

## SHADOW - Hauptergebnis

Berechnung: 241\_16\_702\_Schatten\_Oberfeld  
Annahmen für Schattenwurfberechnung

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

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

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsstunden ermittelt aus WEA in Berechnung und Windverteilung:  
MAST\_2015\_2016\_Oberf\_gefilt\_LANG\_Erg

Betriebsdauer je Sektor  
N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

Eine WEA wird nicht berücksichtigt, wenn sie von keinem Teil der  
Rezeptorfläche aus sichtbar ist. Die Sichtbarkeitsberechnung basiert auf  
den folgenden Annahmen:  
Verwendete Höhenlinien: Höhenlinien: Appenzell\_Hoe 5m\_10\_R30km  
Areal-Objekt(e) verwendet in Berechnung:  
Waelder App\_2022  
Rasterauflösung: 1,0 m

Alle Koordinatenangaben in:  
Swiss (LV95)-CH1903+ (CH/LI 1993)

### WEA

O	N	Z	Beschreibung	WEA-Typ			Nennleistung	Rotor-durchmesser	Nabenhöhe	Schattendaten	
				Aktuell	Hersteller	Typ				Beschatt.-Bereich	U/min
							[kW]	[m]	[m]	[m]	[U/min]
1	2.757.344	1.252.243	1.106,2 WEA 1	Ja	ENERCON	E-138 EP3 E3-4.260	4.260	138,3	131,0	1.688	11,1
2	2.757.070	1.252.554	1.110,0 WEA 2	Ja	ENERCON	E-138 EP3 E3-4.260	4.260	138,3	131,0	1.688	11,1

### Schattenrezeptor-Eingabe

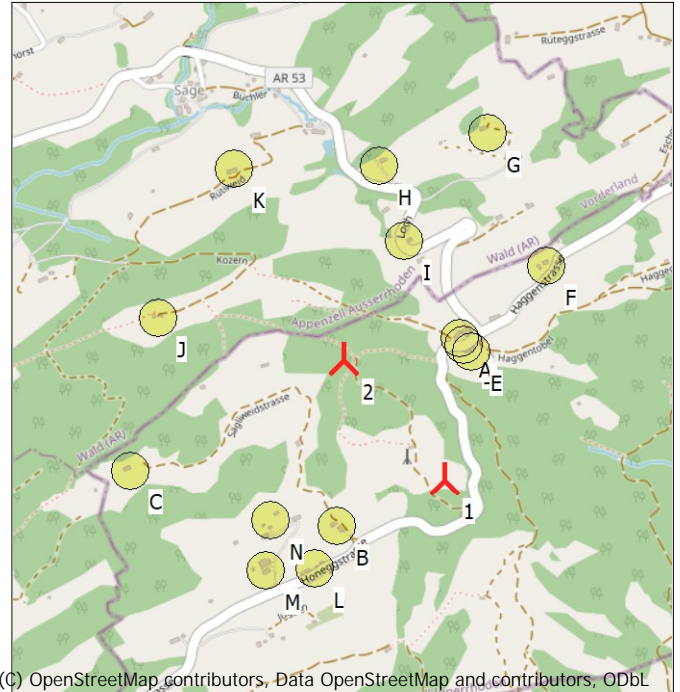
Nr.	Name	O	N	Z	Breite	Höhe	Höhe ü.Gr.	Neigung des Fensters	Ausrichtungsmodus	Augenhöhe (ZVI) ü.Gr.
					[m]	[m]	[m]	[°]		[m]
A	Haggen 2	2.757.378	1.252.620	1.049,5	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0
B	Honegg 1	2.757.064	1.252.114	1.056,2	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0
C	Sägliroet 1	2.756.513	1.252.250	1.026,9	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0
D	Haggen 4	2.757.389	1.252.604	1.050,0	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0
E	Haggen 1	2.757.409	1.252.586	1.047,8	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0
F	Haggen 3	2.757.603	1.252.816	1.070,0	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0
G	Erbskraut 1	2.757.438	1.253.163	1.044,0	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0
H	Rütiweid 1	2.757.153	1.253.068	1.000,1	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0
I	Rütiweid 2	2.757.222	1.252.874	1.005,0	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0
J	Chozeren 1	2.756.576	1.252.652	1.072,5	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0
K	Rütiweid 3	2.756.767	1.253.053	1.005,4	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0
L	Honegg 2	2.757.008	1.251.998	1.046,6	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0
M	Honegg 3	2.756.880	1.251.994	1.025,9	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0
N	Honegg 4	2.756.889	1.252.125	1.036,4	5,0	5,0	4,0	90,0	"Gewächshaus-Modus"	9,0

### Berechnungsergebnisse

#### Schattenrezeptor

Nr.	Name	astron. max. mögl. Beschattungsdauer			met. wahrsch. Beschattungsdauer	
		Stunden/Jahr	Schattentage/Jahr	Max.Schattendauer/Tag	Stunden/Jahr	Stunden/Jahr
		[h/a]	[d/a]	[h/d]	[h/a]	[h/a]
A	Haggen 2	347:03	298	1:29	60:35	60:35
B	Honegg 1	0:00	0	0:00	0:00	0:00

(Fortsetzung nächste Seite)...



(C) OpenStreetMap contributors, Data OpenStreetMap and contributors, ODbL

Maßstab 1:20.000  
▲ Neue WEA  
● Schattenrezeptor

## SHADOW - Hauptergebnis

Berechnung: 241\_16\_702\_Schatten\_Oberfeld

...(Fortsetzung von vorheriger Seite)

Nr.	Name	astron. max. mögl. Beschattungsdauer			met. wahrsch. Beschattungsdauer
		Stunden/Jahr [h/a]	Schattentage/Jahr [d/a]	Max.Schattendauer/Tag [h/d]	Stunden/Jahr [h/a]
C	Sägliroeit 1	26:51	54	0:39	6:14
D	Haggen 4	351:21	297	1:28	61:45
E	Haggen 1	339:11	296	1:27	60:12
F	Haggen 3	107:47	145	0:56	14:43
G	Erbskraut 1	65:34	92	0:48	7:01
H	Rütiweid 1	0:00	0	0:00	0:00
I	Rütiweid 2	156:52	174	1:18	21:28
J	Chozeren 1	65:06	82	1:02	14:13
K	Rütiweid 3	101:24	126	1:05	11:28
L	Honegg 2	0:00	0	0:00	0:00
M	Honegg 3	0:00	0	0:00	0:00
N	Honegg 4	85:24	90	1:09	19:04

### Gesamtdauer Beschattung an Rezeptoren pro WEA

Nr.	Name	Maximal	Erwartet
		[h/a]	[h/a]
1	WEA 1	482:55	66:08
2	WEA 2	575:34	108:42

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

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

## SHADOW - Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld  
Annahmen für Schattenwurfberechnung

Schattenrezeptor: A - Haggen 2

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Januar		Februar		März		April		Mai		Juni					
1	08:10	12:18 (1)	07:50	12:19 (1)	07:05	07:03	17:26 (2)	06:07	16:42 (2)	05:30	17:01 (2)					
	16:42	63	13:21 (1)	17:23	82	13:41 (1)	18:06	19:51	9	17:35 (2)	20:33	88	18:10 (2)	21:11	63	18:04 (2)
2	08:10	12:18 (1)	07:48	12:18 (1)	07:03	07:01	17:17 (2)	06:06	16:42 (2)	05:30	17:02 (2)					
	16:43	64	13:22 (1)	17:24	83	13:41 (1)	18:08	19:52	26	17:43 (2)	20:34	89	18:11 (2)	21:11	62	18:04 (2)
3	08:10	12:18 (1)	07:47	12:19 (1)	07:01	06:59	17:12 (2)	06:04	16:42 (2)	05:29	17:02 (2)					
	16:44	64	13:22 (1)	17:26	82	13:41 (1)	18:09	19:54	35	17:47 (2)	20:35	88	18:10 (2)	21:12	62	18:04 (2)
4	08:10	12:18 (1)	07:46	12:20 (1)	06:59	06:57	17:09 (2)	06:03	16:43 (2)	05:28	17:03 (2)					
	16:45	65	13:23 (1)	17:27	82	13:42 (1)	18:11	19:55	41	17:50 (2)	20:37	87	18:10 (2)	21:13	61	18:04 (2)
5	08:10	12:18 (1)	07:44	12:19 (1)	06:57	06:55	17:05 (2)	06:01	16:43 (2)	05:28	17:04 (2)					
	16:46	66	13:24 (1)	17:29	82	13:41 (1)	18:12	19:56	47	17:52 (2)	20:38	87	18:10 (2)	21:14	59	18:03 (2)
6	08:10	12:19 (1)	07:43	12:20 (1)	06:55	06:53	17:03 (2)	06:00	16:43 (2)	05:27	17:05 (2)					
	16:47	66	13:25 (1)	17:31	82	13:42 (1)	18:14	19:58	51	17:54 (2)	20:40	87	18:10 (2)	21:15	58	18:03 (2)
7	08:09	12:18 (1)	07:42	12:20 (1)	06:53	06:51	17:00 (2)	05:58	16:43 (2)	05:27	17:05 (2)					
	16:48	67	13:25 (1)	17:32	81	13:41 (1)	18:15	19:59	56	17:56 (2)	20:41	86	18:09 (2)	21:16	57	18:02 (2)
8	08:09	12:18 (1)	07:40	12:21 (1)	06:51	06:49	16:58 (2)	05:57	16:44 (2)	05:27	17:06 (2)					
	16:49	69	13:27 (1)	17:34	80	13:41 (1)	18:16	20:01	59	17:57 (2)	20:42	86	18:10 (2)	21:16	57	18:03 (2)
9	08:09	12:18 (1)	07:39	12:21 (1)	06:49	06:47	16:56 (2)	05:55	16:45 (2)	05:26	17:06 (2)					
	16:50	69	13:27 (1)	17:35	80	13:41 (1)	18:18	20:02	63	17:59 (2)	20:44	85	18:10 (2)	21:17	57	18:03 (2)
10	08:08	12:18 (1)	07:37	12:22 (1)	06:47	06:45	16:55 (2)	05:54	16:45 (2)	05:26	17:07 (2)					
	16:51	70	13:28 (1)	17:37	79	13:41 (1)	18:19	20:03	65	18:00 (2)	20:45	84	18:09 (2)	21:18	56	18:03 (2)
11	08:08	12:18 (1)	07:36	12:22 (1)	06:45	06:44	16:53 (2)	05:52	16:46 (2)	05:26	17:07 (2)					
	16:53	71	13:29 (1)	17:38	78	13:40 (1)	18:21	20:05	68	18:01 (2)	20:46	83	18:09 (2)	21:18	55	18:02 (2)
12	08:08	12:18 (1)	07:34	12:22 (1)	06:43	06:42	16:51 (2)	05:51	16:46 (2)	05:25	17:08 (2)					
	16:54	72	13:30 (1)	17:40	77	13:39 (1)	18:22	20:06	71	18:02 (2)	20:48	83	18:09 (2)	21:19	54	18:02 (2)
13	08:07	12:18 (1)	07:33	12:23 (1)	06:41	06:40	16:50 (2)	05:50	16:46 (2)	05:25	17:08 (2)					
	16:55	72	13:30 (1)	17:42	77	13:40 (1)	18:24	20:08	73	18:03 (2)	20:49	82	18:08 (2)	21:20	54	18:02 (2)
14	08:07	12:19 (1)	07:31	12:24 (1)	06:39	06:38	16:49 (2)	05:48	16:47 (2)	05:25	17:09 (2)					
	16:56	73	13:32 (1)	17:43	75	13:39 (1)	18:25	20:09	76	18:05 (2)	20:50	81	18:08 (2)	21:20	53	18:02 (2)
15	08:06	12:18 (1)	07:29	12:24 (1)	06:37	06:36	16:48 (2)	05:47	16:48 (2)	05:25	17:09 (2)					
	16:58	74	13:32 (1)	17:45	74	13:38 (1)	18:27	20:10	78	18:06 (2)	20:51	80	18:08 (2)	21:21	53	18:02 (2)
16	08:05	12:18 (1)	07:28	12:26 (1)	06:35	06:34	16:47 (2)	05:46	16:49 (2)	05:25	17:10 (2)					
	16:59	75	13:33 (1)	17:46	71	13:37 (1)	18:28	20:12	79	18:06 (2)	20:53	79	18:08 (2)	21:21	52	18:02 (2)
17	08:05	12:18 (1)	07:26	12:27 (1)	06:33	06:32	16:46 (2)	05:44	16:50 (2)	05:25	17:10 (2)					
	17:01	75	13:33 (1)	17:48	69	13:36 (1)	18:30	20:13	81	18:07 (2)	20:54	78	18:08 (2)	21:22	52	18:02 (2)
18	08:04	12:18 (1)	07:24	12:28 (1)	06:31	06:30	16:45 (2)	05:43	16:50 (2)	05:25	17:11 (2)					
	17:02	76	13:34 (1)	17:49	67	13:35 (1)	18:31	20:15	82	18:07 (2)	20:55	78	18:08 (2)	21:22	51	18:02 (2)
19	08:03	12:18 (1)	07:23	12:29 (1)	06:29	06:28	16:44 (2)	05:42	16:51 (2)	05:25	17:11 (2)					
	17:03	77	13:35 (1)	17:51	64	13:33 (1)	18:32	20:16	83	18:07 (2)	20:56	77	18:08 (2)	21:22	52	18:03 (2)
20	08:02	12:18 (1)	07:21	12:31 (1)	06:27	06:27	16:44 (2)	05:41	16:52 (2)	05:25	17:11 (2)					
	17:05	78	13:36 (1)	17:52	62	13:33 (1)	18:34	20:17	85	18:09 (2)	20:58	75	18:07 (2)	21:23	52	18:03 (2)
21	08:02	12:18 (1)	07:19	12:33 (1)	06:25	06:25	16:43 (2)	05:40	16:53 (2)	05:25	17:12 (2)					
	17:06	79	13:37 (1)	17:54	58	13:31 (1)	18:35	20:19	86	18:09 (2)	20:59	74	18:07 (2)	21:23	52	18:04 (2)
22	08:01	12:18 (1)	07:17	12:35 (1)	06:23	06:23	16:43 (2)	05:39	16:53 (2)	05:25	17:12 (2)					
	17:08	79	13:37 (1)	17:55	53	13:28 (1)	18:37	20:20	86	18:09 (2)	21:00	74	18:07 (2)	21:23	52	18:04 (2)
23	08:00	12:18 (1)	07:16	12:37 (1)	06:21	06:21	16:42 (2)	05:38	16:54 (2)	05:26	17:12 (2)					
	17:09	80	13:38 (1)	17:57	49	13:26 (1)	18:38	20:22	87	18:09 (2)	21:01	73	18:07 (2)	21:23	52	18:04 (2)
24	07:59	12:18 (1)	07:14	12:41 (1)	06:19	06:19	16:42 (2)	05:37	16:55 (2)	05:26	17:12 (2)					
	17:11	80	13:38 (1)	17:59	42	13:23 (1)	18:40	20:23	88	18:10 (2)	21:02	71	18:06 (2)	21:23	52	18:04 (2)
25	07:58	12:18 (1)	07:12	12:45 (1)	06:17	06:18	16:42 (2)	05:36	16:52 (2)	05:26	17:12 (2)					
	17:12	81	13:39 (1)	18:00	34	13:19 (1)	18:41	20:24	88	18:10 (2)	21:03	71	18:06 (2)	21:23	52	18:04 (2)
26	07:57	12:18 (1)	07:10	12:53 (1)	06:15	06:16	16:41 (2)	05:35	16:56 (2)	05:27	17:12 (2)					
	17:14	81	13:39 (1)	18:02	20	13:13 (1)	18:42	20:26	89	18:10 (2)	21:04	69	18:05 (2)	21:23	52	18:04 (2)
27	07:56	12:18 (1)	07:08	06:13	06:14	06:14	16:42 (2)	05:34	16:57 (2)	05:27	17:12 (2)					
	17:15	81	13:39 (1)	18:03	18:44	20:27	88	18:10 (2)	21:05	68	18:05 (2)	21:23	52	18:04 (2)		
28	07:55	12:18 (1)	07:07	06:11	06:12	06:12	16:42 (2)	05:33	16:58 (2)	05:27	17:12 (2)					
	17:17	82	13:40 (1)	18:05	18:45	20:29	88	18:10 (2)	21:07	67	18:05 (2)	21:23	53	18:05 (2)		
29	07:53	12:18 (1)		07:09	06:11	06:11	16:41 (2)	05:32	16:59 (2)	05:28	17:12 (2)					
	17:18	82	13:40 (1)		19:47	20:30	89	18:10 (2)	21:08	66	18:05 (2)	21:23	53	18:05 (2)		
30	07:52	12:18 (1)		07:07	06:09	06:09	16:42 (2)	05:32	16:59 (2)	05:28	17:12 (2)					
	17:20	82	13:40 (1)		19:48	20:31	88	18:10 (2)	21:09	65	18:04 (2)	21:23	54	18:06 (2)		
31	07:51	12:18 (1)		07:05			07:05		05:31		17:00 (2)					
	17:21	83	13:41 (1)		19:49		19:49		21:10	65	18:05 (2)					
Sonnenscheinstunden	277		287		368		408		468		476					
astr.max.mögl.Beschattung	2296		1783		2105		2426		1644							
Red.Sonnenscheinwahrsch.	0,21		0,28		0,42		0,40		0,42							
Reduktion Betriebsdauer	0,81		0,81		0,81		0,81		0,81							
Reduktion Windrichtung	0,62		0,62		0,64		0,64		0,64							
Gesamte Reduktion	0,10		0,14		0,22		0,21		0,22							
Met.wahrsch.Beschattung	236		246		458		499		360							

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) Schatteneende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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## SHADOW - Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld Schattenrezeptor: A - Haggen 2  
Annahmen für Schattenwurfberechnung  
Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor  
N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Juli		August		September		Oktober		November		Dezember					
1	05:29	17:11 (2)	05:59	16:57 (2)	06:40	16:52 (2)	07:20	07:05	11:50 (1)	07:48	12:00 (1)					
	21:23	55	18:06 (2)	20:58	83	18:20 (2)	20:05	68	18:00 (2)	19:04	17:07	80	13:10 (1)	16:34	71	13:11 (1)
2	05:30	17:12 (2)	06:00	16:56 (2)	06:41	16:54 (2)	07:21	07:06	11:50 (1)	07:49	12:01 (1)					
	21:23	55	18:07 (2)	20:56	84	18:20 (2)	20:03	65	17:59 (2)	19:02	17:05	80	13:10 (1)	16:34	70	13:11 (1)
3	05:30	17:12 (2)	06:02	16:55 (2)	06:43	16:54 (2)	07:23	07:08	11:50 (1)	07:50	12:02 (1)					
	21:22	56	18:08 (2)	20:55	85	18:20 (2)	20:01	63	17:57 (2)	19:00	17:04	81	13:11 (1)	16:33	69	13:11 (1)
4	05:31	17:11 (2)	06:03	16:54 (2)	06:44	16:55 (2)	07:24	07:09	11:50 (1)	07:51	12:02 (1)					
	21:22	57	18:08 (2)	20:53	85	18:19 (2)	19:59	60	17:55 (2)	18:58	17:02	81	13:11 (1)	16:33	69	13:11 (1)
5	05:32	17:11 (2)	06:04	16:53 (2)	06:45	16:56 (2)	07:26	07:11	11:50 (1)	07:53	12:03 (1)					
	21:22	58	18:09 (2)	20:52	86	18:19 (2)	19:57	56	17:52 (2)	18:56	17:01	81	13:11 (1)	16:33	68	13:11 (1)
6	05:32	17:11 (2)	06:06	16:54 (2)	06:47	16:59 (2)	07:27	07:12	11:49 (1)	07:54	12:05 (1)					
	21:21	58	18:09 (2)	20:50	86	18:20 (2)	19:55	51	17:50 (2)	18:54	16:59	82	13:11 (1)	16:32	66	13:11 (1)
7	05:33	17:10 (2)	06:07	16:53 (2)	06:48	17:00 (2)	07:28	07:14	11:49 (1)	07:55	12:05 (1)					
	21:21	59	18:09 (2)	20:49	87	18:20 (2)	19:53	47	17:47 (2)	18:52	16:58	83	13:12 (1)	16:32	66	13:11 (1)
8	05:34	17:10 (2)	06:08	16:52 (2)	06:49	17:02 (2)	07:30	07:15	11:50 (1)	07:56	12:06 (1)					
	21:21	60	18:10 (2)	20:47	87	18:19 (2)	19:51	42	17:44 (2)	18:50	16:57	82	13:12 (1)	16:32	65	13:11 (1)
9	05:35	17:10 (2)	06:09	16:51 (2)	06:51	17:06 (2)	07:31	07:17	11:49 (1)	07:57	12:07 (1)					
	21:20	61	18:11 (2)	20:46	88	18:19 (2)	19:49	35	17:41 (2)	18:48	16:55	83	13:12 (1)	16:32	64	13:11 (1)
10	05:35	17:10 (2)	06:11	16:51 (2)	06:52	17:10 (2)	07:32	07:18	11:50 (1)	07:58	12:07 (1)					
	21:19	61	18:11 (2)	20:44	89	18:20 (2)	19:47	26	17:36 (2)	18:46	16:54	82	13:12 (1)	16:32	64	13:11 (1)
11	05:36	17:09 (2)	06:12	16:51 (2)	06:53	17:16 (2)	07:34	07:20	11:49 (1)	07:59	12:08 (1)					
	21:19	63	18:12 (2)	20:43	88	18:19 (2)	19:45	12	17:28 (2)	18:44	16:53	83	13:12 (1)	16:32	63	13:11 (1)
12	05:37	17:08 (2)	06:13	16:50 (2)	06:54	17:35	07:35	07:21	11:50 (1)	08:00	12:09 (1)					
	21:18	64	18:12 (2)	20:41	89	18:19 (2)	19:43	18:42	16:51	82	13:12 (1)	16:32	63	13:12 (1)		
13	05:38	17:08 (2)	06:15	16:49 (2)	06:56	07:37	07:37	07:23	11:50 (1)	08:01	12:10 (1)					
	21:18	64	18:12 (2)	20:39	89	18:18 (2)	19:41	18:40	16:50	82	13:12 (1)	16:32	62	13:12 (1)		
14	05:39	17:07 (2)	06:16	16:50 (2)	06:57	07:38	07:38	07:24	11:50 (1)	08:02	12:11 (1)					
	21:17	66	18:13 (2)	20:38	88	18:18 (2)	19:39	18:38	16:49	82	13:12 (1)	16:32	61	13:12 (1)		
15	05:40	17:07 (2)	06:17	16:49 (2)	06:58	07:40	07:40	07:26	11:51 (1)	08:02	12:11 (1)					
	21:16	67	18:14 (2)	20:36	89	18:18 (2)	19:36	18:36	16:48	81	13:12 (1)	16:32	61	13:12 (1)		
16	05:41	17:06 (2)	06:19	16:49 (2)	07:00	07:41	07:41	13:21 (1)	07:27	11:51 (1)	08:03	12:11 (1)				
	21:15	68	18:14 (2)	20:34	88	18:17 (2)	19:34	18:35	26	13:47 (1)	16:47	81	13:12 (1)	16:32	61	13:12 (1)
17	05:42	17:06 (2)	06:20	16:48 (2)	07:01	07:42	07:42	13:15 (1)	07:29	11:51 (1)	08:04	12:12 (1)				
	21:14	69	18:15 (2)	20:32	88	18:16 (2)	19:32	18:33	37	13:52 (1)	16:45	81	13:12 (1)	16:32	61	13:13 (1)
18	05:43	17:05 (2)	06:21	16:49 (2)	07:02	07:44	07:44	13:11 (1)	07:30	11:52 (1)	08:05	12:12 (1)				
	21:14	70	18:15 (2)	20:31	87	18:16 (2)	19:30	18:31	44	13:55 (1)	16:44	80	13:12 (1)	16:33	60	13:12 (1)
19	05:44	17:05 (2)	06:23	16:48 (2)	07:04	07:45	07:45	13:08 (1)	07:31	11:52 (1)	08:05	12:13 (1)				
	21:13	70	18:15 (2)	20:29	87	18:15 (2)	19:28	18:29	50	13:58 (1)	16:43	80	13:12 (1)	16:33	60	13:13 (1)
20	05:45	17:04 (2)	06:24	16:48 (2)	07:05	07:47	07:47	13:05 (1)	07:33	11:53 (1)	08:06	12:14 (1)				
	21:12	72	18:16 (2)	20:27	86	18:14 (2)	19:26	18:27	55	14:00 (1)	16:42	79	13:12 (1)	16:33	60	13:14 (1)
21	05:46	17:03 (2)	06:25	16:47 (2)	07:06	07:48	07:48	13:03 (1)	07:34	11:53 (1)	08:07	12:14 (1)				
	21:11	73	18:16 (2)	20:25	86	18:13 (2)	19:24	18:25	59	14:02 (1)	16:41	79	13:12 (1)	16:34	60	13:14 (1)
22	05:47	17:03 (2)	06:27	16:48 (2)	07:08	07:50	07:50	13:00 (1)	07:36	11:54 (1)	08:07	12:15 (1)				
	21:10	74	18:17 (2)	20:23	85	18:13 (2)	19:22	18:24	63	14:03 (1)	16:41	78	13:12 (1)	16:34	60	13:15 (1)
23	05:48	17:02 (2)	06:28	16:48 (2)	07:09	07:51	07:51	12:59 (1)	07:37	11:54 (1)	08:08	12:15 (1)				
	21:09	75	18:17 (2)	20:22	84	18:12 (2)	19:20	18:22	65	14:04 (1)	16:40	77	13:11 (1)	16:35	60	13:15 (1)
24	05:50	17:01 (2)	06:29	16:48 (2)	07:10	07:53	07:53	12:58 (1)	07:39	11:56 (1)	08:08	12:15 (1)				
	21:07	76	18:17 (2)	20:20	83	18:11 (2)	19:18	18:20	68	14:06 (1)	16:39	76	13:12 (1)	16:35	60	13:15 (1)
25	05:51	17:01 (2)	06:31	16:48 (2)	07:12	06:54	06:54	11:56 (1)	07:40	11:56 (1)	08:08	12:16 (1)				
	21:06	77	18:18 (2)	20:18	82	18:10 (2)	19:16	17:18	70	13:06 (1)	16:38	75	13:11 (1)	16:36	60	13:16 (1)
26	05:52	17:01 (2)	06:32	16:49 (2)	07:13	06:56	06:56	11:55 (1)	07:41	11:57 (1)	08:09	12:16 (1)				
	21:05	78	18:19 (2)	20:16	80	18:09 (2)	19:14	17:17	72	13:07 (1)	16:37	75	13:12 (1)	16:37	61	13:17 (1)
27	05:53	17:00 (2)	06:33	16:49 (2)	07:15	06:57	06:57	11:54 (1)	07:43	11:57 (1)	08:09	12:16 (1)				
	21:04	79	18:19 (2)	20:14	79	18:08 (2)	19:12	17:15	73	13:07 (1)	16:37	74	13:11 (1)	16:37	61	13:17 (1)
28	05:54	16:59 (2)	06:35	16:49 (2)	07:16	06:59	06:59	11:53 (1)	07:44	11:58 (1)	08:09	12:16 (1)				
	21:03	80	18:19 (2)	20:12	77	18:06 (2)	19:10	17:13	75	13:08 (1)	16:36	73	13:11 (1)	16:38	61	13:17 (1)
29	05:56	16:58 (2)	06:36	16:50 (2)	07:17	07:00	07:00	11:52 (1)	07:45	11:59 (1)	08:10	12:18 (1)				
	21:01	81	18:19 (2)	20:10	76	18:06 (2)	19:08	17:12	76	13:08 (1)	16:35	72	13:11 (1)	16:39	61	13:19 (1)
30	05:57	16:57 (2)	06:37	16:51 (2)	07:19	07:02	07:02	11:52 (1)	07:47	11:59 (1)	08:10	12:18 (1)				
	21:00	82	18:19 (2)	20:08	73	18:04 (2)	19:06	17:10	77	13:09 (1)	16:35	72	13:11 (1)	16:40	62	13:20 (1)
31	05:58	16:56 (2)	06:39	16:51 (2)	07:20	07:03	07:03	11:51 (1)	07:48	11:51 (1)	08:10	12:18 (1)				
	20:59	83	18:19 (2)	20:06	71	18:02 (2)	19:04	17:08	79	13:10 (1)	16:40	62	13:20 (1)			
Sonnenscheinstunden	481		442		378		338		281		265		1952			
astr.max.mögl.Beschattung	2111		2615		525		989		2377		1952					
Red.Sonnenscheinwahrsch.	0,47		0,46		0,40		0,30		0,21		0,19					
Reduktion Betriebsdauer	0,81		0,81		0,81		0,81		0,81		0,81					
Reduktion Windrichtung	0,64		0,64		0,64		0,62		0,62		0,62					
Gesamte Reduktion	0,24		0,24		0,21		0,15		0,11		0,09					
Met.wahrsch.Beschattung	513		631		110		146		253		182					

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: 241\_16\_702\_Schatten\_Oberfeld  
Annahmen für Schattenwurfberechnung

Schattenrezeptor: B - Honegg 1

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:10 16:42	07:50 17:23	07:05 18:06	07:03 19:51	06:07 20:33	05:30 21:11	05:29 21:23	05:59 20:58	06:40 20:05	07:20 19:04	07:05 17:07	07:48 16:34
2	08:10 16:43	07:48 17:24	07:03 18:08	07:01 19:52	06:06 20:34	05:30 21:11	05:30 21:23	06:00 20:56	06:41 20:03	07:21 19:02	07:06 17:05	07:49 16:34
3	08:10 16:44	07:47 17:26	07:01 18:09	06:59 19:54	06:04 20:35	05:29 21:12	05:30 21:22	06:02 20:55	06:43 20:01	07:23 19:00	07:08 17:04	07:50 16:33
4	08:10 16:45	07:46 17:27	06:59 18:11	06:57 19:55	06:03 20:37	05:28 21:13	05:31 21:22	06:03 20:53	06:44 19:59	07:24 18:58	07:09 17:02	07:51 16:33
5	08:10 16:46	07:44 17:29	06:57 18:12	06:55 19:56	06:01 20:38	05:28 21:14	05:32 21:22	06:04 20:52	06:45 19:57	07:26 18:56	07:11 17:01	07:53 16:33
6	08:10 16:47	07:43 17:31	06:55 18:14	06:53 19:58	06:00 20:40	05:27 21:15	05:32 21:21	06:06 20:50	06:47 19:55	07:27 18:54	07:12 16:59	07:54 16:32
7	08:09 16:48	07:42 17:32	06:53 18:15	06:51 19:59	05:58 20:41	05:27 21:16	05:33 21:21	06:07 20:49	06:48 19:53	07:28 18:52	07:14 16:58	07:55 16:32
8	08:09 16:49	07:40 17:34	06:51 18:17	06:49 20:01	05:57 20:42	05:27 21:16	05:34 21:21	06:08 20:47	06:49 19:51	07:30 18:50	07:15 16:57	07:56 16:32
9	08:09 16:50	07:39 17:35	06:49 18:18	06:47 20:02	05:55 20:44	05:26 21:17	05:35 21:20	06:09 20:46	06:51 19:49	07:31 18:48	07:17 16:55	07:57 16:32
10	08:08 16:51	07:37 17:37	06:47 18:19	06:46 20:03	05:54 20:45	05:26 21:18	05:35 21:19	06:11 20:44	06:52 19:47	07:32 18:46	07:18 16:54	07:58 16:32
11	08:08 16:53	07:36 17:38	06:45 18:21	06:44 20:05	05:52 20:46	05:26 21:18	05:36 21:19	06:12 20:43	06:53 19:45	07:34 18:44	07:20 16:53	07:59 16:32
12	08:08 16:54	07:34 17:40	06:43 18:22	06:42 20:06	05:51 20:48	05:25 21:19	05:37 21:18	06:13 20:41	06:55 19:43	07:35 18:42	07:21 16:51	08:00 16:32
13	08:07 16:55	07:33 17:42	06:41 18:24	06:40 20:08	05:50 20:49	05:25 21:20	05:38 21:18	06:15 20:39	06:56 19:41	07:37 18:40	07:23 16:50	08:01 16:32
14	08:07 16:56	07:31 17:43	06:39 18:25	06:38 20:09	05:48 20:50	05:25 21:20	05:39 21:17	06:16 20:38	06:57 19:39	07:38 18:38	07:24 16:49	08:02 16:32
15	08:06 16:58	07:29 17:45	06:37 18:27	06:36 20:10	05:47 20:51	05:25 21:21	05:40 21:16	06:17 20:36	06:58 19:36	07:40 18:36	07:26 16:48	08:02 16:32
16	08:05 16:59	07:28 17:46	06:35 18:28	06:34 20:12	05:46 20:53	05:25 21:21	05:41 21:15	06:19 20:34	07:00 19:34	07:41 18:35	07:27 16:47	08:03 16:32
17	08:05 17:01	07:26 17:48	06:33 18:30	06:32 20:13	05:45 20:54	05:25 21:21	05:42 21:14	06:20 20:32	07:01 19:32	07:42 18:33	07:29 16:46	08:04 16:32
18	08:04 17:02	07:24 17:49	06:31 18:31	06:30 20:15	05:43 20:55	05:25 21:22	05:43 21:14	06:21 20:31	07:02 19:30	07:44 18:31	07:30 16:44	08:05 16:33
19	08:03 17:03	07:23 17:51	06:29 18:32	06:28 20:16	05:42 20:56	05:25 21:22	05:44 21:13	06:23 20:29	07:04 19:28	07:45 18:29	07:31 16:43	08:05 16:33
20	08:02 17:05	07:21 17:52	06:27 18:34	06:27 20:17	05:41 20:58	05:25 21:23	05:45 21:12	06:24 20:27	07:05 19:26	07:47 18:27	07:33 16:42	08:06 16:33
21	08:02 17:06	07:19 17:54	06:25 18:35	06:25 20:19	05:40 20:59	05:25 21:23	05:46 21:11	06:25 20:25	07:06 19:24	07:48 18:25	07:34 16:41	08:07 16:34
22	08:01 17:08	07:17 17:56	06:23 18:37	06:23 20:20	05:39 21:00	05:25 21:23	05:47 21:10	06:27 20:23	07:08 19:22	07:50 18:24	07:36 16:41	08:07 16:34
23	08:00 17:09	07:16 17:57	06:21 18:38	06:21 20:22	05:38 21:01	05:26 21:23	05:48 21:09	06:28 20:22	07:09 19:20	07:51 18:22	07:37 16:40	08:08 16:35
24	07:59 17:11	07:14 17:59	06:19 18:40	06:19 20:23	05:37 21:02	05:26 21:23	05:50 21:07	06:29 20:20	07:11 19:18	07:53 18:20	07:39 16:39	08:08 16:35
25	07:58 17:12	07:12 18:00	06:17 18:41	06:18 20:24	05:36 21:03	05:26 21:23	05:51 21:06	06:31 20:18	07:12 19:16	07:40 17:18	07:40 16:38	08:08 16:36
26	07:57 17:14	07:10 18:02	06:15 18:42	06:16 20:26	05:35 21:04	05:27 21:23	05:52 21:05	06:32 20:16	07:13 19:14	07:41 17:17	07:41 16:37	08:09 16:37
27	07:56 17:15	07:08 18:03	06:13 18:44	06:14 20:27	05:34 21:05	05:27 21:23	05:53 21:04	06:33 20:14	07:15 19:12	07:43 17:15	07:43 16:37	08:09 16:37
28	07:55 17:17	07:07 18:05	06:11 18:45	06:12 20:29	05:33 21:07	05:27 21:23	05:54 21:03	06:35 20:12	07:16 19:10	07:44 17:13	07:44 16:36	08:09 16:38
29	07:53 17:18	07:09 19:47	06:11 20:30	06:11 21:08	05:32 21:08	05:28 21:23	05:56 21:02	06:36 20:10	07:17 19:08	07:00 17:12	07:45 16:35	08:10 16:39
30	07:52 17:20	07:07 19:48	06:09 20:31	06:09 21:09	05:32 21:09	05:28 21:23	05:57 21:00	06:37 20:08	07:19 19:06	07:02 17:10	07:47 16:35	08:10 16:40
31	07:51 17:21	07:05 19:49	07:05 21:10	07:05 21:10	05:31 21:10	05:28 20:59	05:58 20:07	06:39 20:07	07:03 17:09	07:03 17:09	07:03 16:40	08:10 16:40
Sonnenscheinstunden	277	287	368	408	468	476	481	442	378	338	281	265
astr. max. mögl. Beschattung												
Red. Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met. wahrsch. Beschattung												

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

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

## SHADOW - Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld  
Annahmen für Schattenwurfberechnung

Schattenrezeptor: C - Sägliroeit 1

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember			
1	08:10	07:50	07:05	07:03	08:01 (1)	06:08	05:30	05:29	05:59	06:40	07:45 (1)	07:20	07:05	07:48	
	16:42	17:23	18:06	19:51	18	08:19 (1)	20:33	21:11	21:23	20:05	39	08:24 (1)	19:04	17:07	16:34
2	08:10	07:49	07:03	07:01	07:58 (1)	06:06	05:30	05:30	06:01	06:41	07:46 (1)	07:21	07:06	07:49	
	16:43	17:24	18:08	19:52	23	08:21 (1)	20:34	21:11	21:23	20:03	38	08:24 (1)	19:02	17:05	16:34
3	08:10	07:47	07:01	06:59	07:56 (1)	06:04	05:29	05:30	06:02	06:43	07:46 (1)	07:23	07:08	07:50	
	16:44	17:26	18:09	19:54	26	08:22 (1)	20:35	21:12	21:23	20:01	37	08:23 (1)	19:00	17:04	16:33
4	08:10	07:46	06:59	06:57	07:54 (1)	06:03	05:28	05:31	06:03	06:44	07:46 (1)	07:24	07:09	07:51	
	16:45	17:28	18:11	19:55	29	08:23 (1)	20:37	21:13	21:22	20:05	36	08:22 (1)	18:58	17:02	16:33
5	08:10	07:45	06:57	06:55	07:52 (1)	06:01	05:28	05:32	06:04	06:45	07:47 (1)	07:26	07:11	07:53	
	16:46	17:29	18:12	19:56	32	08:24 (1)	20:38	21:14	21:22	20:05	35	08:22 (1)	18:56	17:01	16:33
6	08:10	07:43	06:55	06:53	07:51 (1)	06:00	05:27	05:32	06:06	06:47	07:47 (1)	07:27	07:12	07:54	
	16:47	17:31	18:14	19:58	34	08:25 (1)	20:40	21:15	21:21	20:05	34	08:21 (1)	18:54	16:59	16:32
7	08:09	07:42	06:53	06:51	07:50 (1)	05:58	05:27	05:33	06:07	06:48	07:47 (1)	07:28	07:14	07:55	
	16:48	17:32	18:15	19:59	35	08:25 (1)	20:41	21:16	21:21	20:05	32	08:19 (1)	18:52	16:58	16:32
8	08:09	07:40	06:51	06:49	07:49 (1)	05:57	05:27	05:34	06:08	06:49	07:48 (1)	07:30	07:15	07:56	
	16:49	17:34	18:17	20:01	36	08:25 (1)	20:42	21:16	21:21	20:05	29	08:17 (1)	18:50	16:57	16:32
9	08:09	07:39	06:49	06:47	07:48 (1)	05:55	05:26	05:35	06:09	06:51	07:50 (1)	07:31	07:17	07:57	
	16:50	17:35	18:18	20:02	37	08:25 (1)	20:44	21:17	21:20	20:05	26	08:16 (1)	18:48	16:55	16:32
10	08:08	07:37	06:47	06:46	07:47 (1)	05:54	05:26	05:35	06:11	06:52	07:51 (1)	07:33	07:18	07:58	
	16:51	17:37	18:19	20:03	38	08:25 (1)	20:45	21:18	21:20	20:05	23	08:14 (1)	18:46	16:54	16:32
11	08:08	07:36	06:45	06:44	07:46 (1)	05:52	05:26	05:36	06:12	06:53	07:52 (1)	07:34	07:20	07:59	
	16:53	17:38	18:21	20:05	39	08:25 (1)	20:46	21:18	21:19	20:05	19	08:11 (1)	18:44	16:53	16:32
12	08:08	07:34	06:43	06:42	07:46 (1)	05:51	05:25	05:37	06:13	06:55	07:55 (1)	07:35	07:21	08:00	
	16:54	17:40	18:22	20:06	39	08:25 (1)	20:48	21:19	21:18	20:05	12	08:07 (1)	18:42	16:51	16:32
13	08:07	07:33	06:41	06:40	07:47 (1)	05:50	05:25	05:38	06:15	06:56	07:56 (1)	07:37	07:23	08:01	
	16:55	17:42	18:24	20:08	38	08:25 (1)	20:49	21:20	21:18	20:05	19	08:11 (1)	18:40	16:50	16:32
14	08:07	07:31	06:39	06:38	07:46 (1)	05:48	05:25	05:39	06:16	06:57	07:57 (1)	07:38	07:24	08:02	
	16:57	17:43	18:25	20:09	39	08:25 (1)	20:50	21:20	21:17	20:05	19	08:11 (1)	18:38	16:49	16:32
15	08:06	07:29	06:37	06:36	07:46 (1)	05:47	05:25	05:40	06:17	06:59	07:59 (1)	07:40	07:26	08:02	
	16:58	17:45	18:27	20:10	38	08:24 (1)	20:51	21:21	21:16	20:05	17	08:11 (1)	18:37	16:48	16:32
16	08:05	07:28	06:35	06:34	07:46 (1)	05:46	05:25	05:41	06:19	07:37	07:50 (1)	07:41	07:27	08:03	
	16:59	17:46	18:28	20:12	37	08:23 (1)	20:53	21:21	21:15	20:05	16	08:11 (1)	18:35	16:47	16:32
17	08:05	07:26	06:33	06:32	07:46 (1)	05:45	05:25	05:42	06:20	07:04	08:04 (1)	07:01	07:42	07:29	08:04
	17:01	17:48	18:30	20:13	36	08:22 (1)	20:54	21:22	21:14	20:05	8	08:12 (1)	18:32	16:46	16:32
18	08:04	07:24	06:31	06:30	07:46 (1)	05:43	05:25	05:43	06:21	07:05	08:01 (1)	07:03	07:44	07:30	08:05
	17:02	17:49	18:31	20:15	35	08:21 (1)	20:55	21:22	21:14	20:05	15	08:16 (1)	18:30	16:44	16:33
19	08:03	07:23	06:29	06:28	07:47 (1)	05:42	05:25	05:44	06:23	07:07	07:58 (1)	07:04	07:45	07:31	08:05
	17:03	17:51	18:32	20:16	33	08:20 (1)	20:56	21:22	21:13	20:05	20	08:18 (1)	18:28	16:43	16:33
20	08:02	07:21	06:27	06:27	07:48 (1)	05:41	05:25	05:45	06:24	07:09	07:56 (1)	07:05	07:47	07:33	08:06
	17:05	17:52	18:34	20:17	31	08:19 (1)	20:58	21:23	21:12	20:05	24	08:20 (1)	18:26	16:42	16:33
21	08:02	07:19	06:25	06:25	07:49 (1)	05:40	05:25	05:46	06:25	07:10	07:54 (1)	07:07	07:48	07:34	08:07
	17:06	17:54	18:35	20:19	28	08:17 (1)	20:59	21:23	21:11	20:05	27	08:21 (1)	18:24	16:42	16:34
22	08:01	07:17	06:23	06:23	07:49 (1)	05:39	05:26	05:47	06:27	07:11	07:53 (1)	07:08	07:50	07:36	08:07
	17:08	17:56	18:37	20:20	27	08:16 (1)	21:00	21:23	21:10	20:05	29	08:22 (1)	18:22	16:41	16:34
23	08:00	07:16	06:21	06:21	07:50 (1)	05:38	05:26	05:48	06:28	07:12	07:52 (1)	07:09	07:51	07:37	08:08
	17:09	17:57	18:38	20:22	24	08:14 (1)	21:01	21:23	21:09	20:05	31	08:23 (1)	18:20	16:40	16:35
24	07:59	07:14	06:19	06:19	07:53 (1)	05:37	05:26	05:50	06:29	07:13	07:50 (1)	07:11	07:53	07:39	08:08
	17:11	17:59	18:40	20:23	19	08:12 (1)	21:02	21:23	21:08	20:05	34	08:24 (1)	18:18	16:39	16:35
25	07:58	07:12	06:17	06:18	07:55 (1)	05:36	05:26	05:51	06:31	07:14	07:50 (1)	07:12	06:54	07:40	08:08
	17:12	18:00	18:41	20:24	14	08:09 (1)	21:03	21:23	21:06	20:05	35	08:25 (1)	18:16	16:38	16:36
26	07:57	07:10	06:15	06:16	07:59 (1)	05:35	05:27	05:52	06:32	07:15	07:49 (1)	07:13	06:56	07:41	08:09
	17:14	18:02	18:42	20:26	5	08:04 (1)	21:04	21:23	21:05	20:05	36	08:25 (1)	18:14	16:37	16:37
27	07:56	07:08	06:13	06:14	08:04 (1)	05:34	05:27	05:53	06:33	07:16	07:48 (1)	07:15	06:57	07:43	08:09
	17:15	18:03	18:44	20:27	21:06	21:23	21:04	20:14	20:14	20:05	37	08:25 (1)	18:12	16:37	16:37
28	07:55	07:07	06:11	06:12	08:04 (1)	05:33	05:28	05:54	06:35	07:17	07:47 (1)	07:16	06:59	07:44	08:09
	17:17	18:05	18:45	20:29	21:07	21:23	21:03	20:12	20:12	20:05	38	08:25 (1)	18:10	16:38	16:38
29	07:53	07:09	06:11	06:11	08:04 (1)	05:32	05:28	05:56	06:36	07:18	07:47 (1)	07:17	07:00	07:45	08:10
	17:18	18:06	18:46	20:30	21:08	21:23	21:02	20:10	20:10	20:05	39	08:26 (1)	18:08	16:35	16:39
30	07:52	07:07	06:11	06:09	08:04 (1)	05:32	05:28	05:57	06:37	07:19	07:46 (1)	07:19	07:02	07:47	08:10
	17:20	18:08	18:48	20:31	21:09	21:23	21:00	20:08	20:08	20:05	39	08:25 (1)	18:06	16:35	16:40
31	07:51	07:05	06:11	07:51	08:05 (1)	05:31	05:28	05:58	06:39	07:20	07:46 (1)	07:19	07:03	08:10	16:40
	17:21	18:09	18:49	20:31	08:15 (1)	21:10	21:00	20:59	20:07	20:05	39	08:25 (1)	17:09	16:41	16:41
Sonnenscheinstunden	277	287	368	408	468	476	481	442	451	378	338	281	265		
astr.max.mögl.Beschattung			10	790	0,42				0,46						
Red.Sonnenscheinwahrsch.			0,36	0,42					0,46						
Reduktion Betriebsdauer			0,81	0,81					0,81						
Reduktion Windrichtung			0,67	0,67					0,67						
Gesamte Reduktion			0,20	0,23					0,25						
Met.wahrsch.Beschattung			2	180					114						

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	Schattenende (WEA mit letztem Schatten)



SHADOW - Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld Schattenrezeptor: D - Haggen 4
Annahmen für Schattenwurfberechnung Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128
Startwindgeschwindigkeit 2,5m/s

Table with columns for months (Januar to Juni) and rows for each day of the month, showing sunrise/sunset times and shadow data. Includes summary rows for 'Sonnenscheinstunden', 'astr.max.mögl.Beschattung', 'Red.Sonnenscheinwahrsch.', 'Reduktion Betriebsdauer', 'Reduktion Windrichtung', 'Gesamte Reduktion', and 'Met.wahrsch.Beschattung'.

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

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

## SHADOW - Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld  
Annahmen für Schattenwurfberechnung

Schattenrezeptor: D - Haggen 4

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Juli		August		September		Oktober		November		Dezember				
1	05:29	17:15 (2)	05:59	17:04 (2)	06:40	17:08 (2)	07:20		07:05	11:55 (1)	07:48	12:08 (1)			
	21:23	65	18:20 (2)	20:58	86	18:03 (2)	19:04		17:07	83	13:18 (1)	16:34	68	13:16 (1)	
2	05:30	17:15 (2)	06:00	17:03 (2)	06:41	17:11 (2)	07:21		07:06		11:55 (1)	07:49		12:09 (1)	
	21:23	65	18:20 (2)	20:56	87	18:30 (2)	20:03	50	17:05	84	13:19 (1)	16:34	67	13:16 (1)	
3	05:30	17:16 (2)	06:02	17:03 (2)	06:43	17:12 (2)	07:23		07:08		11:55 (1)	07:50		12:10 (1)	
	21:22	65	18:21 (2)	20:55	86	18:29 (2)	20:01	46	17:04	84	13:19 (1)	16:33	66	13:16 (1)	
4	05:31	17:15 (2)	06:03	17:02 (2)	06:44	17:14 (2)	07:24		07:09		11:55 (1)	07:51		12:11 (1)	
	21:22	66	18:21 (2)	20:53	87	18:29 (2)	19:59	41	17:02	84	13:19 (1)	16:33	65	13:16 (1)	
5	05:32	17:15 (2)	06:04	17:01 (2)	06:45	17:17 (2)	07:26		07:11		11:55 (1)	07:53		12:11 (1)	
	21:22	67	18:22 (2)	20:52	88	18:29 (2)	19:57	34	17:01	84	13:19 (1)	16:33	64	13:15 (1)	
6	05:32	17:15 (2)	06:06	17:02 (2)	06:47	17:22 (2)	07:27		07:12		11:54 (1)	07:54		12:13 (1)	
	21:21	67	18:22 (2)	20:50	87	18:29 (2)	19:55	25	16:59	85	13:19 (1)	16:32	63	13:16 (1)	
7	05:33	17:14 (2)	06:07	17:01 (2)	06:48	17:29 (2)	07:28		07:14		11:55 (1)	07:55		12:14 (1)	
	21:21	68	18:22 (2)	20:49	88	18:29 (2)	19:53	10	16:58	84	13:19 (1)	16:32	62	13:16 (1)	
8	05:34	17:14 (2)	06:08	17:01 (2)	06:49	17:39 (2)	18:52		07:15		11:55 (1)	07:56		12:15 (1)	
	21:21	69	18:23 (2)	20:47	87	18:28 (2)	19:51		16:57	85	13:20 (1)	16:32	61	13:16 (1)	
9	05:35	17:14 (2)	06:09	17:00 (2)	06:51	17:00 (2)	06:51		07:17		11:55 (1)	07:57		12:15 (1)	
	21:20	69	18:23 (2)	20:46	88	18:28 (2)	19:49		16:55	84	13:19 (1)	16:32	61	13:16 (1)	
10	05:35	17:14 (2)	06:11	17:01 (2)	06:52	17:01 (2)	06:52		07:18		11:55 (1)	07:58		12:16 (1)	
	21:19	70	18:24 (2)	20:44	87	18:28 (2)	19:47		16:54	84	13:19 (1)	16:32	60	13:16 (1)	
11	05:36	17:14 (2)	06:12	17:00 (2)	06:53	17:02 (2)	06:53		07:20		11:55 (1)	07:59		12:17 (1)	
	21:19	71	18:25 (2)	20:43	88	18:28 (2)	19:45		16:53	84	13:19 (1)	16:32	59	13:16 (1)	
12	05:37	17:12 (2)	06:13	17:00 (2)	06:54	17:02 (2)	06:54		07:21		11:56 (1)	08:00		12:18 (1)	
	21:18	72	18:24 (2)	20:41	87	18:27 (2)	19:43	3	13:45 (1)	16:51	83	13:19 (1)	16:32	58	13:16 (1)
13	05:38	17:12 (2)	06:15	16:59 (2)	06:56	13:29 (1)	07:23		07:37		11:56 (1)	08:01		12:19 (1)	
	21:18	73	18:25 (2)	20:39	87	18:26 (2)	19:41	28	13:57 (1)	16:50	83	13:19 (1)	16:32	57	13:16 (1)
14	05:39	17:12 (2)	06:16	17:00 (2)	06:57	13:22 (1)	07:24		07:38		11:56 (1)	08:02		12:20 (1)	
	21:17	73	18:25 (2)	20:38	86	18:26 (2)	19:39	39	14:01 (1)	16:49	83	13:19 (1)	16:32	56	13:16 (1)
15	05:40	17:12 (2)	06:17	16:59 (2)	06:58	13:18 (1)	07:26		07:40		11:57 (1)	08:02		12:20 (1)	
	21:16	74	18:26 (2)	20:36	87	18:26 (2)	19:36	46	14:04 (1)	16:48	82	13:19 (1)	16:32	56	13:16 (1)
16	05:41	17:11 (2)	06:19	16:59 (2)	07:00	13:14 (1)	07:27		07:41		11:57 (1)	08:03		12:21 (1)	
	21:15	75	18:26 (2)	20:34	86	18:25 (2)	19:34	52	14:06 (1)	16:47	81	13:18 (1)	16:32	55	13:16 (1)
17	05:42	17:11 (2)	06:20	16:59 (2)	07:01	13:12 (1)	07:29		07:42		11:58 (1)	08:04		12:22 (1)	
	21:14	75	18:26 (2)	20:32	85	18:24 (2)	19:32	57	14:09 (1)	16:45	81	13:19 (1)	16:32	55	13:17 (1)
18	05:43	17:10 (2)	06:21	17:00 (2)	07:02	13:09 (1)	07:30		07:44		11:59 (1)	08:05		12:22 (1)	
	21:14	77	18:27 (2)	20:31	84	18:24 (2)	19:30	61	14:10 (1)	16:44	80	13:19 (1)	16:33	54	13:16 (1)
19	05:44	17:10 (2)	06:23	17:00 (2)	07:04	13:07 (1)	07:31		07:45		11:59 (1)	08:05		12:23 (1)	
	21:13	77	18:27 (2)	20:29	83	18:23 (2)	19:28	65	14:12 (1)	16:43	79	13:18 (1)	16:33	54	13:17 (1)
20	05:45	17:09 (2)	06:24	16:59 (2)	07:05	13:05 (1)	07:33		07:47		12:00 (1)	08:06		12:24 (1)	
	21:12	78	18:27 (2)	20:27	82	18:21 (2)	19:26	67	14:12 (1)	16:42	78	13:18 (1)	16:33	54	13:18 (1)
21	05:46	17:09 (2)	06:25	16:59 (2)	07:06	13:04 (1)	07:34		07:48		12:00 (1)	08:07		12:24 (1)	
	21:11	79	18:28 (2)	20:25	81	18:20 (2)	19:24	70	14:14 (1)	16:41	78	13:18 (1)	16:34	54	13:18 (1)
22	05:47	17:08 (2)	06:27	17:00 (2)	07:08	13:02 (1)	07:36		07:50		12:01 (1)	08:07		12:25 (1)	
	21:10	80	18:28 (2)	20:23	80	18:20 (2)	19:22	72	14:14 (1)	16:41	77	13:18 (1)	16:34	53	13:18 (1)
23	05:48	17:08 (2)	06:28	17:01 (2)	07:09	13:01 (1)	07:37		07:51		12:02 (1)	08:08		12:25 (1)	
	21:09	80	18:28 (2)	20:22	77	18:18 (2)	19:20	74	14:15 (1)	16:40	75	13:17 (1)	16:35	54	13:19 (1)
24	05:50	17:07 (2)	06:29	17:01 (2)	07:10	13:00 (1)	07:39		07:53		12:03 (1)	08:08		12:25 (1)	
	21:07	81	18:28 (2)	20:20	76	18:17 (2)	19:18	76	14:16 (1)	16:39	75	13:18 (1)	16:35	54	13:19 (1)
25	05:51	17:07 (2)	06:31	17:01 (2)	07:12	11:59 (1)	07:40		06:54		12:03 (1)	08:08		12:26 (1)	
	21:06	82	18:29 (2)	20:18	74	18:15 (2)	19:16	77	13:16 (1)	16:38	74	13:17 (1)	16:36	54	13:20 (1)
26	05:52	17:07 (2)	06:32	17:03 (2)	07:13	11:58 (1)	07:41		06:56		12:05 (1)	08:09		12:26 (1)	
	21:05	82	18:29 (2)	20:16	72	18:15 (2)	19:14	79	13:17 (1)	16:37	72	13:17 (1)	16:37	54	13:20 (1)
27	05:53	17:06 (2)	06:33	17:03 (2)	07:15	11:57 (1)	07:43		06:57		12:05 (1)	08:09		12:26 (1)	
	21:04	83	18:29 (2)	20:14	70	18:13 (2)	19:12	80	13:17 (1)	16:37	72	13:17 (1)	16:37	55	13:21 (1)
28	05:54	17:06 (2)	06:35	17:04 (2)	07:16	11:57 (1)	07:44		06:59		12:05 (1)	08:09		12:26 (1)	
	21:03	83	18:29 (2)	20:12	67	18:11 (2)	19:10	81	13:18 (1)	16:36	71	13:16 (1)	16:38	55	13:21 (1)
29	05:56	17:05 (2)	06:36	17:05 (2)	07:17	11:56 (1)	07:45		07:00		12:07 (1)	08:10		12:27 (1)	
	21:01	84	18:29 (2)	20:10	65	18:10 (2)	19:08	81	13:17 (1)	16:35	70	13:17 (1)	16:39	56	13:23 (1)
30	05:57	17:04 (2)	06:37	17:06 (2)	07:19	11:56 (1)	07:47		07:02		12:07 (1)	08:10		12:27 (1)	
	21:00	85	18:29 (2)	20:08	62	18:08 (2)	19:06	82	13:18 (1)	16:35	69	13:16 (1)	16:40	57	13:24 (1)
31	05:58	17:04 (2)	06:39	17:07 (2)		17:10	07:03		07:03		11:56 (1)	08:10		12:27 (1)	
	20:59	85	18:29 (2)	20:06	58	18:05 (2)	17:08	83	13:19 (1)		16:40	57	13:24 (1)		
Sonnenscheinstunden	481		442		378		338		281		265				
astr.max.mögl.Beschattung	2320		2508		261		1273		2388		1798				
Red.Sonnenscheinwahrsch.	0,47		0,46		0,40		0,30		0,21		0,19				
Reduktion Betriebsdauer	0,81		0,81		0,81		0,81		0,81		0,81				
Reduktion Windrichtung	0,65		0,65		0,65		0,62		0,62		0,62				
Gesamte Reduktion	0,25		0,24		0,21		0,15		0,11		0,09				
Met.wahrsch.Beschattung	571		613		55		188		254		167				

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: 241\_16\_702\_Schatten\_Oberfeld Schattenrezeptor: E - Haggen 1  
Annahmen für Schattenwurfberechnung  
Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

### Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Januar		Februar		März		April		Mai		Juni					
1	08:10	12:48 (1)	07:50	12:37 (1)	07:05	12:52 (1)	07:03	06:07	17:05 (2)	05:30	17:14 (2)					
	16:42	42	13:30 (1)	17:23	84	14:01 (1)	18:06	59	13:51 (1)	19:51	20:33	82	18:27 (2)	21:11	75	18:29 (2)
2	08:10	12:48 (1)	07:48	12:37 (1)	07:03	12:54 (1)	07:01	06:06	17:05 (2)	05:30	17:15 (2)					
	16:43	43	13:31 (1)	17:24	83	14:00 (1)	18:08	55	13:49 (1)	19:52	20:34	83	18:28 (2)	21:11	75	18:30 (2)
3	08:10	12:47 (1)	07:47	12:37 (1)	07:01	12:57 (1)	06:59	06:04	17:05 (2)	05:29	17:15 (2)					
	16:44	44	13:31 (1)	17:26	84	14:01 (1)	18:09	49	13:46 (1)	19:54	20:35	83	18:28 (2)	21:12	74	18:29 (2)
4	08:10	12:46 (1)	07:46	12:37 (1)	06:59	13:01 (1)	06:57	06:03	17:05 (2)	05:28	17:16 (2)					
	16:45	47	13:33 (1)	17:27	85	14:02 (1)	18:11	42	13:43 (1)	19:55	20:37	84	18:29 (2)	21:13	74	18:30 (2)
5	08:10	12:46 (1)	07:44	12:37 (1)	06:57	13:07 (1)	06:55	06:01	17:04 (2)	05:28	17:16 (2)					
	16:46	48	13:34 (1)	17:29	85	14:02 (1)	18:12	31	13:38 (1)	19:56	20:38	84	18:28 (2)	21:14	73	18:29 (2)
6	08:10	12:46 (1)	07:43	12:37 (1)	06:55	13:16 (1)	06:53	06:00	17:05 (2)	05:27	17:17 (2)					
	16:47	49	13:35 (1)	17:31	86	14:03 (1)	18:14	15	13:31 (1)	19:58	20:40	84	18:29 (2)	21:15	72	18:29 (2)
7	08:09	12:45 (1)	07:42	12:37 (1)	06:53		06:51	05:58	17:04 (2)	05:27	17:16 (2)					
	16:48	51	13:36 (1)	17:32	86	14:03 (1)	18:15	19:59	20:41	85	18:29 (2)	21:16	73	18:29 (2)		
8	08:09	12:45 (1)	07:40	12:37 (1)	06:51		06:49	05:57	17:04 (2)	05:27	17:17 (2)					
	16:49	53	13:38 (1)	17:34	86	14:03 (1)	18:16	20:01	20:42	85	18:29 (2)	21:16	72	18:29 (2)		
9	08:09	12:44 (1)	07:39	12:37 (1)	06:49		06:47	05:55	17:05 (2)	05:26	17:18 (2)					
	16:50	54	13:38 (1)	17:35	86	14:03 (1)	18:18	20:02	20:44	85	18:30 (2)	21:17	71	18:29 (2)		
10	08:08	12:45 (1)	07:37	12:37 (1)	06:47		06:45	05:54	17:04 (2)	05:26	17:19 (2)					
	16:51	55	13:40 (1)	17:37	87	14:04 (1)	18:19	20:03	8	17:53 (2)	20:45	85	18:29 (2)	21:18	71	18:30 (2)
11	08:08	12:44 (1)	07:36	12:37 (1)	06:45		06:44	05:52	17:05 (2)	05:26	17:18 (2)					
	16:53	57	13:41 (1)	17:38	86	14:03 (1)	18:21	20:05	24	18:01 (2)	20:46	84	18:29 (2)	21:18	71	18:29 (2)
12	08:08	12:44 (1)	07:34	12:37 (1)	06:43		06:42	05:51	17:05 (2)	05:25	17:19 (2)					
	16:54	58	13:42 (1)	17:40	86	14:03 (1)	18:22	20:06	33	18:05 (2)	20:48	85	18:30 (2)	21:19	70	18:29 (2)
13	08:07	12:43 (1)	07:33	12:37 (1)	06:41		06:40	05:50	17:05 (2)	05:25	17:19 (2)					
	16:55	60	13:43 (1)	17:42	87	14:04 (1)	18:24	20:08	39	18:08 (2)	20:49	84	18:29 (2)	21:20	70	18:29 (2)
14	08:07	12:43 (1)	07:31	12:37 (1)	06:39		06:38	05:48	17:05 (2)	05:25	17:20 (2)					
	16:56	62	13:45 (1)	17:43	86	14:03 (1)	18:25	20:09	45	18:11 (2)	20:50	84	18:29 (2)	21:20	70	18:30 (2)
15	08:06	12:43 (1)	07:29	12:37 (1)	06:37		06:36	05:47	17:04 (2)	05:25	17:20 (2)					
	16:58	63	13:46 (1)	17:45	86	14:03 (1)	18:27	20:10	49	18:13 (2)	20:51	84	18:30 (2)	21:21	70	18:30 (2)
16	08:05	12:42 (1)	07:28	12:38 (1)	06:35		06:34	05:46	17:06 (2)	05:25	17:21 (2)					
	16:59	65	13:47 (1)	17:46	85	14:03 (1)	18:28	20:12	53	18:15 (2)	20:53	84	18:30 (2)	21:21	69	18:30 (2)
17	08:05	12:41 (1)	07:26	12:38 (1)	06:33		06:32	05:44	17:07 (2)	05:25	17:21 (2)					
	17:01	67	13:48 (1)	17:48	84	14:02 (1)	18:30	20:13	57	18:16 (2)	20:54	83	18:30 (2)	21:21	69	18:30 (2)
18	08:04	12:41 (1)	07:24	12:38 (1)	06:31		06:30	05:43	17:07 (2)	05:25	17:21 (2)					
	17:02	68	13:49 (1)	17:49	84	14:02 (1)	18:31	20:15	59	18:17 (2)	20:55	83	18:30 (2)	21:22	69	18:30 (2)
19	08:03	12:41 (1)	07:23	12:39 (1)	06:29		06:28	05:42	17:07 (2)	05:25	17:21 (2)					
	17:03	69	13:50 (1)	17:51	82	14:01 (1)	18:32	20:16	62	18:18 (2)	20:56	83	18:30 (2)	21:22	69	18:30 (2)
20	08:02	12:41 (1)	07:21	12:40 (1)	06:27		06:27	05:41	17:08 (2)	05:25	17:21 (2)					
	17:05	70	13:51 (1)	17:52	81	14:01 (1)	18:34	20:17	65	18:20 (2)	20:58	82	18:30 (2)	21:23	69	18:30 (2)
21	08:02	12:41 (1)	07:19	12:41 (1)	06:25		06:25	05:40	17:08 (2)	05:25	17:23 (2)					
	17:06	71	13:52 (1)	17:54	79	14:00 (1)	18:35	20:19	68	18:21 (2)	20:59	82	18:30 (2)	21:23	68	18:31 (2)
22	08:01	12:40 (1)	07:17	12:41 (1)	06:23		06:23	05:39	17:09 (2)	05:25	17:23 (2)					
	17:08	73	13:53 (1)	17:55	79	14:00 (1)	18:37	20:20	70	18:22 (2)	21:00	81	18:30 (2)	21:23	68	18:31 (2)
23	08:00	12:40 (1)	07:16	12:42 (1)	06:21		06:21	05:38	17:11 (2)	05:26	17:22 (2)					
	17:09	74	13:54 (1)	17:57	77	13:59 (1)	18:38	20:22	71	18:22 (2)	21:01	81	18:30 (2)	21:23	69	18:31 (2)
24	07:59	12:40 (1)	07:14	12:43 (1)	06:19		06:19	05:37	17:10 (2)	05:26	17:22 (2)					
	17:11	75	13:55 (1)	17:59	74	13:57 (1)	18:40	20:23	74	18:24 (2)	21:02	80	18:30 (2)	21:23	69	18:31 (2)
25	07:58	12:39 (1)	07:12	12:44 (1)	06:17		06:18	05:36	17:09 (2)	05:26	17:23 (2)					
	17:12	77	13:56 (1)	18:00	72	13:56 (1)	18:41	20:24	75	18:24 (2)	21:03	79	18:29 (2)	21:23	69	18:32 (2)
26	07:57	12:38 (1)	07:10	12:46 (1)	06:15		06:16	05:35	17:08 (2)	05:27	17:23 (2)					
	17:14	78	13:56 (1)	18:02	70	13:56 (1)	18:42	20:26	77	18:25 (2)	21:04	79	18:29 (2)	21:23	69	18:32 (2)
27	07:56	12:38 (1)	07:08	12:48 (1)	06:13		06:14	05:34	17:08 (2)	05:27	17:22 (2)					
	17:15	79	13:57 (1)	18:03	66	13:54 (1)	18:44	20:27	78	18:26 (2)	21:05	78	18:29 (2)	21:23	70	18:32 (2)
28	07:55	12:38 (1)	07:07	12:49 (1)	06:11		06:12	05:33	17:07 (2)	05:27	17:23 (2)					
	17:17	80	13:58 (1)	18:05	64	13:53 (1)	18:45	20:29	79	18:26 (2)	21:07	78	18:30 (2)	21:23	70	18:33 (2)
29	07:53	12:38 (1)			07:09		06:11	05:32	17:06 (2)	05:28	17:23 (2)					
	17:18	81	13:59 (1)		19:47		20:30	80	18:26 (2)	21:08	77	18:29 (2)	21:23	70	18:33 (2)	
30	07:52	12:37 (1)			07:07		06:09	05:32	17:06 (2)	05:28	17:23 (2)					
	17:20	82	13:59 (1)		19:48		20:31	81	18:27 (2)	21:09	77	18:29 (2)	21:23	70	18:33 (2)	
31	07:51	12:37 (1)			07:05			05:31	17:13 (2)							
	17:21	83	14:00 (1)		19:49			21:10	77	18:30 (2)						
Sonnenscheinstunden	277		287		368		408		468		476					
astr.max.mögl.Beschattung	1978		2280		251		1247		2545		2118					
Red.Sonnenscheinwahrsch.	0,21		0,28		0,36		0,42		0,40		0,42					
Reduktion Betriebsdauer	0,81		0,81		0,81		0,81		0,81		0,81					
Reduktion Windrichtung	0,61		0,61		0,61		0,66		0,66		0,66					
Gesamte Reduktion	0,10		0,14		0,18		0,22		0,21		0,22					
Met.wahrsch.Beschattung	202		312		44		278		536		474					

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) Schatteneende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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### SHADOW - Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld Schattenrezeptor: E - Haggen 1  
 Annahmen für Schattenwurfberechnung Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,85	2,84	4,26	5,69	5,97	6,68	7,26	6,61	5,09	3,24	2,01	1,60

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	436	229	207	251	637	1.082	365	782	1.585	809	350	7.128

Startwindgeschwindigkeit 2,5m/s

	Juli		August		September		Oktober		November		Dezember		
1	05:29	17:23 (2)	05:59	17:16 (2)	06:40	17:36 (2)	07:20	07:05	12:06 (1)	07:48	12:26 (1)		
	21:23	70	18:33 (2)	20:58	84	18:40 (2)	20:05	24	18:00 (2)	19:04	57	13:23 (1)	
2	05:30	17:23 (2)	06:00	17:15 (2)	06:41	17:44 (2)	07:21	07:06	86	13:32 (1)	16:34	13:23 (1)	
	21:23	71	18:34 (2)	20:56	85	18:40 (2)	20:03	8	17:52 (2)	19:02	55	12:28 (1)	
3	05:30	17:23 (2)	06:02	17:15 (2)	06:43	17:44 (2)	07:23	07:08	87	13:33 (1)	16:34	13:23 (1)	
	21:22	72	18:35 (2)	20:55	85	18:40 (2)	20:01	17:05	87	13:33 (1)	16:34	13:23 (1)	
4	05:31	17:23 (2)	06:03	17:14 (2)	06:44	17:44 (2)	07:24	07:09	86	13:32 (1)	16:33	13:22 (1)	
	21:22	71	18:34 (2)	20:53	85	18:39 (2)	19:59	17:04	86	13:32 (1)	16:33	13:22 (1)	
5	05:32	17:23 (2)	06:04	17:14 (2)	06:45	17:44 (2)	07:26	07:11	86	13:32 (1)	16:33	13:22 (1)	
	21:22	72	18:35 (2)	20:52	85	18:39 (2)	19:57	17:01	86	13:33 (1)	16:33	13:21 (1)	
6	05:32	17:23 (2)	06:06	17:14 (2)	06:47	17:44 (2)	07:27	07:12	86	13:33 (1)	16:33	13:21 (1)	
	21:21	73	18:36 (2)	20:50	85	18:39 (2)	19:55	17:02	86	13:32 (1)	16:32	13:21 (1)	
7	05:33	17:22 (2)	06:07	17:14 (2)	06:48	17:44 (2)	07:28	07:14	85	13:32 (1)	16:32	13:21 (1)	
	21:21	73	18:35 (2)	20:49	84	18:38 (2)	19:53	17:04	85	13:32 (1)	16:32	13:21 (1)	
8	05:34	17:22 (2)	06:08	17:14 (2)	06:49	17:44 (2)	07:30	07:15	84	13:32 (1)	16:32	13:21 (1)	
	21:21	74	18:36 (2)	20:47	84	18:38 (2)	19:51	18:50	24	14:11 (1)	16:57	47	13:21 (1)
9	05:35	17:22 (2)	06:09	17:14 (2)	06:51	17:44 (2)	07:31	07:17	84	13:32 (1)	16:32	13:21 (1)	
	21:20	74	18:36 (2)	20:46	83	18:37 (2)	19:49	18:50	24	14:11 (1)	16:57	47	13:21 (1)
10	05:35	17:22 (2)	06:11	17:14 (2)	06:52	17:44 (2)	07:32	07:18	83	13:31 (1)	16:32	13:20 (1)	
	21:19	75	18:37 (2)	20:44	83	18:37 (2)	19:47	18:48	36	14:15 (1)	16:55	83	13:20 (1)
11	05:36	17:22 (2)	06:12	17:14 (2)	06:53	17:44 (2)	07:34	07:20	83	13:31 (1)	16:32	13:20 (1)	
	21:19	75	18:37 (2)	20:43	82	18:36 (2)	19:45	18:46	36	14:15 (1)	16:55	83	13:20 (1)
12	05:37	17:21 (2)	06:13	17:14 (2)	06:54	17:44 (2)	07:35	07:21	83	13:31 (1)	16:32	13:20 (1)	
	21:18	76	18:37 (2)	20:41	82	18:36 (2)	19:43	18:47	36	14:15 (1)	16:55	83	13:20 (1)
13	05:38	17:21 (2)	06:15	17:14 (2)	06:56	17:44 (2)	07:37	07:23	82	13:31 (1)	16:32	13:20 (1)	
	21:18	76	18:37 (2)	20:39	81	18:35 (2)	19:41	18:48	36	14:15 (1)	16:55	83	13:20 (1)
14	05:39	17:21 (2)	06:16	17:15 (2)	06:57	17:44 (2)	07:38	07:24	81	13:31 (1)	16:32	13:20 (1)	
	21:17	77	18:38 (2)	20:38	80	18:35 (2)	19:39	18:49	36	14:15 (1)	16:55	83	13:20 (1)
15	05:40	17:20 (2)	06:17	17:15 (2)	06:58	17:44 (2)	07:40	07:26	80	13:30 (1)	16:32	13:20 (1)	
	21:16	78	18:38 (2)	20:36	79	18:34 (2)	19:36	18:50	36	14:15 (1)	16:55	83	13:20 (1)
16	05:41	17:20 (2)	06:19	17:15 (2)	07:00	17:44 (2)	07:41	07:27	79	13:30 (1)	16:32	13:20 (1)	
	21:15	78	18:38 (2)	20:34	77	18:32 (2)	19:34	18:51	36	14:15 (1)	16:55	83	13:20 (1)
17	05:42	17:20 (2)	06:20	17:15 (2)	07:01	17:44 (2)	07:42	07:29	78	13:29 (1)	16:32	13:20 (1)	
	21:14	79	18:39 (2)	20:32	76	18:31 (2)	19:32	18:52	36	14:15 (1)	16:55	83	13:20 (1)
18	05:43	17:20 (2)	06:21	17:16 (2)	07:02	17:44 (2)	07:44	07:30	77	13:29 (1)	16:32	13:20 (1)	
	21:14	79	18:39 (2)	20:31	75	18:31 (2)	19:30	18:53	36	14:15 (1)	16:55	83	13:20 (1)
19	05:44	17:19 (2)	06:23	17:16 (2)	07:04	17:44 (2)	07:45	07:31	76	13:29 (1)	16:32	13:20 (1)	
	21:13	80	18:39 (2)	20:29	73	18:29 (2)	19:28	18:54	36	14:15 (1)	16:55	83	13:20 (1)
20	05:45	17:19 (2)	06:24	17:16 (2)	07:05	17:44 (2)	07:47	07:33	75	13:28 (1)	16:32	13:20 (1)	
	21:12	80	18:39 (2)	20:27	72	18:28 (2)	19:26	18:55	36	14:15 (1)	16:55	83	13:20 (1)
21	05:46	17:18 (2)	06:25	17:17 (2)	07:06	17:44 (2)	07:48	07:34	74	13:28 (1)	16:32	13:20 (1)	
	21:11	81	18:39 (2)	20:25	69	18:26 (2)	19:24	18:56	36	14:15 (1)	16:55	83	13:20 (1)
22	05:47	17:18 (2)	06:27	17:18 (2)	07:08	17:44 (2)	07:50	07:36	73	13:27 (1)	16:32	13:20 (1)	
	21:10	81	18:39 (2)	20:23	68	18:26 (2)	19:22	18:57	36	14:15 (1)	16:55	83	13:20 (1)
23	05:48	17:18 (2)	06:28	17:19 (2)	07:09	17:44 (2)	07:51	07:37	72	13:27 (1)	16:32	13:20 (1)	
	21:09	82	18:40 (2)	20:22	65	18:24 (2)	19:20	18:58	36	14:15 (1)	16:55	83	13:20 (1)
24	05:50	17:17 (2)	06:29	17:20 (2)	07:10	17:44 (2)	07:53	07:39	71	13:26 (1)	16:32	13:20 (1)	
	21:07	83	18:40 (2)	20:20	62	18:22 (2)	19:18	18:59	36	14:15 (1)	16:55	83	13:20 (1)
25	05:51	17:18 (2)	06:31	17:21 (2)	07:12	17:44 (2)	07:54	07:40	70	13:26 (1)	16:32	13:20 (1)	
	21:06	83	18:41 (2)	20:18	59	18:20 (2)	19:16	19:00	36	14:15 (1)	16:55	83	13:20 (1)
26	05:52	17:17 (2)	06:32	17:22 (2)	07:13	17:44 (2)	07:56	07:41	69	13:26 (1)	16:32	13:20 (1)	
	21:05	83	18:40 (2)	20:16	57	18:19 (2)	19:14	19:01	36	14:15 (1)	16:55	83	13:20 (1)
27	05:53	17:17 (2)	06:33	17:24 (2)	07:15	17:44 (2)	07:57	07:43	68	13:26 (1)	16:32	13:20 (1)	
	21:04	83	18:40 (2)	20:14	52	18:16 (2)	19:12	19:02	36	14:15 (1)	16:55	83	13:20 (1)
28	05:54	17:16 (2)	06:35	17:25 (2)	07:16	17:44 (2)	07:59	07:44	67	13:26 (1)	16:32	13:20 (1)	
	21:03	84	18:40 (2)	20:12	49	18:14 (2)	19:10	19:03	36	14:15 (1)	16:55	83	13:20 (1)
29	05:56	17:16 (2)	06:36	17:28 (2)	07:17	17:44 (2)	08:00	07:45	66	13:26 (1)	16:32	13:20 (1)	
	21:01	84	18:40 (2)	20:10	44	18:12 (2)	19:08	19:04	36	14:15 (1)	16:55	83	13:20 (1)
30	05:57	17:16 (2)	06:37	17:30 (2)	07:19	17:44 (2)	08:02	07:47	65	13:26 (1)	16:32	13:20 (1)	
	21:00	84	18:40 (2)	20:08	39	18:09 (2)	19:06	19:05	36	14:15 (1)	16:55	83	13:20 (1)
31	05:58	17:15 (2)	06:39	17:32 (2)	07:20	17:44 (2)	08:03	07:48	64	13:26 (1)	16:32	13:20 (1)	
	20:59	85	18:40 (2)	20:06	33	18:05 (2)	17:08	17:08	86	13:33 (1)	16:40	40	13:28 (1)
Sonnenscheinstunden	481		442		378		338		281		265		
astr.max.mögl.Beschattung	2416		2217		32		1709		2288		1270		
Red.Sonnenscheinwahrsch.	0,47		0,46		0,40		0,30		0,21		0,19		
Reduktion Betriebsdauer	0,81		0,81		0,81		0,81		0,81		0,81		
Reduktion Windrichtung	0,66		0,66		0,66		0,61		0,61		0,61		
Gesamte Reduktion	0,25		0,25		0,21		0,15		0,11		0,09		
Met.wahrsch.Beschattung	601		547		7		251		242		118		

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	Schattenende (WEA mit letztem Schatten)

## SHADOW - Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld  
Annahmen für Schattenwurfberechnung

Schattenrezeptor: F - Haggen 3

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Januar	Februar	März	April	Mai	Juni
1	08:10 16:42 55	13:47 (1)   07:50 14:42 (1)   17:23	07:05 18:06	16:17 (2)   07:03 17:04 (2)   19:51	06:07 20:33	05:30 21:11
2	08:10 16:43 55	13:48 (1)   07:48 14:43 (1)   17:24	07:03 18:08	16:16 (2)   07:01 17:04 (2)   19:52	06:06 20:34	05:30 21:11
3	08:10 16:44 54	13:48 (1)   07:47 14:42 (1)   17:26	07:01 18:09	16:15 (2)   06:59 17:05 (2)   19:54	06:04 20:35	05:29 21:12
4	08:10 16:45 54	13:49 (1)   07:46 14:43 (1)   17:27	06:59 18:11	16:14 (2)   06:57 17:05 (2)   19:55	06:03 20:37	05:28 21:13
5	08:10 16:46 54	13:49 (1)   07:44 14:43 (1)   17:29	06:57 18:12	16:13 (2)   06:55 17:05 (2)   19:56	06:01 20:38	05:28 21:14
6	08:10 16:47 54	13:50 (1)   07:43 14:44 (1)   17:31	06:55 18:14	16:13 (2)   06:53 17:05 (2)   19:58	06:00 20:40	05:27 21:15
7	08:09 16:48 53	13:50 (1)   07:42 14:43 (1)   17:32	06:53 18:15	16:12 (2)   06:51 17:05 (2)   19:59	05:58 20:41	05:27 21:16
8	08:09 16:49 53	13:51 (1)   07:40 14:44 (1)   17:34	06:51 18:16	16:12 (2)   06:49 17:05 (2)   20:01	05:57 20:42	05:27 21:16
9	08:09 16:50 53	13:51 (1)   07:39 14:44 (1)   17:35	06:49 18:18	16:12 (2)   06:47 17:05 (2)   20:02	05:55 20:44	05:26 21:17
10	08:08 16:51 52	13:52 (1)   07:37 14:44 (1)   17:37	06:47 18:19	16:11 (2)   06:45 17:05 (2)   20:03	05:54 20:45	05:26 21:18
11	08:08 16:53 51	13:53 (1)   07:36 14:44 (1)   17:38	06:45 18:21	16:11 (2)   06:44 17:05 (2)   20:05	05:52 20:46	05:26 21:18
12	08:08 16:54 51	13:54 (1)   07:34 14:45 (1)   17:40	06:43 18:22	16:11 (2)   06:42 17:04 (2)   20:06	05:51 20:48	05:25 21:19
13	08:07 16:55 50	13:54 (1)   07:33 14:44 (1)   17:42	06:41 18:24	16:12 (2)   06:40 17:04 (2)   20:08	05:50 20:49	05:25 21:20
14	08:07 16:56 49	13:56 (1)   07:31 14:45 (1)   17:43	06:39 18:25	16:12 (2)   06:38 17:03 (2)   20:09	05:48 20:50	05:25 21:20
15	08:06 16:58 49	13:56 (1)   07:29 14:45 (1)   17:45	06:37 18:27	16:12 (2)   06:36 17:02 (2)   20:10	05:47 20:51	05:25 21:21
16	08:05 16:59 47	13:57 (1)   07:28 14:44 (1)   17:46	06:35 18:28	16:13 (2)   06:34 17:01 (2)   20:12	05:46 20:53	05:25 21:21
17	08:05 17:00 46	13:58 (1)   07:26 14:44 (1)   17:48	06:33 18:30	16:14 (2)   06:32 17:00 (2)   20:13	05:44 20:54	05:25 21:21
18	08:04 17:02 45	13:59 (1)   07:24 14:44 (1)   17:49	06:31 18:31	16:14 (2)   06:30 16:59 (2)   20:15	05:43 20:55	05:25 21:22
19	08:03 17:03 43	14:01 (1)   07:23 14:44 (1)   17:51	06:29 18:32	16:15 (2)   06:28 16:58 (2)   20:16	05:42 20:56	05:25 21:22
20	08:02 17:05 42	14:02 (1)   07:21 14:44 (1)   17:52	16:37 (2)   06:27 16:46 (2)   18:34	06:27 16:17 (2)   20:17	05:41 20:58	05:25 21:23
21	08:02 17:06 40	14:03 (1)   07:19 14:43 (1)   17:54	16:31 (2)   06:25 16:51 (2)   18:35	06:25 16:18 (2)   20:19	05:40 20:59	05:25 21:23
22	08:01 17:08 39	14:04 (1)   07:17 14:43 (1)   17:55	16:28 (2)   06:23 16:53 (2)   18:37	06:23 16:53 (2)   20:20	05:39 21:00	05:25 21:23
23	08:00 17:09 36	14:06 (1)   07:16 14:42 (1)   17:57	16:25 (2)   06:21 16:56 (2)   18:38	06:21 16:51 (2)   20:22	05:38 21:01	05:26 21:23
24	07:59 17:11 33	14:08 (1)   07:14 14:41 (1)   17:59	16:23 (2)   06:19 16:57 (2)   18:40	06:19 16:48 (2)   20:23	05:37 21:02	05:26 21:23
25	07:58 17:12 30	14:10 (1)   07:12 14:40 (1)   18:00	16:21 (2)   06:17 16:59 (2)   18:41	06:18 16:45 (2)   20:24	05:36 21:03	05:26 21:23
26	07:57 17:14 26	14:12 (1)   07:10 14:38 (1)   18:02	16:21 (2)   06:15 17:01 (2)   18:42	06:16 16:34 (2)   20:26	05:35 21:04	05:27 21:23
27	07:56 17:15 21	14:15 (1)   07:08 14:36 (1)   18:03	16:19 (2)   06:13 17:02 (2)   18:44	06:14 17:02 (2)   20:27	05:34 21:05	05:27 21:23
28	07:55 17:17 14	14:19 (1)   07:06 14:33 (1)   18:05	16:18 (2)   06:11 17:03 (2)   18:45	06:12 18:45	05:33 20:29	05:27 21:23
29	07:53 17:18		07:09 19:47	06:11 20:30	05:32 21:08	05:28 21:23
30	07:52 17:20		07:07 19:48	06:09 20:31	05:32 21:09	05:28 21:23
31	07:51 17:21		07:05 19:49	05:31 21:10		
Sonnenscheinstunden	277	287	368	408	468	476
astr.max.mögl.Beschattung	1249	285	1138			
Red.Sonnenscheinwahrsch.	0,21	0,28	0,36			
Reduktion Betriebsdauer	0,81	0,81	0,81			
Reduktion Windrichtung	0,64	0,65	0,65			
Gesamte Reduktion	0,11	0,15	0,19			
Met.wahrsch.Beschattung	134	42	215			

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: 241\_16\_702\_Schatten\_Oberfeld  
 Annahmen für Schattenwurfberechnung

Schattenrezeptor: F - Haggen 3

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
 1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
 395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
 Startwindgeschwindigkeit 2,5m/s

	July	August	September	Oktober	November	Dezember		
1	05:29 21:23	05:59 20:58	06:40 20:05	07:20 19:04	16:51 (2) 17:04 (2)	07:05 17:07	07:48 16:34	13:35 (1) 51 14:26 (1)
2	05:30 21:23	06:00 20:56	06:41 20:03	07:21 19:02	16:50 (2) 17:05	07:06 17:05	07:49 16:34	13:36 (1) 51 14:27 (1)
3	05:30 21:22	06:02 20:55	06:43 20:01	07:23 19:00	16:49 (2) 17:04	07:08 17:04	07:50 16:33	13:35 (1) 53 14:28 (1)
4	05:31 21:22	06:03 20:53	06:44 19:59	07:24 18:58	16:49 (2) 17:43 (2)	07:09 17:02	07:51 16:33	13:35 (1) 53 14:28 (1)
5	05:31 21:22	06:04 20:52	06:45 19:57	07:25 18:56	16:49 (2) 17:42 (2)	07:11 17:01	07:53 16:33	13:35 (1) 54 14:29 (1)
6	05:32 21:21	06:06 20:50	06:47 19:55	07:27 18:54	16:49 (2) 17:42 (2)	07:12 16:59	07:54 16:32	13:36 (1) 54 14:30 (1)
7	05:33 21:21	06:07 20:49	06:48 19:53	07:28 18:52	16:48 (2) 17:41 (2)	07:14 16:58	07:55 16:32	13:36 (1) 54 14:30 (1)
8	05:34 21:21	06:08 20:47	06:49 19:51	07:30 18:50	16:48 (2) 17:40 (2)	07:15 16:57	07:56 16:32	13:37 (1) 54 14:31 (1)
9	05:35 21:20	06:09 20:46	06:50 19:49	07:31 18:48	16:49 (2) 17:40 (2)	07:17 16:55	07:57 16:32	13:37 (1) 54 14:31 (1)
10	05:35 21:19	06:11 20:44	06:52 19:47	07:32 18:46	16:48 (2) 17:39 (2)	07:18 16:54	07:58 16:32	13:37 (1) 55 14:32 (1)
11	05:36 21:19	06:12 20:43	06:53 19:45	07:34 18:44	16:49 (2) 17:39 (2)	07:20 16:53	07:59 16:32	13:38 (1) 54 14:32 (1)
12	05:37 21:18	06:13 20:41	06:54 19:43	07:35 18:42	16:49 (2) 17:37 (2)	07:21 16:51	08:00 16:32	13:38 (1) 55 14:33 (1)
13	05:38 21:18	06:15 20:39	06:56 19:41	07:37 18:40	16:50 (2) 17:36 (2)	07:23 16:50	08:01 16:32	13:38 (1) 55 14:33 (1)
14	05:39 21:17	06:16 20:38	06:57 19:39	07:38 18:38	16:51 (2) 17:35 (2)	07:24 16:49	08:02 14:05 (1)	13:39 (1) 55 14:34 (1)
15	05:40 21:16	06:17 20:36	06:58 19:36	07:40 18:36	16:52 (2) 17:34 (2)	07:26 16:48	08:02 14:09 (1)	13:39 (1) 55 14:34 (1)
16	05:41 21:15	06:19 20:34	07:00 19:34	07:41 18:35	16:53 (2) 17:32 (2)	07:27 16:47	08:03 14:11 (1)	13:39 (1) 56 14:35 (1)
17	05:42 21:14	06:20 20:32	07:01 19:32	07:42 18:33	16:54 (2) 17:30 (2)	07:29 16:45	08:04 14:13 (1)	13:40 (1) 55 14:35 (1)
18	05:43 21:14	06:21 20:31	07:02 19:30	17:16 (2) 17:31 (2)	07:44 18:31	07:30 16:44	08:05 14:15 (1)	13:40 (1) 55 14:35 (1)
19	05:44 21:13	06:23 20:29	07:04 19:28	17:12 (2) 17:35 (2)	07:45 18:29	07:31 16:43	08:05 14:16 (1)	13:41 (1) 55 14:36 (1)
20	05:45 21:12	06:24 20:27	07:05 19:26	17:09 (2) 17:37 (2)	07:47 18:27	07:33 16:42	08:06 14:18 (1)	13:41 (1) 56 14:37 (1)
21	05:46 21:11	06:25 20:25	07:06 19:24	17:06 (2) 17:38 (2)	07:48 18:25	07:34 16:41	08:07 14:18 (1)	13:41 (1) 56 14:37 (1)
22	05:47 21:10	06:27 20:23	07:08 19:22	17:03 (2) 17:39 (2)	07:50 18:24	07:36 16:41	08:07 14:20 (1)	13:42 (1) 56 14:38 (1)
23	05:48 21:09	06:28 20:22	07:09 19:20	17:02 (2) 17:40 (2)	07:51 18:22	07:37 16:40	08:08 14:20 (1)	13:42 (1) 56 14:38 (1)
24	05:50 21:07	06:29 20:20	07:10 19:18	16:59 (2) 17:41 (2)	07:53 18:20	07:39 16:39	08:08 14:22 (1)	13:43 (1) 55 14:38 (1)
25	05:51 21:06	06:31 20:18	07:12 19:16	16:57 (2) 17:41 (2)	06:54 17:18	07:40 16:38	08:08 14:22 (1)	13:44 (1) 55 14:39 (1)
26	05:52 21:05	06:32 20:16	07:13 19:14	16:56 (2) 17:43 (2)	06:56 17:17	07:41 16:37	08:09 14:23 (1)	13:44 (1) 55 14:39 (1)
27	05:53 21:04	06:33 20:14	07:15 19:12	16:55 (2) 17:43 (2)	06:57 17:15	07:43 16:37	08:09 14:24 (1)	13:44 (1) 55 14:39 (1)
28	05:54 21:03	06:35 20:12	07:16 19:10	16:54 (2) 17:44 (2)	06:59 17:13	07:44 16:36	08:09 14:24 (1)	13:44 (1) 56 14:40 (1)
29	05:55 21:01	06:36 20:10	07:17 19:08	16:53 (2) 17:43 (2)	07:00 17:12	07:45 16:35	08:10 14:25 (1)	13:46 (1) 55 14:41 (1)
30	05:57 21:00	06:37 20:08	07:19 19:06	16:51 (2) 17:43 (2)	07:02 17:10	07:47 16:35	08:10 14:26 (1)	13:46 (1) 55 14:41 (1)
31	05:58 20:59	06:39 20:06		07:03 17:08			08:10 16:40	13:47 (1) 55 14:42 (1)
Sonnenscheinstunden	481	442	378	338	281	265	1693	
astr. max. mögl. Beschattung			505	935	662	1693		
Red. Sonnenscheinwahrsch.			0,40	0,30	0,21	0,19		
Reduktion Betriebsdauer			0,81	0,81	0,81	0,81		
Reduktion Windrichtung			0,65	0,65	0,64	0,64		
Gesamte Reduktion			0,21	0,16	0,11	0,10		
Met. wahrsch. Beschattung			108	147	74	164		

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

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

Berechnung: 241\_16\_702\_Schatten\_Oberfeld  
Annahmen für Schattenwurfberechnung

Schattenrezeptor: H - Rütiweid 1

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:10 16:42	07:50 17:23	07:05 18:06	07:03 19:51	06:07 20:33	05:30 21:11	05:29 21:23	05:59 20:58	06:40 20:05	07:20 19:04	07:05 17:07	07:48 16:34
2	08:10 16:43	07:49 17:24	07:03 18:08	07:01 19:52	06:06 20:34	05:30 21:11	05:30 21:23	06:00 20:56	06:41 20:03	07:21 19:02	07:06 17:05	07:49 16:34
3	08:10 16:44	07:47 17:26	07:01 18:09	06:59 19:54	06:04 20:35	05:29 21:12	05:30 21:23	06:02 20:55	06:43 20:01	07:23 19:00	07:08 17:04	07:50 16:33
4	08:10 16:45	07:46 17:27	06:59 18:11	06:57 19:55	06:03 20:37	05:28 21:13	05:31 21:22	06:03 20:53	06:44 19:59	07:24 18:58	07:09 17:02	07:51 16:33
5	08:10 16:46	07:44 17:29	06:57 18:12	06:55 19:56	06:01 20:38	05:28 21:14	05:31 21:22	06:04 20:52	06:45 19:57	07:26 18:56	07:11 17:01	07:53 16:33
6	08:10 16:47	07:43 17:31	06:55 18:14	06:53 19:58	06:00 20:40	05:27 21:15	05:32 21:21	06:06 20:50	06:47 19:55	07:27 18:54	07:12 16:59	07:54 16:32
7	08:09 16:48	07:42 17:32	06:53 18:15	06:51 19:59	06:51 20:41	05:27 21:16	05:33 21:21	06:07 20:49	06:48 19:53	07:28 18:52	07:14 16:58	07:55 16:32
8	08:09 16:49	07:40 17:34	06:51 18:17	06:49 20:01	06:49 20:42	05:27 21:16	05:34 21:21	06:08 20:47	06:49 19:51	07:30 18:50	07:15 16:57	07:56 16:32
9	08:09 16:50	07:39 17:35	06:49 18:18	06:47 20:02	06:47 20:44	05:26 21:17	05:35 21:20	06:09 20:46	06:51 19:49	07:31 18:48	07:17 16:55	07:57 16:32
10	08:08 16:51	07:37 17:37	06:47 18:19	06:45 20:03	06:45 20:45	05:26 21:18	05:35 21:20	06:11 20:44	06:52 19:47	07:32 18:46	07:18 16:54	07:58 16:32
11	08:08 16:53	07:36 17:38	06:45 18:21	06:44 20:05	06:44 20:46	05:26 21:18	05:36 21:19	06:12 20:43	06:53 19:45	07:34 18:44	07:20 16:53	07:59 16:32
12	08:08 16:54	07:34 17:40	06:43 18:22	06:42 20:06	06:42 20:48	05:25 21:19	05:37 21:18	06:13 20:41	06:54 19:43	07:35 18:42	07:21 16:51	08:00 16:32
13	08:07 16:55	07:33 17:42	06:41 18:24	06:40 20:08	06:40 20:49	05:50 21:20	05:38 21:18	06:15 20:39	06:56 19:41	07:37 18:40	07:23 16:50	08:01 16:32
14	08:07 16:56	07:31 17:43	06:39 18:25	06:38 20:09	06:38 20:50	05:48 21:20	05:39 21:17	06:16 20:38	06:57 19:39	07:38 18:38	07:24 16:49	08:02 16:32
15	08:06 16:58	07:29 17:45	06:37 18:27	06:36 20:10	06:36 20:51	05:47 21:21	05:40 21:16	06:17 20:36	06:58 19:36	07:40 18:36	07:26 16:48	08:02 16:32
16	08:05 16:59	07:28 17:46	06:35 18:28	06:34 20:12	06:34 20:53	05:46 21:21	05:41 21:15	06:19 20:34	07:00 19:34	07:41 18:35	07:27 16:47	08:03 16:32
17	08:05 17:01	07:26 17:48	06:33 18:30	06:32 20:13	06:32 20:54	05:44 21:22	05:42 21:14	06:20 20:32	07:01 19:32	07:42 18:33	07:29 16:45	08:04 16:32
18	08:04 17:02	07:24 17:49	06:31 18:31	06:30 20:15	06:30 20:55	05:43 21:22	05:43 21:14	06:21 20:31	07:02 19:30	07:44 18:31	07:30 16:44	08:05 16:33
19	08:03 17:03	07:23 17:51	06:29 18:32	06:28 20:16	06:28 20:56	05:42 21:22	05:44 21:13	06:23 20:29	07:04 19:28	07:45 18:29	07:31 16:43	08:05 16:33
20	08:02 17:05	07:21 17:52	06:27 18:34	06:27 20:17	06:27 20:58	05:41 21:23	05:45 21:12	06:24 20:27	07:05 19:26	07:47 18:27	07:33 16:42	08:06 16:33
21	08:02 17:06	07:19 17:54	06:25 18:35	06:25 20:19	06:25 20:59	05:40 21:23	05:46 21:11	06:25 20:25	07:06 19:24	07:48 18:25	07:34 16:41	08:07 16:34
22	08:01 17:08	07:17 17:55	06:23 18:37	06:23 20:20	06:23 21:00	05:39 21:23	05:47 21:10	06:27 20:24	07:08 19:22	07:50 18:24	07:36 16:41	08:07 16:34
23	08:00 17:09	07:16 17:57	06:21 18:38	06:21 20:22	06:21 21:01	05:38 21:23	05:48 21:09	06:28 20:22	07:09 19:20	07:51 18:22	07:37 16:40	08:08 16:35
24	07:59 17:11	07:14 17:59	06:19 18:40	06:19 20:23	06:19 21:02	05:37 21:23	05:50 21:08	06:29 20:20	07:11 19:18	07:53 18:20	07:39 16:39	08:08 16:35
25	07:58 17:12	07:12 18:00	06:17 18:41	06:17 20:24	06:17 21:03	05:36 21:23	05:26 21:06	06:31 20:18	07:12 19:16	07:12 17:18	06:54 16:38	08:08 16:36
26	07:57 17:14	07:10 18:02	06:15 18:42	06:16 20:26	06:16 21:04	05:35 21:23	05:27 21:05	06:32 20:16	07:13 19:14	06:56 17:17	07:41 16:37	08:09 16:37
27	07:56 17:15	07:08 18:03	06:13 18:44	06:14 20:27	06:14 21:06	05:34 21:23	05:27 21:04	06:33 20:14	07:15 19:12	06:57 17:15	07:43 16:37	08:09 16:37
28	07:55 17:17	07:07 18:05	06:11 18:45	06:12 20:29	06:12 21:07	05:33 21:23	05:27 21:03	06:35 20:12	07:16 19:10	06:59 17:13	07:44 16:36	08:09 16:38
29	07:53 17:18	07:09 19:47	06:11 20:30	06:11 21:08	06:11 21:08	05:32 21:23	05:28 21:02	06:36 20:10	07:17 19:08	07:00 17:12	07:45 16:35	08:10 16:39
30	07:52 17:20	07:07 19:48	06:09 20:31	06:09 21:09	06:09 21:09	05:32 21:23	05:28 21:00	06:37 20:08	07:19 19:06	07:02 17:10	07:47 16:35	08:10 16:40
31	07:51 17:21	07:05 19:49	07:05 21:10	07:05 21:10	07:05 21:10	05:31 20:59	05:58 20:07	06:39 20:07	07:03 17:08	07:03 17:08	07:03 16:40	08:10 16:40
Sonnenscheinstunden	277	287	368	408	468	476	481	442	378	338	281	265
astr.max.mögl.Beschattung												
Red.Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.Beschattung												

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

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



## SHADOW - Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld  
Annahmen für Schattenwurfberechnung

Schattenrezeptor: I - Rütiweid 2

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Januar	Februar	März	April	Mai	Juni	
1	08:10 16:42 52	11:20 (1)   07:50 12:12 (1)   17:23	07:05	13:26 (2)   07:03	06:07	05:30	
2	08:10 16:43 53	11:20 (1)   07:48 12:13 (1)   17:24	18:06 76	14:42 (2)   19:51	20:33	21:11	
3	08:10 16:44 53	11:20 (1)   07:47 12:13 (1)   17:26	07:03	13:25 (2)   07:01	06:06	05:30	
4	08:10 16:45 52	11:21 (1)   07:46 12:13 (1)   17:27	18:08 77	14:42 (2)   19:52	20:34	21:11	
5	08:10 16:46 53	11:21 (1)   07:44 12:14 (1)   17:29	07:01	13:25 (2)   06:59	06:04	05:29	
6	08:10 16:47 53	11:22 (1)   07:43 12:15 (1)   17:31	18:09 77	14:42 (2)   19:54	20:35	21:12	
7	08:09 16:48 52	11:22 (1)   07:42 12:14 (1)   17:32	06:59	13:24 (2)   06:57	06:03	05:28	
8	08:09 16:49 52	11:23 (1)   07:40 12:15 (1)   17:34	18:11 78	14:42 (2)   19:55	20:37	21:13	
9	08:09 16:50 52	11:24 (1)   07:39 12:16 (1)   17:35	06:57	13:24 (2)   06:55	06:01	05:28	
10	08:08 16:51 52	11:24 (1)   07:37 12:16 (1)   17:37	18:12 78	14:42 (2)   19:56	20:38	21:14	
11	08:08 16:53 51	11:24 (1)   07:36 12:15 (1)   17:38	06:55	13:24 (2)   06:53	06:00	05:27	
12	08:08 16:54 51	11:25 (1)   07:34 12:16 (1)   17:40	18:14 78	14:42 (2)   19:58	20:40	21:15	
13	08:07 16:55 51	11:26 (1)   07:31 12:16 (1)   17:42	06:53	13:24 (2)   06:51	05:58	05:27	
14	08:07 16:56 51	11:26 (1)   07:31 12:17 (1)   17:43	18:15 78	14:42 (2)   19:59	20:41	21:16	
15	08:06 16:58 51	11:26 (1)   07:29 12:17 (1)   17:45	13:57 (2)   06:51	13:24 (2)   06:49	05:57	05:27	
16	08:05 16:59 50	11:27 (1)   07:28 12:17 (1)   17:46	18:17 77	14:41 (2)   20:01	20:42	21:16	
17	08:05 17:01 49	11:27 (1)   07:26 12:16 (1)   17:48	06:49	13:25 (2)   06:47	05:55	05:26	
18	08:04 17:02 48	11:29 (1)   07:24 12:17 (1)   17:49	13:52 (2)   06:49	13:25 (2)   06:47	05:55	05:26	
19	08:03 17:03 48	11:29 (1)   07:23 12:17 (1)   17:51	14:15 (2)   18:18	14:41 (2)   20:02	20:44	21:17	
20	08:02 17:05 47	11:30 (1)   07:21 12:17 (1)   17:52	13:49 (2)   06:47	13:25 (2)   06:45	05:54	05:26	
21	08:02 17:06 45	11:31 (1)   07:19 12:16 (1)   17:54	14:20 (2)   18:19	14:41 (2)   20:03	20:45	21:18	
22	08:01 17:08 44	11:32 (1)   07:17 12:16 (1)   17:55	13:46 (2)   06:45	13:26 (2)   06:44	05:52	05:26	
23	08:00 17:09 43	11:33 (1)   07:16 12:16 (1)   17:57	14:23 (2)   18:21	14:40 (2)   20:05	20:46	21:18	
24	07:59 17:11 41	11:34 (1)   07:14 12:15 (1)   17:59	13:43 (2)   06:43	13:26 (2)   06:42	05:51	05:25	
25	07:58 17:12 39	11:35 (1)   07:12 12:14 (1)   18:00	14:25 (2)   18:22	14:39 (2)   20:06	20:48	21:19	
26	07:57 17:14 38	11:35 (1)   07:10 12:13 (1)   18:02	13:41 (2)   06:41	13:27 (2)   06:40	05:50	05:25	
27	07:56 17:15 35	11:37 (1)   07:08 12:12 (1)   18:03	14:28 (2)   18:24	14:39 (2)   20:08	20:49	21:20	
28	07:55 17:17 31	11:39 (1)   07:07 12:10 (1)   18:05	13:39 (2)   06:39	13:28 (2)   06:38	05:48	05:25	
29	07:53 17:18 28	11:41 (1)     12:09 (1)	14:29 (2)   18:25	14:38 (2)   20:09	20:50	21:20	
30	07:52 17:20 23	11:43 (1)     12:06 (1)	13:37 (2)   06:37	13:29 (2)   06:36	05:47	05:25	
31	07:51 17:21 15	11:47 (1)     12:02 (1)	14:31 (2)   18:27	14:37 (2)   20:10	20:51	21:21	
	Sonnenscheinstunden	277	287	368	408	468	476
	astr.max.mögl.Beschattung	1403	1182	1575			
	Red.Sonnenscheinwahrsch.	0,21	0,28	0,36			
	Reduktion Betriebsdauer	0,81	0,81	0,81			
	Reduktion Windrichtung	0,59	0,64	0,64			
	Gesamte Reduktion	0,10	0,14	0,19			
	Met.wahrsch.Beschattung	138	169	292			

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: 241\_16\_702\_Schatten\_Oberfeld Schattenrezeptor: I - Rütiweid 2  
Annahmen für Schattenwurfberechnung  
Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor  
N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	July	August	September	Oktober	November	Dezember			
1	05:29 21:23	05:59 20:58	06:40 20:05	07:20 19:04	14:06 (2) 15:19 (2)	07:05 17:07	13:18 (2) 13:48 (2)	07:48 16:34	11:06 (1) 11:58 (1)
2	05:30 21:23	06:00 20:56	06:41 20:03	07:21 19:02	14:05 (2) 15:19 (2)	07:06 17:05	13:22 (2) 13:44 (2)	07:49 16:34	11:07 (1) 11:59 (1)
3	05:30 21:23	06:02 20:55	06:43 20:01	07:23 19:00	14:03 (2) 15:18 (2)	07:08 17:04	13:29 (2) 13:38 (2)	07:50 16:33	11:07 (1) 11:59 (1)
4	05:31 21:22	06:03 20:53	06:44 19:59	07:24 18:58	14:03 (2) 15:19 (2)	07:09 17:02	13:29 (2) 13:38 (2)	07:51 16:33	11:07 (1) 11:59 (1)
5	05:32 21:22	06:04 20:52	06:45 19:57	07:26 18:56	14:01 (2) 15:18 (2)	07:11 17:01	13:29 (2) 13:38 (2)	07:53 16:33	11:07 (1) 11:59 (1)
6	05:32 21:21	06:06 20:50	06:47 19:55	07:27 18:54	14:01 (2) 15:19 (2)	07:12 16:59	13:32 (2) 13:41 (2)	07:54 16:32	11:08 (1) 12:01 (1)
7	05:33 21:21	06:07 20:49	06:48 19:53	07:28 18:52	14:00 (2) 15:18 (2)	07:14 16:58	13:35 (2) 13:44 (2)	07:55 16:32	11:08 (1) 12:01 (1)
8	05:34 21:21	06:08 20:47	06:49 19:51	07:30 18:50	14:00 (2) 15:18 (2)	07:15 16:57	13:35 (2) 13:44 (2)	07:56 16:32	11:09 (1) 12:01 (1)
9	05:35 21:20	06:09 20:46	06:51 19:49	07:31 18:48	13:59 (2) 15:17 (2)	07:17 16:55	13:35 (2) 13:44 (2)	07:57 16:32	11:09 (1) 12:02 (1)
10	05:35 21:19	06:11 20:44	06:52 19:47	07:32 18:46	13:59 (2) 15:16 (2)	07:18 16:54	13:35 (2) 13:44 (2)	07:58 16:32	11:09 (1) 12:02 (1)
11	05:36 21:19	06:12 20:43	06:53 19:45	07:34 18:44	13:59 (2) 15:17 (2)	07:20 16:53	11:18 (1) 11:34 (1)	07:59 16:32	11:10 (1) 12:02 (1)
12	05:37 21:18	06:13 20:41	06:54 19:43	07:35 18:42	13:58 (2) 15:16 (2)	07:21 16:51	11:15 (1) 11:38 (1)	08:00 16:32	11:10 (1) 12:03 (1)
13	05:38 21:18	06:15 20:39	06:56 19:41	07:37 18:40	13:59 (2) 15:15 (2)	07:23 16:50	11:13 (1) 11:41 (1)	08:01 16:32	11:11 (1) 12:03 (1)
14	05:39 21:17	06:16 20:38	06:57 19:39	07:38 18:38	13:58 (2) 15:14 (2)	07:24 16:49	11:11 (1) 11:42 (1)	08:02 16:32	11:12 (1) 12:04 (1)
15	05:40 21:16	06:17 20:36	06:58 19:36	07:40 18:36	13:59 (2) 15:14 (2)	07:26 16:48	11:10 (1) 11:45 (1)	08:02 16:32	11:11 (1) 12:04 (1)
16	05:41 21:15	06:19 20:34	07:00 19:34	07:41 18:35	13:59 (2) 15:13 (2)	07:27 16:47	11:08 (1) 11:46 (1)	08:03 16:32	11:12 (1) 12:04 (1)
17	05:42 21:14	06:20 20:32	07:01 19:32	07:42 18:33	13:59 (2) 15:13 (2)	07:29 16:45	11:08 (1) 11:47 (1)	08:04 16:32	11:13 (1) 12:05 (1)
18	05:43 21:14	06:21 20:31	07:02 19:30	07:44 18:31	13:59 (2) 15:11 (2)	07:30 16:44	11:08 (1) 11:49 (1)	08:05 16:33	11:14 (1) 12:06 (1)
19	05:44 21:13	06:23 20:29	07:04 19:28	14:44 (2) 15:06 (2)	07:45 18:29	14:00 (2) 16:43	11:07 (1) 11:50 (1)	08:05 16:33	11:13 (1) 12:06 (1)
20	05:45 21:12	06:24 20:27	07:05 19:26	14:37 (2) 15:09 (2)	07:47 18:27	14:00 (2) 16:42	11:07 (1) 11:51 (1)	08:06 16:33	11:14 (1) 12:07 (1)
21	05:46 21:11	06:25 20:25	07:06 19:24	14:32 (2) 15:11 (2)	07:48 18:25	14:01 (2) 16:41	11:06 (1) 11:51 (1)	08:07 16:34	11:14 (1) 12:07 (1)
22	05:47 21:10	06:27 20:24	07:08 19:22	14:27 (2) 15:12 (2)	07:50 18:24	14:02 (2) 16:41	11:06 (1) 11:53 (1)	08:07 16:34	11:15 (1) 12:08 (1)
23	05:48 21:09	06:28 20:22	07:09 19:20	14:24 (2) 15:14 (2)	07:51 18:22	14:03 (2) 16:40	11:05 (1) 11:53 (1)	08:08 16:35	11:15 (1) 12:08 (1)
24	05:50 21:07	06:29 20:20	07:10 19:18	14:21 (2) 15:15 (2)	07:53 18:20	14:04 (2) 16:39	11:06 (1) 11:54 (1)	08:08 16:35	11:15 (1) 12:08 (1)
25	05:51 21:06	06:31 20:18	07:12 19:16	14:17 (2) 15:16 (2)	06:54 17:18	13:05 (2) 14:03 (2)	11:05 (1) 11:55 (1)	08:08 16:36	11:16 (1) 12:09 (1)
26	05:52 21:05	06:32 20:16	07:13 19:14	14:16 (2) 15:17 (2)	06:56 17:17	13:07 (2) 14:02 (2)	11:06 (1) 11:56 (1)	08:09 16:37	11:17 (1) 12:09 (1)
27	05:53 21:04	06:33 20:14	07:15 19:12	14:13 (2) 15:17 (2)	06:57 17:15	13:07 (2) 14:00 (2)	11:06 (1) 11:56 (1)	08:09 16:37	11:17 (1) 12:09 (1)
28	05:54 21:03	06:35 20:12	07:16 19:10	14:11 (2) 15:18 (2)	06:59 17:13	13:09 (2) 13:58 (2)	11:05 (1) 11:56 (1)	08:09 16:38	11:17 (1) 12:10 (1)
29	05:56 21:02	06:36 20:10	07:17 19:08	14:09 (2) 15:18 (2)	07:00 17:12	13:11 (2) 13:56 (2)	11:06 (1) 11:57 (1)	08:10 16:39	11:18 (1) 12:11 (1)
30	05:57 21:00	06:37 20:08	07:19 19:06	14:07 (2) 15:18 (2)	07:02 17:10	13:13 (2) 13:54 (2)	11:06 (1) 11:57 (1)	08:10 16:40	11:19 (1) 12:11 (1)
31	05:58 20:59	06:39 20:07	07:20 19:05	07:03 17:08	13:16 (2) 13:52 (2)	07:47 16:35	08:10 16:40	11:19 (1) 12:12 (1)	
Sonnenscheinstunden	481	442	378	338	281	265			
astr. max. mögl. Beschattung			633	2101	890	1628			
Red. Sonnenscheinwahrsch.			0,40	0,30	0,21	0,19			
Reduktion Betriebsdauer			0,81	0,81	0,81	0,81			
Reduktion Windrichtung			0,64	0,64	0,59	0,59			
Gesamte Reduktion			0,21	0,15	0,10	0,09			
Met. wahrsch. Beschattung			132	322	91	145			

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

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

Berechnung: 241\_16\_702\_Schatten\_Oberfeld  
Annahmen für Schattenwurfberechnung

Schattenrezeptor: J - Chozeren 1

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember				
1	08:10	07:50	07:05	07:03	08:20 (2)	06:07	05:30	05:29	05:59	06:40	08:19 (2)	07:20	07:05	07:48		
	16:42	17:23	18:06	19:51	09:22 (2)	20:33	21:11	21:23	20:58	20:05	53	09:12 (2)	19:04	17:07	16:34	
2	08:10	07:49	07:03	07:01	08:19 (2)	06:06	05:30	05:30	06:01	06:41	08:18 (2)	07:21	07:06	07:49		
	16:43	17:24	18:08	19:52	09:21 (2)	20:34	21:11	21:23	20:56	20:03	55	09:13 (2)	19:02	17:05	16:34	
3	08:10	07:47	07:01	06:59	08:19 (2)	06:04	05:29	05:30	06:02	06:43	08:17 (2)	07:23	07:08	07:50		
	16:44	17:26	18:09	19:54	09:21 (2)	20:36	21:12	21:23	20:55	20:01	56	09:13 (2)	19:00	17:04	16:33	
4	08:10	07:46	06:59	06:57	08:19 (2)	06:03	05:28	05:31	06:03	06:44	08:16 (2)	07:24	07:09	07:51		
	16:45	17:28	18:11	19:55	09:20 (2)	20:37	21:13	21:22	20:53	19:59	58	09:14 (2)	18:58	17:02	16:33	
5	08:10	07:45	06:57	06:55	08:19 (2)	06:01	05:28	05:32	06:04	06:45	08:16 (2)	07:26	07:11	07:53		
	16:46	17:29	18:12	19:56	09:19 (2)	20:38	21:14	21:22	20:52	19:57	59	09:15 (2)	18:56	17:01	16:33	
6	08:10	07:43	06:55	06:53	08:19 (2)	06:00	05:27	05:32	06:06	06:47	08:15 (2)	07:27	07:12	07:54		
	16:47	17:31	18:14	19:58	09:19 (2)	20:40	21:15	21:22	20:50	19:55	60	09:15 (2)	18:54	16:59	16:32	
7	08:09	07:42	06:53	06:51	08:19 (2)	05:58	05:27	05:33	06:07	06:48	08:14 (2)	07:28	07:14	07:55		
	16:48	17:32	18:15	19:59	09:18 (2)	20:41	21:16	21:21	20:49	19:53	60	09:14 (2)	18:52	16:58	16:32	
8	08:09	07:40	06:51	06:49	08:19 (2)	05:57	05:27	05:34	06:08	06:49	08:13 (2)	07:30	07:15	07:56		
	16:49	17:34	18:17	20:01	09:17 (2)	20:42	21:16	21:21	20:47	19:51	61	09:14 (2)	18:50	16:57	16:32	
9	08:09	07:39	06:49	06:47	08:19 (2)	05:55	05:26	05:35	06:09	06:51	08:13 (2)	07:31	07:17	07:57		
	16:50	17:35	18:18	20:02	09:15 (2)	20:44	21:17	21:20	20:46	19:49	62	09:15 (2)	18:48	16:55	16:32	
10	08:08	07:37	06:47	06:46	08:19 (2)	05:54	05:26	05:35	06:11	06:52	08:13 (2)	07:33	07:18	07:58		
	16:51	17:37	18:19	20:03	09:14 (2)	20:45	21:18	21:20	20:44	19:47	61	09:14 (2)	18:46	16:54	16:32	
11	08:08	07:36	06:45	06:44	08:20 (2)	05:52	05:26	05:36	06:12	06:53	08:12 (2)	07:34	07:20	07:59		
	16:53	17:38	18:21	20:05	09:13 (2)	20:46	21:18	21:19	20:43	19:45	62	09:14 (2)	18:44	16:53	16:32	
12	08:08	07:34	06:43	06:42	08:20 (2)	05:51	05:25	05:37	06:13	06:55	08:11 (2)	07:35	07:21	08:00		
	16:54	17:40	18:22	20:06	09:11 (2)	20:48	21:19	21:18	20:41	19:43	62	09:13 (2)	18:42	16:51	16:32	
13	08:07	07:33	06:41	07:52 (2)	06:40	08:22 (2)	05:50	05:25	05:38	06:56	08:12 (2)	07:37	07:23	08:01		
	16:55	17:42	18:24	10 08:02 (2)	20:08	09:11 (2)	20:49	21:20	20:39	19:41	62	09:14 (2)	18:40	16:50	16:32	
14	08:07	07:31	06:39	07:46 (2)	06:38	08:22 (2)	05:48	05:25	05:39	06:57	08:12 (2)	07:38	07:24	08:02		
	16:56	17:43	18:25	21 08:07 (2)	20:09	09:09 (2)	20:50	21:20	20:38	19:39	61	09:13 (2)	18:38	16:49	16:32	
15	08:06	07:29	06:37	07:42 (2)	06:36	08:23 (2)	05:47	05:25	05:40	06:59	08:11 (2)	07:40	07:26	08:02		
	16:58	17:45	18:27	29 08:11 (2)	20:10	09:07 (2)	20:51	21:21	20:36	19:37	61	09:12 (2)	18:37	16:48	16:32	
16	08:05	07:28	06:35	07:39 (2)	06:34	08:24 (2)	05:46	05:25	05:41	07:00	08:12 (2)	07:41	07:27	08:03		
	16:59	17:46	18:28	34 08:13 (2)	20:12	09:05 (2)	20:53	21:21	20:34	19:34	60	09:12 (2)	18:35	16:47	16:32	
17	08:05	07:26	06:33	07:37 (2)	06:32	08:25 (2)	05:45	05:25	05:42	07:01	08:12 (2)	07:42	07:29	08:04		
	17:01	17:48	18:30	38 08:15 (2)	20:13	09:03 (2)	20:54	21:22	20:32	19:32	59	09:11 (2)	18:33	16:46	16:32	
18	08:04	07:24	06:31	07:35 (2)	06:30	08:26 (2)	05:43	05:25	05:43	07:02	08:12 (2)	07:44	07:30	08:05		
	17:02	17:49	18:31	41 08:16 (2)	20:15	09:01 (2)	20:55	21:22	20:31	19:30	58	09:10 (2)	18:31	16:44	16:33	
19	08:03	07:23	06:29	07:33 (2)	06:28	08:27 (2)	05:42	05:25	05:44	07:04	08:13 (2)	07:45	07:31	08:05		
	17:03	17:51	18:32	45 08:18 (2)	20:16	09:08 (2)	20:56	21:22	20:29	19:28	56	09:09 (2)	18:29	16:43	16:33	
20	08:02	07:21	06:27	07:31 (2)	06:27	08:30 (2)	05:41	05:25	05:45	07:05	08:13 (2)	07:47	07:33	08:06		
	17:05	17:52	18:34	48 08:19 (2)	20:17	08:56 (2)	20:58	21:23	20:27	19:26	55	09:08 (2)	18:27	16:42	16:33	
21	08:02	07:19	06:25	07:29 (2)	06:25	08:33 (2)	05:40	05:25	05:46	07:07	08:13 (2)	07:48	07:34	08:07		
	17:06	17:54	18:35	51 08:20 (2)	20:19	08:53 (2)	20:59	21:23	20:25	13 08:53 (2)	19:24	53	09:06 (2)	18:25	16:42	16:34
22	08:01	07:17	06:23	07:28 (2)	06:23	08:37 (2)	05:39	05:25	05:47	07:08	08:15 (2)	07:50	07:36	08:07		
	17:08	17:56	18:37	53 08:21 (2)	20:20	08:47 (2)	21:00	21:23	20:24	21 08:58 (2)	19:22	51	09:06 (2)	18:24	16:41	16:34
23	08:00	07:16	06:21	07:27 (2)	06:21	05:38	05:26	05:48	06:28	07:09	08:14 (2)	07:51	07:37	08:08		
	17:09	17:57	18:38	54 08:21 (2)	20:22	21:01	21:23	21:09	20:22	27 09:01 (2)	19:20	49	09:04 (2)	18:22	16:40	16:35
24	07:59	07:14	06:19	07:26 (2)	06:19	05:37	05:26	05:50	06:29	07:11	08:16 (2)	07:53	07:39	08:08		
	17:11	17:59	18:40	56 08:22 (2)	20:23	21:02	21:23	21:08	20:20	31 09:02 (2)	19:18	46	09:02 (2)	18:20	16:39	16:35
25	07:58	07:12	06:17	07:25 (2)	06:18	05:36	05:26	05:51	06:31	07:12	08:10 (2)	06:54	07:40	08:08		
	17:12	18:00	18:41	57 08:22 (2)	20:24	21:03	21:23	21:06	20:18	35 09:05 (2)	19:16	43	09:01 (2)	17:18	16:38	16:36
26	07:57	07:10	06:15	07:24 (2)	06:16	05:35	05:27	05:52	06:32	07:13	08:12 (2)	07:13	07:41	08:09		
	17:14	18:02	18:42	58 08:22 (2)	20:26	21:04	21:23	21:05	20:16	38 09:06 (2)	19:14	39	08:58 (2)	17:17	16:37	16:37
27	07:56	07:08	06:13	07:23 (2)	06:14	05:34	05:27	05:53	06:33	07:15	08:11 (2)	06:57	07:43	08:09		
	17:15	18:03	18:44	60 08:23 (2)	20:27	21:06	21:23	21:04	20:14	41 09:07 (2)	19:12	35	08:55 (2)	17:15	16:37	16:37
28	07:55	07:07	06:11	07:22 (2)	06:12	05:33	05:27	05:54	06:35	07:16	08:12 (2)	06:59	07:44	08:09		
	17:17	18:05	18:45	61 08:23 (2)	20:29	21:07	21:23	21:03	20:12	44 09:08 (2)	19:10	30	08:53 (2)	17:13	16:36	16:38
29	07:53	07:09	06:11	08:21 (2)	06:11	05:32	05:28	05:56	06:36	07:17	08:13 (2)	07:17	07:45	08:10		
	17:18	18:06	18:46	62 09:23 (2)	20:30	21:08	21:23	21:02	20:10	47 09:10 (2)	19:08	25	08:50 (2)	17:12	16:35	16:39
30	07:52	07:07	06:11	08:21 (2)	06:09	05:32	05:28	05:57	06:37	07:19	08:12 (2)	07:17	07:47	08:10		
	17:20	18:08	18:48	61 09:22 (2)	20:31	21:09	21:23	21:00	20:08	50 09:11 (2)	19:06	15	08:44 (2)	17:10	16:35	16:40
31	07:51	07:05	06:11	08:20 (2)	06:11	05:31	05:27	05:58	06:39	07:20	08:13 (2)	07:17	07:47	08:10		
	17:21	18:09	18:49	62 09:22 (2)	20:32	21:10	21:24	20:59	20:07	51 09:11 (2)	19:07	15	08:44 (2)	17:09	16:35	16:40
Sonnenscheinstunden	277	287	368	408	1040	468	476	481	442	378	338	281	265			
astr.max.mögl.Beschattung			0,91	0,36	0,42	0,81	0,67	0,81	0,81	0,40	0,40					
Red.Sonnenscheinwahrsch.			0,81	0,67	0,67	0,23	0,25	0,25	0,22	0,22	0,22					
Reduktion Betriebsdauer			0,19	0,19	0,23	0,25	0,25	0,25	0,22	0,22	0,22					
Reduktion Windrichtung			175	236	236	100	100	100	100	343	343					
Gesamte Reduktion																
Met.wahrsch.Beschattung																

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

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

## SHADOW - Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld  
Annahmen für Schattenwurfberechnung

Schattenrezeptor: K - Rütweiid 3

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Januar	Februar	März	April	Mai	Juni
1	08:10 16:42 35	09:43 (1)   07:50 10:18 (1)   17:23 54	10:13 (2)   07:05 11:07 (2)   18:06	07:03 19:51	06:07 20:33	05:30 21:11
2	08:10 16:43 35	09:43 (1)   07:49 10:18 (1)   17:24 55	10:13 (2)   07:03 11:08 (2)   18:08	07:01 19:52	06:06 20:34	05:30 21:11
3	08:10 16:44 35	09:43 (1)   07:47 10:18 (1)   17:26 54	10:13 (2)   07:01 11:07 (2)   18:09	06:59 19:54	06:04 20:35	05:29 21:12
4	08:10 16:45 35	09:43 (1)   07:46 10:18 (1)   17:27 55	10:13 (2)   06:59 11:08 (2)   18:11	06:57 19:55	06:03 20:37	05:28 21:13
5	08:10 16:46 35	09:44 (1)   07:45 10:19 (1)   17:29 54	10:13 (2)   06:57 11:07 (2)   18:12	06:55 19:56	06:01 20:38	05:28 21:14
6	08:10 16:47 43	09:45 (1)   07:43 10:37 (2)   17:31 55	10:13 (2)   06:55 11:08 (2)   18:14	06:53 19:58	06:00 20:40	05:27 21:15
7	08:09 16:48 48	09:45 (1)   07:42 10:39 (2)   17:32 54	10:13 (2)   06:53 11:07 (2)   18:15	06:51 19:59	05:58 20:41	05:27 21:16
8	08:09 16:49 52	09:45 (1)   07:40 10:42 (2)   17:34 54	10:14 (2)   06:51 11:08 (2)   18:17	06:49 20:01	05:57 20:42	05:27 21:16
9	08:09 16:50 56	09:46 (1)   07:39 10:45 (2)   17:35 53	10:14 (2)   06:49 11:07 (2)   18:18	06:47 20:02	05:55 20:44	05:26 21:17
10	08:08 16:51 58	09:46 (1)   07:37 10:46 (2)   17:37 52	10:15 (2)   06:47 11:07 (2)   18:19	06:46 20:03	05:54 20:45	05:26 21:18
11	08:08 16:53 61	09:47 (1)   07:36 10:48 (2)   17:38 51	10:15 (2)   06:45 11:06 (2)   18:21	06:44 20:05	05:52 20:46	05:26 21:18
12	08:08 16:54 61	09:48 (1)   07:34 10:49 (2)   17:40 50	10:15 (2)   06:43 11:05 (2)   18:22	06:42 20:06	05:51 20:48	05:25 21:19
13	08:07 16:55 62	09:48 (1)   07:33 10:50 (2)   17:42 48	10:17 (2)   06:41 11:05 (2)   18:24	06:40 20:08	05:50 20:49	05:25 21:20
14	08:07 16:56 63	09:49 (1)   07:31 10:52 (2)   17:43 46	10:17 (2)   06:39 11:03 (2)   18:25	06:38 20:09	05:48 20:50	05:25 21:20
15	08:06 16:58 64	09:49 (1)   07:29 10:53 (2)   17:45 45	10:17 (2)   06:37 11:02 (2)   18:27	06:36 20:10	05:47 20:51	05:25 21:21
16	08:05 16:59 64	09:50 (1)   07:28 10:54 (2)   17:46 42	10:19 (2)   06:35 11:01 (2)   18:28	06:34 20:12	05:46 20:53	05:25 21:21
17	08:05 17:01 64	09:51 (1)   07:26 10:55 (2)   17:48 39	10:20 (2)   06:33 10:59 (2)   18:30	06:32 20:13	05:44 20:54	05:25 21:22
18	08:04 17:02 65	09:52 (1)   07:24 10:57 (2)   17:49 36	10:21 (2)   06:31 10:57 (2)   18:31	06:30 20:15	05:43 20:55	05:25 21:22
19	08:03 17:03 65	09:53 (1)   07:23 10:58 (2)   17:51 31	10:23 (2)   06:29 10:54 (2)   18:32	06:28 20:16	05:42 20:56	05:25 21:22
20	08:02 17:05 65	09:54 (1)   07:21 10:59 (2)   17:52 27	10:25 (2)   06:27 10:52 (2)   18:34	06:27 20:17	05:41 20:58	05:25 21:23
21	08:02 17:06 65	09:55 (1)   07:19 11:00 (2)   17:54 20	10:28 (2)   06:25 10:48 (2)   18:35	06:25 20:19	05:40 20:59	05:25 21:23
22	08:01 17:08 65	09:56 (1)   07:17 11:01 (2)   17:56 8	10:33 (2)   06:23 10:41 (2)   18:37	06:23 20:20	05:39 21:00	05:25 21:23
23	08:00 17:09 64	09:58 (1)   07:16 11:02 (2)   17:57	06:21 18:38	06:21 20:22	05:38 21:01	05:26 21:23
24	07:59 17:11 63	10:00 (1)   07:14 11:03 (2)   17:59	06:19 18:40	06:19 20:23	05:37 21:02	05:26 21:23
25	07:58 17:12 62	10:02 (1)   07:12 11:04 (2)   18:00	06:17 18:41	06:18 20:24	05:36 21:03	05:26 21:23
26	07:57 17:14 54	10:06 (1)   07:10 11:04 (2)   18:02	06:15 18:42	06:16 20:26	05:35 21:04	05:27 21:23
27	07:56 17:15 51	10:13 (2)   07:08 11:04 (2)   18:03	06:13 18:44	06:14 20:27	05:34 21:06	05:27 21:23
28	07:55 17:17 52	10:13 (2)   07:07 11:05 (2)   18:05	06:11 18:45	06:12 20:29	05:33 21:07	05:27 21:23
29	07:53 17:18 53	10:13 (2)   11:06 (2)	07:09 19:47	06:11 20:30	05:32 21:08	05:28 21:23
30	07:52 17:20 54	10:13 (2)   11:07 (2)	07:07 19:48	06:09 20:31	05:32 21:09	05:28 21:23
31	07:51 17:21 53	10:13 (2)   11:06 (2)	07:05 19:49	05:31 21:10	05:31 21:10	05:28 21:23
Sonnenscheinstunden	277	287	368	408	468	476
astr. max. mögl. Beschattung	1702	983				
Red. Sonnenscheinwahrsch.	0,21	0,28				
Reduktion Betriebsdauer	0,81	0,81				
Reduktion Windrichtung	0,62	0,62				
Gesamte Reduktion	0,11	0,14				
Met. wahrsch. Beschattung	179	138				

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: 241\_16\_702\_Schatten\_Oberfeld  
 Annahmen für Schattenwurfberechnung

Schattenrezeptor: K - Rütweiid 3

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,85	2,84	4,26	5,69	5,97	6,68	7,26	6,61	5,09	3,24	2,01	1,60

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
395	436	229	207	251	637	1.082	365	782	1.585	809	350	7.128

Startwindgeschwindigkeit 2,5m/s

	July	August	September	Oktober	November	Dezember		
1	05:29 21:23	05:59 20:58	06:40 20:05	07:20 19:04	07:05 17:07	09:44 (2) 10:36 (2)	07:48 16:34	09:29 (1) 61 10:30 (2)
2	05:30 21:23	06:00 20:56	06:41 20:03	07:21 19:02	07:06 17:05	09:44 (2) 10:37 (2)	07:49 16:34	09:29 (1) 58 10:29 (2)
3	05:30 21:23	06:02 20:55	06:43 20:01	07:23 19:00	07:08 17:04	09:44 (2) 10:37 (2)	07:50 16:33	09:29 (1) 56 10:28 (2)
4	05:31 21:22	06:03 20:53	06:44 19:59	07:24 18:58	07:09 17:02	09:43 (2) 10:37 (2)	07:51 16:33	09:29 (1) 52 10:26 (2)
5	05:32 21:22	06:04 20:52	06:45 19:57	07:26 18:56	07:11 17:01	09:43 (2) 10:38 (2)	07:53 16:33	09:30 (1) 49 10:25 (2)
6	05:32 21:22	06:06 20:50	06:47 19:55	07:27 18:54	07:12 16:59	09:43 (2) 10:37 (2)	07:54 16:32	09:31 (1) 43 10:23 (2)
7	05:33 21:21	06:07 20:49	06:48 19:53	07:28 18:52	07:14 16:58	09:43 (2) 10:38 (2)	07:55 16:32	09:31 (1) 35 10:06 (1)
8	05:34 21:21	06:08 20:47	06:49 19:51	07:30 18:50	07:15 16:57	09:44 (2) 10:38 (2)	07:56 16:32	09:31 (1) 36 10:07 (1)
9	05:35 21:20	06:09 20:46	06:51 19:49	07:31 18:48	07:17 16:55	09:43 (2) 10:38 (2)	07:57 16:32	09:32 (1) 35 10:07 (1)
10	05:35 21:20	06:11 20:44	06:52 19:47	07:33 18:46	07:18 16:54	09:44 (2) 10:38 (2)	07:58 16:32	09:32 (1) 35 10:07 (1)
11	05:36 21:19	06:12 20:43	06:53 19:45	07:34 18:44	07:20 16:53	09:44 (2) 10:38 (2)	07:59 16:32	09:33 (1) 35 10:08 (1)
12	05:37 21:18	06:13 20:41	06:55 19:43	07:35 18:42	07:21 16:51	09:44 (2) 10:38 (2)	08:00 16:32	09:33 (1) 35 10:08 (1)
13	05:38 21:18	06:15 20:39	06:56 19:41	07:37 18:40	07:23 16:50	09:45 (2) 10:38 (2)	08:01 16:32	09:34 (1) 35 10:09 (1)
14	05:39 21:17	06:16 20:38	06:57 19:39	07:38 18:38	07:24 16:49	09:45 (2) 10:37 (2)	08:02 16:32	09:34 (1) 35 10:09 (1)
15	05:40 21:16	06:17 20:36	06:58 19:37	07:40 18:37	07:26 16:48	09:46 (2) 10:37 (2)	08:02 16:32	09:34 (1) 35 10:09 (1)
16	05:41 21:15	06:19 20:34	07:00 19:34	07:41 18:35	07:27 16:47	09:40 (1) 10:38 (2)	08:03 16:32	09:35 (1) 35 10:10 (1)
17	05:42 21:14	06:20 20:32	07:01 19:32	07:42 18:33	07:29 16:45	09:35 (1) 10:37 (2)	08:04 16:32	09:36 (1) 34 10:10 (1)
18	05:43 21:14	06:21 20:31	07:02 19:30	07:44 18:31	07:30 16:44	09:33 (1) 10:37 (2)	08:05 16:33	09:36 (1) 35 10:11 (1)
19	05:44 21:13	06:23 20:29	07:04 19:28	07:45 18:29	07:31 16:43	09:32 (1) 10:36 (2)	08:05 16:33	09:36 (1) 35 10:11 (1)
20	05:45 21:12	06:24 20:27	07:05 19:26	07:47 18:27	11:01 (2) 13 11:14 (2)	07:33 16:42	08:06 16:33	09:37 (1) 35 10:12 (1)
21	05:46 21:11	06:25 20:25	07:06 19:24	07:48 18:25	10:58 (2) 22 11:20 (2)	07:34 16:41	08:07 16:34	09:37 (1) 35 10:12 (1)
22	05:47 21:10	06:27 20:24	07:08 19:22	07:50 18:24	10:54 (2) 28 11:22 (2)	07:36 16:41	08:07 16:34	09:38 (1) 35 10:13 (1)
23	05:48 21:09	06:28 20:22	07:09 19:20	07:51 18:22	10:52 (2) 33 11:25 (2)	07:37 16:40	08:08 16:35	09:38 (1) 35 10:13 (1)
24	05:50 21:08	06:29 20:20	07:11 19:18	07:53 18:20	10:51 (2) 37 11:28 (2)	07:39 16:39	08:08 16:35	09:39 (1) 35 10:14 (1)
25	05:51 21:06	06:31 20:18	07:12 19:16	07:54 17:18	09:49 (2) 40 10:29 (2)	07:40 16:38	08:08 16:36	09:39 (1) 35 10:14 (1)
26	05:52 21:05	06:32 20:16	07:13 19:14	07:56 17:17	09:48 (2) 43 10:31 (2)	07:41 16:37	08:09 16:37	09:39 (1) 35 10:14 (1)
27	05:53 21:04	06:33 20:14	07:15 19:12	07:57 17:15	09:47 (2) 45 10:32 (2)	07:43 16:37	08:09 16:37	09:40 (1) 34 10:14 (1)
28	05:54 21:03	06:35 20:12	07:16 19:10	07:59 17:13	09:46 (2) 47 10:33 (2)	07:44 16:36	08:09 16:38	09:41 (1) 35 10:16 (1)
29	05:56 21:02	06:36 20:10	07:17 19:08	08:00 17:12	09:46 (2) 48 10:34 (2)	07:45 16:35	08:10 16:39	09:41 (1) 35 10:16 (1)
30	05:57 21:00	06:37 20:08	07:19 19:06	08:02 17:10	09:45 (2) 50 10:35 (2)	07:47 16:35	08:10 16:40	09:42 (1) 35 10:17 (1)
31	05:58 20:59	06:39 20:07	07:03 17:08	07:03 17:08	09:45 (2) 51 10:36 (2)	08:10 16:40	08:10 16:40	09:42 (1) 35 10:17 (1)
Sonnenscheinstunden	481	442	378	338	281		265	
astr.max.mögl.Beschattung				457	1749		1193	
Red.Sonnenscheinwahrsch.				0,30	0,21		0,19	
Reduktion Betriebsdauer				0,81	0,81		0,81	
Reduktion Windrichtung				0,62	0,62		0,63	
Gesamte Reduktion				0,15	0,11		0,10	
Met.wahrsch.Beschattung				69	190		114	

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: 241\_16\_702\_Schatten\_Oberfeld  
Annahmen für Schattenwurfberechnung

Schattenrezeptor: L - Honegg 2

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:10 16:42	07:50 17:23	07:05 18:06	07:03 19:51	06:07 20:33	05:30 21:11	05:29 21:23	05:59 20:58	06:40 20:05	07:20 19:04	07:05 17:07	07:48 16:34
2	08:10 16:43	07:48 17:24	07:03 18:08	07:01 19:52	06:06 20:34	05:30 21:11	05:30 21:23	06:01 20:56	06:41 20:03	07:21 19:02	07:06 17:05	07:49 16:34
3	08:10 16:44	07:47 17:26	07:01 18:09	06:59 19:54	06:04 20:35	05:29 21:12	05:30 21:22	06:02 20:55	06:43 20:01	07:23 19:00	07:08 17:04	07:50 16:33
4	08:10 16:45	07:46 17:27	06:59 18:11	06:57 19:55	06:03 20:37	05:28 21:13	05:31 21:22	06:03 20:53	06:44 19:59	07:24 18:58	07:09 17:02	07:51 16:33
5	08:10 16:46	07:44 17:29	06:57 18:12	06:55 19:56	06:01 20:38	05:28 21:14	05:32 21:22	06:04 20:52	06:45 19:57	07:26 18:56	07:11 17:01	07:53 16:33
6	08:10 16:47	07:43 17:31	06:55 18:14	06:53 19:58	06:00 20:40	05:27 21:15	05:32 21:21	06:06 20:50	06:47 19:55	07:27 18:54	07:12 16:59	07:54 16:32
7	08:09 16:48	07:42 17:32	06:53 18:15	06:51 19:59	05:58 20:41	05:27 21:16	05:33 21:21	06:07 20:49	06:48 19:53	07:28 18:52	07:14 16:58	07:55 16:32
8	08:09 16:49	07:40 17:34	06:51 18:17	06:49 20:01	05:57 20:42	05:27 21:16	05:34 21:21	06:08 20:47	06:49 19:51	07:30 18:50	07:15 16:57	07:56 16:32
9	08:09 16:50	07:39 17:35	06:49 18:18	06:47 20:02	05:55 20:44	05:26 21:17	05:35 21:20	06:09 20:46	06:51 19:49	07:31 18:48	07:17 16:55	07:57 16:32
10	08:08 16:51	07:37 17:37	06:47 18:19	06:46 20:03	05:54 20:45	05:26 21:18	05:35 21:19	06:11 20:44	06:52 19:47	07:32 18:46	07:18 16:54	07:58 16:32
11	08:08 16:53	07:36 17:38	06:45 18:21	06:44 20:05	05:52 20:46	05:26 21:18	05:36 21:19	06:12 20:43	06:53 19:45	07:34 18:44	07:20 16:53	07:59 16:32
12	08:08 16:54	07:34 17:40	06:43 18:22	06:42 20:06	05:51 20:48	05:25 21:19	05:37 21:18	06:13 20:41	06:55 19:43	07:35 18:42	07:21 16:51	08:00 16:32
13	08:07 16:55	07:33 17:42	06:41 18:24	06:40 20:08	05:50 20:49	05:25 21:20	05:38 21:18	06:15 20:39	06:56 19:41	07:37 18:40	07:23 16:50	08:01 16:32
14	08:07 16:56	07:31 17:43	06:39 18:25	06:38 20:09	05:48 20:50	05:25 21:20	05:39 21:17	06:16 20:38	06:57 19:39	07:38 18:38	07:24 16:49	08:02 16:32
15	08:06 16:58	07:29 17:45	06:37 18:27	06:36 20:10	05:47 20:51	05:25 21:21	05:40 21:16	06:17 20:36	06:58 19:36	07:40 18:37	07:26 16:48	08:02 16:32
16	08:05 16:59	07:28 17:46	06:35 18:28	06:34 20:12	05:46 20:53	05:25 21:21	05:41 21:15	06:19 20:34	07:00 19:34	07:41 18:35	07:27 16:47	08:03 16:32
17	08:05 17:01	07:26 17:48	06:33 18:30	06:32 20:13	05:45 20:54	05:25 21:21	05:42 21:14	06:20 20:32	07:01 19:32	07:42 18:33	07:29 16:46	08:04 16:32
18	08:04 17:02	07:24 17:49	06:31 18:31	06:30 20:15	05:43 20:55	05:25 21:22	05:43 21:14	06:21 20:31	07:02 19:30	07:44 18:31	07:30 16:44	08:05 16:33
19	08:03 17:03	07:23 17:51	06:29 18:32	06:28 20:16	05:42 20:56	05:25 21:22	05:44 21:13	06:23 20:29	07:04 19:28	07:45 18:29	07:31 16:43	08:05 16:33
20	08:02 17:05	07:21 17:52	06:27 18:34	06:27 20:17	05:41 20:58	05:25 21:23	05:45 21:12	06:24 20:27	07:05 19:26	07:47 18:27	07:33 16:42	08:06 16:33
21	08:02 17:06	07:19 17:54	06:25 18:35	06:25 20:19	05:40 20:59	05:25 21:23	05:46 21:11	06:25 20:25	07:06 19:24	07:48 18:25	07:34 16:41	08:07 16:34
22	08:01 17:08	07:17 17:56	06:23 18:37	06:23 20:20	05:39 21:00	05:25 21:23	05:47 21:10	06:27 20:23	07:08 19:22	07:50 18:24	07:36 16:41	08:07 16:34
23	08:00 17:09	07:16 17:57	06:21 18:38	06:21 20:22	05:38 21:01	05:26 21:23	05:48 21:09	06:28 20:22	07:09 19:20	07:51 18:22	07:37 16:40	08:08 16:35
24	07:59 17:11	07:14 17:59	06:19 18:40	06:19 20:23	05:37 21:02	05:26 21:23	05:50 21:07	06:29 20:20	07:11 19:18	07:53 18:20	07:39 16:39	08:08 16:35
25	07:58 17:12	07:12 18:00	06:17 18:41	06:18 20:24	05:36 21:03	05:26 21:23	05:51 21:06	06:31 20:18	07:12 19:16	07:12 17:18	06:54 16:38	08:08 16:36
26	07:57 17:14	07:10 18:02	06:15 18:42	06:16 20:26	05:35 21:04	05:27 21:23	05:52 21:05	06:32 20:16	07:13 19:14	06:56 17:17	07:41 16:37	08:09 16:37
27	07:56 17:15	07:08 18:03	06:13 18:44	06:14 20:27	05:34 21:05	05:27 21:23	05:53 21:04	06:33 20:14	07:15 19:12	06:57 17:15	07:43 16:37	08:09 16:37
28	07:55 17:17	07:07 18:05	06:11 18:45	06:12 20:29	05:33 21:07	05:27 21:23	05:54 21:03	06:35 20:12	07:16 19:10	06:59 17:13	07:44 16:36	08:09 16:38
29	07:53 17:18	07:09 19:47	06:11 20:30	06:11 20:30	05:32 21:08	05:28 21:23	05:56 21:02	06:36 20:10	07:17 19:08	07:00 17:12	07:45 16:35	08:10 16:39
30	07:52 17:20	07:07 19:48	06:09 20:31	06:09 20:31	05:32 21:09	05:28 21:23	05:57 21:00	06:37 20:08	07:19 19:06	07:02 17:10	07:47 16:35	08:10 16:40
31	07:51 17:21	07:05 19:49	07:05 20:31	07:05 20:31	05:31 21:10	05:28 21:23	05:58 20:59	06:39 20:07	07:03 17:09	07:03 17:09	07:03 16:40	08:10 16:40
Sonnenscheinstunden	277	287	368	408	468	476	481	442	378	338	281	265
astr. max. mögl. Beschattung												
Red. Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met. wahrsch. Beschattung												

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

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



## SHADOW - Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld  
Annahmen für Schattenwurfberechnung

Schattenrezeptor: M - Honegg 3

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:10 16:42	07:50 17:23	07:05 18:06	07:03 19:51	06:07 20:33	05:30 21:11	05:29 21:23	05:59 20:58	06:40 20:05	07:20 19:04	07:05 17:07	07:48 16:34
2	08:10 16:43	07:48 17:24	07:03 18:08	07:01 19:52	06:06 20:34	05:30 21:11	05:30 21:23	06:01 20:56	06:41 20:03	07:21 19:02	07:06 17:05	07:49 16:34
3	08:10 16:44	07:47 17:26	07:01 18:09	06:59 19:54	06:04 20:35	05:29 21:12	05:30 21:22	06:02 20:55	06:43 20:01	07:23 19:00	07:08 17:04	07:50 16:33
4	08:10 16:45	07:46 17:28	06:59 18:11	06:57 19:55	06:03 20:37	05:28 21:13	05:31 21:22	06:03 20:53	06:44 19:59	07:24 18:58	07:09 17:02	07:51 16:33
5	08:10 16:46	07:44 17:29	06:57 18:12	06:55 19:56	06:01 20:38	05:28 21:14	05:32 21:22	06:04 20:52	06:45 19:57	07:26 18:56	07:11 17:01	07:53 16:33
6	08:10 16:47	07:43 17:31	06:55 18:14	06:53 19:58	06:00 20:40	05:27 21:15	05:32 21:21	06:06 20:50	06:47 19:55	07:27 18:54	07:12 16:59	07:54 16:32
7	08:09 16:48	07:42 17:32	06:53 18:15	06:51 19:59	05:58 20:41	05:27 21:16	05:33 21:21	06:07 20:49	06:48 19:53	07:28 18:52	07:14 16:58	07:55 16:32
8	08:09 16:49	07:40 17:34	06:51 18:17	06:49 20:01	05:57 20:42	05:27 21:16	05:34 21:21	06:08 20:47	06:49 19:51	07:30 18:50	07:15 16:57	07:56 16:32
9	08:09 16:50	07:39 17:35	06:49 18:18	06:47 20:02	05:55 20:44	05:26 21:17	05:35 21:20	06:09 20:46	06:51 19:49	07:31 18:48	07:17 16:55	07:57 16:32
10	08:08 16:51	07:37 17:37	06:47 18:19	06:46 20:03	05:54 20:45	05:26 21:18	05:35 21:19	06:11 20:44	06:52 19:47	07:33 18:46	07:18 16:54	07:58 16:32
11	08:08 16:53	07:36 17:38	06:45 18:21	06:44 20:05	05:52 20:46	05:26 21:18	05:36 21:19	06:12 20:43	06:53 19:45	07:34 18:44	07:20 16:53	07:59 16:32
12	08:08 16:54	07:34 17:40	06:43 18:22	06:42 20:06	05:51 20:48	05:25 21:19	05:37 21:18	06:13 20:41	06:55 19:43	07:35 18:42	07:21 16:51	08:00 16:32
13	08:07 16:55	07:33 17:42	06:41 18:24	06:40 20:08	05:50 20:49	05:25 21:20	05:38 21:18	06:15 20:39	06:56 19:41	07:37 18:40	07:23 16:50	08:01 16:32
14	08:07 16:57	07:31 17:43	06:39 18:25	06:38 20:09	05:48 20:50	05:25 21:20	05:39 21:17	06:16 20:38	06:57 19:39	07:38 18:38	07:24 16:49	08:02 16:32
15	08:06 16:58	07:29 17:45	06:37 18:27	06:36 20:10	05:47 20:51	05:25 21:21	05:40 21:16	06:17 20:36	06:58 19:37	07:40 18:37	07:26 16:48	08:02 16:32
16	08:05 16:59	07:28 17:46	06:35 18:28	06:34 20:12	05:46 20:53	05:25 21:21	05:41 21:15	06:19 20:34	07:00 19:34	07:41 18:35	07:27 16:47	08:03 16:32
17	08:05 17:01	07:26 17:48	06:33 18:30	06:32 20:13	05:45 20:54	05:25 21:22	05:42 21:14	06:20 20:32	07:01 19:32	07:42 18:33	07:29 16:46	08:04 16:32
18	08:04 17:02	07:24 17:49	06:31 18:31	06:30 20:15	05:43 20:55	05:25 21:22	05:43 21:14	06:21 20:31	07:02 19:30	07:44 18:31	07:30 16:44	08:05 16:33
19	08:03 17:03	07:23 17:51	06:29 18:32	06:28 20:16	05:42 20:56	05:25 21:22	05:44 21:13	06:23 20:29	07:04 19:28	07:45 18:29	07:31 16:43	08:05 16:33
20	08:02 17:05	07:21 17:52	06:27 18:34	06:27 20:17	05:41 20:58	05:25 21:23	05:45 21:12	06:24 20:27	07:05 19:26	07:47 18:27	07:33 16:42	08:06 16:33
21	08:02 17:06	07:19 17:54	06:25 18:35	06:25 20:19	05:40 20:59	05:25 21:23	05:46 21:11	06:25 20:25	07:06 19:24	07:48 18:25	07:34 16:42	08:07 16:34
22	08:01 17:08	07:17 17:56	06:23 18:37	06:23 20:20	05:39 21:00	05:26 21:23	05:47 21:10	06:27 20:24	07:08 19:22	07:50 18:24	07:36 16:41	08:07 16:34
23	08:00 17:09	07:16 17:57	06:21 18:38	06:21 20:22	05:38 21:01	05:26 21:23	05:48 21:09	06:28 20:22	07:09 19:20	07:51 18:22	07:37 16:40	08:08 16:35
24	07:59 17:11	07:14 17:59	06:19 18:40	06:19 20:23	05:37 21:02	05:26 21:23	05:50 21:07	06:29 20:20	07:11 19:18	07:53 18:20	07:39 16:39	08:08 16:35
25	07:58 17:12	07:12 18:00	06:17 18:41	06:17 20:24	05:36 21:03	05:26 21:23	05:51 21:06	06:31 20:18	07:12 19:16	07:12 17:18	06:54 16:38	08:08 16:36
26	07:57 17:14	07:10 18:02	06:15 18:42	06:16 20:26	05:35 21:04	05:27 21:23	05:52 21:05	06:32 20:16	07:13 19:14	06:56 17:17	07:41 16:37	08:09 16:37
27	07:56 17:15	07:08 18:03	06:13 18:44	06:14 20:27	05:34 21:05	05:27 21:23	05:53 21:04	06:33 20:14	07:15 19:12	06:57 17:15	07:43 16:37	08:09 16:37
28	07:55 17:17	07:07 18:05	06:11 18:45	06:12 20:29	05:33 21:07	05:28 21:23	05:54 21:03	06:35 20:12	07:16 19:10	06:59 17:13	07:44 16:36	08:09 16:38
29	07:53 17:18	07:09 19:47	06:11 20:30	06:11 20:30	05:32 21:08	05:28 21:23	05:56 21:02	06:36 20:10	07:17 19:08	07:00 17:12	07:45 16:35	08:10 16:39
30	07:52 17:20	07:07 19:48	06:09 20:31	06:09 20:31	05:32 21:09	05:28 21:23	05:57 21:00	06:37 20:08	07:19 19:06	07:02 17:10	07:47 16:35	08:10 16:40
31	07:51 17:21	07:05 19:49	06:07 20:31	06:07 20:31	05:31 21:10	05:28 21:23	05:58 20:59	06:39 20:07	07:03 17:09	07:03 17:09	07:47 16:40	08:10 16:40
Sonnenscheinstunden	277	287	368	408	468	476	481	442	378	338	281	265
astr. max. mögl. Beschattung												
Red. Sonnenscheinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met. wahrsch. Beschattung												

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

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

## SHADOW - Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld  
Annahmen für Schattenwurfberechnung

Schattenrezeptor: N - Honegg 4

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

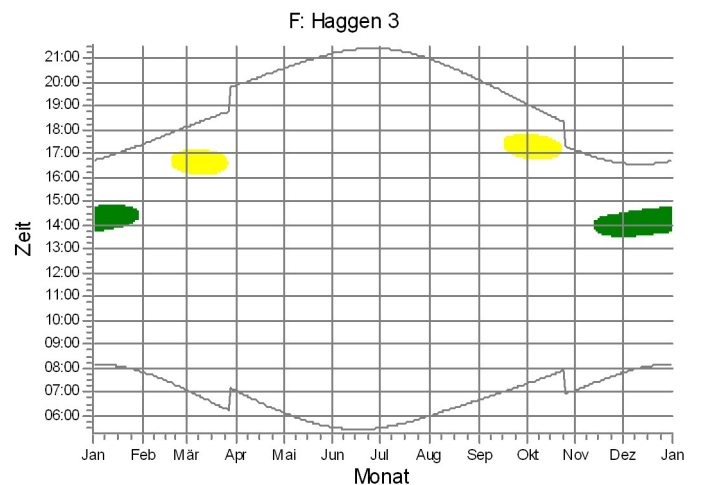
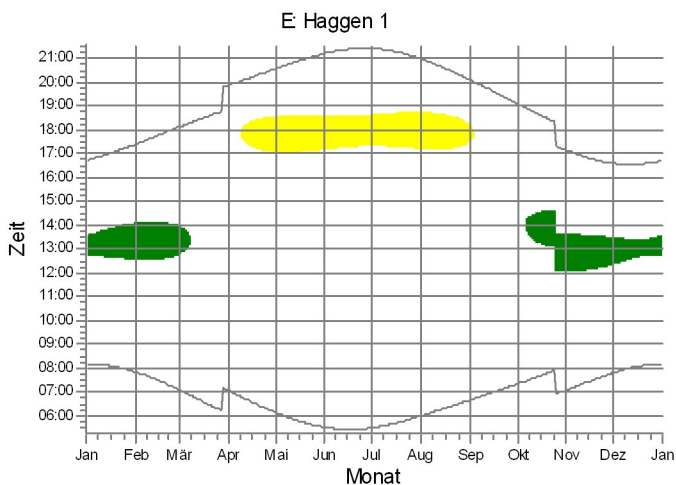
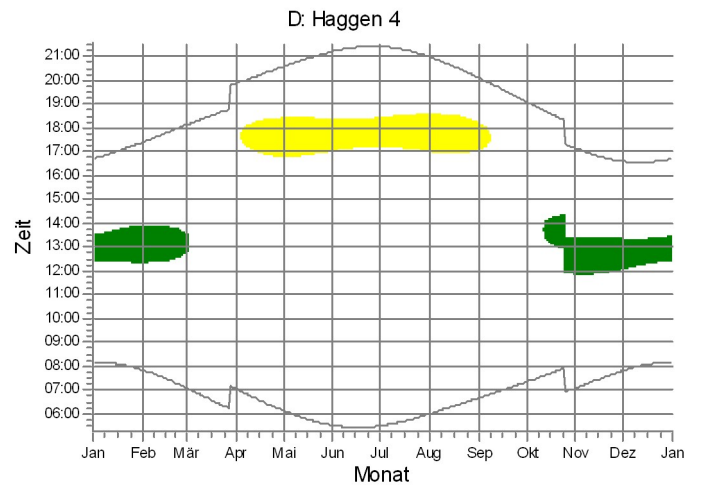
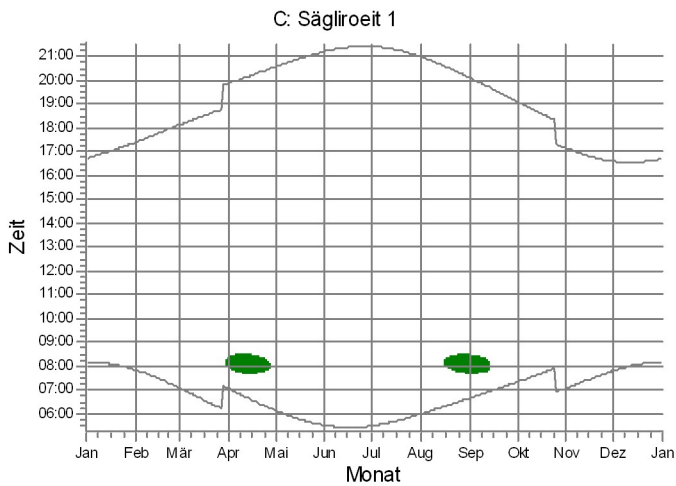
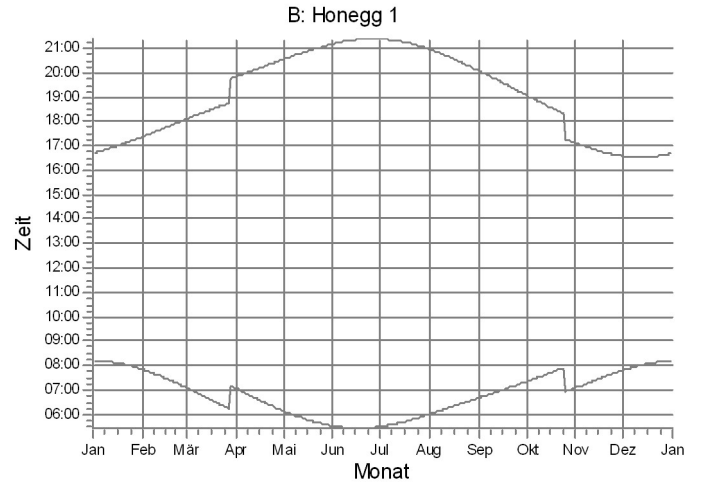
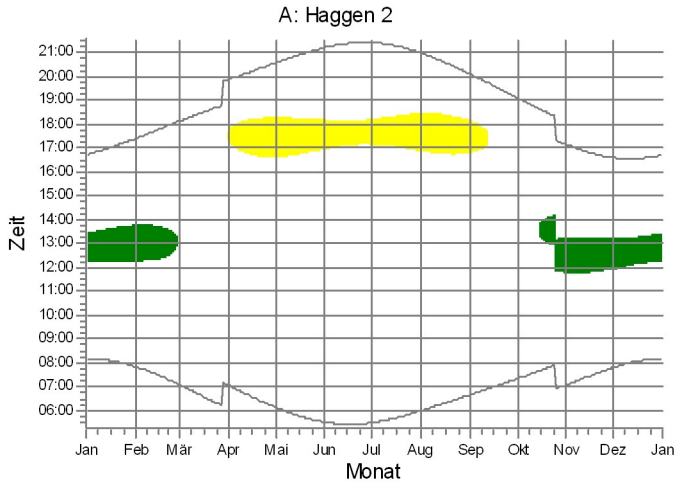
	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:10 16:42	07:50 17:23	07:05 18:06	07:03 19:51	06:07 20:33	05:30 21:11	07:13 (1) 21:23	05:59 20:58	07:39 (1) 20:05	06:40 19:04	07:20 17:07	07:05 16:34
2	08:10 16:43	07:48 17:24	07:03 18:08	07:01 19:52	06:06 20:34	05:30 21:11	07:14 (1) 21:23	06:01 20:56	07:41 (1) 20:03	06:41 19:02	07:21 17:05	07:06 16:49
3	08:10 16:44	07:47 17:26	07:01 18:09	06:59 19:54	06:04 20:35	05:29 21:12	07:13 (1) 21:23	06:02 20:55	07:43 (1) 20:01	06:43 19:00	07:23 17:04	07:08 16:33
4	08:10 16:45	07:46 17:27	06:59 18:11	06:57 19:55	06:03 20:37	05:28 21:13	07:13 (1) 21:22	06:03 20:53	07:46 (1) 20:53	06:44 19:59	07:24 18:58	07:09 17:02
5	08:10 16:46	07:44 17:29	06:57 18:12	06:55 19:56	06:01 20:38	05:28 21:14	07:13 (1) 21:22	06:04 20:52	07:53 (1) 20:52	06:45 19:57	07:11 18:56	07:53 17:01
6	08:10 16:47	07:43 17:31	06:55 18:14	06:53 19:58	06:00 20:40	05:27 21:15	07:13 (1) 21:21	06:06 20:50	07:19 (1) 20:50	06:47 19:55	07:27 18:54	07:12 16:59
7	08:09 16:48	07:42 17:32	06:53 18:15	06:51 19:59	05:58 20:41	05:27 21:16	07:13 (1) 21:21	06:07 20:49	07:19 (1) 20:49	06:48 19:53	07:28 18:52	07:14 16:58
8	08:09 16:49	07:40 17:34	06:51 18:17	06:49 20:01	05:57 20:42	07:40 (1) 21:16	07:13 (1) 21:21	06:08 20:47	07:20 (1) 20:47	06:49 19:51	07:30 18:50	07:15 16:57
9	08:09 16:50	07:39 17:35	06:49 18:18	06:47 20:02	05:55 20:44	07:35 (1) 21:17	07:13 (1) 21:20	06:09 20:46	07:20 (1) 20:46	06:51 19:49	07:31 18:48	07:17 16:55
10	08:08 16:51	07:37 17:37	06:47 18:19	06:46 20:03	05:54 20:45	07:31 (1) 21:18	07:14 (1) 21:19	06:11 20:44	07:21 (1) 20:44	06:52 19:47	07:33 18:46	07:18 16:54
11	08:08 16:53	07:36 17:38	06:45 18:21	06:44 20:05	05:52 20:46	07:29 (1) 21:18	07:13 (1) 21:19	06:12 20:43	07:21 (1) 20:43	06:53 19:45	07:34 18:44	07:20 16:53
12	08:08 16:54	07:34 17:40	06:43 18:22	06:42 20:06	05:51 20:48	07:28 (1) 21:19	07:13 (1) 21:18	06:13 20:41	07:22 (1) 20:41	06:55 19:43	07:35 18:42	07:21 16:51
13	08:07 16:55	07:33 17:42	06:41 18:24	06:40 20:08	05:50 20:49	07:26 (1) 21:20	07:13 (1) 21:18	06:15 20:39	07:21 (1) 20:39	06:56 19:41	07:37 18:40	07:23 16:50
14	08:07 16:56	07:31 17:43	06:39 18:25	06:38 20:09	05:48 20:50	07:24 (1) 21:20	07:14 (1) 21:17	06:16 20:38	07:22 (1) 20:38	06:57 19:39	07:38 18:38	07:24 16:49
15	08:06 16:58	07:29 17:45	06:37 18:27	06:36 20:10	05:47 20:51	07:23 (1) 21:21	07:14 (1) 21:16	06:17 20:36	07:23 (1) 20:36	06:58 19:37	07:40 18:37	07:26 16:48
16	08:05 16:59	07:28 17:46	06:35 18:28	06:34 20:12	05:46 20:53	07:22 (1) 21:21	07:14 (1) 21:15	06:19 20:34	07:23 (1) 20:34	07:00 19:34	07:41 18:35	07:27 16:47
17	08:05 17:01	07:26 17:48	06:33 18:30	06:32 20:13	05:45 20:54	07:21 (1) 21:22	07:14 (1) 21:14	06:20 20:32	07:24 (1) 20:32	07:01 19:32	07:42 18:33	07:29 16:46
18	08:04 17:02	07:24 17:49	06:31 18:31	06:30 20:15	05:43 20:55	07:20 (1) 21:22	07:14 (1) 21:14	06:21 20:31	07:24 (1) 20:31	07:02 19:30	07:44 18:31	07:30 16:44
19	08:03 17:03	07:23 17:51	06:29 18:32	06:28 20:16	05:42 20:56	07:19 (1) 21:22	07:14 (1) 21:13	06:23 20:29	07:25 (1) 20:29	07:04 19:28	07:45 18:29	07:31 16:43
20	08:02 17:05	07:21 17:52	06:27 18:34	06:27 20:17	05:41 20:58	07:18 (1) 21:23	07:14 (1) 21:12	06:24 20:27	07:26 (1) 20:27	07:05 19:26	07:47 18:27	07:33 16:42
21	08:02 17:06	07:19 17:54	06:25 18:35	06:25 20:19	05:40 20:59	07:18 (1) 21:23	07:15 (1) 21:11	06:25 20:25	07:26 (1) 20:25	07:06 19:24	07:48 18:25	07:34 16:42
22	08:01 17:08	07:17 17:56	06:23 18:37	06:23 20:20	05:39 21:00	07:17 (1) 21:23	07:15 (1) 21:10	06:27 20:24	07:27 (1) 20:24	07:08 19:22	07:50 18:24	07:36 16:41
23	08:00 17:09	07:16 17:57	06:21 18:38	06:21 20:22	05:38 21:01	07:16 (1) 21:23	07:15 (1) 21:09	06:28 20:22	07:28 (1) 20:22	07:09 19:20	07:51 18:22	07:37 16:40
24	07:59 17:11	07:14 17:59	06:19 18:40	06:19 20:23	05:37 21:02	07:16 (1) 21:23	07:15 (1) 21:07	06:29 20:20	07:28 (1) 20:20	07:11 19:18	07:53 18:20	07:39 16:39
25	07:58 17:12	07:12 18:00	06:17 18:41	06:18 20:24	05:36 21:03	07:15 (1) 21:23	07:16 (1) 21:06	06:31 20:18	07:30 (1) 20:18	07:12 19:16	06:54 17:18	07:40 16:38
26	07:57 17:14	07:10 18:02	06:15 18:42	06:16 20:26	05:35 21:04	07:14 (1) 21:23	07:16 (1) 21:05	06:32 20:16	07:31 (1) 20:16	07:13 19:14	06:56 17:17	07:41 16:37
27	07:56 17:15	07:08 18:03	06:13 18:44	06:14 20:27	05:34 21:06	07:14 (1) 21:23	07:17 (1) 21:04	06:33 20:14	07:32 (1) 20:14	07:15 19:12	06:57 17:15	07:43 16:37
28	07:55 17:17	07:07 18:05	06:11 18:45	06:12 20:29	05:33 21:07	07:14 (1) 21:23	07:17 (1) 21:03	06:35 20:12	07:33 (1) 20:12	07:16 19:10	06:59 17:13	07:44 16:36
29	07:53 17:18	07:09 19:47	06:11 20:30	06:11 21:08	05:32 21:08	07:14 (1) 21:23	07:17 (1) 21:02	06:36 20:08	07:34 (1) 20:08	07:17 19:08	07:00 17:12	07:45 16:35
30	07:52 17:20	07:07 19:48	06:09 20:31	06:09 21:08	05:32 21:09	07:13 (1) 21:23	07:17 (1) 21:02	06:37 20:08	07:35 (1) 20:08	07:19 19:06	07:02 17:10	07:47 16:35
31	07:51 17:21	07:05 19:49	06:05 21:10	06:05 21:10	05:31 21:10	07:14 (1) 21:23	07:17 (1) 21:07	06:39 20:07	07:36 (1) 20:07	07:03 17:09	07:03 17:09	08:10 16:40
Sonnenscheinstunden	277	287	368	408	468	476	481	442	378	338	281	265
astr. max. mögl. Beschattung					1166	2028	1819	1111				
Red. Sonnenscheinwahrsch.					0,40	0,42	0,47	0,46				
Reduktion Betriebsdauer					0,81	0,81	0,81	0,81				
Reduktion Windrichtung					0,63	0,63	0,63	0,63				
Gesamte Reduktion					0,20	0,22	0,24	0,24				
Met. wahrsch. Beschattung					238	440	439	27				

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

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

## SHADOW - Grafischer Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld



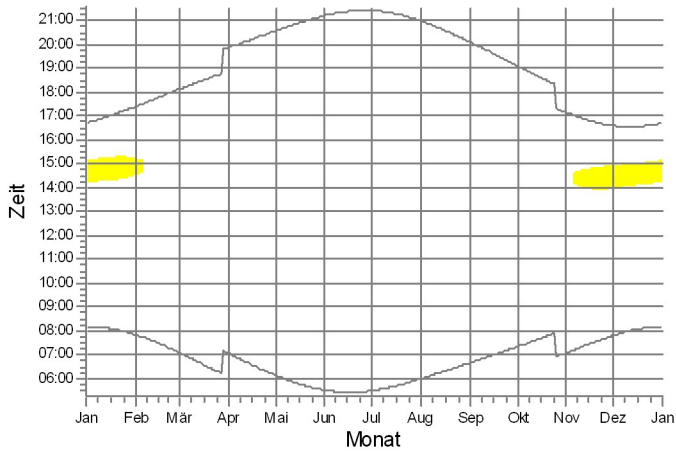
WEA

1: WEA 1  2: WEA 2

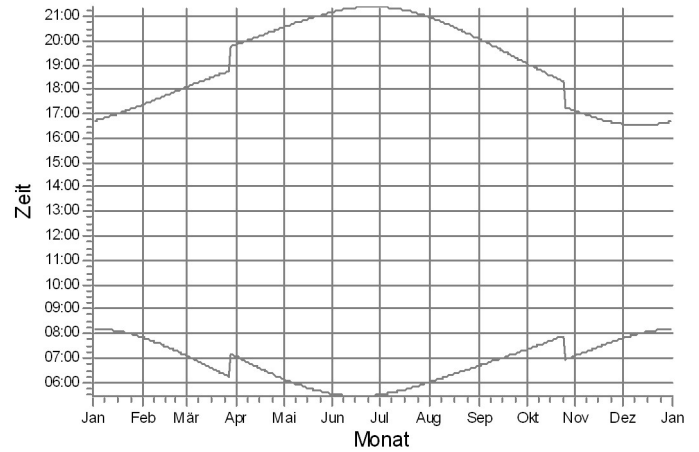
## SHADOW - Grafischer Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld

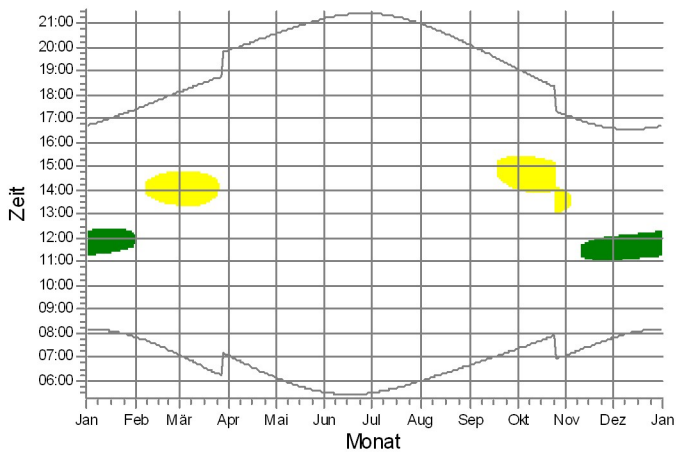
G: Erbskraut 1



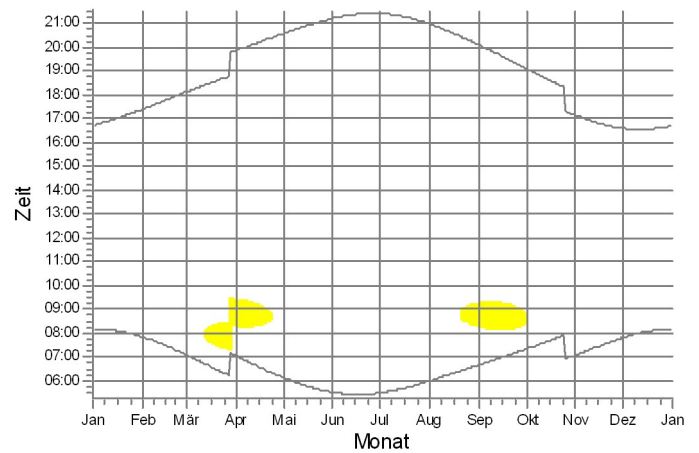
H: Rütwi eid 1



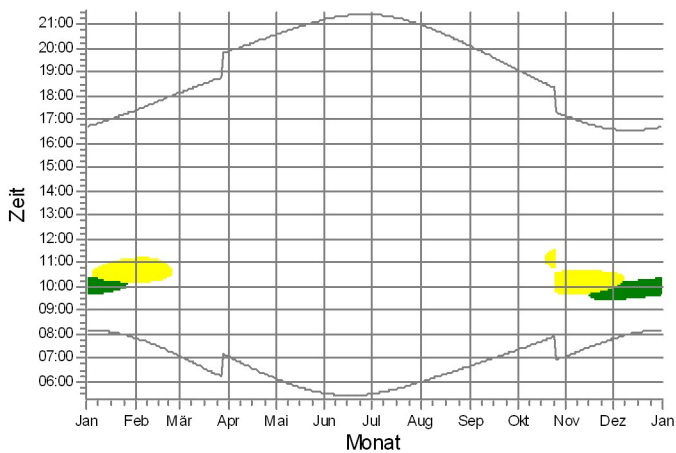
I: Rütwi eid 2



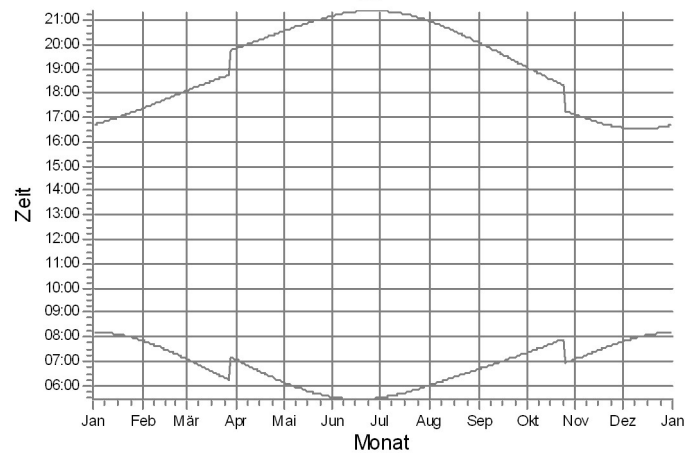
J: Chozeren 1



K: Rütwi eid 3



L: Honegg 2

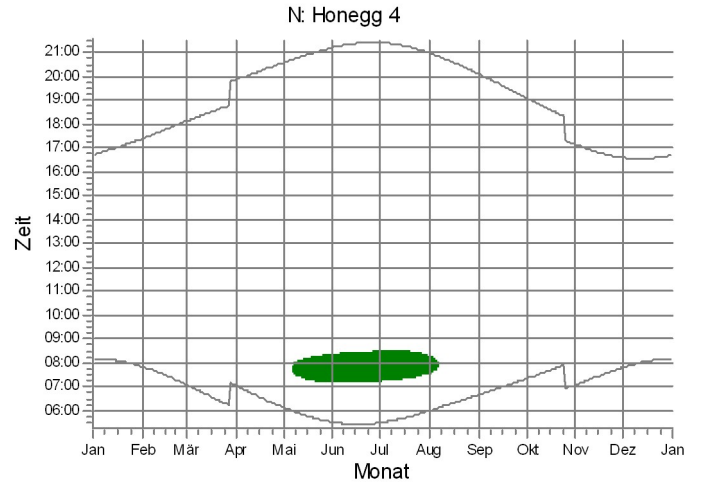
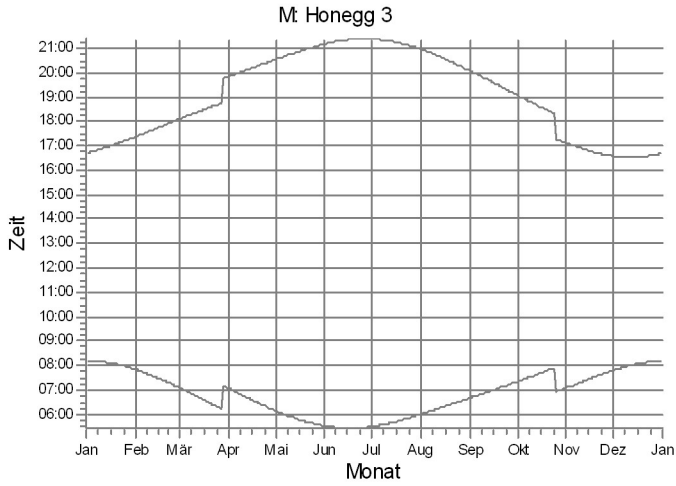


WEA

1: WEA 1  2: WEA 2

## SHADOW - Grafischer Kalender

Berechnung: 241\_16\_702\_Schatten\_Oberfeld



WEA



1: WEA 1

SHADOW - Kalender pro WEA

Berechnung: 241\_16\_702\_Schatten\_Oberfeld WEA: 1 - WEA 1

Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []

Table with 12 columns (Jan to Dez) and 1 row of values: 1,85, 2,84, 4,26, 5,69, 5,97, 6,68, 7,26, 6,61, 5,09, 3,24, 2,01, 1,60

Betriebsdauer je Sektor

Table with 13 columns (N, NNO, ONO, O, OSO, SSO, S, SSW, WSW, W, WNW, NNW, Summe) and 1 row of values: 395, 436, 229, 207, 251, 637, 1.082, 365, 782, 1.585, 809, 350, 7.128

Startwindgeschwindigkeit 2,5m/s

Main data table with columns for months (Januar to Juni) and rows for each day (1 to 31). Each cell contains a time range (e.g., 08:10 09:43-10:18/35 13:47-14:42/55) and a shadow start time (e.g., 07:50 12:19-14:01/102).

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

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



## SHADOW - Kalender pro WEA

Berechnung: 241\_16\_702\_Schatten\_Oberfeld WEA: 1 - WEA 1  
Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	July	August	September	Oktober	November	Dezember
1	05:29 07:18-08:26/68 21:23	05:59 07:39-08:13/34 20:58	06:40 07:45-08:24/39 20:05	07:20 19:04	07:05 11:50-13:32/102 17:07	07:48 09:29-10:04/35 13:35-14:26/51 16:34 11:06-11:58/52 12:00-13:23/83
2	05:30 07:18-08:25/67 21:23	06:00 07:41-08:11/30 20:56	06:41 07:46-08:24/38 20:03	07:21 19:02	07:06 11:50-13:33/103 17:05	07:49 09:29-10:04/35 13:36-14:27/51 16:34 11:07-11:59/52 12:01-13:23/82
3	05:30 07:18-08:26/68 21:22	06:02 07:43-08:08/25 20:55	06:43 07:46-08:23/37 20:01	07:23 19:00	07:08 11:50-13:33/103 17:04	07:50 09:29-10:04/35 13:35-14:28/53 16:33 11:07-11:59/52 12:02-13:22/80
4	05:31 07:18-08:25/67 21:22	06:03 07:46-08:04/18 20:53	06:44 07:46-08:22/36 19:59	07:24 18:58	07:09 11:50-13:32/102 17:02	07:51 09:29-10:04/35 13:35-14:28/53 16:33 11:07-11:59/52 12:02-13:22/80
5	05:32 07:19-08:26/67 21:22	06:04 07:53-07:57/4 20:52	06:45 07:47-08:22/35 19:57	07:26 18:56	07:11 11:50-13:33/103 17:01	07:53 09:30-10:05/35 13:35-14:29/54 16:33 11:07-11:59/52 12:03-13:21/78
6	05:32 07:19-08:26/67 21:21	06:06 20:50	06:47 07:47-08:21/34 19:55	07:27 18:54	07:12 11:49-13:32/103 16:59	07:54 09:31-10:06/35 13:36-14:30/54 16:32 11:08-12:01/53 12:05-13:22/77
7	05:33 07:19-08:25/66 21:21	06:07 20:49	06:48 07:47-08:19/32 19:53	07:28 18:52	07:14 11:49-13:32/103 16:58	07:55 09:31-10:06/35 13:36-14:30/54 16:32 11:08-12:01/53 12:05-13:21/76
8	05:34 07:20-08:26/66 21:21	06:08 20:47	06:49 07:48-08:17/29 19:51	07:30 18:50	07:15 11:50-13:32/102 16:57	07:56 09:31-10:07/36 13:37-14:31/54 16:32 11:09-12:01/52 12:06-13:21/75
9	05:35 07:20-08:26/66 21:20	06:09 20:46	06:51 07:50-08:16/26 19:49	07:31 18:48	07:17 11:49-13:31/102 16:55	07:57 09:32-10:07/35 13:37-14:31/54 16:32 11:09-12:02/53 12:07-13:20/73
10	05:35 07:21-08:26/65 21:19	06:11 20:44	06:52 07:51-08:14/23 19:47	07:32 18:46	07:18 11:50-13:31/101 16:54	07:58 09:32-10:07/35 13:37-14:32/55 16:32 11:09-12:02/53 12:07-13:20/73
11	05:36 07:21-08:26/65 21:19	06:12 20:43	06:53 07:52-08:11/19 19:45	07:34 18:44	07:20 11:18-11:34/16 16:53 11:49-13:31/102	07:59 09:33-10:08/35 13:38-14:32/54 16:32 11:10-12:02/52 12:08-13:20/72
12	05:37 07:22-08:26/64 21:18	06:13 20:41	06:54 07:55-08:07/12 19:43	07:35 18:42	07:21 11:15-11:38/23 16:51 11:50-13:31/101	08:00 09:33-10:08/35 13:38-14:33/55 16:32 11:10-12:03/53 12:09-13:20/71
13	05:38 07:21-08:25/64 21:18	06:15 20:39	06:56 19:41	07:37 18:40	07:23 11:13-11:41/28 16:50 11:50-13:31/101	08:01 09:34-10:09/35 13:38-14:33/55 16:32 11:11-12:03/52 12:10-13:19/69
14	05:39 07:22-08:25/63 21:17	06:16 20:38	06:57 19:39	07:38 18:38	07:24 11:11-11:42/31 11:50-13:30/100 16:49 13:51-14:05/14	08:02 09:34-10:09/35 13:39-14:34/55 16:32 11:12-12:04/52 12:11-13:19/68
15	05:40 07:23-08:25/62 21:16	06:17 20:36	06:58 19:36	07:40 18:36	07:26 11:10-11:45/35 11:51-13:30/99 16:48 13:48-14:09/21	08:02 09:34-10:09/35 13:39-14:34/55 16:32 11:11-12:04/53 12:11-13:19/68
16	05:41 07:23-08:25/62 21:15	06:19 20:34	07:00 19:34	07:41 18:35	07:27 09:40-09:43/3 13:44-14:11/27 16:47 11:08-11:46/38 11:51-13:29/98	08:03 09:35-10:10/35 13:39-14:35/56 16:32 11:12-12:04/52 12:11-13:19/68
17	05:42 07:24-08:25/61 21:14	06:20 08:04-08:12/8 20:32	07:01 19:32	07:42 18:33	07:29 09:35-09:47/12 13:43-14:13/30 16:45 11:08-11:47/39 11:51-13:29/98	08:04 09:36-10:10/34 13:40-14:35/55 16:32 11:13-12:05/52 12:12-13:19/67
18	05:43 07:24-08:25/61 21:14	06:21 08:01-08:16/15 20:31	07:02 19:30	07:44 18:31	07:30 09:33-09:50/17 13:42-14:15/33 16:44 11:08-11:49/41 11:52-13:29/97	08:05 09:36-10:11/35 13:40-14:35/55 16:33 11:14-12:06/52 12:12-13:19/67
19	05:44 07:25-08:24/59 21:13	06:23 07:58-08:18/20 20:29	07:04 19:28	07:45 18:29	07:31 09:32-09:52/20 13:40-14:16/36 16:43 11:07-11:50/43 11:52-13:28/96	08:05 09:36-10:11/35 13:41-14:36/55 16:33 11:13-12:06/53 12:13-13:19/66
20	05:45 07:26-08:24/58 21:12	06:24 07:56-08:20/24 20:27	07:05 19:26	07:47 18:27	07:33 09:31-09:54/23 13:39-14:18/39 16:42 11:07-11:51/44 11:53-13:28/95	08:06 09:37-10:12/35 13:41-14:37/56 16:33 11:14-12:07/53 12:14-13:20/66
21	05:46 07:26-08:23/57 21:11	06:25 07:54-08:21/27 20:25	07:06 19:24	07:48 18:25	07:34 09:30-09:55/25 13:38-14:18/40 16:41 11:06-11:51/45 11:53-13:27/94	08:07 09:37-10:12/35 13:41-14:37/56 16:34 11:14-12:07/53 12:14-13:20/66
22	05:47 07:27-08:23/56 21:10	06:27 07:53-08:22/29 20:23	07:08 19:22	07:50 18:24	07:36 09:30-09:57/27 13:38-14:20/42 16:41 11:06-11:53/47 11:54-13:27/93	08:07 09:38-10:13/35 13:42-14:38/56 16:34 11:15-12:08/53 12:15-13:21/66
23	05:48 07:28-08:22/54 21:09	06:28 07:52-08:23/31 20:22	07:09 19:20	07:51 18:22	07:37 09:29-09:57/28 13:37-14:20/43 16:40 11:05-11:53/48 11:54-13:26/92	08:08 09:38-10:13/35 13:42-14:38/56 16:35 11:15-12:08/53 12:15-13:21/66
24	05:50 07:28-08:21/53 21:07	06:29 07:50-08:24/34 20:20	07:10 19:18	07:53 18:20	07:39 09:29-09:59/30 13:37-14:22/45 16:39 11:06-11:54/48 11:56-13:27/91	08:08 09:39-10:14/35 13:43-14:38/55 16:35 11:15-12:08/53 12:15-13:21/66
25	05:51 07:30-08:21/51 21:06	06:31 07:50-08:25/35 20:18	07:12 19:16	07:54 18:18	07:40 09:29-09:59/30 13:36-14:22/46 16:38 11:05-11:55/50 11:56-13:26/90	08:08 09:39-10:14/35 13:44-14:39/55 16:36 11:16-12:09/53 12:16-13:22/66
26	05:52 07:31-08:20/49 21:05	06:32 07:49-08:25/36 20:16	07:13 19:14	07:56 18:17	07:41 09:29-10:00/31 13:36-14:23/47 16:37 11:06-11:56/50 11:57-13:26/89	08:09 09:39-10:14/35 13:44-14:39/55 16:37 11:17-12:09/52 12:16-13:23/67
27	05:53 07:32-08:19/47 21:04	06:33 07:48-08:25/37 20:14	07:15 19:12	07:57 18:15	07:43 09:29-10:01/32 13:35-14:24/49 16:37 11:06-11:56/50 11:57-13:25/88	08:09 09:40-10:14/34 13:44-14:39/55 16:37 11:17-12:09/52 12:16-13:23/67
28	05:54 07:33-08:18/45 21:03	06:35 07:47-08:25/38 20:12	07:16 19:10	07:59 18:13	07:44 09:28-10:01/33 13:35-14:24/49 16:36 11:05-11:56/51 11:58-13:24/86	08:09 09:41-10:16/35 13:44-14:40/56 16:38 11:17-12:10/53 12:16-13:24/68
29	05:56 07:34-08:17/43 21:01	06:36 07:47-08:26/39 20:10	07:17 19:08	08:00 18:12	07:45 09:29-10:02/33 13:35-14:25/50 16:35 11:06-11:57/51 11:59-13:24/85	08:10 09:41-10:16/35 13:46-14:41/55 16:39 11:18-12:11/53 12:18-13:26/68
30	05:57 07:35-08:15/40 21:00	06:37 07:46-08:25/39 20:08	07:19 19:06	08:02 18:10	07:47 09:29-10:02/33 13:35-14:26/51 16:35 11:06-11:57/51 11:59-13:24/85	08:10 09:42-10:17/35 13:46-14:41/55 16:40 11:19-12:11/52 12:18-13:27/69
31	05:58 07:36-08:14/38 20:59	06:39 07:46-08:25/39 20:06	07:20 19:04	08:04 18:08	07:49 11:51-13:33/102 17:08	08:10 09:42-10:17/35 13:47-14:42/55 16:40 11:19-12:12/53 12:18-13:28/70
Sonneneinstrahlung	481	442	378	338	281	265
Anzahl Minuten mit Schatten	1819	562	360	1868	4772	6603

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

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

## SHADOW - Kalender pro WEA

Berechnung: 241\_16\_702\_Schatten\_Oberfeld WEA: 2 - WEA 2  
Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

	Januar	Februar	März	April	Mai	Juni
1	08:10 14:18-15:03/45 16:42	07:50 10:13-11:07/54 17:23 14:36-15:07/31	07:05 13:26-14:42/76 18:06 16:17-17:04/47	07:03 08:20-09:22/62 19:51 17:26-17:35/9	06:07 16:42-18:27/105 20:33	05:30 17:01-18:29/88 21:11
2	08:10 14:18-15:04/46 16:43	07:48 10:13-11:08/55 17:24 14:37-15:05/28	07:03 13:25-14:42/77 18:08 16:16-17:04/48	07:01 08:19-09:21/62 19:52 17:17-17:43/26	06:06 16:42-18:28/106 20:34	05:30 17:02-18:30/88 21:11
3	08:10 14:18-15:04/46 16:44	07:47 10:13-11:07/54 17:26 14:40-15:04/24	07:01 13:25-14:42/77 18:09 16:17-17:05/50	06:59 08:19-09:21/62 19:54 17:12-17:47/35	06:04 16:42-18:28/106 20:35	05:29 17:02-18:29/87 21:12
4	08:10 14:18-15:04/46 16:45	07:46 10:13-11:08/55 17:27 14:43-15:03/20	06:59 13:24-14:42/78 18:11 16:14-17:05/51	06:57 08:19-09:20/61 19:55 17:09-17:50/41	06:03 16:43-18:29/106 20:37	05:28 17:03-18:30/87 21:13
5	08:10 14:19-15:05/46 16:46	07:44 10:13-11:07/54 17:29 14:46-14:59/13	06:57 13:24-14:42/78 18:12 16:13-17:05/52	06:55 08:19-09:19/60 19:56 17:05-17:52/47	06:01 16:43-18:28/105 20:38	05:28 17:04-18:29/85 21:14
6	08:10 10:29-10:37/8 16:47 14:19-15:06/47	07:43 10:13-11:08/55 17:31	06:55 13:24-14:42/78 18:14 16:13-17:05/52	06:53 08:19-09:19/60 19:58 17:03-17:54/51	06:00 16:43-18:29/106 20:40	05:27 17:05-18:29/84 21:15
7	08:09 10:26-10:39/13 16:48 14:19-15:06/47	07:42 10:13-11:07/54 17:32	06:53 13:24-14:42/78 18:15 16:12-17:05/53	06:51 13:25-14:41/76 19:59 17:00-17:56/56	05:58 16:43-18:29/106 20:41	05:27 17:05-18:29/84 21:16
8	08:09 10:25-10:42/17 16:49 14:20-15:07/47	07:40 10:14-11:08/54 17:34 13:57-14:10/13	06:51 13:24-14:41/77 18:17 16:12-17:05/53	06:49 13:25-14:41/76 20:01 16:58-17:58/60	05:57 16:44-18:29/105 20:42	05:27 17:06-18:29/83 21:16
9	08:09 10:24-10:45/21 16:50 14:20-15:08/48	07:39 10:14-11:07/53 17:35 13:52-14:15/23	06:49 13:25-14:41/76 18:18 16:12-17:05/53	06:47 08:19-09:15/56 20:02 16:56-18:00/64	05:55 16:45-18:30/105 20:44	05:26 17:06-18:29/83 21:17
10	08:08 10:23-10:46/23 16:51 14:20-15:08/48	07:37 10:15-11:07/52 17:37 13:49-14:20/31	06:47 13:25-14:41/76 18:19 16:11-17:05/54	06:46 08:19-09:14/55 20:03 16:55-18:02/67	05:54 16:45-18:29/104 20:45	05:26 17:07-18:30/83 21:18
11	08:08 10:22-10:48/26 16:53 14:20-15:08/48	07:36 10:15-11:06/51 17:38 13:46-14:23/37	06:45 13:26-14:40/74 18:21 16:11-17:05/54	06:44 08:20-09:13/53 20:05 16:53-18:04/71	05:52 16:46-18:29/103 20:46	05:26 17:07-18:29/82 21:18
12	08:08 10:21-10:49/28 16:54 14:21-15:09/48	07:34 10:15-11:05/50 17:40 13:43-14:25/42	06:43 13:26-14:39/73 18:22 16:11-17:04/53	06:42 08:20-09:11/51 20:06 16:51-18:06/75	05:51 16:46-18:30/104 20:48	05:25 17:08-18:29/81 21:19
13	08:07 10:19-10:50/31 16:55 14:21-15:09/48	07:33 10:17-11:05/48 17:42 13:41-14:28/47	06:41 07:52-08:02/10 16:12-17:04/52 18:24 13:27-14:39/72	06:40 08:22-09:11/49 20:08 16:50-18:08/78	05:50 16:46-18:29/103 20:49	05:25 17:08-18:29/81 21:20
14	08:07 10:19-10:52/33 16:56 14:22-15:10/48	07:31 10:17-11:03/46 17:43 13:39-14:29/50	06:39 07:46-08:07/21 16:12-17:03/51 18:25 13:28-14:38/70	06:38 08:22-09:09/47 20:09 16:49-18:11/82	05:48 16:47-18:29/102 20:50	05:25 17:09-18:30/81 21:20
15	08:06 10:18-10:53/35 16:58 14:22-15:10/48	07:29 10:17-11:02/45 17:45 13:37-14:31/54	06:37 07:42-08:11/29 16:12-17:02/50 18:27 13:29-14:37/68	06:36 08:23-09:07/44 20:10 16:48-18:13/85	05:47 16:48-18:30/102 20:51	05:25 17:09-18:30/81 21:21
16	08:05 10:17-10:54/37 16:59 14:22-15:10/48	07:28 10:19-11:01/42 17:46 13:37-14:33/56	06:35 07:39-08:13/34 16:13-17:01/48 18:28 13:31-14:36/65	06:34 08:24-09:05/41 20:12 16:47-18:15/88	05:46 16:49-18:30/101 20:52	05:25 17:10-18:30/80 21:21
17	08:05 10:17-10:55/38 17:01 14:22-15:11/47	07:26 10:20-10:59/39 17:48 13:35-14:34/59	06:33 07:37-08:15/38 16:14-17:00/46 18:30 13:32-14:35/63	06:32 08:25-09:03/38 20:13 16:46-18:16/90	05:44 16:50-18:30/100 20:54	05:25 17:10-18:30/80 21:22
18	08:04 10:17-10:57/40 17:02 14:24-15:11/47	07:24 10:21-10:57/36 17:49 13:33-14:35/62	06:31 07:35-08:16/41 16:14-16:59/45 18:31 13:34-14:33/59	06:30 08:26-09:01/35 20:15 16:45-18:17/92	05:43 16:50-18:30/100 20:55	05:25 17:11-18:30/79 21:22
19	08:03 10:16-10:58/42 17:03 14:24-15:11/47	07:23 10:23-10:54/31 17:51 13:32-14:36/64	06:29 07:33-08:18/45 16:15-16:58/43 18:32 13:36-14:32/56	06:28 08:27-08:58/31 20:16 16:44-18:19/94	05:42 16:51-18:30/99 20:56	05:25 17:11-18:30/79 21:22
20	08:02 10:16-10:59/43 17:05 14:24-15:12/48	07:21 10:25-10:52/27 16:37-16:46/9 17:52 13:32-14:38/66	06:27 07:31-08:19/48 16:17-16:56/39 18:34 13:39-14:30/51	06:27 08:30-08:56/26 20:17 16:44-18:20/96	05:41 16:52-18:30/98 20:58	05:25 17:11-18:30/79 21:23
21	08:02 10:15-11:00/45 17:06 14:25-15:12/47	07:19 10:28-10:48/20 16:31-16:51/20 17:54 13:31-14:38/67	06:25 07:29-08:20/51 16:18-16:55/37 18:35 13:42-14:28/46	06:25 08:33-08:53/20 20:19 16:43-18:21/98	05:40 16:53-18:30/97 20:59	05:25 17:12-18:31/79 21:23
22	08:01 10:15-11:01/46 17:08 14:25-15:12/47	07:17 10:33-10:41/8 16:28-16:53/25 17:56 13:30-14:39/69	06:23 07:28-08:21/53 16:20-16:53/33 18:37 13:45-14:26/41	06:23 08:37-08:47/10 20:20 16:43-18:22/99	05:39 16:53-18:30/97 21:00	05:25 17:12-18:31/79 21:23
23	08:00 10:15-11:02/47 17:09 14:26-15:12/46	07:16 13:29-14:40/71 17:57 16:25-16:56/31	06:21 07:27-08:21/54 16:22-16:51/29 18:38 13:50-14:23/33	06:21 16:42-18:22/100 20:22	05:38 16:54-18:30/96 21:01	05:26 17:12-18:31/79 21:23
24	07:59 10:14-11:03/49 17:11 14:27-15:12/45	07:14 13:28-14:40/72 17:59 16:23-16:57/34	06:19 07:26-08:22/56 16:24-16:48/24 18:40 13:55-14:19/24	06:19 16:42-18:24/102 20:23	05:37 16:55-18:30/95 21:02	05:26 17:12-18:31/79 21:23
25	07:58 10:14-11:04/50 17:12 14:28-15:11/43	07:12 13:27-14:40/73 18:00 16:21-16:59/38	06:17 07:25-08:22/57 16:27-16:45/18 18:41 14:03-14:12/9	06:18 16:42-18:24/102 20:24	05:36 16:55-18:29/94 21:03	05:26 17:12-18:32/80 21:23
26	07:57 10:13-11:04/51 17:14 14:28-15:10/42	07:10 13:27-14:42/75 18:02 16:21-17:01/40	06:15 07:24-08:22/58 18:42 16:34-16:37/3	06:16 16:41-18:25/104 20:26	05:35 16:56-18:29/93 21:04	05:27 17:12-18:32/80 21:23
27	07:56 10:13-11:04/51 17:15 14:29-15:10/41	07:08 13:27-14:42/75 18:03 16:19-17:02/43	06:13 07:23-08:23/60 18:44	06:14 16:42-18:26/104 20:27	05:34 16:57-18:29/92 21:06	05:27 17:12-18:32/80 21:23
28	07:55 10:13-11:05/52 17:17 14:30-15:10/40	07:07 13:26-14:42/76 18:05 16:18-17:03/45	06:11 07:22-08:23/61 18:45	06:12 16:42-18:26/104 20:29	05:33 16:58-18:30/92 21:07	05:27 17:12-18:33/81 21:23
29	07:53 10:13-11:06/53 17:18 14:31-15:10/39	07:09 08:21-09:23/62 19:47	07:09 08:21-09:23/62 19:48	06:11 16:41-18:26/105 20:30	05:32 16:59-18:29/90 21:08	05:28 17:12-18:33/81 21:23
30	07:52 10:13-11:07/54 17:20 14:32-15:08/36	07:07 08:21-09:22/61 19:48	07:07 08:21-09:22/61 19:48	06:09 16:42-18:27/105 20:31	05:32 16:59-18:29/90 21:09	05:28 17:12-18:33/81 21:23
31	07:51 10:13-11:06/53 17:21 14:34-15:08/34	07:05 08:20-09:22/62 19:49	07:05 08:20-09:22/62 19:49		05:31 17:00-18:30/90 21:10	
Sonnenscheinstunden	277	287	368	408	468	476
Anzahl Minuten mit Schatten	2390	2566	3614	3370	3092	2454

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: 241\_16\_702\_Schatten\_Oberfeld WEA: 2 - WEA 2  
Annahmen für Schattenwurfberechnung

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) []  
Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez  
1,85 2,84 4,26 5,69 5,97 6,68 7,26 6,61 5,09 3,24 2,01 1,60

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe  
395 436 229 207 251 637 1.082 365 782 1.585 809 350 7.128  
Startwindgeschwindigkeit 2,5m/s

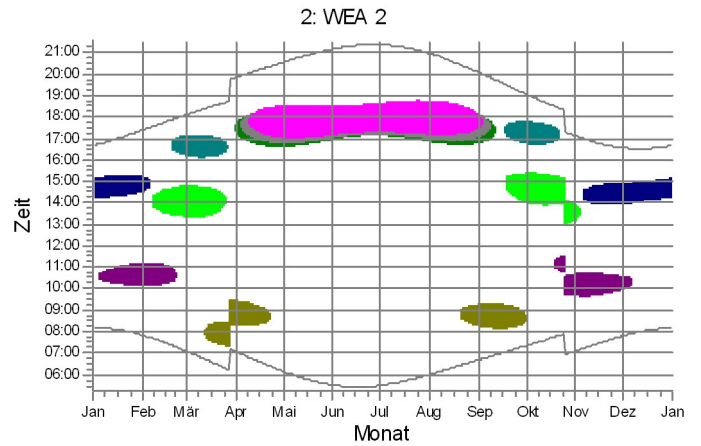
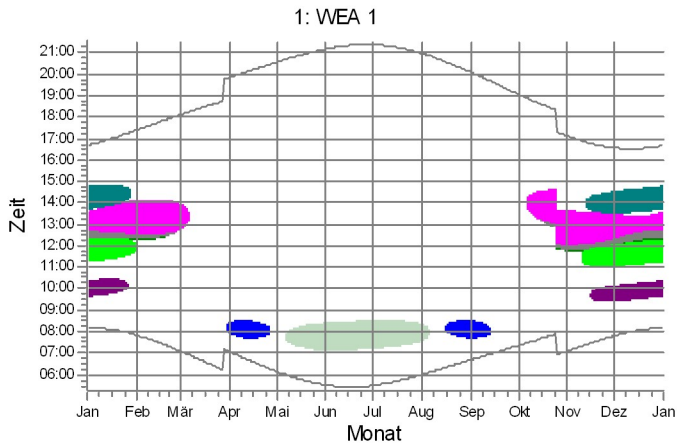
	July	August	September	Oktober	November	Dezember
1	05:29 17:11-18:33/82 21:23	05:59 16:57-18:40/103 20:58	06:40 08:19-09:12/53 20:05 16:52-18:03/71	07:20 14:06-15:19/73 19:04 16:51-17:44/53	07:05 09:44-10:36/52 17:07 13:18-13:48/30	07:48 10:04-10:30/26 16:34 14:02-14:50/48
2	05:30 17:12-18:34/82 21:23	06:00 16:56-18:40/104 20:56	06:41 08:18-09:13/55 20:03 16:54-18:01/67	07:21 14:05-15:19/74 19:02 16:50-17:43/53	07:06 09:44-10:37/53 17:05 13:22-13:44/22	07:49 10:06-10:29/23 16:34 14:03-14:51/48
3	05:30 17:12-18:35/83 21:23	06:02 16:55-18:40/105 20:55	06:43 08:17-09:13/56 20:01 16:54-17:58/64	07:23 14:03-15:18/75 19:00 16:49-17:43/54	07:08 09:44-10:37/53 17:04 13:29-13:38/9	07:50 10:07-10:28/21 16:33 14:03-14:51/48
4	05:31 17:11-18:34/83 21:22	06:03 16:54-18:39/105 20:53	06:44 08:16-09:14/58 19:59 16:55-17:55/60	07:24 14:03-15:19/76 18:58 16:49-17:43/54	07:09 09:43-10:37/54 17:02	07:51 10:09-10:26/17 16:33 14:04-14:51/47
5	05:32 17:11-18:35/84 21:22	06:04 16:53-18:39/106 20:52	06:45 08:16-09:15/59 19:57 16:56-17:52/56	07:26 14:01-15:18/77 18:56 16:49-17:42/53	07:11 09:43-10:38/55 17:01	07:53 10:11-10:25/14 16:33 14:04-14:51/47
6	05:32 17:11-18:36/85 21:21	06:06 16:54-18:39/105 20:50	06:47 08:15-09:15/60 19:55 16:59-17:50/51	07:27 14:01-15:19/78 18:54 16:49-17:42/53	07:12 09:43-10:37/54 16:59 14:15-14:29/14	07:54 10:15-10:23/8 16:32 14:05-14:52/47
7	05:33 17:10-18:35/85 21:21	06:07 16:53-18:38/105 20:49	06:48 08:14-09:14/60 19:53 17:00-17:47/47	07:28 14:00-15:18/78 18:52 16:48-17:41/53	07:14 09:43-10:38/55 16:58 14:12-14:33/21	07:55 14:06-14:52/46 16:32
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13	05:38 17:08-18:37/89 21:18	06:15 16:49-18:35/106 20:39	06:56 08:12-09:14/62 19:41	07:37 13:59-15:15/76 18:40 16:50-17:36/46	07:23 09:45-10:38/53 16:50 14:03-14:42/39	08:01 14:09-14:54/45 16:32
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23	05:48 17:02-18:40/98 21:09	06:28 16:48-18:24/96 20:22	07:09 08:15-09:04/49 19:20 14:24-15:14/50	17:02-17:40/38 17:02-17:40/38 18:22 14:03-15:06/63	07:51 10:52-11:25/33 18:22 14:03-15:06/63	08:08 14:14-14:58/44 16:35
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Sonnenscheinstunden	481	442	378	338	281	265
Anzahl Minuten mit Schatten	2857	3460	3236	3493	2490	1512

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: 241\_16\_702\_Schatten\_Oberfeld

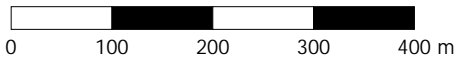
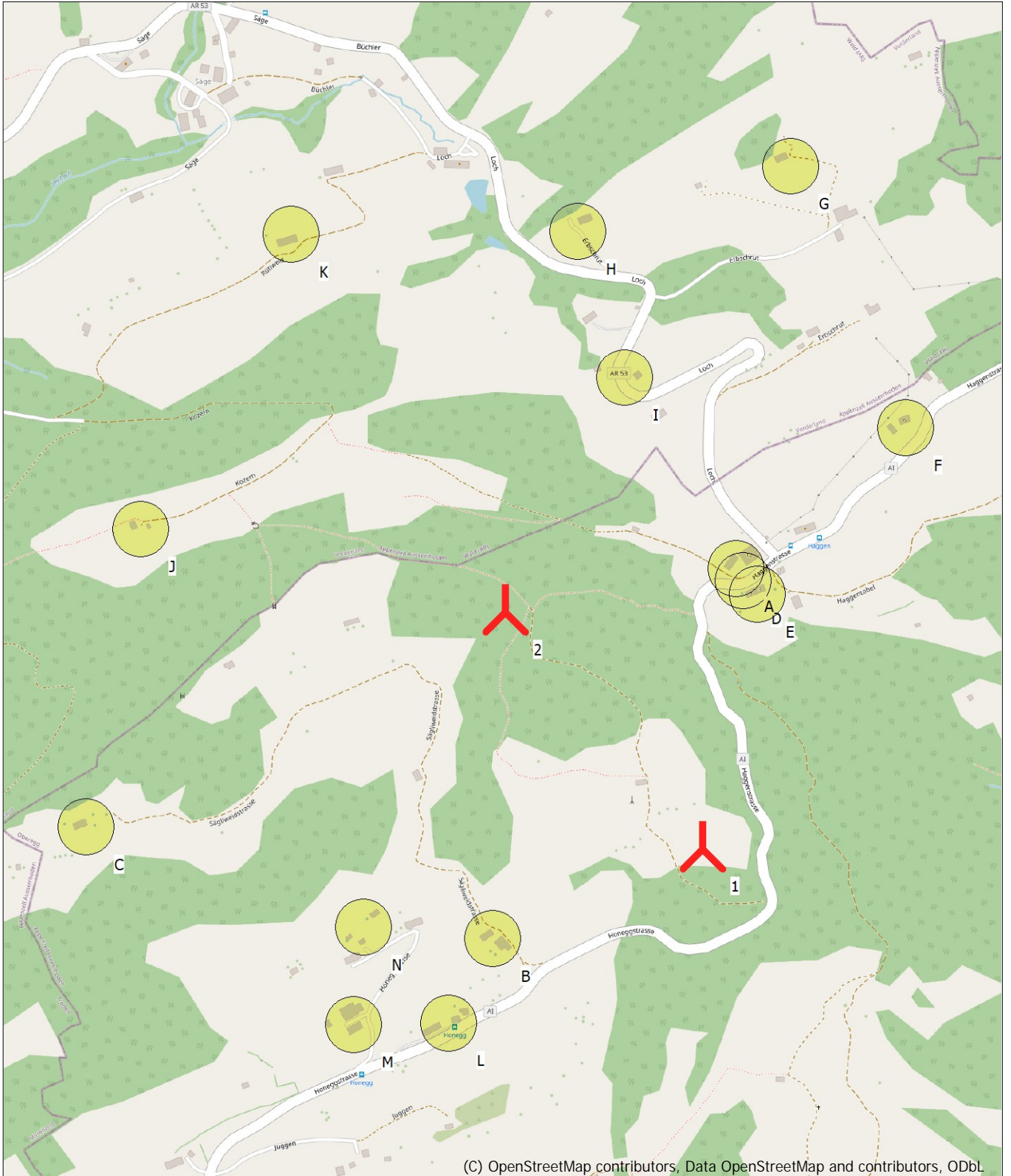


### Schattenrezeptoren

	A: Haggen 2		E: Haggen 1		I: Rütiweid 2		N: Honegg 4
	C: Sägliroeit 1		F: Haggen 3		J: Chozeren 1		
	D: Haggen 4		G: Erbskraut 1		K: Rütiweid 3		

## SHADOW - Karte

Berechnung: 241\_16\_702\_Schatten\_Oberfeld



Karte: EMD OpenStreetMap , Maßstab 1:7.500, Mitte: Swiss (LV95)-CH1903+ (CH/LI 1993) Ost: 2.757.058 Nord: 1.252.578

Neue WEA Schattenrezeptor

Höhe der Schattenkarte: Höhenlinien: Appenzell\_Hoe 5m\_10\_R30km