

## Schattenwurf Standort Swatte Poele

DEWI-GER-WP16-11428604-02.01

### Nachtrag zu Bericht

DEWI-GER-WP15-04513-02.01

**09.09.2016**

Im Bericht DEWI-GER-WP15-04513-02.01 wurde davon ausgegangen, dass drei benachbart geplante WEA im Bereich Handrup aus genehmigungstechnischen Gründen nachrangig zu berücksichtigen sind und daher nicht als Vorbelastung in die Berechnungen einzubeziehen sind.

Unter Berücksichtigung der drei geplanten WEA in Handrup als Vorbelastung ergeben sich für 10 weitere Immissionsorte Überschreitungen oder Ausschöpfung der empfohlenen Richtwerte durch die Gesamtbelastung. Diese Immissionsorte sind bei der späteren Programmierung einer Abschaltautomatik ebenfalls zu berücksichtigen.

Im Folgenden werden die Berechnungen der Zeiten mit beweglichem Schattenwurf unter Berücksichtigung der drei WEA im Bereich Handrup als Vorbelastung dargestellt.

Verantwortlicher Bearbeiter

A handwritten signature in blue ink, appearing to read 'S. Schulz'.

Sabine Schulz  
Dipl.-Phys  
Micrositing

# 1 Eingangsdaten

## 1.1. WEA-Daten

Die Koordinaten der benachbart geplanten WEA wurden vom Auftraggeber übermittelt, zu den Blattdaten liegen DEWI Informationen des Herstellers Enercon vor.

ID	Koordinaten (UTM ETRS89 Zone 32)		Höhe ü. NN [m]	WEA – Typ	Rotordurchmesser [m]	Nabenhöhe [m]
	Rechtswert	Hochwert				
Han01	405'561	5'823'107	34	ENERCON E-141 EP4	141	129
Han02	405'749	5'822'707	37	ENERCON E-141 EP4	141	129
Han03	405'999	5'823'018	36	ENERCON E-115	115.7	149

Tabelle 1: Koordinaten und Daten der benachbart geplanten WEA

WEA-Typ	Nabenhöhe [m]	Rotordurchmesser [m]	Maximale Blatttiefe [m]	Blatttiefe bei 90% Radius [m]	resultierender Beschattungsbereich gemäß WindPro [m]
Enercon E-141 EP4	129	141	4.28	1.16	1'835
Enercon E-115	149	115.7	4.53	1.55	2'066

Tabelle 2: Blattdaten und Beschattungsbereich der benachbart geplanten WEA.

Die geplanten WEA des Windparks Swatte Poele sowie die benachbart bestehenden WEA im Bereich Bippen wurden mit den Daten aus DEWI-GER-WP15-04513-02.01 berücksichtigt.

## 1.2. Zusätzliche Immissionsorte

Unter Berücksichtigung der drei WEA in Handrup werden die empfohlenen Richtwerte durch die Gesamtbelastung an weiteren Wohnhäusern innerhalb des Beschattungsbereiches der geplanten WEA des Windparks Swatte Poele überschritten. Tabelle 3 zeigt die geographischen Daten der zusätzlich berücksichtigten Immissionsorte.

IO-Nr.	Koordinaten (UTM ETRS89 Zone 32)		Höhe ü. NN [m]	Bezeichnung / Beschreibung	Immissions- orthöhe [m]
	Rechtswert	Hochwert			
46	404'800	5'824'196	28	Neuengraben 1A	2 m
47	404'795	5'824'213	28	Neuengraben 1	2 m
48	405'024	5'824'086	29	Neuengraben 2	2 m
49	404'537	5'823'408	30	Andervenner Straße 8	2 m
50	404'610	5'823'565	30	Flurweg 1	2 m
51	404'670	5'822'886	33	Andervenner Straße 11	2 m
52	404'579	5'823'052	32	Andervenner Straße 10	2 m
53	404'601	5'823'022	32	Andervenner Straße 10A	2 m
54	404'881	5'822'514	33	Wöstenweg 1A	2 m
55	404'856	5'822'567	33	Wöstenweg 1	2 m

Tabelle 3: Daten der zusätzlichen Immissionsorte.

Die folgenden Abbildungen zeigen die in diesem Nachtrag berücksichtigten Immissionsorte.

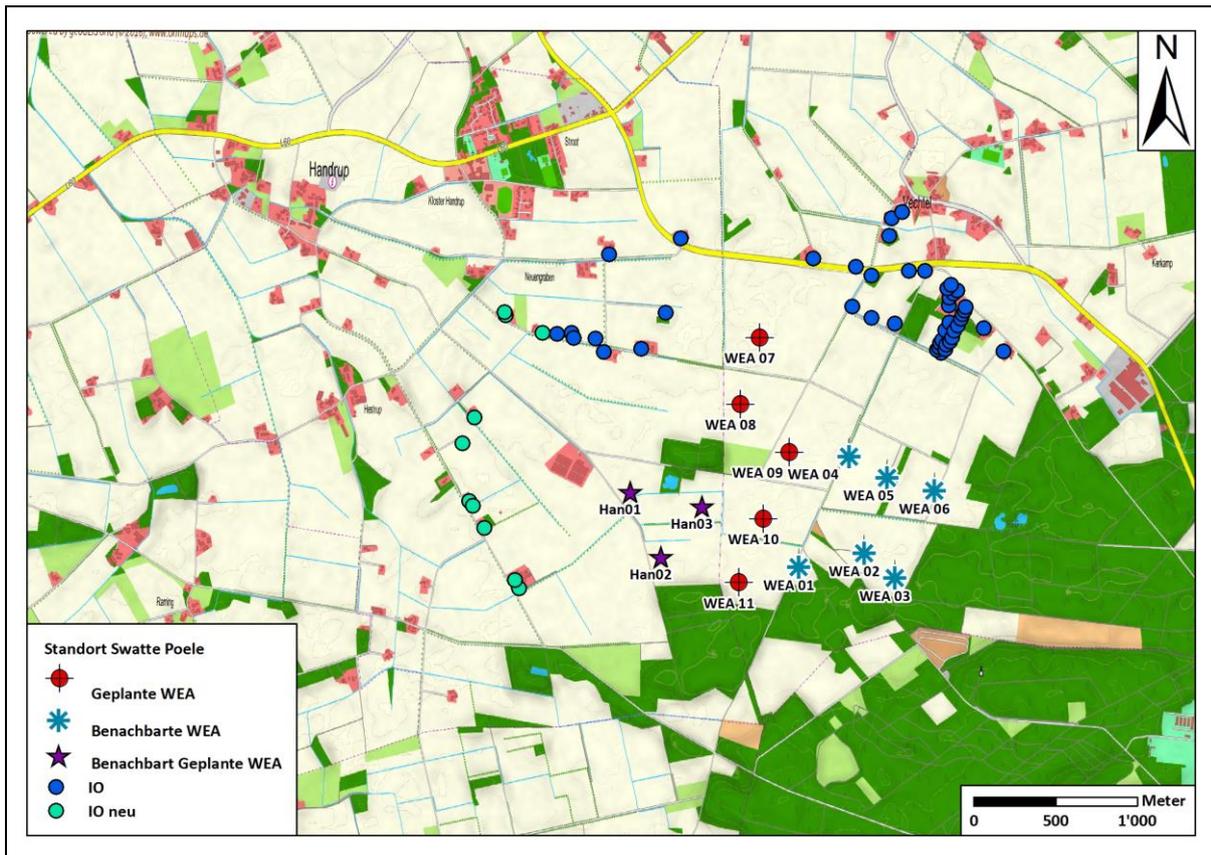


Abbildung 1: Immissionsorte, Übersicht

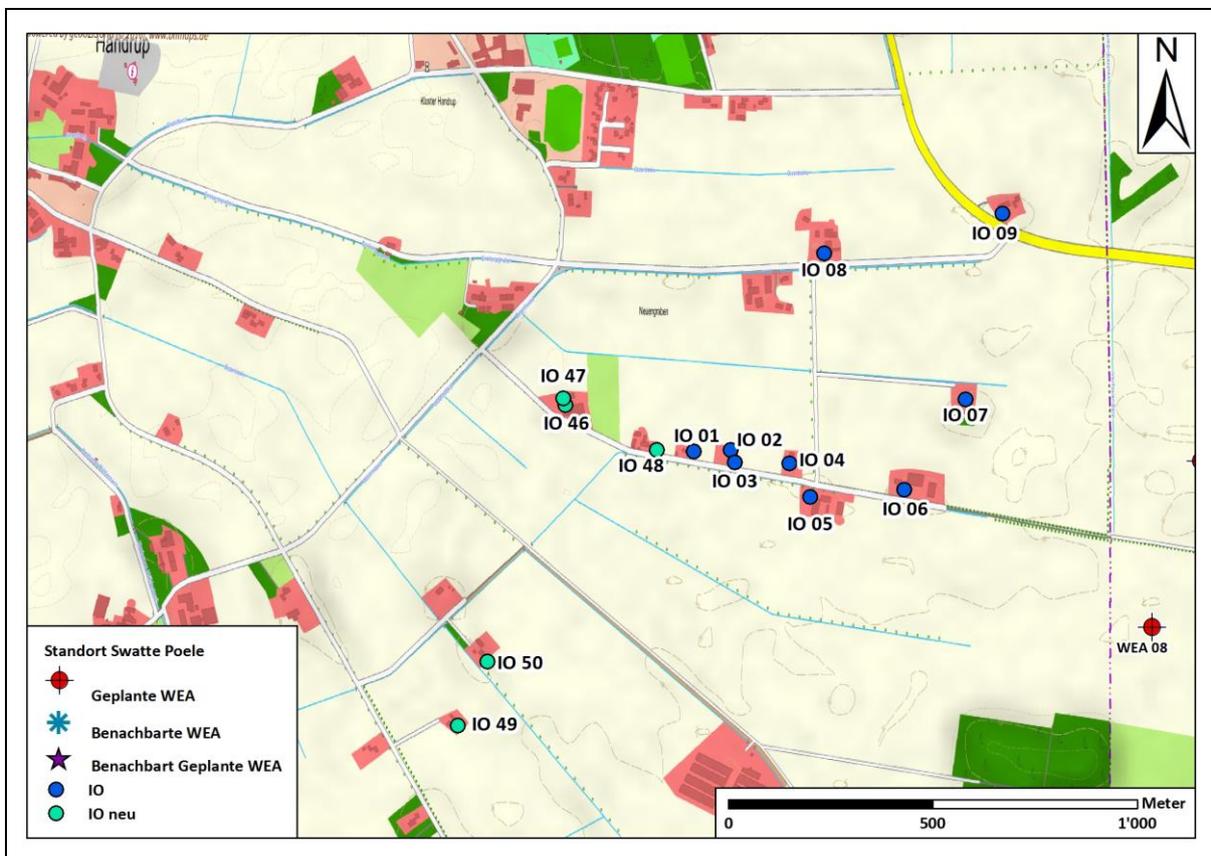


Abbildung 2: Detail, neue Immissionsorte Nord

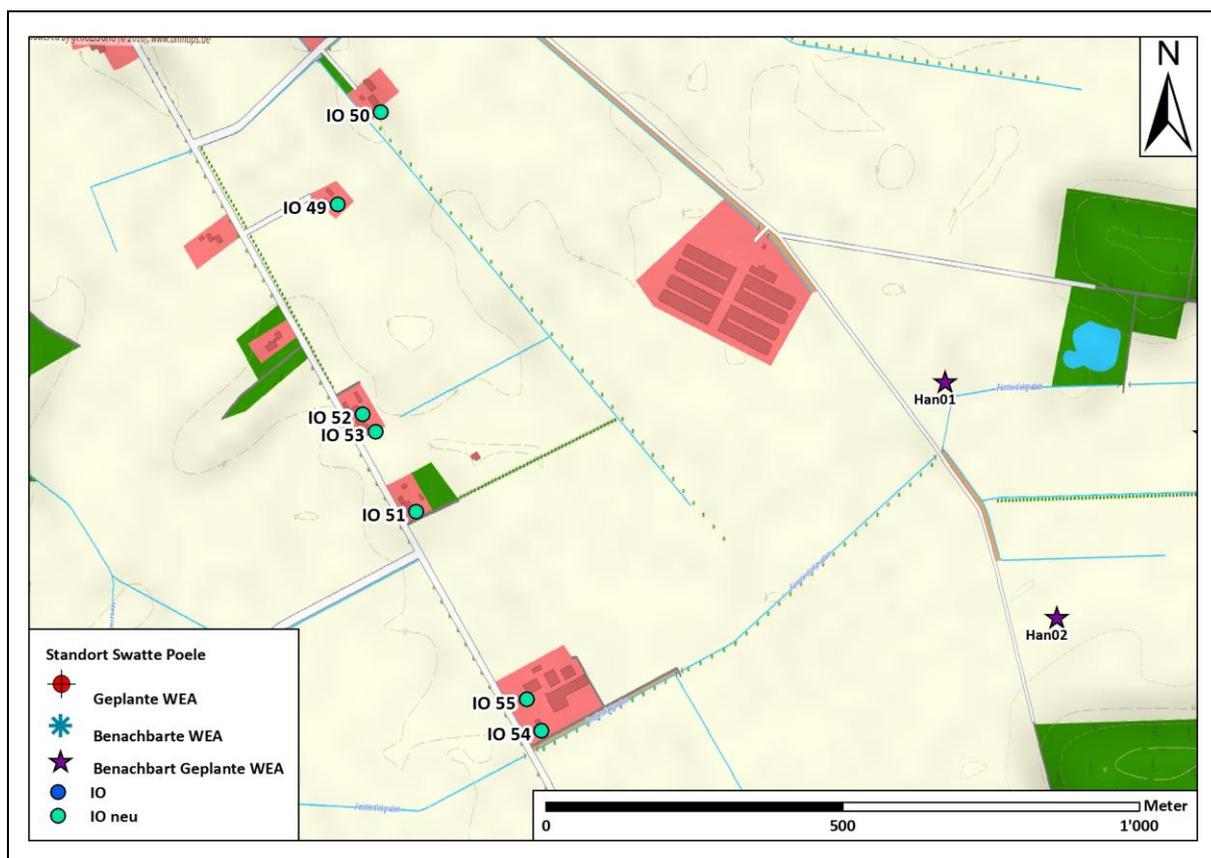


Abbildung 3: Detail, neue Immissionsorte Süd

## 2. Berechnungsergebnisse

### 2.1. Vorbelastung

Die Berechnung des Schattenwurfs für den Standort Swatte Poele durch die 6 benachbart bestehenden WEA in Bippen und der 3 benachbart geplanten WEA des Windparks Handrup ergab die nachfolgend dargestellten Schattenwurfzeiten.

An 6 Immissionsorten wird der Richtwert von 30 Std. pro Jahr überschritten. An 8 Immissionsorten wird der Richtwert von 30 Minuten pro Tag überschritten.

Immissionspunkt	Mögliche Beschattungstage	Astronomisch mögliche Beschattungszeiten	Meteorologisch wahrscheinliche Beschattungszeiten	Maximal mögliche Beschattungszeit an einem Beschattungstag
	pro Jahr	(Stunden / Jahr)	(Stunden / Jahr)	(Stunden / Tag)
IO1 Neuengraben 3	66	24:59	2:05	0:32
IO2 Neuengraben 4A	58	18:50	1:34	0:22
IO3 Neuengraben 4	62	20:01	1:40	0:22
IO4 Neuengraben 5	48	15:55	1:18	0:24
IO5 Neuengraben 6	56	21:09	1:45	0:26
IO6 Neuengraben 7	18	2:55	0:13	0:12
IO7 Fasanenweg 1	0	0:00	0:00	0:00
IO8 Am Schürenkamp 3	0	0:00	0:00	0:00
IO9 Fürstenauer Straße 3	0	0:00	0:00	0:00
IO10 Feldkamp 19	13	1:16	0:07	0:08
IO11 Feldkamp 18	0	0:00	0:00	0:00
IO12 Feldkamp 16	0	0:00	0:00	0:00
IO13 Feldkamp 14	72	15:39	1:42	0:20
IO14 Feldkamp 8	86	21:34	2:23	0:19
IO15 Feldkamp 6	44	9:58	1:07	0:18
IO16 Feldkamp 4	38	8:00	0:47	0:15
IO17 Feldkamp 2	46	10:15	1:01	0:15
IO18 Dorfstraße 29	0	0:00	0:00	0:00
IO19 Dorfstraße 27	0	0:00	0:00	0:00
IO20 Dorfstraße 25	0	0:00	0:00	0:00
IO21 Im Felde 17	95	28:44	3:17	0:24
IO22 Im Felde 15	89	28:11	3:09	0:24
IO23 Im Felde 13	86	26:45	2:59	0:24
IO24 Im Felde 11	82	24:51	2:45	0:23
IO25 Im Felde 9	80	23:04	2:32	0:23
IO26 Im Felde 5	68	17:13	1:52	0:20
IO27 Im Felde 3	60	13:05	1:25	0:18
IO28 Im Felde 8	92	27:13	3:05	0:23
IO29 Im Felde 6	88	26:06	2:56	0:23
IO30 Im Felde 4	88	24:44	2:46	0:22
IO31 Im Felde 2	84	23:16	2:35	0:21
IO32 Im Felde 1	76	20:09	2:12	0:21
IO33 Strickamp 20	72	18:00	1:57	0:20
IO34 Strickamp 18	65	14:57	1:36	0:19
IO35 Strickamp 16A	60	12:29	1:20	0:17
IO36 Strickamp 16	58	11:13	1:12	0:16
IO37 Strickamp 14	52	9:07	0:59	0:14
IO38 Strickamp 2	28	4:59	0:35	0:15
IO39 Strickamp 4	30	5:11	0:37	0:15
IO40 Strickamp 6	28	4:50	0:34	0:14
IO41 Strickamp 8	28	4:40	0:33	0:14
IO42 Strickamp 1	34	5:37	0:39	0:14
IO43 Strickamp 1A	33	5:29	0:38	0:14
IO44 Strickamp 22	72	14:25	1:44	0:18
IO45 Strickamp 24	89	23:13	2:39	0:19
IO46 Neuengraben 1A	76	25:46	2:11	0:26
IO47 Neuengraben 1	74	24:25	2:04	0:25
IO48 Neuengraben 2	73	26:55	2:17	0:30
IO49 Andervenner Straße 8	72	25:17	4:14	0:31
IO50 Flurweg 1	79	31:42	4:43	0:40
IO51 Andervenner Straße 11	122	49:52	11:31	0:36
IO52 Andervenner Straße 10	89	35:11	7:22	0:33
IO53 Andervenner Straße 10A	94	37:58	8:07	0:34
IO54 Wöstenweg 1A	132	50:15	12:41	0:38
IO55 Wöstenweg 1	101	40:06	10:03	0:36

## 2.2. Zusatzbelastung

Die Berechnung des Schattenwurfs für den Standort Swatte Poele durch die 5 geplanten ergab die nachfolgend dargestellten Schattenwurfzeiten.

An 38 Immissionsorten wird der Richtwert von 30 Std. pro Jahr überschritten. An 10 Immissionsorten wird der Richtwert von 30 Minuten pro Tag überschritten.

Immissionspunkt	Mögliche Beschattungstage	Astronomisch mögliche Beschattungszeiten	Meteorologisch wahrscheinliche Beschattungszeiten	Maximal mögliche Beschattungszeit an einem Beschattungstag
	pro Jahr	(Stunden / Jahr)	(Stunden / Jahr)	(Stunden / Tag)
IO1 Neuengraben 3	116	31:19	5:00	0:24
IO2 Neuengraben 4A	129	36:56	5:48	0:25
IO3 Neuengraben 4	132	37:26	6:00	0:25
IO4 Neuengraben 5	163	50:38	7:48	0:29
IO5 Neuengraben 6	162	54:37	9:04	0:31
IO6 Neuengraben 7	192	86:41	14:34	0:40
IO7 Fasanenweg 1	151	86:07	11:30	0:47
IO8 Am Schürenkamp 3	113	42:04	4:31	0:29
IO9 Fürstenauer Straße 3	84	38:57	3:48	0:38
IO10 Feldkamp 19	110	79:36	9:22	0:49
IO11 Feldkamp 18	125	56:22	7:56	0:39
IO12 Feldkamp 16	108	42:19	6:38	0:36
IO13 Feldkamp 14	136	62:39	10:36	0:46
IO14 Feldkamp 8	149	68:07	10:54	0:40
IO15 Feldkamp 6	156	65:19	9:55	0:33
IO16 Feldkamp 4	103	30:15	4:37	0:28
IO17 Feldkamp 2	108	32:40	4:41	0:26
IO18 Dorfstraße 29	107	37:09	4:36	0:29
IO19 Dorfstraße 27	96	31:05	3:34	0:27
IO20 Dorfstraße 25	94	28:57	3:18	0:26
IO21 Im Felde 17	151	44:53	7:47	0:26
IO22 Im Felde 15	164	48:23	8:07	0:26
IO23 Im Felde 13	169	48:12	7:57	0:26
IO24 Im Felde 11	170	48:35	7:46	0:25
IO25 Im Felde 9	168	48:02	7:32	0:25
IO26 Im Felde 5	159	46:50	7:00	0:25
IO27 Im Felde 3	155	44:54	6:34	0:24
IO28 Im Felde 8	148	42:47	7:19	0:25
IO29 Im Felde 6	152	42:47	7:08	0:25
IO30 Im Felde 4	149	41:16	6:48	0:24
IO31 Im Felde 2	152	40:59	6:36	0:24
IO32 Im Felde 1	159	41:54	6:25	0:24
IO33 Strickamp 20	156	40:47	6:07	0:23
IO34 Strickamp 18	153	40:01	5:53	0:23
IO35 Strickamp 16A	93	25:39	4:18	0:22
IO36 Strickamp 16	92	25:14	4:13	0:22
IO37 Strickamp 14	94	25:02	4:09	0:22
IO38 Strickamp 2	108	30:47	4:56	0:24
IO39 Strickamp 4	114	31:36	4:53	0:24
IO40 Strickamp 6	114	30:38	4:41	0:23
IO41 Strickamp 8	112	29:21	4:29	0:23
IO42 Strickamp 1	128	36:30	5:13	0:23
IO43 Strickamp 1A	126	35:33	5:02	0:23
IO44 Strickamp 22	81	20:39	3:46	0:21
IO45 Strickamp 24	73	17:18	3:27	0:20
IO46 Neuengraben 1A	46	11:03	1:59	0:18
IO47 Neuengraben 1	46	11:03	1:58	0:18
IO48 Neuengraben 2	78	20:41	3:46	0:22
IO49 Andervenner Straße 8	22	4:43	1:08	0:17
IO50 Flurweg 1	22	5:01	1:07	0:18
IO51 Andervenner Straße 11	45	9:36	1:54	0:18
IO52 Andervenner Straße 10	21	4:19	0:44	0:16
IO53 Andervenner Straße 10A	22	4:30	0:46	0:17
IO54 Wöstenweg 1A	55	14:24	3:24	0:20
IO55 Wöstenweg 1	54	13:41	3:07	0:20

## 2.3. Gesamtbelastung

Die Berechnung des Schattenwurfs für den Standort Swatte Poele durch die 5 geplanten WEA, die 6 benachbart bestehenden WEA in Bippen und die 3 benachbart geplanten WEA des Windparks Handrup ergab die nachfolgend dargestellten Schattenwurfzeiten.

An 53 Immissionsorten wird der Richtwert von 30 Std. pro Jahr überschritten an 2 IO wird er ausgeschöpft bzw. nahezu ausgeschöpft. An 42 Immissionsorten wird der Richtwert von 30 Minuten pro Tag überschritten.

Immissionspunkt	Mögliche Beschattungstage	Astronomisch mögliche Beschattungszeiten	Meteorologisch wahrscheinliche Beschattungszeiten	Maximal mögliche Beschattungszeit an einem Beschattungstag
	pro Jahr	(Stunden / Jahr)	(Stunden / Jahr)	(Stunden / Tag)
IO1 Neuengraben 3	164	56:18	7:01	0:32
IO2 Neuengraben 4A	164	55:46	7:19	0:33
IO3 Neuengraben 4	170	57:27	7:37	0:32
IO4 Neuengraben 5	169	66:33	9:04	0:36
IO5 Neuengraben 6	186	75:46	10:45	0:40
IO6 Neuengraben 7	192	89:36	14:47	0:40
IO7 Fasanenweg 1	151	86:07	11:31	0:47
IO8 Am Schürenkamp 3	113	42:04	4:31	0:29
IO9 Fürstenaue Straße 3	84	38:57	3:48	0:38
IO10 Feldkamp 19	110	80:52	9:30	0:53
IO11 Feldkamp 18	125	56:22	7:57	0:39
IO12 Feldkamp 16	108	42:19	6:38	0:36
IO13 Feldkamp 14	162	76:07	12:04	0:46
IO14 Feldkamp 8	172	88:49	13:11	0:48
IO15 Feldkamp 6	156	75:17	11:04	0:47
IO16 Feldkamp 4	115	38:15	5:25	0:30
IO17 Feldkamp 2	114	42:55	5:43	0:35
IO18 Dorfstraße 29	107	37:09	4:36	0:29
IO19 Dorfstraße 27	96	31:05	3:34	0:27
IO20 Dorfstraße 25	94	28:57	3:18	0:26
IO21 Im Felde 17	180	69:59	10:33	0:44
IO22 Im Felde 15	177	73:02	10:46	0:42
IO23 Im Felde 13	175	71:34	10:28	0:42
IO24 Im Felde 11	170	70:11	10:04	0:40
IO25 Im Felde 9	168	68:05	9:40	0:39
IO26 Im Felde 5	159	61:38	8:33	0:36
IO27 Im Felde 3	155	56:04	7:45	0:35
IO28 Im Felde 8	175	66:31	9:54	0:42
IO29 Im Felde 6	172	65:25	9:34	0:40
IO30 Im Felde 4	168	62:38	9:05	0:40
IO31 Im Felde 2	163	61:01	8:43	0:38
IO32 Im Felde 1	159	59:13	8:14	0:37
IO33 Strickamp 20	156	56:09	7:43	0:35
IO34 Strickamp 18	153	52:41	7:12	0:33
IO35 Strickamp 16A	129	36:08	5:24	0:29
IO36 Strickamp 16	124	34:38	5:13	0:29
IO37 Strickamp 14	120	32:33	4:57	0:29
IO38 Strickamp 2	108	35:16	5:28	0:35
IO39 Strickamp 4	114	36:39	5:30	0:35
IO40 Strickamp 6	114	35:23	5:16	0:34
IO41 Strickamp 8	112	33:57	5:02	0:33
IO42 Strickamp 1	128	42:07	5:53	0:35
IO43 Strickamp 1A	126	41:02	5:41	0:34
IO44 Strickamp 22	133	31:54	5:02	0:21
IO45 Strickamp 24	162	40:31	6:08	0:20
IO46 Neuengraben 1A	122	36:49	4:06	0:26
IO47 Neuengraben 1	120	35:28	3:58	0:25
IO48 Neuengraben 2	151	47:36	5:57	0:30
IO49 Andervenner Straße 8	94	30:00	5:21	0:31
IO50 Flurweg 1	101	36:43	5:49	0:40
IO51 Andervenner Straße 11	144	56:18	12:49	0:36
IO52 Andervenner Straße 10	90	35:15	7:23	0:33
IO53 Andervenner Straße 10A	96	38:10	8:09	0:34
IO54 Wöstenweg 1A	158	61:58	15:24	0:48
IO55 Wöstenweg 1	127	53:10	13:01	0:51

## 2.4. Gesamtbelastung, graphische Darstellung

Die folgenden Abbildungen zeigen die Beschattungszeiten jeweils als Farbraster sowie die 30-Stunden-pro-Tag bzw. die 30-Minuten-pro-Tag-Linie. Zusätzlich ist jeweils in violett der Beschattungsbereich der geplanten WEA des Windparks Swatte Poele eingezeichnet. Wohnhäuser außerhalb der violetten Linie, an denen Überschreitungen eines Richtwertes durch die Gesamtbelastung vorliegen, werden nicht berücksichtigt, da dort die geplanten WEA keinen Schattenwurf verursachen.

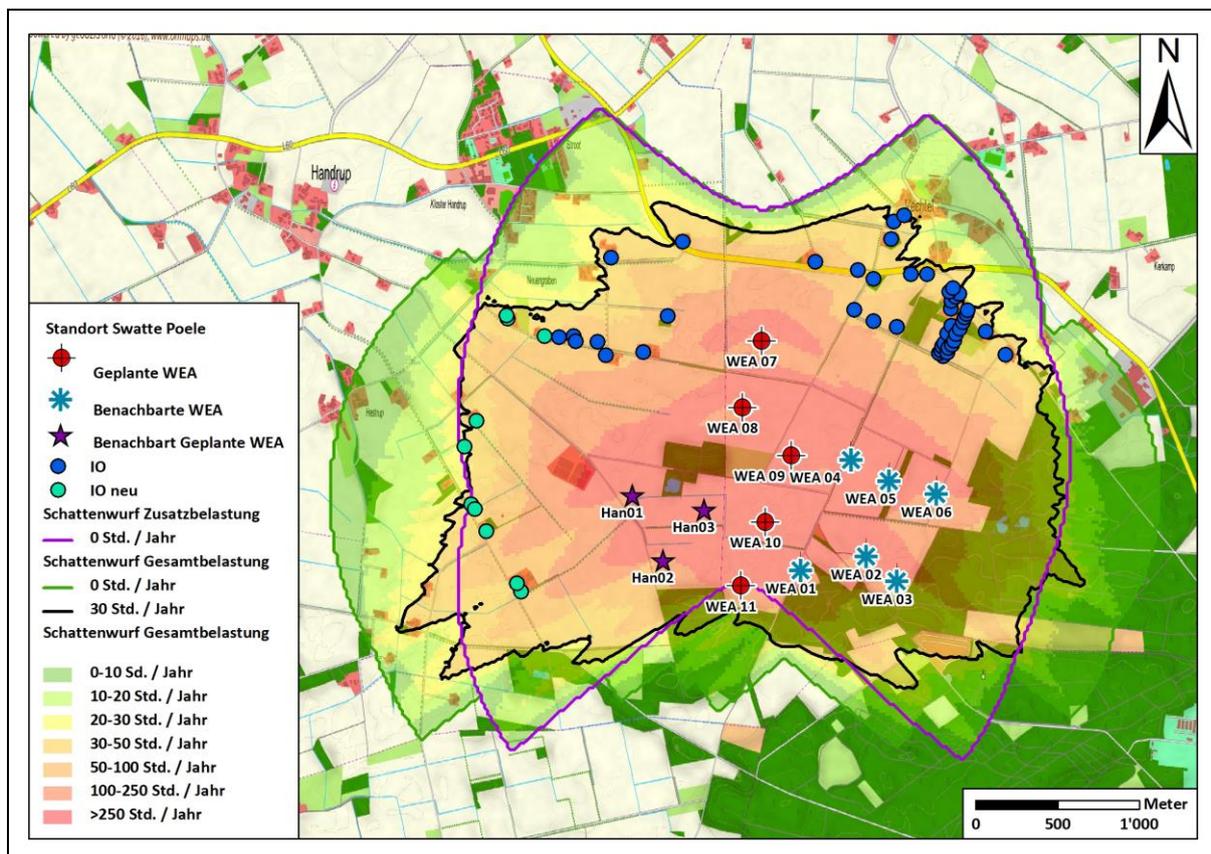


Abbildung 4: Gesamtbelastung Schattenwurf und Beschattungsbereich der Zusatzbelastung, Stunden pro Jahr

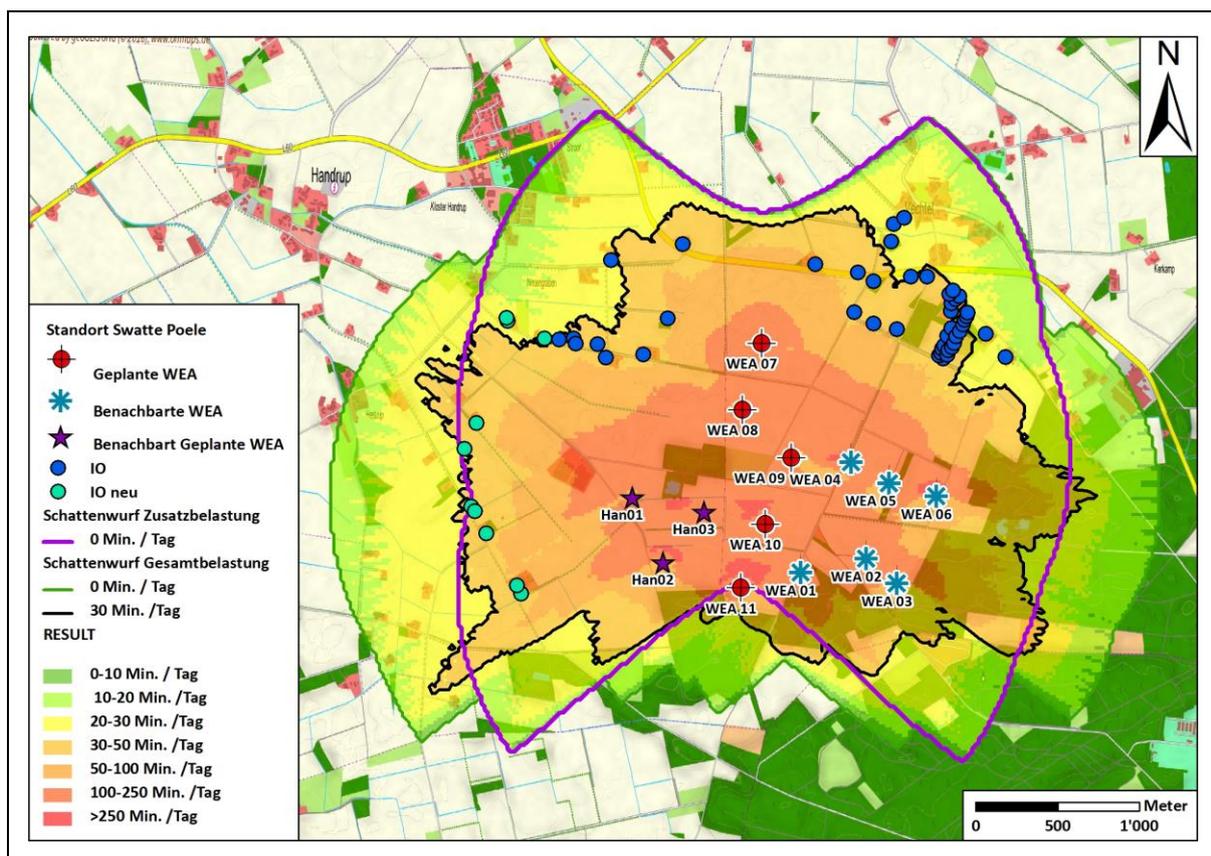


Abbildung 5: Gesamtbelastung Schattenwurf und Beschattungsbereich der Zusatzbelastung, Minuten pro Tag

## 2.5. Abschaltungen zur Reduzierung der Schattenwurfzeiten

Bei Überschreitung der Werte für die astronomisch maximal mögliche Beschattungsdauer kommen gemäß den Hinweisen des Länderausschuss Immissionsschutz unter anderem technische Maßnahmen zur zeitlichen Beschränkung des Betriebes der WEA in Betracht.

An allen betrachteten Immissionsorten wird mindestens einer der empfohlenen Richtwerte rechnerisch überschritten, ausgeschöpft oder nahezu ausgeschöpft.

Die nachfolgende Tabelle 4 zeigt die Gesamtsumme der Abschaltstunden pro Jahr ohne Berücksichtigung eventueller Sicherheitszuschläge, die dazu führen würde, dass an den betrachteten Immissionsorten kein Schattenwurf mehr von den geplanten WEA verursacht wird. Abschnitt 2.6 zeigt die Zeiten in Form detaillierter Kalender. Die dort dargestellten Abschaltzeiten beziehen sich auf das zur Berechnung verwendete Referenzjahr 2016. Leichte Variationen der Zeiten aufgrund des von Jahr zu Jahr veränderlichen Sonnenganges sind möglich.

WEA	Summe Abschaltzeiten astronomisch	Summe Abschaltzeiten meteorologisch
WEA07	393:07	68:02
WEA08	259:08	37:08
WEA09	190:35	22:57
WEA10	93:05	11:02
WEA11	21:40	4:16

Tabelle 4: Gesamtsummen der Abschaltzeiten der WEA für das Referenzjahr 2016.

## 2.6. Schattenwurfkalender je WEA

Die folgenden Tabellen zeigen die Schattenwurfzeiten der geplanten WEA für alle Immissionsorte mit Überschreitungen oder nahezu Ausschöpfung der empfohlenen Richtwerte.

WEA 07		Januar - Juni				
Schattenwurfzeiten berechnet für IO		IO 1 - IO 55				
Referenzjahr		2016				
Januar	Februar	März	April	Mai	Juni	
1   08:39 09:41-09:50/9 18:23 14:32-15:02/30	08:13 09:38-10:13/35 15:48-16:18/28 17:11 14:34-15:22/48 16:18-16:27/11	07:17 08:22-06:38/16 17:30-17:37/7 18:06 16:24-17:23/59	07:05 07:37-08:00/23 08:27-09:09/42 20:01 07:58-08:00/3 18:14-19:36/62	06:58 07:15-07:48/33 20:53	05:12 21:40	
2   08:39 09:41-09:50/11 18:24 14:33-15:03/30	08:11 09:39-10:13/34 15:48-16:18/26 17:13 14:34-15:21/47 16:15-16:27/12	07:14 08:25-06:35/10 17:27-17:40/13 18:07 16:25-17:23/58	07:02 07:36-08:00/24 08:27-09:09/41 20:03 08:00-08:03/3 18:15-19:37/62	06:56 07:15-07:47/32 20:55	05:11 21:42	
3   08:39 09:40-09:54/14 18:25 14:33-15:04/31	08:10 09:38-10:12/33 15:48-16:18/26 17:14 14:34-15:21/47 16:15-16:27/12	07:12 08:27-07:22/55 18:09 17:25-17:42/17	07:00 07:35-08:00/25 08:26-08:07/39 20:04 08:00-08:03/3 18:15-19:36/61	06:53 07:18-07:49/27 20:59	05:10 21:43	
4   08:39 09:39-09:54/15 18:25 14:32-15:04/32	08:08 09:41-10:12/31 15:50-16:18/26 17:16 14:36-15:22/46 16:15-16:28/13	07:10 16:27-17:21/54 18:11 17:23-17:43/20	06:58 07:33-07:58/26 08:26-09:09/37 20:08 07:58-08:01/5 18:21-18:58/37	06:49 07:18-07:48/33 20:53	05:09 21:44	
5   08:39 09:39-09:56/17 18:27 14:32-15:06/34	08:06 09:42-10:11/29 15:51-16:14/23 17:18 14:36-15:21/45 16:13-16:29/15	07:08 16:29-16:50/21 17:22-17:45/23 18:13 16:52-17:20/28 17:45-17:48/1	06:55 07:33-07:58/25 08:29-06:04/35 20:08 07:57-08:02/5 18:19-19:38/79	06:51 07:18-07:43/25 21:00	05:09 21:45	
6   08:39 09:38-09:57/19 18:29 14:32-15:06/34	08:05 09:43-10:10/27 15:53-16:12/19 17:20 14:37-15:20/43 16:11-16:28/17	07:05 16:32-16:48/16 16:56-17:47/53 18:15 16:54-17:19/25 17:49-17:49/2	06:53 07:33-07:58/25 08:30-09:02/32 18:03-19:39/36 20:10 07:58-08:01/5 18:21-18:58/37	06:49 07:20-07:41/21 21:02	05:08 21:46	
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9   08:39 09:38-10:01/23 18:32 14:32-15:10/38	07:58 09:47-10:05/18 15:57-16:29/32 17:26 14:38-15:18/39 16:29-16:31/2	06:59 16:48-17:47/59 18:20 17:44-17:52/6	06:48 07:23-08:00/37 18:05-19:33/29 20:15 06:38-08:54/18 19:30-19:39/9	06:43 07:20-07:31/13 21:07	05:06 21:49	
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15   08:33 09:36-10:07/31 15:51-16:03/12 18:41 14:32-15:15/43	07:48 08:25-06:38/13 15:55-16:22/27 17:37 14:53-15:06/13 16:22-16:52/30	06:45 07:40-06:06/26 17:34-18:05/31 18:31 16:42-17:39/57	06:32 07:14-07:53/39 19:26-19:34/8 20:26 19:13-19:27/14	06:32 07:14-07:25/11 21:02	05:04 21:53	
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21   08:28 09:36-10:12/36 15:47-16:12/25 18:51 14:32-15:19/47	07:36 08:18-06:44/26 17:49 15:56-17:16/80	18:42 07:31-06:13/42 06:29 06:54-07:12/18 16:42-18:20/96	06:19 07:14-07:53/39 20:36	06:19 07:14-07:25/11 21:02	05:04 21:55	
22   08:27 09:35-10:11/36 15:46-16:14/26 18:53 14:31-15:19/48	07:34 08:18-06:45/27 17:51 15:57-17:19/82	18:43 07:30-06:13/43 06:26 06:52-07:11/19 16:42-18:20/96	06:17 07:14-07:53/39 20:38	06:17 07:14-07:25/11 21:02	05:04 21:55	
23   08:25 09:36-10:12/36 15:46-16:13/27 18:54 14:31-15:20/49	07:32 08:18-06:45/27 17:52 15:58-17:21/83	18:45 07:29-06:13/44 06:23 06:52-07:12/20 16:43-18:21/96	06:15 07:14-07:52/38 20:41	06:15 07:14-07:25/11 21:02	05:05 21:55	
24   08:24 09:35-10:13/37 15:46-16:14/28 18:56 14:32-15:20/48	07:30 08:18-06:45/27 17:54 16:00-17:22/82	18:47 07:28-06:13/45 06:21 06:52-07:11/19 16:44-18:22/96	06:13 07:14-07:52/38 20:43	06:13 07:14-07:25/11 21:02	05:05 21:55	
25   08:23 09:36-10:13/37 15:45-16:15/30 18:58 14:32-15:20/49 16:15-16:17/2	07:28 08:19-06:45/26 17:56 16:01-17:23/82	18:49 07:28-06:13/45 06:19 06:48-06:50/3 07:27-06:12/45	06:11 07:14-07:52/38 20:45	06:11 07:14-07:25/11 21:02	05:05 21:56	
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27   08:20 09:36-10:13/37 15:46-16:19/30 17:01 14:32-15:21/49 16:16-16:21/5	07:23 08:19-06:43/24 18:00 16:04-17:23/79	18:52 07:56-06:09/13 17:48-19:25/99 07:14 07:42-06:00/18 08:27-06:12/45	06:06 07:14-07:50/36 20:48	06:06 07:14-07:25/11 21:02	05:07 21:56	
28   08:19 09:37-10:14/37 15:46-16:17/31 17:03 14:33-15:22/49 16:17-16:23/6	07:21 08:20-06:42/22 16:24-17:24/60 18:02 16:08-16:21/13	18:54 07:58-06:06/10 17:48-19:26/96 07:12 07:40-06:01/21 08:26-08:11/45	06:02 07:14-07:50/36 20:50	06:02 07:14-07:25/11 21:02	05:08 21:56	
29   08:18 09:37-10:14/37 15:46-16:19/30 17:05 14:33-15:22/49 16:16-16:24/8	07:19 08:21-06:41/20 18:04 16:23-17:23/69	19:57 06:00-08:03/3 17:52-18:12/20 07:09 07:38-06:01/22 08:27-08:11/44 18:14-19:33/79	06:00 07:14-07:48/35 20:52	06:00 07:14-07:25/11 21:02	05:08 21:55	
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31   08:14 09:36-10:14/38 15:47-16:17/30 17:09 14:34-15:22/49 16:17-16:26/9	255	367	417	486	502	0
Sonneneinstrahlung Anzahl Minuten mit Schatten	2872	2814	3601	2194	198	0

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

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

WEA 07		Juli -Dezember										
Schattenwurfzeiten berechnet für IO		IO 1- IO 55										
Referenzjahr		2016										
	Juli	August	September	Oktober	November	Dezember						
1	05:09 21:55	05:46 21:22	06:37 20:19	07:28 19:07	07:23 17:00	08:15 16:01	09:16:09:46:28 14:13:14:54:41					08:15 16:01
2	05:09 21:54	05:48 21:21	06:39 20:16	07:29 19:05	07:25 16:58	08:17 15:58	09:20:09:46:26 14:13:14:54:39					08:17 15:58
3	05:10 21:54	05:49 21:21	06:41 20:14	07:31 19:03	07:31 16:58	08:18 15:58	09:21:09:46:25 14:13:14:54:38					08:18 15:58
4	05:11 21:52	05:51 21:17	06:42 20:11	07:32 19:02	07:33 16:58	08:19 15:58	09:22:09:45:23 14:13:14:54:37					08:19 15:58
5	05:12 21:53	05:53 21:15	06:44 20:09	07:34 19:00	07:35 16:58	08:20 15:58	09:23:09:46:23 14:13:14:54:36					08:20 15:58
6	05:12 21:52	05:54 21:13	06:46 20:07	07:36 18:59	07:36 16:58	08:21 15:58	09:24:09:45:21 14:13:14:54:35					08:21 15:58
7	05:13 21:52	05:56 21:11	06:47 20:04	07:38 18:57	07:38 16:58	08:22 15:58	09:25:09:44:19 14:13:14:54:34					08:22 15:58
8	05:14 21:51	05:57 21:09	06:49 20:02	07:40 18:55	07:40 16:58	08:23 15:58	09:26:09:44:17 14:13:14:54:33					08:23 15:58
9	05:15 21:50	05:59 21:07	06:51 20:00	07:42 18:53	07:41 16:58	08:24 15:58	09:27:09:43:15 14:13:14:54:32					08:24 15:58
10	05:16 21:50	06:01 21:05	06:52 19:57	07:43 18:52	07:43 16:58	08:25 15:58	09:28:09:43:14 14:13:14:54:31					08:25 15:58
11	05:17 21:49	06:02 21:03	06:54 19:55	07:45 18:50	07:45 16:58	08:26 15:58	09:29:09:42:11 14:13:14:54:30					08:26 15:58
12	05:19 21:48	06:04 21:01	06:56 19:53	07:47 18:48	07:47 16:58	08:27 15:58	09:30:09:41:09 14:13:14:54:29					08:27 15:58
13	05:20 21:47	06:06 20:59	06:57 19:50	07:48 18:47	07:48 16:58	08:28 15:58	09:31:09:40:06 14:13:14:54:28					08:28 15:58
14	05:21 21:46	06:07 20:57	06:59 19:48	07:50 18:45	07:50 16:58	08:29 15:58	09:32:09:39:04 14:13:14:54:27					08:29 15:58
15	05:22 21:45	06:09 20:55	07:01 19:45	07:52 18:43	07:52 16:58	08:30 15:58	09:33:09:38:02 14:13:14:54:26					08:30 15:58
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17	05:25 21:43	06:12 20:51	07:04 19:41	07:55 18:40	07:56 16:58	08:32 15:58	09:35:09:36:00 14:13:14:54:24					08:32 15:58
18	05:26 21:42	06:14 20:49	07:06 19:38	07:57 18:38	07:57 16:58	08:33 15:58	09:36:09:35:00 14:13:14:54:23					08:33 15:58
19	05:27 21:41	06:16 20:47	07:07 19:36	07:59 18:36	07:59 16:58	08:34 15:58	09:37:09:34:00 14:13:14:54:22					08:34 15:58
20	05:28 21:39	06:17 20:45	07:09 19:33	08:01 18:35	08:01 16:58	08:35 15:58	09:38:09:33:00 14:13:14:54:21					08:35 15:58
21	05:30 21:38	06:19 20:43	07:11 19:31	08:03 18:33	08:03 16:58	08:36 15:58	09:39:09:32:00 14:13:14:54:20					08:36 15:58
22	05:31 21:37	06:21 20:41	07:12 19:29	08:05 18:31	08:05 16:58	08:37 15:58	09:40:09:31:00 14:13:14:54:19					08:37 15:58
23	05:33 21:36	06:22 20:38	07:14 19:26	08:06 18:30	08:06 16:58	08:38 15:58	09:41:09:30:00 14:13:14:54:18					08:38 15:58
24	05:34 21:34	06:24 20:36	07:16 19:24	08:08 18:28	08:08 16:58	08:39 15:58	09:42:09:29:00 14:13:14:54:17					08:39 15:58
25	05:36 21:33	06:26 20:34	07:17 19:22	08:10 18:26	08:10 16:58	08:40 15:58	09:43:09:28:00 14:13:14:54:16					08:40 15:58
26	05:37 21:31	06:27 20:32	07:19 19:20	08:11 18:25	08:11 16:58	08:41 15:58	09:44:09:27:00 14:13:14:54:15					08:41 15:58
27	05:38 21:30	06:29 20:30	07:21 19:18	08:13 18:23	08:13 16:58	08:42 15:58	09:45:09:26:00 14:13:14:54:14					08:42 15:58
28	05:40 21:28	06:31 20:27	07:23 19:16	08:15 18:21	08:15 16:58	08:43 15:58	09:46:09:25:00 14:13:14:54:13					08:43 15:58
29	05:41 21:27	06:32 20:25	07:24 19:14	08:17 18:19	08:17 16:58	08:44 15:58	09:47:09:24:00 14:13:14:54:12					08:44 15:58
30	05:43 21:25	06:34 20:23	07:26 19:12	08:19 18:17	08:19 16:58	08:45 15:58	09:48:09:23:00 14:13:14:54:11					08:45 15:58
31	05:45 21:23	06:36 20:21	07:28 19:10	08:21 18:15	08:21 16:58	08:46 15:58	09:49:09:22:00 14:13:14:54:10					08:46 15:58
Sonneneinstrahlung		505	456	381	330	260	3173					264
Anzahl Minuten mit Schatten		0	1082	4096	2605	3173	1164					

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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WEA 08		Januar - Juni					
Schattenwurfzeiten berechnet für IO		IO 1- IO 55					
Referenzjahr		2016					
	Januar	Februar	März	April	Mai	Juni	
1	08:39 09:22 09:36/16 15:07-15:34/27 16:23 14:16-14:34/19 15:34-15:39/5	08:13 09:35-10:15/40 17:11 15:43-16:37/54	07:17 07:48-08:12/24 17:07-17:40/33 18:06 08:07-08:59/52	07:05 07:29-07:36/7 20:01	05:58 05:12 20:53	05:12 21:40	
2	08:39 09:22 09:39/17 15:08-15:35/27 16:24 14:17-14:34/17 15:35-15:40/5	08:11 09:35-10:15/40 17:13 15:45-16:37/52	07:14 07:47-08:15/26 17:08-17:42/34 18:07 08:09-08:59/50	07:02 07:27-07:38/11 20:03	05:56 05:11 20:55	05:11 21:42	
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8	08:38 09:22 09:43/21 15:09-15:36/27 16:31 09:46-09:50/4 15:36-15:50/14	08:01 09:39-10:13/34 16:19-16:58/37 17:24 15:48-16:38/48	07:01 07:46-08:10/24 17:17-17:54/37 18:18 08:06-08:55/49	06:48 07:22-07:38/16 20:13	05:45 05:07 21:05	05:07 21:48	
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10	08:37 09:23 09:56/33 15:36-15:53/17 16:34 15:10-15:37/27	07:58 09:41-10:11/30 16:17-17:00/43 17:28 15:49-16:16/27 16:21-16:33/12	06:56 07:47-08:05/18 17:20-17:57/37 18:22 08:03-08:52/49	06:44 07:09-07:19/10 20:17	05:42 05:09 21:09	05:09 21:49	
11	08:36 09:23 09:58/35 15:35-15:54/19 16:35 15:11-15:38/25	07:56 09:42-10:09/27 16:17-17:02/45 17:01-17:02/1 17:30 15:50-16:15/25 16:24-16:31/7	06:54 07:50-08:02/12 08:22-08:51/29 18:24 08:00-08:20/20 17:22-17:57/35	06:41 07:06-07:19/13 20:19	05:40 05:06 21:10	05:06 21:50	
12	08:36 09:22 09:59/37 15:35-15:55/20 16:36 15:11-15:38/25	07:54 09:43-10:08/25 16:17-17:04/47 17:32 15:51-16:14/23 17:02-17:04/2	06:52 07:50-08:19/29 17:22-17:56/34 18:26 08:24-08:49/25 17:25-17:35/10	06:39 07:04-07:20/16 20:20	05:38 05:05 21:12	05:05 21:51	
13	08:35 09:24-10:01/37 15:34-15:56/22 16:38 15:11-15:35/24	07:52 09:45-10:06/21 16:16-17:05/49 17:34 15:53-16:13/20 17:02-17:06/4	06:49 07:50-08:17/27 17:24-17:56/32 18:27 08:25-08:46/21	06:37 07:04-07:20/16 20:22	05:37 05:05 21:13	05:05 21:51	
14	08:34 09:24-10:03/39 15:25-15:27/2 16:39 15:12-15:34/22 15:39-15:50/25	07:50 09:48-10:03/15 16:16-17:05/49 17:35 15:55-16:11/16 17:02-17:09/7	06:47 07:51-08:17/26 17:26-17:38/12 18:29 08:29-08:43/14 17:28-17:55/27	06:35 07:03-07:20/17 20:24	05:35 05:05 21:15	05:05 21:52	
15	08:33 09:24-10:04/40 15:45-15:59/14 16:41 15:13-15:45/32	07:49 15:58-16:07/19 17:00-17:11/11 17:37 16:16-17:04/48	06:45 07:51-08:14/23 17:42-17:52/10 18:31 17:29-17:41/12	06:32 07:04-07:20/16 20:26	05:33 05:04 21:17	05:04 21:53	
16	08:33 09:24-10:05/41 15:45-16:00/15 16:43 15:14-15:45/31	07:46 16:17-17:04/47 17:39 17:00-17:13/13	06:42 07:53-08:13/20 17:45-17:49/4 18:33 17:32-17:37/5	06:30 07:03-07:18/15 20:27	05:32 05:04 21:18	05:04 21:53	
17	08:32 09:25-10:07/42 15:44-15:59/15 16:44 15:13-15:44/31	07:44 16:17-17:04/47 17:41 16:59-17:15/16	06:40 07:55-08:11/16 18:35	06:28 07:04-07:17/13 20:29	05:30 05:04 21:20	05:04 21:54	
18	08:31 09:24-10:07/43 15:43-16:00/17 16:46 15:14-15:45/29	07:42 16:19-17:03/45 17:43 16:58-17:17/19	06:38 07:57-08:06/9 18:36	06:26 07:05-07:16/11 20:31	05:29 05:04 21:21	05:04 21:54	
19	08:30 09:25-10:08/43 15:43-16:01/18 16:47 15:15-15:43/28	07:40 08:34-08:49/14 16:56-17:19/23 17:45 16:18-17:01/43	06:35 07:58-08:14/16 18:38	06:24 07:07-07:14/7 20:32	05:27 05:04 21:23	05:04 21:54	
20	08:29 09:25-10:09/44 15:42-16:02/20 16:49 15:16-15:42/26	07:38 08:31-08:51/20 16:57-17:21/24 17:47 16:19-17:01/42	06:33 07:59-08:11/17 18:40	06:21 07:07-07:13/7 20:34	05:26 05:04 21:24	05:04 21:55	
21	08:28 09:26-10:10/44 15:40-16:05/25 16:51 15:17-15:40/23 16:10-16:19/8	07:36 08:28-08:53/25 17:03-17:23/20 17:49 16:20-17:08/48	06:31 07:59-08:13/16 18:42	06:19 07:05-07:16/11 20:36	05:24 05:04 21:26	05:04 21:55	
22	08:26 09:26-10:10/44 16:08-16:20/12 16:53 15:17-16:07/50	07:34 08:14-08:21/7 16:21-17:06/45 17:51 08:26-08:54/28 17:01-17:25/24	06:28 07:58-08:11/16 18:43	06:17 07:05-07:16/11 20:38	05:23 05:05 21:27	05:05 21:55	
23	08:25 09:27-10:12/45 16:54 15:19-16:22/63	07:32 08:08-08:56/48 16:40-17:01/21 17:53 16:23-16:39/16 16:59-17:27/28	06:26 07:58-08:11/16 18:45	06:15 07:05-07:16/11 20:39	05:22 05:05 21:29	05:05 21:55	
24	08:24 09:28-10:13/45 16:56 15:21-16:24/69	07:30 07:56-08:06/10 16:27-16:36/9 17:54 08:08-08:57/51 16:40-17:29/49	06:23 07:58-08:11/16 18:47	06:13 07:05-07:16/11 20:41	05:20 05:05 21:30	05:05 21:55	
25	08:23 09:29-10:13/44 15:37-16:24/47 16:58 15:22-15:36/14	07:28 07:54-08:10/16 16:41-17:30/49 17:56 08:08-08:58/50	06:21 07:58-08:11/16 18:49	06:11 07:05-07:16/11 20:43	05:19 05:05 21:32	05:05 21:56	
26	08:22 09:30-10:14/44 15:38-16:30/52 17:00 15:25-15:35/10	07:25 07:52-08:10/18 16:41-17:33/52 17:58 08:08-08:58/50	06:19 07:58-08:11/16 18:50	06:09 07:05-07:16/11 20:45	05:18 05:06 21:33	05:06 21:56	
27	08:20 09:31-10:14/43 17:01 15:38-16:32/54	07:23 07:51-08:05/14 16:42-17:02/20 18:00 08:01-08:59/58 17:04-17:35/31	07:16 07:58-08:11/16 18:52	06:07 07:05-07:16/11 20:46	05:17 05:06 21:34	05:06 21:55	
28	08:19 09:34-10:15/41 17:03 15:40-16:33/53	07:21 07:50-08:11/21 16:44-17:00/16 18:02 08:05-08:59/54 17:06-17:37/31	07:14 07:58-08:11/16 19:54	06:04 07:05-07:16/11 20:48	05:16 05:07 21:36	05:07 21:55	
29	08:17 09:35-10:15/40 17:05 15:40-16:34/54	07:19 07:50-08:13/23 16:46-16:57/11 18:04 08:07-09:00/53 17:06-17:38/32	07:12 07:58-08:11/16 19:56	06:02 07:05-07:16/11 20:50	05:15 05:07 21:37	05:07 21:55	
30	08:16 09:35-10:15/40 17:07 15:41-16:35/54		07:09 07:58-08:11/16 19:57	06:00 07:05-07:16/11 20:52	05:14 05:08 21:38	05:08 21:55	
31	08:14 09:36-10:15/39 17:09 15:42-16:36/54		07:07 07:58-08:11/16 19:59	05:59 07:05-07:16/11 20:53	05:13 05:08 21:39	05:08 21:55	
Sonnenscheinstunden	255	285	367	417	488	502	
Anzahl Minuten mit Schatten	2641	2718	1489	289	0	0	

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

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

WEA 08		Juli -Dezember																					
Schattenwurfzeiten berechnet für IO		IO 1- IO 55																					
Referenzjahr		2016																					
	Jul	August	September			Oktober			November			Dezember											
1	05:09	05:46	06:37	07:06	07:19/13	07:28	08:29	08:58	29	18:03	18:36/33	07:23	09:11	09:39	28	15:46	16:31/45	08:15	09:05	09:41	36	15:17	15:37/20
	21:55	21:22	20:18	07:24	07:33/9	19:07	09:04	09:27	23	18:06	18:14/8	17:00	15:19	15:45	26	15:53	16:01/8	16:18	14:53	15:18	25	15:18	15:18:25
2	05:09	05:48	06:39	07:07	07:17/10	07:29	08:28	08:39	11	09:52	09:29/27	07:25	09:10	09:40	30	15:47	16:29/42	08:17	09:08	09:41	35	15:18	15:37/19
	21:54	21:20	20:16	07:22	07:34/12	19:05	08:38	08:58	20	18:01	18:35/34	16:58	15:18	15:46	28	15:50	16:03/13	16:18	14:54	15:19	25	15:18	15:18:25
3	05:10	05:49	06:41	07:09	07:15/6	07:31	08:26	08:42	16	08:59	09:30/31	07:27	09:09	09:42	33	15:48	16:27/39	08:18	09:07	09:40	33	15:19	15:37/18
	21:54	21:18	20:14	07:20	07:35/15	19:03	08:40	08:58	18	17:58	18:35/37	16:56	15:18	15:48	30	15:49	16:05/16	16:17	14:53	15:20	27	15:18	15:18:25
4	05:11	05:51	06:42	07:19	07:35/16	07:33	08:24	08:44	20	17:57	18:34/37	07:28	09:08	09:42	34	16:13	16:25/12	08:19	09:07	09:38	31	15:20	15:37/17
	21:53	21:17	20:11			19:00	08:41	09:31	50			16:54	15:17	16:12	55			16:16	14:54	15:21/27			
5	05:12	05:53	06:44	07:18	07:35/17	07:35	08:23	08:46	23	17:55	18:32/37	07:30	09:08	09:43	35	16:14	16:24/10	08:21	09:08	09:29	21	14:54	15:21/27
	21:53	21:15	20:09			18:58	08:42	09:32	50			16:52	15:17	16:11	54			16:16	09:30	09:35	15	15:21	15:36/15
6	05:13	05:54	06:46	07:18	07:36/18	07:36	08:22	08:47	25	17:54	18:30/36	07:32	09:07	09:44	37	16:17	16:22/5	08:22	09:08	09:29	21	14:56	15:22/26
	21:52	21:13	20:07			18:56	08:43	09:33	50			16:51	15:16	16:10	54			16:15	14:11	14:17	16	15:22	15:35/13
7	05:13	05:56	06:47	07:18	07:35/17	07:38	08:21	08:47	26	17:51	18:27/36	07:34	09:07	09:44	37	16:08	16:09/1	08:23	09:09	09:28	19	14:56	15:22/26
	21:52	21:11	20:04			18:53	08:43	09:32	49			16:49	15:16	16:08	52			16:15	14:09	14:19	10	15:22	15:34/12
8	05:14	05:57	06:49	07:18	07:34/16	07:40	08:28	08:47	27	17:48	18:22/34	07:36	09:06	09:45	39			08:25	09:10	09:29	19	14:57	15:24/27
	21:51	21:09	20:02			18:51	08:43	09:33	50	16:23	18:24/1	16:47	15:16	16:07	51			16:15	14:09	14:21	12	15:24	15:32/1
9	05:15	05:59	06:51	07:18	07:32/14	07:41	08:28	08:47	27	17:47	18:21/34	07:38	09:06	09:45	39			08:26	09:11	09:29	18	14:57	15:24/27
	21:50	21:07	20:00			18:49	08:43	09:33	50			16:46	15:16	16:08	52			16:14	14:08	14:22	14	15:24	15:29/1
10	05:16	06:01	06:52	07:20	07:31/11	07:43	08:28	08:47	27	17:46	18:19/33	07:39	09:06	09:46	40			08:27	09:11	09:29	18	14:58	15:24/26
	21:50	21:05	19:57			18:46	08:43	09:33	50			16:44	15:15	16:07	52			16:14	14:07	14:23	16	15:24	15:30/6
11	05:17	06:02	06:54	07:22	07:29/7	07:45	08:21	08:47	28	17:43	18:17/34	07:41	09:06	09:46	40			08:28	09:12	09:29	17	14:58	15:25/27
	21:49	21:03	19:55			18:44	08:43	09:33	50			16:42	15:14	16:07	53			16:14	14:07	14:24	17	15:25	15:30/5
12	05:19	06:04	06:56			07:47	08:21	08:46	25	17:41	18:14/33	07:43	09:06	09:46	40			08:29	09:13	09:29	18	14:58	15:25/27
	21:48	21:01	19:53			18:42	08:41	09:33	52			16:41	15:13	16:07	54			16:14	14:07	14:25	18	15:25	15:30/5
13	05:20	06:06	06:57			07:48	08:21	08:45	24	17:21	17:28/7	07:45	09:07	09:46	39			08:30	09:14	09:29	16	14:59	15:26/27
	21:47	20:59	19:50			18:40	08:39	09:32	53	17:40	18:12/32	16:39	15:12	16:07	55			16:14	14:07	14:26	19	15:26	15:30/4
14	05:21	06:07	06:59			07:50	08:22	08:44	22	17:18	17:31/13	07:47	09:07	09:46	39			08:31	09:15	09:29	14	15:00	15:26/26
	21:46	20:57	19:48			18:37	08:38	09:32	54	17:39	18:10/31	16:38	15:12	16:09	54			16:14	14:07	14:27	20	15:26	15:31/1
15	05:22	06:09	07:01			07:52	08:22	08:41	19	17:16	17:33/17	07:48	09:05	09:47	42			08:32	09:15	09:29	14	15:00	15:27/27
	21:45	20:55	19:45			18:35	08:36	09:31	55	17:38	18:08/30	16:36	15:11	16:05	54			16:14	14:07	14:27	20	15:27	15:31/4
16	05:23	06:11	07:02			07:54	08:23	08:43	20	17:14	18:08/52	07:50	09:04	09:47	43			08:33	09:16	09:29	13	15:01	15:28/27
	21:44	20:53	19:43			18:33	08:41	09:31	50			16:35	15:11	16:04	53			16:14	14:08	14:28	20	15:28	15:32/4
17	05:25	06:12	07:04			07:56	08:25	08:42	17	17:13	18:04/51	07:52	09:03	09:47	44	15:11	16:03/52	08:34	09:17	09:30	13	15:02	15:28/26
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20	05:28	06:17	07:09			08:01	08:43	08:55	12	16:54	17:36/42	07:57	09:02	09:46	44			08:36	09:19	09:30	11	15:03	15:30/27
	21:39	20:45	19:33			18:24	08:57	09:27	30	17:32	17:57/25	16:29	14:54	15:57	63			16:15	14:09	14:31	22	15:30	15:34/4
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	21:38	20:43	19:31			18:22	08:56	09:25	27	17:32	17:54/22	16:28	14:53	15:43	50			16:15	14:09	14:31	22	15:30	15:34/4
22	05:31	06:21	07:12			08:05	08:59	09:22	23	17:34	17:52/18	08:01	09:02	09:46	44	15:17	15:41/24	08:37	09:20	09:31	11	15:04	15:31/27
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	21:36	20:38	19:26			18:18	16:48	17:31	43			16:26	14:53	15:19	26			16:16	14:10	14:32	22	15:31	15:35/4
24	05:34	06:24	07:10	07:18/8	07:16	08:08	09:05	09:16	11	17:26	17:48/22	08:04	09:02	09:45	43	15:20	15:38/18	08:38	09:21	09:33	12	15:05	15:32/27
	21:34	20:36	19:24			18:16	16:47	17:31	44			16:25	14:52	15:20	28			16:17	14:11	14:33	22	15:32	15:36/4
25	05:36	06:26	07:07	07:19/12	07:17	08:09	09:06	09:48/5				08:06	09:02	09:45	43	15:21	15:38/17	08:39	09:21	09:33	12	15:05	15:32/27
	21:33	20:34	19:22			18:14	17:28	17:46	18			16:24	14:52	15:21	29			16:17	14:12	14:33	21	15:32	15:36/4
26	05:37	06:27	07:06	07:20/14	07:19	08:07	09:04	09:52/15				08:07	09:03	09:45	42	15:23	15:38/15	08:39	09:21	09:33	12	15:06	15:32/26
	21:31	20:32	19:19			18:12	17:29	17:44	15			16:23	14:52	15:23	31			16:18	14:12	14:33	21	15:32	15:36/4
27	05:38	06:29	07:06	07:21/15	07:21	08:35	08:54/19					08:09	09:03	09:44	41	15:24	15:39/15	08:39	09:21	09:34	13	15:06	15:32/26
	21:30	20:30	19:17			18:10	17:31	17:42	11			16:22	14:53	15:24	31			16:19	14:12	14:33	21	15:32	15:37/5
28	05:40	06:31	07:04	07:20/16	07:23	08:33	08:56/23	18:24	18:33/9			08:11	09:04	09:43	39	15:24	15:38/14	08:39	09:21	09:35	14	15:06	15:33/27
	21:28	20:27	19:14	18:11	18:22/11	18:08	16:27	16:3															

WEA 09		Januar - Juni					
Schattenwurfzeiten berechnet für IO		IO 1- IO 55					
Referenzjahr		2016					
	Januar	Februar	März	April	Mai	Juni	
1	08:39 09:15-09:33/18 14:29-15:19/50 16:23 14:05-14:17/12 15:04-15:47/43	08:13 09:35-09:44/9 16:02-16:41/39 17:11 15:56-16:34/38	07:17 18:06	07:05 20:01	05:58 20:53	05:12 21:40	
2	08:39 09:16-09:35/19 14:30-15:20/50 15:48-15:49/1 16:24 14:07-14:17/10 15:04-15:48/44	08:11 15:59-16:03/4 16:04-16:29/25 17:13 16:02-16:44/42	07:14 18:07	07:02 20:03	05:56 20:55	05:11 21:42	
3	08:39 09:16-09:36/20 14:31-15:01/30 15:05-15:50/45 16:25 14:09-14:16/7 15:02-15:20/18 15:49-15:51/2	08:10 16:03-16:45/42 17:14 16:05-16:29/24	07:12 18:09	07:00 20:04	05:55 20:57	05:10 21:43	
4	08:39 09:16-09:37/21 15:02-15:20/18 15:49-15:52/3 16:26 14:31-15:00/29 15:04-15:51/47	08:08 08:48-08:55/7 16:08-16:30/22 17:16 16:04-16:47/43	07:10 18:11	06:58 20:06	05:53 20:58	05:09 21:44	
5	08:39 09:16-09:38/22 15:04-15:20/16 15:51-15:54/3 16:27 14:32-15:01/29 15:05-15:52/47	08:06 08:45-08:58/13 16:09-16:29/20 17:18 16:05-16:48/43	07:08 18:13	06:55 20:08	05:51 21:00	05:09 21:45	
6	08:38 09:17-09:39/22 15:04-15:20/16 15:51-15:54/3 16:28 14:32-15:01/29 15:05-15:53/48	08:05 08:43-09:00/17 16:10-16:28/18 17:20 16:06-16:48/42	07:05 18:15	06:53 20:10	05:49 21:02	05:08 21:46	
7	08:38 09:17-09:41/24 15:05-15:20/15 15:52-15:56/4 16:30 14:33-15:02/29 15:06-15:54/48	08:03 08:42-09:01/19 16:12-16:27/15 17:22 16:07-16:49/42	07:03 18:17	06:51 20:11	05:47 21:04	05:07 21:47	
8	08:38 09:16-09:41/25 15:05-15:54/49 15:52-15:57/5 16:31 14:33-15:01/28 15:06-15:19/13	08:01 08:41-09:02/21 16:13-16:26/13 17:24 16:08-16:49/41	07:01 18:18	06:48 20:13	05:45 21:05	05:07 21:48	
9	08:37 09:17-09:43/26 15:06-15:56/50 15:53-15:58/5 16:32 14:35-15:02/27 15:08-15:20/12	07:59 08:40-09:03/23 16:16-16:23/7 17:26 16:09-16:49/40	06:59 18:20	06:46 20:15	05:43 21:07	05:06 21:48	
10	08:37 09:17-09:43/26 15:06-15:57/51 15:54-15:59/5 16:34 14:35-15:02/27 15:09-15:19/10	07:58 08:29-08:37/8 16:11-16:49/38 17:28 08:40-09:04/24	06:56 18:22	06:44 20:17	05:42 21:09	05:06 21:49	
11	08:36 09:17-09:44/27 15:06-15:57/51 15:54-16:00/6 16:35 14:36-15:02/26 15:11-15:17/6	07:56 08:27-09:04/37 16:18-16:27/9 17:30 16:13-16:49/36	06:54 18:24	06:41 20:18	05:40 21:10	05:05 21:50	
12	08:36 09:18-09:45/27 15:07-15:57/50 16:36 14:36-15:01/25 15:54-16:01/7	07:54 08:23-09:04/41 17:32 16:14-16:48/34	06:52 18:26	06:39 20:20	05:38 21:12	05:05 21:51	
13	08:35 09:19-09:46/27 15:07-15:57/50 16:38 14:37-15:01/24 15:54-16:02/8	07:52 08:20-09:05/45 16:22-16:27/5 17:34 16:15-16:47/32	06:49 18:27	06:37 20:22	05:37 21:13	05:05 21:51	
14	08:34 09:19-09:47/28 15:08-15:59/51 16:39 14:39-15:02/23 15:56-16:04/8	07:50 08:19-09:05/46 17:01-17:09/8 17:35 16:16-16:47/31	06:47 18:29	06:35 20:24	05:35 21:15	05:05 21:52	
15	08:33 09:20-09:48/28 15:08-15:59/51 16:41 14:40-15:01/21 15:56-16:05/9	07:48 08:15-09:05/50 16:59-17:11/12 17:37 16:18-16:46/28	06:45 18:31	06:32 20:25	05:33 21:17	05:04 21:53	
16	08:33 09:20-09:48/28 15:09-15:59/50 16:43 14:42-15:01/19 15:56-16:06/10	07:46 08:13-08:20/7 16:19-16:46/27 17:39 08:18-09:04/46 16:57-17:13/16	06:42 18:33	06:30 20:27	05:32 21:18	05:04 21:53	
17	08:32 09:21-09:49/28 15:08-15:59/51 16:07-16:10/3 16:44 14:42-14:59/17 15:56-16:06/10	07:44 08:11-08:24/13 16:20-16:45/25 17:41 08:21-09:04/43 16:56-17:14/18	06:40 18:35	06:28 20:29	05:30 21:20	05:04 21:54	
18	08:31 09:21-09:49/28 15:09-15:59/50 16:46 14:44-14:58/14 15:56-16:14/18	07:42 08:09-08:27/18 16:23-16:44/21 17:43 08:23-09:03/40 16:56-17:14/18	06:38 18:36	06:26 20:31	05:29 21:21	05:04 21:54	
19	08:30 09:22-09:49/27 15:10-15:59/49 16:47 14:47-14:56/9 15:56-16:16/20	07:40 08:08-08:28/20 16:26-16:43/17 17:45 08:24-09:02/38 16:56-17:15/19	06:35 18:38	06:24 20:32	05:27 21:23	05:04 21:54	
20	08:29 09:23-09:50/27 15:56-16:17/21 16:49 15:11-15:59/48	07:38 08:07-08:29/22 16:29-16:41/12 17:47 08:25-09:01/36 16:54-17:14/20	06:33 18:40	06:21 20:34	05:26 21:24	05:04 21:55	
21	08:28 09:25-09:50/25 15:56-16:19/23 16:51 15:12-15:59/47	07:36 08:06-08:28/22 08:44-08:58/14 17:49 08:24-08:41/17 16:55-17:14/19	06:31 18:42	06:19 20:36	05:24 21:26	05:04 21:55	
22	08:26 09:24-09:50/26 15:38-15:58/20 16:53 15:12-15:37/25 15:55-16:20/25	07:34 08:06-08:27/21 08:47-08:55/8 17:51 08:24-08:40/16 16:55-17:14/19	06:28 18:43	06:17 20:38	05:23 21:27	05:05 21:55	
23	08:25 09:25-09:51/26 15:39-15:58/19 16:54 15:13-15:38/25 15:55-16:22/27	07:32 08:06-08:27/21 16:56-17:13/17 17:52 08:24-08:38/14	06:26 18:45	06:15 20:39	05:22 21:29	05:05 21:55	
24	08:24 09:26-09:51/25 15:41-15:58/17 16:56 15:14-15:38/24 15:55-16:23/28	07:30 08:07-08:27/20 16:57-17:13/16 17:54 08:24-08:37/13	06:23 18:47	06:13 20:41	05:20 21:30	05:05 21:55	
25	08:23 09:26-09:50/24 15:42-15:55/13 16:58 15:15-15:36/21 15:51-16:25/34	07:28 08:08-08:25/17 16:57-17:11/14 17:56 08:23-08:36/13	06:21 18:49	06:11 20:43	05:19 21:32	05:05 21:55	
26	08:22 09:27-09:51/24 15:46-15:53/7 17:00 15:17-15:36/19 15:50-16:27/37	07:25 08:08-08:22/14 16:59-17:09/10 17:58 08:21-08:34/13	06:19 18:50	06:09 20:45	05:18 21:33	05:06 21:55	
27	08:20 09:27-09:50/23 15:47-16:09/22 17:01 15:18-15:35/17 16:04-16:28/24	07:23 08:11-08:17/6 18:00 08:20-08:32/12	07:16 19:52	06:06 20:46	05:17 21:34	05:06 21:55	
28	08:19 09:29-09:50/21 15:48-16:08/20 17:03 15:20-15:33/13 16:03-16:30/27	07:21 08:23-08:29/6 18:02	07:14 19:54	06:04 20:48	05:16 21:36	05:07 21:55	
29	08:17 09:29-09:49/20 15:51-16:00/9 17:05 15:23-15:30/7 15:58-16:32/34	07:19 18:04	07:12 19:56	06:02 20:50	05:15 21:37	05:07 21:55	
30	08:16 09:30-09:48/18 15:58-16:33/35 17:07 15:52-15:58/6		07:09 19:57	06:00 20:52	05:14 21:38	05:08 21:55	
31	08:14 09:33-09:47/14 16:09-16:36/27 17:09 15:54-16:18/24		07:07 19:59		05:13 21:39		
Sonnenscheinstunden	255	285	367	417	488	502	
Anzahl Minuten mit Schatten	2974	1747	0	0	0	0	

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

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

WEA 09					Juli -Dezember																					
Schattenwurfzeiten berechnet für IO					IO 1- IO 55																					
Referenzjahr					2016																					
	Jul	August	September	Oktober	November	Dezember																				
1	05:09	05:46	06:37	07:28	07:23	07:57	08:08	11	15	14	16	18	36	08:15	09:00	09:27	27	14	49	15	39	50				
	21:55	21:22	20:18	19:07	17:00	06:09	06:34	25	15	47	15	57	10	16:18	14:18	14:43	25	15	36	15	43	7				
2	05:09	05:48	06:39	07:29	07:25	07:59	08:06	7	15	40	16	18	38	08:17	09:01	09:27	26	14	49	15	40	51	15:37	15:43	6	
	21:54	21:20	20:16	19:05	16:58	06:09	06:33	24						16:18	14:19	14:45	26	14	54	15	00	6				
3	05:10	05:49	06:41	07:31	07:27	08:10	08:32	22	15	44	15	53	9	08:18	09:01	09:27	26	14	49	15	40	51	15:37	15:42	5	
	21:54	21:18	20:14	19:03	16:56	15:39	16:19	40						16:17	14:18	14:45	27	14	52	15	02	10				
4	05:11	05:51	06:42	07:33	07:28	08:11	08:32	21	15	42	15	56	14	08:19	09:01	09:27	26	14	50	15	40	50	15:37	15:42	5	
	21:55	21:16	20:11	19:00	16:54	15:38	16:19	41						16:16	14:19	14:46	27	14	52	15	04	12				
5	05:12	05:53	06:44	07:35	07:30	08:12	08:31	19	15	41	15	57	16	08:21	09:03	09:28	23	14	51	15	04	13	15:37	15:42	5	
	21:53	21:15	20:09	18:58	16:52	15:36	16:18	42						16:16	14:18	14:46	28	14	51	15	39	48				
6	05:13	05:54	06:46	07:36	07:32	08:13	08:29	16	15	39	15	58	19	08:22	09:03	09:27	24	14	51	15	06	15	15:38	15:42	4	
	21:52	21:13	20:07	18:56	16:51	15:35	16:18	43						16:15	14:19	14:48	29	14	52	15	40	48				
7	05:13	05:56	06:47	07:38	07:34	08:15	08:27	12	15	38	15	58	21	08:23	09:03	09:26	23	14	51	15	07	16	15:38	15:41	3	
	21:52	21:11	20:04	18:53	16:49	15:34	16:17	43						16:15	14:19	14:48	29	14	52	15	40	48				
8	05:14	05:57	06:49	07:40	07:36	08:19	08:24	5	15	37	15	59	22	08:25	09:04	09:27	23	14	51	15	07	16	15:38	15:41	3	
	21:51	21:09	20:02	18:51	16:47	15:34	16:17	43						16:15	14:19	14:48	29	14	52	15	40	48				
9	05:15	05:59	06:51	07:41	07:38	15:33	16:16	43						08:26	09:05	09:26	21	14	51	15	09	18	15:39	15:41	2	
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	21:50	21:05	19:57	18:46	16:44	15:33	16:14	41						16:14	13:58	14:05	7	14	51	15	09	18	15:38	15:40	2	
11	05:17	06:02	06:54	07:45	07:41	09:01	09:16	11	15	33	16:12	39		08:28	09:06	09:25	19	14	20	15	10	50	15:38	15:39	1	
	21:49	21:03	19:55	18:44	16:42	15:26	16:05	39						16:14	13:57	14:07	10	14	54	15	39	45				
12	05:19	06:04	06:56	07:47	07:43	09:03	09:18	15	15	40	16:08	26		08:29	09:06	09:24	18	14	20	15	10	50				
	21:48	21:01	19:52	18:42	16:41	15:25	15:49	24						16:14	13:56	14:08	12	14	55	15	38	43				
13	05:20	06:06	06:57	07:48	07:45	09:02	09:20	18	15	31	16:05	34		08:30	09:07	09:23	16	14	21	15	21	60				
	21:47	20:59	19:50	18:40	16:39	15:24	15:31	7						16:14	13:56	14:09	13	15	22	15	38	16				
14	05:21	06:07	06:59	07:50	07:47	09:01	09:21	20	15	22	15:34	12		08:31	09:08	09:21	13	14	21	15	21	60				
	21:46	20:57	19:48	18:37	16:36	14:55	15:03	8	15	32	16:03	31		16:14	13:56	14:10	14	15	22	15	38	16				
15	05:22	06:09	07:01	07:52	07:52	08:59	09:03	10						08:32	09:08	09:22	14	14	22	15	22	60				
	21:45	20:55	19:45	18:35	16:36	14:52	15:06	14	15	36	16:02	26		16:14	13:56	14:11	15	15	23	15	38	15				
16	05:23	06:11	07:02	07:54	07:54	08:42	08:52	10	17	34	17:39	5		08:33	09:09	09:22	13	14	22	15	22	60				
	21:44	20:53	19:43	18:33	16:35	14:51	15:08	17	15	37	16:01	24		16:14	13:56	14:12	16	15	24	15	39	15				
17	05:25	06:12	07:04	07:56	07:56	08:40	08:55	15	17	30	17:42	12		08:34	09:10	09:22	12	14	23	15	23	60				
	21:43	20:51	19:41	18:31	16:33	14:50	15:09	19	15	23	16:00	37		16:14	13:56	14:13	17	15	25	15	39	14				
18	05:26	06:14	07:06	07:57	07:57	08:39	08:56	17	17	29	17:43	14		08:34	09:11	09:23	12	14	23	15	23	60				
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19	05:27	06:16	07:07	07:59	07:59	08:38	08:58	20	17	27	17:44	17		08:35	09:11	09:23	12	14	23	15	23	60				
	21:41	20:47	19:36	18:26	16:28	14:45	15:08	13						16:14	13:56	14:14	18	15	26	15	39	13				
20	05:28	06:17	07:09	08:01	08:01	08:38	08:58	20	17	26	17:44	18		08:36	09:12	09:23	11	14	24	15	24	60				
	21:39	20:45	19:33	18:24	16:25	14:42	15:09	10	15					16:15	13:57	14:15	18	15	27	15	40	13				
21	05:30	06:19	07:11	08:03	08:03	08:37	08:58	21	09	17	09	28	11		08:36	09:12	09:23	11	14	24	15	24	60			
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22	05:31	06:21	07:12	08:05	08:05	08:37	08:58	21	09	14	09	29	15	17	25	17:44	19									
	21:37	20:41	19:29	18:20	16:21	14:38	15:09	12	18	17	01	17:08	7		16:16	13:58	14:16	18	15	28	15	41	13			
23	05:33	06:22	07:14	08:06	08:06	08:37	08:58	21	16	57	17:11	14		08:37	09:13	09:24	11	14	25	15	25	60				
	21:35	20:38	19:26	18:18	16:19	14:36	15:09	11	17	25	17:44	19		16:16	13:58	14:16	18	15	28	15	41	13				
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	21:30	20:30	19:17	18:10	16:11	14:28	15:09	14	17	26	17:42	15		16:19	14:01	14:17	18	15	29	15	43	14				
28	05:40	06:31	07:23	08:15	08:15	08:45	09:34	49	17	28	17:40	12		08:39	09:14	09:27	13	14	27	15	27	60				
	21:28	20:27	19:14	18:08	16:09	14:27	15:09	15	17	26	17:41	15		16:20	14:02	14:17	18	15	29	15	43	14				
29	05:42	06:32	07:24	08:17	08:17	08:49	09:34	45	17	31	17:38	7		08:39	09:14	09:28	14	14	28	15	28	60				
	21:27	20:25	19:12	18:06	16:07	14:25	15:09	16	17	26	17:41	15		16:20	14:02	14:17	18	15	29	15	43	14				
30	05:43	06:34	07:26	08:19	08:19	08:50	09:34	44	15	50	15:57	7		08:39	09:15	09:31	16	14	28	15	29	61				
	21:25	20:23																								

WEA 10		Januar - Juni							
Schattenwurfzeiten berechnet für IO		IO 1- IO 55							
Referenzjahr		2016							
	Januar	Februar	März	April	Mai	Juni			
1	08:39 09:16-09:26/10 15:29-15:49/20 16:23 09:39-10:03/24	08:13 09:07-09:15/8 17:11	07:17 18:06	07:05 07:29-07:42/13 20:01	05:58 06:34-06:55/21 20:53	05:12 21:40			
2	08:39 09:16-09:27/11 15:29-15:50/21 16:24 09:40-10:03/23	08:11 17:13	07:14 18:07	07:02 07:27-07:42/15 20:03	05:56 06:34-06:52/18 20:55	05:11 21:42			
3	08:39 09:16-09:28/12 15:30-15:52/22 16:25 09:40-10:04/24	08:10 17:14	07:12 18:09	07:00 07:27-07:43/16 20:04	05:55 06:35-06:51/16 20:57	05:10 21:43			
4	08:39 09:15-09:29/14 15:30-15:52/22 16:26 09:40-10:03/23	08:08 17:16	07:10 18:11	06:58 07:26-07:42/16 20:06	05:53 06:36-06:50/14 20:58	05:09 21:44			
5	08:39 09:16-09:30/14 15:31-15:54/23 16:27 09:41-10:04/23	08:06 17:18	07:08 18:13	06:55 07:26-07:42/16 20:08	05:51 06:37-06:49/12 21:00	05:09 21:45			
6	08:38 09:15-09:30/15 15:30-15:55/25 16:28 09:41-10:04/23 15:54-15:55/1	08:05 17:20	07:05 18:15	06:53 07:26-07:41/15 20:10	05:49 06:39-06:47/8 21:02	05:08 21:46			
7	08:38 09:16-09:32/16 15:31-15:57/26 16:30 09:42-10:05/23 15:55-15:56/1	08:03 17:22	07:03 18:17	06:51 07:26-07:39/13 20:11	05:47 21:04	05:07 21:47			
8	08:38 09:15-09:32/17 15:31-15:58/27 16:31 09:43-10:05/22 15:55-15:58/3	08:01 17:24	07:01 18:18	06:48 07:27-07:38/11 20:13	05:45 21:05	05:07 21:48			
9	08:37 09:15-09:33/18 15:33-16:00/27 16:32 09:44-10:05/21 15:56-16:00/4	07:59 17:26	06:59 18:20	06:46 07:30-07:35/5 20:15	05:43 21:07	05:06 21:48			
10	08:37 09:10-09:34/24 15:33-16:01/28 16:34 09:44-10:05/21 15:56-16:01/5	07:58 17:28	06:56 18:22	06:44 20:17	05:42 21:09	05:06 21:49			
11	08:36 09:09-09:34/25 15:33-16:02/29 15:59-16:01/2 16:35 09:45-10:05/20 15:57-15:58/1	07:56 17:30	06:54 18:24	06:41 20:18	05:40 21:10	05:06 21:50			
12	08:36 09:08-09:35/27 15:34-16:03/29 16:36 09:45-10:05/20 15:57-16:03/6	07:54 17:32	06:52 18:26	06:39 20:20	05:38 21:12	05:05 21:51			
13	08:35 09:08-09:36/28 15:34-16:03/29 16:38 09:47-10:05/18 15:57-16:04/7	07:52 17:34	06:49 18:27	06:37 20:22	05:37 21:13	05:05 21:51			
14	08:34 09:07-09:36/29 15:36-16:04/28 16:39 09:48-10:05/17 15:58-16:05/7	07:50 17:35	06:47 18:29	06:35 20:24	05:35 21:15	05:05 21:52			
15	08:33 09:07-09:37/30 15:37-16:04/27 16:41 09:49-10:05/16 15:58-16:06/8	07:48 17:37	06:45 18:31	06:32 20:25	05:33 21:17	05:04 21:53			
16	08:32 09:05-09:37/32 15:37-16:03/26 16:43 09:51-10:04/13 15:57-16:06/9	07:46 17:39	06:42 18:33	06:30 20:27	05:32 21:18	05:04 21:53			
17	08:32 09:04-09:38/34 15:38-16:03/25 16:44 09:52-10:03/11 15:57-16:06/9	07:44 17:41	06:40 18:35	06:28 20:29	05:30 21:20	05:04 21:54			
18	08:31 09:02-09:37/35 15:39-16:03/24 16:46 09:54-10:00/6 15:56-16:07/11	07:42 17:43	06:38 18:36	06:26 20:31	05:29 21:21	05:04 21:54			
19	08:30 09:01-09:37/36 15:56-16:07/11 16:47 15:40-16:04/24	07:40 17:45	06:35 18:38	06:24 06:49-06:56/7 20:32	05:27 21:23	05:04 21:54			
20	08:29 09:01-09:38/37 15:55-16:08/13 16:49 15:42-16:03/21	07:38 17:47	06:33 18:40	06:21 06:47-06:58/11 20:34	05:26 21:24	05:04 21:55			
21	08:28 09:01-09:38/37 15:59-16:08/9 16:51 15:44-16:04/20	07:36 17:49	06:31 18:42	06:19 06:45-06:59/14 20:36	05:24 21:26	05:04 21:55			
22	08:26 09:00-09:37/37 15:57-16:08/11 16:53 15:44-16:03/19	07:34 17:51	06:28 18:43	06:17 06:44-07:00/16 20:38	05:23 21:27	05:05 21:55			
23	08:25 09:00-09:37/37 15:58-16:08/10 16:54 15:46-16:03/17	07:32 17:53	06:26 18:45	06:15 06:41-07:00/19 20:39	05:22 21:29	05:05 21:55			
24	08:24 09:01-09:37/36 16:02-16:08/6 16:56 15:46-16:05/19	07:30 17:54	06:23 18:47	06:13 06:39-07:01/22 20:41	05:20 21:30	05:05 21:55			
25	08:23 09:01-09:36/35 16:01-16:08/7 16:58 15:48-16:04/16	07:28 17:56	06:21 18:49	06:11 06:37-07:01/24 20:43	05:19 21:31	05:06 21:55			
26	08:22 09:01-09:36/35 16:04-16:08/4 17:00 15:50-16:05/15	07:25 17:58	06:19 18:50	06:09 06:36-07:00/24 20:45	05:18 21:33	05:06 21:55			
27	08:20 09:01-09:35/34 16:02-16:06/4 17:01 15:53-16:03/10	07:23 18:00	07:16 19:52	06:07 06:35-07:00/25 20:46	05:17 21:34	05:06 21:55			
28	08:19 09:02-09:35/33 16:04-16:05/1 17:03 15:54-16:04/10	07:21 18:02	07:14 19:54	06:04 06:35-06:59/24 20:48	05:16 21:35	05:07 21:55			
29	08:17 09:03-09:23/20 15:58-16:03/5 17:05 09:24-09:33/9	07:19 18:04	07:12 19:56	06:02 06:35-06:58/23 20:50	05:15 21:37	05:07 21:55			
30	08:16 09:03-09:22/19 17:07		07:09 19:57	06:00 06:34-06:57/23 20:52	05:14 21:38	05:08 21:55			
31	08:14 09:05-09:19/14 17:09		07:07 19:59	07:32-07:41/9 20:52	05:13 21:39				
	Sonnenscheinstunden   255 Anzahl Minuten mit Schatten   1850	285	8   367	14	417	352	488	89	502

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

WEA 10		Juli -Dezember					
Schattenwurfzeiten berechnet für IO		IO 1- IO 55					
Referenzjahr		2016					
	Jul	August	September	Oktober	November	Dezember	
1	05.09 21.55	05.46 21.22	06.37 20.18	07.28 19.07	07.23 17.00	08.15 08.50-09.17/27 15.16-15.45/29 16.18 09.27-09.47/20 15.39-15.45/6	
2	05.09 21.54	05.48 21.20	06.39 20.16	07.29 19.05	07.25 16.58	08.17 08.52-09.17/25 15.16-15.45/29 15.42-15.45/3 16.18 09.28-09.48/20 15.40-15.41/1	
3	05.10 21.54	05.49 21.18	06.41 07.27-07.33/6 20.14	07.31 19.03	07.27 16.56	08.18 08.54-09.18/24 15.16-15.44/28 16.17 09.28-09.49/21 15.39-15.44/5	
4	05.11 21.53	05.51 21.16	06.42 07.24-07.35/11 20.11	07.33 19.00	07.28 16.54	08.19 08.56-08.58/2 09.28-09.49/21 15.40-15.44/4 16.16 08.59-09.17/18 15.17-15.44/27	
5	05.12 21.53	05.53 21.15	06.44 07.23-07.36/13 20.09	07.35 18.58	07.30 16.52	08.21 09.00-09.17/17 15.16-15.43/27 16.16 09.28-09.50/22 15.40-15.43/3	
6	05.13 21.52	05.54 06.50-06.55/5 21.13	06.46 07.22-07.37/15 20.07	07.36 18.56	07.32 16.51	08.22 09.02-09.18 16.15-17-15.43/26 16.15 09.28-09.51/23 15.41-15.42/1	
7	05.13 21.52	05.56 06.47-06.57/10 21.11	06.47 07.21-07.37/16 20.04	07.38 18.53	07.34 16.49	08.23 09.02-09.17 15.15-17-15.42/25 16.15 09.28-09.51/23 15.41-15.42/1	
8	05.14 21.51	05.57 06.46-06.59/13 21.09	06.49 07.21-07.37/16 20.02	07.40 18.51	07.36 16.47	08.25 09.04-09.18 14 15.18-15.41/23 16.15 09.29-09.52/3	
9	05.15 21.50	05.59 06.44-06.59/15 21.07	06.51 07.20-07.36/16 20.00	07.41 18.49	07.38 16.46	08.26 09.04-09.18 14 15.19-15.42/23 16.14 09.29-09.53/24	
10	05.16 21.50	06.01 06.44-07.00/16 21.05	06.52 07.20-07.35/15 19.57	07.43 18.46	07.39 16.44	08.27 09.05-09.17 12 15.19-15.41/22 16.14 09.30-09.53/25	
11	05.17 21.49	06.02 06.44-07.03/19 21.03	06.54 07.22-07.35/13 19.55	07.45 18.44	08.37-08.46/9 16.42	08.28 09.06-09.17 11 15.19-15.41/22 16.14 09.30-09.53/23	
12	05.19 21.48	06.04 06.43-07.04/21 21.01	06.56 07.23-07.32/9 19.53	07.47 18.42	08.36-08.51/15 16.41	08.29 09.07-09.17 10 15.20-15.40/20 16.14 09.30-09.54/24	
13	05.20 21.47	06.06 06.43-07.06/23 20.59	06.57 07.25-07.30/5 19.50	07.48 18.40	08.35-08.54/19 16.39	08.30 09.08-09.17 9 15.20-15.40/20 16.14 09.30-09.54/24	
14	05.21 21.46	06.07 06.42-07.06/24 20.57	06.59 19.48	07.50 18.37	08.35-08.55/20 15.29-15.35/6 16.38 06.56-09.05/9	08.31 09.09-09.17 8 15.21-15.40/19 16.14 09.31-09.54/23	
15	05.22 21.45	06.09 06.42-07.07/25 20.55	07.01 19.45	07.52 18.35	08.34-09.07/33 15.37-15.38/1 15.27-15.37/10	08.32 09.10-09.17 7 14.50-14.53/3 16.14 09.31-09.55/24 15.22-15.40/18	
16	05.23 21.44	06.11 06.42-07.06/24 20.53	07.02 19.43	07.54 18.33	08.34-09.08/34 15.35-15.39/4 15.25-15.36/11	08.33 09.11-09.17 6 14.49-14.54/5 16.14 09.32-09.56/24 15.22-15.40/18	
17	05.25 21.43	06.12 06.43-07.07/24 20.51	07.04 19.41	07.56 18.31	08.34-09.09/35 15.37-15.41/4 15.23-15.36/15	08.34 09.13-09.17 4 14.49-14.56/7 16.14 09.33-09.56/23 15.23-15.41/18	
18	05.26 21.42	06.14 06.43-07.06/23 20.49	07.06 19.38	07.57 18.29	08.34-09.10/36 15.35-15.42/7 15.22-15.38/16	08.34 09.14-09.16 2 14.50-14.57/7 16.14 09.33-09.57/24 15.23-15.40/17	
19	05.27 21.41	06.16 06.45-07.06/21 20.47	07.07 19.36	07.59 18.26	08.35-09.11/36 15.37-15.42/5 15.21-15.40/19	08.35 09.33-09.57/24 15.24-15.41/17 16.14 14.49-14.57/8	
20	05.29 21.39	06.17 06.47-07.06/19 20.45	07.09 19.33	08.01 18.24	08.35-09.12/37 15.33-15.43/10 15.21-15.38/17	08.36 09.34-09.58/24 15.24-15.41/17 16.15 14.50-14.58/8	
21	05.30 21.38	06.19 06.49-07.04/15 20.43	07.11 19.31	08.03 18.22	08.36-09.13/37 15.33-15.44/11 15.20-15.39/19	08.36 09.34-09.58/24 15.24-15.41/17 16.15 14.50-14.58/8	
22	05.31 21.37	06.21 06.50-07.04/14 20.41	07.12 19.29	08.05 18.20	08.01 08.37-09.14/37 15.35-15.44/9 15.20-15.40/20	08.37 09.35-09.59/24 15.25-15.42/17 16.16 14.50-14.59/9	
23	05.33 21.35	06.22 06.51-07.01/10 20.38	07.14 19.26	08.06 18.18	08.02 08.38-09.15/37 15.32-15.45/13 15.19-15.40/21	08.37 09.35-09.59/24 15.25-15.42/17 16.16 14.51-14.59/8	
24	05.34 21.34	06.24 06.54-06.58/4 20.36	07.16 19.24	08.08 18.16	08.04 08.38-09.14/36 15.33-15.44/11 15.17-15.41/24	08.38 09.36-10.00/24 15.27-15.43/16 16.17 14.52-15.00/8	
25	05.36 21.33	06.26 20.34	07.17 19.22	08.10 18.14	08.06 08.40-09.15/35 15.17-15.41/24 09.32-09.38/6 15.34-15.45/11	08.38 09.18-09.19 1 14.52-15.00/8 16.17 09.36-10.00/24 15.27-15.44/17	
26	05.37 21.31	06.27 20.32	07.19 19.19	08.12 18.12	08.07 08.42-09.16/34 15.17-15.42/25 09.30-09.41/11 15.36-15.45/9	08.39 09.17-09.20 3 14.53-15.00/7 16.18 09.37-10.00/23 15.27-15.44/17	
27	05.39 21.30	06.29 20.30	07.21 19.17	08.14 18.10	08.09 08.44-09.16/32 15.17-15.43/26 09.30-09.43/13 15.37-15.46/9	08.39 09.16-09.21 5 14.54-15.00/6 16.19 09.37-10.00/23 15.27-15.45/18	
28	05.40 21.28	06.31 20.27	07.23 19.14	08.15 18.08	08.10 08.47-09.16/29 15.16-15.43/27 09.28-09.44/16 15.37-15.45/8	08.39 09.16-09.22/6 14.55-14.59/4 16.20 09.37-10.01/24 15.27-15.46/19	
29	05.42 21.27	06.32 20.25	07.24 19.12	08.17 18.06	08.12 08.47-09.16/29 15.16-15.44/28 09.28-09.45/17 15.38-15.45/7	08.39 09.16-09.23 7 15.28-15.47/19 16.21 09.38-10.01/23	
30	05.43 21.25	06.34 20.23	07.26 19.10	08.19 18.04	08.10 08.49-09.17/28 15.16-15.45/29 09.28-09.46/18 15.39-15.46/7	08.39 09.16-09.24 8 15.28-15.48/20 16.21 09.38-10.02/24	
31	05.45 21.23	06.36 20.20		07.21 17.02		08.39 09.16-09.26 10 15.29-15.49/20 16.22 09.39-10.02/23	
Sonnenscheinstunden	505	456	381	330	264	240	
Anzahl Minuten mit Schatten	0	325	135	0	1090	1736	

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

WEA 11		Januar - Juni												
Schattenwurfzeiten berechnet für IO		IO 1- IO 55												
Referenzjahr		2016												
	Januar	Februar	März	April	Mai	Juni								
1	08:39 16:23	08:13 17:11	07:17 18:06	07:42-07:46/4	07:05 20:01	07:32-07:56/24	05:58 20:53	05:12 21:40						
2	08:39 16:24	08:11 17:13	07:14 18:07	07:40-07:44/4 07:44-07:49/5	07:02 20:03	07:30-07:56/26	05:56 20:55	05:11 21:42						
3	08:39 16:25	08:10 17:15	07:12 18:09	07:38-07:48/10 07:48-07:50/2	07:00 20:04	07:30-07:56/26	05:55 20:57	05:10 21:43						
4	08:39 16:26	08:08 17:16	07:10 18:11	07:35-07:48/13 07:48-07:50/2	06:58 20:06	07:28-07:55/27	05:53 20:58	05:09 21:44						
5	08:39 16:27	08:06 17:18	07:08 18:13	07:33-07:49/16 07:49-07:51/2	06:55 20:08	07:28-07:54/26	05:51 21:00	05:09 21:45						
6	08:38 16:28	08:05 17:20	07:05 18:15	07:33-07:50/17 07:50-07:51/1	06:53 20:10	07:28-07:53/25	05:49 21:02	05:08 21:46						
7	08:38 16:30	08:03 17:22	07:03 18:17	07:32-07:49/17 07:49-07:50/1	06:51 20:11	07:27-07:51/24	05:47 21:04	05:07 21:47						
8	08:38 16:31	08:01 17:24	07:01 18:18	07:32-07:49/17 07:49-07:50/1	06:48 20:13	07:27-07:49/22	05:45 21:05	05:07 21:48						
9	08:37 16:32	07:59 17:26	06:59 18:20	07:24-07:49/25 18:20	06:46 20:15	07:28-07:46/18	05:43 21:07	05:06 21:48						
10	08:37 16:34	07:58 17:28	06:56 18:22	07:21-07:46/25 18:22	06:44 20:17	07:28-07:45/17	05:42 21:09	05:06 21:49						
11	08:36 16:35	07:56 17:30	06:54 18:24	07:19-07:45/26 18:24	06:41 20:18	07:29-07:43/14	05:40 21:10	05:06 21:50						
12	08:36 16:36	07:54 17:32	06:52 18:26	07:19-07:35/16 07:36-07:43/7	06:39 20:20	07:31-07:41/10	05:38 21:12	05:05 21:51						
13	08:35 16:38	07:52 17:34	06:49 18:27	07:18-07:35/17 18:27	06:37 20:22		05:37 21:13	05:05 21:51						
14	08:34 16:39	07:50 17:35	06:47 18:29	07:17-07:35/18 18:29	06:35 20:24		05:35 21:15	05:05 21:52						
15	08:33 16:41	07:48 17:37	06:45 18:31	07:17-07:34/17 18:31	06:32 20:25		05:33 21:17	05:04 21:53						
16	08:32 16:43	07:46 17:39	06:42 18:33	07:17-07:33/16 18:33	06:30 20:27		05:32 21:18	05:04 21:53						
17	08:32 16:44	07:44 17:41	06:40 18:35	07:18-07:33/15 18:35	06:28 20:29		05:30 21:20	05:04 21:54						
18	08:31 16:46	07:42 17:43	06:38 18:36	07:19-07:30/11 18:36	06:26 20:31		05:29 21:21	05:04 21:54						
19	08:30 16:47	07:40 17:45	06:35 18:38	07:21-07:28/7 18:38	06:24 20:32		05:27 21:23	05:04 21:54						
20	08:29 16:49	07:38 17:47	06:33 18:40		06:21 20:34		05:26 21:24	05:04 21:55						
21	08:28 16:51	07:36 17:49	06:31 18:42		06:19 20:36		05:24 21:26	05:04 21:55						
22	08:26 16:53	07:34 17:51	06:28 18:43		06:17 20:38		05:23 21:27	05:05 21:55						
23	08:25 16:54	07:32 17:53	06:26 18:45		06:15 20:39		05:22 21:29	05:05 21:55						
24	08:24 16:56	07:30 17:54	06:23 18:47		06:13 20:41		05:21 21:30	05:05 21:55						
25	08:23 16:58	07:28 17:56	06:21 18:49		06:11 20:43		05:19 21:31	05:06 21:55						
26	08:22 17:00	07:25 17:58	06:19 18:50		06:09 20:45		05:18 21:33	05:06 21:55						
27	08:20 17:02	07:23 18:00	07:16 19:52	07:44-07:51/7	06:07 20:46		05:17 21:34	05:06 21:55						
28	08:19 17:03	07:21 18:02	07:14 19:54	07:41-07:54/13	06:04 20:48		05:16 21:35	05:07 21:55						
29	08:17 17:05	07:19 18:04	07:12 19:56	07:39-07:55/16	06:02 20:50		05:15 21:37	05:07 21:55						
30	08:16 17:07		07:09 19:57	07:38-07:56/18	06:00 20:52		05:14 21:38	05:08 21:55						
31	08:14 17:09		07:07 19:59	07:35-07:56/21			05:13 21:39							
Sonnenscheinstunden	255	285	367	417	488	502								
Anzahl Minuten mit Schatten	0	0	387	259	0	0								

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

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

WEA 11		Juli -Dezember							
Schattenwurfzeiten berechnet für IO		IO 1- IO 55							
Referenzjahr		2016							
	Juli	August	September		Oktober		November	Dezember	
1	05:09	05:46	06:37	07:28-07:43/15	07:28	07:57-08:14/17	07:23	08:15	
	21:55	21:22	20:18		19:07	08:17-08:19/2	17:00	16:18	
2	05:09	05:48	06:39	07:26-07:43/17	07:29	07:58-08:23/25	07:25	08:16	
	21:54	21:20	20:16		19:05		16:58	16:18	
3	05:10	05:49	06:41	07:25-07:44/19	07:31	07:58-08:23/25	07:27	08:18	
	21:54	21:18	20:14		19:03		16:56	16:17	
4	05:11	05:51	06:42	07:24-07:46/22	07:33	08:00-08:25/25	07:28	08:19	
	21:53	21:16	20:11		19:00		16:54	16:16	
5	05:12	05:53	06:44	07:24-07:48/24	07:35	08:03-08:06/3	07:30	08:21	
	21:53	21:15	20:09		18:58	08:09-08:26/17	16:52	16:16	
6	05:13	05:54	06:46	07:24-07:49/25	07:36	08:08-08:26/18	07:32	08:22	
	21:52	21:13	20:07		18:56	08:26-08:27/1	16:51	16:15	
7	05:13	05:56	06:47	07:23-07:49/26	07:38	08:07-08:25/18	07:34	08:23	
	21:52	21:11	20:04		18:53	08:25-08:27/2	16:49	16:15	
8	05:14	05:57	06:49	07:23-07:50/27	07:40	08:08-08:24/16	07:36	08:25	
	21:51	21:09	20:02		18:51	08:24-08:26/2	16:47	16:15	
9	05:15	05:59	06:51	07:23-07:49/26	07:41	08:09-08:24/15	07:38	08:26	
	21:50	21:07	20:00		18:49	08:24-08:26/2	16:46	16:14	
10	05:16	06:01	06:52	07:24-07:49/25	07:43	08:11-08:22/11	07:39	08:27	
	21:50	21:05	19:57		18:47	08:22-08:25/3	16:44	16:14	
11	05:18	06:02	06:54	07:25-07:49/24	07:45	08:13-08:20/7	07:41	08:28	
	21:49	21:03	19:55		18:44	08:20-08:24/4	16:42	16:14	
12	05:19	06:04	06:56	07:26-07:48/22	07:47	08:15-08:22/7	07:43	08:29	
	21:48	21:01	19:53		18:42		16:41	16:14	
13	05:20	06:06	06:57	07:29-07:47/18	07:48		07:45	08:30	
	21:47	20:59	19:50		18:40		16:39	16:14	
14	05:21	06:07	06:59	07:29-07:45/16	07:50		07:47	08:31	
	21:46	20:57	19:48		18:37		16:38	16:14	
15	05:22	06:09	07:01	07:30-07:43/13	07:52		07:48	08:32	
	21:45	20:55	19:45		18:35		16:36	16:14	
16	05:23	06:11	07:02	07:33-07:41/8	07:54		07:50	08:33	
	21:44	20:53	19:43		18:33		16:35	16:14	
17	05:25	06:12	07:04		07:56		07:52	08:34	
	21:43	20:51	19:41		18:31		16:33	16:14	
18	05:26	06:14	07:06		07:57		07:54	08:34	
	21:42	20:49	19:38		18:29		16:32	16:14	
19	05:27	06:16	07:07		07:59		07:56	08:35	
	21:41	20:47	19:36		18:26		16:31	16:14	
20	05:29	06:17	07:09		08:01		07:57	08:36	
	21:39	20:45	19:33		18:24		16:29	16:15	
21	05:30	06:19	07:11		08:03		07:59	08:36	
	21:38	20:43	19:31		18:22		16:28	16:15	
22	05:31	06:21	07:12		08:05		08:01	08:37	
	21:37	20:41	19:29		18:20		16:27	16:16	
23	05:33	06:22	07:14		08:06		08:02	08:37	
	21:35	20:38	19:26		18:18		16:26	16:16	
24	05:34	06:24	07:16	08:06-08:10/4	08:08		08:04	08:38	
	21:34	20:36	19:24		18:16		16:25	16:17	
25	05:36	06:26	07:17	08:03-08:13/10	08:10		08:06	08:38	
	21:33	20:34	19:22		18:14		16:24	16:17	
26	05:37	06:27	07:19	08:00-08:14/14	08:12		08:07	08:39	
	21:31	20:32	19:19		18:12		16:23	16:18	
27	05:39	06:29	07:21	07:59-08:15/16	08:14		08:09	08:39	
	21:30	20:30	19:17		18:10		16:22	16:19	
28	05:40	06:31	07:23	07:59-08:15/16	08:15		08:10	08:39	
	21:28	20:27	19:14		18:08		16:21	16:20	
29	05:42	06:32	07:24	07:57-08:15/18	08:17		08:12	08:39	
	21:27	20:25	19:12		18:06		16:20	16:21	
30	05:43	06:34	07:26	07:57-08:15/18	07:19		08:14	08:39	
	21:25	20:23	19:10		17:04		16:19	16:21	
31	05:45	06:36	07:30-07:41/11		07:21			08:39	
	21:23	20:20			17:02			16:22	
Sonnenscheinstunden	505	456	381		330		264	240	
Anzahl Minuten mit Schatten	0	11	423		220		0	0	

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

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