (01847-12-14) 14 08:58 (01847-12-14)	08:14 16:16	09:31 (WEA 10) 46 14:13 (WEA 04)
6	05:14 21:45	05:54 21:07	06:43 20:02	07:32 18:53		07:26 16:50	08:45 (01847-12-14) 13 08:58 (01847-12-14)	08:15 16:16	09:32 (WEA 10) 45 14:13 (WEA 04)
7	05:14 21:44	05:55 21:05	06:45 20:00	07:34 18:51		07:28 16:48	08:46 (01847-12-14) 11 08:57 (01847-12-14)	08:16 16:16	09:33 (WEA 10) 45 14:15 (WEA 04)
8	05:15 21:44	05:57 21:03	06:47 19:58	07:36 18:49		07:30 16:47	08:47 (01847-12-14) 9 08:56 (01847-12-14)	08:17 16:15	09:34 (WEA 10) 43 14:15 (WEA 04)
9	05:16 21:43	05:58 21:01	06:48 19:56	07:37 18:46		07:32 16:45	08:51 (01847-12-14) 1 08:52 (01847-12-14)	08:19 16:15	09:35 (WEA 10) 41 14:15 (WEA 04)
10	05:17 21:42	06:00 20:59	06:50 19:53	07:39 18:44		07:33 16:43		08:20 16:15	09:36 (WEA 10) 40 14:15 (WEA 04)
11	05:18 21:41	06:02 20:58	06:52 19:51	07:41 18:42		07:35 16:42	09:29 (WEA 10) 7 09:36 (WEA 10)	08:21 16:15	09:38 (WEA 10) 36 14:15 (WEA 04)
12	05:19 21:41	06:03 20:56	06:53 19:49	07:42 18:40		07:37 16:40	09:26 (WEA 10) 13 09:39 (WEA 10)	08:22 16:14	09:39 (WEA 10) 35 14:16 (WEA 04)
13	05:21 21:40	06:05 20:54	06:55 19:46	07:44 18:38		07:39 16:39	09:25 (WEA 10) 16 09:41 (WEA 10)	08:23 16:14	09:42 (WEA 10) 31 14:16 (WEA 04)
14	05:22 21:39	06:06 20:52	06:56 19:44	07:46 18:35		07:41 16:37	09:24 (WEA 10) 18 09:42 (WEA 10)	08:24 16:14	13:03 (WEA 05) 32 14:16 (WEA 04)
15	05:23 21:38	06:08 20:50	06:58 19:42	07:48 18:33		07:42 16:36	09:23 (WEA 10) 21 09:44 (WEA 10)	08:25 16:14	13:02 (WEA 05) 35 14:17 (WEA 04)
16	05:24 21:37	06:10 20:48	07:00 19:39	07:49 18:31	09:22 (02149-13-14) 7 09:29 (02149-13-14)	07:44 16:34	09:23 (WEA 10) 22 09:45 (WEA 10)	08:25 16:15	13:02 (WEA 05) 36 14:17 (WEA 04)
17	05:25 21:36	06:11 20:46	07:01 19:37	07:51 18:29	09:20 (02149-13-14) 11 09:31 (02149-13-14)	07:46 16:33	09:23 (WEA 10) 23 09:46 (WEA 10)	08:26 16:15	13:02 (WEA 05) 37 14:18 (WEA 04)
18	05:26 21:35	06:13 20:44	07:03 19:35	07:53 18:27	09:18 (02149-13-14) 15 09:33 (02149-13-14)	07:47 16:32	09:23 (WEA 10) 31 13:58 (WEA 04)	08:27 16:15	13:02 (WEA 05) 38 14:19 (WEA 04)
19	05:28 21:34	06:14 20:42	07:04 19:32	07:54 18:25	09:17 (02149-13-14) 16 09:33 (02149-13-14)	07:49 16:30	09:23 (WEA 10) 37 14:01 (WEA 04)	08:28 16:15	13:02 (WEA 05) 37 14:18 (WEA 04)
20	05:29 21:32	06:16 20:40	07:06 19:30	07:56 18:23	09:16 (02149-13-14) 17 09:33 (02149-13-14)	07:51 16:29	09:22 (WEA 10) 41 14:02 (WEA 04)	08:28 16:16	13:02 (WEA 05) 38 14:19 (WEA 04)
21	05:30 21:31	06:18 20:38	07:08 19:28	07:58 18:20	09:16 (02149-13-14) 17 09:33 (02149-13-14)	07:52 16:28	09:22 (WEA 10) 44 14:04 (WEA 04)	08:29 16:16	13:02 (WEA 05) 39 14:19 (WEA 04)
22	05:32 21:30	06:19 20:35	07:09 19:25	08:00 18:18	09:16 (02149-13-14) 17 09:33 (02149-13-14)	07:54 16:27	09:23 (WEA 10) 46 14:05 (WEA 04)	08:30 16:17	13:03 (WEA 05) 39 14:20 (WEA 04)
23	05:33 21:29	06:21 20:33	07:11 19:23	08:01 18:16	09:16 (02149-13-14) 17 09:33 (02149-13-14)	07:56 16:26	09:23 (WEA 10) 47 14:06 (WEA 04)	08:30 16:17	13:03 (WEA 05) 38 14:20 (WEA 04)
24	05:34 21:27	06:22 20:31	07:13 19:21	08:03 18:14	09:17 (02149-13-14) 15 09:32 (02149-13-14)	07:57 16:25	09:24 (WEA 10) 49 14:08 (WEA 04)	08:30 16:18	13:05 (WEA 05) 37 14:21 (WEA 04)
25	05:36 21:26	06:24 20:29	07:14 19:18	07:05 17:12	08:17 (02149-13-14) 15 08:32 (02149-13-14)	07:59 16:24	09:23 (WEA 10) 50 14:08 (WEA 04)	08:31 16:18	13:05 (WEA 05) 38 14:22 (WEA 04)
26	05:37 21:25	06:26 20:27	07:16 19:16	07:07 17:10	08:19 (02149-13-14) 11 08:30 (02149-13-14)	08:01 16:23	09:24 (WEA 10) 51 14:09 (WEA 04)	08:31 16:19	13:06 (WEA 05) 37 14:22 (WEA 04)
27	05:39 21:23	06:27 20:25	07:17 19:14	07:09 17:08	08:21 (02149-13-14) 7 08:28 (02149-13-14)	08:02 16:22	09:25 (WEA 10) 51 14:10 (WEA 04)	08:31 16:20	13:06 (WEA 05) 37 14:22 (WEA 04)
28	05:40 21:22	06:29 20:23	07:19 19:11	07:10 17:06		08:04 16:21	09:25 (WEA 10) 52 14:10 (WEA 04)	08:32 16:21	13:07 (WEA 05) 36 14:23 (WEA 04)
29	05:42 21:20	06:31 20:20	07:21 19:09	07:12 17:04	08:48 (01847-12-14) 5 08:53 (01847-12-14)	08:05 16:20	09:26 (WEA 10) 51 14:11 (WEA 04)	08:32 16:21	13:09 (WEA 05) 33 14:23 (WEA 04)
30	05:43 21:19	06:32 20:18	07:22 19:07	07:14 17:03	08:46 (01847-12-14) 9 08:55 (01847-12-14)	08:07 16:19	09:27 (WEA 10) 51 14:12 (WEA 04)	08:32 16:22	13:55 (WEA 04) 29 14:24 (WEA 04)
31	05:45 21:17	06:34 20:16		07:16 17:01	08:45 (01847-12-14) 12 08:57 (01847-12-14)			08:32 16:23	09:49 (WEA 10) 32 14:24 (WEA 04)
	Sonnenscheinstunden astr.max.mögl.Beschattung	501 453	381 332	332 191		267 824		245 1206	

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

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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## SHADOW - Kalender

Berechnung: GB KeimbergSchattenrezeptor: SR M - Am Hammer 13, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:32 16:25	13:52 (WEA 04) 14:21 (WEA 04)	08:05 17:12	09:54 (WEA 10) 10:00 (WEA 10)	07:12 18:03	07:02 20:47	05:58 21:33
2	08:32 16:26	13:52 (WEA 04) 14:22 (WEA 04)	08:04 17:14	07:10 18:05	07:00 19:59	05:56 20:49	05:12 21:34
3	08:32 16:27	09:48 (WEA 10) 14:22 (WEA 04)	08:02 17:16	07:08 18:07	06:58 20:00	05:54 20:51	05:11 21:35
4	08:32 16:28	09:45 (WEA 10) 14:22 (WEA 04)	08:01 17:18	09:13 (01847-12-14) 09:21 (01847-12-14)	07:06 18:09	06:55 20:02	05:52 20:52
5	08:31 16:29	09:45 (WEA 10) 14:23 (WEA 04)	07:59 17:19	09:12 (01847-12-14) 09:23 (01847-12-14)	07:04 18:10	06:53 20:04	05:50 20:54
6	08:31 16:30	09:44 (WEA 10) 14:23 (WEA 04)	07:57 17:21	09:11 (01847-12-14) 09:24 (01847-12-14)	07:01 18:12	06:51 20:05	05:48 20:56
7	08:31 16:31	09:44 (WEA 10) 14:24 (WEA 04)	07:56 17:23	09:10 (01847-12-14) 09:24 (01847-12-14)	06:59 18:14	06:49 20:07	05:47 20:57
8	08:30 16:33	09:43 (WEA 10) 14:24 (WEA 04)	07:54 17:25	09:10 (01847-12-14) 09:24 (01847-12-14)	06:57 18:16	06:46 20:09	05:45 20:59
9	08:30 16:34	09:43 (WEA 10) 14:25 (WEA 04)	07:52 17:27	09:10 (01847-12-14) 09:24 (01847-12-14)	06:55 18:17	06:44 20:10	05:43 21:01
10	08:29 16:35	09:43 (WEA 10) 14:25 (WEA 04)	07:50 17:29	09:10 (01847-12-14) 09:24 (01847-12-14)	06:53 18:19	06:42 20:12	05:41 21:02
11	08:29 16:37	09:42 (WEA 10) 14:25 (WEA 04)	07:49 17:30	09:11 (01847-12-14) 09:24 (01847-12-14)	06:50 18:21	06:40 20:14	05:40 21:04
12	08:28 16:38	09:42 (WEA 10) 14:25 (WEA 04)	07:47 17:32	09:11 (01847-12-14) 09:23 (01847-12-14)	06:48 18:23	06:37 20:16	05:38 21:05
13	08:27 16:40	09:42 (WEA 10) 14:25 (WEA 04)	07:45 17:34	09:14 (01847-12-14) 09:22 (01847-12-14)	06:46 18:24	06:35 20:17	05:37 21:07
14	08:27 16:41	09:42 (WEA 10) 14:26 (WEA 04)	07:43 17:36	06:43 18:26	06:33 20:19	05:35 21:08	05:06 21:44
15	08:26 16:43	09:42 (WEA 10) 14:26 (WEA 04)	07:41 17:38	06:41 18:28	06:31 20:21	05:33 21:10	05:06 21:45
16	08:25 16:44	09:42 (WEA 10) 14:26 (WEA 04)	07:39 17:40	08:46 (02149-13-14) 08:54 (02149-13-14)	06:39 18:30	06:29 20:22	05:32 21:12
17	08:24 16:46	09:42 (WEA 10) 14:25 (WEA 04)	07:37 17:42	08:44 (02149-13-14) 08:56 (02149-13-14)	06:37 18:31	06:26 20:24	05:30 21:13
18	08:23 16:48	09:42 (WEA 10) 14:25 (WEA 04)	07:35 17:43	08:43 (02149-13-14) 08:57 (02149-13-14)	06:34 18:33	06:24 20:26	05:29 21:15
19	08:22 16:49	09:42 (WEA 10) 14:24 (WEA 04)	07:33 17:45	08:42 (02149-13-14) 08:58 (02149-13-14)	06:32 18:35	06:22 20:27	05:28 21:16
20	08:21 16:51	09:43 (WEA 10) 14:24 (WEA 04)	07:31 17:47	08:41 (02149-13-14) 08:58 (02149-13-14)	06:30 18:37	06:20 20:29	05:26 21:17
21	08:20 16:53	09:43 (WEA 10) 14:23 (WEA 04)	07:29 17:49	08:41 (02149-13-14) 08:58 (02149-13-14)	06:27 18:38	06:18 20:31	05:25 21:19
22	08:19 16:54	09:43 (WEA 10) 14:21 (WEA 04)	07:27 17:51	08:41 (02149-13-14) 08:58 (02149-13-14)	06:25 18:40	06:16 20:32	05:23 21:20
23	08:18 16:56	09:43 (WEA 10) 14:20 (WEA 04)	07:25 17:52	08:42 (02149-13-14) 08:58 (02149-13-14)	06:23 18:42	06:14 20:34	05:22 21:21
24	08:16 16:58	09:44 (WEA 10) 10:08 (WEA 10)	07:23 17:54	08:42 (02149-13-14) 08:57 (02149-13-14)	06:21 18:43	06:12 20:36	05:21 21:23
25	08:15 16:59	09:44 (WEA 10) 10:08 (WEA 10)	07:21 17:56	08:43 (02149-13-14) 08:56 (02149-13-14)	06:18 18:45	06:10 20:37	05:20 21:24
26	08:14 17:01	09:45 (WEA 10) 10:08 (WEA 10)	07:19 17:58	08:44 (02149-13-14) 08:54 (02149-13-14)	06:16 18:47	06:08 20:39	05:19 21:26
27	08:13 17:03	09:46 (WEA 10) 10:07 (WEA 10)	07:17 18:00	06:14 18:48	06:06 20:41	05:18 21:27	05:08 21:48
28	08:11 17:05	09:47 (WEA 10) 10:07 (WEA 10)	07:15 18:02	06:11 18:50	06:04 20:42	05:17 21:28	05:08 21:48
29	08:10 17:07	09:48 (WEA 10) 10:06 (WEA 10)	07:14 18:03	07:09 19:52	06:02 20:44	05:16 21:29	05:09 21:47
30	08:08 17:08	09:50 (WEA 10) 10:05 (WEA 10)	07:13 18:04	07:07 19:54	06:00 20:46	05:15 21:31	05:09 21:47
31	08:07 17:10	09:51 (WEA 10) 10:03 (WEA 10)	07:12 18:05	07:04 19:55	06:00 20:46	05:14 21:32	05:08 21:48
Sonnenscheinstunden	260		278	367	416	484	498
astr.max.mögl.Beschattung	1145		282				

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

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

Berechnung: GB KeimbergSchattenrezeptor: SR M - Am Hammer 13, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember
1	05:10 21:47	05:46 21:15	06:35 20:14	07:24 19:05	07:17 16:59	08:00 (01847-12-14) 16:19
2	05:11 21:47	05:48 21:14	06:37 20:11	07:26 19:02	07:19 16:57	08:00 (01847-12-14) 16:18
3	05:11 21:46	05:49 21:12	06:39 20:09	07:27 19:00	07:21 16:55	08:00 (01847-12-14) 16:17
4	05:12 21:46	05:51 21:10	06:40 20:07	07:29 18:58	07:23 16:53	08:00 (01847-12-14) 16:17
5	05:13 21:45	05:52 21:09	06:42 20:05	07:31 18:55	07:25 16:52	08:00 (01847-12-14) 16:16
6	05:14 21:45	05:54 21:07	06:43 20:02	07:32 18:53	07:26 16:50	08:00 (01847-12-14) 16:16
7	05:14 21:44	05:55 21:05	06:45 20:00	07:34 18:51	07:28 16:48	08:00 (01847-12-14) 16:16
8	05:15 21:44	05:57 21:03	06:47 19:58	07:36 18:49	07:30 16:47	08:00 (01847-12-14) 16:15
9	05:16 21:43	05:58 21:01	06:48 19:56	07:37 18:46	07:32 16:45	08:00 (01847-12-14) 16:15
10	05:17 21:42	06:00 20:59	06:50 19:53	07:39 18:44	07:33 16:43	09:26 (WEA 10) 16:15
11	05:18 21:41	06:02 20:58	06:52 19:51	07:41 18:42	07:35 16:42	09:22 (WEA 10) 16:15
12	05:19 21:41	06:03 20:56	06:53 19:49	07:42 18:40	07:37 16:40	09:21 (WEA 10) 16:14
13	05:21 21:40	06:05 20:54	06:55 19:46	07:44 18:38	07:39 16:39	09:20 (WEA 10) 16:14
14	05:22 21:39	06:06 20:52	06:56 19:44	07:46 18:35	07:41 16:37	09:19 (WEA 10) 16:14
15	05:23 21:38	06:08 20:50	06:58 19:42	07:48 18:33	07:42 16:36	09:19 (WEA 10) 16:14
16	05:24 21:37	06:10 20:48	07:00 19:39	07:49 18:31	07:44 16:34	09:18 (WEA 10) 16:15
17	05:25 21:36	06:11 20:46	07:01 19:37	07:51 18:29	07:46 16:33	09:18 (WEA 10) 16:15
18	05:26 21:35	06:13 20:44	07:03 19:35	07:53 18:27	07:47 16:32	09:18 (WEA 10) 16:15
19	05:28 21:34	06:14 20:42	07:04 19:32	07:54 18:25	07:49 16:30	09:18 (WEA 10) 16:15
20	05:29 21:32	06:16 20:40	07:06 19:30	07:56 18:23	07:51 16:29	09:18 (WEA 10) 16:16
21	05:30 21:31	06:18 20:38	07:08 19:28	07:58 18:20	07:52 16:28	09:18 (WEA 10) 16:16
22	05:32 21:30	06:19 20:35	07:09 19:25	08:00 18:18	07:54 16:27	09:19 (WEA 10) 16:17
23	05:33 21:29	06:21 20:33	07:11 19:23	08:01 18:16	07:56 16:26	09:19 (WEA 10) 16:17
24	05:34 21:27	06:22 20:31	07:13 19:21	08:03 18:14	07:57 16:25	09:20 (WEA 10) 16:18
25	05:36 21:26	06:24 20:29	07:14 19:18	07:05 17:12	07:59 16:24	09:20 (WEA 10) 16:18
26	05:37 21:25	06:26 20:27	07:16 19:16	07:07 17:10	08:01 16:23	09:21 (WEA 10) 16:19
27	05:39 21:23	06:27 20:25	07:17 19:14	07:09 17:08	08:02 16:22	09:21 (WEA 10) 16:20
28	05:40 21:22	06:29 20:23	07:19 19:11	07:10 17:06	08:04 16:21	09:22 (WEA 10) 16:21
29	05:42 21:20	06:31 20:20	07:21 19:09	07:12 17:04	08:05 16:20	09:23 (WEA 10) 16:21
30	05:43 21:19	06:32 20:18	07:22 19:07	07:14 17:03	08:07 16:19	09:24 (WEA 10) 16:22
31	05:45 21:17	06:34 20:16		07:16 17:01	08:00 (01847-12-14) 08:53 (01847-12-14)	08:32 16:23
Sonnenscheinstunden	501	453	381	332	267	245
astr.max.mögl.Beschattung				197	798	1125

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

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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## SHADOW - Kalender

Berechnung: GB KeimbergSchattenrezeptor: SR N - Am Hammer 14, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:32 16:25 37	09:44 (WEA 10) 14:11 (WEA 04)	08:05 17:12 5	09:16 (01847-12-14) 18:03	07:12 19:07	05:58 20:47	05:13 21:33
2	08:32 16:26 37	09:44 (WEA 10) 14:11 (WEA 04)	08:04 17:14 9	09:15 (01847-12-14) 18:05	07:10 19:59	05:56 20:49	05:12 21:34
3	08:32 16:27 39	09:44 (WEA 10) 14:12 (WEA 04)	08:02 17:16 12	09:13 (01847-12-14) 18:07	07:08 20:00	05:54 20:51	05:11 21:35
4	08:32 16:28 41	09:43 (WEA 10) 14:12 (WEA 04)	08:01 17:18 12	09:13 (01847-12-14) 18:09	07:06 20:02	05:52 20:52	05:10 21:36
5	08:31 16:29 42	09:43 (WEA 10) 14:13 (WEA 04)	07:59 17:19 13	09:13 (01847-12-14) 18:10	07:04 20:04	05:50 20:54	05:10 21:37
6	08:31 16:30 43	09:42 (WEA 10) 14:12 (WEA 04)	07:57 17:21 14	09:13 (01847-12-14) 18:12	07:01 20:05	05:48 20:56	05:09 21:38
7	08:31 16:31 43	09:43 (WEA 10) 14:13 (WEA 04)	07:56 17:23 13	09:13 (01847-12-14) 18:14	06:59 20:07	05:47 20:57	05:09 21:39
8	08:30 16:33 45	09:42 (WEA 10) 14:13 (WEA 04)	07:54 17:25 13	09:13 (01847-12-14) 18:16	06:57 20:09	05:45 20:59	05:08 21:40
9	08:30 16:34 45	09:43 (WEA 10) 14:14 (WEA 04)	07:52 17:27 11	09:14 (01847-12-14) 18:17	06:55 20:10	05:43 21:01	05:08 21:41
10	08:29 16:35 46	09:42 (WEA 10) 14:14 (WEA 04)	07:50 17:29 9	09:15 (01847-12-14) 18:19	06:53 20:12	05:41 21:02	05:07 21:42
11	08:29 16:37 46	09:42 (WEA 10) 14:13 (WEA 04)	07:49 17:30 5	09:17 (01847-12-14) 18:21	06:50 20:14	05:40 21:04	05:07 21:42
12	08:28 16:38 45	09:42 (WEA 10) 14:13 (WEA 04)	07:47 17:32	09:22 (01847-12-14) 18:23	06:48 20:16	05:38 21:05	05:06 21:43
13	08:27 16:40 45	09:42 (WEA 10) 14:13 (WEA 04)	07:45 17:34 8	08:51 (02149-13-14) 18:24	06:46 20:17	05:37 21:07	05:06 21:44
14	08:27 16:41 44	09:43 (WEA 10) 14:14 (WEA 04)	07:43 17:36 12	08:49 (02149-13-14) 18:26	06:43 20:19	05:35 21:08	05:06 21:44
15	08:26 16:43 43	09:43 (WEA 10) 14:13 (WEA 04)	07:41 17:38 14	09:01 (02149-13-14) 18:28	06:41 20:21	05:33 21:10	05:06 21:45
16	08:25 16:44 42	09:43 (WEA 10) 14:13 (WEA 04)	07:39 17:40 16	08:46 (02149-13-14) 18:30	06:39 20:22	05:32 21:12	05:06 21:45
17	08:24 16:46 40	09:42 (WEA 10) 14:11 (WEA 04)	07:37 17:42 16	08:46 (02149-13-14) 18:31	06:37 20:24	05:30 21:13	05:06 21:46
18	08:23 16:48 37	09:42 (WEA 10) 14:10 (WEA 04)	07:35 17:43 16	09:02 (02149-13-14) 18:33	06:34 20:26	05:29 21:15	05:05 21:46
19	08:22 16:49 32	09:43 (WEA 10) 14:08 (WEA 04)	07:33 17:45 16	08:46 (02149-13-14) 18:35	06:32 20:27	05:28 21:16	05:06 21:47
20	08:21 16:51 24	09:43 (WEA 10) 10:07 (WEA 10)	07:31 17:47 15	08:46 (02149-13-14) 18:37	06:30 20:29	05:26 21:17	05:06 21:47
21	08:20 16:53 24	09:44 (WEA 10) 10:08 (WEA 10)	07:29 17:49 14	08:47 (02149-13-14) 18:38	06:27 20:31	05:25 21:19	05:06 21:47
22	08:19 16:54 23	09:44 (WEA 10) 10:07 (WEA 10)	07:27 17:51 11	09:01 (02149-13-14) 18:40	06:25 20:32	05:23 21:20	05:06 21:47
23	08:18 16:56 22	09:45 (WEA 10) 10:07 (WEA 10)	07:25 17:52 6	08:51 (02149-13-14) 18:42	06:23 20:34	05:22 21:22	05:06 21:47
24	08:17 16:58 22	09:46 (WEA 10) 10:08 (WEA 10)	07:23 17:54	08:57 (02149-13-14) 18:43	06:21 20:36	05:21 21:23	05:06 21:48
25	08:15 16:59 21	09:46 (WEA 10) 10:07 (WEA 10)	07:21 17:56	06:18 18:45	06:10 20:37	05:20 21:24	05:07 21:48
26	08:14 17:01 20	09:47 (WEA 10) 10:07 (WEA 10)	07:19 17:58	06:16 18:47	06:08 20:39	05:19 21:26	05:07 21:48
27	08:13 17:03 17	09:48 (WEA 10) 10:05 (WEA 10)	07:17 18:00	06:14 18:48	06:06 20:41	05:18 21:27	05:08 21:48
28	08:11 17:05 15	09:50 (WEA 10) 10:05 (WEA 10)	07:15 18:02	06:11 18:50	06:04 20:42	05:17 21:28	05:08 21:48
29	08:10 17:07 12	09:51 (WEA 10) 10:03 (WEA 10)		07:09 19:52	06:02 20:44	05:16 21:29	05:09 21:47
30	08:08 17:08 6	09:55 (WEA 10) 10:01 (WEA 10)		07:07 19:54	06:00 20:46	05:15 21:31	05:09 21:47
31	08:07 17:10			07:04 19:55		05:14 21:32	
Sonnenscheinstunden	260		278	367	416	484	498
astr.max.mögl.Beschattung	998		260				

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

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

Berechnung: GB KeimbergSchattenrezeptor: SR N - Am Hammer 14, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember	
1	05:10 21:47	05:46 21:15	06:35 20:14	07:24 19:05		07:17 16:59	08:44 (01847-12-14) 10 08:54 (01847-12-14)	08:08 16:19 45	09:24 (WEA 10) 13:55 (WEA 04)
2	05:11 21:47	05:48 21:14	06:37 20:11	07:26 19:02		07:19 16:57	12 08:43 (01847-12-14) 12 08:55 (01847-12-14)	08:10 16:18 46	09:25 (WEA 10) 13:57 (WEA 04)
3	05:11 21:46	05:49 21:12	06:39 20:09	07:27 19:00		07:21 16:55	13 08:43 (01847-12-14) 13 08:56 (01847-12-14)	08:11 16:17 45	09:26 (WEA 10) 13:57 (WEA 04)
4	05:12 21:46	05:51 21:10	06:40 20:07	07:29 18:58		07:23 16:53	14 08:42 (01847-12-14) 14 08:56 (01847-12-14)	08:12 16:17 45	09:27 (WEA 10) 13:58 (WEA 04)
5	05:13 21:45	05:52 21:09	06:42 20:05	07:31 18:55		07:25 16:52	13 08:43 (01847-12-14) 13 08:56 (01847-12-14)	08:14 16:16 43	09:28 (WEA 10) 13:58 (WEA 04)
6	05:14 21:45	05:54 21:07	06:43 20:02	07:32 18:53		07:26 16:50	13 08:43 (01847-12-14) 13 08:56 (01847-12-14)	08:15 16:16 43	09:28 (WEA 10) 13:58 (WEA 04)
7	05:14 21:44	05:55 21:05	06:45 20:00	07:34 18:51		07:28 16:48	13 08:43 (01847-12-14) 13 08:56 (01847-12-14)	08:16 16:16 42	09:30 (WEA 10) 14:00 (WEA 04)
8	05:15 21:44	05:57 21:03	06:47 19:58	07:36 18:49		07:30 16:47	11 08:44 (01847-12-14) 11 08:55 (01847-12-14)	08:17 16:15 41	09:31 (WEA 10) 14:00 (WEA 04)
9	05:16 21:43	05:58 21:01	06:48 19:56	07:37 18:46		07:32 16:45	8 08:46 (01847-12-14) 8 08:54 (01847-12-14)	08:19 16:15 39	09:32 (WEA 10) 14:00 (WEA 04)
10	05:17 21:42	06:00 21:00	06:50 19:53	07:39 18:44		07:34 16:43	4 08:48 (01847-12-14) 4 08:52 (01847-12-14)	08:20 16:15 39	09:33 (WEA 10) 14:01 (WEA 04)
11	05:18 21:41	06:02 20:58	06:52 19:51	07:41 18:42		07:35 16:42		08:21 16:15 37	09:34 (WEA 10) 14:01 (WEA 04)
12	05:19 21:41	06:03 20:56	06:53 19:49	07:42 18:40		07:37 16:40	6 09:26 (WEA 10) 6 09:32 (WEA 10)	08:22 16:14 33	09:36 (WEA 10) 14:01 (WEA 04)
13	05:21 21:40	06:05 20:54	06:55 19:46	07:44 18:38		07:39 16:39	12 09:23 (WEA 10) 12 09:35 (WEA 10)	08:23 16:14 31	09:38 (WEA 10) 14:02 (WEA 04)
14	05:22 21:39	06:06 20:52	06:56 19:44	07:46 18:35		07:41 16:37	15 09:22 (WEA 10) 15 09:37 (WEA 10)	08:24 16:14 28	13:34 (WEA 04) 14:02 (WEA 04)
15	05:23 21:38	06:08 20:50	06:58 19:42	07:48 18:33		07:42 16:36	17 09:21 (WEA 10) 17 09:38 (WEA 10)	08:25 16:14 29	13:34 (WEA 04) 14:03 (WEA 04)
16	05:24 21:37	06:10 20:48	07:00 19:39	07:49 18:31		07:44 16:34	20 09:20 (WEA 10) 20 09:40 (WEA 10)	08:25 16:15 28	13:35 (WEA 04) 14:03 (WEA 04)
17	05:25 21:36	06:11 20:46	07:01 19:37	07:51 18:29		07:46 16:33	21 09:20 (WEA 10) 21 09:41 (WEA 10)	08:26 16:15 29	13:35 (WEA 04) 14:04 (WEA 04)
18	05:26 21:35	06:13 20:44	07:03 19:35	07:53 18:27		07:47 16:32	22 09:20 (WEA 10) 22 09:42 (WEA 10)	08:27 16:15 29	13:36 (WEA 04) 14:05 (WEA 04)
19	05:28 21:34	06:14 20:42	07:04 19:32	07:55 18:25	8 09:21 (02149-13-14) 8 09:29 (02149-13-14)	07:49 16:30	22 09:20 (WEA 10) 22 09:42 (WEA 10)	08:28 16:15 29	13:36 (WEA 04) 14:05 (WEA 04)
20	05:29 21:32	06:16 20:40	07:06 19:30	07:56 18:23	12 09:18 (02149-13-14) 12 09:30 (02149-13-14)	07:51 16:29	23 09:19 (WEA 10) 23 09:42 (WEA 10)	08:28 16:16 29	13:37 (WEA 04) 14:06 (WEA 04)
21	05:30 21:31	06:18 20:38	07:08 19:28	07:58 18:20	14 09:17 (02149-13-14) 14 09:31 (02149-13-14)	07:52 16:28	24 09:19 (WEA 10) 24 09:43 (WEA 10)	08:29 16:16 28	13:37 (WEA 04) 14:05 (WEA 04)
22	05:32 21:30	06:19 20:35	07:09 19:25	08:00 18:18	15 09:17 (02149-13-14) 15 09:32 (02149-13-14)	07:54 16:27	23 09:20 (WEA 10) 23 09:43 (WEA 10)	08:30 16:17 28	13:38 (WEA 04) 14:06 (WEA 04)
23	05:33 21:29	06:21 20:33	07:11 19:23	08:01 18:16	16 09:16 (02149-13-14) 16 09:32 (02149-13-14)	07:56 16:26	32 09:20 (WEA 10) 32 13:45 (WEA 04)	08:30 16:17 29	13:38 (WEA 04) 14:07 (WEA 04)
24	05:34 21:27	06:22 20:31	07:13 19:21	08:03 18:14	17 09:16 (02149-13-14) 17 09:33 (02149-13-14)	07:57 16:25	37 09:21 (WEA 10) 37 13:48 (WEA 04)	08:30 16:18 29	13:39 (WEA 04) 14:08 (WEA 04)
25	05:36 21:26	06:24 20:29	07:14 19:18	07:05 17:12	16 08:16 (02149-13-14) 16 08:32 (02149-13-14)	07:59 16:24	40 09:20 (WEA 10) 40 13:49 (WEA 04)	08:31 16:18 29	13:39 (WEA 04) 14:08 (WEA 04)
26	05:37 21:25	06:26 20:27	07:16 19:16	07:07 17:10	15 08:17 (02149-13-14) 15 08:32 (02149-13-14)	08:01 16:23	42 09:21 (WEA 10) 42 13:51 (WEA 04)	08:31 16:19 29	13:39 (WEA 04) 14:08 (WEA 04)
27	05:39 21:23	06:27 20:25	07:17 19:14	07:09 17:08	13 08:18 (02149-13-14) 13 08:31 (02149-13-14)	08:02 16:22	43 09:22 (WEA 10) 43 13:52 (WEA 04)	08:31 16:20 28	13:40 (WEA 04) 14:08 (WEA 04)
28	05:40 21:22	06:29 20:23	07:19 19:11	07:10 17:06	11 08:18 (02149-13-14) 11 08:29 (02149-13-14)	08:04 16:21	44 09:22 (WEA 10) 44 13:53 (WEA 04)	08:32 16:21 29	13:40 (WEA 04) 14:09 (WEA 04)
29	05:42 21:20	06:31 20:20	07:21 19:09	07:12 17:04	7 08:20 (02149-13-14) 7 08:27 (02149-13-14)	08:05 16:20	45 09:23 (WEA 10) 45 13:54 (WEA 04)	08:32 16:21 29	13:40 (WEA 04) 14:09 (WEA 04)
30	05:43 21:19	06:32 20:18	07:22 19:07	07:14 17:03		08:07 16:19	45 09:24 (WEA 10) 45 13:55 (WEA 04)	08:32 16:22 29	13:41 (WEA 04) 14:10 (WEA 04)
31	05:45 21:17	06:34 20:16		07:16 17:01	6 08:46 (01847-12-14) 6 08:52 (01847-12-14)			08:32 16:23 33	09:45 (WEA 10) 14:10 (WEA 04)
Sonnenscheinstunden		501	453	381	332	267	644	245	1050
astr.max.mögl.Beschattung					150				

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

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

Berechnung: GB Keimberg Schattenrezeptor: SR O - Dorfstraße 52, 33184 Altenbeken  
 Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

Januar		Februar		März		April		Mai		Juni		
1	08:32	14:35 (42241-21)	08:05	15:54 (WEA2)	07:12	16:53 (WEA 07)	07:02	19:03 (00090-11-14)	05:58	19:36 (WEA 06)	05:13	20:01 (WEA 08)
2	08:32	14:36 (42241-21)	08:04	15:55 (WEA2)	07:10	16:52 (WEA 07)	07:00	19:02 (00090-11-14)	05:56	19:37 (WEA 06)	05:12	20:02 (WEA 08)
3	08:32	14:36 (42241-21)	08:02	15:55 (WEA2)	07:08	16:52 (WEA 07)	06:58	19:01 (00090-11-14)	05:54	19:37 (WEA 06)	05:11	20:03 (WEA 08)
4	08:31	14:37 (42241-21)	08:01	15:55 (WEA2)	07:07	16:52 (WEA 07)	06:57	19:01 (00090-11-14)	05:52	19:38 (WEA 06)	05:10	20:03 (WEA 08)
5	08:31	14:39 (42241-21)	07:59	15:55 (WEA2)	07:04	16:53 (WEA 07)	06:53	19:01 (00090-11-14)	05:50	19:39 (WEA 06)	05:10	20:04 (WEA 08)
6	08:31	14:39 (42241-21)	07:57	15:56 (WEA2)	07:01	16:52 (WEA 07)	06:51	19:01 (00090-11-14)	05:48	19:40 (WEA 06)	05:09	20:04 (WEA 08)
7	08:30	14:41 (42241-21)	07:56	15:57 (WEA2)	06:59	16:53 (WEA 07)	06:48	19:01 (00090-11-14)	05:47	19:42 (WEA 06)	05:09	20:06 (WEA 08)
8	08:30	14:42 (42241-21)	07:54	15:58 (WEA2)	06:57	16:54 (WEA 07)	06:46	19:02 (00090-11-14)	05:45	19:45 (WEA 06)	05:08	20:06 (WEA 08)
9	08:30	14:43 (42241-21)	07:52	15:59 (WEA2)	06:55	16:55 (WEA 07)	06:44	19:04 (00090-11-14)	05:43	19:58 (WEA 08)	05:08	20:07 (WEA 08)
10	08:29	14:46 (42241-21)	07:50	16:00 (WEA2)	06:52	16:56 (WEA 07)	06:42	19:05 (00090-11-14)	05:41	19:58 (WEA 08)	05:07	20:08 (WEA 08)
11	08:28	14:48 (42241-21)	07:48	16:01 (WEA2)	06:50	16:59 (WEA 07)	06:40	19:13 (00090-11-14)	05:40	19:57 (WEA 08)	05:07	20:08 (WEA 08)
12	08:28	14:49 (42241-21)	07:47	16:01 (WEA2)	06:48	17:02 (02501-12-14)	06:37	19:13 (00090-11-14)	05:38	19:57 (WEA 08)	05:06	20:09 (WEA 08)
13	08:27	14:50 (42241-21)	07:45	16:16 (WEA2)	06:46	17:09 (02501-12-14)	06:35	19:13 (00090-11-14)	05:37	19:56 (WEA 08)	05:06	20:10 (WEA 08)
14	08:26	14:51 (42241-21)	07:43	16:16 (WEA2)	06:43	17:16 (02501-12-14)	06:33	19:13 (00090-11-14)	05:35	19:56 (WEA 08)	05:06	20:11 (WEA 08)
15	08:26	14:52 (42241-21)	07:41	16:16 (WEA2)	06:41	17:23 (02501-12-14)	06:31	19:13 (00090-11-14)	05:33	19:55 (WEA 08)	05:06	20:12 (WEA 08)
16	08:25	14:53 (42241-21)	07:39	16:16 (WEA2)	06:39	17:29 (02501-12-14)	06:29	19:13 (00090-11-14)	05:32	19:56 (WEA 08)	05:06	20:13 (WEA 08)
17	08:24	14:54 (42241-21)	07:37	16:16 (WEA2)	06:37	17:36 (02501-12-14)	06:26	19:13 (00090-11-14)	05:30	19:56 (WEA 08)	05:06	20:13 (WEA 08)
18	08:23	14:55 (42241-21)	07:35	16:16 (WEA2)	06:34	17:43 (02501-12-14)	06:24	19:13 (00090-11-14)	05:29	19:55 (WEA 08)	05:06	20:14 (WEA 08)
19	08:22	14:56 (42241-21)	07:33	16:16 (WEA2)	06:32	17:50 (02501-12-14)	06:22	19:13 (00090-11-14)	05:28	19:56 (WEA 08)	05:06	20:14 (WEA 08)
20	08:21	14:57 (42241-21)	07:31	16:16 (WEA2)	06:30	17:57 (02501-12-14)	06:20	19:13 (00090-11-14)	05:26	19:56 (WEA 08)	05:06	20:15 (WEA 08)
21	08:20	14:58 (42241-21)	07:29	16:16 (WEA2)	06:27	18:04 (02501-12-14)	06:18	19:13 (00090-11-14)	05:25	19:56 (WEA 08)	05:06	20:15 (WEA 08)
22	08:19	14:59 (42241-21)	07:27	16:16 (WEA2)	06:25	18:11 (02501-12-14)	06:16	19:13 (00090-11-14)	05:24	19:56 (WEA 08)	05:06	20:15 (WEA 08)
23	08:18	15:00 (42241-21)	07:25	16:16 (WEA2)	06:23	18:18 (02501-12-14)	06:14	19:13 (00090-11-14)	05:22	19:56 (WEA 08)	05:06	20:16 (WEA 08)
24	08:16	15:01 (42241-21)	07:23	16:16 (WEA2)	06:20	18:25 (02501-12-14)	06:12	19:13 (00090-11-14)	05:21	19:57 (WEA 08)	05:06	20:16 (WEA 08)
25	08:15	15:02 (42241-21)	07:21	16:16 (WEA2)	06:18	18:32 (02501-12-14)	06:10	19:13 (00090-11-14)	05:20	19:57 (WEA 08)	05:07	20:15 (WEA 08)
26	08:14	15:03 (42241-21)	07:19	16:16 (WEA2)	06:16	18:39 (02501-12-14)	06:08	19:13 (00090-11-14)	05:19	19:57 (WEA 08)	05:07	20:15 (WEA 08)
27	08:12	15:04 (42241-21)	07:17	16:16 (WEA2)	06:14	18:46 (02501-12-14)	06:06	19:13 (00090-11-14)	05:18	19:58 (WEA 08)	05:08	20:14 (WEA 08)
28	08:11	15:05 (42241-21)	07:15	16:16 (WEA2)	06:11	18:53 (02501-12-14)	06:04	19:13 (00090-11-14)	05:17	19:58 (WEA 08)	05:08	20:14 (WEA 08)
29	08:10	15:06 (42241-21)	07:13	16:16 (WEA2)	06:09	19:00 (02501-12-14)	06:02	19:13 (00090-11-14)	05:16	19:59 (WEA 08)	05:09	20:14 (WEA 08)
30	08:08	15:07 (42241-21)	07:11	16:16 (WEA2)	06:07	19:07 (02501-12-14)	06:00	19:13 (00090-11-14)	05:15	20:00 (WEA 08)	05:09	20:14 (WEA 08)
31	08:07	15:08 (42241-21)	07:09	16:16 (WEA2)	06:05	19:14 (02501-12-14)	05:59	20:00 (WEA 08)	05:14	20:00 (WEA 08)	05:09	20:14 (WEA 08)
	17:10	16:24 (WEA2)			19:55	19:21 (00090-11-14)			21:32	20:00 (WEA 08)		
	Sonnenscheinstunden	260	278	367	416	416	416	484	498			
	astr.max.mögl.Beschattung	509	466	580	400	400	1195	1155				

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



## SHADOW - Kalender

Berechnung: GB KeimbergSchattenrezeptor: SR O - Dorfstraße 52, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

Juli		August		September		Oktober		November		Dezember			
1	05:10	20:13 (WEA 08)	05:46	20:07 (WEA 08)	06:35		07:24	17:47 (02501-12-14)	07:17	15:29 (WEA2)	08:08	14:31 (42241-21)	
2	05:11	20:13 (WEA 08)	05:48	20:07 (WEA 08)	06:37	19:04 (00090-11-14)	07:26	17:39 (WEA 07)	07:19	15:28 (WEA2)	08:09	14:28 (42241-21)	
3	05:11	20:12 (WEA 08)	05:49	20:08 (WEA 08)	06:39	19:01 (00090-11-14)	07:27	17:35 (WEA 07)	07:21	15:27 (WEA2)	08:11	14:28 (42241-21)	
4	05:12	20:11 (WEA 08)	05:51	20:08 (WEA 08)	06:40	18:59 (00090-11-14)	07:29	17:33 (WEA 07)	07:23	15:26 (WEA2)	08:12	14:26 (42241-21)	
5	05:13	20:11 (WEA 08)	05:52	20:08 (WEA 08)	06:42	18:58 (00090-11-14)	07:31	17:32 (WEA 07)	07:24	15:26 (WEA2)	08:13	14:26 (42241-21)	
6	05:14	20:11 (WEA 08)	05:54	20:08 (WEA 08)	06:43	18:57 (00090-11-14)	07:32	17:29 (WEA 07)	07:26	15:26 (WEA2)	08:15	14:26 (42241-21)	
7	05:15	20:11 (WEA 08)	05:55	20:08 (WEA 08)	06:45	18:56 (00090-11-14)	07:34	17:28 (WEA 07)	07:28	15:25 (WEA2)	08:16	14:25 (42241-21)	
8	05:15	20:10 (WEA 08)	05:57	20:08 (WEA 08)	06:47	18:55 (00090-11-14)	07:36	17:28 (WEA 07)	07:30	15:25 (WEA2)	08:17	14:26 (42241-21)	
9	05:16	20:10 (WEA 08)	05:58	20:08 (WEA 08)	06:48	18:55 (00090-11-14)	07:37	17:27 (WEA 07)	07:32	15:24 (WEA2)	08:18	14:25 (42241-21)	
10	05:17	20:10 (WEA 08)	06:00	20:08 (WEA 08)	06:50	18:55 (00090-11-14)	07:39	17:26 (WEA 07)	07:33	15:25 (WEA2)	08:19	14:25 (42241-21)	
11	05:18	20:09 (WEA 08)	06:02	20:08 (WEA 08)	06:51	18:55 (00090-11-14)	07:41	17:26 (WEA 07)	07:35	15:25 (WEA2)	08:21	14:25 (42241-21)	
12	05:19	20:09 (WEA 08)	06:03	20:08 (WEA 08)	06:53	18:55 (00090-11-14)	07:42	17:26 (WEA 07)	07:37	15:25 (WEA2)	08:22	14:25 (42241-21)	
13	05:21	20:09 (WEA 08)	06:05	20:08 (WEA 08)	06:55	18:57 (00090-11-14)	07:44	17:26 (WEA 07)	07:39	15:26 (WEA2)	08:23	14:25 (42241-21)	
14	05:22	20:08 (WEA 08)	06:06	20:08 (WEA 08)	06:56	18:58 (00090-11-14)	07:46	17:26 (WEA 07)	07:40	15:26 (WEA2)	08:24	14:25 (42241-21)	
15	05:23	20:08 (WEA 08)	06:08	20:08 (WEA 08)	06:58	18:55 (00090-11-14)	07:47	17:26 (WEA 07)	07:42	15:27 (WEA2)	08:24	14:26 (42241-21)	
16	05:24	20:08 (WEA 08)	06:10	20:08 (WEA 08)	07:00	19:04 (00090-11-14)	07:49	17:27 (WEA 07)	07:44	15:28 (WEA2)	08:25	14:26 (42241-21)	
17	05:25	20:07 (WEA 08)	06:11	20:08 (WEA 08)	07:01		07:51	17:28 (WEA 07)	07:46	15:29 (WEA2)	08:26	14:27 (42241-21)	
18	05:26	20:07 (WEA 08)	06:13	20:07 (WEA 08)	07:03		07:53	17:29 (WEA 07)	07:47	15:30 (WEA2)	08:27	14:26 (42241-21)	
19	05:28	20:06 (WEA 08)	06:14	20:07 (WEA 08)	07:04		07:54	17:30 (WEA 07)	07:49	15:30 (WEA2)	08:28	14:27 (42241-21)	
20	05:29	20:07 (WEA 08)	06:16	20:05 (WEA 08)	07:06		07:56	17:32 (WEA 07)	07:51	15:32 (WEA2)	08:28	14:28 (42241-21)	
21	05:30	20:07 (WEA 08)	06:18	20:04 (WEA 08)	07:08	17:59 (02501-12-14)	07:58	17:33 (WEA 07)	07:53	15:33 (WEA2)	08:29	14:28 (42241-21)	
22	05:32	20:06 (WEA 08)	06:19	20:02 (WEA 08)	07:09	18:04 (02501-12-14)	08:00	17:38 (WEA 07)	07:52	15:34 (WEA2)	08:29	14:28 (42241-21)	
23	05:33	20:06 (WEA 08)	06:21	20:02 (WEA 08)	07:11	18:07 (02501-12-14)	08:01	17:39 (WEA 07)	07:52	15:34 (WEA2)	08:29	14:28 (42241-21)	
24	05:34	20:06 (WEA 08)	06:22	20:01 (WEA 08)	07:12	17:52 (02501-12-14)	08:01	17:38 (WEA 07)	07:52	15:34 (WEA2)	08:29	14:28 (42241-21)	
25	05:36	20:06 (WEA 08)	06:24	19:58 (WEA 08)	07:14	18:09 (02501-12-14)	08:03	17:37 (WEA 07)	07:52	15:34 (WEA2)	08:29	14:28 (42241-21)	
26	05:37	20:06 (WEA 08)	06:26	19:58 (WEA 08)	07:16	18:09 (02501-12-14)	08:04	17:37 (WEA 07)	07:52	15:34 (WEA2)	08:29	14:28 (42241-21)	
27	05:39	20:06 (WEA 08)	06:27	19:58 (WEA 08)	07:17	18:09 (02501-12-14)	08:04	17:37 (WEA 07)	07:52	15:34 (WEA2)	08:29	14:28 (42241-21)	
28	05:40	20:06 (WEA 08)	06:29	19:58 (WEA 08)	07:19	18:10 (02501-12-14)	08:05	17:37 (WEA 07)	07:52	15:34 (WEA2)	08:29	14:28 (42241-21)	
29	05:42	20:06 (WEA 08)	06:31	19:58 (WEA 08)	07:21	18:10 (02501-12-14)	08:05	17:37 (WEA 07)	07:52	15:34 (WEA2)	08:29	14:28 (42241-21)	
30	05:43	20:06 (WEA 08)	06:32	19:58 (WEA 08)	07:22	18:10 (02501-12-14)	08:05	17:37 (WEA 07)	07:52	15:34 (WEA2)	08:29	14:28 (42241-21)	
31	05:45	20:06 (WEA 08)	06:34	19:58 (WEA 08)	07:24	18:10 (02501-12-14)	08:05	17:37 (WEA 07)	07:52	15:34 (WEA2)	08:29	14:28 (42241-21)	
	21:17	20:40 (WEA 08)	20:16				17:01	17:01	17:01	15:48 (WEA2)	16:23	26	15:00 (42241-21)
Sonnenscheinstunden		501		453		381		332		267		245	
astr.max.mögl.Beschattung		1300		618		410		568		565		770	

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

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

Berechnung: GB Keimberg Schattenrezeptor: SR P - Am Stapelsberg 97, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:32 16:24 40	10:02 (WEA 10) 14:19 (WEA 04) 17:12 17	08:05 09:17 (02149-13-14) 07:12	07:12 09:34 (02149-13-14) 18:03	07:02 19:57 20:47	05:58 20:47 21:33
2	08:32 16:26 39	10:03 (WEA 10) 14:19 (WEA 04) 17:14 16	08:04 09:34 (02149-13-14) 18:05	07:10 09:19 (02149-13-14) 07:08	07:00 19:59 20:49	05:56 20:49 21:34
3	08:32 16:27 37	10:04 (WEA 10) 14:19 (WEA 04) 17:16 14	08:02 09:33 (02149-13-14) 18:07	07:08 09:20 (02149-13-14) 07:06	06:58 20:00 20:51	05:54 20:51 21:35
4	08:32 16:28 35	10:04 (WEA 10) 14:18 (WEA 04) 17:18 12	08:01 09:22 (02149-13-14) 07:04	07:06 09:32 (02149-13-14) 18:09	06:55 20:02 20:52	05:52 20:52 21:36
5	08:31 16:29 34	10:05 (WEA 10) 14:19 (WEA 04) 17:19 10	07:59 09:32 (02149-13-14) 18:10	07:04 09:24 (02149-13-14) 07:01	06:53 20:04 20:54	05:50 20:54 21:37
6	08:31 16:30 32	10:05 (WEA 10) 14:18 (WEA 04) 17:21 5	07:57 09:29 (02149-13-14) 18:12	07:01 18:12	06:51 20:05 20:56	05:48 20:56 21:38
7	08:31 16:31 28	10:06 (WEA 10) 14:17 (WEA 04) 17:23	07:56 17:23	06:59 18:14	06:49 20:07 20:57	05:47 20:57 21:39
8	08:30 16:33 22	10:07 (WEA 10) 14:15 (WEA 04) 17:25	07:54 17:25	06:57 18:16	06:46 20:09 20:59	05:45 20:59 21:40
9	08:30 16:34 16	10:09 (WEA 10) 10:25 (WEA 10) 17:27	07:52 17:27	06:55 18:17	06:44 20:10 21:01	05:43 21:01 21:41
10	08:29 16:35 16	10:09 (WEA 10) 10:25 (WEA 10) 17:29	07:50 17:29	06:53 18:19	06:42 20:12 21:02	05:41 21:02 21:42
11	08:29 16:37 17	09:39 (01847-12-14) 10:24 (WEA 10) 17:30	07:49 17:30	06:50 18:21	06:40 20:14 21:04	05:40 21:04 21:42
12	08:28 16:38 18	09:37 (01847-12-14) 10:23 (WEA 10) 17:32	07:47 17:32	06:48 18:23	06:37 20:16 21:05	05:38 21:05 21:43
13	08:27 16:40 18	09:37 (01847-12-14) 10:22 (WEA 10) 17:34	07:45 17:34	06:46 18:24	06:35 20:17 21:07	05:36 21:07 21:44
14	08:27 16:41 11	09:37 (01847-12-14) 09:48 (01847-12-14) 17:36	07:43 17:36	06:43 18:26	06:33 20:19 21:08	05:35 21:08 21:44
15	08:26 16:43 12	09:37 (01847-12-14) 09:49 (01847-12-14) 17:38	07:41 17:38	06:41 18:28	06:31 20:21 21:10	05:33 21:10 21:45
16	08:25 16:44 12	09:37 (01847-12-14) 09:49 (01847-12-14) 17:40	07:39 17:40	06:39 18:30	06:29 20:22 21:12	05:32 21:12 21:45
17	08:24 16:46 13	09:36 (01847-12-14) 09:49 (01847-12-14) 17:42	07:37 17:42	06:37 18:31	06:26 20:24 21:13	05:30 21:13 21:46
18	08:23 16:48 14	09:36 (01847-12-14) 09:50 (01847-12-14) 17:43	07:35 17:43	06:34 18:33	06:24 20:26 21:15	05:29 21:15 21:46
19	08:22 16:49 14	09:36 (01847-12-14) 09:50 (01847-12-14) 17:45	07:33 17:45	06:32 18:35	06:22 20:27 21:16	05:27 21:16 21:47
20	08:21 16:51 14	09:37 (01847-12-14) 09:51 (01847-12-14) 17:47	07:31 17:47	06:30 18:37	06:20 20:29 21:17	05:26 21:17 21:47
21	08:20 16:53 14	09:37 (01847-12-14) 09:51 (01847-12-14) 17:49	07:29 17:49	06:27 18:38	06:18 20:31 21:19	05:25 21:19 21:47
22	08:19 16:54 14	09:37 (01847-12-14) 09:51 (01847-12-14) 17:51	07:27 17:51	06:25 18:40	06:16 20:32 21:20	05:23 21:20 21:47
23	08:18 16:56 19	09:21 (02149-13-14) 09:51 (01847-12-14) 17:52	07:25 17:52	06:23 18:42	06:14 20:34 21:22	05:22 21:22 21:47
24	08:16 16:58 20	09:20 (02149-13-14) 09:51 (01847-12-14) 17:54	07:23 17:54	06:21 18:43	06:12 20:36 21:23	05:20 21:23 21:48
25	08:15 16:59 21	09:18 (02149-13-14) 09:49 (01847-12-14) 17:56	07:21 17:56	06:18 18:45	06:10 20:37 21:24	05:19 21:24 21:48
26	08:14 17:01 19	09:18 (02149-13-14) 09:48 (01847-12-14) 17:58	07:19 17:58	06:16 18:47	06:08 20:39 21:26	05:19 21:26 21:48
27	08:13 17:03 15	09:17 (02149-13-14) 09:32 (02149-13-14) 18:00	07:17 18:00	06:14 18:48	06:06 20:41 21:27	05:18 21:27 21:48
28	08:11 17:05 16	09:17 (02149-13-14) 09:33 (02149-13-14) 18:02	07:15 18:02	06:11 18:50	06:04 20:42 21:28	05:17 21:28 21:48
29	08:10 17:07 16	09:17 (02149-13-14) 09:33 (02149-13-14) 18:02	07:15 18:02	06:11 19:52	06:04 20:44 21:29	05:17 21:29 21:47
30	08:08 17:08 17	09:17 (02149-13-14) 09:34 (02149-13-14) 18:02	07:15 18:02	06:11 19:54	06:00 20:46 21:31	05:15 21:31 21:47
31	08:07 17:10 17	09:17 (02149-13-14) 09:34 (02149-13-14) 18:02	07:15 18:02	06:11 19:55	06:00 21:32 21:32	05:15 21:32 21:47
Sonnenscheinstunden	260	278	367	416	484	498
astr.max.mögl.Beschattung	630	74				

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

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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## SHADOW - Kalender

Berechnung: GB Keimberg Schattenrezeptor: SR P - Am Stapelsberg 97, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember	
1	05:10 21:47	05:46 21:15	06:35 20:14	07:24 19:05	07:17 16:59	08:08 16:19	09:21 (01847-12-14) 18 10:06 (WEA 10)
2	05:10 21:47	05:48 21:14	06:37 20:11	07:26 19:02	07:19 16:57	08:10 16:18	16 10:08 (WEA 10)
3	05:11 21:46	05:49 21:12	06:39 20:09	07:27 19:00	07:21 16:55	08:11 16:17	16 10:08 (WEA 10)
4	05:12 21:46	05:51 21:10	06:40 20:07	07:29 18:58	07:23 16:53	08:12 16:17	22 09:52 (WEA 10) 14:00 (WEA 04)
5	05:13 21:45	05:52 21:09	06:42 20:05	07:31 18:55	07:25 16:52	08:14 16:16	27 09:52 (WEA 10) 14:02 (WEA 04)
6	05:14 21:45	05:54 21:07	06:43 20:02	07:32 18:53	07:26 16:50	08:15 16:16	32 09:51 (WEA 10) 14:04 (WEA 04)
7	05:14 21:44	05:55 21:05	06:45 20:00	07:34 18:51	07:28 16:48	08:16 16:16	34 09:52 (WEA 10) 14:06 (WEA 04)
8	05:15 21:44	05:57 21:03	06:47 19:58	07:36 18:49	07:30 16:47	08:17 16:15	35 09:52 (WEA 10) 14:06 (WEA 04)
9	05:16 21:43	05:58 21:01	06:48 19:56	07:37 18:46	07:32 16:45	08:19 16:15	37 09:52 (WEA 10) 14:07 (WEA 04)
10	05:17 21:42	06:00 20:59	06:50 19:53	07:39 18:44	07:33 16:43	08:20 16:15	39 09:52 (WEA 10) 14:08 (WEA 04)
11	05:18 21:41	06:02 20:58	06:52 19:51	07:41 18:42	07:35 16:42	08:21 16:15	40 09:52 (WEA 10) 14:09 (WEA 04)
12	05:19 21:41	06:03 20:56	06:53 19:49	07:42 18:40	07:37 16:40	08:22 16:14	42 09:52 (WEA 10) 14:10 (WEA 04)
13	05:21 21:40	06:05 20:54	06:55 19:46	07:44 18:38	07:39 16:39	08:23 16:14	41 09:53 (WEA 10) 14:10 (WEA 04)
14	05:22 21:39	06:06 20:52	06:56 19:44	07:46 18:35	07:41 16:37	08:24 16:14	43 09:53 (WEA 10) 14:11 (WEA 04)
15	05:23 21:38	06:08 20:50	06:58 19:42	07:48 18:33	07:42 16:36	08:25 16:14	43 09:54 (WEA 10) 14:12 (WEA 04)
16	05:24 21:37	06:10 20:48	07:00 19:39	07:49 18:31	07:44 16:34	08:25 16:15	44 09:54 (WEA 10) 14:13 (WEA 04)
17	05:25 21:36	06:11 20:46	07:01 19:37	07:51 18:29	07:46 16:33	08:26 16:15	43 09:55 (WEA 10) 14:13 (WEA 04)
18	05:26 21:35	06:13 20:44	07:03 19:35	07:53 18:27	07:47 16:32	08:27 16:15	45 09:55 (WEA 10) 14:14 (WEA 04)
19	05:28 21:34	06:14 20:42	07:04 19:32	07:54 18:25	07:49 16:30	08:28 16:15	45 09:55 (WEA 10) 14:14 (WEA 04)
20	05:29 21:32	06:16 20:40	07:06 19:30	07:56 18:23	07:51 16:29	08:28 16:16	44 09:56 (WEA 10) 14:15 (WEA 04)
21	05:30 21:31	06:18 20:38	07:08 19:28	07:58 18:20	07:52 16:28	08:29 16:16	44 09:56 (WEA 10) 14:15 (WEA 04)
22	05:32 21:30	06:19 20:35	07:09 19:25	08:00 18:18	07:54 16:27	08:30 16:17	44 09:57 (WEA 10) 14:16 (WEA 04)
23	05:33 21:29	06:21 20:33	07:11 19:23	08:01 18:16	07:56 16:26	08:30 16:17	44 09:57 (WEA 10) 14:16 (WEA 04)
24	05:34 21:27	06:22 20:31	07:13 19:21	08:03 18:14	07:57 16:25	08:30 16:18	44 09:58 (WEA 10) 14:17 (WEA 04)
25	05:36 21:26	06:24 20:29	07:14 19:18	08:05 17:12	07:59 16:24	08:31 16:18	45 09:58 (WEA 10) 14:17 (WEA 04)
26	05:37 21:25	06:26 20:27	07:16 19:16	08:07 17:10	08:01 16:23	08:31 16:19	43 09:59 (WEA 10) 14:17 (WEA 04)
27	05:39 21:23	06:27 20:25	07:17 19:14	08:09 17:08	08:02 16:22	08:31 16:20	43 09:59 (WEA 10) 14:17 (WEA 04)
28	05:40 21:22	06:29 20:23	07:19 19:11	08:10 17:06	08:04 16:21	08:32 16:21	44 09:59 (WEA 10) 14:18 (WEA 04)
29	05:42 21:20	06:31 20:20	07:21 19:09	08:12 17:04	08:05 16:20	08:32 16:21	43 10:00 (WEA 10) 14:18 (WEA 04)
30	05:43 21:19	06:32 20:18	07:22 19:07	08:13 17:03	08:07 16:19	08:32 16:22	42 10:00 (WEA 10) 14:18 (WEA 04)
31	05:45 21:17	06:34 20:16		08:14 17:01		08:32 16:23	41 10:01 (WEA 10) 14:18 (WEA 04)
Sonnenscheinstunden	501	453	381	332	267	245	
astr.max.mögl.Beschattung					389		1183

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

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

Berechnung: GB KeimbergSchattenrezeptor: SR Q - Am Hammer 30, 33184 Altenbeken  
 Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:32 16:25	12:02 (WEA 04) 12:18 (WEA 04)	08:05 17:12	11:55 (WEA 04) 18:03	07:02 19:57	05:58 21:33
2	08:32 16:26	12:01 (WEA 04) 12:20 (WEA 04)	08:04 17:14	11:55 (WEA 04) 18:05	07:00 19:59	05:56 21:34
3	08:32 16:27	12:01 (WEA 04) 12:21 (WEA 04)	08:02 17:16	11:55 (WEA 04) 18:07	06:58 20:00	05:54 21:35
4	08:32 16:28	12:00 (WEA 04) 12:22 (WEA 04)	08:01 17:18	11:55 (WEA 04) 18:09	06:55 20:02	05:52 21:36
5	08:31 16:29	12:00 (WEA 04) 12:24 (WEA 04)	07:59 17:19	11:56 (WEA 04) 18:10	06:53 20:04	05:50 21:37
6	08:31 16:30	11:59 (WEA 04) 12:25 (WEA 04)	07:57 17:21	11:56 (WEA 04) 18:12	06:51 20:05	05:48 21:38
7	08:31 16:32	11:59 (WEA 04) 12:27 (WEA 04)	07:56 17:23	11:57 (WEA 04) 18:14	06:49 20:07	05:47 21:39
8	08:30 16:33	11:58 (WEA 04) 12:27 (WEA 04)	07:54 17:25	11:57 (WEA 04) 18:16	06:46 20:09	05:45 21:40
9	08:30 16:34	11:58 (WEA 04) 12:29 (WEA 04)	07:52 17:27	11:58 (WEA 04) 18:18	06:44 20:11	05:43 21:41
10	08:29 16:36	11:57 (WEA 04) 12:30 (WEA 04)	07:50 17:29	11:58 (WEA 04) 18:19	06:42 20:12	05:41 21:42
11	08:29 16:37	11:57 (WEA 04) 12:31 (WEA 04)	07:49 17:31	11:59 (WEA 04) 18:21	06:40 20:14	05:40 21:42
12	08:28 16:38	11:56 (WEA 04) 12:32 (WEA 04)	07:47 17:32	12:01 (WEA 04) 18:23	06:37 20:16	05:38 21:43
13	08:27 16:40	11:56 (WEA 04) 12:33 (WEA 04)	07:45 17:34	12:03 (WEA 04) 18:25	06:35 20:17	05:37 21:44
14	08:27 16:41	11:56 (WEA 04) 12:35 (WEA 04)	07:43 17:36	12:05 (WEA 04) 18:26	06:33 20:19	05:35 21:44
15	08:26 16:43	11:56 (WEA 04) 12:36 (WEA 04)	07:41 17:38	12:07 (WEA 04) 18:28	06:31 20:21	05:33 21:45
16	08:25 16:44	11:56 (WEA 04) 12:37 (WEA 04)	07:39 17:40	12:09 (WEA 04) 18:30	06:29 20:22	05:32 21:45
17	08:24 16:46	11:55 (WEA 04) 12:37 (WEA 04)	07:37 17:42	12:12 (WEA 04) 18:31	06:26 20:24	05:30 21:46
18	08:23 16:48	11:54 (WEA 04) 12:38 (WEA 04)	07:35 17:43	06:34 18:33	06:24 20:26	05:29 21:46
19	08:22 16:49	11:54 (WEA 04) 12:39 (WEA 04)	07:33 17:45	06:32 18:35	06:22 20:27	05:28 21:47
20	08:21 16:51	11:54 (WEA 04) 12:40 (WEA 04)	07:31 17:47	06:30 18:37	06:20 20:29	05:26 21:47
21	08:20 16:53	11:54 (WEA 04) 12:41 (WEA 04)	07:29 17:49	06:27 18:38	06:18 20:31	05:25 21:47
22	08:19 16:54	11:54 (WEA 04) 12:41 (WEA 04)	07:27 17:51	08:11 (WEA 10) 18:40	06:25 20:32	05:24 21:47
23	08:18 16:56	11:54 (WEA 04) 12:42 (WEA 04)	07:25 17:53	08:20 (WEA 10) 18:42	06:23 20:34	05:22 21:47
24	08:17 16:58	11:54 (WEA 04) 12:43 (WEA 04)	07:23 17:54	08:09 (WEA 10) 18:43	06:21 20:36	05:21 21:48
25	08:15 17:00	11:53 (WEA 04) 12:43 (WEA 04)	07:21 17:56	08:24 (WEA 10) 18:45	06:18 20:37	05:20 21:48
26	08:14 17:01	11:54 (WEA 04) 12:44 (WEA 04)	07:19 17:58	08:06 (WEA 10) 18:47	06:16 20:39	05:19 21:48
27	08:13 17:03	11:53 (WEA 04) 12:44 (WEA 04)	07:17 18:00	08:25 (WEA 10) 18:48	06:14 20:41	05:18 21:48
28	08:11 17:05	11:54 (WEA 04) 12:45 (WEA 04)	07:15 18:02	08:22 (WEA 10) 18:50	06:12 20:43	05:17 21:48
29	08:10 17:07	11:53 (WEA 04) 12:45 (WEA 04)	07:13 18:04	08:07 (WEA 10) 19:09	06:10 20:44	05:16 21:47
30	08:08 17:08	11:54 (WEA 04) 12:46 (WEA 04)	07:11 18:06	08:04 (WEA 10) 19:52	06:08 20:46	05:15 21:47
31	08:07 17:10	11:54 (WEA 04) 12:46 (WEA 04)	07:09 18:08	08:25 (WEA 10) 19:55	06:00 20:48	05:14 21:32
	Sonnenscheinstunden astr. max. mögl. Beschattung	260 1201	278 835	367 184	416 18	484 498

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) Schattende (WEA mit letztem Schatten)
	Sonnenuntergang (SS:MM)			

## SHADOW - Kalender

Berechnung: GB KeimbergSchattenrezeptor: SR Q - Am Hammer 30, 33184 Altenbeken  
 Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember			
1	05:10 21:47	05:46 21:15	06:35 20:14	07:24 19:05	07:17 16:59	11:28 (WEA 04) 16:19	08:08 34 12:13 (WEA 04)	11:39 (WEA 04) 12:13 (WEA 04)	
2	05:11 21:47	05:48 21:14	06:37 20:11	07:26 19:02	07:19 16:57	11:27 (WEA 04) 12:14 (WEA 04)	08:10 32 16:18	11:41 (WEA 04) 12:13 (WEA 04)	
3	05:11 21:46	05:49 21:12	06:39 20:09	07:27 19:00	07:21 16:55	11:27 (WEA 04) 12:14 (WEA 04)	08:11 32 16:18	11:41 (WEA 04) 12:13 (WEA 04)	
4	05:12 21:46	05:51 21:10	06:40 20:07	07:29 18:58	07:23 16:53	11:26 (WEA 04) 12:15 (WEA 04)	08:12 30 16:17	11:43 (WEA 04) 12:13 (WEA 04)	
5	05:13 21:45	05:52 21:09	06:42 20:05	07:31 18:55	07:25 16:52	11:26 (WEA 04) 12:16 (WEA 04)	08:14 28 16:16	11:44 (WEA 04) 12:12 (WEA 04)	
6	05:14 21:45	05:54 21:07	06:44 20:02	07:32 18:53	08:47 (WEA 10) 08:52 (WEA 10)	07:26 16:50	11:26 (WEA 04) 12:16 (WEA 04)	08:15 26 16:16	11:45 (WEA 04) 12:11 (WEA 04)
7	05:15 21:44	05:55 21:05	06:45 20:00	07:34 18:51	08:43 (WEA 10) 08:55 (WEA 10)	07:28 16:48	11:25 (WEA 04) 12:17 (WEA 04)	08:16 24 16:16	11:47 (WEA 04) 12:11 (WEA 04)
8	05:15 21:44	05:57 21:03	06:47 19:58	07:36 18:49	08:41 (WEA 10) 08:57 (WEA 10)	07:30 16:47	11:25 (WEA 04) 12:17 (WEA 04)	08:17 22 16:15	11:48 (WEA 04) 12:10 (WEA 04)
9	05:16 21:43	05:59 21:01	06:48 19:56	07:37 18:46	08:40 (WEA 10) 08:58 (WEA 10)	07:32 16:45	11:25 (WEA 04) 12:17 (WEA 04)	08:19 21 16:15	11:49 (WEA 04) 12:10 (WEA 04)
10	05:17 21:42	06:00 21:00	06:50 19:53	07:39 18:44	08:38 (WEA 10) 08:58 (WEA 10)	07:34 16:43	11:26 (WEA 04) 12:17 (WEA 04)	08:20 19 16:15	11:50 (WEA 04) 12:09 (WEA 04)
11	05:18 21:41	06:02 20:58	06:52 19:51	07:41 18:42	08:37 (WEA 10) 08:58 (WEA 10)	07:35 16:42	11:25 (WEA 04) 12:17 (WEA 04)	08:21 16 16:15	11:52 (WEA 04) 12:08 (WEA 04)
12	05:20 21:41	06:03 20:56	06:53 19:49	07:41 18:40	08:37 (WEA 10) 08:59 (WEA 10)	07:37 16:40	11:25 (WEA 04) 12:17 (WEA 04)	08:22 14 16:15	11:53 (WEA 04) 12:07 (WEA 04)
13	05:21 21:40	06:05 20:54	06:55 19:46	07:39 18:38	08:37 (WEA 10) 08:59 (WEA 10)	07:39 16:39	11:25 (WEA 04) 12:17 (WEA 04)	08:23 12 16:14	11:55 (WEA 04) 12:07 (WEA 04)
14	05:22 21:39	06:06 20:52	06:56 19:44	07:40 18:35	08:37 (WEA 10) 08:59 (WEA 10)	07:41 16:37	11:26 (WEA 04) 12:17 (WEA 04)	08:24 9 16:14	11:57 (WEA 04) 12:06 (WEA 04)
15	05:23 21:38	06:08 20:50	06:58 19:42	07:39 18:33	08:36 (WEA 10) 08:57 (WEA 10)	07:42 16:36	11:26 (WEA 04) 12:17 (WEA 04)	08:25 6 16:15	11:59 (WEA 04) 12:05 (WEA 04)
16	05:24 21:37	06:10 20:48	07:00 19:39	07:40 18:31	08:37 (WEA 10) 08:57 (WEA 10)	07:44 16:34	11:27 (WEA 04) 12:17 (WEA 04)	08:25 50 16:15	
17	05:25 21:36	06:11 20:46	07:01 19:37	07:41 18:29	08:38 (WEA 10) 08:56 (WEA 10)	07:46 16:33	11:27 (WEA 04) 12:17 (WEA 04)	08:26 50 16:15	
18	05:27 21:35	06:13 20:44	07:03 19:35	07:53 18:27	08:39 (WEA 10) 08:55 (WEA 10)	07:47 16:32	11:28 (WEA 04) 12:17 (WEA 04)	08:27 49 16:15	
19	05:28 21:34	06:14 20:42	07:04 19:32	07:55 18:25	08:41 (WEA 10) 08:53 (WEA 10)	07:49 16:31	11:29 (WEA 04) 12:17 (WEA 04)	08:28 48 16:15	
20	05:29 21:32	06:16 20:40	07:06 19:30	07:56 18:23	08:43 (WEA 10) 08:49 (WEA 10)	07:51 16:29	11:29 (WEA 04) 12:16 (WEA 04)	08:28 47 16:16	
21	05:30 21:31	06:18 20:38	07:08 19:28	07:58 18:20		07:53 16:28	11:29 (WEA 04) 12:16 (WEA 04)	08:29 47 16:16	
22	05:32 21:30	06:19 20:35	07:09 19:25	08:00 18:18		07:54 16:27	11:30 (WEA 04) 12:16 (WEA 04)	08:30 46 16:17	
23	05:33 21:29	06:21 20:33	07:11 19:23	08:02 18:16		07:56 16:26	11:31 (WEA 04) 12:16 (WEA 04)	08:30 45 16:17	
24	05:34 21:27	06:23 20:31	07:13 19:21	08:03 18:14		07:57 16:25	11:32 (WEA 04) 12:16 (WEA 04)	08:30 44 16:18	
25	05:36 21:26	06:24 20:29	07:14 19:18	07:05 17:12	11:42 (WEA 04) 12:00 (WEA 04)	07:59 16:24	11:33 (WEA 04) 12:15 (WEA 04)	08:31 42 16:18	
26	05:37 21:25	06:26 20:27	07:16 19:16	07:07 17:10	11:38 (WEA 04) 12:04 (WEA 04)	08:01 16:23	11:34 (WEA 04) 12:15 (WEA 04)	08:31 41 16:19	
27	05:39 21:23	06:27 20:25	07:17 19:14	07:09 17:08	11:36 (WEA 04) 12:06 (WEA 04)	08:02 16:22	11:35 (WEA 04) 12:15 (WEA 04)	08:31 40 16:20	
28	05:40 21:22	06:29 20:23	07:19 19:11	07:10 17:06	11:33 (WEA 04) 12:07 (WEA 04)	08:04 16:21	11:35 (WEA 04) 12:14 (WEA 04)	08:32 39 16:21	12:06 (WEA 04)
29	05:42 21:20	06:31 20:20	07:21 19:09	07:12 17:04	11:31 (WEA 04) 12:09 (WEA 04)	08:05 16:20	11:37 (WEA 04) 12:14 (WEA 04)	08:32 37 16:21	3 12:09 (WEA 04)
30	05:43 21:19	06:32 20:18	07:22 19:07	07:14 17:03	11:30 (WEA 04) 12:10 (WEA 04)	08:07 16:20	11:38 (WEA 04) 12:14 (WEA 04)	08:32 36 16:22	8 12:12 (WEA 04)
31	05:45 21:17	06:34 20:16		07:16 17:01	11:29 (WEA 04) 12:12 (WEA 04)		08:32 16:23	11 12:14 (WEA 04)	12:02 (WEA 04)
	Sonnenscheinstunden	501	453	381	332	267	245	14 12:16 (WEA 04)	
	astr.max.mögl.Beschattung			81	480	1414	361		

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

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

Berechnung: GB Keimberg Schattenrezeptor: SR R - Am Hammer 15, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:32 16:25	09:08 (2772-91-06 A) 15:04 (WEA 07)	08:05 17:12	09:13 (WEA 09) 15:15 (WEA 05)	07:12 18:03	14:56 (WEA 05) 15:35 (WEA 05)
2	08:32 16:26	09:09 (2772-91-06 A) 15:05 (WEA 07)	08:04 17:14	08:43 (2772-91-06 D) 16:08 (WEA 03)	07:10 18:05	14:57 (WEA 05) 15:33 (WEA 05)
3	08:32 16:27	09:09 (2772-91-06 A) 15:06 (WEA 07)	08:02 17:16	08:41 (2772-91-06 D) 16:12 (WEA 03)	07:08 18:07	14:59 (WEA 05) 15:32 (WEA 05)
4	08:31 16:28	09:10 (2772-91-06 A) 15:06 (WEA 07)	07:59 17:18	08:42 (2772-91-06 D) 16:14 (WEA 03)	07:04 18:09	15:04 (WEA 05) 15:30 (WEA 05)
5	08:31 16:29	09:10 (2772-91-06 A) 15:07 (WEA 07)	07:59 17:19	08:43 (2772-91-06 D) 16:16 (WEA 03)	07:01 18:10	15:07 (WEA 05) 15:27 (WEA 05)
6	08:31 16:30	09:10 (2772-91-06 A) 15:07 (WEA 07)	07:57 17:21	08:43 (2772-91-06 D) 16:17 (WEA 03)	07:01 18:12	15:07 (WEA 05) 15:23 (WEA 05)
7	08:31 16:31	09:12 (2772-91-06 A) 15:09 (WEA 07)	07:56 17:23	09:18 (WEA 09) 16:18 (WEA 03)	06:59 18:14	15:09 (WEA 05) 15:51 (WEA 05)
8	08:30 16:33	09:12 (2772-91-06 A) 15:08 (WEA 07)	07:54 17:25	09:19 (WEA 09) 16:19 (WEA 03)	06:57 18:16	15:09 (WEA 05) 15:51 (WEA 05)
9	08:30 16:34	12:49 (Keimberg E160) 15:09 (WEA 07)	07:52 17:27	09:21 (WEA 09) 16:20 (WEA 03)	06:55 18:17	15:09 (WEA 05) 16:58 (WEA 04)
10	08:29 16:36	12:48 (Keimberg E160) 15:09 (WEA 07)	07:50 17:29	09:24 (WEA 09) 16:20 (WEA 03)	06:52 18:19	15:09 (WEA 05) 17:03 (WEA 04)
11	08:29 16:37	15:10 (WEA 07) 17:30	13:39	12:45 (Keimberg E160) 16:41 (WEA 02)	18:21	07:56 (WEA 10) 17:06 (WEA 04)
12	08:28 16:38	09:18 (WEA 09) 15:10 (WEA 07)	07:47 17:32	12:45 (Keimberg E160) 16:43 (WEA 02)	06:48 18:23	07:56 (WEA 10) 17:08 (WEA 04)
13	08:27 16:40	09:02 (2772-91-06 B) 15:10 (WEA 07)	07:45 17:34	12:46 (Keimberg E160) 16:45 (WEA 02)	06:46 18:24	07:54 (WEA 10) 17:09 (WEA 04)
14	08:26 16:41	09:02 (2772-91-06 B) 15:10 (WEA 07)	07:43 17:36	12:47 (Keimberg E160) 16:46 (WEA 02)	06:43 18:26	07:53 (WEA 10) 17:11 (WEA 04)
15	08:26 16:43	09:02 (2772-91-06 B) 15:11 (WEA 07)	07:41 17:38	12:48 (Keimberg E160) 16:47 (WEA 02)	06:41 18:28	07:51 (WEA 10) 17:12 (WEA 04)
16	08:25 16:44	09:02 (2772-91-06 B) 15:11 (WEA 07)	07:39 17:40	12:49 (Keimberg E160) 16:47 (WEA 02)	06:39 18:30	07:51 (WEA 10) 17:13 (WEA 04)
17	08:24 16:46	09:03 (2772-91-06 B) 15:11 (WEA 07)	07:37 17:42	12:51 (Keimberg E160) 16:48 (WEA 02)	06:37 18:31	07:49 (WEA 10) 17:13 (WEA 04)
18	08:23 16:48	09:04 (2772-91-06 B) 15:12 (WEA 07)	07:35 17:43	12:52 (Keimberg E160) 16:48 (WEA 02)	06:34 18:33	07:48 (WEA 10) 17:14 (WEA 04)
19	08:22 16:49	09:13 (WEA 09) 15:12 (WEA 07)	07:33 17:45	12:54 (Keimberg E160) 16:48 (WEA 02)	06:32 18:35	07:48 (WEA 10) 17:14 (WEA 04)
20	08:21 16:51	09:12 (WEA 09) 15:12 (WEA 07)	07:31 17:47	12:57 (Keimberg E160) 16:48 (WEA 02)	06:30 18:37	07:46 (WEA 10) 17:14 (WEA 04)
21	08:20 16:53	09:12 (WEA 09) 15:12 (WEA 07)	07:29 17:49	13:00 (Keimberg E160) 16:48 (WEA 02)	06:27 18:38	07:46 (WEA 10) 17:14 (WEA 04)
22	08:19 16:54	09:11 (WEA 09) 15:11 (WEA 07)	07:27 17:51	13:05 (Keimberg E160) 16:47 (WEA 02)	06:25 18:40	07:46 (WEA 10) 17:14 (WEA 04)
23	08:18 16:56	09:12 (WEA 09) 15:11 (WEA 07)	07:25 17:52	14:52 (WEA 05) 16:45 (WEA 02)	06:23 18:43	07:45 (WEA 10) 17:13 (WEA 04)
24	08:15 16:59	08:54 (2772-91-06 C) 15:11 (WEA 07)	07:23 17:54	14:52 (WEA 05) 16:45 (WEA 02)	06:21 18:43	07:45 (WEA 10) 17:13 (WEA 04)
25	08:14 17:01	08:54 (2772-91-06 C) 15:10 (WEA 07)	07:19 17:58	14:53 (WEA 05) 16:40 (WEA 02)	06:16 18:47	07:44 (WEA 10) 17:12 (WEA 04)
26	08:13 17:03	08:54 (2772-91-06 C) 15:08 (WEA 07)	07:17 18:00	14:54 (WEA 05) 16:40 (WEA 02)	06:14 18:48	07:45 (WEA 10) 17:11 (WEA 04)
27	08:11 17:05	08:56 (2772-91-06 C) 15:07 (WEA 07)	07:15 18:02	14:55 (WEA 05) 16:41 (WEA 02)	06:11 18:50	07:45 (WEA 10) 17:11 (WEA 04)
28	08:11 17:07	09:12 (WEA 09) 15:04 (WEA 07)	07:15 18:04	15:53 (WEA 05) 19:52	07:09 19:52	08:45 (WEA 10) 18:09 (WEA 04)
29	08:08 17:08	09:13 (WEA 09) 14:02 (WEA 06)	07:15 18:06	17:12 (WEA 04) 19:54	06:00 19:54	08:45 (WEA 10) 18:08 (WEA 04)
30	08:08 17:10	09:12 (WEA 09) 13:42 (Keimberg E160)	07:15 18:08	17:12 (WEA 04) 19:55	06:00 19:55	08:45 (WEA 10) 18:07 (WEA 04)
31	08:07 17:10		07:15 18:08		06:00 19:55	08:45 (WEA 10) 18:07 (WEA 04)
Sonnenscheinstunden		260	278	367	416	484
astr.max.mögl.Beschattung		4060	3495	1932	516	604

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

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)
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Projekt:

Buke Keimberg

Lizenzierter Anwender:

Lackmann Phymetric GmbH  
Vattmannstraße 6  
DE-33100 Paderborn  
+49 05251-68 25 80

Berechnet:

06.01.2023 13:27/3.5.584

## SHADOW - Kalender

Berechnung: GB KeimbergSchattenrezeptor: SR R - Am Hammer 15, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Juli		August		September		Oktober		November		Dezember					
1	05:10	06:14 (02149-13-14)	05:46		06:35		07:24	08:34 (WEA 10)	07:17	08:53 (WEA 09)	08:08	09:03 (WEA 09)				
2	21:47	06:35 (02149-13-14)	21:15		20:14		19:05	17:48 (WEA 04)	16:59	15:50 (WEA 03)	16:19	14:52 (WEA 07)				
2	05:11	06:14 (02149-13-14)	05:48		06:37		07:26	08:36 (WEA 10)	07:19	08:50 (WEA 09)	08:09	12:31 (Keimberg E160)				
3	21:47	06:35 (02149-13-14)	21:14		20:11		19:02	17:46 (WEA 04)	16:57	15:49 (WEA 03)	16:18	14:53 (WEA 07)				
3	05:11	06:15 (02149-13-14)	05:49		06:39		07:27	08:37 (WEA 10)	07:21	08:49 (WEA 09)	08:11	12:32 (Keimberg E160)				
4	21:46	06:35 (02149-13-14)	21:12		20:09		19:00	17:42 (WEA 04)	16:55	15:49 (WEA 03)	16:18	14:52 (WEA 07)				
4	05:12	06:15 (02149-13-14)	05:51		06:40		07:29	08:40 (WEA 10)	07:41	08:47 (WEA 09)	08:12	10:42 (WEA 08)				
5	21:46	06:34 (02149-13-14)	21:10		20:07		18:58	17:39 (WEA 04)	16:53	15:48 (WEA 03)	16:17	14:52 (WEA 07)				
5	05:13	06:16 (02149-13-14)	05:52		06:42		07:31	08:45 (WEA 10)	07:25	08:13 (2772-91-06 D)	08:14	08:57 (2772-91-06 A)				
6	21:45	06:34 (02149-13-14)	21:09		20:05		18:55	08:55 (WEA 10)	16:52	15:47 (WEA 03)	16:16	14:53 (WEA 07)				
6	05:14	06:16 (02149-13-14)	05:54		06:43		07:32	08:53 (WEA 10)	07:26	08:12 (2772-91-06 D)	08:15	08:56 (2772-91-06 A)				
7	21:45	06:34 (02149-13-14)	21:07	7	07:45 (01847-12-14)	20:02	10	09:03 (WEA 10)	18:53	16:50	15:46 (WEA 03)	16:16	14:53 (WEA 07)			
7	05:15	06:17 (02149-13-14)	05:55		06:45		07:34	08:49 (WEA 10)	07:34	15:46 (WEA 05)	07:28	08:12 (2772-91-06 D)	08:16	08:57 (2772-91-06 A)		
8	21:44	06:34 (02149-13-14)	21:05	12	07:47 (01847-12-14)	20:00	33	17:51 (WEA 04)	18:51	15:56 (WEA 05)	16:48	15:49 (WEA 03)	16:16	14:54 (WEA 07)		
8	05:15	06:18 (02149-13-14)	05:57		06:47		07:36	08:45 (WEA 10)	07:36	15:41 (WEA 05)	07:30	08:12 (2772-91-06 D)	08:17	08:57 (2772-91-06 A)		
9	21:44	06:34 (02149-13-14)	21:03	15	07:49 (01847-12-14)	19:58	47	17:54 (WEA 04)	18:49	16:01 (WEA 05)	16:47	14:4	15:42 (WEA 03)	16:15	119	14:54 (WEA 07)
9	05:16	06:19 (02149-13-14)	05:58		06:48		07:37	08:44 (WEA 10)	07:37	15:38 (WEA 05)	07:32	08:14 (2772-91-06 D)	08:18	08:57 (2772-91-06 A)		
10	21:43	06:33 (02149-13-14)	21:01	18	07:50 (01847-12-14)	19:55	54	17:56 (WEA 04)	18:46	16:04 (WEA 05)	16:45	126	15:37 (WEA 03)	16:15	118	14:54 (WEA 07)
10	05:17	06:20 (02149-13-14)	06:00		06:50		07:39	08:41 (WEA 10)	07:39	15:34 (WEA 05)	07:33	08:43 (WEA 09)	08:20	08:58 (2772-91-06 A)		
11	21:42	06:33 (02149-13-14)	20:59	19	07:51 (01847-12-14)	19:53	62	17:57 (WEA 04)	18:44	16:05 (WEA 05)	16:43	106	13:12 (Keimberg E160)	16:15	120	14:54 (WEA 07)
11	05:18	06:22 (02149-13-14)	06:02		06:52		07:41	08:40 (WEA 10)	07:41	15:32 (WEA 05)	07:35	08:43 (WEA 09)	08:15	08:58 (2772-91-06 A)		
12	21:41	06:32 (02149-13-14)	20:58	22	07:52 (01847-12-14)	19:51	68	17:58 (WEA 04)	18:42	16:06 (WEA 05)	16:42	106	13:12 (Keimberg E160)	16:15	122	14:54 (WEA 07)
12	05:19	06:23 (02149-13-14)	06:03		06:53		07:42	08:38 (WEA 10)	07:42	15:30 (WEA 05)	07:37	08:43 (WEA 09)	08:22	08:59 (2772-91-06 A)		
13	21:41	06:30 (02149-13-14)	20:56	22	07:52 (01847-12-14)	19:49	72	17:58 (WEA 04)	18:40	16:08 (WEA 05)	16:40	118	13:34 (WEA 06)	16:15	120	14:54 (WEA 07)
13	05:21	06:20 (02149-13-14)	06:05		06:55		07:44	08:37 (WEA 10)	07:44	15:29 (WEA 05)	07:39	08:44 (WEA 09)	08:23	08:59 (2772-91-06 A)		
14	21:40	06:20 (02149-13-14)	20:54	23	07:52 (01847-12-14)	19:46	76	17:59 (WEA 04)	18:38	16:09 (WEA 05)	16:39	132	14:36 (WEA 07)	16:14	119	14:55 (WEA 07)
14	05:22	06:06	06:06		06:56		07:46	08:36 (WEA 10)	07:46	15:28 (WEA 05)	07:40	08:27 (2772-91-06 C)	08:24	09:00 (2772-91-06 A)		
15	21:39	06:18 (02149-13-14)	20:52	24	07:53 (01847-12-14)	19:44	80	18:00 (WEA 04)	18:35	16:10 (WEA 05)	16:37	144	14:39 (WEA 07)	16:14	118	14:55 (WEA 07)
15	05:23	06:08	06:08		06:58		07:48	08:35 (WEA 10)	07:48	15:26 (WEA 05)	07:42	08:27 (2772-91-06 C)	08:25	09:01 (2772-91-06 A)		
16	21:38	06:20 (02149-13-14)	20:50	24	07:52 (01847-12-14)	19:42	83	18:00 (WEA 04)	18:33	16:11 (WEA 05)	16:36	150	14:41 (WEA 07)	16:15	113	14:55 (WEA 07)
16	05:24	06:10	06:10		07:00		07:49	08:34 (WEA 10)	07:49	15:25 (WEA 05)	07:44	08:27 (2772-91-06 C)	08:25	09:02 (2772-91-06 A)		
17	21:37	06:20 (02149-13-14)	20:48	24	07:53 (01847-12-14)	19:39	86	18:01 (WEA 04)	18:31	17:14 (WEA 02)	16:34	153	14:43 (WEA 07)	16:15	107	14:56 (WEA 07)
17	05:25	06:11	06:11		07:01		07:51	08:33 (WEA 10)	07:51	15:24 (WEA 05)	07:46	08:27 (2772-91-06 C)	08:26	09:03 (2772-91-06 A)		
18	21:36	06:24	20:46	24	07:52 (01847-12-14)	19:37	88	18:00 (WEA 04)	18:29	17:16 (WEA 02)	16:33	155	14:44 (WEA 07)	16:15	109	14:56 (WEA 07)
18	05:26	06:13	06:13		07:03		07:53	08:33 (WEA 10)	07:53	15:23 (WEA 05)	07:47	08:28 (2772-91-06 C)	08:27	10:39 (WEA 08)		
19	21:35	06:24	20:44	23	07:52 (01847-12-14)	19:35	88	18:00 (WEA 04)	18:27	17:17 (WEA 02)	16:32	148	14:45 (WEA 07)	16:15	108	14:57 (WEA 07)
19	05:28	06:14	06:14		07:04		07:54	08:32 (WEA 10)	07:54	13:41 (Keimberg E160)	07:49	08:47 (WEA 09)	08:28	10:38 (WEA 08)		
20	21:34	06:22	20:42	22	07:51 (01847-12-14)	19:32	91	18:01 (WEA 04)	18:25	17:18 (WEA 02)	16:31	144	14:46 (WEA 07)	16:15	109	14:57 (WEA 07)
20	05:29	06:16	06:16		07:06		07:56	08:31 (WEA 10)	07:56	13:33 (Keimberg E160)	07:51	08:46 (WEA 09)	08:28	10:39 (WEA 08)		
21	21:32	06:20	20:40	20	07:50 (01847-12-14)	19:30	92	18:00 (WEA 04)	18:23	17:18 (WEA 02)	16:29	146	14:46 (WEA 07)	16:16	109	14:58 (WEA 07)
21	05:30	06:18	06:18		07:08		07:58	08:31 (WEA 10)	07:58	13:29 (Keimberg E160)	07:52	08:47 (WEA 09)	08:29	10:39 (WEA 08)		
22	21:31	06:28	20:38	18	07:49 (01847-12-14)	19:28	92	18:00 (WEA 04)	18:20	17:18 (WEA 02)	16:28	146	14:47 (WEA 07)	16:16	109	14:58 (WEA 07)
22	05:32	06:19	06:19		07:09		08:00	08:31 (WEA 10)	08:00	13:27 (Keimberg E160)	07:54	08:48 (WEA 09)	08:29	10:40 (WEA 08)		
23	21:30	06:35	20:35	16	07:47 (01847-12-14)	19:25	90	17:58 (WEA 04)	18:18	17:18 (WEA 02)	16:27	145	14:48 (WEA 07)	16:17	109	14:59 (WEA 07)
23	05:33	06:21	06:21		07:11		08:01	08:31 (WEA 10)	08:01	13:24 (Keimberg E160)	07:56	08:50 (WEA 09)	08:30	10:40 (WEA 08)		
24	21:29	06:33	20:33	12	07:46 (01847-12-14)	19:23	90	17:58 (WEA 04)	18:16	17:18 (WEA 02)	16:26	144	14:49 (WEA 07)	16:17	109	14:59 (WEA 07)
24	05:34	06:22	06:22		07:13		08:03	08:31 (WEA 10)	08:03	13:22 (Keimberg E160)	07:57	08:42 (2772-91-06 B)	08:30	10:41 (WEA 08)		
25	21:27	06:31	20:31	5	07:41 (01847-12-14)	19:21	88	17:58 (WEA 04)	18:14	17:18 (WEA 02)	16:25	146	14:50 (WEA 07)	16:18	109	15:00 (WEA 07)
25	05:36	06:24	06:24		07:14		08:05	08:31 (WEA 10)	08:05	12:21 (Keimberg E160)	07:59	08:41 (2772-91-06 B)	08:31	10:42 (WEA 08)		
26	21:26	06:29	20:29		07:18		08:06	08:31 (WEA 10)	08:06	16:18 (WEA 02)	16:24	144	14:49 (WEA 07)	16:18	109	15:00 (WEA 07)
26	05:37	06:26	06:26		07:16		08:07	08:32 (WEA 10)	08:07	12:20 (Keimberg E160)	08:01	08:41 (2772-91-06 B)	08:31	09:07 (2772-91-06 A)		
27	21:24	06:27	20:27		07:16		08:07	08:31 (WEA 10)	08:07	16:18 (WEA 02)	16:23	144	14:50 (WEA 07)	16:19	109	15:00 (WEA 07)
27	05:39	06:27	06:27		07:17		08:09	08:31 (WEA 10)	08:09	12:18 (Keimberg E160)	08:02	08:42 (2772-91-06 B)	08:31	09:07 (2772-91-06 A)		
28	21:23	06:25	20:25		07:14		08:02	08:31 (WEA 10)	08:02	16:17 (WEA 02)	16:22	141	14:51 (WEA 07)	16:20	109	15:01 (WEA 07)
28	05:40	06:29	06:29		07:19		08:10	08:32 (WEA 10)	08:10	12:16 (Keimberg E160)	08:04	08:42 (2772-91-06 B)	08:32	09:07 (2772-91-06 A)		
29	21:22	06:23	20:23		07:11		08:04	08:31 (WEA 10)	08:04	16:15 (WEA 02)	16:21	137	14:51 (WEA 07)	16:21	110	15:01 (WEA 07)
29	05:42	06:31	06:31		07:21		08:13	08:33 (WEA 10)	08:13	12:16 (Keimberg E160)	08:05	08:43 (2772-91-06 B)	08:32	09:07 (2772-91-06 A)		
30	21:20	06:20	20:20		07:09		08:04	08:32 (WEA 10)	08:04	16:14 (WEA 02)	16:20	132	14:51 (WEA 07)	16:21	115	15:02 (WEA 07)
30	05:43	06:32	06:32		07:22		08:13	08:33 (WEA 10)	08:13	12:15 (Keimberg E160)	08:07	08:59 (WEA 09)	08:32	09:07 (2772-91-06 A)		
31	21:18	06:18	20:18		07:07		08:00	08:31 (WEA 10)	08:00	16:12 (WEA 02)	16:19	122	14:51 (WEA 07)	16:22	120	15:02 (WEA 07)
31	05:45	06:34	06:34		07:24		08:13	08:33 (WEA 10)	08:13	12:14 (Keimberg E160)	08:07	08:59 (WEA 09)	08:32	09:08 (2772-91-06 A)		
31	21:17	06:16	20:16		07:01		07:31	08:31 (WEA 10)	07:31	17:01 (WEA 02)	16:10	121	16:23	121	15:03 (WEA 07)	
Sonnenscheinstunden		501		453		381		332		267		245				
astr.max.mögl.Beschattung		194		350		1864		2458		4273		3516				

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 erst
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## SHADOW - Kalender

Berechnung: GB KeimbergSchattenrezeptor: SR S - Wienackerstr. 25, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:32 16:24	14:02 (WEA 10) 17:12	14:11 (WEA 10) 16:21 (Keimberg E160)	07:12 18:03	14:58 (1847-12-14) 15:47 (1847-12-14)	07:02 19:57
2	08:32 16:26	14:02 (WEA 10) 17:14	14:13 (WEA 10) 16:22 (Keimberg E160)	07:10 18:05	14:57 (1847-12-14) 15:46 (1847-12-14)	07:00 19:59
3	08:32 16:27	14:02 (WEA 10) 17:16	14:13 (WEA 10) 16:22 (Keimberg E160)	07:08 18:07	14:58 (1847-12-14) 15:46 (1847-12-14)	06:58 20:00
4	08:31 16:28	14:02 (WEA 10) 17:17	14:14 (WEA 10) 16:22 (Keimberg E160)	07:06 18:09	14:58 (1847-12-14) 15:46 (1847-12-14)	06:55 20:02
5	08:31 16:29	14:03 (WEA 10) 17:19	14:15 (WEA 10) 16:21 (Keimberg E160)	07:04 18:10	14:59 (1847-12-14) 15:46 (1847-12-14)	06:53 20:04
6	08:31 16:30	14:03 (WEA 10) 17:21	14:17 (WEA 10) 16:22 (Keimberg E160)	07:01 18:12	14:58 (1847-12-14) 15:45 (1847-12-14)	06:51 20:05
7	08:31 16:31	14:03 (WEA 10) 17:23	14:18 (WEA 10) 16:48 (WEA 05)	06:59 18:14	14:59 (1847-12-14) 15:44 (1847-12-14)	06:48 20:07
8	08:30 16:33	14:03 (WEA 10) 17:25	14:20 (WEA 10) 16:50 (WEA 05)	06:57 18:16	15:00 (1847-12-14) 15:43 (1847-12-14)	06:46 20:09
9	08:30 16:34	14:03 (WEA 10) 17:27	14:21 (WEA 10) 16:51 (WEA 05)	06:55 18:17	15:02 (1847-12-14) 15:43 (1847-12-14)	06:44 20:10
10	08:29 16:35	14:04 (WEA 10) 17:29	14:24 (WEA 10) 16:52 (WEA 05)	06:52 18:19	15:02 (1847-12-14) 15:41 (1847-12-14)	06:42 20:12
11	08:29 16:37	14:04 (WEA 10) 17:30	14:26 (WEA 10) 16:53 (WEA 05)	06:50 18:21	15:04 (1847-12-14) 15:39 (1847-12-14)	06:39 20:14
12	08:28 16:38	14:04 (WEA 10) 17:32	14:30 (WEA 10) 16:54 (WEA 05)	06:48 18:23	15:06 (1847-12-14) 15:38 (1847-12-14)	06:37 20:15
13	08:27 16:40	14:04 (WEA 10) 17:34	15:16 (1847-12-14) 16:54 (WEA 05)	06:46 18:24	15:07 (1847-12-14) 15:35 (1847-12-14)	06:35 20:17
14	08:26 16:41	14:04 (WEA 10) 17:36	15:12 (1847-12-14) 16:54 (WEA 05)	06:43 18:26	15:10 (1847-12-14) 15:32 (1847-12-14)	06:33 20:19
15	08:26 16:43	14:04 (WEA 10) 17:38	15:09 (1847-12-14) 16:54 (WEA 05)	06:41 18:28	15:15 (1847-12-14) 15:29 (1847-12-14)	06:31 20:21
16	08:25 16:44	14:04 (WEA 10) 17:40	15:07 (1847-12-14) 16:54 (WEA 05)	06:39 18:30	15:28 (1847-12-14) 15:28 (1847-12-14)	06:28 20:22
17	08:24 16:46	14:05 (WEA 10) 17:41	15:06 (1847-12-14) 16:54 (WEA 05)	06:37 18:31	15:29 (1847-12-14) 15:27 (1847-12-14)	06:26 20:24
18	08:23 16:48	14:05 (WEA 10) 17:43	15:04 (1847-12-14) 16:53 (WEA 05)	06:34 18:33	15:29 (1847-12-14) 15:26 (1847-12-14)	06:24 20:26
19	08:22 16:49	14:05 (WEA 10) 17:45	15:03 (1847-12-14) 16:52 (WEA 05)	06:32 18:35	15:28 (1847-12-14) 15:25 (1847-12-14)	06:22 20:27
20	08:21 16:51	14:06 (WEA 10) 17:47	15:02 (1847-12-14) 16:51 (WEA 05)	06:30 18:36	15:27 (1847-12-14) 15:24 (1847-12-14)	06:20 20:29
21	08:20 16:53	14:06 (WEA 10) 17:49	15:01 (1847-12-14) 16:49 (WEA 05)	06:27 18:38	15:26 (1847-12-14) 15:23 (1847-12-14)	06:18 20:31
22	08:19 16:54	14:06 (WEA 10) 17:51	15:01 (1847-12-14) 16:48 (WEA 05)	06:25 18:40	15:25 (1847-12-14) 15:22 (1847-12-14)	06:16 20:32
23	08:18 16:56	14:07 (WEA 10) 17:52	15:00 (1847-12-14) 16:48 (WEA 05)	06:23 18:42	15:24 (1847-12-14) 15:21 (1847-12-14)	06:14 20:34
24	08:16 16:58	14:07 (WEA 10) 17:54	15:00 (1847-12-14) 16:47 (WEA 05)	06:20 18:43	15:23 (1847-12-14) 15:20 (1847-12-14)	06:12 20:36
25	08:15 16:59	14:07 (WEA 10) 17:56	14:58 (1847-12-14) 16:46 (WEA 05)	06:18 18:45	15:23 (1847-12-14) 15:19 (1847-12-14)	06:10 20:38
26	08:14 17:01	14:08 (WEA 10) 17:58	14:58 (1847-12-14) 16:45 (WEA 05)	06:16 18:47	15:22 (1847-12-14) 15:18 (1847-12-14)	06:08 20:40
27	08:13 17:03	14:08 (WEA 10) 18:00	14:58 (1847-12-14) 16:44 (WEA 05)	06:14 18:48	15:22 (1847-12-14) 15:17 (1847-12-14)	06:05 20:42
28	08:11 17:05	14:09 (WEA 10) 18:01	14:58 (1847-12-14) 16:43 (WEA 05)	06:11 18:50	15:21 (1847-12-14) 15:16 (1847-12-14)	06:04 20:44
29	08:10 17:07	14:09 (WEA 10) 18:02	14:57 (1847-12-14) 16:42 (WEA 05)	06:09 19:52	15:20 (1847-12-14) 15:15 (1847-12-14)	06:02 20:46
30	08:08 17:08	14:10 (WEA 10) 18:03	14:57 (1847-12-14) 16:41 (WEA 05)	06:07 19:53	15:19 (1847-12-14) 15:14 (1847-12-14)	06:00 20:48
31	08:07 17:10	14:11 (WEA 10) 18:04	14:57 (1847-12-14) 16:40 (WEA 05)	06:04 19:55	15:18 (1847-12-14) 15:13 (1847-12-14)	06:04 20:46
Sonnenscheinstunden astr.max.mögl.Beschattung	260 1850	278 1600	367 587	416 848	484 1178	498 2147

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

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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## SHADOW - Kalender

Berechnung: GB Keimberg Schattenrezeptor: SR S - Wienackerstr. 25, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Juli	August	September	Oktober	November	Dezember					
1	05:10 21:47	05:46 21:15	18:35 (02149-13-14) 19:24 (02149-13-14)	06:35 20:14	07:24 19:04	15:46 (01847-12-14) 16:16 (01847-12-14)	07:17 16:59	13:53 (WEA 10) 16:22 (WEA 05)	08:08 16:19	53 53	13:46 (WEA 10) 14:39 (WEA 10)
2	05:10 21:46	05:48 21:14	18:34 (02149-13-14) 19:24 (02149-13-14)	06:37 20:11	07:26 19:02	15:43 (01847-12-14) 16:18 (01847-12-14)	07:19 16:57	13:51 (WEA 10) 16:21 (WEA 05)	08:09 16:18	53 53	13:46 (WEA 10) 14:39 (WEA 10)
3	05:11 21:46	05:49 21:12	18:34 (02149-13-14) 19:25 (02149-13-14)	06:39 20:09	07:27 19:00	15:41 (01847-12-14) 16:18 (01847-12-14)	07:21 16:55	13:49 (WEA 10) 16:19 (WEA 05)	08:11 16:17	52 52	13:47 (WEA 10) 14:39 (WEA 10)
4	05:12 21:46	05:51 21:10	18:33 (02149-13-14) 19:25 (02149-13-14)	06:40 20:07	07:29 18:58	15:39 (01847-12-14) 16:19 (01847-12-14)	07:23 16:53	13:48 (WEA 10) 16:17 (WEA 05)	08:12 16:17	52 52	13:47 (WEA 10) 14:39 (WEA 10)
5	05:13 21:45	05:52 21:08	18:32 (02149-13-14) 19:25 (02149-13-14)	06:42 20:05	07:31 18:55	15:38 (01847-12-14) 16:20 (01847-12-14)	07:25 16:52	13:47 (WEA 10) 16:16 (Keimberg E160)	08:14 16:16	52 52	13:48 (WEA 10) 14:40 (WEA 10)
6	05:14 21:45	05:54 21:07	18:32 (02149-13-14) 19:25 (02149-13-14)	06:43 20:02	07:32 18:53	15:36 (01847-12-14) 16:20 (01847-12-14)	07:26 16:50	13:45 (WEA 10) 16:15 (Keimberg E160)	08:15 16:16	51 51	13:49 (WEA 10) 14:40 (WEA 10)
7	05:14 21:44	05:55 21:06	18:31 (02149-13-14) 19:25 (02149-13-14)	06:45 20:00	07:34 18:51	15:35 (01847-12-14) 16:20 (01847-12-14)	07:28 16:48	13:45 (WEA 10) 16:15 (Keimberg E160)	08:16 16:16	50 50	13:49 (WEA 10) 14:39 (WEA 10)
8	05:15 21:43	05:57 21:03	18:31 (02149-13-14) 19:26 (02149-13-14)	06:47 19:58	07:36 18:49	15:34 (01847-12-14) 16:21 (01847-12-14)	07:30 16:46	13:44 (WEA 10) 16:15 (Keimberg E160)	08:17 16:15	50 50	13:50 (WEA 10) 14:40 (WEA 10)
9	05:16 21:43	05:58 21:01	18:30 (02149-13-14) 19:25 (02149-13-14)	06:48 19:55	07:37 18:46	15:33 (01847-12-14) 16:21 (01847-12-14)	07:32 16:45	13:43 (WEA 10) 16:15 (Keimberg E160)	08:18 16:15	49 49	13:51 (WEA 10) 14:40 (WEA 10)
10	05:17 21:42	06:00 20:59	18:30 (02149-13-14) 19:26 (02149-13-14)	06:50 19:53	07:39 18:44	15:32 (01847-12-14) 16:20 (01847-12-14)	07:33 16:43	13:42 (WEA 10) 16:15 (Keimberg E160)	08:20 16:15	49 49	13:51 (WEA 10) 14:40 (WEA 10)
11	05:18 21:41	06:02 20:58	18:30 (02149-13-14) 19:25 (02149-13-14)	06:51 19:51	07:41 18:42	15:32 (01847-12-14) 16:20 (01847-12-14)	07:35 16:42	13:41 (WEA 10) 16:15 (Keimberg E160)	08:21 16:15	49 49	13:52 (WEA 10) 14:41 (WEA 10)
12	05:19 21:41	06:03 20:56	18:30 (02149-13-14) 19:25 (02149-13-14)	06:53 19:49	07:42 18:40	15:31 (01847-12-14) 16:20 (01847-12-14)	07:37 16:40	13:41 (WEA 10) 16:15 (Keimberg E160)	08:22 16:14	49 49	13:52 (WEA 10) 14:41 (WEA 10)
13	05:20 21:40	06:05 20:54	18:29 (02149-13-14) 19:25 (02149-13-14)	06:55 19:46	07:44 18:37	15:31 (01847-12-14) 16:20 (01847-12-14)	07:39 16:39	13:41 (WEA 10) 16:15 (Keimberg E160)	08:23 16:14	48 48	13:53 (WEA 10) 14:41 (WEA 10)
14	05:22 21:39	06:06 20:52	18:30 (02149-13-14) 19:25 (02149-13-14)	06:56 19:44	07:46 18:35	15:30 (01847-12-14) 16:19 (01847-12-14)	07:40 16:37	13:41 (WEA 10) 16:15 (Keimberg E160)	08:24 16:14	47 47	13:54 (WEA 10) 14:41 (WEA 10)
15	05:23 21:38	06:08 18:55 (02149-13-14) 19:05 (02149-13-14)	18:29 (02149-13-14) 20:50	06:58 19:42	07:48 18:33	15:30 (01847-12-14) 16:19 (01847-12-14)	07:42 16:36	13:41 (WEA 10) 16:15 (Keimberg E160)	08:25 16:14	47 47	13:54 (WEA 10) 14:42 (WEA 10)
16	05:24 21:37	06:10 18:52 (02149-13-14) 19:08 (02149-13-14)	18:29 (02149-13-14) 20:48	07:00 19:39	07:49 18:31	15:30 (01847-12-14) 16:19 (01847-12-14)	07:44 16:34	13:41 (WEA 10) 16:15 (Keimberg E160)	08:25 16:15	47 47	13:55 (WEA 10) 14:42 (WEA 10)
17	05:25 21:36	06:11 18:50 (02149-13-14) 19:10 (02149-13-14)	18:29 (02149-13-14) 20:46	07:01 19:37	07:51 18:29	15:31 (01847-12-14) 16:18 (01847-12-14)	07:46 16:33	13:41 (WEA 10) 16:15 (Keimberg E160)	08:26 16:15	47 47	13:56 (WEA 10) 14:43 (WEA 10)
18	05:26 21:35	06:13 18:48 (02149-13-14) 19:11 (02149-13-14)	18:30 (02149-13-14) 20:44	07:03 19:35	07:53 18:27	15:31 (01847-12-14) 16:18 (01847-12-14)	07:47 16:32	13:41 (WEA 10) 16:15 (Keimberg E160)	08:27 16:15	46 46	13:56 (WEA 10) 14:42 (WEA 10)
19	05:28 21:33	06:14 18:47 (02149-13-14) 19:13 (02149-13-14)	18:29 (02149-13-14) 20:42	07:04 19:32	07:54 18:25	15:32 (01847-12-14) 16:17 (01847-12-14)	07:49 16:30	13:41 (WEA 10) 16:15 (Keimberg E160)	08:28 16:15	46 46	13:57 (WEA 10) 14:43 (WEA 10)
20	05:29 21:32	06:16 18:46 (02149-13-14) 19:15 (02149-13-14)	18:30 (02149-13-14) 20:40	07:06 19:30	07:56 18:22	15:31 (01847-12-14) 17:17 (WEA 05)	07:51 16:29	13:41 (WEA 10) 16:15 (Keimberg E160)	08:28 16:16	46 46	13:58 (WEA 10) 14:44 (WEA 10)
21	05:30 21:31	06:18 18:45 (02149-13-14) 19:16 (02149-13-14)	18:30 (02149-13-14) 20:37	07:08 19:28	07:58 18:20	15:32 (01847-12-14) 17:20 (WEA 05)	07:52 16:28	13:41 (WEA 10) 16:16 (Keimberg E160)	08:29 16:16	46 46	13:57 (WEA 10) 14:44 (WEA 10)
22	05:32 21:30	06:19 18:43 (02149-13-14) 19:17 (02149-13-14)	18:31 (02149-13-14) 20:35	07:09 19:25	08:00 18:18	15:33 (01847-12-14) 17:22 (WEA 05)	07:54 16:27	13:42 (WEA 10) 16:17 (Keimberg E160)	08:29 16:17	47 47	14:44 (WEA 10) 14:45 (WEA 10)
23	05:33 21:29	06:21 18:42 (02149-13-14) 19:17 (02149-13-14)	18:31 (02149-13-14) 20:33	07:11 19:23	08:01 18:16	15:34 (01847-12-14) 17:23 (WEA 05)	07:56 16:26	13:42 (WEA 10) 16:16 (Keimberg E160)	08:30 16:17	46 46	13:59 (WEA 10) 14:45 (WEA 10)
24	05:34 21:27	06:22 18:42 (02149-13-14) 19:19 (02149-13-14)	18:32 (02149-13-14) 20:31	07:12 19:21	08:03 18:14	15:35 (01847-12-14) 17:24 (WEA 05)	07:57 16:25	13:42 (WEA 10) 16:18 (Keimberg E160)	08:30 16:18	46 46	14:00 (WEA 10) 14:46 (WEA 10)
25	05:36 21:26	06:24 18:40 (02149-13-14) 19:19 (02149-13-14)	18:33 (02149-13-14) 20:29	07:14 19:18	07:05 17:12	14:37 (01847-12-14) 16:24 (WEA 05)	07:59 16:24	13:43 (WEA 10) 16:18 (Keimberg E160)	08:31 16:18	46 46	14:00 (WEA 10) 14:46 (WEA 10)
26	05:37 21:24	06:26 18:39 (02149-13-14) 19:20 (02149-13-14)	18:34 (02149-13-14) 20:27	07:16 19:16	07:07 17:10	14:38 (01847-12-14) 16:25 (WEA 05)	08:00 16:23	13:43 (WEA 10) 16:18 (Keimberg E160)	08:31 16:19	47 47	14:00 (WEA 10) 14:47 (WEA 10)
27	05:39 21:23	06:27 18:39 (02149-13-14) 19:21 (02149-13-14)	18:35 (02149-13-14) 20:25	07:17 19:14	07:08 17:08	14:40 (01847-12-14) 16:24 (WEA 05)	08:02 16:22	13:44 (WEA 10) 16:19 (Keimberg E160)	08:31 16:20	47 47	14:00 (WEA 10) 14:47 (WEA 10)
28	05:40 21:21	06:29 18:38 (02149-13-14) 19:22 (02149-13-14)	18:36 (02149-13-14) 20:22	07:19 19:11	07:10 17:06	14:42 (01847-12-14) 16:24 (WEA 05)	08:04 16:21	13:44 (WEA 10) 16:19 (Keimberg E160)	08:32 16:20	47 47	14:00 (WEA 10) 14:47 (WEA 10)
29	05:42 21:20	06:31 18:36 (02149-13-14) 19:22 (02149-13-14)	18:38 (02149-13-14) 20:20	07:21 19:09	9 16:07 (01847-12-14) 15:53 (01847-12-14)	17:06 17:12	42 39	14:05 (WEA 05) 16:23 (WEA 05)	16:21 16:20	54 54	14:38 (WEA 10) 14:48 (WEA 10)
30	05:43 21:18	06:32 18:36 (02149-13-14) 19:23 (02149-13-14)	18:40 (02149-13-14) 20:18	07:22 19:07	19 16:12 (01847-12-14) 15:48 (01847-12-14)	17:04 17:02	42 45	13:59 (WEA 10) 16:23 (WEA 05)	16:20 16:19	53 53	14:39 (WEA 10) 14:49 (WEA 10)
31	05:44 21:17	06:34 18:35 (02149-13-14) 19:23 (02149-13-14)	18:44 (02149-13-14) 20:16	07:23 19:00 (02149-13-14)	07:16 17:01	13:55 (WEA 10) 16:23 (WEA 05)	42 59	13:48 (WEA 10) 16:23 (WEA 05)	16:22 16:23	48 48	14:01 (WEA 10) 14:49 (WEA 10)
Sonnenscheinstunden	501	453	381	332	267	245					
astr.max.mögl.Beschattung	568	1483	54	1461	2006	1500					

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)

## SHADOW - Kalender

Berechnung: GB KeimbergSchattenrezeptor: SR T - Wienackerstr. 27, 33184 Altenbeken  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:32 16:24 49	13:57 (WEA 10) 14:46 (WEA 10) 17:12	08:05 16:13 (Keimberg E160) 18:03	07:12 14:21 (WEA 10) 07:10	07:02 17:47 (02149-13-14) 05:58	05:13 20:47 21:33
2	08:32 16:26 48	13:58 (WEA 10) 14:46 (WEA 10) 17:14	08:04 14:24 (WEA 10) 18:05	07:10 14:24 (WEA 10) 07:08	07:00 17:46 (02149-13-14) 05:56	05:12 20:49 21:34
3	08:32 16:27 49	13:57 (WEA 10) 14:46 (WEA 10) 17:16	08:02 14:29 (WEA 10) 18:07	07:08 14:29 (WEA 10) 07:06	06:58 17:46 (02149-13-14) 05:54	05:11 20:51 21:35
4	08:31 16:28 49	13:58 (WEA 10) 14:47 (WEA 10) 17:17	08:01 14:49 (01847-12-14) 18:09	07:06 16:11 (Keimberg E160) 18:09	06:55 17:47 (02149-13-14) 05:52	05:10 20:52 21:36
5	08:31 16:29 49	13:59 (WEA 10) 14:48 (WEA 10) 17:19	07:59 14:49 (01847-12-14) 18:10	07:04 16:10 (Keimberg E160) 18:10	06:53 17:47 (02149-13-14) 05:50	05:10 20:54 21:37
6	08:31 16:30 49	13:59 (WEA 10) 14:48 (WEA 10) 17:21	07:57 14:49 (01847-12-14) 18:12	07:01 16:09 (Keimberg E160) 18:12	06:51 17:47 (02149-13-14) 05:48	05:09 20:56 21:38
7	08:31 16:31 49	14:00 (WEA 10) 14:49 (WEA 10) 17:23	07:56 14:49 (01847-12-14) 18:14	06:59 16:07 (Keimberg E160) 18:14	06:48 17:48 (02149-13-14) 05:45	05:08 20:57 21:39
8	08:30 16:33 49	14:00 (WEA 10) 14:49 (WEA 10) 17:25	07:54 15:27 (01847-12-14) 18:16	06:57 15:27 (01847-12-14) 18:16	06:46 17:49 (02149-13-14) 05:43	05:08 20:59 21:40
9	08:30 16:34 49	14:00 (WEA 10) 14:49 (WEA 10) 17:27	07:52 15:28 (01847-12-14) 18:19	06:55 14:47 (01847-12-14) 18:17	06:44 17:49 (02149-13-14) 05:41	05:07 21:00 21:41
10	08:29 16:35 49	14:01 (WEA 10) 14:50 (WEA 10) 17:29	07:50 14:47 (01847-12-14) 18:19	06:52 15:28 (01847-12-14) 18:19	06:42 17:49 (02149-13-14) 05:40	05:07 21:02 21:41
11	08:29 16:37 50	14:01 (WEA 10) 14:51 (WEA 10) 17:30	07:49 14:47 (01847-12-14) 18:21	06:50 15:28 (01847-12-14) 18:21	06:39 18:28 (02149-13-14) 21:04	05:07 21:04 21:42
12	08:28 16:38 50	14:01 (WEA 10) 14:51 (WEA 10) 17:32	07:47 15:28 (01847-12-14) 18:23	06:48 14:47 (01847-12-14) 18:23	06:37 17:51 (02149-13-14) 05:38	05:06 21:05 21:43
13	08:27 16:40 50	14:01 (WEA 10) 14:51 (WEA 10) 17:34	07:45 14:47 (01847-12-14) 18:24	06:46 15:28 (01847-12-14) 18:24	06:35 17:52 (02149-13-14) 05:36	05:06 21:07 21:44
14	08:26 16:41 49	14:02 (WEA 10) 14:51 (WEA 10) 17:36	07:43 14:47 (01847-12-14) 18:26	06:43 15:28 (01847-12-14) 18:26	06:33 17:54 (02149-13-14) 05:35	05:06 21:08 21:44
15	08:26 16:43 49	14:02 (WEA 10) 14:51 (WEA 10) 17:38	07:41 14:48 (01847-12-14) 18:28	06:41 15:28 (01847-12-14) 18:28	06:31 17:56 (02149-13-14) 05:33	05:06 21:10 21:45
16	08:25 16:44 55	14:03 (WEA 10) 16:00 (Keimberg E160) 17:40	07:39 14:48 (01847-12-14) 18:30	06:39 15:28 (01847-12-14) 18:30	06:28 17:58 (02149-13-14) 05:32	05:06 21:11 21:45
17	08:24 16:46 60	14:03 (WEA 10) 16:03 (Keimberg E160) 17:41	07:37 14:48 (01847-12-14) 18:31	06:37 17:12 (02149-13-14) 06:26	06:26 18:02 (02149-13-14) 05:30	05:05 21:13 21:46
18	08:23 16:48 61	14:04 (WEA 10) 16:04 (Keimberg E160) 17:43	07:35 14:49 (01847-12-14) 18:33	6 17:18 (02149-13-14) 06:24	12 18:14 (02149-13-14) 05:29	05:05 21:14 21:46
19	08:22 16:49 64	14:05 (WEA 10) 16:06 (Keimberg E160) 17:45	07:33 14:50 (01847-12-14) 18:35	19 17:25 (02149-13-14) 06:22	20 18:15 (02149-13-14) 05:27	05:05 21:16 21:46
20	08:21 16:51 66	14:05 (WEA 10) 16:08 (Keimberg E160) 17:47	07:31 14:51 (01847-12-14) 18:36	25 17:28 (02149-13-14) 06:20	26 18:16 (02149-13-14) 05:26	05:06 21:17 21:47
21	08:20 16:53 67	14:06 (WEA 10) 16:09 (Keimberg E160) 17:49	07:29 14:52 (01847-12-14) 18:38	30 17:29 (02149-13-14) 06:18	31 18:17 (02149-13-14) 05:25	05:06 21:19 21:47
22	08:19 16:54 67	14:06 (WEA 10) 16:09 (Keimberg E160) 17:51	07:27 14:54 (01847-12-14) 18:40	33 16:56 (02149-13-14) 06:16	34 18:18 (02149-13-14) 05:23	05:06 21:20 21:47
23	08:18 16:56 68	14:07 (WEA 10) 16:10 (Keimberg E160) 17:52	07:25 14:56 (01847-12-14) 18:42	37 16:54 (02149-13-14) 06:14	38 18:19 (02149-13-14) 05:22	05:06 21:22 21:47
24	08:16 16:58 67	14:09 (WEA 10) 16:12 (Keimberg E160) 17:54	07:23 14:58 (01847-12-14) 18:43	39 16:53 (02149-13-14) 06:12	40 18:20 (02149-13-14) 05:21	05:06 21:23 21:47
25	08:15 16:59 67	14:09 (WEA 10) 16:12 (Keimberg E160) 17:56	07:21 15:00 (01847-12-14) 18:45	41 16:52 (02149-13-14) 06:10	42 18:21 (02149-13-14) 05:20	05:07 21:24 21:48
26	08:14 17:01 67	14:10 (WEA 10) 16:13 (Keimberg E160) 17:58	07:19 14:59 (01847-12-14) 18:47	43 17:35 (02149-13-14) 06:07	44 18:22 (02149-13-14) 05:19	05:07 21:26 21:48
27	08:13 17:03 64	14:11 (WEA 10) 16:12 (Keimberg E160) 18:00	07:17 14:58 (01847-12-14) 18:48	45 17:35 (02149-13-14) 06:05	46 18:23 (02149-13-14) 05:18	05:08 21:27 21:48
28	08:11 17:05 75	14:12 (WEA 10) 16:13 (Keimberg E160) 18:01	07:14 14:57 (01847-12-14) 18:50	47 16:49 (02149-13-14) 06:04	48 18:24 (02149-13-14) 05:16	05:08 21:28 21:47
29	08:10 17:07 79	14:13 (WEA 10) 16:13 (Keimberg E160) 18:02	07:13 14:56 (01847-12-14) 18:51	49 17:48 (02149-13-14) 06:02	50 18:25 (02149-13-14) 05:15	05:09 21:29 21:47
30	08:08 17:08 80	14:15 (WEA 10) 16:14 (Keimberg E160) 18:03	07:12 14:55 (01847-12-14) 18:52	51 17:47 (02149-13-14) 06:00	52 18:26 (02149-13-14) 05:14	05:09 21:31 21:47
31	08:07 17:10 80	14:17 (WEA 10) 16:13 (Keimberg E160) 18:04	07:11 14:54 (01847-12-14) 18:53	53 17:47 (02149-13-14) 06:00	54 18:27 (02149-13-14) 05:13	05:09 21:32 21:47
	Sonnenscheinstunden astr.max.mögl.Beschattung	260 1824	278 1072	367 557	416 653	498 933

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

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

Berechnung: GB KeimbergSchattenrezeptor: SR T - Wienackerstr. 27, 33184 Altenbeken  
 Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Juli		August		September		Oktober		November		Dezember	
1	05:10	05:46			06:35	17:49 (02149-13-14)	07:24		07:17	14:17 (01847-12-14)	08:08	13:43 (WEA 10)
	21:47	21:15			20:14	38 18:27 (02149-13-14)	19:04		16:59	40 14:57 (01847-12-14)	16:19	50 14:33 (WEA 10)
2	05:10	05:48			06:37	17:47 (02149-13-14)	07:26		07:19	14:17 (01847-12-14)	08:09	13:44 (WEA 10)
	21:46	21:14			20:11	41 18:28 (02149-13-14)	19:02		16:57	40 14:57 (01847-12-14)	16:18	49 14:33 (WEA 10)
3	05:11	05:49			06:39	17:46 (02149-13-14)	07:27		07:21	14:18 (01847-12-14)	08:11	13:44 (WEA 10)
	21:46	21:12			20:09	42 18:28 (02149-13-14)	19:00		16:55	39 14:57 (01847-12-14)	16:17	49 14:33 (WEA 10)
4	05:12	05:51			06:40	17:45 (02149-13-14)	07:29		07:23	14:18 (01847-12-14)	08:12	13:44 (WEA 10)
	21:46	21:10			20:07	44 18:29 (02149-13-14)	18:58		16:53	47 15:37 (Keimberg E160)	16:17	49 14:33 (WEA 10)
5	05:13	05:52			06:42	17:44 (02149-13-14)	07:31		07:25	14:19 (01847-12-14)	08:14	13:45 (WEA 10)
	21:45	21:08			20:05	45 18:29 (02149-13-14)	18:55		16:52	51 15:39 (Keimberg E160)	16:16	49 14:34 (WEA 10)
6	05:14	05:54			06:43	17:43 (02149-13-14)	07:32		07:26	14:20 (01847-12-14)	08:15	13:45 (WEA 10)
	21:45	21:07			20:02	46 18:29 (02149-13-14)	18:53		16:50	52 15:41 (Keimberg E160)	16:16	49 14:34 (WEA 10)
7	05:14	05:55			06:45	17:42 (02149-13-14)	07:34		07:28	13:59 (WEA 10)	08:16	13:45 (WEA 10)
	21:44	21:05			20:00	47 18:29 (02149-13-14)	18:51		16:48	63 15:42 (Keimberg E160)	16:16	49 14:34 (WEA 10)
8	05:15	05:57			06:47	17:41 (02149-13-14)	07:36		07:30	13:54 (WEA 10)	08:17	13:46 (WEA 10)
	21:44	21:03			19:58	48 18:29 (02149-13-14)	18:49		16:46	72 15:43 (Keimberg E160)	16:15	49 14:35 (WEA 10)
9	05:16	05:58			06:48	17:41 (02149-13-14)	07:37		07:32	13:52 (WEA 10)	08:18	13:47 (WEA 10)
	21:43	21:01			19:55	48 18:29 (02149-13-14)	18:46		16:45	76 15:44 (Keimberg E160)	16:15	48 14:35 (WEA 10)
10	05:17	06:00			06:50	17:39 (02149-13-14)	07:39		07:33	13:49 (WEA 10)	08:20	13:47 (WEA 10)
	21:42	20:59			19:53	49 18:28 (02149-13-14)	18:44		16:43	80 15:44 (Keimberg E160)	16:15	49 14:36 (WEA 10)
11	05:18	06:02			06:51	17:39 (02149-13-14)	07:41		07:35	13:47 (WEA 10)	08:21	13:47 (WEA 10)
	21:41	20:58			19:51	49 18:28 (02149-13-14)	18:42		16:42	81 15:44 (Keimberg E160)	16:15	49 14:36 (WEA 10)
12	05:19	06:03			06:53	17:38 (02149-13-14)	07:42		07:37	13:46 (WEA 10)	08:22	13:48 (WEA 10)
	21:41	20:56			19:49	49 18:27 (02149-13-14)	18:40		16:40	80 15:45 (Keimberg E160)	16:14	48 14:36 (WEA 10)
13	05:20	06:05			06:55	17:39 (02149-13-14)	07:44		07:39	13:45 (WEA 10)	08:23	13:48 (WEA 10)
	21:40	20:54			19:46	48 18:27 (02149-13-14)	18:37		16:39	79 15:45 (Keimberg E160)	16:14	48 14:36 (WEA 10)
14	05:22	06:06			06:56	17:39 (02149-13-14)	07:46		07:40	13:44 (WEA 10)	08:24	13:49 (WEA 10)
	21:39	20:52			19:44	48 18:27 (02149-13-14)	18:35		16:37	74 15:45 (Keimberg E160)	16:14	48 14:37 (WEA 10)
15	05:23	06:08			06:58	17:38 (02149-13-14)	07:48		07:42	13:44 (WEA 10)	08:25	13:49 (WEA 10)
	21:38	20:50			19:42	47 18:25 (02149-13-14)	18:33		16:36	64 15:45 (Keimberg E160)	16:14	48 14:37 (WEA 10)
16	05:24	06:10			07:00	17:39 (02149-13-14)	07:49	15:36 (01847-12-14)	07:44	13:43 (WEA 10)	08:25	13:50 (WEA 10)
	21:37	20:48			19:39	46 18:25 (02149-13-14)	18:31	9 15:45 (01847-12-14)	16:34	66 15:45 (Keimberg E160)	16:15	48 14:38 (WEA 10)
17	05:25	06:11			07:01	17:38 (02149-13-14)	07:51	15:31 (01847-12-14)	07:46	13:43 (WEA 10)	08:26	13:51 (WEA 10)
	21:36	20:46			19:37	45 18:23 (02149-13-14)	18:29	18 15:49 (01847-12-14)	16:33	67 15:46 (Keimberg E160)	16:15	48 14:39 (WEA 10)
18	05:26	06:13			07:03	17:39 (02149-13-14)	07:53	15:28 (01847-12-14)	07:47	13:43 (WEA 10)	08:27	13:51 (WEA 10)
	21:35	20:44			19:35	44 18:23 (02149-13-14)	18:27	24 15:52 (01847-12-14)	16:32	68 15:46 (Keimberg E160)	16:15	47 14:38 (WEA 10)
19	05:28	06:14			07:04	17:39 (02149-13-14)	07:54	15:26 (01847-12-14)	07:49	13:41 (WEA 10)	08:28	13:51 (WEA 10)
	21:33	20:42			19:32	42 18:21 (02149-13-14)	18:25	27 15:53 (01847-12-14)	16:30	68 15:44 (Keimberg E160)	16:15	48 14:39 (WEA 10)
20	05:29	06:16			07:06	17:40 (02149-13-14)	07:56	15:24 (01847-12-14)	07:51	13:41 (WEA 10)	08:28	13:52 (WEA 10)
	21:32	20:40			19:30	40 18:20 (02149-13-14)	18:22	30 15:54 (01847-12-14)	16:29	67 15:44 (Keimberg E160)	16:16	48 14:40 (WEA 10)
21	05:30	06:18			07:08	17:41 (02149-13-14)	07:58	15:22 (01847-12-14)	07:52	13:41 (WEA 10)	08:29	13:52 (WEA 10)
	21:31	20:37			19:28	38 18:19 (02149-13-14)	18:20	33 15:55 (01847-12-14)	16:28	67 15:44 (Keimberg E160)	16:16	48 14:40 (WEA 10)
22	05:32	06:19			07:09	17:42 (02149-13-14)	08:00	15:21 (01847-12-14)	07:54	13:41 (WEA 10)	08:29	13:53 (WEA 10)
	21:30	20:35			19:25	34 18:16 (02149-13-14)	18:18	35 15:56 (01847-12-14)	16:27	66 15:44 (Keimberg E160)	16:17	48 14:41 (WEA 10)
23	05:33	06:21			07:11	17:43 (02149-13-14)	08:01	15:20 (01847-12-14)	07:56	13:42 (WEA 10)	08:30	13:53 (WEA 10)
	21:29	20:33			19:23	31 18:14 (02149-13-14)	18:16	37 15:57 (01847-12-14)	16:26	64 15:43 (Keimberg E160)	16:17	48 14:41 (WEA 10)
24	05:34	06:22			07:12	17:45 (02149-13-14)	08:03	15:19 (01847-12-14)	07:57	13:41 (WEA 10)	08:30	13:54 (WEA 10)
	21:27	20:31			19:21	26 18:11 (02149-13-14)	18:14	38 15:57 (01847-12-14)	16:25	62 15:42 (Keimberg E160)	16:18	48 14:42 (WEA 10)
25	05:36	06:24			07:14	17:48 (02149-13-14)	07:05	14:19 (01847-12-14)	07:59	13:41 (WEA 10)	08:31	13:54 (WEA 10)
	21:26	20:29			19:18	20 18:08 (02149-13-14)	17:12	39 14:58 (01847-12-14)	16:24	60 15:41 (Keimberg E160)	16:18	48 14:42 (WEA 10)
26	05:37	06:26	18:04 (02149-13-14)		07:16	17:52 (02149-13-14)	07:07	14:18 (01847-12-14)	08:00	13:42 (WEA 10)	08:31	13:55 (WEA 10)
	21:24	20:27	13 18:17 (02149-13-14)		19:16	12 18:04 (02149-13-14)	17:10	40 14:58 (01847-12-14)	16:23	55 15:39 (Keimberg E160)	16:19	47 14:42 (WEA 10)
27	05:39	06:27	18:00 (02149-13-14)		07:17		07:08	40 14:17 (01847-12-14)	08:02	13:42 (WEA 10)	08:31	13:55 (WEA 10)
	21:23	20:25	21 18:21 (02149-13-14)		19:14		17:08	40 14:57 (01847-12-14)	16:22	50 14:32 (WEA 10)	16:20	48 14:43 (WEA 10)
28	05:40	06:29	17:57 (02149-13-14)		07:19		07:10	41 14:17 (01847-12-14)	08:04	13:42 (WEA 10)	08:32	13:55 (WEA 10)
	21:21	20:22	25 18:22 (02149-13-14)		19:11		17:06	41 14:58 (01847-12-14)	16:21	49 14:31 (WEA 10)	16:20	48 14:43 (WEA 10)
29	05:42	06:31	17:55 (02149-13-14)		07:21		07:12	41 14:17 (01847-12-14)	08:05	13:42 (WEA 10)	08:32	13:56 (WEA 10)
	21:20	20:20	29 18:24 (02149-13-14)		19:09		17:04	41 14:58 (01847-12-14)	16:20	50 14:32 (WEA 10)	16:21	48 14:44 (WEA 10)
30	05:43	06:32	17:52 (02149-13-14)		07:22		07:14	41 14:17 (01847-12-14)	08:07	13:42 (WEA 10)	08:32	13:56 (WEA 10)
	21:18	20:18	33 18:25 (02149-13-14)		19:07		17:02	41 14:58 (01847-12-14)	16:19	50 14:32 (WEA 10)	16:22	48 14:44 (WEA 10)
31	05:44	06:34	17:51 (02149-13-14)				07:16	41 14:17 (01847-12-14)			08:32	13:56 (WEA 10)
	21:17	20:16	36 18:27 (02149-13-14)				17:01	41 14:58 (01847-12-14)			16:23	49 14:45 (WEA 10)
Sonnenscheinstunden	501	453			381		332		267	1847		1498
astr.max.mögl.Beschattung			157		1067		534					

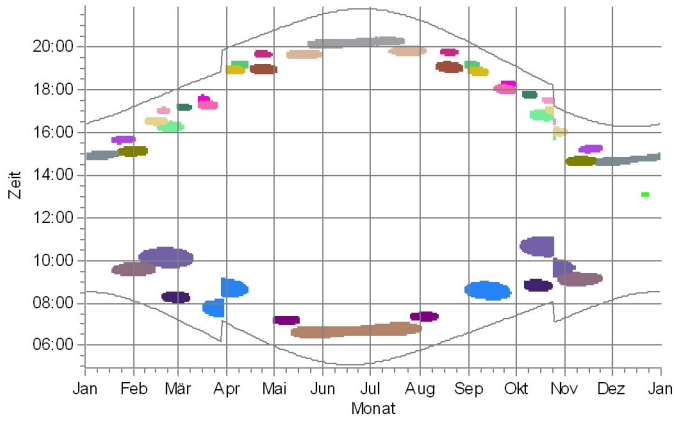
Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

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

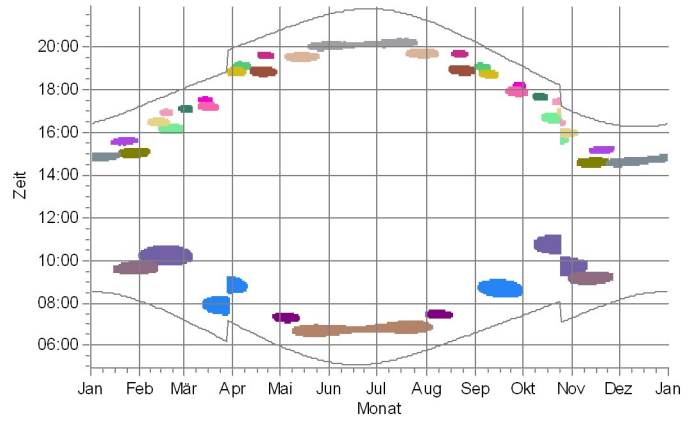
## SHADOW - Grafischer Kalender

Berechnung: GB Keimberg

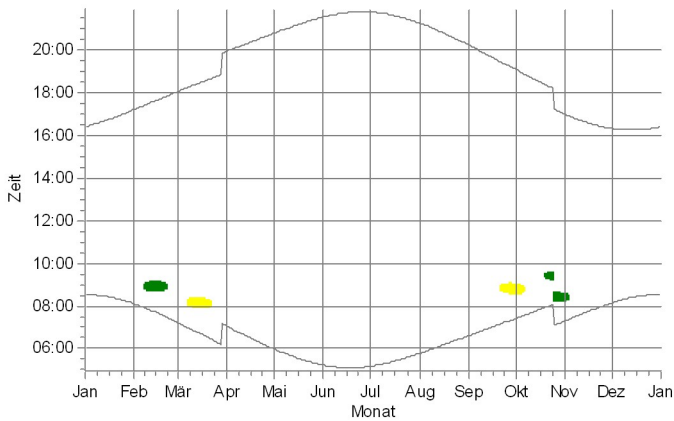
SR A: Dune 1A, 33184 Altenbeken



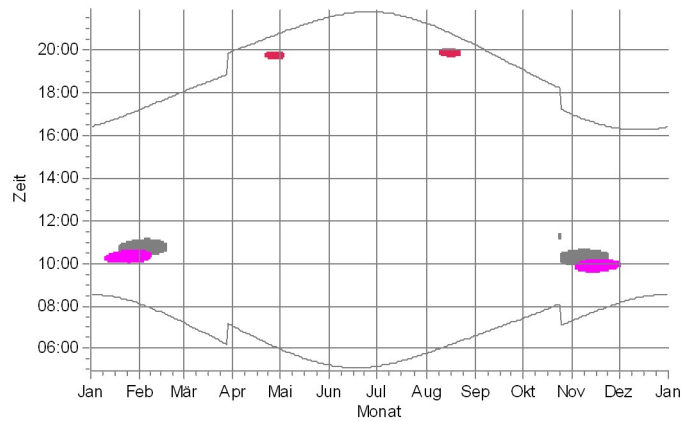
SR B: Dune 1, 33184 Altenbeken



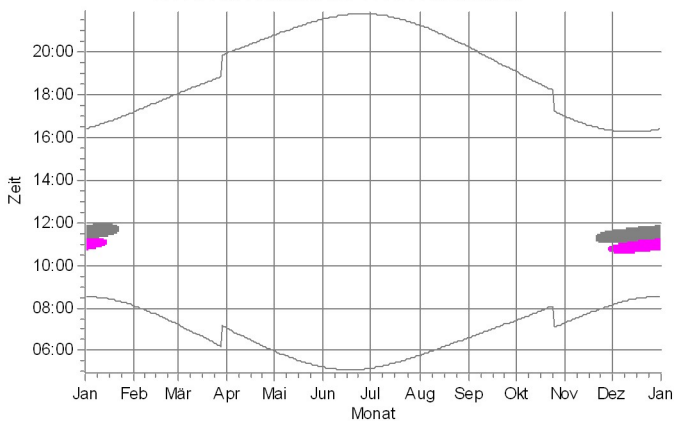
SR C: Dune 1, 33100 Paderborn



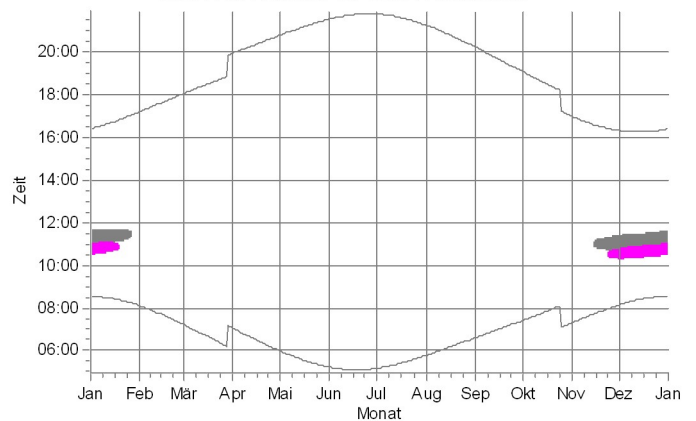
SR D: Am Hammer 20, 33184 Altenbeken



SR E: Am Hammer 16, 33184 Altenbeken



SR F: Am Hammer 18, 33184 Altenbeken

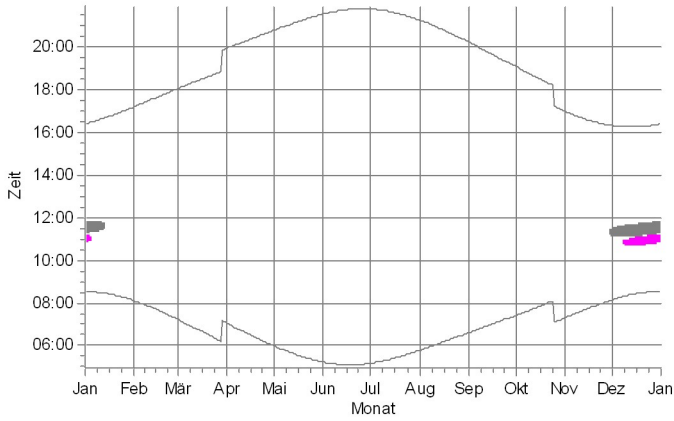


WEA 01: VESTAS V136-4.2 4200 136.0 KOI NH: 112.0 m (Gasc: 180.0 m) (158)	0005-10-14 (2): ENERCON E-82 E2 2300 82.0 KOI NH: 138.4 m (Gasc: 179.4 m) (75)	4035-16-42370-150V: ENERCON E-82 E2 2300 82.0 KOI NH: 138.4 m (Gasc: 179.4 m) (119)	42613-14: 41973-18: ENERCON E-115 TES 3000 115.7 KOI NH: 149.0 m (Gasc: 206.9 m) (89)
WEA 02: VESTAS V162-7.2 7200 162.0 KOI NH: 169.0 m (Gasc: 250.0 m) (151)	00078-10-14 (1): ENERCON E-82 E2 2300 82.0 KOI NH: 138.4 m (Gasc: 189.4 m) (58)	4042-2004794-170: ENERCON E-147 EPS 4.30MW 4200 147.0 KOI NH: 126.4 m (Gasc: 199.9 m) (104)	51.00780600106-2: ENERCON E-70 E4 2.3 MW 2300 71.0 KOI NH: 85.0 m (Gasc: 120.5 m) (70)
WEA 03: VESTAS V162-7.2 7200 162.0 KOI NH: 169.0 m (Gasc: 250.0 m) (154)	1834-08-14: ENERCON E-70 E4 2.3 MW 2300 71.0 KOI NH: 113.5 m (Gasc: 149.0 m) (72)	4040-19: 41371-26: ENERCON E-82 E2 2300 82.0 KOI NH: 138.4 m (Gasc: 179.4 m) (120)	51.0036001010-2: ENERCON E-82 E2 2300 82.0 KOI NH: 138.4 m (Gasc: 189.4 m) (78)
WEA 04: VESTAS V162-7.2 7200 162.0 KOI NH: 169.0 m (Gasc: 250.0 m) (156)	2049-09-14: ENERCON E-82 E2 2300 82.0 KOI NH: 138.4 m (Gasc: 189.4 m) (50)	40751-16: ENERCON E-82 E2 2300 82.0 KOI NH: 138.4 m (Gasc: 179.4 m) (126)	WEA 07: GE WIND ENERGY 5.3-156 GT 100 5300 156.0 H NH: 161.0 m (Gasc: 240.0 m) (153)
00223-10-14: ENERCON E-82 E2 2300 82.0 KOI NH: 138.4 m (Gasc: 179.4 m) (57)	2535-09-14: ENERCON E-82 E2 2300 82.0 KOI NH: 138.4 m (Gasc: 149.4 m) (74)	40769-19: ENERCON E-138 EPS E2 4200 138.0 H NH: 140.0 m (Gasc: 229.0 m) (105)	WEA1: VESTAS V150-6.0 6000 150.0 KOI NH: 148.0 m (Gasc: 223.0 m) (172)
00560-10-14: ENERCON E-82 E2 2300 82.0 KOI NH: 138.4 m (Gasc: 179.4 m) (1)	2558-10-1607-12: ENERCON E-70 E4 2.3 MW 2300 71.0 KOI NH: 113.5 m (Gasc: 149.0 m) (71)	41968-15 (3): ENERCON E-115 TES 3000 115.7 KOI NH: 149.0 m (Gasc: 206.9 m) (176)	WEA3: VESTAS V162-7.2 7200 162.0 KOI NH: 169.0 m (Gasc: 250.0 m) (173)
0005-10-14 (1): ENERCON E-82 E2 2300 82.0 KOI NH: 138.4 m (Gasc: 179.4 m) (74)	2696-09-14: ENERCON E-82 E2 2300 82.0 KOI NH: 138.4 m (Gasc: 149.4 m) (77)	42338-14: 2175-06: ENERCON E-82 E2 2300 82.0 KOI NH: 138.4 m (Gasc: 149.4 m) (73)	

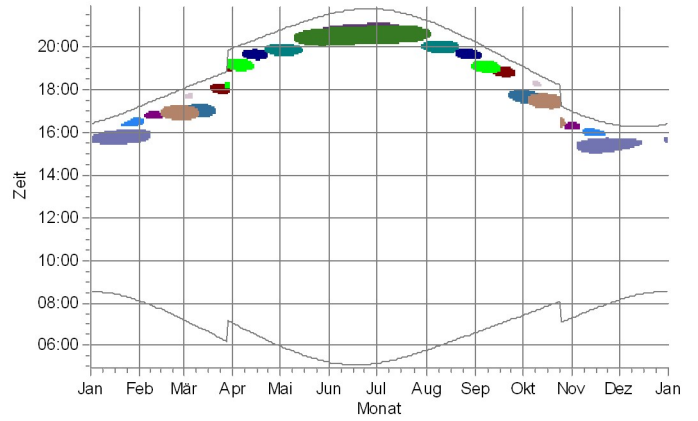
## SHADOW - Grafischer Kalender

Berechnung: GB Keimberg

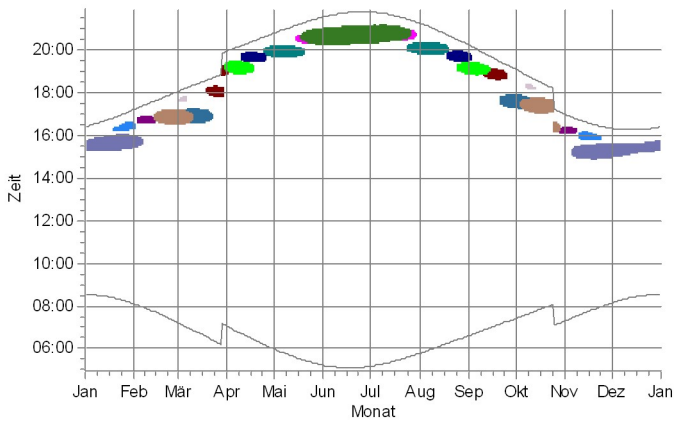
SR G: Am Hammer 17, 33184 Altenbeken



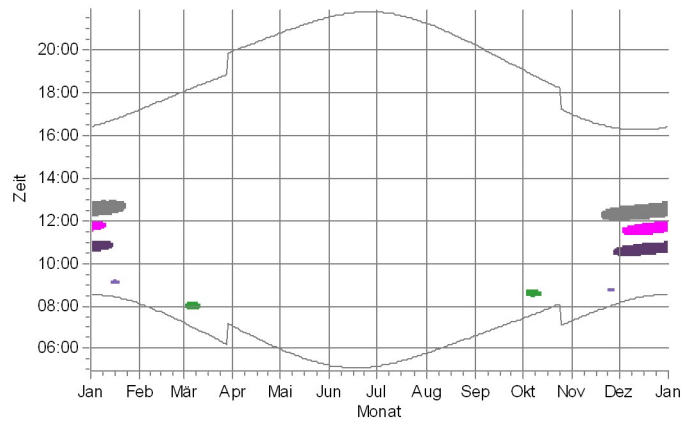
SR H: Am Keimberg 62, 33184 Altenbeken



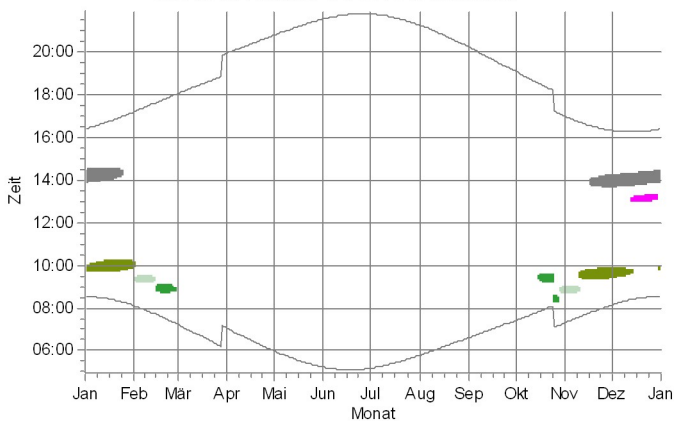
SR I: Am Keimberg 64, 33184 Altenbeken



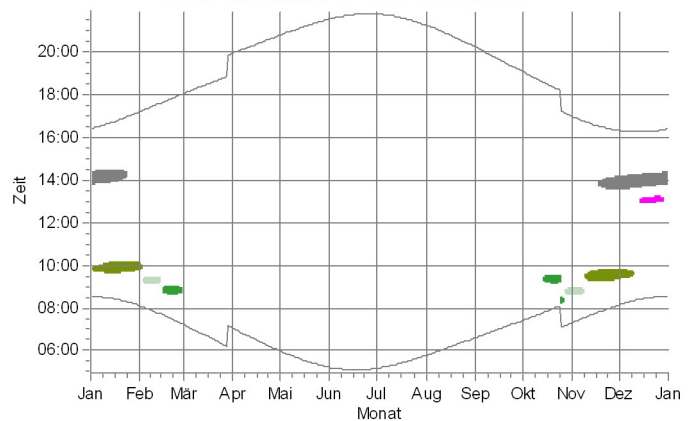
SR K: Am Hammer 11, 33184 Altenbeken



SR L: Am Hammer 12, 33184 Altenbeken



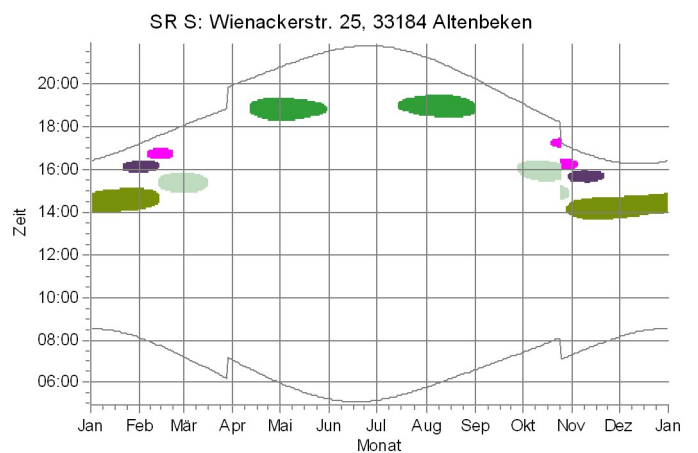
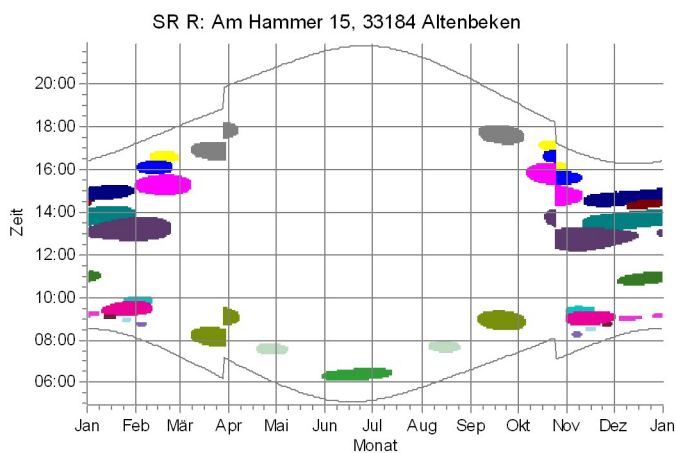
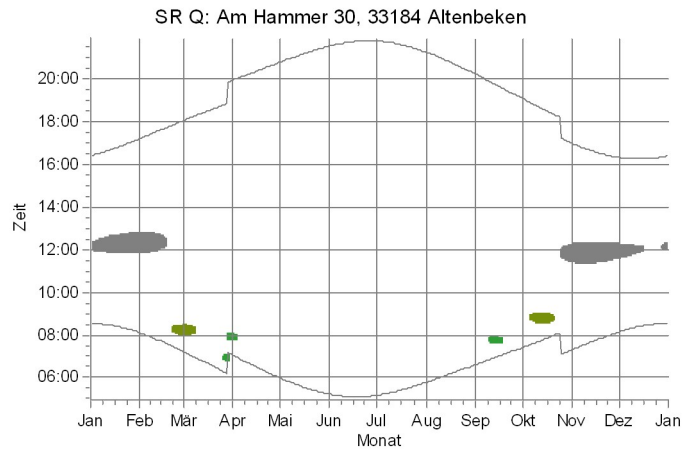
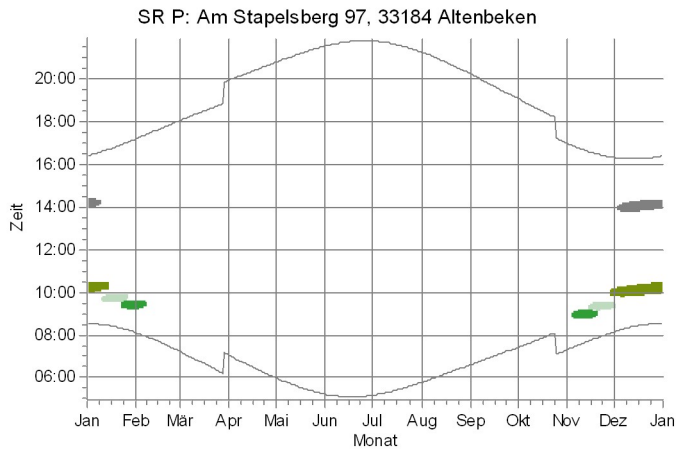
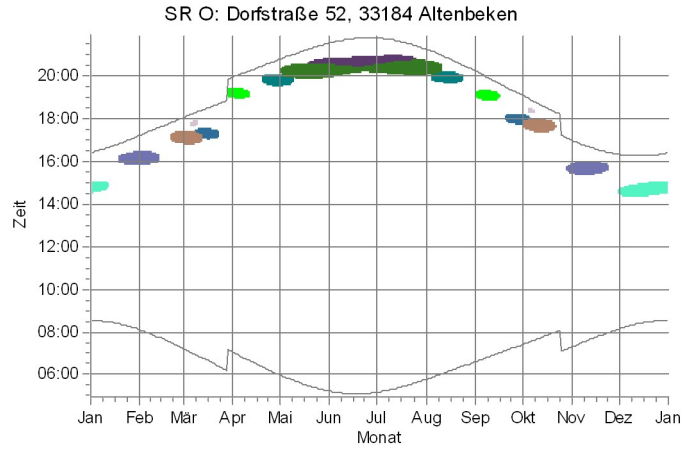
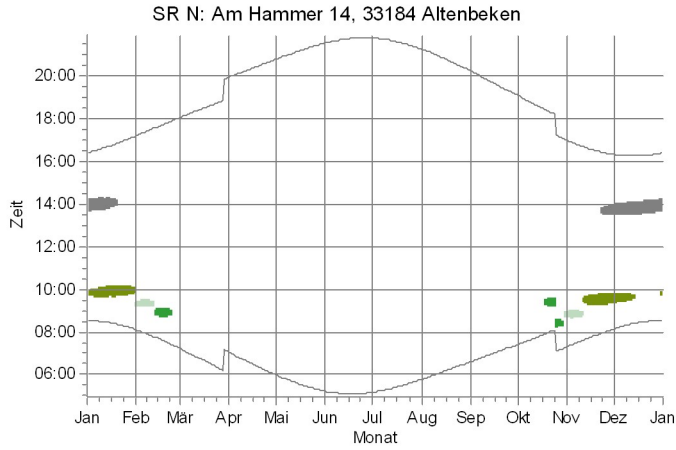
SR M: Am Hammer 13, 33184 Altenbeken



<p>WEA</p> <ul style="list-style-type: none"> <li>WEA 04: VESTAS V162-7.2 2000 162.0 I/OI NH: 169.0 m (Gsc: 250.0 m) (154)</li> <li>WEA 05: VESTAS V162-7.2 2000 162.0 I/OI NH: 169.0 m (Gsc: 250.0 m) (155)</li> <li>WEA 06: VESTAS V162-7.2 2000 162.0 I/OI NH: 169.0 m (Gsc: 250.0 m) (156)</li> <li>WEA 07: VESTAS V162-7.2 2000 162.0 I/OI NH: 169.0 m (Gsc: 250.0 m) (157)</li> <li>WEA 08: VESTAS V162-7.2 2000 162.0 I/OI NH: 169.0 m (Gsc: 250.0 m) (158)</li> </ul>	<ul style="list-style-type: none"> <li>00090-11-14: ENERCON E-82 E2 2300 82.0 I/OI NH: 108.4 m (Gsc: 149.4 m) (11)</li> <li>00560-10-14: ENERCON E-82 E2 2300 82.0 I/OI NH: 138.4 m (Gsc: 179.4 m) (1)</li> <li>01947-12-14: ENERCON E-82 E2 2300 82.0 I/OI NH: 138.4 m (Gsc: 179.4 m) (2)</li> <li>02149-13-14: ENERCON E-82 E2 2300 82.0 I/OI NH: 108.4 m (Gsc: 149.4 m) (1)</li> <li>02501-12-14: ENERCON E-82 E2 2300 82.0 I/OI NH: 138.4 m (Gsc: 179.4 m) (12)</li> </ul>	<ul style="list-style-type: none"> <li>1868-98-06: DEWIND D44H8 400 48.0 I/OI NH: 70.0 m (Gsc: 94.0 m) (1)</li> <li>2772-91-06-0: WINDEN N621150 150-30 27.0 I/OI NH: 38.0 m (Gsc: 49.5 m) (6)</li> <li>40422-2004704-17: ENERCON E-140 EP5 4 2000 140.0 I/OI NH: 126.4 m (Gsc: 199.9 m) (104)</li> <li>Keimberg E160: ENERCON E-160 EP5 4600 160.0 I/OI NH: 166.6 m (Gsc: 246.6 m) (152)</li> <li>WEA 07: GE WIND ENERGY 5.3-158 GT120 5300 158.0 I-I NH: 161.0 m (Gsc: 240.0 m) (153)</li> </ul>	<ul style="list-style-type: none"> <li>WEA 08: ENERCON E-138 EP3 3500 138.3 I/OI NH: 110.0 m (Gsc: 178.1 m) (154)</li> <li>WEA 10: GE WIND ENERGY 5.3-158 GT120 5300 158.0 I-I NH: 161.0 m (Gsc: 240.0 m) (156)</li> <li>WEA: VESTAS V162-7.2 2000 162.0 I/OI NH: 169.0 m (Gsc: 250.0 m) (170)</li> </ul>
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## SHADOW - Grafischer Kalender

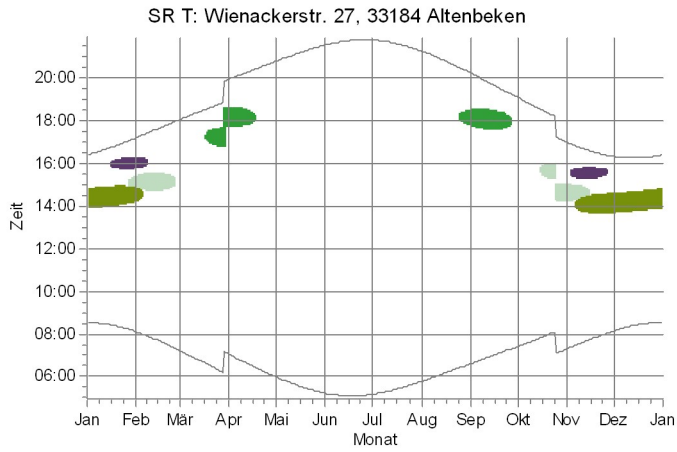
Berechnung: GB Keimberg



WEA	WEA	WEA	WEA
WEA 02: VESTAS V162-7.2 2200 162.0 ICH NH: 169.0 m (Ges: 250.0 m) (151)	WEA 08: VESTAS V162-7.2 2200 162.0 ICH NH: 169.0 m (Ges: 250.0 m) (152)	1868-98-06: DEWIND D448 600 48.0 ICH NH: 70.0 m (Ges: 94.0 m) (1)	Keimberg E160: ENERCON E-160 EPS 4600 160.0 ICH NH: 166.0 m (Ges: 246.6 m) (153)
WEA 03: VESTAS V162-7.2 2200 162.0 ICH NH: 169.0 m (Ges: 250.0 m) (157)	0090-11-14: ENERCON E-82 E2 2300 82.0 ICH NH: 108.4 m (Ges: 149.4 m) (1)	2772-91-06-A: NORDEX NZ1750 150-30 27.0 ICH NH: 36.0 m (Ges: 49.5 m) (9)	WEA 07: GE WIND ENERGY 5.3-158 GT120 5300 158.0 I-1 NH: 161.0 m (Ges: 240.0 m) (155)
WEA 04: VESTAS V162-7.2 2200 162.0 ICH NH: 169.0 m (Ges: 250.0 m) (154)	0167-12-14: ENERCON E-82 E2 2300 82.0 ICH NH: 138.4 m (Ges: 179.4 m) (2)	2772-91-06-B: NORDEX NZ1750 150-30 27.0 ICH NH: 36.0 m (Ges: 49.5 m) (8)	WEA 08: ENERCON E-158 EPS 3000 158.0 I-1 NH: 155.0 m (Ges: 235.0 m) (154)
WEA 05: VESTAS V162-7.2 2200 162.0 ICH NH: 169.0 m (Ges: 250.0 m) (156)	02149-13-14: ENERCON E-82 E2 2300 82.0 ICH NH: 108.4 m (Ges: 149.4 m) (1)	2772-91-06-C: NORDEX NZ1750 150-30 27.0 ICH NH: 36.0 m (Ges: 49.5 m) (7)	WEA 09: GE WIND ENERGY 5.3-158 GT120 5300 158.0 I-1 NH: 120.9 m (Ges: 199.9 m) (156)
WEA 06: VESTAS V162-7.2 2200 162.0 ICH NH: 169.0 m (Ges: 250.0 m) (155)	02473-12: 40861-15: ENERCON E-82 E2 2300 82.0 ICH NH: 138.4 m (Ges: 179.4 m) (5)	2772-91-06-D: NORDEX NZ1750 150-30 27.0 ICH NH: 36.0 m (Ges: 49.5 m) (6)	WEA 10: GE WIND ENERGY 5.3-158 GT120 5300 158.0 I-1 NH: 161.0 m (Ges: 240.0 m) (156)
WEA 07: VESTAS V162-7.2 2200 162.0 ICH NH: 169.0 m (Ges: 250.0 m) (153)	02501-12-14: ENERCON E-82 E2 2300 82.0 ICH NH: 138.4 m (Ges: 179.4 m) (2)	42241-21: NORDEX N1636-X 6800 163.0 ICH NH: 164.0 m (Ges: 245.5 m) (118)	WEA2: VESTAS V162-7.2 2200 162.0 ICH NH: 169.0 m (Ges: 250.0 m) (170)

## SHADOW - Grafischer Kalender

Berechnung: GB Keimberg



WEA 01847-13-14: ENERCON E-82 E2 2300 82.0 ICH NH: 138.4 m (Gau:179.4 m) (Z)

02149-13-14: ENERCON E-82 E2 2300 82.0 ICH NH: 108.4 m (Gau:149.4 m) (1)

Keimberg E160: ENERCON E-160 EPS 4600 160.0 ICH NH: 146.6 m (Gau:246.6 m) (152)

WEA 10: GE WIND ENERGY 5.3-158 GT120 5300 158.0 I-1 NH: 161.0 m (Gau:240.0 m) (156)

## SHADOW - Kalender pro WEA

Berechnung: GB KeimbergWEA: WEA 01 - VESTAS V136-4.2 4200 136.0 IO! NH: 112,0 m (Ges:180,0 m) (158)  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:32 16:25	08:05 17:12	07:12 18:03	07:02 19:57	05:58 20:48	05:13 21:33	05:10 21:47	05:46 21:15	06:36 20:14	07:24 19:05	07:17 16:59	08:17-08:32/15 16:19
2	08:32 16:26	08:04 17:14	07:10 18:05	07:00 19:59	05:56 20:49	05:12 21:34	05:11 21:47	05:48 21:14	06:37 20:11	07:26 19:02	07:19 16:57	08:18-08:30/12 16:18
3	08:32 16:27	08:02 17:16	07:08 18:07	06:58 20:00	05:54 20:51	05:11 21:35	05:11 21:46	05:49 21:12	06:39 20:09	07:27 19:00	07:21 16:55	08:21-08:28/7 16:18
4	08:32 16:28	08:01 17:18	07:06 18:09	06:55 20:02	05:52 20:52	05:11 21:36	05:12 21:46	05:51 21:10	06:40 20:07	07:29 18:58	07:23 16:54	08:12 16:17
5	08:31 16:29	07:59 17:19	07:04 18:11	06:53 20:04	05:50 20:54	05:10 21:37	05:13 21:45	05:52 21:09	06:42 20:05	07:31 18:56	07:25 16:52	08:14 16:17
6	08:31 16:30	07:57 17:21	07:02 18:12	06:51 20:05	05:49 20:56	05:09 21:38	05:14 21:45	05:54 21:07	06:44 20:02	07:32 18:53	07:26 16:50	08:15 16:16
7	08:31 16:32	07:56 17:23	06:59 18:14	06:49 20:07	05:47 20:57	05:09 21:39	05:15 21:44	05:55 21:05	06:45 20:00	07:34 18:51	07:28 16:48	08:16 16:16
8	08:30 16:33	07:54 17:25	06:57 18:16	06:46 20:09	05:45 20:59	05:08 21:40	05:16 21:44	05:57 21:03	06:47 19:58	07:36 18:49	07:30 16:47	08:17 16:15
9	08:30 16:34	07:52 17:27	06:55 18:18	06:44 20:11	05:43 21:01	05:08 21:41	05:17 21:43	05:59 21:01	06:48 19:56	07:37 18:46	07:32 16:45	08:19 16:15
10	08:29 16:36	07:50 17:29	06:53 18:19	06:42 20:12	05:42 21:02	05:07 21:42	05:18 21:42	06:00 21:00	06:50 19:53	07:39 18:44	07:34 16:43	08:20 16:15
11	08:29 16:37	07:49 17:31	06:50 18:21	06:40 20:14	05:40 21:04	05:07 21:42	05:19 21:41	06:02 20:58	06:52 19:51	07:41 18:42	07:35 16:42	08:21 16:15
12	08:28 16:39	07:47 17:32	06:48 18:23	06:37 20:16	05:38 21:05	05:07 21:43	05:20 21:41	06:03 20:56	06:53 19:49	07:43 18:40	07:37 16:40	08:22 16:15
13	08:27 16:40	07:45 17:34	06:46 18:25	06:35 20:17	05:37 21:07	05:06 21:44	05:21 21:40	06:05 20:54	06:55 19:46	07:44 18:38	07:39 16:39	08:23 16:15
14	08:27 16:41	07:43 17:36	06:44 18:26	06:33 20:19	05:35 21:08	05:06 21:44	05:22 21:39	06:07 20:52	06:56 19:44	07:46 18:35	07:41 16:37	08:24 16:15
15	08:26 16:43	07:41 17:38	06:41 18:28	06:31 20:21	05:34 21:10	05:06 21:45	05:23 21:38	06:08 20:50	06:58 19:42	07:48 18:33	07:42 16:36	08:25 16:15
16	08:25 16:45	07:39 17:40	06:39 18:30	06:29 20:22	05:32 21:12	05:06 21:45	05:24 21:37	06:10 20:48	07:00 19:39	07:49 18:31	07:44 16:35	08:25 16:15
17	08:24 16:46	07:37 17:42	06:37 18:31	06:27 20:24	05:31 21:13	05:06 21:46	05:25 21:36	06:11 20:46	07:01 19:37	07:51 18:29	07:46 16:33	08:26 16:15
18	08:23 16:48	07:35 17:43	06:34 18:33	06:24 20:26	05:29 21:14	05:06 21:46	05:27 21:35	06:13 20:44	07:03 19:35	07:53 18:27	07:47 16:32	08:27 16:15
19	08:22 16:49	07:33 17:45	06:32 18:35	06:22 20:27	05:28 21:16	05:06 21:47	05:28 21:34	06:15 20:42	07:05 19:32	07:55 18:25	07:49 16:31	08:28 16:16
20	08:21 16:51	07:31 17:47	06:30 18:37	06:20 20:29	05:26 21:17	05:06 21:47	05:29 21:32	06:16 20:40	07:06 19:30	07:56 18:23	07:51 16:29	08:28 16:16
21	08:20 16:53	07:29 17:49	06:28 18:38	06:18 20:31	05:25 21:19	05:06 21:47	05:30 21:31	06:18 20:38	07:08 19:28	07:58 18:21	07:52 16:28	08:29 16:16
22	08:19 16:54	07:27 17:51	06:25 18:40	06:16 20:32	05:24 21:20	05:06 21:47	05:32 21:30	06:19 20:35	07:09 19:25	08:00 18:18	07:54 16:27	08:30 16:17
23	08:18 16:56	07:25 17:53	06:23 18:42	06:14 20:34	05:22 21:22	05:06 21:47	05:33 21:29	06:21 20:33	07:11 19:23	08:02 18:16	07:56 16:26	08:30 16:17
24	08:16 16:58	07:23 17:54	06:21 18:43	06:12 20:36	05:21 21:23	05:07 21:48	05:35 21:27	06:23 20:31	07:13 19:21	08:03 18:14	07:57 16:25	08:30 16:18
25	08:15 17:00	07:21 17:56	06:18 18:45	06:10 20:37	05:20 21:24	05:07 21:48	05:36 21:26	06:24 20:29	07:14 19:18	07:05 17:12	07:59 16:24	08:31 16:18
26	08:14 17:01	07:19 17:58	06:16 18:47	06:08 20:39	05:19 21:26	05:07 21:48	05:37 21:25	06:26 20:27	07:16 19:16	07:07 17:10	07:58 16:23	08:31 16:19
27	08:13 17:03	07:17 18:00	06:14 18:49	06:06 20:41	05:18 21:27	05:08 21:48	05:39 21:23	06:27 20:25	07:18 19:14	07:09 17:08	07:59 16:22	08:31 16:20
28	08:11 17:05	07:15 18:02	06:11 18:50	06:04 20:43	05:17 21:28	05:08 21:47	05:40 21:22	06:29 20:23	07:19 19:12	07:10 17:06	07:58 16:21	08:32 16:21
29	08:10 17:07		07:09 19:52	06:02 20:44	05:16 21:29	05:09 21:47	05:42 21:20	06:31 20:20	07:21 19:09	07:12 17:05	07:57 16:20	08:32 16:22
30	08:08 17:09		07:07 19:54	06:00 20:46	05:15 21:31	05:09 21:47	05:43 21:19	06:32 20:18	07:22 19:07	07:14 17:03	07:56 16:20	08:32 16:22
31	08:07 17:10		07:05 19:55	05:14 21:32			05:45 21:17	06:34 20:16		07:16 17:01	07:55 16:23	08:32 16:23
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	229	0	0	0	0	0	0	0	198	34	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: GB KeimbergWEA: WEA 02 - VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (151)  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember		
1	08:32 16:25	08:05 17:12	07:12 18:03	07:02 19:57	05:58 20:48	05:13 21:33	05:10 21:47	05:46 21:15	06:36 20:14	07:24 19:05	08:37-08:59/22	07:17 16:59	08:08 16:19	
2	08:32 16:26	08:04 17:14	07:10 18:05	07:00 19:59	05:56 20:49	05:12 21:34	05:11 21:47	05:48 21:14	06:37 20:11	07:26 19:02	08:37-08:58/21	07:19 16:57	08:10 16:18	
3	08:32 16:27	08:02 17:16	07:08 18:07	06:58 20:00	05:54 20:51	05:11 21:35	05:11 21:46	05:49 21:12	06:39 20:09	07:27 19:00	08:38-08:57/19	07:21 16:55	08:11 16:18	
4	08:32 16:28	08:01 17:18	07:06 18:09	06:55 20:02	05:52 20:52	05:11 21:36	05:12 21:46	05:51 21:10	06:40 20:07	07:29 18:58	08:38-08:55/17	07:23 16:53	08:12 16:17	
5	08:31 16:29	07:59 17:19	07:04 18:11	06:53 20:04	05:50 20:54	05:10 21:37	05:13 21:45	05:52 21:09	06:42 20:05	07:31 18:55	08:40-08:53/13	07:25 16:52	08:14 16:17	
6	08:31 16:30	07:57 17:21	07:01 18:12	06:51 20:05	05:49 20:56	05:09 21:38	05:14 21:45	05:54 21:07	06:44 20:02	07:32 18:53	08:43-08:50/7	07:26 16:50	08:15 16:16	
7	08:31 16:32	07:56 17:23	06:59 18:14	06:49 20:07	05:47 20:57	05:09 21:39	05:15 21:44	05:55 21:05	06:45 20:00	07:34 18:51		07:28 16:48	08:16 16:17	
8	08:30 16:33	07:54 17:25	06:57 18:16	06:46 20:09	05:45 20:59	05:08 21:40	05:16 21:44	05:57 21:03	06:47 19:58	07:36 18:49		07:30 16:47	08:17 16:15	
9	08:30 16:34	07:52 17:27	06:55 18:18	06:44 20:11	05:43 21:01	05:08 21:41	05:17 21:43	05:59 21:01	06:48 19:56	07:37 18:46		07:32 16:45	08:19 16:15	
10	08:29 16:36	07:50 17:29	06:53 18:19	06:42 20:12	05:42 21:02	05:07 21:42	05:18 21:42	06:00 21:00	06:50 19:53	07:39 18:44		07:34 16:43	08:20 16:15	
11	08:29 16:37	07:49 17:31	06:50 18:21	06:50 20:14	05:40 21:04	05:07 21:42	05:19 21:41	06:02 20:58	06:52 19:51	07:41 18:42		07:35 16:42	08:21 16:15	
12	08:28 16:38	07:47 17:32	06:48 18:23	06:48 20:16	05:38 21:05	05:07 21:43	05:20 21:41	06:03 20:56	06:53 19:49	07:43 18:40		07:37 16:40	08:22 16:15	
13	08:27 16:40	07:45 17:34	06:46 18:25	06:35 20:17	05:37 21:07	05:06 21:44	05:21 21:40	06:05 20:54	06:55 19:46	07:44 18:38		07:39 16:39	08:23 16:15	
14	08:27 16:41	07:43 17:36	06:44 18:26	06:33 20:19	05:35 21:08	05:06 21:44	05:22 21:39	06:07 20:52	06:56 19:44	07:46 18:35		07:41 16:37	08:24 16:15	
15	08:26 16:43	07:41 17:38	06:41 18:28	06:31 20:21	05:34 21:10	05:06 21:45	05:23 21:38	06:08 20:50	06:58 19:42	07:48 18:33	17:06-17:10/4	07:42 16:36	08:25 16:15	
16	08:25 16:45	07:39 17:40	06:39 18:30	06:29 20:22	05:32 21:12	05:06 21:45	05:24 21:37	06:10 20:48	07:00 19:39	07:49 18:31	17:02-17:14/12	07:44 16:35	08:25 16:15	
17	08:24 16:46	07:37 17:42	06:37 18:31	06:26 20:24	05:31 21:13	05:06 21:46	05:25 21:36	06:11 20:46	07:01 19:37	07:51 18:29	17:00-17:16/16	07:46 16:33	08:26 16:15	
18	08:23 16:48	07:35 17:43	06:34 18:33	06:24 20:26	05:29 21:15	05:06 21:46	05:27 21:35	06:13 20:44	07:03 19:35	07:53 18:27	16:58-17:17/19	07:47 16:32	08:27 16:15	
19	08:22 16:49	07:33 17:45	06:32 18:35	06:22 20:27	05:28 21:16	05:06 21:47	05:28 21:34	06:15 20:42	07:05 19:32	07:55 18:25	16:57-17:18/21	07:49 16:31	08:28 16:15	
20	08:21 16:51	07:31 17:47	06:30 18:37	06:20 20:29	05:26 21:17	05:06 21:47	05:29 21:32	06:16 20:40	07:06 19:30	07:56 18:23	16:55-17:18/23	07:51 16:29	08:28 16:16	
21	08:20 16:53	07:29 17:49	06:29 18:38	06:18 20:31	05:25 21:19	05:06 21:47	05:30 21:31	06:18 20:38	07:08 19:28	07:58 18:18	16:55-17:18/23	07:52 16:28	08:29 16:16	
22	08:19 16:54	07:27 17:51	06:25 18:40	06:16 20:32	05:24 21:20	05:06 21:47	05:32 21:30	06:19 20:35	07:09 19:25	08:00 18:18	08:46-08:55/9	07:54 16:27	08:30 16:17	
23	08:18 16:56	07:25 17:53	06:23 18:42	06:14 20:34	05:22 21:22	05:06 21:47	05:33 21:29	06:21 20:33	07:11 19:23	08:03 18:16	08:43-08:57/14	07:56 16:26	08:30 16:17	
24	08:17 16:58	07:23 17:54	06:21 18:43	06:12 20:36	05:21 21:23	05:07 21:48	05:35 21:27	06:23 20:31	07:13 19:21	08:03 18:14	08:42-08:59/17	07:57 16:25	08:30 16:18	
25	08:15 17:00	07:21 17:56	06:18 18:45	06:10 20:37	05:20 21:24	05:07 21:48	05:36 21:26	06:24 20:29	07:14 19:18	08:04 18:12	08:40-08:59/19	07:59 16:24	08:31 16:18	
26	08:14 17:01	07:19 17:58	06:16 18:47	06:08 20:39	05:19 21:26	05:07 21:48	05:37 21:25	06:26 20:27	07:16 19:16	08:39-09:00/21	07:07	15:55-16:18/23	08:01	08:31
27	08:13 17:03	07:17 18:00	06:14 18:49	06:06 20:41	05:18 21:27	05:08 21:48	05:39 21:23	06:27 20:25	07:18 19:14	08:38-09:01/23	07:09	15:56-16:17/21	08:02	08:31
28	08:11 17:05	07:15 18:02	06:11 18:50	06:04 20:43	05:17 21:28	05:08 21:47	05:40 21:22	06:29 20:23	07:19 19:12	08:37-09:00/23	07:10	15:56-16:15/19	08:04	08:32
29	08:10 17:07		07:09 19:52	06:02 20:44	05:16 21:29	05:09 21:47	05:42 21:20	06:31 20:20	07:21 19:09	08:37-09:00/23	07:12	15:57-16:14/17	08:05	08:32
30	08:08 17:09		07:07 19:54	06:00 20:46	05:15 21:31	05:09 21:47	05:43 21:20	06:32 20:19	07:22 19:07	08:37-09:00/23	07:14	15:59-16:12/13	08:07	08:32
31	08:07 17:10		07:05 19:55		05:14 21:32		05:45 21:17	06:34 20:16			07:16	16:01-16:10/9	08:32	08:32
	Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245	
	Anzahl Minuten mit Schatten	0	310	265	0	0	0	0	0	172	411	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: GB KeimbergWEA: WEA 03 - VESTAS V162-7.2 7200 162.0 IO! NH: 169,0 m (Ges:250,0 m) (157)  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember	
1	08:32 16:25	08:05 17:12	07:12 18:03	07:02 19:57	05:58 20:47	05:13 21:33	05:10 21:47	05:46 21:15	06:35 20:14	07:24 19:05	07:17 16:59	15:21-15:50/29 16:19	
2	08:32 16:26	08:04 17:14	16:03-16:08/5 18:05	07:10 19:59	05:56 20:49	05:12 21:34	05:11 21:47	05:48 21:14	06:37 20:11	07:26 19:02	07:19 16:57	15:21-15:49/28 16:18	
3	08:32 16:27	08:02 17:16	15:59-16:12/13 18:07	07:08 20:00	05:54 20:51	05:11 21:35	05:11 21:46	05:49 21:12	06:39 20:09	07:27 19:00	07:21 16:55	15:22-15:49/27 16:18	
4	08:32 16:28	08:01 17:18	15:56-16:14/18 18:09	07:06 20:02	05:52 20:52	05:11 21:36	05:12 21:46	05:51 21:10	06:40 20:07	07:29 18:58	07:23 16:53	15:23-15:48/25 16:17	
5	08:31 16:29	07:59 17:19	15:56-16:16/20 18:10	07:04 20:04	05:50 20:54	05:10 21:37	05:13 21:45	05:52 21:09	06:42 20:05	07:31 18:55	07:25 16:52	15:24-15:47/23 16:17	
6	08:31 16:30	07:57 17:21	15:54-16:17/23 18:12	07:01 20:05	06:51 20:56	05:09 21:38	05:14 21:45	05:54 21:07	06:44 20:02	07:32 18:53	07:26 16:50	15:26-15:46/20 16:16	
7	08:31 16:32	07:56 17:23	15:53-16:18/25 18:14	06:59 20:07	06:49 20:57	05:09 21:39	05:15 21:44	05:55 21:05	06:45 20:00	07:34 18:51	07:28 16:48	15:27-15:44/17 16:16	
8	08:30 16:33	07:54 17:25	15:52-16:19/27 18:16	06:57 20:09	06:46 20:59	05:08 21:40	05:16 21:44	05:57 21:03	06:47 19:58	07:36 18:49	07:30 16:47	15:30-15:42/12 16:15	
9	08:30 16:34	07:52 17:27	15:52-16:20/28 18:18	06:55 20:10	06:44 21:01	05:08 21:41	05:16 21:43	05:59 21:01	06:48 19:56	07:37 18:46	07:32 16:45	15:35-15:37/2 16:15	
10	08:29 16:36	07:50 17:29	15:51-16:20/29 18:19	06:53 20:12	06:42 21:02	05:07 21:41	05:17 21:42	06:00 20:59	06:50 19:53	07:39 18:44	07:33 16:43	08:20 16:15	
11	08:29 16:37	07:49 17:31	15:51-16:20/29 18:21	06:50 20:14	06:40 21:04	05:07 21:42	05:19 21:41	06:02 20:58	06:52 19:51	07:41 18:42	07:35 16:42	08:21 16:15	
12	08:28 16:38	07:47 17:32	15:51-16:21/30 18:23	06:48 20:16	06:37 21:05	05:07 21:43	05:20 21:41	06:03 20:56	06:53 19:49	07:42 18:40	07:37 16:40	08:22 16:15	
13	08:27 16:40	07:45 17:34	15:50-16:21/31 18:25	06:46 20:17	06:35 21:07	05:06 21:44	05:21 21:40	06:05 20:54	06:55 19:46	07:44 18:38	07:39 16:39	08:23 16:15	
14	08:27 16:41	07:43 17:36	15:50-16:21/31 18:26	06:43 20:19	06:33 21:08	05:06 21:44	05:22 21:39	06:06 20:52	06:56 19:44	07:46 18:35	07:41 16:37	08:24 16:15	
15	08:26 16:43	07:41 17:38	15:51-16:21/30 18:28	06:41 20:21	06:31 21:10	05:06 21:45	05:23 21:38	06:08 20:50	06:58 19:42	07:48 18:33	07:42 16:36	08:25 16:15	
16	08:25 16:45	07:39 17:40	15:51-16:20/29 18:30	06:39 20:22	06:29 21:11	05:06 21:45	05:24 21:37	06:10 20:48	07:00 19:39	07:49 18:31	07:44 16:35	08:25 16:15	
17	08:24 16:46	07:37 17:42	15:51-16:20/29 18:31	06:37 20:24	06:26 21:13	05:06 21:46	05:25 21:36	06:11 20:46	07:01 19:37	07:51 18:29	07:46 16:33	08:26 16:15	
18	08:23 16:48	07:35 17:43	15:52-16:19/27 18:33	06:34 20:26	06:24 21:14	05:06 21:46	05:27 21:35	06:13 20:44	07:03 19:35	07:53 18:27	07:47 16:32	16:35-16:40/5 16:15	
19	08:22 16:49	07:33 17:45	15:53-16:19/26 18:35	06:32 20:27	06:22 21:16	05:06 21:47	05:28 21:34	06:15 20:42	07:04 19:32	07:55 18:25	16:30-16:45/15 16:31	08:28 16:15	
20	08:21 16:51	07:31 17:47	15:54-16:18/24 18:37	06:30 20:29	06:20 21:17	05:06 21:47	05:29 21:32	06:16 20:40	07:06 19:30	07:56 18:23	16:27-16:46/19 16:29	08:28 16:16	
21	08:20 16:53	07:29 17:49	15:55-16:17/22 18:38	06:27 20:31	06:18 21:19	05:06 21:47	05:30 21:31	06:18 20:38	07:08 19:28	07:58 18:21	16:25-16:47/22 16:28	08:29 16:16	
22	08:19 16:54	07:27 17:51	15:57-16:15/18 18:40	06:25 20:32	06:16 21:20	05:06 21:47	05:32 21:30	06:19 20:35	07:09 19:25	08:00 18:18	16:24-16:49/25 16:27	08:30 16:17	
23	08:18 16:56	07:25 17:53	16:00-16:12/12 18:42	06:23 20:34	06:14 21:22	05:06 21:47	05:33 21:29	06:21 20:33	07:11 19:23	08:01 18:16	16:23-16:49/26 16:26	08:30 16:17	
24	08:16 16:58	07:23 17:54	16:22-16:50/28 18:43	06:21 20:36	06:12 21:23	05:07 21:48	05:35 21:27	06:23 20:31	07:13 19:21	08:03 18:14	16:22-16:50/28 16:25	08:30 16:18	
25	08:15 17:00	07:21 17:56	15:22-15:51/29 18:45	06:18 20:37	06:10 21:24	05:07 21:48	05:36 21:26	06:24 20:29	07:14 19:18	07:05 17:12	15:22-15:51/29 16:24	08:31 16:18	
26	08:14 17:01	07:19 17:58	15:21-15:51/30 18:47	06:16 20:39	06:08 21:26	05:07 21:48	05:37 21:24	06:26 20:27	07:16 19:16	07:07 17:10	15:21-15:51/30 16:23	08:31 16:19	
27	08:13 17:03	07:17 18:00	15:21-15:51/30 18:48	06:14 20:41	06:06 21:27	05:08 21:48	05:39 21:23	06:27 20:25	07:17 19:14	07:09 17:08	15:21-15:51/30 16:22	08:31 16:20	
28	08:11 17:05	07:15 18:02	15:20-15:50/30 18:50	06:11 20:42	06:04 21:28	05:08 21:47	05:40 21:22	06:29 20:23	07:19 19:12	07:10 17:06	15:20-15:50/30 16:21	08:32 16:21	
29	08:10 17:07	07:14 18:07	15:20-15:50/30 19:09	07:09 20:44	06:02 21:29	05:09 21:47	05:42 21:20	06:31 20:20	07:21 19:09	07:12 17:05	15:20-15:50/30 16:20	08:32 16:21	
30	08:08 17:08	07:13 18:08	15:20-15:50/30 19:07	07:07 20:46	06:00 21:31	05:09 21:47	05:43 21:19	06:32 20:18	07:22 19:07	07:14 17:03	15:20-15:50/30 16:20	08:32 16:22	
31	08:07 17:10	07:12 18:04	15:20-15:50/30 19:05	07:04 21:32	06:11 21:32	05:14 21:47	05:45 21:17	06:34 20:16	07:16 17:01	07:15 17:01	15:20-15:50/30 16:23	08:32 16:23	
	Sonnenscheinstunden Anzahl Minuten mit Schatten	260 0	278 526	367 0	416 0	484 0	498 0	501 0	453 0	381 0	332 349	267 183	245 0

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

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM)	Schattenanfang-Zeitpunkt (SS:MM)	Schattenende/Minuten mit Schatten
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## SHADOW - Kalender pro WEA

Berechnung: GB KeimbergWEA: WEA 04 - VESTAS V162-7.2 7200 162.0 IO! NH: 169,0 m (Ges:250,0 m) (154)  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:  
Die Sonne scheint täglich von Sonnenauf- bis -untergang  
Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung  
Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:32 12:02-12:49/47 11:02-11:50/48 16:25 13:42-14:25/43	08:05 11:55-12:47/52 17:12 10:27-11:04/37	07:12 18:03	07:02 17:33-18:06/33 19:57 20:47	05:58 20:47	05:13 21:33
2	08:32 12:01-12:50/49 11:02-11:50/48 16:26 13:43-14:26/43	08:04 11:55-12:46/51 17:14 10:26-11:04/38	07:10 18:05	07:00 17:34-18:04/30 19:59 20:49	05:56 20:49	05:12 21:34
3	08:32 12:01-12:51/50 11:03-11:51/48 16:27 13:44-14:27/43	08:02 11:55-12:46/51 17:16 10:26-11:04/38	07:08 18:07	06:58 17:36-18:02/26 20:00 20:51	05:54 20:51	05:11 21:35
4	08:32 12:00-12:50/50 11:03-11:51/48 16:28 13:44-14:27/43	08:01 11:55-12:46/51 17:18 10:26-11:04/38	07:06 18:09	06:55 17:38-18:00/22 20:02 20:52	05:52 20:52	05:11 21:36
5	08:31 12:00-12:51/51 11:03-11:51/48 16:29 13:45-14:27/42	07:59 11:56-12:46/50 17:19 10:27-11:05/38	07:04 18:10	06:53 17:41-17:57/16 20:04 20:54	05:50 20:54	05:10 21:37
6	08:31 11:59-12:51/52 11:03-11:51/48 16:30 13:45-14:27/42	07:57 11:56-12:46/50 17:21 10:27-11:05/38	07:01 18:12	06:51 20:05	05:48 20:56	05:09 21:38
7	08:31 11:59-12:52/53 11:04-11:52/48 16:32 13:46-14:28/42	07:56 11:57-12:45/48 17:23 10:27-11:04/37	06:59 18:14	06:49 20:07	05:47 20:57	05:09 21:39
8	08:30 11:58-12:52/54 11:04-11:52/48 16:33 13:46-14:28/42	07:54 11:57-12:45/48 17:25 10:27-11:04/37	06:57 18:16	06:46 20:09	05:45 20:59	05:08 21:40
9	08:30 11:58-12:53/55 11:05-11:53/48 16:34 13:47-14:29/42	07:52 11:58-12:44/46 17:27 10:27-11:03/36	06:55 16:52-16:58/6 18:18	06:44 20:10	05:43 21:01	05:08 21:41
10	08:29 11:57-12:52/55 11:05-11:53/48 16:36 13:48-14:29/41	07:50 11:58-12:43/45 17:29 10:27-11:03/36	06:53 16:45-17:03/18 18:19	06:42 20:12	05:42 21:02	05:07 21:42
11	08:29 11:57-12:52/55 11:06-11:52/46 16:37 13:48-14:29/41	07:49 11:59-12:42/43 17:31 10:28-11:02/34	06:50 16:42-17:06/24 18:21	06:40 20:14	05:40 21:04	05:07 21:42
12	08:28 11:56-12:52/56 11:06-11:52/46 16:38 13:49-14:30/41	07:47 12:01-12:41/40 17:32 10:30-11:02/32	06:48 16:40-17:08/28 18:23	06:37 20:16	05:38 21:05	05:06 21:43
13	08:27 11:56-12:52/56 11:06-11:52/46 16:40 13:50-14:30/40	07:45 12:03-12:40/37 17:34 10:31-11:01/30	06:46 16:38-17:09/31 18:24	06:35 20:17	05:37 21:07	05:06 21:44
14	08:27 11:56-12:53/57 11:08-11:53/45 16:41 13:52-14:31/39	07:43 12:05-12:38/33 17:36 10:32-11:00/28	06:43 16:36-17:11/35 18:26	06:33 20:19	05:35 21:08	05:06 21:44
15	08:26 11:56-12:53/57 11:08-11:53/45 16:43 13:53-14:31/38	07:41 12:07-12:36/29 17:38 10:33-10:58/25	06:41 16:35-17:12/37 18:28	06:31 20:21	05:33 21:10	05:06 21:45
16	08:25 11:56-12:53/57 11:09-11:52/43 16:45 13:54-14:31/37	07:39 12:09-12:33/24 17:40 10:35-10:56/21	06:39 16:34-17:13/39 18:30	06:29 20:22	05:32 21:11	05:06 21:45
17	08:24 11:55-12:51/56 11:10-11:52/42 16:46 13:55-14:30/35	07:37 12:12-12:28/16 17:42 10:37-10:52/15	06:37 16:32-17:13/41 18:31	06:26 20:24	05:30 21:13	05:06 21:46
18	08:23 11:54-12:51/57 11:09-11:50/41 16:48 13:57-14:30/33	07:35 12:14-12:28/16 17:43 10:38-10:53/14	06:34 16:32-17:14/42 18:33	06:24 20:26	05:29 21:14	05:06 21:46
19	08:22 11:54-12:50/56 11:10-11:49/39 16:49 14:00-14:29/29 10:37-10:46/9	07:33 12:15-12:29/15 17:45 10:39-10:54/13	06:32 16:31-17:14/43 18:35	06:22 20:27	05:28 21:16	05:06 21:47
20	08:21 11:54-12:49/55 11:12-11:48/36 16:51 14:04-14:29/25 10:35-10:49/14	07:31 12:16-12:29/14 17:47 10:40-10:55/12	06:30 16:30-17:14/44 18:37	06:20 20:29	05:26 21:17	05:06 21:47
21	08:20 11:54-12:48/54 11:13-11:46/33 16:53 14:06-14:29/23 10:33-10:52/19	07:29 12:17-12:29/13 17:49 10:41-10:56/11	06:27 16:30-17:14/44 18:38	06:18 20:31	05:25 21:19	05:06 21:47
22	08:19 11:54-12:45/51 11:14-11:38/24 16:54 14:07-14:27/20 10:32-10:54/22	07:27 12:18-12:29/12 17:51 10:42-10:57/10	06:25 16:30-17:14/44 18:40	06:16 20:32	05:24 21:20	05:06 21:47
23	08:18 11:54-12:42/48 11:15-11:36/21 16:56 14:10-14:26/16 10:31-10:55/24	07:25 12:19-12:29/11 17:53 10:43-10:58/9	06:23 16:29-17:13/44 18:42	06:14 20:34	05:22 21:22	05:06 21:47
24	08:16 11:54-12:43/49 11:17-11:35/18 16:58 14:16-14:24/8 10:30-10:57/27	07:23 12:20-12:29/10 17:54 10:44-10:59/7	06:21 16:29-17:13/44 18:43	06:12 20:36	05:21 21:23	05:07 21:48
25	08:15 11:53-12:43/50 10:29-10:57/28 17:00 11:18-11:33/15	07:21 12:21-12:29/9 17:56 10:45-10:59/6	06:18 16:29-17:13/44 18:45	06:10 20:37	05:20 21:24	05:07 21:48
26	08:14 11:54-12:44/50 10:29-10:59/30 17:01 11:22-11:31/9	07:19 12:22-12:29/8 17:58 10:46-10:59/5	06:16 16:29-17:12/43 18:47	06:08 20:39	05:19 21:26	05:07 21:48
27	08:13 11:53-12:44/51 17:03 10:28-11:00/32	07:17 12:23-12:29/7 18:00 10:47-10:59/4	06:14 16:29-17:11/42 18:48	06:06 20:41	05:18 21:27	05:08 21:48
28	08:11 11:54-12:45/51 17:05 10:28-11:01/33	07:15 12:24-12:29/6 18:02 10:48-10:59/3	06:11 16:30-17:11/41 18:50	06:04 20:42	05:17 21:28	05:08 21:47
29	08:10 11:53-12:45/52 17:07 10:27-11:01/34	07:13 12:25-12:29/5 18:03 10:49-10:59/2	07:09 17:30-18:09/39 19:52	06:02 20:44	05:16 21:29	05:09 21:47
30	08:08 11:54-12:46/52 17:08 10:27-11:03/36	07:11 12:26-12:29/4 18:04 10:50-10:59/1	07:07 17:31-18:08/37 19:54	06:00 20:46	05:15 21:31	05:09 21:47
31	08:07 11:54-12:46/52 17:10 10:26-11:03/37	07:09 12:27-12:29/3 18:05 10:51-10:59/0	07:04 17:32-18:07/35 19:55	06:00 20:46	05:14 21:32	05:09 21:47
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	3860	1272	845	127	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: GB KeimbergWEA: WEA 04 - VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (154)  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember				
1	05:10 21:47	05:46 21:15	06:35 20:14	07:24 17:18-17:48/30 19:05	07:17 11:28-12:13/45 16:59 09:57-10:33/36	08:08 11:39-12:34/55 10:48-11:34/46 16:19 13:31-14:12/41				
2	05:11 21:47	05:48 21:14	06:37 20:11	07:26 17:20-17:46/26 19:02	07:19 11:27-12:14/47 16:57 09:57-10:33/36	08:10 11:41-12:36/55 10:48-11:36/48 16:18 13:31-14:12/41				
3	05:11 21:46	05:49 21:12	06:39 20:09	07:27 17:22-17:42/20 19:00	07:21 11:27-12:14/47 16:55 09:56-10:34/38	08:11 11:41-12:36/55 10:48-11:36/48 16:18 13:31-14:12/41				
4	05:12 21:46	05:51 21:10	06:40 20:07	07:29 17:26-17:39/13 18:58	07:23 11:26-12:15/49 16:53 09:56-10:34/38	08:12 11:43-12:37/54 10:49-11:37/48 16:17 13:31-14:13/42				
5	05:13 21:45	05:52 21:09	06:42 20:05	07:31 18:55	07:25 11:26-12:16/50 16:52 09:56-10:34/38	08:14 11:44-12:37/53 10:49-11:37/48 16:17 13:31-14:13/42				
6	05:14 21:45	05:54 21:07	06:44 20:02	07:32 18:53	07:26 11:26-12:16/50 16:50 09:56-10:35/39	08:15 11:45-12:37/52 10:49-11:37/48 16:16 13:31-14:13/42				
7	05:15 21:44	05:55 21:05	06:45 20:00	07:34 18:51	07:28 11:25-12:17/52 16:48 09:57-10:35/38	08:16 11:47-12:38/51 10:50-11:38/48 16:16 13:32-14:15/43				
8	05:16 21:44	05:57 21:03	06:47 19:58	07:36 18:49	07:30 11:25-12:17/52 16:47 09:57-10:35/38	08:17 11:48-12:39/51 10:51-11:39/48 16:15 13:32-14:15/43				
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11	05:18 21:41	06:02 20:58	06:52 19:51	07:41 18:42	07:35 11:25-12:17/52 16:42 09:58-10:35/37	08:21 11:52-12:39/47 10:52-11:40/48 16:15 13:32-14:15/43				
12	05:20 21:41	06:03 20:56	06:53 19:49	07:42 18:40	07:37 11:25-12:17/52 16:40 09:58-10:33/35	08:22 11:53-12:40/47 10:52-11:40/48 16:15 13:33-14:16/43				
13	05:21 21:40	06:05 20:54	06:55 19:46	07:44 18:38	07:39 11:25-12:17/52 16:39 09:59-10:33/34	08:23 11:55-12:40/45 10:53-11:41/48 16:15 13:33-14:16/43				
14	05:22 21:39	06:06 20:52	06:56 19:44	07:46 18:35	07:41 11:26-12:17/51 16:37 10:00-10:33/33	08:24 11:57-12:06/9 12:07-12:41/34 16:15 13:34-14:16/42 10:53-11:41/48				
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16	05:24 21:37	06:10 20:48	07:00 19:39	07:49 18:31	07:44 11:27-12:17/50 16:34 10:55-11:04/9	08:25 13:35-14:17/42 10:54-11:42/48 16:15 12:08-12:42/34				
17	05:25 21:36	06:11 20:46	07:01 19:37	07:51 18:29	07:46 11:27-12:17/50 16:33 10:52-11:07/15	08:26 13:35-14:18/43 10:55-11:43/48 16:15 12:08-12:43/35				
18	05:27 21:35	06:13 20:44	07:03 19:35	07:53 18:27	07:47 11:28-12:17/49 16:32 13:50-13:58/8 10:04-10:31/27	08:27 13:36-14:19/43 10:56-11:44/48 16:15 12:09-12:43/34				
19	05:28 21:34	06:14 20:42	07:04 19:32	07:55 18:25	07:49 11:29-12:17/48 16:31 13:45-14:01/16 10:06-10:30/24	08:28 13:36-14:18/42 10:56-11:43/47 16:15 12:09-12:43/34				
20	05:29 21:32	06:16 20:40	07:06 19:30	07:56 18:23	07:51 11:29-12:20/51 16:29 13:42-14:02/20 10:06-10:28/22	08:28 13:37-14:19/42 10:57-11:44/47 16:16 12:10-12:44/34				
21	05:30 21:31	06:18 20:38	07:08 19:28	07:58 18:20	07:52 11:29-12:23/54 16:28 13:41-14:04/23 10:08-10:27/19	08:29 13:37-14:19/42 10:57-11:44/47 16:16 12:10-12:44/34				
22	05:32 21:30	06:19 20:35	07:09 19:25	08:00 18:18	07:54 11:30-12:25/55 16:27 13:40-14:05/25 10:11-10:26/15	08:30 13:38-14:20/42 10:58-11:45/47 16:17 12:11-12:45/34				
23	05:33 21:29	06:21 20:33	07:11 19:23	08:01 18:16	07:56 11:31-12:27/56 16:26 13:37-14:06/29 10:14-10:23/9	08:30 13:38-14:20/42 10:58-11:45/47 16:17 12:11-12:45/34				
24	05:34 21:27	06:23 20:31	07:13 19:21	08:03 18:14	07:57 11:32-12:29/57 16:25 13:35-14:08/33	08:30 13:39-14:21/42 10:59-11:46/47 16:18 12:12-12:46/34				
25	05:36 21:26	06:24 20:29	07:14 19:18	08:05 18:12	07:59 11:33-12:29/56 16:24 13:33-14:08/35	08:31 13:39-14:22/43 10:59-11:47/48 16:18 12:12-12:46/34				
26	05:37 21:25	06:26 20:27	07:16 19:16	08:07 18:10	08:01 11:34-12:31/57 16:23 13:32-14:09/37	08:31 13:39-14:22/43 10:59-11:47/48 16:19 12:12-12:47/35				
27	05:39 21:23	06:27 20:25	07:17 19:14	08:09 18:08	08:02 11:35-12:32/57 16:22 13:32-14:10/38	08:31 13:40-14:22/42 10:59-11:47/48 16:20 12:13-12:47/34				
28	05:40 21:22	06:29 20:23	07:19 19:11	08:10 18:06	08:04 11:35-12:32/57 16:21 13:31-14:10/39	08:32 12:06-12:09/3 12:13-12:47/34 16:21 13:40-14:23/43 11:00-11:47/47				
29	05:42 21:20	06:31 20:20	07:21 19:09	08:12 18:04	08:05 11:37-12:33/56 16:20 13:31-14:11/40	08:32 12:04-12:12/8 12:13-12:48/35 16:21 13:40-14:23/43 11:00-11:48/48				
30	05:43 21:19	06:32 20:18	07:22 19:07	08:14 18:03	08:07 11:38-12:34/56 16:20 13:31-14:12/41	08:32 12:03-12:48/45 11:00-11:48/48 16:22 13:41-14:24/43				
31	05:45 21:17	06:34 20:16		08:16 18:01	08:09 11:39-12:35/56 16:19 13:31-14:12/41	08:32 12:02-12:49/47 11:01-11:49/48 16:23 13:41-14:24/43				
	Sonnenscheinstunden Anzahl Minuten mit Schatten	501 0	453 0	381 901		332 515		267 3170		245 4123

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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## SHADOW - Kalender pro WEA

Berechnung: GB KeimbergWEA: WEA 05 - VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (156)  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:32 11:34-11:53/19 16:25 10:33-11:10/37	08:05 15:13-15:15/2 17:12 10:08-10:33/25	07:12 14:56-15:35/39 18:03	07:02 19:57	05:58 20:47	05:13 20:19-20:45/26 21:33
2	08:32 11:35-11:54/19 16:26 10:34-11:11/37	08:04 15:07-15:23/16 17:14 10:08-10:32/24	07:10 14:57-15:33/36 18:05	07:00 19:59	05:56 20:49	05:12 20:20-20:46/26 21:34
3	08:32 11:36-11:54/18 16:27 10:35-11:11/36	08:02 15:04-15:25/21 17:16 10:09-10:31/22	07:08 14:59-15:32/33 18:07	06:58 20:00	05:54 20:51	05:11 20:20-20:46/26 21:35
4	08:31 11:36-11:53/17 16:28 10:35-11:11/36	08:01 15:01-15:28/27 17:18 10:10-10:30/20	07:06 15:01-15:30/29 18:09	06:55 20:02	05:52 20:52	05:11 20:21-20:45/24 21:36
5	08:31 11:38-11:53/15 16:29 10:36-11:11/35	07:59 15:00-15:30/30 17:19 10:12-10:29/17	07:04 15:04-15:27/23 18:10	06:53 20:04	05:50 20:54	05:10 20:22-20:46/24 21:37
6	08:31 11:38-11:52/14 16:30 10:36-11:11/35	07:57 14:59-15:32/33 17:21 10:14-10:27/13	07:01 15:07-15:23/16 18:12	06:51 20:05	05:48 20:56	05:09 20:22-20:45/23 21:38
7	08:31 11:41-11:52/11 16:32 10:37-11:11/34	07:56 16:39-16:48/9 10:18-10:23/5 17:23 14:57-15:33/36	06:59 18:14	06:49 20:07	05:47 20:57	05:09 20:23-20:46/23 21:39
8	08:30 11:42-11:50/8 16:33 10:37-11:10/33	07:54 16:37-16:50/13 17:25 14:56-15:34/38	06:57 18:16	06:46 20:09	05:45 20:59	05:08 20:24-20:45/21 21:40
9	08:30 11:47-11:48/1 16:34 10:38-11:11/33	07:52 16:35-16:51/16 17:27 14:55-15:35/40	06:55 18:18	06:44 20:10	05:43 21:01	05:08 20:24-20:46/22 21:41
10	08:29 10:39-11:10/31 16:36	07:50 16:34-16:52/18 17:29 14:54-15:36/42	06:53 18:19	06:42 20:12	05:42 21:02	05:07 20:25-20:46/21 21:41
11	08:29 10:39-11:09/30 16:37 10:12-10:17/5	07:49 16:34-16:53/19 17:31 14:53-15:37/44	06:50 18:21	06:40 20:14	05:40 20:25-20:29/4 21:04	05:07 20:25-20:45/20 21:42
12	08:28 10:40-11:08/28 16:38 10:10-10:19/9	07:47 16:33-16:54/21 17:32 14:53-15:38/45	06:48 18:23	06:37 20:16	05:38 20:23-20:33/10 21:05	05:06 20:25-20:46/21 21:43
13	08:27 10:41-11:00/19 10:08-10:21/13 16:40 11:02-11:05/3	07:45 16:33-16:54/21 17:34 14:52-15:38/46	06:46 18:24	06:35 20:17	05:37 20:20-20:34/14 21:07	05:06 20:26-20:46/20 21:44
14	08:26 10:43-11:01/18 16:41 10:08-10:24/16	07:43 16:32-16:54/22 17:36 14:51-15:39/48	06:43 18:26	06:33 20:19	05:35 20:20-20:36/16 21:08	05:06 20:27-20:46/19 21:44
15	08:26 10:44-11:00/16 16:43 10:07-10:25/18	07:41 16:32-16:54/22 17:38 14:51-15:39/48	06:41 18:28	06:31 20:21	05:33 20:18-20:36/18 21:10	05:06 20:27-20:46/19 21:45
16	08:25 10:45-11:00/15 16:44 10:07-10:27/20	07:39 16:33-16:54/21 17:40 14:51-15:40/49	06:39 18:30	06:29 20:22	05:32 20:18-20:38/20 21:11	05:06 20:27-20:46/19 21:45
17	08:24 10:47-10:59/12 16:46 10:06-10:28/22	07:37 16:33-16:54/21 17:42 14:51-15:40/49	06:37 18:31	06:26 20:24	05:30 20:17-20:40/23 21:13	05:06 20:28-20:46/18 21:46
18	08:23 10:49-10:56/7 16:48 10:05-10:28/23	07:35 16:34-16:53/19 17:43 14:50-15:40/50	06:34 18:33	06:24 20:26	05:29 20:16-20:40/24 21:14	05:06 20:28-20:46/18 21:46
19	08:22 10:05-10:29/24 16:49	07:33 16:35-16:52/17 17:45 14:50-15:40/50	06:32 18:35	06:22 20:27	05:28 20:16-20:41/25 21:16	05:06 20:28-20:46/18 21:46
20	08:21 10:05-10:30/25 16:51	07:31 16:36-16:51/15 17:47 14:51-15:40/49	06:30 18:37	06:20 20:29	05:26 20:16-20:42/26 21:17	05:06 20:28-20:47/19 21:47
21	08:20 10:05-10:31/26 16:53	07:29 16:38-16:49/11 17:49 14:51-15:40/49	06:27 18:38	06:18 20:31	05:25 20:16-20:43/27 21:19	05:06 20:28-20:47/19 21:47
22	08:19 10:05-10:32/27 16:54	07:27 14:51-15:40/49 17:51	06:25 18:40	06:16 20:32	05:24 20:17-20:44/27 21:20	05:06 20:28-20:47/19 21:47
23	08:18 10:05-10:32/27 16:56	07:25 14:52-15:40/48 17:53	06:23 18:42	06:14 20:34	05:22 20:16-20:43/27 21:22	05:06 20:29-20:47/18 21:47
24	08:16 10:05-10:33/28 16:58	07:23 14:52-15:40/48 17:54	06:21 18:43	06:12 20:36	05:21 20:16-20:44/28 21:23	05:07 20:29-20:47/18 21:48
25	08:15 10:04-10:33/29 17:00	07:21 14:52-15:38/46 17:56	06:18 18:45	06:10 20:37	05:20 20:16-20:44/28 21:24	05:07 20:29-20:47/18 21:48
26	08:14 10:05-10:33/28 17:01	07:19 14:53-15:38/45 17:58	06:16 18:47	06:08 20:39	05:19 20:16-20:44/28 21:26	05:07 20:30-20:48/18 21:48
27	08:13 10:05-10:33/28 17:03	07:17 14:54-15:37/43 18:00	06:14 18:48	06:06 20:41	05:18 20:17-20:45/28 21:27	05:08 20:29-20:48/19 21:48
28	08:11 10:06-10:34/28 17:05	07:15 14:55-15:36/41 18:02	06:11 18:50	06:04 20:42	05:17 20:17-20:45/28 21:28	05:08 20:30-20:49/19 21:47
29	08:10 10:05-10:33/28 17:07		07:09 19:52	06:02 20:44	05:16 20:18-20:46/28 21:29	05:09 20:29-20:49/20 21:47
30	08:08 10:06-10:34/28 17:08		07:07 19:54	06:00 20:46	05:15 20:18-20:46/28 21:31	05:09 20:30-20:50/20 21:47
31	08:07 10:07-10:33/26 17:10		07:04 19:55		05:14 20:19-20:46/27 21:32	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	1095	1523	176	0	484	615

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

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

## SHADOW - Kalender pro WEA

Berechnung: GB KeimbergWEA: WEA 05 - VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (156)  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember
1	05:10 20:29-20:49/20 21:47	05:46 20:34-20:43/9 21:15	06:35 20:14	07:24 19:05	07:17 16:04-16:22/18 16:59 14:24-15:06/42	08:08 10:21-10:51/30 16:19 09:54-09:59/5
2	05:11 20:29-20:50/21 21:47	05:48 21:14	06:37 20:11	07:26 19:02	07:19 16:05-16:21/16 16:57 14:25-15:05/40	08:09 10:22-10:53/31 16:18
3	05:11 20:30-20:51/21 21:46	05:49 21:12	06:39 20:09	07:27 19:00	07:21 16:07-16:19/12 16:55 14:26-15:04/38	08:11 10:21-10:54/33 16:18
4	05:12 20:29-20:51/22 21:46	05:51 21:10	06:40 20:07	07:29 18:58	07:23 16:10-16:17/7 09:47-09:54/7 16:53 14:27-15:03/36	08:12 11:27-11:35/8 16:17 10:22-10:55/33
5	05:13 20:29-20:51/22 21:45	05:52 21:09	06:42 20:05	07:31 18:55	07:25 14:29-15:01/32 16:52 09:44-09:57/13	08:14 11:26-11:37/11 16:17 10:22-10:56/34
6	05:14 20:29-20:52/23 21:45	05:54 21:07	06:44 20:02	07:32 18:53	07:26 14:30-15:00/30 16:50 09:42-09:59/17	08:15 11:25-11:38/13 16:16 10:22-10:57/35
7	05:15 20:28-20:52/24 21:44	05:55 21:05	06:45 20:00	07:34 15:46-15:56/10 18:51	07:28 14:32-14:58/26 16:48 09:41-10:01/20	08:16 11:25-11:40/15 16:16 10:23-10:58/35
8	05:15 20:28-20:53/25 21:44	05:57 21:03	06:47 19:58	07:36 15:41-16:01/20 18:49	07:30 14:35-14:56/21 16:47 09:40-10:02/22	08:17 11:24-11:41/17 16:15 10:23-10:59/36
9	05:16 20:28-20:53/25 21:43	05:59 21:01	06:48 19:56	07:37 15:38-16:04/26 18:46	07:32 14:38-14:53/15 16:45 09:39-10:03/24	08:18 11:24-11:42/18 16:15 10:23-10:59/36
10	05:17 20:28-20:53/25 21:42	06:00 20:59	06:50 19:53	07:39 15:34-16:05/31 18:44	07:33 09:39-10:04/25 16:43	08:20 11:24-11:43/19 16:15 10:23-11:00/37
11	05:18 20:28-20:54/26 21:41	06:02 20:58	06:52 19:51	07:41 15:32-16:06/34 18:42	07:35 09:38-10:05/27 16:42	08:21 11:24-11:43/19 16:15 10:23-11:00/37
12	05:20 20:27-20:54/27 21:41	06:03 20:56	06:53 19:49	07:42 15:30-16:08/38 18:40	07:37 09:37-10:05/28 16:40	08:22 11:24-11:44/20 16:15 10:24-11:01/37
13	05:21 20:27-20:54/27 21:40	06:05 20:54	06:55 19:46	07:44 15:29-16:09/40 18:38	07:39 09:37-10:05/28 16:39	08:23 11:24-11:45/21 16:15 10:24-11:01/37
14	05:22 20:27-20:54/27 21:39	06:06 20:52	06:56 19:44	07:46 15:28-16:10/42 18:35	07:41 09:37-10:06/29 16:37	08:24 13:03-13:07/4 10:25-11:02/37 16:15 11:24-11:45/21
15	05:23 20:27-20:54/27 21:38	06:08 20:50	06:58 19:42	07:48 15:26-16:09/43 18:33	07:42 09:38-10:06/28 16:36	08:25 12:58-13:09/11 10:25-11:03/38 16:15 11:24-11:46/22
16	05:24 20:26-20:54/28 21:37	06:10 20:48	07:00 19:39	07:49 15:25-16:10/45 18:31	07:44 09:38-10:06/28 16:34	08:25 12:58-13:10/12 10:26-11:03/37 16:15 11:25-11:47/22
17	05:25 20:26-20:54/28 21:36	06:11 20:46	07:01 19:37	07:51 15:24-16:11/47 18:29	07:46 09:38-10:07/29 16:33	08:26 12:58-13:11/13 10:26-11:04/38 16:15 11:25-11:48/23
18	05:27 20:26-20:54/28 21:35	06:13 20:44	07:03 19:35	07:53 15:23-16:11/48 18:27	07:47 09:39-10:07/28 16:32	08:27 12:58-13:12/14 10:27-11:05/38 16:15 11:26-11:49/23
19	05:28 20:26-20:54/28 21:34	06:14 20:42	07:04 19:32	07:54 15:23-16:11/48 18:25	07:49 09:40-10:07/27 16:31	08:28 12:58-13:12/14 10:27-11:05/38 16:15 11:26-11:49/23
20	05:29 20:26-20:54/28 21:32	06:16 20:40	07:06 19:30	07:56 17:11-17:17/6 18:23 15:21-16:10/49	07:51 09:39-10:06/27 16:29	08:28 12:58-13:13/15 10:28-11:06/38 16:16 11:27-11:49/22
21	05:30 20:26-20:54/28 21:31	06:18 20:38	07:08 19:28	07:58 17:08-17:20/12 18:20 15:21-16:11/50	07:52 09:40-10:06/26 16:28	08:29 12:58-13:13/15 10:28-11:05/37 16:16 11:26-11:49/23
22	05:32 20:26-20:53/27 21:30	06:19 20:35	07:09 19:25	08:00 17:06-17:22/16 18:18 15:21-16:11/50	07:54 09:41-10:06/25 16:27	08:29 12:59-13:14/15 10:29-11:06/37 16:17 11:27-11:50/23
23	05:33 20:26-20:52/26 21:29	06:21 20:33	07:11 19:23	08:01 17:05-17:23/18 18:16 15:21-16:11/50	07:56 09:42-10:06/24 16:26	08:30 12:59-13:14/15 10:29-11:07/38 16:17 11:28-11:50/22
24	05:34 20:27-20:53/26 21:27	06:23 20:31	07:13 19:21	08:03 17:04-17:24/20 18:14 15:21-16:10/49	07:57 10:27-10:34/7 16:25 09:43-10:06/23	08:30 13:01-13:15/14 10:30-11:08/38 16:18 11:29-11:52/23
25	05:36 20:27-20:51/24 21:26	06:24 20:29	07:14 19:18	07:05 16:03-16:24/21 17:12 14:21-15:10/49	07:59 10:24-10:36/12 16:24 09:43-10:05/22	08:31 13:01-13:15/14 10:30-11:08/38 16:18 11:29-11:52/23
26	05:37 20:27-20:50/23 21:24	06:26 20:27	07:16 19:16	07:07 16:03-16:25/22 17:10 14:21-15:10/49	08:01 10:23-10:38/15 16:23 09:45-10:05/20	08:31 13:02-13:15/13 10:30-11:08/38 16:19 11:29-11:52/23
27	05:39 20:28-20:50/22 21:23	06:27 20:25	07:17 19:14	07:09 16:02-16:24/22 17:08 14:22-15:10/48	08:02 10:23-10:39/16 16:22 09:46-10:04/18	08:31 13:03-13:15/12 10:31-11:08/37 16:20 11:30-11:52/22
28	05:40 20:28-20:47/19 21:22	06:29 20:23	07:19 19:11	07:10 16:02-16:24/22 17:06 14:21-15:08/47	08:04 10:22-10:40/18 16:21 09:47-10:03/16	08:32 13:04-13:15/11 10:31-11:08/37 16:21 11:30-11:52/22
29	05:42 20:29-20:46/17 21:20	06:31 20:20	07:21 19:09	07:12 16:02-16:23/21 17:04 14:22-15:08/46	08:05 10:22-10:41/19 09:49-10:02/13 16:20 10:44-10:45/1	08:32 13:09-13:14/5 10:31-11:09/38 16:21 11:31-11:52/21
30	05:43 20:30-20:46/16 21:18	06:32 20:18	07:22 19:07	07:14 16:03-16:23/20 17:03 14:22-15:07/45	08:07 10:22-10:49/27 16:20 09:52-10:02/10	08:32 11:32-11:53/21 16:22 10:32-11:09/37
31	05:45 20:31-20:44/13 21:17	06:34 20:16	 17:01	07:16 16:03-16:23/20 14:23-15:06/43	 	08:32 11:32-11:53/21 16:23 10:33-11:10/37
Sonneneinstrahlung	501	453	381	332	267	245
Anzahl Minuten mit Schatten	743	9	0	1267	1052	1890

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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## SHADOW - Kalender pro WEA

Berechnung: GB KeimbergWEA: WEA 06 - VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (155)  
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Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:  
Die Sonne scheint täglich von Sonnenauf- bis -untergang  
Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung  
Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:32 13:26-14:06/40 16:25	08:05 17:12	07:12 18:03	07:02 19:57	05:58 19:36-20:09/33 20:47	05:13 21:33
2	08:32 13:26-14:07/41 16:26	08:04 17:14	07:10 18:05	07:00 19:59	05:56 19:37-20:09/32 20:49	05:12 21:34
3	08:32 13:27-14:08/41 16:27	08:02 17:16	07:08 18:07	06:58 20:00	05:54 19:37-20:09/32 20:51	05:11 21:35
4	08:31 13:27-14:08/41 16:28	08:01 17:18	07:06 18:09	06:55 20:02	05:52 19:38-20:10/32 20:52	05:11 21:36
5	08:31 13:28-14:09/41 16:29	07:59 17:19	07:04 18:10	06:53 20:04	05:50 19:39-20:10/31 20:54	05:10 21:37
6	08:31 13:27-14:08/41 16:30	07:57 17:21	07:01 18:12	06:51 20:05	05:48 19:39-20:09/30 20:56	05:09 21:38
7	08:31 13:28-14:09/41 16:32	07:56 17:23	06:59 18:14	06:49 20:07	05:47 19:40-20:10/30 20:57	05:09 21:39
8	08:30 13:28-14:10/42 16:33	07:54 17:25	06:57 18:16	06:46 20:09	05:45 19:40-20:09/29 20:59	05:08 21:40
9	08:30 13:29-14:11/42 16:34	07:52 17:27	06:55 18:18	06:44 20:10	05:43 19:41-20:09/28 21:01	05:08 21:41
10	08:29 13:30-14:11/41 16:36	07:50 17:29	06:53 18:19	06:42 20:12	05:42 19:42-20:09/27 21:02	05:07 21:41
11	08:29 13:30-14:11/41 16:37	07:49 17:31	06:50 18:21	06:40 20:14	05:40 19:42-20:08/26 21:04	05:07 21:42
12	08:28 13:30-14:11/41 16:38	07:47 17:32	06:48 18:23	06:37 20:16	05:38 19:43-20:08/25 21:05	05:06 21:43
13	08:27 13:30-14:11/41 16:40	07:45 17:34	06:46 18:24	06:35 20:17	05:37 19:43-20:07/24 21:07	05:06 21:44
14	08:26 13:31-14:11/40 16:41	07:43 17:36	06:43 18:26	06:33 20:19	05:35 19:44-20:06/22 21:08	05:06 21:44
15	08:26 13:31-14:12/41 16:43	07:41 17:38	06:41 18:28	06:31 20:21	05:33 19:45-20:05/20 21:10	05:06 21:45
16	08:25 13:32-14:12/40 16:45	07:39 17:40	06:39 18:30	06:29 20:22	05:32 19:46-20:04/18 21:11	05:06 21:45
17	08:24 13:33-14:12/39 16:46	07:37 17:42	06:37 18:31	06:26 20:24	05:30 19:48-20:03/15 21:13	05:06 21:46
18	08:23 13:33-14:12/39 16:48	07:35 17:43	06:34 18:33	06:24 20:26	05:29 19:49-20:01/12 21:14	05:06 21:46
19	08:22 13:34-14:12/38 16:49	07:33 17:45	06:32 18:35	06:22 20:27	05:28 19:52-19:58/6 21:16	05:06 21:46
20	08:21 13:35-14:12/37 16:51	07:31 17:47	06:30 18:37	06:20 19:45-19:54/9 20:29	05:26 21:17	05:06 21:47
21	08:20 13:36-14:12/36 16:53	07:29 17:49	06:27 18:38	06:18 19:43-19:57/14 20:31	05:25 21:19	05:06 21:47
22	08:19 13:36-14:11/35 16:54	07:27 17:51	06:25 18:40	06:16 19:41-19:58/17 20:32	05:24 21:20	05:06 21:47
23	08:18 13:38-14:11/33 16:56	07:25 17:53	06:23 18:42	06:14 19:39-20:00/21 20:34	05:22 21:22	05:06 21:47
24	08:16 13:39-14:11/32 16:58	07:23 17:54	06:21 18:43	06:12 19:38-20:02/24 20:36	05:21 21:23	05:07 21:48
25	08:15 13:40-14:10/30 17:00	07:21 17:56	06:18 18:45	06:10 19:37-20:03/26 20:37	05:20 21:24	05:07 21:48
26	08:14 13:42-14:10/28 17:01	07:19 17:58	06:16 18:47	06:08 19:37-20:04/27 20:39	05:19 21:26	05:07 21:48
27	08:13 13:43-14:08/25 17:03	07:17 18:00	06:14 18:48	06:06 19:36-20:05/29 20:41	05:18 21:27	05:08 21:48
28	08:11 13:45-14:07/22 17:05	07:15 18:02	06:11 18:50	06:04 19:36-20:06/30 20:42	05:17 21:28	05:08 21:47
29	08:10 13:47-14:05/18 17:07		07:09 19:52	06:02 19:37-20:08/31 20:44	05:16 21:29	05:09 21:47
30	08:08 13:51-14:02/11 17:08		07:07 19:54	06:00 19:36-20:09/33 20:46	05:15 21:31	05:09 21:47
31	08:07 17:10		07:04 19:55		05:14 21:32	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	1078	0	0	261	472	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: GB Keimberg WEA: WEA 06 - VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (155)  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:  
Die Sonne scheint täglich von Sonnenauf- bis -untergang  
Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung  
Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember
1	05:10 21:47	05:46 19:53-20:18/25 21:15	06:35 20:14	07:24 19:05	07:17 16:59	08:08 13:12-13:53/41 16:19
2	05:11 21:46	05:48 19:52-20:18/26 21:14	06:37 20:11	07:26 19:02	07:19 16:57	08:09 13:13-13:54/41 16:18
3	05:11 21:46	05:49 19:52-20:19/27 21:12	06:39 20:09	07:27 19:00	07:21 16:55	08:11 13:13-13:54/41 16:18
4	05:12 21:46	05:51 19:51-20:19/28 21:10	06:40 20:07	07:29 18:58	07:23 16:53	08:12 13:12-13:54/42 16:17
5	05:13 21:45	05:52 19:49-20:19/30 21:09	06:42 20:05	07:31 18:55	07:25 16:52	08:14 13:13-13:55/42 16:17
6	05:14 21:45	05:54 19:49-20:19/30 21:07	06:44 20:02	07:32 18:53	07:26 16:50	08:15 13:14-13:55/41 16:16
7	05:15 21:44	05:55 19:48-20:19/31 21:05	06:45 20:00	07:34 18:51	07:28 16:48	08:16 13:15-13:56/41 16:16
8	05:16 21:44	05:57 19:48-20:19/31 21:03	06:47 19:58	07:36 18:49	07:30 16:47	08:17 13:15-13:56/41 16:15
9	05:16 21:43	05:59 19:47-20:18/31 21:01	06:48 19:55	07:37 18:46	07:32 16:45	08:18 13:15-13:56/41 16:15
10	05:17 21:42	06:00 19:46-20:19/33 20:59	06:50 19:53	07:39 18:44	07:33 16:43	08:20 13:16-13:56/40 16:15
11	05:18 21:41	06:02 19:45-20:18/33 20:58	06:52 19:51	07:41 18:42	07:35 16:42	08:21 13:16-13:56/40 16:15
12	05:20 21:41	06:03 19:45-20:17/32 20:56	06:53 19:49	07:42 18:40	07:37 13:22-13:34/12 16:40	08:22 13:16-13:57/41 16:15
13	05:21 21:40	06:05 19:44-20:16/32 20:54	06:55 19:46	07:44 18:38	07:39 13:19-13:37/18 16:39	08:23 13:17-13:57/40 16:15
14	05:22 21:39	06:06 19:44-20:15/31 20:52	06:56 19:44	07:46 18:35	07:40 13:17-13:39/22 16:37	08:24 13:17-13:57/40 16:15
15	05:23 21:38	06:08 19:43-20:14/31 20:50	06:58 19:42	07:48 18:33	07:42 13:16-13:41/25 16:36	08:25 13:18-13:58/40 16:15
16	05:24 21:37	06:10 19:44-20:12/28 20:48	07:00 19:39	07:49 18:31	07:44 13:15-13:43/28 16:34	08:25 13:19-13:58/39 16:15
17	05:25 21:36	06:11 19:43-20:10/27 20:46	07:01 19:37	07:51 18:29	07:46 13:14-13:44/30 16:33	08:26 13:19-13:59/40 16:15
18	05:27 21:35	06:13 19:44-20:09/25 20:44	07:03 19:35	07:53 18:27	07:47 13:13-13:45/32 16:32	08:27 13:20-14:00/40 16:15
19	05:28 21:34	06:14 19:44-20:07/23 20:42	07:04 19:32	07:54 18:25	07:49 13:13-13:46/33 16:31	08:28 13:20-13:59/39 16:15
20	05:29 21:32	06:16 19:45-20:05/20 20:40	07:06 19:30	07:56 18:23	07:51 13:11-13:46/35 16:29	08:28 13:21-14:00/39 16:16
21	05:30 21:31	06:18 19:46-20:02/16 20:38	07:08 19:28	07:58 18:20	07:52 13:11-13:47/36 16:28	08:29 13:21-14:00/39 16:16
22	05:32 21:30	06:19 19:48-20:01/13 20:35	07:09 19:25	08:00 18:18	07:54 13:11-13:48/37 16:27	08:29 13:22-14:01/39 16:17
23	05:33 21:29	06:21 19:51-19:58/7 20:33	07:11 19:23	08:01 18:16	07:56 13:11-13:49/38 16:26	08:30 13:22-14:01/39 16:17
24	05:34 21:27	06:23 20:31	07:13 19:21	08:03 18:14	07:57 13:11-13:50/39 16:25	08:30 13:23-14:02/39 16:18
25	05:36 20:01-20:10/9 21:26	06:24 20:29	07:14 19:18	07:05 17:12	07:59 13:11-13:50/39 16:24	08:31 13:23-14:03/40 16:18
26	05:37 19:59-20:12/13 21:24	06:26 20:27	07:16 19:16	07:07 17:10	08:01 13:11-13:51/40 16:23	08:31 13:23-14:03/40 16:19
27	05:39 19:58-20:14/16 21:23	06:27 20:25	07:17 19:14	07:09 17:08	08:02 13:11-13:52/41 16:22	08:31 13:24-14:03/39 16:20
28	05:40 19:56-20:15/19 21:22	06:29 20:23	07:19 19:11	07:10 17:06	08:04 13:11-13:51/40 16:21	08:32 13:24-14:04/40 16:21
29	05:42 19:55-20:16/21 21:20	06:31 20:20	07:21 19:09	07:12 17:04	08:05 13:11-13:52/41 16:20	08:32 13:24-14:04/40 16:21
30	05:43 19:55-20:17/22 21:18	06:32 20:18	07:22 19:07	07:14 17:03	08:07 13:11-13:52/41 16:20	08:32 13:25-14:05/40 16:22
31	05:45 19:53-20:17/24 21:17	06:34 20:16		07:16 17:01		08:32 13:25-14:05/40 16:23
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	124	610	0	0	627	1244

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: GB Keimberg WEA: WEA 07 - VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (153)  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:32 14:34-15:04/30 16:25	08:05 17:12	07:12 18:03	07:02 19:57	05:58 20:47	05:13 21:33
2	08:32 14:35-15:05/30 16:26	08:04 17:14	07:10 18:05	07:00 19:59	05:56 20:49	05:12 21:34
3	08:32 14:36-15:06/30 16:27	08:02 17:16	07:08 18:07	06:58 20:00	05:54 20:51	05:11 21:35
4	08:31 14:35-15:06/31 16:28	08:01 17:18	07:06 18:09	06:55 20:02	05:52 20:52	05:11 21:36
5	08:31 14:36-15:07/31 16:29	07:59 17:19	07:04 18:10	06:53 20:04	05:50 20:54	05:10 21:37
6	08:31 14:36-15:07/31 16:30	07:57 17:21	07:01 18:12	06:51 20:05	05:49 20:56	05:09 21:38
7	08:31 14:36-15:08/32 16:32	07:56 17:23	06:59 18:14	06:49 20:07	05:47 20:57	05:09 21:39
8	08:30 14:36-15:08/32 16:33	07:54 17:25	06:57 18:16	06:46 19:37-19:43/6 20:09	05:45 20:59	05:08 21:40
9	08:30 14:37-15:09/32 16:34	07:52 17:27	06:55 18:18	06:44 19:34-19:45/11 20:10	05:43 21:01	05:08 21:41
10	08:29 14:37-15:09/32 16:36	07:50 17:29	06:53 18:19	06:42 19:31-19:45/14 20:12	05:42 21:02	05:07 21:41
11	08:29 14:37-15:10/33 16:37	07:49 17:31	06:50 18:21	06:40 19:30-19:47/17 20:14	05:40 21:04	05:07 21:42
12	08:28 14:38-15:10/32 16:38	07:47 17:32	06:48 18:23	06:37 19:29-19:49/20 20:16	05:38 21:05	05:07 21:43
13	08:27 14:38-15:10/32 16:40	07:45 17:34	06:46 18:24	06:35 19:29-19:51/22 20:17	05:37 21:07	05:06 21:44
14	08:26 14:38-15:10/32 16:41	07:43 17:36	06:43 18:26	06:33 19:28-19:52/24 20:19	05:35 21:08	05:06 21:44
15	08:26 14:38-15:11/33 16:43	07:41 17:38	06:41 18:28	06:31 19:28-19:52/24 20:21	05:33 21:10	05:06 21:45
16	08:25 14:39-15:11/32 16:45	07:39 17:40	06:39 18:30	06:29 19:27-19:51/24 20:22	05:32 21:11	05:06 21:45
17	08:24 14:40-15:11/31 16:46	07:37 17:42	06:37 18:31	06:26 19:27-19:51/24 20:24	05:30 21:13	05:06 21:46
18	08:23 14:40-15:12/32 16:48	07:35 17:43	06:34 18:33	06:24 19:28-19:51/23 20:26	05:29 21:14	05:06 21:46
19	08:22 14:41-15:12/31 16:49	07:33 17:45	06:32 18:35	06:22 19:28-19:50/22 20:27	05:28 21:16	05:06 21:46
20	08:21 14:42-15:12/30 16:51	07:31 17:47	06:30 18:37	06:20 19:29-19:49/20 20:29	05:26 21:17	05:06 21:47
21	08:20 14:43-15:12/29 16:53	07:29 17:49	06:27 18:38	06:18 19:30-19:48/18 20:31	05:25 21:19	05:06 21:47
22	08:19 14:43-15:11/28 16:54	07:27 17:51	06:25 18:40	06:16 19:31-19:47/16 20:32	05:24 21:20	05:06 21:47
23	08:18 14:44-15:11/27 16:56	07:25 17:53	06:23 18:42	06:14 19:32-19:45/13 20:34	05:22 21:22	05:06 21:47
24	08:16 14:46-15:11/25 16:58	07:23 17:54	06:21 18:43	06:12 19:34-19:43/9 20:36	05:21 21:23	05:07 21:48
25	08:15 14:46-15:10/24 17:00	07:21 17:56	06:18 18:45	06:10 20:37	05:20 21:24	05:07 21:48
26	08:14 14:48-15:10/22 17:01	07:19 17:58	06:16 18:47	06:08 20:39	05:19 21:26	05:07 21:48
27	08:13 14:49-15:08/19 17:03	07:17 18:00	06:14 18:48	06:06 20:41	05:18 21:27	05:08 21:48
28	08:11 14:52-15:07/15 17:05	07:15 18:02	06:11 18:50	06:04 20:42	05:17 21:28	05:08 21:47
29	08:10 14:54-15:04/10 17:07		07:09 19:52	06:02 20:44	05:16 21:29	05:09 21:47
30	08:08 17:08		07:07 19:54	06:00 20:46	05:15 21:31	05:09 21:47
31	08:07 17:10		07:04 19:55		05:14 21:32	
Sonnenscheinstunden	260	278	367	416	484	498
Anzahl Minuten mit Schatten	828	0	0	307	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: GB Keimberg WEA: WEA 07 - VESTAS V162-7.2 7200 162.0 IO! NH: 169,0 m (Ges:250,0 m) (153)  
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:  
Die Sonne scheint täglich von Sonnenauf- bis -untergang  
Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlungsrichtung  
Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember
1	05:10 21:47	05:46 21:15	06:35 19:29-19:46/17 20:14	07:24 19:05	07:17 16:59	08:08 14:19-14:52/33 16:19
2	05:11 21:46	05:48 21:14	06:37 19:30-19:44/14 20:11	07:26 19:02	07:19 16:57	08:09 14:20-14:53/33 16:18
3	05:11 21:46	05:49 21:12	06:39 19:31-19:42/11 20:09	07:27 19:00	07:21 16:55	08:11 14:20-14:52/32 16:18
4	05:12 21:46	05:51 21:10	06:40 19:34-19:40/6 20:07	07:29 18:58	07:23 16:53	08:12 14:20-14:52/32 16:17
5	05:13 21:45	05:52 21:09	06:42 20:05	07:31 18:55	07:25 16:52	08:14 14:21-14:53/32 16:17
6	05:14 21:45	05:54 21:07	06:44 20:02	07:32 18:53	07:26 16:50	08:15 14:22-14:53/31 16:16
7	05:15 21:44	05:55 21:05	06:45 20:00	07:34 18:51	07:28 16:48	08:16 14:23-14:54/31 16:16
8	05:16 21:44	05:57 21:03	06:47 19:58	07:36 18:49	07:30 16:47	08:17 14:23-14:54/31 16:15
9	05:16 21:43	05:59 21:01	06:48 19:56	07:37 18:46	07:32 16:45	08:18 14:24-14:54/30 16:15
10	05:17 21:42	06:00 20:59	06:50 19:53	07:39 18:44	07:33 16:43	08:20 14:24-14:54/30 16:15
11	05:19 21:41	06:02 20:58	06:52 19:51	07:41 18:42	07:35 16:42	08:21 14:24-14:54/30 16:15
12	05:20 21:41	06:03 20:56	06:53 19:49	07:42 18:40	07:37 16:40	08:22 14:25-14:54/29 16:15
13	05:21 21:40	06:05 20:54	06:55 19:46	07:44 18:38	07:39 14:26-14:36/10 16:39	08:23 14:26-14:55/29 16:15
14	05:22 21:39	06:06 20:52	06:56 19:44	07:46 18:35	07:40 14:23-14:39/16 16:37	08:24 14:26-14:55/29 16:15
15	05:23 21:38	06:08 20:50	06:58 19:42	07:48 18:33	07:42 14:22-14:41/19 16:36	08:25 14:27-14:55/28 16:15
16	05:24 21:37	06:10 20:48	07:00 19:39	07:49 18:31	07:44 14:21-14:43/22 16:35	08:25 14:28-14:56/28 16:15
17	05:25 21:36	06:11 20:46	07:01 19:37	07:51 18:29	07:46 14:20-14:44/24 16:33	08:26 14:28-14:56/28 16:15
18	05:27 21:35	06:13 20:44	07:03 19:35	07:53 18:27	07:47 14:19-14:45/26 16:32	08:27 14:29-14:57/28 16:15
19	05:28 21:34	06:15 19:39-19:49/10 20:42	07:04 19:32	07:54 18:25	07:49 14:19-14:46/27 16:31	08:28 14:29-14:57/28 16:15
20	05:29 21:32	06:16 19:37-19:51/14 20:40	07:06 19:30	07:56 18:23	07:51 14:18-14:46/28 16:29	08:28 14:30-14:58/28 16:16
21	05:30 21:31	06:18 19:35-19:52/17 20:38	07:08 19:28	07:58 18:20	07:52 14:18-14:47/29 16:28	08:29 14:30-14:58/28 16:16
22	05:32 21:30	06:19 19:34-19:53/19 20:35	07:09 19:25	08:00 18:18	07:54 14:18-14:48/30 16:27	08:29 14:31-14:59/28 16:17
23	05:33 21:29	06:21 19:34-19:54/20 20:33	07:11 19:23	08:01 18:16	07:56 14:18-14:49/31 16:26	08:30 14:31-14:59/28 16:17
24	05:35 21:27	06:23 19:32-19:54/22 20:31	07:13 19:21	08:03 18:14	07:57 14:18-14:50/32 16:25	08:30 14:32-15:00/28 16:18
25	05:36 21:26	06:24 19:31-19:54/23 20:29	07:14 19:18	07:05 17:12	07:59 14:18-14:49/31 16:24	08:31 14:32-15:00/28 16:18
26	05:37 21:24	06:26 19:30-19:54/24 20:27	07:16 19:16	07:07 17:10	08:01 14:18-14:50/32 16:23	08:31 14:32-15:00/28 16:19
27	05:39 21:23	06:27 19:30-19:54/24 20:25	07:17 19:14	07:09 17:08	08:02 14:19-14:51/32 16:22	08:31 14:33-15:01/28 16:20
28	05:40 21:22	06:29 19:29-19:53/24 20:23	07:19 19:11	07:10 17:06	08:04 14:18-14:51/33 16:21	08:32 14:33-15:01/28 16:21
29	05:42 21:20	06:31 19:29-19:53/24 20:20	07:21 19:09	07:12 17:05	08:05 14:19-14:51/32 16:20	08:32 14:33-15:02/29 16:21
30	05:43 21:18	06:32 19:29-19:51/22 20:18	07:22 19:07	07:14 17:03	08:07 14:19-14:51/32 16:20	08:32 14:33-15:02/29 16:22
31	05:45 21:17	06:34 19:29-19:49/20 20:16		07:16 17:01		08:32 14:34-15:03/29 16:23
Sonnenscheinstunden	501	453	381	332	267	245
Anzahl Minuten mit Schatten	0	263	48	0	486	911

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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## SHADOW - Kalender pro WEA

Berechnung: GB KeimbergWEA: WEA 08 - VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (152)  
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:32 14:22-14:31/9 16:25	08:05 17:12	07:12 18:03	07:02 18:59-19:05/6	05:58 20:47	05:13 21:33	05:10 21:47	05:46 21:15	06:35 20:14	07:24 19:05	07:17 16:59	08:08 16:19
2	08:32 14:24-14:30/6 16:26	08:04 17:14	07:10 18:05	07:00 19:59	05:56 20:49	05:12 21:34	05:11 21:46	05:48 21:14	06:37 20:11	07:26 19:02	07:19 16:57	08:09 16:18
3	08:32 16:27	08:02 17:16	07:08 18:07	06:58 20:00	05:54 20:51	05:11 21:35	05:11 21:46	05:49 21:12	06:39 20:09	07:27 19:00	07:21 16:55	08:11 16:18
4	08:31 16:28	08:01 17:18	07:06 18:09	06:55 20:02	05:52 20:52	05:11 21:36	05:12 21:46	05:51 21:10	06:40 20:07	07:29 18:58	07:23 16:53	08:12 16:17
5	08:31 16:29	07:59 17:19	07:04 18:10	06:53 20:04	05:50 20:54	05:10 21:37	05:13 21:45	05:52 21:09	06:42 20:05	07:31 18:55	07:25 16:52	08:14 16:17
6	08:31 16:30	07:57 17:21	07:01 18:12	06:51 20:05	05:49 20:56	05:09 21:38	05:14 21:45	05:54 21:07	06:44 20:02	07:32 18:53	07:26 16:50	08:15 16:16
7	08:31 16:32	07:56 17:23	06:59 18:14	06:49 20:07	05:47 20:57	05:09 21:39	05:15 21:44	05:55 21:05	06:45 20:00	07:34 18:51	07:28 16:48	08:16 16:16
8	08:30 16:33	07:54 17:25	06:57 18:16	06:46 20:09	05:45 20:59	05:08 21:40	05:16 21:44	05:57 21:03	06:47 19:58	07:36 18:49	07:30 16:47	08:17 16:15
9	08:30 16:34	07:52 17:27	06:55 18:18	06:44 20:10	05:43 21:01	05:08 21:41	05:17 21:43	05:59 21:01	06:48 19:56	07:37 18:46	07:32 16:45	08:18 16:15
10	08:29 16:36	07:50 17:45	06:53 18:19	06:42 20:12	05:42 21:02	05:07 21:41	05:18 21:42	06:00 20:59	06:50 19:53	07:39 18:44	07:33 16:43	08:20 16:15
11	08:29 16:37	07:49 17:31	06:50 18:21	06:40 20:14	05:40 21:04	05:07 21:42	05:19 21:41	06:02 20:58	06:52 18:52-18:56/4	07:41 18:42	07:35 16:42	08:21 14:12-14:21/9 16:15
12	08:28 16:38	07:47 17:32	06:48 18:23	06:37 20:16	05:38 21:05	05:06 21:43	05:20 21:41	06:03 20:56	06:53 18:47-18:59/12	07:42 18:40	07:37 16:40	08:22 14:12-14:22/10 16:15
13	08:27 16:40	07:45 17:34	06:46 18:25	06:35 20:17	05:37 21:07	05:06 21:44	05:21 21:40	06:05 20:54	06:55 18:45-19:01/16	07:44 18:38	07:39 16:39	08:23 14:11-14:23/12 16:15
14	08:26 16:41	07:43 17:36	06:43 18:26	06:33 20:19	05:35 21:08	05:06 21:44	05:22 21:39	06:06 20:52	06:56 18:44-19:02/18	07:46 18:35	07:40 16:37	08:24 14:11-14:24/13 16:15
15	08:26 16:43	07:41 17:38	06:41 18:28	06:31 20:21	05:33 21:10	05:06 21:45	05:23 21:38	06:08 20:50	06:58 18:42-19:02/20	07:48 18:33	07:42 16:36	08:25 14:11-14:25/14 16:15
16	08:25 16:45	07:39 17:40	06:39 18:30	06:29 20:22	05:32 21:11	05:06 21:45	05:24 21:37	06:10 20:48	07:00 18:42-19:03/21	07:49 18:31	07:44 16:35	08:25 14:12-14:26/14 16:15
17	08:24 16:46	07:37 17:42	06:37 18:31	06:26 20:24	05:30 21:13	05:06 21:46	05:25 21:36	06:11 20:46	07:01 18:41-19:02/21	07:51 18:29	07:46 16:33	08:26 14:12-14:27/15 16:15
18	08:23 16:48	07:35 17:43	06:34 18:33	06:24 20:26	05:29 21:14	05:06 21:46	05:27 21:35	06:13 20:44	07:03 18:41-19:02/21	07:53 18:27	07:47 16:32	08:27 14:13-14:28/15 16:15
19	08:22 16:49	07:33 17:45	06:32 18:35	06:22 20:27	05:28 21:16	05:06 21:46	05:28 21:34	06:15 20:42	07:04 18:40-19:01/21	07:54 18:25	07:49 16:31	08:28 14:12-14:28/16 16:15
20	08:21 16:51	07:31 17:47	06:30 18:37	06:20 20:29	05:26 21:17	05:06 21:47	05:29 21:32	06:16 20:40	07:06 18:40-19:01/21	07:56 18:23	07:51 16:29	08:28 14:13-14:29/16 16:16
21	08:20 16:53	07:29 17:49	06:27 18:38	06:18 20:31	05:25 21:19	05:06 21:47	05:30 21:31	06:18 20:38	07:08 18:40-19:00/20	07:58 18:21	07:52 16:28	08:29 14:13-14:29/16 16:16
22	08:19 16:54	07:27 17:51	06:25 18:40	06:16 20:32	05:24 21:20	05:06 21:47	05:32 21:30	06:19 20:35	07:09 18:40-18:58/18	08:00 18:18	07:54 16:27	08:29 14:14-14:30/16 16:17
23	08:18 16:56	07:25 17:53	06:23 18:42	06:14 20:34	05:22 21:22	05:06 21:47	05:33 21:29	06:21 20:33	07:11 18:41-18:56/15	08:01 18:16	07:56 16:26	08:30 14:14-14:30/16 16:17
24	08:16 16:58	07:23 17:54	06:21 18:43	06:12 20:36	05:21 21:23	05:07 21:48	05:35 21:27	06:23 20:31	07:13 18:42-18:53/11	08:03 18:14	07:57 16:25	08:30 14:15-14:31/16 16:18
25	08:15 17:00	07:21 17:56	06:18 18:45	06:10 20:37	05:20 21:24	05:07 21:48	05:36 21:26	06:24 20:29	07:14 18:44-18:51/7	07:05 17:12	07:59 16:24	08:31 14:15-14:31/16 16:18
26	08:14 17:01	07:19 17:58	06:16 18:47	06:08 20:39	05:19 21:26	05:07 21:48	05:37 21:24	06:26 20:27	07:16 18:44-18:51/7	07:07 17:10	08:01 16:23	08:31 14:16-14:31/15 16:19
27	08:13 17:03	07:17 18:00	06:14 18:48	06:06 20:41	05:18 21:27	05:08 21:48	05:39 21:23	06:27 20:25	07:17 19:14	07:09 17:08	08:02 16:22	08:31 14:16-14:31/15 16:20
28	08:11 17:05	07:15 18:02	06:11 18:50	06:04 20:42	05:17 21:28	05:08 21:47	05:40 21:22	06:29 20:23	07:19 19:11	07:10 17:06	08:04 16:21	08:32 14:17-14:31/14 16:21
29	08:10 17:07	07:09 18:08	06:09 19:52	06:02 20:44	05:16 21:29	05:09 21:47	05:42 21:20	06:31 20:20	07:21 19:09	07:12 17:05	08:05 16:20	08:32 14:18-14:31/13 16:22
30	08:08 17:08	07:07 19:04	06:08 19:10/16	06:00 20:46	05:15 21:31	05:09 21:47	05:43 21:18	06:32 20:18	07:22 19:07	07:14 17:03	08:07 16:20	08:32 14:19-14:31/12 16:22
31	08:07 17:10	07:04 19:55	06:07 19:08/12	06:00 20:46	05:14 21:32	05:45 21:47	06:34 21:17	06:34 20:16	19:07	07:16 17:01	08:32 16:23	14:20-14:31/11 16:23
Sonnenscheinstunden	260	278	367	416	484	498	501	453	381	332	267	245
Anzahl Minuten mit Schatten	15	0	237	6	0	0	0	0	246	0	0	300

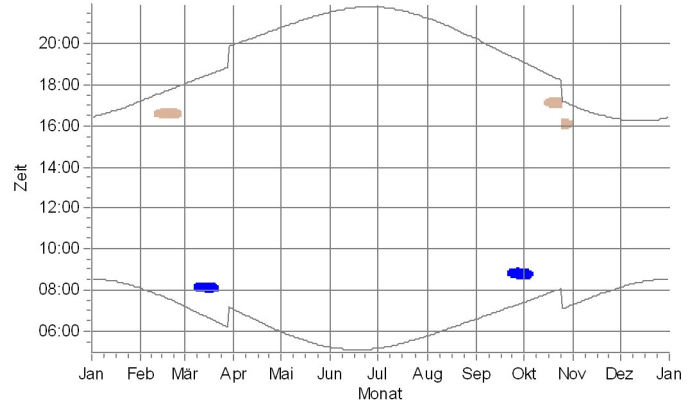
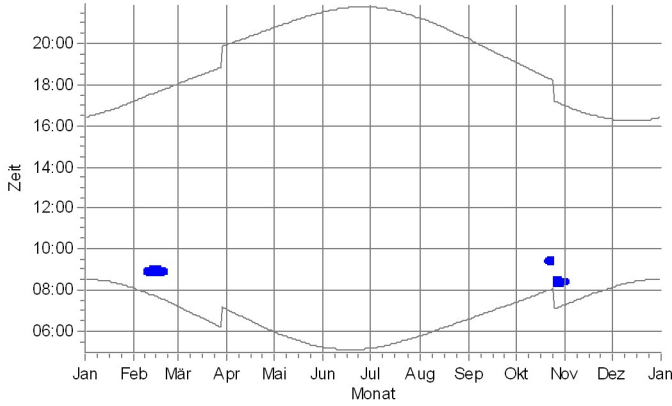
Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM)	Schattenanfang-Zeitpunkt (SS:MM)	Schattenende/Minuten mit Schatten
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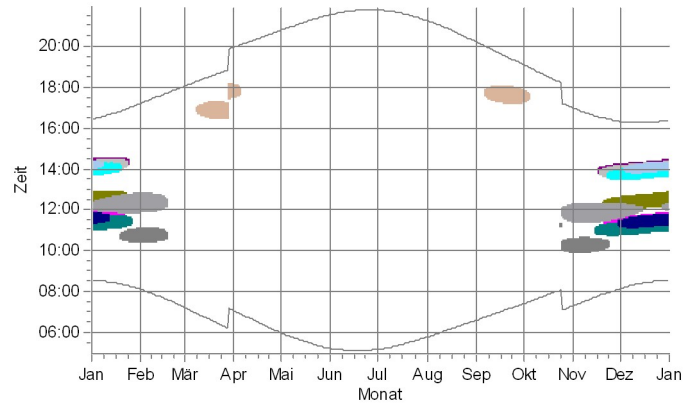
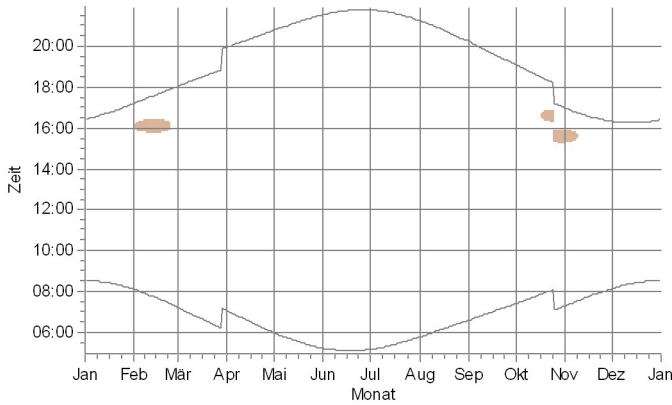
## SHADOW - Grafischer Kalender pro WEA

Berechnung: GB Keimberg

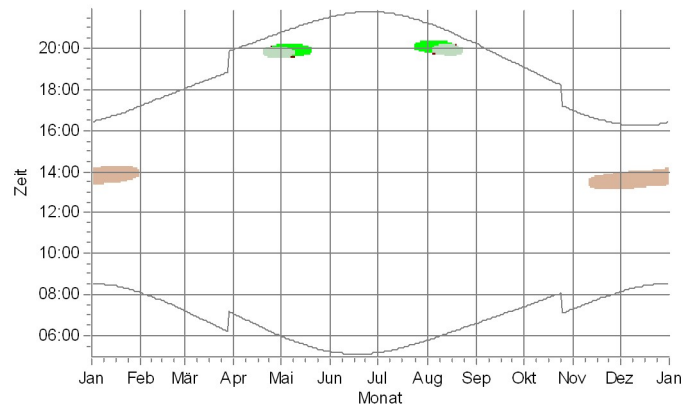
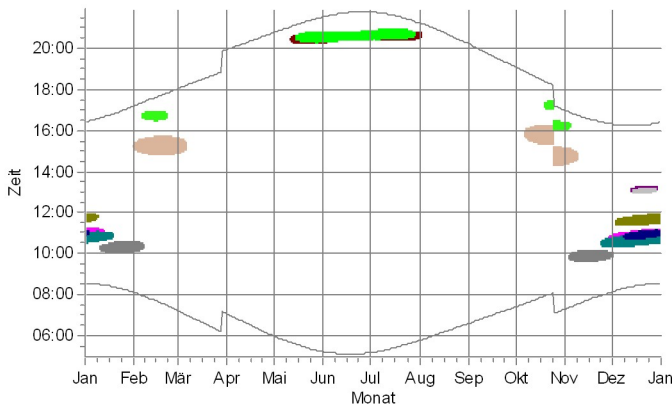
WEA 01: VESTAS V136-4.2 4200 136.0 !O! NH: 112,0 m (Ges:180,0 m) (158) WEA 02: VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (151)



















WEA 03: VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (157) WEA 04: VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (154)



WEA 05: VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (156) WEA 06: VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (155)



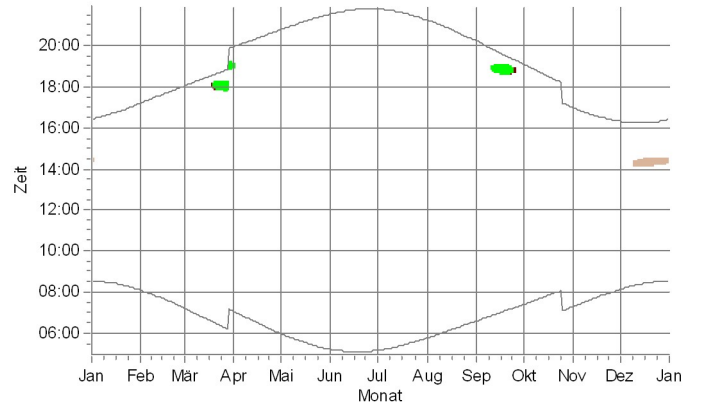
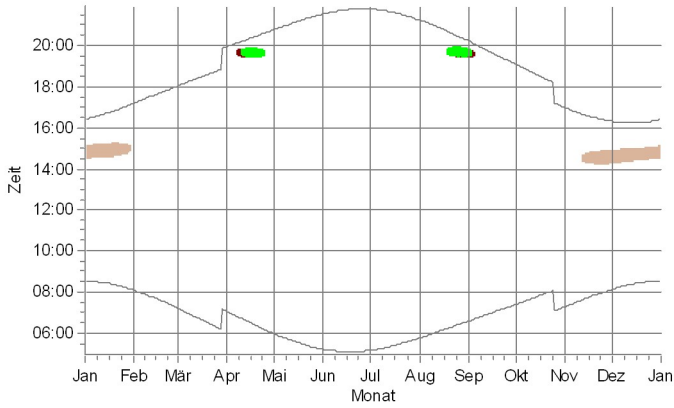
### Schattenrezeptoren

	SR C: Dune 1, 33100 Paderborn		SR I: Am Keimberg 64, 33184 Altenbeken		SR P: Am Stapelsberg 97, 33184 Altenbeken
	SR D: Am Hammer 20, 33184 Altenbeken		SR K: Am Hammer 11, 33184 Altenbeken		SR Q: Am Hammer 30, 33184 Altenbeken
	SR E: Am Hammer 16, 33184 Altenbeken		SR L: Am Hammer 12, 33184 Altenbeken		SR R: Am Hammer 15, 33184 Altenbeken
	SR F: Am Hammer 18, 33184 Altenbeken		SR M: Am Hammer 13, 33184 Altenbeken		SR S: Wienackerstr. 25, 33184 Altenbeken
	SR G: Am Hammer 17, 33184 Altenbeken		SR N: Am Hammer 14, 33184 Altenbeken		
	SR H: Am Keimberg 62, 33184 Altenbeken		SR O: Dorfstraße 52, 33184 Altenbeken		

## SHADOW - Grafischer Kalender pro WEA

Berechnung: GB Keimberg

WEA 07: VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (153) WEA 08: VESTAS V162-7.2 7200 162.0 !O! NH: 169,0 m (Ges:250,0 m) (152)



### Schattenrezeptoren

SR H: Am Keimberg 62, 33184 Altenbeken

SR I: Am Keimberg 64, 33184 Altenbeken

SR R: Am Hammer 15, 33184 Altenbeken