



AGOSTO 2022

**SKI 31 S.R.L.**

**VIA CARADOSSO 9 – 20123 Milano**

**C.F. 12416980964**

**WIND FARM TARQUINIA – IMPIANTO  
EOLICO DA 52,8 MW E SISTEMA DI  
ACCUMULO DA 30 MW**

**COMUNE DI TARQUINIA (VT)**

**Località “Pian d’Arcione”**

**ELABORATI TECNICI DI PROGETTO**

**ELABORATO R10**

**STUDIO DEGLI EFFETTI DI  
SHADOW-FLICKERING**

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Marntano



## Memorandum delle revisioni

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## 1 PREMESSA

Il progetto riguarda la realizzazione di un nuovo Parco eolico della potenza complessiva di **52,8 MW**, che prevede l'installazione di n. **8** aerogeneratori da **6,6 MW** e relativo sistema di accumulo da **30 MW**, da installarsi nei territori comunali di Tarquinia e Tuscania in provincia di Viterbo, Località "Pian d'Arcione" e relative opere di connessione nel comune di Tuscania.

La Società proponente è la **SKI 31 S.R.L.**, con sede legale in Via Caradosso 9, 20123 Milano.

Tale opera si inserisce nel quadro istituzionale di cui al D.Lgs. 29 dicembre 2003, n. 387 "Attuazione della direttiva 2001/77/CE relativa alla promozione dell'energia elettrica prodotta da fonti energetiche rinnovabili nel mercato interno dell'elettricità" le cui finalità sono:

- promuovere un maggior contributo delle fonti energetiche rinnovabili alla produzione di elettricità nel relativo mercato italiano e comunitario;
- promuovere misure per il perseguimento degli obiettivi indicativi nazionali;
- concorrere alla creazione delle basi per un futuro quadro comunitario in materia;
- favorire lo sviluppo di impianti di microgenerazione elettrica alimentati da fonti rinnovabili, in particolare per gli impieghi agricoli e per le aree montane.

La Soluzione Tecnica Minima Generale (STMG) elaborata, prevede che l'impianto eolico venga collegato in antenna alla nuova sezione 36 kV di futura realizzazione all'interno della Stazione Elettrica (SE) denominata "Tuscania", nel territorio comunale di Tuscania. La connessione verrà realizzata mediante due linee cavo interrato 36 kV di lunghezza pari a circa 200 m di collegamento tra lo stallo dedicato in stazione Terna e la cabina di connessione utente esercita a 36 kV.

Il presente documento ha lo scopo di fornire uno studio dettagliato sugli effetti di ombreggiamento ("Shadow-Flickering") derivante dalla realizzazione di un nuovo Parco eolico.

Lo Shadow-Flickering è l'espressione comunemente impiegata in ambito specialistico per descrivere l'effetto stroboscopico delle ombre proiettate dalle pale rotanti degli aerogeneratori eolici quando sussistono le condizioni meteorologiche opportune. La possibilità e la durata di tali effetti dipendono da una serie di condizioni ambientali, tra cui: posizione del sole, giorno dell'anno, ora del giorno, condizioni atmosferiche e posizione della turbina eolica rispetto ad un recettore.

La valutazione tecnica è eseguita con l'ausilio di un software di simulazione specifico per la progettazione degli impianti eolici WIND PRO®, costituito da un insieme di moduli di elaborazione orientati alla simulazione di una serie di aspetti che caratterizzano le diverse fasi progettuali. Il modulo SHADOW è quello specifico per la valutazione dell'evoluzione dell'ombra e del flickering.

All'interno del documento verranno trattati i seguenti temi:

- Una sintesi della normativa e linee guida esistenti in ambito internazionale.
- Descrizione del caso di studio con le posizioni delle turbine e loro caratteristiche tecniche.
- Un'analisi dei potenziali recettori sensibili al fenomeno.
- Una breve descrizione tecnica del fenomeno di shadow flickering.
- Sintesi della metodologia di analisi seguita per lo studio.
- Sintesi dei risultati ottenuti, con allegati grafici ed analitici di dettaglio (ALLEGATO A) che descrivono il fenomeno su ognuno dei recettori e da parte di ognuna delle turbine per tutto l'anno solare.

## 2 INQUADRAMENTO TERRITORIALE DEL SITO

L'area oggetto di studio ricade all'interno del territorio comunale di Tarquinia, in provincia di Viterbo, a breve distanza dalla costa. Il tracciato di connessione attraversa i Comuni di Tarquinia e Tuscania dove è localizzata anche la Stazione RTN per la connessione finale.

Il paesaggio limitrofo è caratterizzato da un andamento del territorio pianeggiante ad uso prettamente agricolo. La successiva Figura 2-1 illustra l'inquadramento territoriale dell'area di interesse su ortofoto.

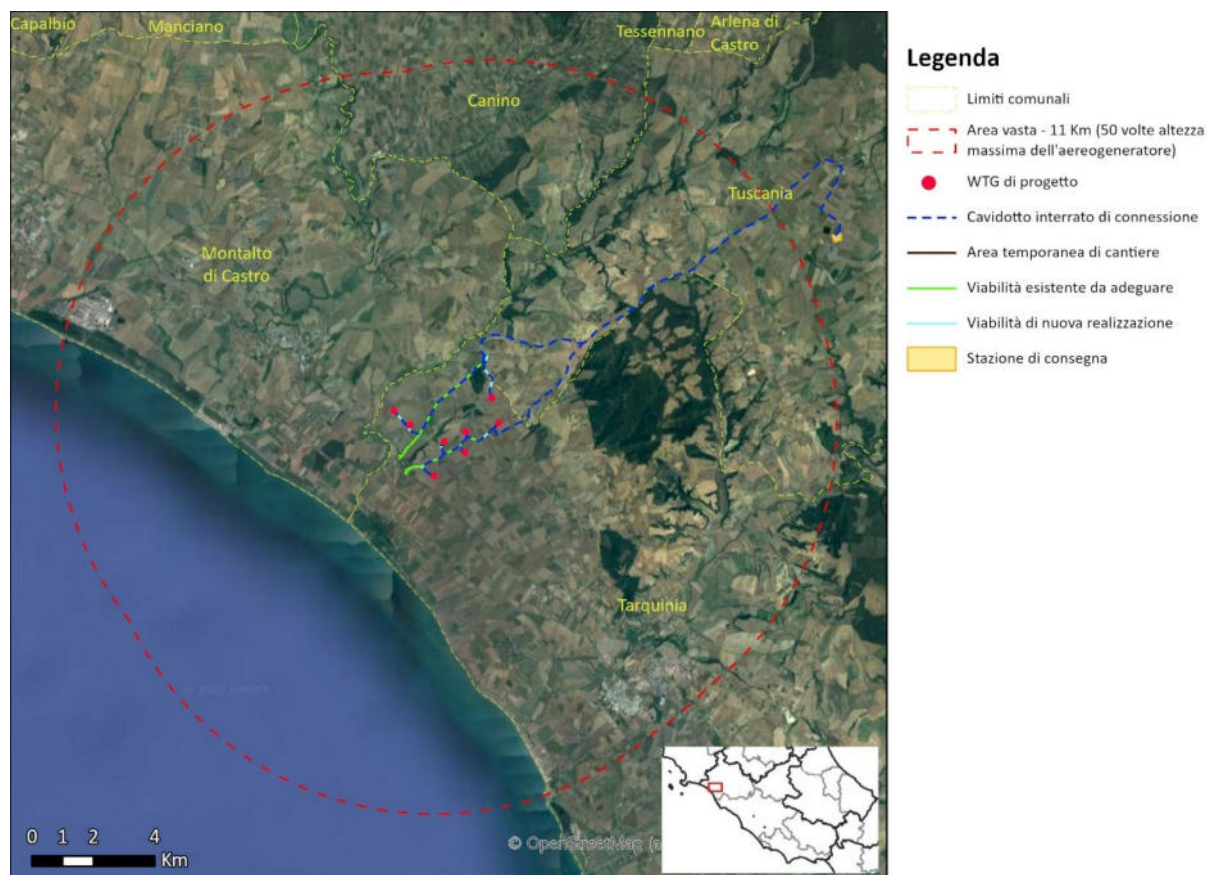


Figura 2-1: Inquadramento generale dell'area di progetto

La Tabella 2-1 elenca le coordinate degli aerogeneratori di cui al layout proposto.

Tabella 2-1: Coordinate WTGs proposte (WGS84 UTM32 N – EPSG 32632)

WTG	LATITUDINE N	LONGITUDINE E
TRQ01	4689539	720428
TRQ02	4688865	720859
TRQ03	4689244	719091
TRQ04	4687392	719840
TRQ05	4688496	720190
TRQ06	4688157	720844
TRQ07	4689164	721965
TRQ08	4690032	721735



### 3 SINTESI NORMATIVA

Alla data di emissione del presente documento, in Italia non vi sono specifiche norme o linee guida che regolamentino i limiti di esposizione al fenomeno dello Shadow flicker generato dagli impianti eolici, né una distanza massima oltre la quale è improbabile che si verifichi un impatto significativo sulla salute umana.

Ai fini della presente specifica tecnica si farà riferimento alle seguenti norme internazionali, che fissano limiti di esposizione entro i quali gli effetti del fenomeno sulla salute umana possono considerarsi trascurabili o nulli:

- Länderausschuss für Immissionsschutz “Hinweise zur Ermittlung und Beurteilung der optischen Immissionen von Windenergieanlagen (WEA-Schattenwurf-Hinweise)” (Germania, 2002)
- Department of Energy and Climate Change “National Policy Statement for Renewable Energy Infrastructure (EN-3)” (Regno Unito, 2011).

Altre norme in materia sono:

- Environment Protection and Heritage Council (EPHC) “National Wind Farm Development Guidelines - Draft” (Australia-Governo Nazionale, 2010).
- State of Queensland, Department of Infrastructure, Local Government and Planning “Wind farm State Code Planning Guideline” (Australia-Stato del Queensland, 2017).
- Western Australian Planning Commission “Guidelines for Wind Farm Development” (Western Australia, 2004).
- Victoria State Government, Department of Environment, Land, Water and Planning “Policy and planning Guidelines for Development of Wind Energy Facilities in Victoria” (Australia, 2017).
- Vlaamse overheid – Departement Leefmilieu, Natuur en Energie, VLAREM II (Belgio- Regione delle Fiandre 2017).
- Arrêté du Gouvernement wallon portant conditions sectorielles relatives aux parcs d'éoliennes d'une puissance totale supérieure ou égale à 0,5 MW (Belgio-Regione Vallone, 2014).
- Scottish Government “Onshore wind turbines” (Scozia, 2012).
- Danish Government, Naturstyrelsen, Miljøministeriet “Vejledning om planlægning for og tilladelse til opstilling af vindmøller” (Danimarca, 2015).

Le linee guida tedesche stabiliscono due limiti per la durata dell'esposizione al fenomeno, il primo riferito a un periodo giornaliero, il secondo riferito a un periodo annuale. Un impatto dovuto all'ombreggiatura periodica prevista non è considerato significativamente fastidioso se la durata astronomicamente massima possibile dell'ombreggiatura, tenendo conto della valutazione cumulativa di tutti i contributi delle turbine eoliche nel rispettivo luogo di immissione ad un'altezza di riferimento di 2 m dal suolo, non supera le 30 ore per l'anno civile ed il fenomeno non supera i 30 minuti per giorno di calendario.

Le linee guida inglesi individuano preliminarmente una distanza oltre la quale l'intensità dell'ombra delle pale rotanti delle turbine sia sufficientemente ridotta in modo da non avere un impatto significativo su eventuali edifici occupati, fissando tale limite a una distanza pari a 10 volte il diametro del rotore dell'aerogeneratore che provoca l'emissione.

Le norme di riferimento scelte costituiscono una valida sintesi dei diversi gradi di attenzione e sono mutuati dalla maggior parte delle linee guida/ norme internazionali citate come limiti entro i quali lo shadow flicker non rappresenta un problema significativo per la salute umana e possono sintetizzarsi nelle seguenti prescrizioni:



I valori di n° ore/anno di shadow flicker per ciascun ricevitore, ottenuti usando la configurazione “real case” e “worst case” del modello del software, sono confrontati con i seguenti limiti di esposizione allo shadow flicker:

- **Massimo n° 30 ore/anno di shadow flicker;**





#### 4 CARATTERISTICHE TECNICHE DEGLI AEROGENERATORI

Le caratteristiche tecniche degli aerogeneratori scelti sono riportati nella successiva Tabella 4-1, secondo quanto fornito dal produttore.

Tabella 4-1 :Caratteristiche tecniche turbina Siemens Gamesa SG 6.6-170

AEROGENERATORE SIEMENS GAMESA SG 6.6-170	
<b>DATI DI FUNZIONAMENTO</b>	
Potenza nominale	5.600 – 6.600 kW
Velocità minima del vento	3.0m/s
Velocità massima del vento	20.0 m/s
Classe di vento-IEC	IIIA
<b>ROTORE</b>	
Diametro del rotore	170 m
Area spazzata	22698 m <sup>2</sup>
Velocità angolare massima	10 giri/min
<b>TORRE</b>	
Tipo	torre in acciaio tubolare
Altezza mozzo	135 m
Altezza al Tip	220 m
<b>PALA</b>	
Lunghezza	83 m
Numero pale	3
<b>DATI ELETTRICI</b>	
Frequenza	50Hz/60Hz
Tipo generatore	doubly-fed asynchronous three phase generator

## 5 INDIVIDUAZIONE DEI RECETTORI

I recettori sono stati individuati all'interno di aree buffer di raggio 1500 m con centro nelle posizioni delle turbine (Figura 5.1).

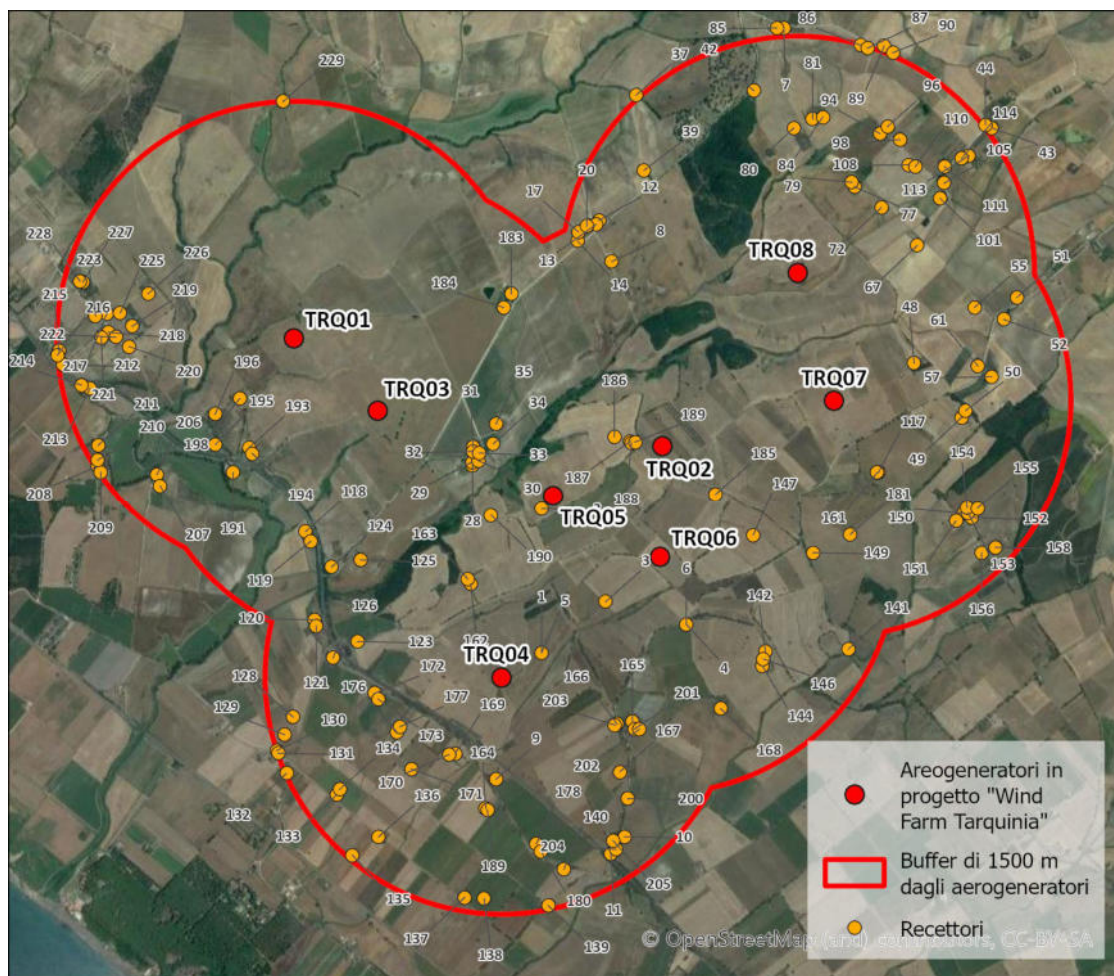


Figura 5.1 Inquadramento dell'area di progetto e dei recettori presenti nelle aree buffer individuate

A partire da tali aree buffer, sono stati presi in considerazione tutti i fabbricati presenti nell'area, sui quali sono state effettuate le opportune analisi catastali per definirne la classe catastale. I fabbricati censiti si dividono nelle seguenti classi catastali:

- A02 - Abitazioni di tipo civile
- A03 - Abitazioni di tipo economico
- A04 - Abitazioni di tipo popolare
- A07 - Abitazioni in villini
- B07 - Cappelle ed oratori non destinati all'esercizio pubblico del culto
- C02 - Magazzini e locali di deposito
- C06 - Stalle, scuderie, rimesse, autorimesse (senza fine di lucro)
- D01 – Opifici



- D07 - Fabbricati costruiti o adattati per le speciali esigenze di un'attività industriale e non suscettibili di destinazione diversa senza radicali trasformazioni
- D10 - Fabbricati per funzioni produttive connesse alle attività agricole
- F02 - Unità collabenti

I recettori che dall'analisi catastale non danno Nessuna Corrispondenza sono stati classificati come "NC".

Successivamente all'analisi desktop su immagini satellitare e catastali sono stati effettuati dei sopralluoghi che hanno permesso di verificare quanto analizzato dal catasto, di rilevare lo stato di fatto del fabbricato e la frequentazione da presone (R06\_Rev0\_MONOGRAFIA DEI RECETTORI).

Tutti i recettori individuati vengono descritti nella tabella seguente.

Tabella 5.1: Dati catastali dei fabbricati individuati all'interno dei buffer di 1500 m dalle WTGs di progetto

ID	WGS84 LONG. (°)	WGS84 LAT. (°)	COMUNE	FOGLIO	PARTICELLA	CAT. CATASTALE	DISTANZA DALLA WTG PIÙ PROSSIMA (m)	WTG PIÙ PROSSIMA
1	11,67	42,31	Tarquinia	9	62	F02	296,5	TRQ04
2	11,67	42,32	Tarquinia	9	177	F02	110,7	TRQ05
3	11,68	42,31	Tarquinia	9	196	F02	447,5	TRQ06
4	11,68	42,31	Tarquinia	9	39	F02	459,1	TRQ06
7	11,69	42,34	Tarquinia	133	53	C02	1551,2	TRQ08
8	11,68	42,33	Tarquinia	7	96	D10	1180,3	TRQ08
9	11,67	42,30	Tarquinia	19	460	A07	646,6	TRQ04
10	11,68	42,30	Tarquinia	20	143	D10	1273,5	TRQ04
11	11,68	42,30	Tarquinia	20	99	A02	1311,5	TRQ04
12	11,68	42,33	Tarquinia	8	87	NC	1303,0	TRQ08
13	11,68	42,33	Tarquinia	8	50	A03	1313,7	TRQ08
14	11,67	42,33	Tarquinia	7	98	B07	1405,8	TRQ01
17	11,67	42,33	Tarquinia	7	49	A03	1413,1	TRQ08
20	11,67	42,33	Tarquinia	8	49	D10	1369,6	TRQ08
28	11,67	42,32	Tarquinia	9	200	A02	546,5	TRQ05
29	11,67	42,32	Tarquinia	9	200	A02	557,4	TRQ05
30	11,67	42,32	Tarquinia	9	200	A02	523,7	TRQ05
31	11,67	42,32	Tarquinia	9	200	A02	594,2	TRQ05
32	11,67	42,32	Tarquinia	9	200	A02	581,4	TRQ05
33	11,67	42,32	Tarquinia	9	200	A02	543,2	TRQ05
34	11,67	42,32	Tarquinia	9	200	A02	504,6	TRQ05
35	11,67	42,32	Tarquinia	7	93	D10	583,5	TRQ05
37	11,67	42,32	Tarquinia	8	57	NC	1523,0	TRQ08
39	11,68	42,34	Tarquinia	8	58	NC	1171,8	TRQ08
42	11,69	42,34	Tarquinia	8	29	A07	1188,6	TRQ08
43	11,71	42,34	Tuscania	133	283	A03	1532,3	TRQ08
44	11,71	42,34	Tuscania	133	311	A03	1514,0	TRQ08
48	11,70	42,32	Tarquinia	10	1	NC	559,7	TRQ07
49	11,70	42,32	Tarquinia	10	2	NC	812,5	TRQ07
50	11,70	42,32	Tarquinia	10	18	NC	835,8	TRQ07
51	11,71	42,33	Tuscania	134	130	A03	1331,6	TRQ07



ID	WGS84 LONG. (°)	WGS84 LAT. (°)	COMUNE	FOGLIO	PARTICELLA	CAT. CATASTALE	DISTANZA DALLA WTG PIÙ PROSSIMA (m)	WTG PIÙ PROSSIMA
52	11,71	42,33	Tuscania	134	54	A02	1191,8	TRQ07
55	11,70	42,33	Tuscania	134	151	A03	1070,3	TRQ07
57	11,71	42,32	Tuscania	134	111	A04	1008,7	TRQ07
61	11,70	42,32	Tuscania	134	121	A03	936,4	TRQ07
67	11,70	42,33	Tuscania	134	152	A03	775,3	TRQ08
72	11,70	42,33	Tuscania	134	33	A02	671,4	TRQ08
77	11,70	42,34	Tuscania	134	136	D10	652,6	TRQ08
79	11,70	42,34	Tarquinia	134	134	NC	668,3	TRQ08
80	11,69	42,34	Tuscania	133	62	A04	917,7	TRQ08
81	11,69	42,34	Tuscania	133	282	A02	979,1	TRQ08
84	11,69	42,34	Tuscania	133	64	A03	999,2	TRQ08
85	11,69	42,34	Tuscania	133	53	A03	1557,6	TRQ08
86	11,70	42,34	Tuscania	133	223	C07	1495,8	TRQ08
87	11,70	42,34	Tuscania	133	56	A02	1490,1	TRQ08
89	11,70	42,34	Tuscania	133	222	C02	1538,5	TRQ08
90	11,70	42,34	Tuscania	133	276	A02	1518,9	TRQ08
94	11,70	42,34	Tuscania	134	119	A03	1024,1	TRQ08
96	11,70	42,34	Tuscania	134	169	A02	1087,8	TRQ08
98	11,70	42,34	Tuscania	134	125	A03	1062,7	TRQ08
101	11,70	42,33	Tuscania	134	145	A03	1017,6	TRQ08
105	11,70	42,34	Tuscania	134	29	A02	1087,1	TRQ08
108	11,70	42,34	Tuscania	134	23	NC	979,6	TRQ08
110	11,70	42,34	Tuscania	134	24	A03	1004,7	TRQ08
111	11,70	42,34	Tuscania	134	11	A03	1147,2	TRQ08
113	11,70	42,34	Tuscania	134	149	C07	1312,6	TRQ08
114	11,70	42,34	Tuscania	134	150	A04	1264,6	TRQ08
117	11,70	42,32	Tarquinia	10	255	A04	532,3	TRQ07
118	11,65	42,32	Tarquinia	17	107	A03	895,7	TRQ03
119	11,65	42,32	Tarquinia	17	73	A03	935,6	TRQ03
120	11,65	42,31	Tarquinia	18	119	A03	1239,8	TRQ04
121	11,65	42,31	Tarquinia	18	138	A03	1219,9	TRQ04
123	11,66	42,31	Tarquinia	18	133	A03	943,0	TRQ04
124	11,65	42,31	Tarquinia	9	71	A03	1037,3	TRQ03
125	11,66	42,31	Tarquinia	9	179	A03	956,6	TRQ03
126	11,65	42,31	Tarquinia	18	16	A03	1076,5	TRQ04
128	11,65	42,31	Tarquinia	17	68	C06	1345,6	TRQ04
129	11,65	42,30	Tarquinia	17	8	NC	1423,9	TRQ04
130	11,65	42,30	Tarquinia	17	413	A04	1496,6	TRQ04
131	11,65	42,30	Tarquinia	17	413	A04	1495,3	TRQ04
132	11,65	42,30	Tarquinia	19	293	A03	1492,5	TRQ04
133	11,65	42,30	Tarquinia	18	107	D01	1283,4	TRQ04
134	11,65	42,30	Tarquinia	18	106	A03	1247,4	TRQ04
135	11,66	42,30	Tarquinia	18	368	NC	1470,3	TRQ04
136	11,66	42,30	Tarquinia	19	368	NC	1275,3	TRQ04
137	11,66	42,30	Tarquinia	19	495	C02	1412,2	TRQ04



ID	WGS84 LONG. (°)	WGS84 LAT. (°)	COMUNE	FOGLIO	PARTICELLA	CAT. CATASTALE	DISTANZA DALLA WTG PIÙ PROSSIMA (m)	WTG PIÙ PROSSIMA
138	11,67	42,30	Tarquinia	19	489	C02	1404,1	TRQ04
139	11,67	42,29	Tarquinia	20	115	C02	1475,2	TRQ04
140	11,67	42,30	Tarquinia	19	72	C02	1276,0	TRQ04
141	11,69	42,31	Tarquinia	10	33	NC	1328,7	TRQ06
142	11,69	42,31	Tarquinia	22	206	D10	898,4	TRQ06
144	11,69	42,31	Tarquinia	22	209	A02	949,6	TRQ06
146	11,69	42,31	Tarquinia	22	206	D10	921,2	TRQ06
147	11,69	42,32	Tarquinia	9	197	D10	604,9	TRQ06
149	11,69	42,31	Tarquinia	10	205	A03	969,0	TRQ06
150	11,70	42,32	Tarquinia	10	69	A03	1091,3	TRQ07
151	11,70	42,32	Tarquinia	10	215	A03	1086,1	TRQ07
152	11,70	42,32	Tarquinia	10	203	A03	1146,3	TRQ07
153	11,70	42,32	Tarquinia	10	270	C06	1108,5	TRQ07
154	11,70	42,32	Tarquinia	10	269	C06	1083,5	TRQ07
155	11,70	42,32	Tuscania	10	358	F01	1135,7	TRQ07
156	11,70	42,31	Tarquinia	10	242	A03	1344,1	TRQ07
158	11,71	42,31	Tarquinia	10	254	A02	1382,2	TRQ07
162	11,67	42,31	Tarquinia	9	145	A03	623,7	TRQ04
163	11,66	42,31	Tarquinia	9	146	NC	657,5	TRQ04
165	11,68	42,31	Tarquinia	20	122	A03	872,9	TRQ04
167	11,68	42,30	Tarquinia	20	73	A07	956,5	TRQ04
168	11,68	42,31	Tarquinia	22	22	A02	1037,3	TRQ06
169	11,66	42,30	Tarquinia	18	115	A02	565,7	TRQ04
170	11,66	42,30	Tarquinia	18	115	A02	590,7	TRQ04
171	11,66	42,30	Tarquinia	18	104	A07	815,2	TRQ04
172	11,66	42,31	Tarquinia	18	103	A03	813,2	TRQ04
173	11,66	42,31	Tarquinia	18	96	D10	794,8	TRQ04
176	11,66	42,30	Tarquinia	18	111	A07	749,1	TRQ04
177	11,66	42,31	Tarquinia	18	59	C02	717,4	TRQ04
178	11,67	42,30	Tarquinia	19	576	C02	1075,2	TRQ04
180	11,67	42,30	Tarquinia	19	479	C06	1128,0	TRQ04
181	11,69	42,32	Tarquinia	10	31	NC	856,9	TRQ07
183	11,67	42,33	Tarquinia	7	83	D10	1123,6	TRQ03
184	11,67	42,33	Tarquinia	7	82	D10	1031,6	TRQ03
185	11,68	42,32	Tarquinia	9	213	C06	455,6	TRQ01
186	11,68	42,32	Tarquinia	9	228	NC	311,0	TRQ01
187	11,68	42,32	Tarquinia	9	20	NC	206,3	TRQ01
188	11,68	42,32	Tarquinia	9	19	NC	197,5	TRQ01
189	11,67	42,30	Tarquinia	19	497	A03	843,2	TRQ04
190	11,67	42,32	Tarquinia	9	194	F02	413,1	TRQ05
191	11,65	42,32	Tarquinia	9	218	A03	933,5	TRQ02
193	11,65	42,32	Tarquinia	9	159	A03	745,9	TRQ02
194	11,65	42,32	Tarquinia	9	158	C02	775,8	TRQ02
195	11,65	42,32	Tarquinia	7	88	A03	835,1	TRQ02
196	11,65	42,32	Tarquinia	7	84	A03	691,6	TRQ02



ID	WGS84 LONG. (°)	WGS84 LAT. (°)	COMUNE	FOGLIO	PARTICELLA	CAT. CATASTALE	DISTANZA DALLA WTG PIÙ PROSSIMA (m)	WTG PIÙ PROSSIMA
198	11,65	42,32	Tarquinia	7	94	A03	512,4	TRQ02
200	11,68	42,30	Tarquinia	20	141	D10	1106,6	TRQ04
201	11,68	42,30	Tarquinia	20	121	C06	901,0	TRQ04
202	11,68	42,30	Tarquinia	20	151	C06	931,5	TRQ04
203	11,68	42,30	Tarquinia	20	5	A03	778,1	TRQ04
204	11,68	42,30	Tarquinia	20	18	NC	1306,0	TRQ04
205	11,68	42,30	Tarquinia	20	0	A03	1248,3	TRQ04
206	11,64	42,32	Montalto di Castro	82	32	A03	1222,0	TRQ02
207	11,64	42,32	Montalto di Castro	82	15	C02	1261,3	TRQ02
208	11,64	42,32	Montalto di Castro	81	3	D07	1485,3	TRQ02
209	11,64	42,32	Montalto di Castro	81	3	D07	1487,4	TRQ02
210	11,64	42,32	Montalto di Castro	81	3	D07	1463,0	TRQ02
211	11,64	42,32	Montalto di Castro	81	3	D07	1410,5	TRQ02
212	11,63	42,33	Montalto di Castro	71	169	A02	1468,5	TRQ02
214	11,64	42,33	Montalto di Castro	78	78	A03	1376,3	TRQ02
215	11,63	42,33	Montalto di Castro	71	174	A04	1488,9	TRQ02
216	11,63	42,33	Montalto di Castro	71	184	A03	1499,7	TRQ02
217	11,64	42,33	Montalto di Castro	71	160	A03	1192,9	TRQ02
218	11,64	42,33	Montalto di Castro	71	142	C02	1172,7	TRQ02
219	11,64	42,33	Montalto di Castro	71	164	C02	1024,6	TRQ02
220	11,64	42,33	Montalto di Castro	71	208	A04	1043,3	TRQ02
221	11,64	42,33	Montalto di Castro	71	173	C07	1218,8	TRQ02
222	11,64	42,33	Montalto di Castro	71	154	C02	1127,2	TRQ02
223	11,64	42,33	Montalto di Castro	71	99	C06	1262,3	TRQ02
225	11,64	42,33	Montalto di Castro	71	92	A03, C06	1110,1	TRQ02
226	11,64	42,33	Montalto di Castro	71	148	C02	963,5	TRQ02
227	11,64	42,33	Montalto di Castro	71	146	A02	1381,3	TRQ02
228	11,64	42,33	Montalto di Castro	71	145	A07, C02	1402,0	TRQ02
229	11,65	42,34	Montalto di Castro	65	93	D10	1499,7	TRQ02



## 6 ANALISI SHADOW FLICKERING

### 6.1 CENNI SUL FENOMENO DELL'EVOLUZIONE DELL'OMBRA GENERATA DAGLI AEROGENERATORI

Le turbine eoliche, come altre strutture sviluppate in altezza, proiettano un'ombra sulle aree adiacenti in presenza della luce solare diretta. Il termine "Shadow Flickering" è utilizzato per indicare il fenomeno del cambiamento dell'intensità della luce causato da un oggetto in movimento. Per un impianto eolico tale fenomeno, che si traduce in una variazione ciclica dell'intensità luminosa, è generato dalla proiezione, al suolo o su un recettore, dell'ombra prodotta dalle pale in rotazione degli aerogeneratori.

Il flickering si verifica solo in determinate condizioni e coinvolge solo un'area limitata che circonda un parco eolico, tuttavia esso può determinare fastidio agli occupanti dei fabbricati le cui finestre risultano esposte al fenomeno stesso.

Affinché il fenomeno si verifichi presso un recettore, devono verificarsi le seguenti condizioni:

- la turbina deve essere in funzione, altrimenti non vengono emesse ombre in movimento;
- il cielo deve essere sereno, sgombro da nubi, con assenza di nebbia e con sole alto rispetto all'orizzonte, tale da generare un livello sufficiente di intensità luminosa;
- la direzione del vento deve essere tale da orientare le turbine in modo che, in rispetto alla posizione istantanea del sole, l'ombra prodotta dalle pale in rotazione interessi la posizione del recettore;
- il rotore della turbina deve essere situato lungo la linea di vista, senza ostacoli, dal recettore al sole, infatti in presenza di vegetazione o edifici interposti, l'ombra generata dagli ostacoli annulla il fenomeno;
- le ombre proiettate in prossimità dell'aerogeneratore risultano di maggiore intensità e nitidezza rispetto a quelle proiettate lontano in quanto, all'aumentare della distanza tra turbina e recettore, le pale coprono una porzione sempre più piccola del sole, inducendo un flickering di minore entità. Di conseguenza oltre una certa distanza, che solitamente non si estende oltre 10 volte il diametro del rotore, l'ombra smette di essere un problema poiché il rapporto tra lo spessore della pala ed il diametro del sole diventa molto piccolo.

Pertanto, in riferimento a quanto sin qui esposto, la durata e l'entità del fenomeno di Shadow flickering sono determinate e condizionate:

- dalla distanza tra aerogeneratore e recettore;
- dalla direzione ed intensità del vento;
- dall'orientamento del recettore;
- dalla presenza o meno di ostacoli lungo la linea di vista recettore – aerogeneratore – sole;
- dalle condizioni meteorologiche;
- dall'altezza del sole.

Alcune linee guida di paesi esteri condotti riportano che frequenze inferiori a 3Hz non causano episodi di epilessia fotosensibile. Gli aerogeneratori tripala in commercio, in particolar modo quelli di ultima generazione, hanno una velocità di rotazione tipicamente non superiore ai 20 rpm, il che equivale ad una frequenza di flickering prodotto inferiore a 1Hz. Pertanto, a queste basse frequenze, lo sfarfallio prodotto da una turbina eolica potrebbe essere motivo di fastidio, ma sulla base degli studi condotti, è ragionevolmente possibile escluderlo tra le cause di epilessia fotosensibile.

## 6.2 METODOLOGIA D'ANALISI

La valutazione tecnica è stata eseguita con l'ausilio di un software di simulazione specifico per la progettazione degli impianti eolici WIND PRO®, costituito da un insieme di moduli di elaborazione orientati alla simulazione di una moltitudine di aspetti che caratterizzano le diverse fasi progettuali. Il modulo SHADOW è quello specifico per la valutazione dell'evoluzione dell'ombra e del flickering.

I dati di input sono (Figura 6.1):

- modello DTM del terreno (fonte: TINITALY passo 10m);
- posizione degli aerogeneratori esistenti e di progetto, con relativi modelli e caratteristiche dimensionali;
- posizione geografica dei recettori;
- definizione di caratteristiche anemometriche dell'area per il calcolo del "real case";
- dati meteorologici storici di una stazione di riferimento per il calcolo del "real case".

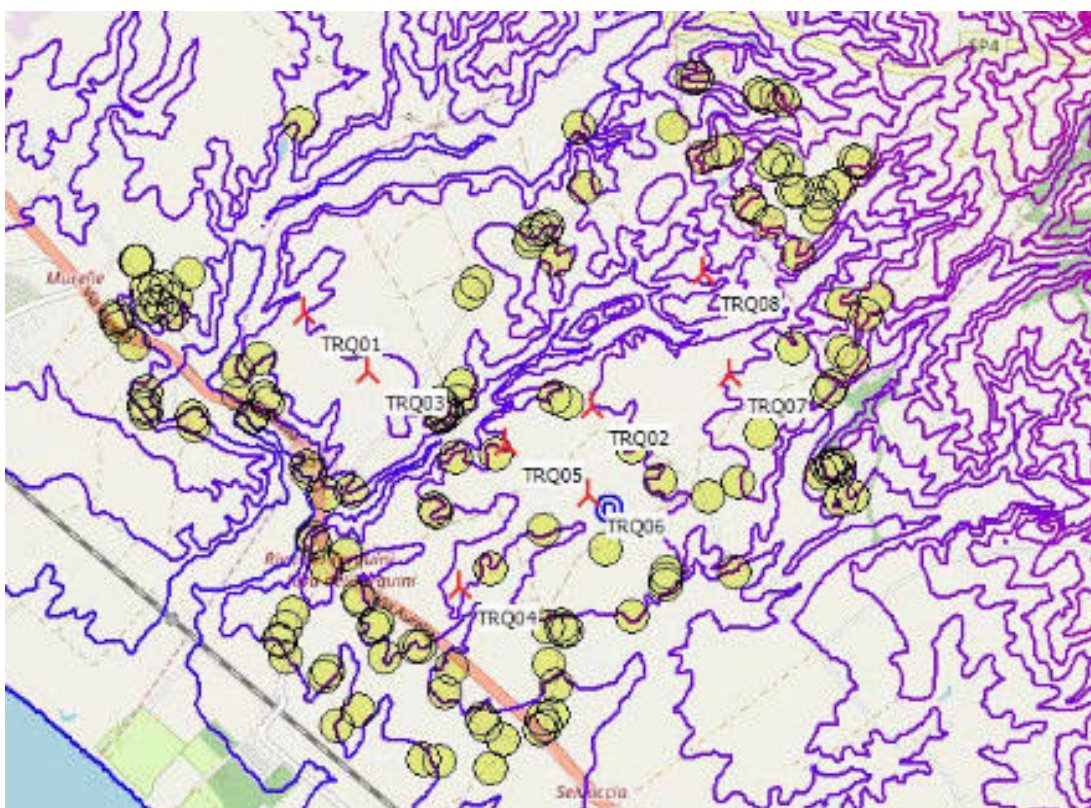


Figura 6.1: Disposizione planimetrica degli aerogeneratori di progetto e dei recettori e del DTM

Nel modello di calcolo dell'ombra utilizzato da WIND PRO® (Figura 6.2) i seguenti parametri definiscono la propagazione dell'ombra dietro il disco del rotore:

- Diametro del Sole, D: 1.390.000 km
- Distanza dal Sole, d: 150.000.000 km
- Angolo di attacco: 0.531 gradi

Teoricamente, ciò comporterebbe un impatto di ombra fino a 4,8 km con un rotore di 45 metri di diametro. In realtà le ombre non raggiungono mai il massimo teorico a causa delle caratteristiche



ottiche dell'atmosfera. Quando il Sole diventa troppo basso all'orizzonte e la distanza diventa troppo lunga, l'ombra si disperde prima che raggiunga il suolo (o il recettore). Per tale motivo il modulo SHADOW del software WindPRO assume 2 km come valore di default della distanza massima di propagazione dell'ombra.

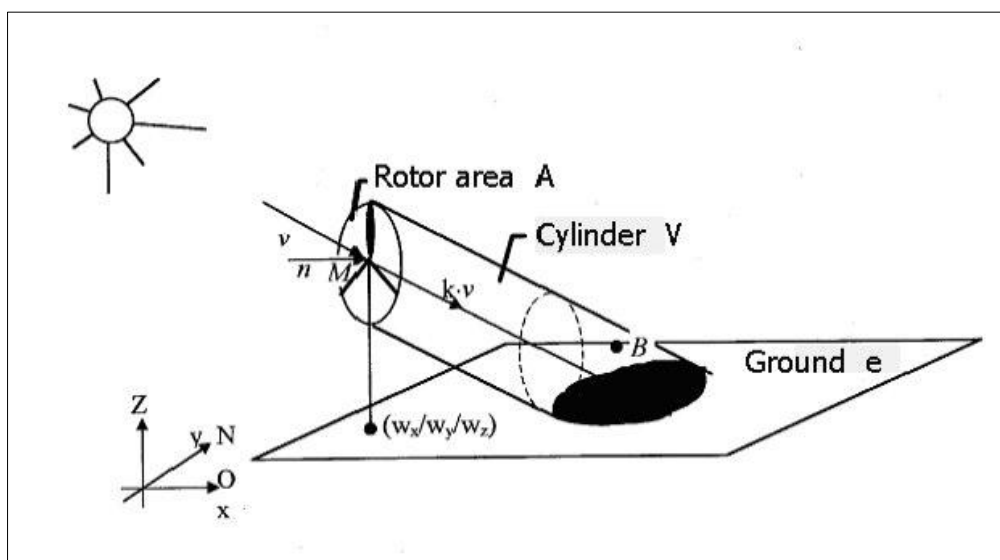


Figura 6.2: Schema di calcolo del modulo Shadow

Il modulo SHADOW di WIND PRO®, nella definizione dei recettori permette di definire sia la dimensione della finestra che l'orientazione direzionale e angolare (inclinazione rispetto al piano orizzontale). Un'altra opzione è quella di impostare il recettore nella modalità "green house" (modalità Serra), in tale modalità non si fa riferimento ad una porzione (la finestra) del recettore orientato in una particolare direzione, ma si considera l'intero recettore esposto al fenomeno in maniera omnidirezionale.

Per il parco eolico di proprietà della della società "SKY 31 S.r.L." oggetto del presente studio, visto che per alcuni recettori sono presenti turbine su più lati del recettore stesso, al fine di considerare l'effetto complessivo prodotto da tutte le turbine, si è proceduto ponendosi nella condizione peggiore di considerare ogni recettore nella modalità "green house" ovvero, per ciascun recettore, non sono state indicate le dimensioni e le orientazioni delle singole finestre, ma il recettore è stato considerato come se tutte le pareti esterne fossero esposte al fenomeno. Allo stesso tempo, è stata trascurata la presenza degli alberi e di eventuali altri ostacoli posti ai margini delle strade che, intercettando l'ombra prodotta dagli aerogeneratori, potrebbero ridurre o completamente annullare l'effetto del flickering.

Il modulo SHADOW di WIND PRO® permette di effettuare il calcolo in due modalità definite rispettivamente "worst case" e "real case".

Il calcolo nella modalità definita "worst case" viene effettuato nelle condizioni più sfavorevoli possibili, in quanto viene assunto che:

- il sole splende per tutta la giornata, dall'alba al tramonto (cioè si è sempre in assenza di copertura nuvolosa);
- il piano di rotazione delle pale è sempre perpendicolare alla direttrice sole-aerogeneratore (ovvero si assume che l'aerogeneratore "insegue" il sole);
- l'aerogeneratore è sempre operativo.



Sulla base di tali assunzioni, si evidenzia come la modalità definita “worst case” sia rappresentativa di una condizione irrealistica, e costituisca lo scenario peggiore possibile.

Il calcolo nella modalità definita “real case” invece consente di avvicinarsi maggiormente alle condizioni effettive, quindi al reale effetto del disturbo, in quanto permette di tener conto nei calcoli di dati statistici ricavati da una stazione anemometrica sita nella stessa area e di una stazione meteo che fornisce i dati di copertura nuvolosa della zona. In tal modo, viene ricavato un numero di ore di ombreggiamento più realistico poiché, a differenza del caso precedente, si tiene conto della reale presenza del sole e delle reali ore di funzionamento della turbina nell’arco di un anno anche in funzione della direzione del vento, ovvero vengono considerati tutti i fattori che influiscono sull’orientamento delle turbine rispetto al sole e dunque sull’ombra proiettata sui recettori.

Sulla base di tali assunzioni, si evidenzia come la modalità definita “real case” sia rappresentativa di una condizione di certo più realistica rispetto alla modalità “worst case”, ma comunque non ancora pienamente rappresentativa dell’effettivo fenomeno di ombreggiamento che si ottiene nella realtà, in quanto non tiene conto della presenza di eventuali ostacoli fonte di ombra (quali alberi, lampioni ecc) e in quanto soggetto anche alle assunzioni sull’esposizione dei recettori spiegate precedentemente.

Pertanto, nel corso del presente studio, qualsiasi riferimento alla dicitura “real case” dovrà considerarsi semplicemente come indicativo della modalità di calcolo del software, e sulla base delle considerazioni appena esposte, non dovrà intendersi come reale effetto del fenomeno.

Per lo studio relativo all’impianto eolico di proprietà della società “SKY 31 S.r.L.” i dati meteo utili al calcolo di funzionamento degli aerogeneratori (su base annua) sono stati ricavati dai dati anemometrici di una stazione di misura installata in sito, in posizione esposta e rappresentativa di altezza dal suolo pari a 30 m, mentre per l’indicazione della reale presenza del sole nel corso di un anno è stata considerata la stazione meteorologica di Vigna di Valle (Figura 6.3).

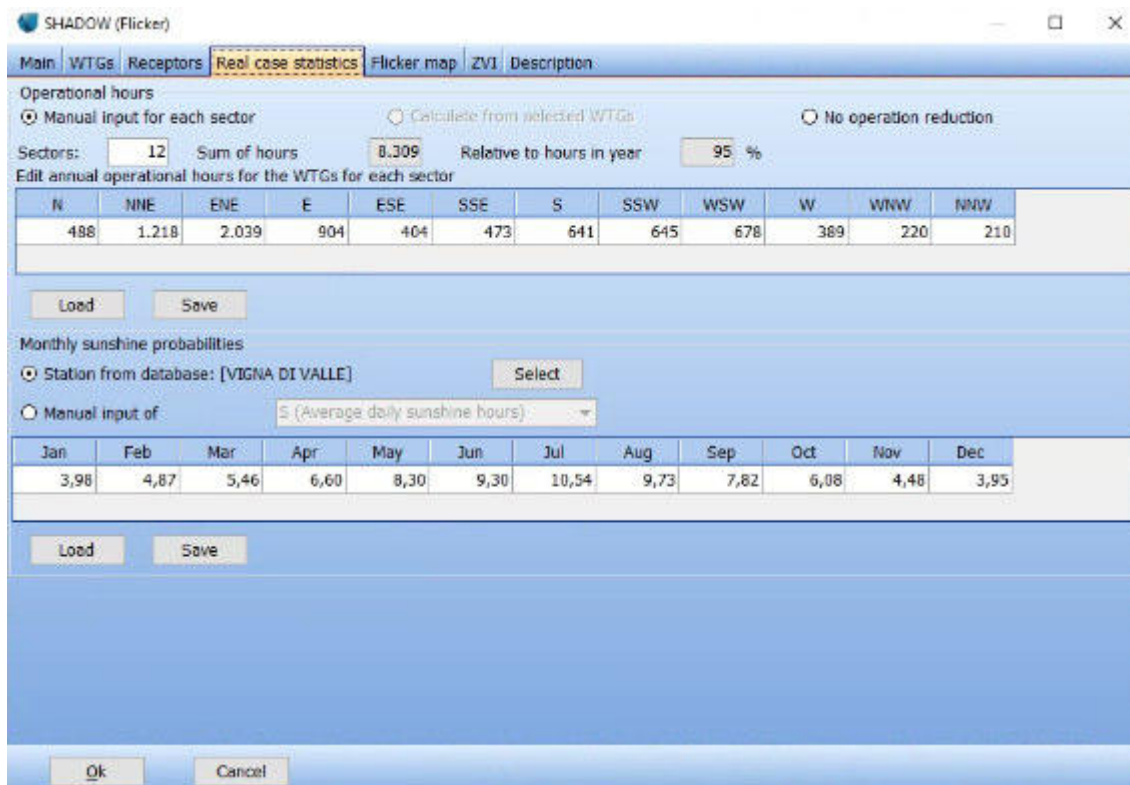


Figura 6.3: Caratteristiche della stazione meteorologica di riferimento per i valori di probabilità di soleggiamento mensile- Stazione Vigna di Valle



## 7 RISULTATI

La Tabella 7.1 riporta i risultati dell'effetto di ombreggiamento generato dall'impianto di progetto su ogni recettore identificato, modellati in modalità "green-house", ovvero senza indicare le dimensioni e le orientazioni delle singole finestre, ma considerando il recettore cautelativamente come se tutte le pareti esterne fossero esposte al fenomeno.

Nella seconda e terza colonna sono riportati i valori di ombreggiamento in ore/anno e giorni/anno nella modalità "worst case" che quantifica e riproduce il risultato di un calcolo teorico non aderente alla realtà, basato sull'assunzione che gli aerogeneratori funzionino per tutte le ore dell'anno e sempre in presenza di sole. Può tuttavia risultare utile un confronto con il reale valore atteso per comprendere quanto impatta la matrice delle probabilità di copertura nuvolosa e di dati anemometrici. Nella quarta colonna sono riportati i valori massimi di ore/giorno per ogni recettore.

Nella quinta colonna sono presentati i valori ottenuti in base ai dati anemometrici del sito e alle probabilità di copertura nuvolosa dettagliate nel paragrafo 6.2, tali valori sono da confrontare con il limite che si è scelto a riferimento di 30 ore/anno (in rosso i valori oltre il limite).

Tabella 7.1: Risultati effetto shadow flickering per ogni recettore.

ID RECETTORE	WORST CASE			REAL CASE
	[ORE/ANNO]	[GIORNI/ANNO]	[ORE/GIORNO]	[ORE/ANNO]
[-]				
1	246:06:00	165	2:00:00	89:28:00
2	96:44:00	174	0:49:00	32:51:00
3	67:10:00	118	0:51:00	21:27:00
4	16:27:00	43	0:33:00	5:14:00
7	0:00:00	0	0:00:00	0:00:00
8	47:40:00	131	0:40:00	12:31:00
9	0:00:00	0	0:00:00	0:00:00
10	0:00:00	0	0:00:00	0:00:00
11	0:00:00	0	0:00:00	0:00:00
12	36:13:00	79	0:41:00	9:03:00
13	41:05:00	85	0:44:00	10:16:00
14	46:34:00	134	0:31:00	12:43:00
17	43:09:00	125	0:32:00	11:09:00
20	43:12:00	112	0:38:00	10:54:00
28	116:09:00	171	1:11:00	30:01:00
29	128:08:00	199	1:09:00	33:20:00
30	161:49:00	228	1:14:00	42:32:00



ID RECETTORE	WORST CASE			REAL CASE
	[ORE/ANNO]	[GIORNI/ANNO]	[ORE/GIORNO]	[ORE/ANNO]
[-]				
31	203:00:00	251	1:07:00	53:34:00
32	180:46:00	237	1:08:00	47:53:00
33	198:27:00	247	1:12:00	51:58:00
34	299:16:00	292	1:41:00	72:39:00
35	209:33:00	281	1:41:00	54:14:00
37	0:00:00	0	0:00:00	0:00:00
39	42:35:00	90	0:36:00	8:39:00
42	0:00:00	0	0:00:00	0:00:00
43	18:44:00	68	0:24:00	5:47:00
44	19:35:00	60	0:25:00	6:03:00
48	101:20:00	147	1:30:00	34:16:00
49	52:56:00	100	0:49:00	17:15:00
50	45:54:00	93	0:48:00	15:01:00
51	26:01:00	86	0:29:00	8:24:00
52	32:50:00	97	0:34:00	10:45:00
55	55:03:00	138	0:39:00	17:40:00
57	32:25:00	96	0:39:00	10:25:00
61	42:42:00	110	0:42:00	13:38:00
67	39:58:00	65	0:51:00	12:58:00
72	98:06:00	117	1:02:00	31:12:00
77	22:56:00	42	0:42:00	7:17:00
79	2:03:00	12	0:13:00	0:39:00
80	0:00:00	0	0:00:00	0:00:00
81	0:00:00	0	0:00:00	0:00:00
84	0:00:00	0	0:00:00	0:00:00
85	0:00:00	0	0:00:00	0:00:00
86	0:00:00	0	0:00:00	0:00:00
87	0:00:00	0	0:00:00	0:00:00
89	0:00:00	0	0:00:00	0:00:00



ID RECETTORE	WORST CASE			REAL CASE
	[ORE/ANNO]	[GIORNI/ANNO]	[ORE/GIORNO]	[ORE/ANNO]
[-]				
90	0:00:00	0	0:00:00	0:00:00
94	0:00:00	0	0:00:00	0:00:00
96	0:00:00	0	0:00:00	0:00:00
98	0:00:00	0	0:00:00	0:00:00
101	27:06:00	61	0:39:00	8:57:00
105	27:20:00	68	0:37:00	8:41:00
108	34:32:00	60	0:42:00	10:44:00
110	41:50:00	70	0:43:00	13:01:00
111	35:41:00	90	0:36:00	11:04:00
113	22:26:00	84	0:30:00	6:57:00
114	26:41:00	88	0:32:00	8:16:00
117	22:47:00	77	0:28:00	7:27:00
118	37:04:00	100	0:28:00	8:53:00
119	42:03:00	108	0:29:00	10:09:00
120	41:25:00	114	0:33:00	14:27:00
121	37:28:00	105	0:33:00	12:44:00
123	35:46:00	84	0:42:00	9:45:00
124	51:17:00	138	0:32:00	13:23:00
125	61:28:00	145	0:37:00	16:58:00
126	21:59:00	47	0:37:00	6:19:00
128	16:01:00	43	0:30:00	5:50:00
129	15:49:00	43	0:29:00	6:00:00
130	15:56:00	46	0:28:00	6:23:00
131	16:31:00	48	0:28:00	6:42:00
132	28:57:00	90	0:28:00	12:27:00
133	0:00:00	0	0:00:00	0:00:00
134	0:00:00	0	0:00:00	0:00:00
135	0:00:00	0	0:00:00	0:00:00
136	0:00:00	0	0:00:00	0:00:00



ID RECETTORE	WORST CASE			REAL CASE
	[ORE/ANNO]	[GIORNI/ANNO]	[ORE/GIORNO]	[ORE/ANNO]
[-]				
137	0:00:00	0	0:00:00	0:00:00
138	0:00:00	0	0:00:00	0:00:00
139	0:00:00	0	0:00:00	0:00:00
140	0:00:00	0	0:00:00	0:00:00
141	20:47:00	57	0:29:00	6:21:00
142	7:04:00	30	0:21:00	2:17:00
144	7:37:00	30	0:23:00	2:25:00
146	7:24:00	30	0:22:00	2:22:00
147	92:24:00	167	1:03:00	30:16:00
149	35:21:00	89	0:41:00	11:19:00
150	9:17:00	52	0:16:00	2:55:00
151	10:36:00	55	0:18:00	3:20:00
152	8:33:00	51	0:16:00	2:41:00
153	8:53:00	50	0:16:00	2:47:00
154	8:58:00	51	0:16:00	2:49:00
155	7:57:00	49	0:16:00	2:30:00
156	3:34:00	22	0:14:00	1:07:00
158	0:00:00	0	0:00:00	0:00:00
162	18:37:00	45	0:33:00	6:35:00
163	17:54:00	44	0:32:00	6:12:00
165	71:05:00	102	0:48:00	22:02:00
167	0:00:00	0	0:00:00	0:00:00
168	13:42:00	42	0:29:00	4:20:00
169	0:00:00	0	0:00:00	0:00:00
170	0:00:00	0	0:00:00	0:00:00
171	0:00:00	0	0:00:00	0:00:00
172	55:52:00	123	0:49:00	20:51:00
173	66:47:00	152	0:50:00	25:55:00
176	47:03:00	67	0:52:00	20:36:00



ID RECETTORE	WORST CASE			REAL CASE
	[ORE/ANNO]	[GIORNI/ANNO]	[ORE/GIORNO]	[ORE/ANNO]
[-]				
177	61:54:00	78	0:59:00	26:50:00
178	0:00:00	0	0:00:00	0:00:00
180	0:00:00	0	0:00:00	0:00:00
181	43:52:00	134	0:32:00	13:52:00
183	56:12:00	133	0:39:00	17:50:00
184	82:01:00	152	1:01:00	24:22:00
185	161:07:00	160	1:39:00	51:59:00
186	400:02:00	296	2:42:00	125:44:00
187	577:54:00	329	3:27:00	189:52:00
188	573:08:00	309	3:29:00	193:44:00
189	0:00:00	0	0:00:00	0:00:00
190	217:02:00	169	1:53:00	84:52:00
191	61:17:00	115	0:42:00	25:22:00
193	63:00:00	121	0:48:00	24:07:00
194	81:27:00	139	0:49:00	32:34:00
195	28:39:00	58	0:38:00	10:42:00
196	24:47:00	50	0:38:00	7:57:00
198	32:53:00	57	0:44:00	9:46:00
200	0:00:00	0	0:00:00	0:00:00
201	59:56:00	87	0:47:00	18:32:00
202	60:38:00	90	0:46:00	18:46:00
203	58:41:00	78	0:54:00	18:07:00
204	0:00:00	0	0:00:00	0:00:00
205	0:00:00	0	0:00:00	0:00:00
206	15:30:00	45	0:28:00	6:00:00
207	17:13:00	49	0:28:00	7:01:00
208	8:41:00	44	0:21:00	3:14:00
209	7:49:00	32	0:21:00	2:53:00
210	15:15:00	65	0:22:00	6:05:00





ID RECETTORE	WORST CASE			REAL CASE
	[ORE/ANNO]	[GIORNI/ANNO]	[ORE/GIORNO]	[ORE/ANNO]
[-]				
<b>211</b>	33:02:00	92	0:31:00	13:46:00
<b>212</b>	16:42:00	60	0:27:00	5:21:00
<b>214</b>	21:13:00	70	0:29:00	7:23:00
<b>215</b>	10:56:00	34	0:27:00	3:32:00
<b>216</b>	10:49:00	34	0:26:00	3:33:00
<b>217</b>	25:09:00	72	0:33:00	6:47:00
<b>218</b>	26:04:00	74	0:34:00	7:32:00
<b>219</b>	33:48:00	82	0:39:00	9:35:00
<b>220</b>	33:50:00	83	0:38:00	10:21:00
<b>221</b>	24:12:00	71	0:33:00	7:06:00
<b>222</b>	28:06:00	75	0:35:00	8:15:00
<b>223</b>	22:15:00	68	0:31:00	6:06:00
<b>225</b>	29:13:00	79	0:36:00	7:48:00
<b>226</b>	41:38:00	99	0:41:00	9:50:00
<b>227</b>	19:43:00	68	0:29:00	4:43:00
<b>228</b>	13:04:00	38	0:29:00	3:12:00
<b>229</b>	0:00:00	0	0:00:00	0:00:00



## 8 CONCLUSIONI E RACCOMANDAZIONI

Lo studio eseguito ha evidenziato che il fenomeno di shadow flickering interessa 18 dei 150 recettori individuati considerando il “real case” (superamento del limite di 30 ore/anno), tra questi 7 risultano essere delle abitazioni (34, 31, 33, 32, 30, 29, 72) mentre gli altri sono magazzini o ruderi non frequentati in modo continuativo da persone (si rimanda a R06\_Rev0\_MONOGRAFIA DEI RECETTORI per un maggiore dettaglio).

Tuttavia è opportuno precisare che i risultati riportati nel presente studio sono ampiamente cautelativi in quanto riferiti ad uno scenario peggiorativo rispetto a quello reale. Infatti, il “worst case” considera le condizioni più sfavorevoli possibili (il sole splende per tutta la giornata, il piano di rotazione delle pale è sempre perpendicolare alla direttrice sole-aerogeneratore, l'aerogeneratore è sempre operativo). Inoltre nel modello i recettori sono stati considerati esposti al fenomeno in maniera omnidirezionale (modalità “green house”) e si è trascurata la presenza di vegetazione o di altri ostacoli in grado di “intercettare” l'ombra degli aerogeneratori.

I grafici e i dati dei minuti di ombreggiamento nel corso dell'anno per i recettori individuati sono presentati nell'Allegato A. Si può notare come il fenomeno di shadow flickering si verifichi in genere per intervalli di pochi minuti, soprattutto nelle ultime e nelle prime ore del giorno; il valore confrontato con il limite di 30 ore/anno rappresenta la somma di tutti gli intervalli dell'anno.

Infine va sottolineato che il reale disturbo del fenomeno è fortemente legato alla frequenza di lampeggiamento, a sua volta correlata alla velocità di rotazione del rotore delle macchine. Gli aerogeneratori oggetto di questo studio hanno una velocità di rotazione massima pari a 9 giri/minuto, valore ben lontano dal provocare un effetto di stroboscopia; ciò per chiarire che la quantificazione riguarda la valutazione di un fastidio che non ha effetto sanitario diretto.

In conclusione il fenomeno di shadow flickering interessa 18 recettori (solo 7 sono risultate essere delle abitazioni) considerando la modalità “real case”, l'impatto risulta essere di bassa entità in virtù delle condizioni previste sia in termini temporali che di frequenza d'intermittenza, considerando sia l'approccio cautelativo adottato, che il limite prefissato (derivante dall'applicazione di linee guida di paesi esteri).

Una volta che il parco eolico sarà operativo, in seguito a studi più approfonditi e all'acquisizione di ulteriori dati di esercizio, sarà rivalutato l'effettivo contributo dell'ombreggiamento e ove questo si verificasse superiore ai limiti, sarà opportunamente mitigato.



**9 ALLEGATO A**

## SHADOW - Main Result

**Calculation:** Shadow\_real

### Assumptions for shadow calculations

Maximum distance for influence

Calculate only when more than 20 % of sun is covered by the blade

Please look in WTG table

Minimum sun height over horizon for influence 3 °

Day step for calculation 1 days

Time step for calculation 1 minutes

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

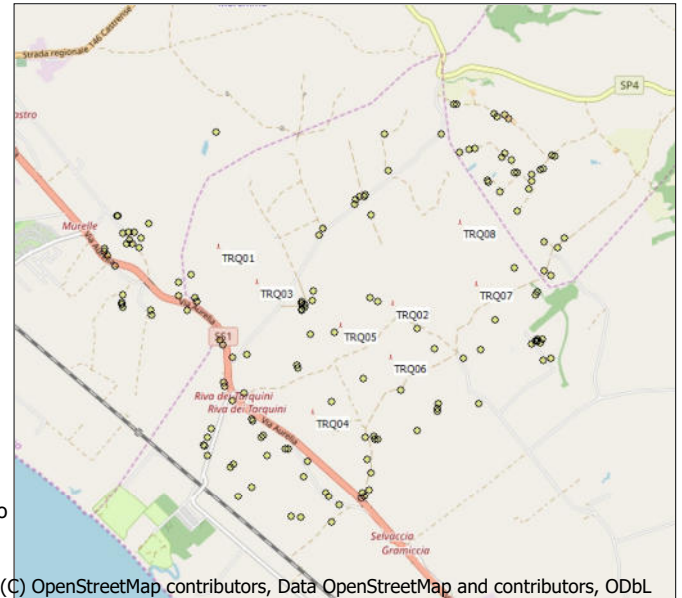
N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:

Height contours used: Height Contours: CONTOURLINE\_ONLINEDATA\_0.wpo

Obstacles used in calculation

Receptor grid resolution: 1,0 m



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

All coordinates are in

Geo [deg]-WGS84

### WTGs

	Longitude	Latitude	Z	Row data/Description	WTG type			Shadow data				
					Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM [RPM]
TRQ01	11,652138° E	42,327506° N	37,6	TRQ01	Yes	Siemens Gamesa	SG 6.6-170-6.600	6.600	170,0	135,0	2.040	8,8
TRQ02	11,680220° E	42,320713° N	48,0	TRQ02	Yes	Siemens Gamesa	SG 6.6-170-6.600	6.600	170,0	135,0	2.040	8,8
TRQ03	11,658432° E	42,323219° N	38,9	TRQ03	Yes	Siemens Gamesa	SG 6.6-170-6.600	6.600	170,0	135,0	2.040	8,8
TRQ04	11,667308° E	42,307746° N	40,0	TRQ04	Yes	Siemens Gamesa	SG 6.6-170-6.600	6.600	170,0	135,0	2.040	8,8
TRQ05	11,671702° E	42,318041° N	40,0	TRQ05	Yes	Siemens Gamesa	SG 6.6-170-6.600	6.600	170,0	135,0	2.040	8,8
TRQ06	11,679766° E	42,314352° N	44,2	TRQ06	Yes	Siemens Gamesa	SG 6.6-170-6.600	6.600	170,0	135,0	2.040	8,8
TRQ07	11,693514° E	42,322957° N	60,0	TRQ07	Yes	Siemens Gamesa	SG 6.6-170-6.600	6.600	170,0	135,0	2.040	8,8
TRQ08	11,691034° E	42,330319° N	55,8	TRQ08	Yes	Siemens Gamesa	SG 6.6-170-6.600	6.600	170,0	135,0	2.040	8,8

### Shadow receptor-Input

No.	Name	Longitude	Latitude	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
				[m]	[m]	[m]	a.g.l. [m]	window [°]		(ZVI) a.g.l. [m]
A 8	11,676776° E	42,331313° N	50,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
B 9	11,666609° E	42,301947° N	30,2	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
C 10	11,676356° E	42,298454° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
D 11	11,675265° E	42,297522° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
E 13	11,675664° E	42,333451° N	50,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
F 14	11,674170° E	42,332547° N	50,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
G 17	11,674285° E	42,333040° N	49,5	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
H 20	11,674931° E	42,333364° N	49,7	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
I 28	11,665587° E	42,319940° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
J 29	11,665560° E	42,320139° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
K 30	11,666048° E	42,320192° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
L 31	11,665675° E	42,320975° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
M 32	11,665657° E	42,320736° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
N 33	11,666119° E	42,320638° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
O 34	11,667227° E	42,321140° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
P 35	11,667491° E	42,322263° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
Q 39	11,679455° E	42,336440° N	50,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
R 42	11,688078° E	42,340792° N	51,5	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
S 43	11,706259° E	42,338236° N	90,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
T 44	11,705806° E	42,338421° N	89,8	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
U 48	11,699741° E	42,324966° N	63,9	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
V 49	11,703243° E	42,321787° N	60,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	

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## SHADOW - Main Result

### Calculation: Shadow\_real

...continued from previous page

No.	Name	Longitude	Latitude	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
W 51	11,707815° E	42,328534° N	83,9	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
X 52	11,706735° E	42,327299° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
Y 55	11,704537° E	42,328050° N	78,6	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
Z 57	11,705661° E	42,324059° N	74,7	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AA 61	11,704625° E	42,324712° N	77,3	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AB 67	11,700264° E	42,331667° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AC 72	11,697604° E	42,333892° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AD 77	11,695589° E	42,335125° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AE 80	11,691053° E	42,338580° N	70,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AF 81	11,692543° E	42,339062° N	70,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AG 84	11,693330° E	42,339151° N	70,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AH 85	11,690013° E	42,344320° N	60,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AI 86	11,696443° E	42,343173° N	65,1	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AJ 87	11,696924° E	42,343001° N	66,2	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AK 89	11,698221° E	42,343101° N	70,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AL 90	11,698861° E	42,342698° N	70,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AM 94	11,697673° E	42,338111° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AN 96	11,698286° E	42,338501° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AO 98	11,699187° E	42,337731° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AP 101	11,702154° E	42,334299° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AQ 105	11,702489° E	42,335171° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AR 110	11,700324° E	42,336174° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AS 111	11,702560° E	42,336109° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AT 113	11,704456° E	42,336679° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AU 114	11,703881° E	42,336543° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AV 117	11,696732° E	42,318802° N	60,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AW 118	11,652594° E	42,316418° N	10,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AX 119	11,652948° E	42,315844° N	11,3	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AY 120	11,653087° E	42,311371° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
AZ 121	11,653179° E	42,311008° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BA 123	11,656301° E	42,310053° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BB 124	11,654498° E	42,314349° N	17,8	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BC 125	11,656755° E	42,314697° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BD 126	11,654392° E	42,309162° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BE 128	11,651186° E	42,305866° N	26,5	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BF 130	11,649874° E	42,303996° N	20,5	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BG 131	11,649957° E	42,303829° N	20,4	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BH 132	11,650547° E	42,302673° N	20,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BI 133	11,654342° E	42,301354° N	20,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BJ 134	11,654590° E	42,301664° N	20,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BK 136	11,657469° E	42,298887° N	20,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BL 137	11,663934° E	42,295282° N	20,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BM 138	11,665425° E	42,295183° N	20,8	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BN 139	11,670339° E	42,294657° N	22,7	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BO 140	11,671627° E	42,296715° N	26,7	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BP 142	11,687624° E	42,308749° N	44,4	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BQ 144	11,687362° E	42,307925° N	41,9	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BR 146	11,687454° E	42,308334° N	43,1	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BS 147	11,686963° E	42,315415° N	50,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BT 149	11,691520° E	42,314305° N	53,3	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BU 150	11,703221° E	42,316277° N	60,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BV 151	11,702566° E	42,315852° N	58,5	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BW 152	11,703813° E	42,316023° N	60,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BX 153	11,703525° E	42,316294° N	60,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BY 154	11,703471° E	42,316589° N	60,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
BZ 156	11,704463° E	42,313990° N	60,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CA 158	11,705528° E	42,314278° N	60,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CB 162	11,665147° E	42,313127° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CC 165	11,677241° E	42,305026° N	38,3	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CD 167	11,676135° E	42,302157° N	32,1	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CE 168	11,684054° E	42,305573° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CF 169	11,663542° E	42,303488° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CG 170	11,663080° E	42,303452° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CH 171	11,660150° E	42,302683° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	

To be continued on next page...

## SHADOW - Main Result

### Calculation: Shadow\_real

...continued from previous page

No.	Name	Longitude	Latitude	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
CI 172	11,657487° E	42,307070° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CJ 173	11,657766° E	42,306733° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CK 176	11,659131° E	42,304806° N	31,6	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CL 177	11,659363° E	42,305114° N	31,3	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CM 178	11,669573° E	42,298213° N	27,5	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CN 180	11,669905° E	42,297775° N	27,4	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CO 183	11,668960° E	42,329643° N	48,3	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CP 184	11,668345° E	42,328887° N	47,2	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CQ 185	11,684158° E	42,317836° N	50,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CR 191	11,647166° E	42,319956° N	12,8	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CS 193	11,648468° E	42,321369° N	25,7	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CT 194	11,648688° E	42,321008° N	23,1	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CU 195	11,645887° E	42,321590° N	22,5	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CV 196	11,645923° E	42,323323° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CW 198	11,647853° E	42,324165° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CX 200	11,676681° E	42,300615° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CY 201	11,677363° E	42,304571° N	37,3	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
CZ 202	11,677754° E	42,304552° N	37,3	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DA 203	11,675891° E	42,304834° N	38,3	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DB 189	11,665880° E	42,300229° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DC 205	11,675439° E	42,298266° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DD 206	11,641322° E	42,319983° N	23,7	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DE 207	11,641531° E	42,319322° N	26,9	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DF 208	11,636750° E	42,320548° N	27,9	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DG 209	11,637004° E	42,320215° N	28,6	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DH 210	11,636774° E	42,320912° N	25,1	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DI 211	11,636875° E	42,321764° N	23,2	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DJ 212	11,634385° E	42,326395° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DK 214	11,635730° E	42,325210° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DL 215	11,634078° E	42,327225° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DM 216	11,633957° E	42,326966° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DN 217	11,637858° E	42,329254° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DO 218	11,637938° E	42,328171° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DP 219	11,639775° E	42,328474° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DQ 220	11,639483° E	42,327326° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DR 221	11,637360° E	42,327872° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DS 222	11,638471° E	42,327886° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DT 223	11,636979° E	42,329122° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DU 225	11,638876° E	42,329251° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DV 226	11,641071° E	42,330301° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DW 227	11,636091° E	42,331092° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DX 228	11,635850° E	42,331144° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DY 229	11,651901° E	42,341007° N	32,1	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
DZ 1	11,670433° E	42,309072° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EA 3	11,675483° E	42,311845° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EB 4	11,681633° E	42,310469° N	43,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EC 190	11,666885° E	42,317035° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
ED 2	11,670853° E	42,317354° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EE 129	11,650517° E	42,304883° N	23,3	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EF 135	11,655399° E	42,297814° N	20,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EG 141	11,694014° E	42,308741° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EH 181	11,694451° E	42,315275° N	59,5	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EI 188	11,677836° E	42,320929° N	43,5	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EJ 187	11,677751° E	42,321026° N	43,3	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EK 186	11,676542° E	42,321322° N	41,1	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EL 50	11,703595° E	42,322188° N	60,5	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EM 37	11,679042° E	42,340725° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EN 7	11,690543° E	42,344286° N	60,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EO 79	11,695404° E	42,335385° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EP 108	11,699798° E	42,336276° N	80,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
EQ 155	11,704250° E	42,316548° N	60,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
ER 163	11,664945° E	42,313398° N	40,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
ES 12	11,675886° E	42,333678° N	50,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	
ET 204	11,675648° E	42,297761° N	30,0	2,0	2,0	1,0	90,0	"Green house mode"	3,0	

## SHADOW - Main Result

Calculation: Shadow\_real

### Calculation Results

Shadow receptor

No.	Name	Shadow, worst case		Shadow, expected values	
		Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
A	8	47:40	131	0:40	12:31
B	9	0:00	0	0:00	0:00
C	10	0:00	0	0:00	0:00
D	11	0:00	0	0:00	0:00
E	13	41:05	85	0:44	10:16
F	14	46:34	134	0:31	12:43
G	17	43:09	125	0:32	11:09
H	20	43:12	112	0:38	10:54
I	28	116:09	171	1:11	30:01
J	29	128:08	199	1:09	33:20
K	30	161:49	228	1:14	42:32
L	31	203:00	251	1:07	53:34
M	32	180:46	237	1:08	47:53
N	33	198:27	247	1:12	51:58
O	34	299:16	292	1:41	72:39
P	35	209:33	281	1:41	54:14
Q	39	42:35	90	0:36	8:39
R	42	0:00	0	0:00	0:00
S	43	18:44	68	0:24	5:47
T	44	19:35	60	0:25	6:03
U	48	101:20	147	1:30	34:16
V	49	52:56	100	0:49	17:15
W	51	26:01	86	0:29	8:24
X	52	32:50	97	0:34	10:45
Y	55	55:03	138	0:39	17:40
Z	57	32:25	96	0:39	10:25
AA	61	42:42	110	0:42	13:38
AB	67	39:58	65	0:51	12:58
AC	72	98:06	117	1:02	31:12
AD	77	22:56	42	0:42	7:17
AE	80	0:00	0	0:00	0:00
AF	81	0:00	0	0:00	0:00
AG	84	0:00	0	0:00	0:00
AH	85	0:00	0	0:00	0:00
AI	86	0:00	0	0:00	0:00
AJ	87	0:00	0	0:00	0:00
AK	89	0:00	0	0:00	0:00
AL	90	0:00	0	0:00	0:00
AM	94	0:00	0	0:00	0:00
AN	96	0:00	0	0:00	0:00
AO	98	0:00	0	0:00	0:00
AP	101	27:06	61	0:39	8:57
AQ	105	27:20	68	0:37	8:41
AR	110	41:50	70	0:43	13:01
AS	111	35:41	90	0:36	11:04
AT	113	22:26	84	0:30	6:57
AU	114	26:41	88	0:32	8:16
AV	117	22:47	77	0:28	7:27
AW	118	37:04	100	0:28	8:53
AX	119	42:03	108	0:29	10:09
AY	120	41:25	114	0:33	14:27
AZ	121	37:28	105	0:33	12:44
BA	123	35:46	84	0:42	9:45
BB	124	51:17	138	0:32	13:23
BC	125	61:28	145	0:37	16:58
BD	126	21:59	47	0:37	6:19
BE	128	16:01	43	0:30	5:50
BF	130	15:56	46	0:28	6:23
BG	131	16:31	48	0:28	6:42
BH	132	28:57	90	0:28	12:27
BI	133	0:00	0	0:00	0:00
BJ	134	0:00	0	0:00	0:00

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## SHADOW - Main Result

### Calculation: Shadow\_real

...continued from previous page

No.	Name	Shadow, worst case		Shadow, expected values	
		per year [h/year]	per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
BK	136	0:00	0	0:00	0:00
BL	137	0:00	0	0:00	0:00
BM	138	0:00	0	0:00	0:00
BN	139	0:00	0	0:00	0:00
BO	140	0:00	0	0:00	0:00
BP	142	7:04	30	0:21	2:17
BQ	144	7:37	30	0:23	2:25
BR	146	7:24	30	0:22	2:22
BS	147	92:24	167	1:03	30:16
BT	149	35:21	89	0:41	11:19
BU	150	9:17	52	0:16	2:55
BV	151	10:36	55	0:18	3:20
BW	152	8:33	51	0:16	2:41
BX	153	8:53	50	0:16	2:47
BY	154	8:58	51	0:16	2:49
BZ	156	3:34	22	0:14	1:07
CA	158	0:00	0	0:00	0:00
CB	162	18:37	45	0:33	6:35
CC	165	71:05	102	0:48	22:02
CD	167	0:00	0	0:00	0:00
CE	168	13:42	42	0:29	4:20
CF	169	0:00	0	0:00	0:00
CG	170	0:00	0	0:00	0:00
CH	171	0:00	0	0:00	0:00
CI	172	55:52	123	0:49	20:51
CJ	173	66:47	152	0:50	25:55
CK	176	47:03	67	0:52	20:36
CL	177	61:54	78	0:59	26:50
CM	178	0:00	0	0:00	0:00
CN	180	0:00	0	0:00	0:00
CO	183	56:12	133	0:39	17:50
CP	184	82:01	152	1:01	24:22
CQ	185	161:07	160	1:39	51:59
CR	191	61:17	115	0:42	25:22
CS	193	63:00	121	0:48	24:07
CT	194	81:27	139	0:49	32:34
CU	195	28:39	58	0:38	10:42
CV	196	24:47	50	0:38	7:57
CW	198	32:53	57	0:44	9:46
CX	200	0:00	0	0:00	0:00
CY	201	59:56	87	0:47	18:32
CZ	202	60:38	90	0:46	18:46
DA	203	58:41	78	0:54	18:07
DB	189	0:00	0	0:00	0:00
DC	205	0:00	0	0:00	0:00
DD	206	15:30	45	0:28	6:00
DE	207	17:13	49	0:28	7:01
DF	208	8:41	44	0:21	3:14
DG	209	7:49	32	0:21	2:53
DH	210	15:15	65	0:22	6:05
DI	211	33:02	92	0:31	13:46
DJ	212	16:42	60	0:27	5:21
DK	214	21:13	70	0:29	7:23
DL	215	10:56	34	0:27	3:32
DM	216	10:49	34	0:26	3:33
DN	217	25:09	72	0:33	6:47
DO	218	26:04	74	0:34	7:32
DP	219	33:48	82	0:39	9:35
DQ	220	33:50	83	0:38	10:21
DR	221	24:12	71	0:33	7:06
DS	222	28:06	75	0:35	8:15
DT	223	22:15	68	0:31	6:06
DU	225	29:13	79	0:36	7:48

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## SHADOW - Main Result

### Calculation: Shadow\_real

...continued from previous page

No.	Name	Shadow, worst case		Shadow, expected values	
		Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
DV 226		41:38	99	0:41	9:50
DW 227		19:43	68	0:29	4:43
DX 228		13:04	38	0:29	3:12
DY 229		0:00	0	0:00	0:00
DZ 1		246:06	165	2:00	89:28
EA 3		67:10	118	0:51	21:27
EB 4		16:27	43	0:33	5:14
EC 190		217:02	169	1:53	84:52
ED 2		96:44	174	0:49	32:51
EE 129		15:49	43	0:29	6:00
EF 135		0:00	0	0:00	0:00
EG 141		20:47	57	0:29	6:21
EH 181		43:52	134	0:32	13:52
EI 188		573:08	309	3:29	193:44
EJ 187		577:54	329	3:27	189:52
EK 186		400:02	296	2:42	125:44
EL 50		45:54	93	0:48	15:01
EM 37		0:00	0	0:00	0:00
EN 7		0:00	0	0:00	0:00
EO 79		2:03	12	0:13	0:39
EP 108		34:32	60	0:42	10:44
EQ 155		7:57	49	0:16	2:30
ER 163		17:54	44	0:32	6:12
ES 12		36:13	79	0:41	9:03
ET 204		0:00	0	0:00	0:00

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]	Expected [h/year]
TRQ01	TRQ01	193:14	61:57
TRQ02	TRQ02	699:56	224:08
TRQ03	TRQ03	440:41	147:23
TRQ04	TRQ04	698:22	234:57
TRQ05	TRQ05	783:24	239:22
TRQ06	TRQ06	446:19	134:10
TRQ07	TRQ07	280:36	89:42
TRQ08	TRQ08	331:25	98:52

Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.

The calculation of the total expected values for a given receptor assumes a weighted average directional reduction for all WTGs contributing to shadow flicker within the same day. In the case where shadow flicker from different WTGs is not concurrent within the day, the total expected time at a given receptor may deviate marginally from the individual flicker time caused by each turbine separately.

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** A - 8  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	08:06 (TRQ07)   07:28	16:40 (TRQ03)   06:51	06:58	07:46 (TRQ08)   06:10	05:40
	16:51	9   08:15 (TRQ07)   17:27	15   16:55 (TRQ03)   18:03	19:39	10   07:56 (TRQ08)   20:12	20:43
2	07:43	08:06 (TRQ07)   07:27	16:42 (TRQ03)   06:49	06:56	06:09	05:40
	16:52	10   08:16 (TRQ07)   17:28	11   16:53 (TRQ03)   18:04	19:40	20:13	20:44
3	07:43	08:06 (TRQ07)   07:26	16:46 (TRQ03)   06:48	06:55	06:08	05:39
	16:53	11   08:17 (TRQ07)   17:29	4   16:50 (TRQ03)   18:05	19:41	20:15	20:45
4	07:43	08:06 (TRQ07)   07:25	06:46	06:53	06:06	05:39
	16:54	12   08:18 (TRQ07)   17:31	18:06	19:42	20:16	20:46
5	07:43	08:06 (TRQ07)   07:24	06:44	06:51	06:05	05:38
	16:55	13   08:19 (TRQ07)   17:32	18:07	19:43	20:17	20:46
6	07:43	08:06 (TRQ07)   07:23	06:43	06:50	06:04	05:38
	16:56	14   08:20 (TRQ07)   17:33	18:09	19:44	20:18	20:47
7	07:43	08:06 (TRQ07)   07:22	06:41	06:48	06:03	05:38
	16:57	15   08:21 (TRQ07)   17:35	18:10	19:45	20:19	20:48
8	07:43	08:05 (TRQ07)   07:21	06:39	06:46	06:01	05:37
	16:58	16   08:21 (TRQ07)   17:36	18:11	19:46	20:20	20:48
9	07:43	08:05 (TRQ07)   07:19	06:38	06:44	06:00	05:37
	16:59	17   08:22 (TRQ07)   17:37	18:12	19:48	20:21	20:49
10	07:43	08:05 (TRQ07)   07:18	06:36	06:43	05:59	05:37
	17:00	18   08:23 (TRQ07)   17:39	18:13	19:49	20:22	20:49
11	07:42	08:05 (TRQ07)   07:17	06:34	06:41	05:58	05:37
	17:01	19   08:24 (TRQ07)   17:40	18:15	19:50	20:23	20:50
12	07:42	08:04 (TRQ07)   07:16	06:33	06:39	05:57	05:37
	17:02	21   16:36 (TRQ03)   17:41	18:16	11   07:03 (TRQ08)   19:51	20:24	20:51
13	07:42	08:04 (TRQ07)   07:14	06:31	06:50 (TRQ08)   06:38	05:56	05:37
	17:03	23   16:37 (TRQ03)   17:42	18:17	16   07:06 (TRQ08)   19:52	20:25	20:51
14	07:41	08:03 (TRQ07)   07:13	06:29	06:48 (TRQ08)   06:36	05:55	05:36
	17:04	26   16:38 (TRQ03)   17:44	18:18	20   07:08 (TRQ08)   19:53	20:26	20:51
15	07:41	08:03 (TRQ07)   07:12	06:28	06:47 (TRQ08)   06:35	05:53	05:36
	17:06	29   16:40 (TRQ03)   17:45	18:19	23   07:10 (TRQ08)   19:54	20:27	20:52
16	07:40	08:02 (TRQ07)   07:10	06:26	06:45 (TRQ08)   06:33	05:52	05:36
	17:07	32   16:41 (TRQ03)   17:46	18:20	25   07:10 (TRQ08)   19:55	20:29	20:52
17	07:40	08:02 (TRQ07)   07:09	06:24	06:43 (TRQ08)   06:31	05:51	05:36
	17:08	34   16:42 (TRQ03)   17:48	18:22	28   07:11 (TRQ08)   19:57	20:30	20:53
18	07:39	08:01 (TRQ07)   07:07	06:22	06:41 (TRQ08)   06:30	05:50	05:37
	17:09	36   16:43 (TRQ03)   17:49	18:23	30   07:11 (TRQ08)   19:58	20:31	20:53
19	07:39	08:01 (TRQ07)   07:06	06:21	06:40 (TRQ08)   06:28	05:50	05:37
	17:10	37   16:44 (TRQ03)   17:50	18:24	32   07:12 (TRQ08)   19:59	20:32	20:53
20	07:38	08:03 (TRQ07)   07:05	06:19	06:39 (TRQ08)   06:27	05:49	05:37
	17:12	37   16:46 (TRQ03)   17:51	18:25	33   07:12 (TRQ08)   20:00	20:33	20:54
21	07:38	08:03 (TRQ07)   07:03	06:17	06:38 (TRQ08)   06:25	05:48	05:37
	17:13	38   16:47 (TRQ03)   17:53	18:26	33   07:11 (TRQ08)   20:01	20:34	20:54
22	07:37	08:03 (TRQ07)   07:02	06:15	06:38 (TRQ08)   06:24	05:47	05:37
	17:14	39   16:48 (TRQ03)   17:54	18:27	33   07:11 (TRQ08)   20:02	20:34	20:54
23	07:36	08:04 (TRQ07)   07:00	06:14	06:38 (TRQ08)   06:22	05:46	05:37
	17:15	38   16:49 (TRQ03)   17:55	18:28	33   07:11 (TRQ08)   20:03	20:35	20:54
24	07:36	08:05 (TRQ07)   06:59	06:12	06:38 (TRQ08)   06:21	05:45	05:38
	17:17	40   16:52 (TRQ03)   17:56	18:30	32   07:10 (TRQ08)   20:04	20:36	20:54
25	07:35	08:06 (TRQ07)   06:57	06:10	06:38 (TRQ08)   06:19	05:45	05:38
	17:18	39   16:53 (TRQ03)   17:58	18:31	31   07:09 (TRQ08)   20:06	20:37	20:55
26	07:34	08:07 (TRQ07)   06:56	06:08	06:38 (TRQ08)   06:18	05:44	05:38
	17:19	39   16:54 (TRQ03)   17:59	18:32	30   07:08 (TRQ08)   20:07	20:38	20:55
27	07:33	08:08 (TRQ07)   06:54	06:07	06:39 (TRQ08)   06:16	05:43	05:39
	17:20	37   16:55 (TRQ03)   18:00	18:33	29   07:08 (TRQ08)   20:08	20:39	20:55
28	07:32	08:10 (TRQ07)   06:52	06:05	06:39 (TRQ08)   06:15	05:42	05:39
	17:22	35   16:57 (TRQ03)   18:01	18:34	27   07:06 (TRQ08)   20:09	20:40	20:55
29	07:31	08:12 (TRQ07)   06:51	07:03	07:40 (TRQ08)   06:13	05:42	05:39
	17:23	30   16:57 (TRQ03)   18:02	19:35	24   08:04 (TRQ08)   20:10	20:41	20:55
30	07:30	16:37 (TRQ03)   17:50	07:02	07:41 (TRQ08)   06:12	05:41	05:40
	17:24	19   16:56 (TRQ03)   18:03	19:36	21   08:02 (TRQ08)   20:11	20:42	20:55
31	07:29	16:38 (TRQ03)   17:49	07:00	07:44 (TRQ08)   06:11	05:41	05:40
	17:26	18   16:56 (TRQ03)   18:04	19:37	16   08:00 (TRQ08)   20:12	20:42	20:55
Potential sun hours	294	295	369	400	452	457
Total, worst case	801	30	527	10		
Sun reduction	0,42	0,46	0,46	0,49		
Oper. time red.	0,95	0,95	0,95	0,95		
Wind dir. red.	0,58	0,74	0,59	0,59		
Total reduction	0,23	0,32	0,25	0,27		
Total, real	184	10	134	3		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** A - 8  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40	06:05	06:38	07:10	07:30 (TRQ08)	06:46
	20:54	20:34	19:49	18:57	14 07:44 (TRQ08)	17:08
2	05:41	06:06	06:39	07:11	07:34 (TRQ08)	06:47
	20:54	20:33	19:48	18:55	4 07:38 (TRQ08)	17:07
3	05:41	06:07	06:40	07:12	06:48	07:24
	20:54	20:32	19:46	18:54	17:06	16:42
4	05:42	06:08	06:41	07:13	06:50	17:25
	20:54	20:31	19:44	18:52	17:05	16:42
5	05:42	06:09	06:42	07:14	06:51	07:26
	20:54	20:30	19:43	18:50	17:03	16:42
6	05:43	06:10	06:43	07:15	06:52	07:27
	20:53	20:28	19:41	18:48	17:02	16:41
7	05:44	06:12	06:44	07:16	06:53	07:28
	20:53	20:27	19:39	18:47	17:01	16:41
8	05:44	06:13	06:45	07:18	06:55	16:15 (TRQ03)
	20:53	20:26	19:37	18:45	17:00	5 16:20 (TRQ03)
9	05:45	06:14	06:46	07:19	06:56	16:13 (TRQ03)
	20:52	20:25	19:36	18:43	16:59	11 16:24 (TRQ03)
10	05:46	06:15	06:47	07:20	06:57	16:11 (TRQ03)
	20:52	20:23	19:34	18:42	16:58	15 16:26 (TRQ03)
11	05:46	06:16	06:48	07:21	06:58	16:09 (TRQ03)
	20:52	20:22	19:32	9 07:48 (TRQ08)	18:40	18 16:27 (TRQ03)
12	05:47	06:17	06:49	07:22	07:00	16:09 (TRQ03)
	20:51	20:20	19:31	16 07:51 (TRQ08)	18:38	16:41
13	05:48	06:18	06:51	07:23	07:01	19 07:44 (TRQ07)
	20:51	20:19	19:29	21 07:53 (TRQ08)	18:37	16:55
14	05:49	06:19	06:52	07:24	07:02	30 16:29 (TRQ03)
	20:50	20:18	19:27	24 07:54 (TRQ08)	18:35	07:42 (TRQ07)
15	05:50	06:20	06:53	07:25	07:03	35 16:54 (TRQ07)
	20:49	20:16	19:25	26 07:55 (TRQ08)	18:33	07:41 (TRQ07)
16	05:50	06:21	06:54	07:27	07:05	37 16:28 (TRQ03)
	20:49	20:15	19:23	29 07:56 (TRQ08)	18:32	16:42
17	05:51	06:22	06:55	07:28	07:06	39 16:27 (TRQ03)
	20:48	20:13	19:22	30 07:56 (TRQ08)	18:30	16:42
18	05:52	06:23	06:56	07:29	07:07	39 16:26 (TRQ03)
	20:47	20:12	19:20	31 07:56 (TRQ08)	18:29	07:39 (TRQ07)
19	05:53	06:24	06:57	07:30	07:08	40 07:39 (TRQ07)
	20:47	20:10	19:18	33 07:57 (TRQ08)	18:27	07:38
20	05:54	06:25	06:58	07:31	07:10	38 16:24 (TRQ03)
	20:46	20:09	19:16	32 07:57 (TRQ08)	18:26	16:43
21	05:55	06:26	06:59	07:33	07:11	39 16:23 (TRQ03)
	20:45	20:07	19:15	33 07:57 (TRQ08)	18:24	16:43
22	05:56	06:27	07:00	07:34	07:12	38 16:22 (TRQ03)
	20:44	20:06	19:13	33 07:57 (TRQ08)	18:23	16:44
23	05:57	06:28	07:01	07:35	07:13	37 16:22 (TRQ03)
	20:43	20:04	19:11	33 07:56 (TRQ08)	18:21	16:44
24	05:57	06:29	07:02	07:36	07:14	37 16:21 (TRQ03)
	20:42	20:03	19:09	32 07:55 (TRQ08)	18:20	16:45
25	05:58	06:30	07:03	06:37	07:15	36 16:20 (TRQ03)
	20:42	20:01	19:08	31 07:55 (TRQ08)	17:18	07:41 (TRQ07)
26	05:59	06:32	07:04	06:39	07:17	35 16:21 (TRQ03)
	20:41	19:59	19:06	29 07:54 (TRQ08)	17:17	16:46
27	06:00	06:33	07:05	06:40	07:18	32 16:21 (TRQ03)
	20:40	19:58	19:04	26 07:52 (TRQ08)	17:15	07:41 (TRQ07)
28	06:01	06:34	07:06	06:41	07:19	29 16:19 (TRQ03)
	20:39	19:56	19:02	24 07:51 (TRQ08)	17:14	16:47
29	06:02	06:35	07:08	06:42	07:20	26 16:18 (TRQ03)
	20:38	19:54	19:01	21 07:49 (TRQ08)	17:12	07:44 (TRQ07)
30	06:03	06:36	07:09	06:43	07:21	24 16:18 (TRQ03)
	20:37	19:53	18:59	18 07:47 (TRQ08)	17:11	16:49
31	06:04	06:37		06:45		21 16:17 (TRQ03)
	20:35	19:51		17:10		07:43
Potential sun hours	463	430	376	344	295	284
Total, worst case			531		680	263
Sun reduction			0,62		0,55	0,43
Oper. time red.			0,95		0,95	0,95
Wind dir. red.			0,59		0,60	0,50
Total reduction			0,35		0,26	0,20
Total, real			184		177	53

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** B - 9  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:09	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:14	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:45	05:42 20:54	06:09 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:39 20:46	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	06:51 17:04	07:26 16:42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:11 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:42
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:02 20:20	05:38 20:48	05:45 20:53	06:13 20:26	06:45 19:38	07:18 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:25	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:42 17:00	07:18 17:39	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50	05:47 20:51	06:16 20:22	06:49 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	05:57 20:24	05:37 20:50	05:47 20:51	06:17 20:20	06:50 19:31	07:22 18:38	07:00 16:56	07:33 16:41
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	05:56 20:25	05:37 20:51	05:48 20:50	06:18 20:19	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	05:55 20:26	05:37 20:51	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	05:54 20:27	05:37 20:52	05:50 20:49	06:20 20:16	06:53 19:25	07:25 18:34	07:03 16:53	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55	05:53 20:28	05:37 20:52	05:51 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	05:52 20:29	05:37 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:43
18	07:39 17:09	07:07 17:49	06:22 18:23	06:30 19:58	05:51 20:30	05:37 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:50 20:31	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:50	07:38 16:43
20	07:38 17:12	07:05 17:51	06:19 18:25	06:27 20:00	05:49 20:32	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:09 16:49	07:39 16:44
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:33 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:24 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:45
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	07:35 17:17	06:59 17:56	06:12 18:30	06:21 20:04	05:45 20:36	05:38 20:54	05:58 20:42	06:30 20:03	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:45 20:37	05:38 20:54	05:59 20:42	06:31 20:01	07:03 19:08	06:37 17:18	07:15 16:45	07:41 16:46
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	05:44 20:38	05:38 20:55	06:00 20:41	06:32 19:59	07:04 19:06	06:39 17:17	07:17 16:45	07:41 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:39 20:55	06:00 20:40	06:33 19:58	07:05 19:04	06:40 17:15	07:18 16:44	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:43 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:07 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	07:31 17:23		07:03 19:35	06:13 20:10	05:42 20:41	05:40 20:55	06:02 20:38	06:35 19:54	07:08 19:01	06:42 17:13	07:20 16:44	07:42 16:49
30	07:30 17:24		07:02 19:36	06:12 20:11	05:41 20:42	05:40 20:55	06:03 20:37	06:36 19:53	07:09 18:59	06:43 17:11	07:21 16:43	07:43 16:50
31	07:29 17:26		07:00 19:37		05:41 20:42		06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** C - 10  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:09	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:29	06:48 18:05	06:55 19:41	06:08 20:14	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:45	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	06:51 17:04	07:26 16:42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:11 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:42
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:47	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:01 20:20	05:38 20:48	05:44 20:53	06:13 20:26	06:45 19:37	07:17 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:42 17:00	07:18 17:39	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50	05:47 20:51	06:16 20:22	06:48 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	05:57 20:24	05:37 20:50	05:47 20:51	06:17 20:20	06:50 19:30	07:22 18:38	07:00 16:56	07:33 16:41
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	05:56 20:25	05:37 20:51	05:48 20:50	06:18 20:19	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	05:55 20:26	05:37 20:51	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	05:54 20:27	05:37 20:52	05:50 20:49	06:20 20:16	06:53 19:25	07:25 18:34	07:03 16:53	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55	05:53 20:28	05:37 20:52	05:50 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	05:52 20:29	05:37 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:42
18	07:39 17:09	07:07 17:49	06:22 18:23	06:30 19:58	05:51 20:30	05:37 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:50 20:31	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:49	07:38 16:43
20	07:38 17:12	07:05 17:51	06:19 18:25	06:27 20:00	05:49 20:32	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:09 16:49	07:38 16:44
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:32 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:24 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:44
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	07:35 17:17	06:59 17:56	06:12 18:30	06:21 20:04	05:45 20:36	05:38 20:54	05:58 20:42	06:29 20:03	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:45 20:37	05:38 20:54	05:59 20:41	06:31 20:01	07:03 19:08	06:37 17:18	07:15 16:45	07:41 16:46
26	07:34 17:19	06:56 17:59	06:08 18:32	06:18 20:07	05:44 20:38	05:38 20:54	05:59 20:41	06:32 19:59	07:04 19:06	06:38 17:17	07:17 16:45	07:41 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:39 20:55	06:00 20:40	06:33 19:58	07:05 19:04	06:40 17:15	07:18 16:44	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:43 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:06 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	07:31 17:23		07:03 19:35	06:13 20:10	05:42 20:41	05:39 20:55	06:02 20:38	06:35 19:54	07:08 19:01	06:42 17:13	07:20 16:43	07:42 16:49
30	07:30 17:24		07:02 19:36	06:12 20:11	05:41 20:42	05:40 20:54	06:03 20:36	06:36 19:53	07:09 18:59	06:43 17:11	07:21 16:43	07:42 16:50
31	07:29 17:26		07:00 19:37		05:41 20:42		06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** D - 11  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:09	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:14	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:45	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	06:51 17:04	07:26 16:42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:11 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:42
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:47	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:01 20:20	05:38 20:48	05:44 20:53	06:13 20:26	06:45 19:37	07:17 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:42 17:00	07:18 17:39	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50	05:47 20:51	06:16 20:22	06:48 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	05:57 20:24	05:37 20:50	05:47 20:51	06:17 20:20	06:50 19:30	07:22 18:38	07:00 16:56	07:33 16:41
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	05:56 20:25	05:37 20:51	05:48 20:50	06:18 20:19	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	05:55 20:26	05:37 20:51	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	05:54 20:27	05:37 20:52	05:50 20:49	06:20 20:16	06:53 19:25	07:25 18:34	07:03 16:53	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55	05:53 20:28	05:37 20:52	05:51 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	05:52 20:29	05:37 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:42
18	07:39 17:09	07:07 17:49	06:22 18:23	06:30 19:58	05:51 20:30	05:37 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:50 20:31	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:49	07:38 16:43
20	07:38 17:12	07:05 17:51	06:19 18:25	06:27 20:00	05:49 20:32	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:09 16:49	07:38 16:44
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:32 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:24 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:44
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	07:35 17:17	06:59 17:56	06:12 18:30	06:21 20:04	05:45 20:36	05:38 20:54	05:58 20:42	06:29 20:03	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:45 20:37	05:38 20:54	05:59 20:41	06:31 20:01	07:03 19:08	06:37 17:18	07:15 16:45	07:41 16:46
26	07:34 17:19	06:56 17:59	06:08 18:32	06:18 20:07	05:44 20:38	05:38 20:55	05:59 20:41	06:32 19:59	07:04 19:06	06:38 17:17	07:17 16:45	07:41 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:39 20:55	06:00 20:40	06:33 19:58	07:05 19:04	06:40 17:15	07:18 16:44	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:43 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:07 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	07:31 17:23		07:03 19:35	06:13 20:10	05:42 20:41	05:40 20:55	06:02 20:38	06:35 19:54	07:08 19:01	06:42 17:13	07:20 16:43	07:42 16:49
30	07:30 17:24		07:02 19:36	06:12 20:11	05:41 20:42	05:40 20:54	06:03 20:36	06:36 19:53	07:09 18:59	06:43 17:11	07:21 16:43	07:42 16:50
31	07:29 17:26		07:00 19:37		05:41 20:42		06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** E - 13  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	08:10 (TRQ07)	07:28	06:51	07:10 (TRQ08)	06:58
	16:51	40 16:21 (TRQ03)	17:27	18:03	30 07:40 (TRQ08)	19:39
2	07:43	08:10 (TRQ07)	07:27	06:49	07:10 (TRQ08)	06:56
	16:52	40 16:21 (TRQ03)	17:28	18:04	31 07:41 (TRQ08)	19:40
3	07:43	08:11 (TRQ07)	07:26	06:48	07:10 (TRQ08)	06:55
	16:53	38 16:21 (TRQ03)	17:29	18:05	30 07:40 (TRQ08)	19:41
4	07:43	08:12 (TRQ07)	07:25	06:46	07:10 (TRQ08)	06:53
	16:54	37 16:21 (TRQ03)	17:31	18:06	29 07:39 (TRQ08)	19:42
5	07:43	08:12 (TRQ07)	07:24	06:44	07:10 (TRQ08)	06:51
	16:55	36 16:21 (TRQ03)	17:32	18:07	29 07:39 (TRQ08)	19:43
6	07:43	08:13 (TRQ07)	07:23	06:43	07:10 (TRQ08)	06:50
	16:56	34 16:21 (TRQ03)	17:33	18:09	28 07:38 (TRQ08)	19:44
7	07:43	08:14 (TRQ07)	07:22	06:41	07:11 (TRQ08)	06:48
	16:57	31 16:21 (TRQ03)	17:35	18:10	26 07:37 (TRQ08)	19:45
8	07:43	08:14 (TRQ07)	07:21	06:39	07:12 (TRQ08)	06:46
	16:58	29 16:20 (TRQ03)	17:36	18:11	24 07:36 (TRQ08)	19:46
9	07:43	08:16 (TRQ07)	07:19	06:38	07:13 (TRQ08)	06:44
	16:59	25 16:20 (TRQ03)	17:37	18:12	21 07:34 (TRQ08)	19:48
10	07:43	08:17 (TRQ07)	07:18	06:36	07:14 (TRQ08)	06:43
	17:00	21 16:19 (TRQ03)	17:39	18:13	18 07:32 (TRQ08)	19:49
11	07:42	08:19 (TRQ07)	07:17	06:34	07:16 (TRQ08)	06:41
	17:01	12 08:31 (TRQ07)	17:40	18:15	13 07:29 (TRQ08)	19:50
12	07:42	08:20 (TRQ07)	07:16	06:33	07:17 (TRQ08)	06:39
	17:02	10 08:30 (TRQ07)	17:41	18:16	19:51	20:24
13	07:42	08:22 (TRQ07)	07:14	06:31	07:18 (TRQ08)	06:38
	17:03	7 08:29 (TRQ07)	17:42	18:17	19:52	20:25
14	07:41	07:13	17:43	06:29	06:36	05:55
	17:04	17:44	18:18	19:53	20:26	20:51
15	07:41	07:12	17:45	06:28	06:35	05:53
	17:06	17:46	18:19	19:54	20:27	20:52
16	07:40	07:10	17:46	06:26	06:33	05:52
	17:07	17:47	18:20	19:55	20:29	20:52
17	07:40	07:09	17:48	06:24	06:31	05:51
	17:08	17:49	18:22	19:57	20:30	20:53
18	07:39	07:07	17:49	06:22	06:30	05:50
	17:09	17:50	18:23	19:58	20:31	20:53
19	07:39	07:06	17:50	06:21	06:28	05:50
	17:10	17:51	18:24	19:59	20:32	20:53
20	07:38	07:05	17:51	06:19	06:27	05:49
	17:12	17:52	18:25	20:00	20:33	20:54
21	07:38	07:03	07:23 (TRQ08)	06:17	06:25	05:48
	17:13	17:53	9 07:32 (TRQ08)	18:26	20:01	20:34
22	07:37	07:02	07:21 (TRQ08)	06:15	06:24	05:47
	17:14	17:54	13 07:34 (TRQ08)	18:27	20:02	20:34
23	07:36	07:00	07:20 (TRQ08)	06:14	06:22	05:46
	17:15	17:55	17 07:37 (TRQ08)	18:28	20:03	20:35
24	07:36	06:59	07:18 (TRQ08)	06:12	06:21	05:45
	17:17	17:56	20 07:38 (TRQ08)	18:30	20:04	20:36
25	07:35	06:57	07:17 (TRQ08)	06:10	06:19	05:45
	17:18	17:58	22 07:39 (TRQ08)	18:31	20:06	20:37
26	07:34	06:56	07:15 (TRQ08)	06:08	06:18	05:44
	17:19	17:59	24 07:39 (TRQ08)	18:32	20:07	20:38
27	07:33	06:54	07:13 (TRQ08)	06:07	06:16	05:43
	17:20	18:00	26 07:39 (TRQ08)	18:33	20:08	20:39
28	07:32	06:52	07:12 (TRQ08)	06:05	06:15	05:42
	17:22	18:01	28 07:40 (TRQ08)	18:34	20:09	20:40
29	07:31	07:03	19:35	06:13	05:42	05:39
	17:23	19:36	07:02	20:10	20:41	20:55
30	07:30	19:37	06:12	20:11	05:41	05:40
	17:24	07:00	06:11	20:42	20:42	20:55
31	07:29	19:37	05:41	20:42	05:41	
	17:26	19:37	05:41	20:42	05:41	
Potential sun hours	294	295	369	400	452	457
Total, worst case	360	159	279			
Sun reduction	0,42	0,46	0,46			
Oper. time red.	0,95	0,95	0,95			
Wind dir. red.	0,60	0,52	0,52			
Total reduction	0,24	0,23	0,23			
Total, real	86	37	64			

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** E - 13  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:08	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	07:57 (TRQ08) 08:06 (TRQ08)	08:13 (TRQ07) 08:00 (TRQ07)
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	07:53 (TRQ08) 08:08 (TRQ08)	08:00 (TRQ07) 16:42 (TRQ03)
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	07:51 (TRQ08) 08:11 (TRQ08)	16:01 (TRQ03) 16:05 (TRQ03)
5	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	07:49 (TRQ08) 08:12 (TRQ08)	16:07 (TRQ03) 16:06 (TRQ03)
6	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	07:48 (TRQ08) 08:13 (TRQ08)	07:59 (TRQ07) 16:41 (TRQ03)
7	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	07:46 (TRQ08) 08:13 (TRQ08)	07:59 (TRQ07) 16:41 (TRQ03)
8	05:44 20:53	06:13 20:26	06:45 19:38	07:18 18:45	07:45 (TRQ08) 08:14 (TRQ08)	08:00 (TRQ07) 16:41 (TRQ03)
9	05:45 20:52	06:14 20:25	06:46 19:36	07:19 18:43	07:44 (TRQ08) 08:14 (TRQ08)	08:00 (TRQ07) 16:41 (TRQ03)
10	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	07:44 (TRQ08) 08:14 (TRQ08)	08:00 (TRQ07) 16:41 (TRQ03)
11	05:46 20:52	06:16 20:22	06:48 19:32	07:21 18:40	07:44 (TRQ08) 08:14 (TRQ08)	08:00 (TRQ07) 16:41 (TRQ03)
12	05:47 20:51	06:17 20:20	06:49 19:31	07:22 18:38	07:44 (TRQ08) 08:14 (TRQ08)	08:00 (TRQ07) 16:41 (TRQ03)
13	05:48 20:51	06:18 20:19	06:51 19:29	07:23 18:37	07:44 (TRQ08) 08:13 (TRQ08)	08:01 (TRQ07) 16:41 (TRQ03)
14	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:45 (TRQ08) 08:13 (TRQ08)	08:01 (TRQ07) 16:42 (TRQ03)
15	05:50 20:49	06:20 20:16	06:53 19:25	07:25 18:33	07:46 (TRQ08) 08:12 (TRQ08)	08:02 (TRQ07) 16:42 (TRQ03)
16	05:50 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:48 (TRQ08) 08:11 (TRQ08)	08:02 (TRQ07) 16:42 (TRQ03)
17	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:49 (TRQ08) 08:10 (TRQ08)	08:02 (TRQ07) 16:42 (TRQ03)
18	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:50 (TRQ08) 08:09 (TRQ08)	08:03 (TRQ07) 16:43 (TRQ03)
19	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:51 (TRQ08) 08:07 (TRQ08)	08:03 (TRQ07) 16:43 (TRQ03)
20	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:53 (TRQ08) 08:05 (TRQ08)	08:04 (TRQ07) 16:43 (TRQ03)
21	05:55 20:45	06:26 20:07	06:59 19:15	07:33 18:24	07:54 (TRQ08) 08:02 (TRQ08)	08:04 (TRQ07) 16:44 (TRQ03)
22	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:12 16:47	08:05 (TRQ07) 16:44 (TRQ03)
23	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:47	08:05 (TRQ07) 16:45 (TRQ03)
24	05:57 20:43	06:29 20:03	07:02 19:09	07:36 18:20	07:14 16:46	08:06 (TRQ07) 16:45 (TRQ03)
25	05:58 20:42	06:30 20:01	07:03 19:08	06:37 17:18	07:15 16:45	08:06 (TRQ07) 16:46 (TRQ03)
26	05:59 20:41	06:32 19:59	07:04 19:06	06:39 17:17	07:17 16:45	08:06 (TRQ07) 16:47 (TRQ03)
27	06:00 20:40	06:33 19:58	07:05 19:04	06:40 17:15	07:18 16:44	08:06 (TRQ07) 16:47 (TRQ03)
28	06:01 20:39	06:34 19:56	07:07 19:02	06:41 17:14	07:19 16:44	08:08 (TRQ07) 16:48 (TRQ03)
29	06:02 20:38	06:35 19:54	07:08 19:01	06:42 17:12	07:20 16:43	08:08 (TRQ07) 08:09 (TRQ07)
30	06:03 20:37	06:36 19:53	07:09 18:59	06:43 17:11	07:21 16:43	08:01 (TRQ07) 08:11 (TRQ07)
31	06:04 20:35	06:37 19:51	07:09 19:10	06:45 17:10	07:21 16:43	08:09 (TRQ07) 16:50 (TRQ03)
Potential sun hours	463	430	376	344	295	284
Total, worst case				450	17	1200
Sun reduction				0,55	0,46	0,43
Oper. time red.				0,95	0,95	0,95
Wind dir. red.				0,52	0,48	0,61
Total reduction				0,27	0,21	0,25
Total, real				123	4	303

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** F - 14  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	08:06 (TRQ07)	07:28	06:51	17:25 (TRQ01)	06:58
	16:51	29 16:22 (TRQ03)	17:27	18:03	6 17:31 (TRQ01)	06:10
2	07:43	08:06 (TRQ07)	07:27	06:49		20:12
	16:52	30 16:22 (TRQ03)	17:28	18:04		20:43
3	07:43	08:06 (TRQ07)	07:26	06:48	07:07 (TRQ08)	06:55
	16:53	31 16:23 (TRQ03)	17:29	18:05	8 07:15 (TRQ08)	06:08
4	07:43	08:06 (TRQ07)	07:25	06:46	07:05 (TRQ08)	06:53
	16:54	30 16:23 (TRQ03)	17:31	18:06	12 07:17 (TRQ08)	06:06
5	07:43	08:06 (TRQ07)	07:24	06:44	07:04 (TRQ08)	06:51
	16:55	30 16:23 (TRQ03)	17:32	18:07	15 07:19 (TRQ08)	06:05
6	07:43	08:06 (TRQ07)	07:23	06:43	07:02 (TRQ08)	06:50
	16:56	30 16:23 (TRQ03)	17:33	18:09	18 07:20 (TRQ08)	06:04
7	07:43	08:06 (TRQ07)	07:22	06:41	07:00 (TRQ08)	06:48
	16:57	30 16:23 (TRQ03)	17:35	18:10	20 07:20 (TRQ08)	06:03
8	07:43	08:05 (TRQ07)	07:21	06:39	06:59 (TRQ08)	06:46
	16:58	31 16:23 (TRQ03)	17:36	18:11	22 07:21 (TRQ08)	06:19
9	07:43	08:05 (TRQ07)	07:19	06:38	06:57 (TRQ08)	06:44
	16:59	31 16:23 (TRQ03)	17:37	18:12	24 07:21 (TRQ08)	06:20
10	07:43	08:05 (TRQ07)	07:18	06:36	06:55 (TRQ08)	06:41
	17:00	30 16:23 (TRQ03)	17:39	18:13	26 07:21 (TRQ08)	06:59
11	07:42	08:05 (TRQ07)	07:17	06:34	06:53 (TRQ08)	06:41
	17:01	30 16:23 (TRQ03)	17:40	18:15	28 07:21 (TRQ08)	06:58
12	07:42	08:04 (TRQ07)	07:16	06:33	06:53 (TRQ08)	06:39
	17:02	28 16:21 (TRQ03)	17:41	18:16	28 07:21 (TRQ08)	06:59
13	07:42	08:04 (TRQ07)	07:14	06:31	06:53 (TRQ08)	06:38
	17:03	26 16:20 (TRQ03)	17:42	18:17	27 07:20 (TRQ08)	06:51
14	07:41	08:03 (TRQ07)	07:13	06:29	06:53 (TRQ08)	06:36
	17:04	21 16:17 (TRQ03)	17:44	18:18	26 07:19 (TRQ08)	06:55
15	07:41	08:03 (TRQ07)	07:12	06:28	06:54 (TRQ08)	06:35
	17:06	19 08:22 (TRQ07)	17:45	18:19	25 07:19 (TRQ08)	06:53
16	07:40	08:02 (TRQ07)	07:10	06:26	06:54 (TRQ08)	06:33
	17:07	20 08:22 (TRQ07)	17:46	18:20	24 07:18 (TRQ08)	06:54
17	07:40	08:02 (TRQ07)	07:09	06:24	06:55 (TRQ08)	06:31
	17:08	21 08:23 (TRQ07)	17:48	18:22	21 07:16 (TRQ08)	06:51
18	07:39	08:01 (TRQ07)	07:08	06:22	06:56 (TRQ08)	06:30
	17:09	21 08:22 (TRQ07)	17:49	18:23	18 07:14 (TRQ08)	06:50
19	07:39	08:01 (TRQ07)	07:06	06:21	06:59 (TRQ08)	06:28
	17:10	21 08:22 (TRQ07)	17:50	18:24	13 07:12 (TRQ08)	06:50
20	07:38	08:02 (TRQ07)	07:05	06:19	07:03 (TRQ08)	06:27
	17:12	21 08:23 (TRQ07)	17:51	18:25	4 07:07 (TRQ08)	06:59
21	07:38	08:03 (TRQ07)	07:03	06:17	06:25	06:25
	17:13	19 08:22 (TRQ07)	17:53	18:26		05:48
22	07:37	08:03 (TRQ07)	07:02	06:15	20:01	20:34
	17:14	19 08:22 (TRQ07)	17:54	18:27	06:24	20:54
23	07:36	08:04 (TRQ07)	07:00	06:14	20:02	20:34
	17:15	17 08:21 (TRQ07)	17:55	18:28	06:22	20:54
24	07:36	08:06 (TRQ07)	06:59	06:12	20:03	20:35
	17:17	15 08:21 (TRQ07)	17:56	18:30	06:21	20:54
25	07:35	08:08 (TRQ07)	06:57	06:10	20:04	20:36
	17:18	12 08:20 (TRQ07)	17:58	18:31	06:19	20:54
26	07:34	08:09 (TRQ07)	06:56	06:08	20:06	20:37
	17:19	9 08:18 (TRQ07)	17:59	18:32	06:18	20:55
27	07:33		06:54	06:07	20:07	20:38
	17:20		18:00	18:33	06:16	20:54
28	07:32		06:52	06:05	20:08	20:39
	17:22		18:01	18:34	06:15	20:54
29	07:31			07:03	20:09	20:40
	17:23			19:35	06:13	20:41
30	07:30			07:02	20:10	20:41
	17:24			19:36	06:12	20:42
31	07:29			07:00	20:11	20:42
	17:26			19:37		20:42
Potential sun hours	294	295	369		400	452
Total, worst case	621	142	365			457
Sun reduction	0,42	0,46	0,46			
Oper. time red.	0,95	0,95	0,95			
Wind dir. red.	0,60	0,68	0,56			
Total reduction	0,24	0,30	0,24			
Total, real	149	43	89			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** F - 14  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40	06:05	06:38	07:10	07:32 (TRQ08)	06:46
	20:54	20:34	19:49	18:57	28 08:00 (TRQ08)	17:08
2	05:41	06:06	06:39	07:11	07:32 (TRQ08)	06:47
	20:54	20:33	19:48	18:55	27 07:59 (TRQ08)	17:07
3	05:41	06:07	06:40	07:12	07:32 (TRQ08)	06:48
	20:54	20:32	19:46	18:54	27 07:59 (TRQ08)	17:06
4	05:42	06:08	06:41	07:13	07:34 (TRQ08)	06:50
	20:54	20:31	19:44	18:52	25 07:59 (TRQ08)	17:05
5	05:42	06:09	06:42	07:14	07:35 (TRQ08)	06:51
	20:54	20:30	19:43	18:50	23 07:58 (TRQ08)	17:03
6	05:43	06:10	06:43	07:15	07:36 (TRQ08)	06:52
	20:53	20:28	19:41	18:48	21 07:57 (TRQ08)	17:02
7	05:44	06:12	06:44	07:16	07:37 (TRQ08)	06:53
	20:53	20:27	19:39	18:47	19 07:56 (TRQ08)	17:01
8	05:44	06:13	06:45	07:18	07:38 (TRQ08)	06:55
	20:53	20:26	19:38	18:45	17 07:55 (TRQ08)	17:00
9	05:45	06:14	06:46	07:19	07:39 (TRQ08)	06:56
	20:52	20:25	19:36	18:43	14 07:53 (TRQ08)	16:59
10	05:46	06:15	06:47	07:20	07:40 (TRQ08)	06:57
	20:52	20:23	19:34	18:42	10 07:50 (TRQ08)	16:58
11	05:46	06:16	06:48	07:21	07:42 (TRQ08)	06:58
	20:52	20:22	19:32	18:40	5 07:47 (TRQ08)	16:57
12	05:47	06:17	06:50	07:22		07:00
	20:51	20:20	19:31	18:38		16:56
13	05:48	06:18	06:51	07:23	17:57 (TRQ01)	07:01
	20:51	20:19	19:29	18:37	9 18:06 (TRQ01)	16:55
14	05:49	06:19	06:52	07:24	17:54 (TRQ01)	07:02
	20:50	20:18	19:27	18:35	14 18:08 (TRQ01)	16:54
15	05:50	06:20	06:53	07:25	17:52 (TRQ01)	07:03
	20:49	20:16	19:25	18:33	17 18:09 (TRQ01)	16:53
16	05:50	06:21	06:54	07:27	17:52 (TRQ01)	07:05
	20:49	20:15	19:23	18:32	17 18:09 (TRQ01)	16:52
17	05:51	06:22	06:55	07:28	17:51 (TRQ01)	07:06
	20:48	20:13	19:22	18:30	16 18:07 (TRQ01)	16:51
18	05:52	06:23	06:56	07:29	17:50 (TRQ01)	07:07
	20:47	20:12	19:20	18:29	15 18:05 (TRQ01)	16:50
19	05:53	06:24	06:57	07:30	17:49 (TRQ01)	07:08
	20:47	20:10	19:18	18:27	14 18:03 (TRQ01)	16:49
20	05:54	06:25	06:58	07:31	17:50 (TRQ01)	07:10
	20:46	20:09	19:16	18:26	12 18:02 (TRQ01)	16:49
21	05:55	06:26	06:59	07:33	17:50 (TRQ01)	07:11
	20:45	20:07	19:15	18:24	11 18:01 (TRQ01)	16:48
22	05:56	06:27	07:00	07:34	17:50 (TRQ01)	07:12
	20:44	20:06	19:13	18:23	9 17:59 (TRQ01)	16:47
23	05:57	06:28	07:01	07:35	17:50 (TRQ01)	07:13
	20:43	20:04	19:11	18:21	7 17:57 (TRQ01)	16:47
24	05:57	06:29	07:02	07:36	17:52 (TRQ01)	07:14
	20:43	20:03	19:09	18:20	4 17:56 (TRQ01)	16:46
25	05:58	06:31	07:03	07:40 (TRQ08)	16:53 (TRQ01)	07:15
	20:42	20:01	19:08	17:18	1 16:54 (TRQ01)	16:45
26	05:59	06:32	07:04	07:38 (TRQ08)	06:39	07:17
	20:41	19:59	19:06	17:17	16:45	20 08:01 (TRQ07)
27	06:00	06:33	07:05	07:36 (TRQ08)	06:40	07:18
	20:40	19:58	19:04	17:15	16:44	19 08:01 (TRQ07)
28	06:01	06:34	07:07	07:35 (TRQ08)	06:41	07:19
	20:39	19:56	19:02	17:14	16:44	20 15:57 (TRQ03)
29	06:02	06:35	07:08	07:34 (TRQ08)	06:42	07:20
	20:38	19:54	19:01	17:12	16:43	25 16:00 (TRQ03)
30	06:03	06:36	07:09	07:33 (TRQ08)	06:43	07:21
	20:37	19:53	18:59	17:11	16:43	28 07:45 (TRQ07)
31	06:04	06:37		06:45		07:43
	20:35	19:51		17:10		16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case			149	362		867
Sun reduction			0,62	0,55		0,46
Oper. time red.			0,95	0,95		0,95
Wind dir. red.			0,56	0,61		0,71
Total reduction			0,33	0,32		0,29
Total, real			50	115	65	253

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_realShadow receptor: G - 17  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51 31	08:06 (TRQ07)   07:28 16:15 (TRQ03)   17:27	06:51 18:03 16	07:10 (TRQ08)   06:58 07:26 (TRQ08)   19:39	06:10 20:12 20:43	05:40 20:43
2	07:43 16:52 30	08:06 (TRQ07)   07:27 16:15 (TRQ03)   17:28	06:49 18:04 18	07:09 (TRQ08)   06:56 07:27 (TRQ08)   19:40	06:09 20:13 20:44	05:40 20:44
3	07:43 16:53 30	08:06 (TRQ07)   07:26 16:15 (TRQ03)   17:29	06:48 18:05 21	07:07 (TRQ08)   06:55 07:28 (TRQ08)   19:41	06:08 20:15 20:45	05:39 20:45
4	07:43 16:54 29	08:06 (TRQ07)   07:25 16:15 (TRQ03)   17:31	06:46 18:06 23	07:05 (TRQ08)   06:53 07:28 (TRQ08)   19:42	06:06 20:16 20:46	05:39 20:46
5	07:43 16:55 29	08:06 (TRQ07)   07:24 16:15 (TRQ03)   17:32	06:44 18:07 25	07:04 (TRQ08)   06:51 07:29 (TRQ08)   19:43	06:05 20:17 20:46	05:38 20:46
6	07:43 16:56 27	08:06 (TRQ07)   07:23 16:14 (TRQ03)   17:33	06:43 18:09 27	07:02 (TRQ08)   06:50 07:29 (TRQ08)   19:44	06:04 20:18 20:47	05:38 20:47
7	07:43 16:57 26	08:06 (TRQ07)   07:22 16:14 (TRQ03)   17:35	06:41 18:10 28	07:00 (TRQ08)   06:48 07:28 (TRQ08)   19:45	06:03 20:19 20:48	05:38 20:48
8	07:43 16:58 22	08:05 (TRQ07)   07:21 16:11 (TRQ03)   17:36	06:39 18:11 28	07:01 (TRQ08)   06:46 07:29 (TRQ08)   19:46	06:01 20:20 20:48	05:37 20:48
9	07:43 16:59 19	08:05 (TRQ07)   07:19 08:24 (TRQ07)   17:37	06:38 18:12 27	07:01 (TRQ08)   06:44 07:28 (TRQ08)   19:48	06:00 20:21 20:49	05:37 20:49
10	07:43 17:00 20	08:05 (TRQ07)   07:18 08:25 (TRQ07)   17:39	06:36 18:13 27	07:00 (TRQ08)   06:43 07:27 (TRQ08)   19:49	05:59 20:22 20:49	05:37 20:49
11	07:42 17:01 20	08:05 (TRQ07)   07:17 08:25 (TRQ07)   17:40	06:34 18:15 25	07:01 (TRQ08)   06:41 07:26 (TRQ08)   19:50	05:58 20:23 20:50	05:37 20:50
12	07:42 17:02 21	08:04 (TRQ07)   07:16 08:25 (TRQ07)   17:41	06:33 18:16 23	07:02 (TRQ08)   06:39 07:25 (TRQ08)   19:51	05:57 20:24 20:51	05:37 20:51
13	07:42 17:03 22	08:04 (TRQ07)   07:14 08:26 (TRQ07)   17:42	06:31 18:17 20	07:03 (TRQ08)   06:38 07:23 (TRQ08)   19:52	05:56 20:25 20:51	05:37 20:51
14	07:41 17:04 21	08:04 (TRQ07)   07:13 08:25 (TRQ07)   17:44	06:29 18:18 17	07:04 (TRQ08)   06:36 07:21 (TRQ08)   19:53	05:55 20:26 20:52	05:36 20:52
15	07:41 17:06 21	08:05 (TRQ07)   07:12 08:26 (TRQ07)   17:45	06:28 18:19 13	07:06 (TRQ08)   06:35 07:19 (TRQ08)   19:54	05:53 20:27 20:52	05:36 20:52
16	07:40 17:07 19	08:06 (TRQ07)   07:10 08:25 (TRQ07)   17:46	06:26 18:20 7	07:16 (TRQ01)   06:24 17:23 (TRQ01)   18:20	06:33 19:55 20:29	05:36 20:52
17	07:40 17:08 19	08:07 (TRQ07)   07:09 08:26 (TRQ07)   17:48	06:24 18:22 9	17:16 (TRQ01)   06:24 17:25 (TRQ01)   18:22	06:31 19:57 20:30	05:36 20:53
18	07:39 17:09 17	08:08 (TRQ07)   07:08 08:25 (TRQ07)   17:49	06:22 18:23 11	17:15 (TRQ01)   06:22 17:26 (TRQ01)   18:23	06:30 19:58 20:31	05:37 20:53
19	07:39 17:10 16	08:08 (TRQ07)   07:06 08:24 (TRQ07)   17:50	06:21 18:24 13	17:15 (TRQ01)   06:21 17:28 (TRQ01)   18:24	06:28 19:59 20:32	05:37 20:53
20	07:38 17:12 14	08:10 (TRQ07)   07:05 08:24 (TRQ07)   17:51	06:19 18:25 14	17:15 (TRQ01)   06:19 17:29 (TRQ01)   18:25	06:27 20:00 20:33	05:37 20:54
21	07:38 17:13 11	08:12 (TRQ07)   07:03 08:23 (TRQ07)   17:53	06:17 18:26 15	17:15 (TRQ01)   06:17 17:30 (TRQ01)   18:26	06:25 20:01 20:34	05:37 20:54
22	07:37 17:14 7	08:14 (TRQ07)   07:02 08:21 (TRQ07)   17:54	06:15 18:27 16	17:15 (TRQ01)   06:15 17:31 (TRQ01)   18:27	06:24 20:02 20:34	05:37 20:54
23	07:36 17:15 17	07:00 17:55 17	06:14 18:28 17	17:16 (TRQ01)   06:14 17:33 (TRQ01)   18:28	06:22 20:03 20:35	05:37 20:54
24	07:36 17:17 15	06:59 17:56 15	06:12 18:30 15	17:17 (TRQ01)   06:12 17:32 (TRQ01)   18:30	06:21 20:04 20:36	05:38 20:54
25	07:35 17:18 18	06:57 17:58 12	06:10 18:31 12	17:19 (TRQ01)   06:10 17:31 (TRQ01)   18:31	06:19 20:06 20:37	05:38 20:55
26	07:34 17:19 17	06:56 17:59 7	06:08 18:32 7	17:21 (TRQ01)   06:08 17:28 (TRQ01)   18:32	06:18 20:07 20:38	05:38 20:55
27	07:33 17:20 18	06:54 18:00 9	06:07 18:33 9	07:13 (TRQ08)   06:07 07:22 (TRQ08)   18:33	06:16 20:08 20:39	05:39 20:55
28	07:32 17:22 13	06:52 18:01 13	06:05 18:34 13	07:12 (TRQ08)   06:05 07:25 (TRQ08)   18:34	06:15 20:09 20:40	05:39 20:55
29	07:31 17:23 30		07:03 19:35 30	07:03   07:03 19:35   19:35	06:13 20:10 20:41	05:39 20:55
30	07:30 17:24 31		07:02 19:36 31	07:02   07:02 19:36   19:36	06:12 20:11 20:42	05:40 20:55
31	07:29 17:26		07:00 19:37	07:00   07:00 19:37   19:37	06:11 20:12 20:42	05:40 20:55
Potential sun hours	294	295	369	400	452	457
Total, worst case	471	166	338			
Sun reduction	0,42	0,46	0,46			
Oper. time red.	0,95	0,95	0,95			
Wind dir. red.	0,55	0,67	0,54			
Total reduction	0,22	0,29	0,24			
Total, real	103	49	80			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: G - 17  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	07:41 (TRQ08) 17:08	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	07:39 (TRQ08) 17:07	07:23 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	07:38 (TRQ08) 17:06	07:24 16:42
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	07:38 (TRQ08) 17:05	07:25 16:42
5	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	07:38 (TRQ08) 17:03	07:26 16:42
6	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	07:37 (TRQ08) 17:02	07:27 16:41
7	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	07:37 (TRQ08) 17:01	07:28 16:41
8	05:44 20:53	06:13 20:26	06:45 19:38	07:18 18:45	07:38 (TRQ08) 17:00	07:29 16:41
9	05:45 20:52	06:14 20:25	06:46 19:36	07:19 18:43	07:39 (TRQ08) 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	07:40 (TRQ08) 16:58	07:31 16:41
11	05:46 20:52	06:16 20:22	06:48 19:32	07:21 18:40	07:42 (TRQ08) 16:57	07:32 16:41
12	05:47 20:51	06:17 20:20	06:50 19:31	07:22 18:38	07:43 (TRQ08) 16:56	07:33 16:41
13	05:48 20:51	06:18 20:19	06:51 19:29	07:23 18:37	07:44 (TRQ08) 16:55	07:34 16:41
14	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:45 (TRQ08) 16:54	07:35 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	07:25 18:33	07:46 (TRQ08) 16:53	07:36 16:42
16	05:50 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:53 (TRQ08) 16:52	07:37 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	17:50 (TRQ01) 16:51	07:38 16:42
18	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	17:48 (TRQ01) 16:50	07:39 16:43
19	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	17:46 (TRQ01) 16:49	07:40 16:43
20	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	17:46 (TRQ01) 16:49	07:41 16:43
21	05:55 20:45	06:26 20:07	06:59 19:15	07:33 18:24	17:46 (TRQ01) 16:48	07:42 16:44
22	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	17:45 (TRQ01) 16:47	07:43 16:44
23	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	17:45 (TRQ01) 16:47	07:44 16:45
24	05:57 20:43	06:29 20:03	07:02 19:09	07:36 18:20	17:46 (TRQ01) 16:46	07:45 16:45
25	05:58 20:42	06:31 20:01	07:03 19:08	06:37 17:18	16:46 (TRQ01) 16:45	07:46 16:46
26	05:59 20:41	06:32 19:59	07:04 19:06	06:39 17:17	16:46 (TRQ01) 16:45	07:47 16:47
27	06:00 20:40	06:33 19:58	07:05 19:04	06:40 17:15	16:46 (TRQ01) 16:44	07:48 16:47
28	06:01 20:39	06:34 19:56	07:07 19:02	06:41 07:48 (TRQ08)	16:48 (TRQ01) 17:19	07:49 16:48
29	06:02 20:38	06:35 19:54	07:08 19:01	06:42 08:01 (TRQ08)	16:50 (TRQ01) 17:12	07:50 16:49
30	06:03 20:37	06:36 19:53	07:09 18:59	06:43 08:02 (TRQ08)	16:43 17:11	07:51 16:49
31	06:04 20:35	06:37 19:51		06:45 17:10		07:52 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case			45	469	188	912
Sun reduction			0,62	0,55	0,46	0,43
Oper. time red.			0,95	0,95	0,95	0,95
Wind dir. red.			0,54	0,59	0,49	0,64
Total reduction			0,32	0,31	0,21	0,26
Total, real			15	144	40	239

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_real **Shadow receptor:** H - 20  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June			
1	07:43	08:06 (TRQ07)	07:28	06:51	07:10 (TRQ08)	06:58	06:10	05:40	
	16:51	37 16:16 (TRQ03)	17:27	18:03	25 07:35 (TRQ08)	19:39	20:12	20:43	
2	07:43	08:06 (TRQ07)	07:27	06:49	07:09 (TRQ08)	06:56	06:09	05:40	
	16:52	37 16:16 (TRQ03)	17:28	18:04	27 07:36 (TRQ08)	19:40	20:13	20:44	
3	07:43	08:06 (TRQ07)	07:26	06:48	07:07 (TRQ08)	06:55	06:08	05:39	
	16:53	35 16:16 (TRQ03)	17:29	18:05	29 07:36 (TRQ08)	19:41	20:15	20:45	
4	07:43	08:06 (TRQ07)	07:25	06:46	07:06 (TRQ08)	06:53	06:06	05:39	
	16:54	34 16:15 (TRQ03)	17:31	18:06	29 07:35 (TRQ08)	19:42	20:16	20:46	
5	07:43	08:07 (TRQ07)	07:24	06:44	07:07 (TRQ08)	06:51	06:05	05:38	
	16:55	32 16:15 (TRQ03)	17:32	18:07	28 07:35 (TRQ08)	19:43	20:17	20:46	
6	07:43	08:07 (TRQ07)	07:23	06:43	07:07 (TRQ08)	06:50	06:04	05:38	
	16:56	31 16:15 (TRQ03)	17:33	18:09	28 07:35 (TRQ08)	19:44	20:18	20:47	
7	07:43	08:08 (TRQ07)	07:22	06:41	07:07 (TRQ08)	06:48	06:03	05:38	
	16:57	27 16:14 (TRQ03)	17:35	18:10	27 07:34 (TRQ08)	19:45	20:19	20:48	
8	07:43	08:08 (TRQ07)	07:21	06:39	07:08 (TRQ08)	06:46	06:01	05:37	
	16:58	21 08:29 (TRQ07)	17:36	18:11	25 07:33 (TRQ08)	19:46	20:20	20:48	
9	07:43	08:09 (TRQ07)	07:19	06:38	07:08 (TRQ08)	06:44	06:00	05:37	
	16:59	20 08:29 (TRQ07)	17:37	18:12	24 07:32 (TRQ08)	19:48	20:21	20:49	
10	07:43	08:10 (TRQ07)	07:18	06:36	07:09 (TRQ08)	06:43	05:59	05:37	
	17:00	19 08:29 (TRQ07)	17:39	18:13	21 07:30 (TRQ08)	19:49	20:22	20:49	
11	07:42	08:11 (TRQ07)	07:17	06:34	07:10 (TRQ08)	06:41	05:58	05:37	
	17:01	19 08:30 (TRQ07)	17:40	18:15	18 07:28 (TRQ08)	19:50	20:23	20:50	
12	07:42	08:11 (TRQ07)	07:16	06:33	07:13 (TRQ08)	06:39	05:57	05:37	
	17:02	18 08:29 (TRQ07)	17:41	18:16	13 07:26 (TRQ08)	19:51	20:24	20:51	
13	07:42	08:13 (TRQ07)	07:14	06:31	07:18 (TRQ08)	06:38	05:56	05:37	
	17:03	16 08:29 (TRQ07)	17:42	2 17:19 (TRQ01)	18:17	1 07:19 (TRQ08)	19:52	20:25	20:51
14	07:41	08:13 (TRQ07)	07:13	06:29	17:16 (TRQ01)	06:36	05:55	05:36	
	17:04	15 08:28 (TRQ07)	17:44	5 17:21 (TRQ01)	18:18	19:53	20:26	20:51	
15	07:41	08:15 (TRQ07)	07:12	06:28	17:16 (TRQ01)	06:35	05:53	05:36	
	17:06	13 08:28 (TRQ07)	17:45	7 17:23 (TRQ01)	18:19	19:54	20:27	20:52	
16	07:40	08:16 (TRQ07)	07:10	06:26	17:15 (TRQ01)	06:33	05:52	05:36	
	17:07	11 08:27 (TRQ07)	17:46	8 17:23 (TRQ01)	18:20	19:55	20:29	20:52	
17	07:40	08:19 (TRQ07)	07:09	06:24	17:15 (TRQ01)	06:31	05:51	05:36	
	17:08	7 08:26 (TRQ07)	17:48	10 17:25 (TRQ01)	18:22	19:57	20:30	20:53	
18	07:39	07:08	17:14 (TRQ01)	06:22	06:30	05:50	05:37		
	17:09	17:49	12 17:26 (TRQ01)	18:23	19:58	20:31	20:53		
19	07:39	07:06	17:14 (TRQ01)	06:21	06:28	05:50	05:37		
	17:10	17:50	14 17:28 (TRQ01)	18:24	19:59	20:32	20:53		
20	07:38	07:05	17:14 (TRQ01)	06:19	06:27	05:49	05:37		
	17:12	17:51	15 17:29 (TRQ01)	18:25	20:00	20:33	20:54		
21	07:38	07:03	17:15 (TRQ01)	06:17	06:25	05:48	05:37		
	17:13	17:53	15 17:30 (TRQ01)	18:26	20:01	20:34	20:54		
22	07:37	07:02	17:15 (TRQ01)	06:15	06:24	05:47	05:37		
	17:14	17:54	16 17:31 (TRQ01)	18:27	20:02	20:34	20:54		
23	07:36	07:00	07:20 (TRQ08)	06:14	06:22	05:46	05:37		
	17:15	17:55	22 17:31 (TRQ01)	18:28	20:03	20:35	20:54		
24	07:36	06:59	07:18 (TRQ08)	06:12	06:21	05:45	05:38		
	17:17	17:56	23 17:29 (TRQ01)	18:30	20:04	20:36	20:54		
25	07:35	06:57	07:17 (TRQ08)	06:10	06:19	05:45	05:38		
	17:18	17:58	18 17:25 (TRQ01)	18:31	20:06	20:37	20:55		
26	07:34	06:56	07:15 (TRQ08)	06:08	06:18	05:44	05:38		
	17:19	17:59	18 07:33 (TRQ08)	18:32	20:07	20:38	20:55		
27	07:33	06:54	07:13 (TRQ08)	06:07	06:16	05:43	05:39		
	17:20	18:00	21 07:34 (TRQ08)	18:33	20:08	20:39	20:55		
28	07:32	06:52	07:12 (TRQ08)	06:05	06:15	05:42	05:39		
	17:22	18:01	23 07:35 (TRQ08)	18:34	20:09	20:40	20:55		
29	07:31		07:03	06:03	06:13	05:42	05:39		
	17:23		19:35	06:10	20:10	20:41	20:55		
30	07:30		07:02	06:02	06:12	05:41	05:40		
	17:24		19:36	20:11	20:11	20:42	20:55		
31	07:29		07:00	06:00		05:41			
	17:26		19:37			20:42			
Potential sun hours	294	295	369	400	452	457			
Total, worst case	392	229	295						
Sun reduction	0,42	0,46	0,46						
Oper. time red.	0,95	0,95	0,95						
Wind dir. red.	0,55	0,62	0,53						
Total reduction	0,22	0,27	0,23						
Total, real	85	63	68						

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: H - 20  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40	06:05	06:38	07:10	07:53 (TRQ08)	06:46
	20:54	20:34	19:49	18:57	10 08:03 (TRQ08)	17:08
2	05:41	06:06	06:39	07:11	07:49 (TRQ08)	06:47
	20:54	20:33	19:48	18:55	16 08:05 (TRQ08)	17:07
3	05:41	06:07	06:40	07:12	07:47 (TRQ08)	06:48
	20:54	20:32	19:46	18:54	20 08:07 (TRQ08)	17:06
4	05:42	06:08	06:41	07:13	07:46 (TRQ08)	06:50
	20:54	20:31	19:44	18:52	23 08:09 (TRQ08)	17:05
5	05:42	06:09	06:42	07:14	07:45 (TRQ08)	06:51
	20:54	20:30	19:43	18:50	25 08:10 (TRQ08)	17:03
6	05:43	06:10	06:43	07:15	07:44 (TRQ08)	06:52
	20:53	20:28	19:41	18:48	26 08:10 (TRQ08)	17:02
7	05:44	06:12	06:44	07:16	07:43 (TRQ08)	06:53
	20:53	20:27	19:39	18:47	27 08:10 (TRQ08)	17:01
8	05:44	06:13	06:45	07:18	07:42 (TRQ08)	06:55
	20:53	20:26	19:38	18:45	28 08:10 (TRQ08)	17:00
9	05:45	06:14	06:46	07:19	07:41 (TRQ08)	06:56
	20:52	20:25	19:36	18:43	29 08:10 (TRQ08)	16:59
10	05:46	06:15	06:47	07:20	07:41 (TRQ08)	06:57
	20:52	20:23	19:34	18:42	29 08:10 (TRQ08)	16:58
11	05:46	06:16	06:48	07:21	07:42 (TRQ08)	06:58
	20:52	20:22	19:32	18:40	28 08:10 (TRQ08)	16:57
12	05:47	06:17	06:49	07:22	07:43 (TRQ08)	07:00
	20:51	20:20	19:31	18:38	26 08:09 (TRQ08)	16:56
13	05:48	06:18	06:51	07:23	07:44 (TRQ08)	07:01
	20:51	20:19	19:29	18:37	24 08:08 (TRQ08)	16:55
14	05:49	06:19	06:52	07:24	07:45 (TRQ08)	07:02
	20:50	20:18	19:27	18:35	22 08:07 (TRQ08)	16:54
15	05:50	06:20	06:53	07:25	07:46 (TRQ08)	07:03
	20:49	20:16	19:25	18:33	20 08:06 (TRQ08)	16:53
16	05:50	06:21	06:54	07:27	07:48 (TRQ08)	07:05
	20:49	20:15	19:23	18:32	17 08:05 (TRQ08)	16:52
17	05:51	06:22	06:55	07:28	07:49 (TRQ08)	07:06
	20:48	20:13	19:22	18:30	22 17:59 (TRQ01)	16:51
18	05:52	06:23	06:56	07:29	07:50 (TRQ08)	07:07
	20:47	20:12	19:20	18:29	23 18:01 (TRQ01)	16:50
19	05:53	06:24	06:57	07:30	07:51 (TRQ08)	07:08
	20:47	20:10	19:18	18:27	21 18:02 (TRQ01)	16:49
20	05:54	06:25	06:58	07:31	17:47 (TRQ01)	07:10
	20:46	20:09	19:16	18:26	15 18:02 (TRQ01)	16:49
21	05:55	06:26	06:59	07:33	17:45 (TRQ01)	07:11
	20:45	20:07	19:15	18:24	16 18:01 (TRQ01)	16:48
22	05:56	06:27	07:00	07:34	17:45 (TRQ01)	07:12
	20:44	20:06	19:13	18:23	14 17:59 (TRQ01)	16:47
23	05:57	06:28	07:01	07:35	17:44 (TRQ01)	07:13
	20:43	20:04	19:11	18:21	13 17:57 (TRQ01)	16:47
24	05:57	06:29	07:02	07:36	17:44 (TRQ01)	07:14
	20:43	20:03	19:09	18:20	12 17:56 (TRQ01)	16:46
25	05:58	06:31	07:03	06:37	16:44 (TRQ01)	07:15
	20:42	20:01	19:08	17:18	10 16:54 (TRQ01)	16:45
26	05:59	06:32	07:04	06:39	16:44 (TRQ01)	07:17
	20:41	19:59	19:06	17:17	9 16:53 (TRQ01)	16:45
27	06:00	06:33	07:05	06:40	16:45 (TRQ01)	07:18
	20:40	19:58	19:04	17:15	6 16:51 (TRQ01)	16:44
28	06:01	06:34	07:07	06:41	16:46 (TRQ01)	07:19
	20:39	19:56	19:02	17:14	4 16:50 (TRQ01)	16:44
29	06:02	06:35	07:08	06:42	16:47 (TRQ01)	07:20
	20:38	19:54	19:01	17:12	1 16:48 (TRQ01)	16:43
30	06:03	06:36	07:09	06:43		07:21
	20:37	19:53	18:59	17:11		16:43
31	06:04	06:37		06:45		
	20:35	19:51		17:10		
Potential sun hours	463	430	376	344	295	284
Total, worst case				536		1060
Sun reduction				0,55	80	0,43
Oper. time red.				0,95	0,46	0,95
Wind dir. red.				0,57	0,95	0,60
Total reduction				0,30	0,21	0,25
Total, real				159	17	262

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_real**Shadow receptor:** I - 28  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51	07:28 17:27	07:49 (TRQ06) 08:17 (TRQ06)	06:51 18:03	07:32 (TRQ05) 08:42 (TRQ05)	06:58 19:39
2	07:43 16:52	07:27 17:28	07:48 (TRQ06) 08:17 (TRQ06)	06:49 18:04	07:32 (TRQ05) 08:43 (TRQ05)	06:56 19:40
3	07:43 16:53	07:26 17:29	07:47 (TRQ06) 08:18 (TRQ06)	06:48 18:05	07:32 (TRQ05) 08:42 (TRQ05)	06:55 19:41
4	07:43 16:54	07:25 17:31	07:47 (TRQ06) 08:18 (TRQ06)	06:46 18:06	07:31 (TRQ05) 08:41 (TRQ05)	06:53 19:42
5	07:43 16:55	07:24 17:32	07:47 (TRQ06) 08:18 (TRQ06)	06:44 18:07	07:32 (TRQ05) 08:42 (TRQ05)	06:51 19:43
6	07:43 16:56	07:23 17:33	07:47 (TRQ06) 08:17 (TRQ06)	06:43 18:09	07:32 (TRQ05) 08:41 (TRQ05)	06:50 19:44
7	07:43 16:57	07:22 17:35	07:47 (TRQ06) 08:18 (TRQ06)	06:41 18:10	07:31 (TRQ05) 08:40 (TRQ05)	06:48 19:45
8	07:43 16:58	07:21 17:36	07:48 (TRQ06) 08:22 (TRQ05)	06:39 18:11	07:32 (TRQ05) 08:40 (TRQ05)	06:46 19:47
9	07:43 16:59	07:19 17:37	07:49 (TRQ06) 08:25 (TRQ05)	06:38 18:12	07:32 (TRQ05) 08:39 (TRQ05)	06:45 19:48
10	07:43 17:00	07:18 17:39	07:49 (TRQ06) 08:27 (TRQ05)	06:36 18:13	07:32 (TRQ05) 08:37 (TRQ05)	06:43 19:49
11	07:42 17:01	07:17 17:40	07:49 (TRQ05) 08:29 (TRQ05)	06:34 18:15	07:32 (TRQ05) 08:36 (TRQ05)	06:41 19:50
12	07:42 17:02	07:16 17:41	07:47 (TRQ05) 08:31 (TRQ05)	06:33 18:16	07:33 (TRQ05) 08:36 (TRQ05)	06:40 19:51
13	07:42 17:03	07:14 17:43	07:45 (TRQ05) 08:32 (TRQ05)	06:31 18:17	07:33 (TRQ05) 08:34 (TRQ05)	06:38 19:52
14	07:41 17:05	07:13 17:44	07:44 (TRQ05) 08:34 (TRQ05)	06:29 18:18	07:33 (TRQ05) 08:33 (TRQ05)	06:36 19:53
15	07:41 17:06	07:12 17:45	07:43 (TRQ05) 08:36 (TRQ05)	06:28 18:19	07:35 (TRQ05) 08:32 (TRQ05)	06:35 19:54
16	07:40 17:07	07:10 17:46	07:41 (TRQ05) 08:37 (TRQ05)	06:26 18:20	07:35 (TRQ05) 08:30 (TRQ05)	06:33 19:56
17	07:40 17:08	07:09 17:48	07:41 (TRQ05) 08:38 (TRQ05)	06:24 18:22	07:36 (TRQ05) 08:28 (TRQ05)	06:31 19:57
18	07:39 17:09	07:08 17:49	07:39 (TRQ05) 08:38 (TRQ05)	06:22 18:23	07:37 (TRQ05) 08:26 (TRQ05)	06:30 19:58
19	07:39 17:10	07:06 17:50	07:39 (TRQ05) 08:40 (TRQ05)	06:21 18:24	07:39 (TRQ05) 08:25 (TRQ05)	06:28 19:59
20	07:38 17:12	07:05 17:51	07:37 (TRQ05) 08:40 (TRQ05)	06:19 18:25	07:40 (TRQ05) 08:22 (TRQ05)	06:27 20:00
21	07:38 17:13	07:03 17:53	07:37 (TRQ05) 08:41 (TRQ05)	06:17 18:26	07:41 (TRQ05) 08:20 (TRQ05)	06:25 20:01
22	07:37 17:14	07:02 08:01 (TRQ06)	07:36 (TRQ05) 08:41 (TRQ05)	06:15 18:27	07:43 (TRQ05) 08:17 (TRQ05)	06:24 20:02
23	07:36 17:15	07:00 08:05 (TRQ06)	07:35 (TRQ05) 08:42 (TRQ05)	06:14 18:28	07:46 (TRQ05) 08:14 (TRQ05)	06:22 20:03
24	07:36 17:17	06:59 08:08 (TRQ06)	07:34 (TRQ05) 08:42 (TRQ05)	06:12 18:30	07:49 (TRQ05) 08:09 (TRQ05)	06:21 20:04
25	07:35 17:18	06:57 08:10 (TRQ06)	07:34 (TRQ05) 08:43 (TRQ05)	06:10 18:31	07:57 (TRQ05) 08:00 (TRQ05)	06:19 20:06
26	07:34 17:19	06:56 08:11 (TRQ06)	07:33 (TRQ05) 08:42 (TRQ05)	06:09 18:32	06:18 20:07	06:18 20:07
27	07:33 17:20	06:54 08:12 (TRQ06)	07:33 (TRQ05) 08:42 (TRQ05)	06:07 18:33	06:16 20:08	06:16 20:08
28	07:32 17:22	06:52 08:13 (TRQ06)	07:33 (TRQ05) 08:43 (TRQ05)	06:05 18:34	06:15 20:09	06:15 20:09
29	07:31 17:23	06:51 08:14 (TRQ06)	07:03 19:35	06:13	06:13	06:13
30	07:30 17:24	06:50 08:15 (TRQ06)	07:02 19:36	06:12	07:20 (TRQ02) 07:33 (TRQ02)	06:12 20:11
31	07:29 17:26	06:49 08:16 (TRQ06)	07:00 19:38	06:11	07:19 (TRQ02) 07:36 (TRQ02)	06:11 20:11
Potential sun hours	294	295	369	400	452	457
Total, worst case	162	1390	1392	520		
Sun reduction	0,42	0,46	0,46	0,49		
Oper. time red.	0,95	0,95	0,95	0,95		
Wind dir. red.	0,51	0,51	0,51	0,63		
Total reduction	0,20	0,22	0,22	0,29		
Total, real	33	310	310	153		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** I - 28  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December	
1	05:40 20:54	06:05 20:34	06:38 19:49	07:06 (TRQ02) 07:38 (TRQ02)	07:10 18:57	08:12 (TRQ05) 17:09	07:18 (TRQ06) 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:05 (TRQ02) 07:38 (TRQ02)	07:11 18:55	08:11 (TRQ05) 17:07	07:17 (TRQ06) 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	07:05 (TRQ02) 07:37 (TRQ02)	07:12 18:54	08:11 (TRQ05) 17:06	07:18 (TRQ06) 16:42
4	05:42 20:54	06:08 20:31	06:41 19:44	07:04 (TRQ02) 07:37 (TRQ02)	07:13 18:52	08:10 (TRQ05) 17:05	07:17 (TRQ06) 16:42
5	05:43 20:54	06:09 20:30	06:42 19:43	07:04 (TRQ02) 07:37 (TRQ02)	07:14 18:50	08:09 (TRQ05) 17:04	07:17 (TRQ06) 16:42
6	05:43 20:53	06:11 20:28	06:43 19:41	07:04 (TRQ02) 07:36 (TRQ02)	07:15 18:48	08:08 (TRQ05) 17:02	07:17 (TRQ06) 16:42
7	05:44 20:53	06:12 20:27	06:44 19:39	07:05 (TRQ02) 07:35 (TRQ02)	07:16 18:47	08:07 (TRQ05) 17:01	07:17 (TRQ06) 16:41
8	05:44 20:53	06:13 20:26	06:45 19:38	07:06 (TRQ02) 07:34 (TRQ02)	07:18 18:45	08:07 (TRQ05) 17:00	07:17 (TRQ06) 16:41
9	05:45 20:52	06:14 20:25	06:46 19:36	07:07 (TRQ02) 07:33 (TRQ02)	07:19 18:43	08:06 (TRQ05) 16:59	07:19 (TRQ06) 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	07:08 (TRQ02) 07:32 (TRQ02)	07:20 18:42	08:06 (TRQ05) 16:58	07:20 (TRQ06) 16:41
11	05:47 20:52	06:16 20:22	06:48 19:32	07:09 (TRQ02) 07:30 (TRQ02)	07:21 18:40	08:06 (TRQ05) 16:57	07:21 (TRQ06) 16:41
12	05:47 20:51	06:17 20:21	06:50 19:31	07:10 (TRQ02) 07:27 (TRQ02)	07:22 18:38	08:06 (TRQ05) 16:56	07:23 (TRQ06) 16:41
13	05:48 20:51	06:18 20:19	06:51 19:29	07:11 (TRQ02) 07:24 (TRQ02)	07:23 18:37	08:06 (TRQ05) 16:55	07:24 (TRQ06) 16:42
14	05:49 20:50	06:19 20:18	06:52 19:27	07:16 (TRQ02) 07:18 (TRQ02)	07:24 18:35	08:05 (TRQ05) 16:54	07:25 (TRQ06) 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	07:18 (TRQ02) 07:25	07:26 18:34	08:05 (TRQ05) 16:53	07:27 (TRQ06) 16:42
16	05:50 20:49	06:21 20:15	06:54 19:24	07:27	07:27 18:32	08:06 (TRQ05) 16:52	07:28 (TRQ06) 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	07:28	07:28 18:30	08:06 (TRQ05) 16:51	07:29 (TRQ06) 16:42
18	05:52 20:47	06:23 20:12	06:56 19:20	07:29	07:29 18:29	08:06 (TRQ05) 16:50	07:31 (TRQ06) 16:43
19	05:53 20:47	06:24 20:10	06:57 19:18	08:38 (TRQ05) 08:55 (TRQ05)	07:30 18:27	08:06 (TRQ05) 16:49	07:32 (TRQ06) 16:43
20	05:54 20:46	06:25 20:09	06:58 19:16	08:33 (TRQ05) 08:59 (TRQ05)	07:31 18:26	08:07 (TRQ05) 16:49	07:33 (TRQ06) 16:44
21	05:55 20:45	06:26 20:07	06:59 19:15	08:30 (TRQ05) 09:02 (TRQ05)	07:33 18:24	08:08 (TRQ05) 16:48	07:36 (TRQ06) 16:44
22	05:56 20:44	06:27 20:06	07:00 19:13	08:27 (TRQ05) 09:04 (TRQ05)	07:34 18:23	08:08 (TRQ05) 16:47	07:40 16:44
23	05:57 20:43	06:28 20:04	07:01 19:11	08:25 (TRQ05) 09:06 (TRQ05)	07:35 18:21	08:08 (TRQ05) 16:47	07:40 16:45
24	05:58 20:43	06:30 20:03	07:02 19:09	07:17 (TRQ02) 07:31 (TRQ02)	07:36 18:20	08:10 (TRQ05) 16:46	07:41 16:46
25	05:59 20:42	06:31 20:01	07:03 19:08	07:14 (TRQ02) 07:33 (TRQ02)	06:37 17:18	07:11 (TRQ05) 16:45	07:41 16:46
26	05:59 20:41	06:32 19:59	07:04 19:06	07:12 (TRQ02) 07:35 (TRQ02)	06:39 17:17	07:11 (TRQ05) 16:45	07:41 16:47
27	06:00 20:40	06:33 19:58	07:05 19:04	07:11 (TRQ02) 07:36 (TRQ02)	06:40 17:15	07:12 (TRQ05) 16:44	07:42 16:47
28	06:01 20:39	06:34 19:56	07:07 19:02	07:09 (TRQ02) 07:36 (TRQ02)	06:41 17:14	07:14 (TRQ05) 16:44	07:42 16:48
29	06:02 20:38	06:35 19:54	07:08 19:01	07:08 (TRQ02) 07:37 (TRQ02)	06:42 17:13	07:15 (TRQ05) 16:43	07:42 16:49
30	06:03 20:37	06:36 19:53	07:09 18:59	07:07 (TRQ02) 07:37 (TRQ02)	06:43 17:11	07:17 (TRQ05) 16:43	07:43 16:50
31	06:04 20:35	06:37 19:51	07:06 07:38 (TRQ02)	07:06 (TRQ02)	06:45 17:10	07:19 (TRQ05) 07:59 (TRQ05)	07:43 16:50
Potential sun hours	463	430	376	344	295	284	
Total, worst case		205	882	1941	477		
Sun reduction		0,70	0,62	0,55	0,46		
Oper. time red.		0,95	0,95	0,95	0,95		
Wind dir. red.		0,63	0,56	0,51	0,51		
Total reduction		0,42	0,33	0,26	0,22		
Total, real		86	291	514	104		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: J - 29
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

Table with 12 columns: N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum. Values range from 1.218 to 8.309.

Main shadow calculation table with columns for months (January to June) and rows for each day (1-31) showing sun rise/set times, shadow reduction, and operational time.

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise/set times, Minutes with flicker, First/Last time with flicker (WTG causing flicker).

Project:

Tarquinia1

Licensed user:

MONTANA SPA
VIA ANGELO CARLO FUMAGALLI 6
IT-20143 MILANO
0254118173

Andrea / fronteddu@montanambiente.com

Calculated:

06/08/2022 14:40/3.5.584

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: J - 29
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (July, August, September, October, November, December) and rows for each day from 05:40 to 06:04. Includes summary rows for 'Potential sun hours' and various reduction factors like 'Sun reduction', 'Oper. time red.', etc.

Table layout: For each day in each month the following matrix apply

Matrix table with columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)



## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** K - 30  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:54 44	19:41 (TRQ03) 20:25 (TRQ03) 20:34	06:05 20:34	06:38 19:49	07:10 (TRQ02) 18:57	07:10 08:31 (TRQ05)
2	05:41 20:54 43	19:41 (TRQ03) 20:24 (TRQ03) 20:33	06:06 20:33	06:39 19:48	07:09 (TRQ02) 18:55	07:11 09:23 (TRQ05)
3	05:41 20:54 43	19:42 (TRQ03) 20:25 (TRQ03) 20:32	06:07 20:32	06:40 19:46	07:09 (TRQ02) 18:54	07:12 08:29 (TRQ05)
4	05:42 20:54 42	19:42 (TRQ03) 20:24 (TRQ03) 20:31	06:08 20:31	06:41 19:44	07:08 (TRQ02) 18:52	07:13 08:27 (TRQ05)
5	05:43 20:54 41	19:43 (TRQ03) 20:24 (TRQ03) 20:30	06:09 20:30	06:42 19:43	07:07 (TRQ02) 18:50	07:14 08:26 (TRQ05)
6	05:43 20:53 40	19:43 (TRQ03) 20:23 (TRQ03) 20:28	06:11 20:28	06:43 19:41	07:07 (TRQ02) 18:48	07:15 09:27 (TRQ05)
7	05:44 20:53 39	19:44 (TRQ03) 20:23 (TRQ03) 20:27	06:12 20:27	06:44 19:39	07:07 (TRQ02) 18:47	07:16 09:28 (TRQ05)
8	05:44 20:53 38	19:45 (TRQ03) 20:23 (TRQ03) 20:26	06:13 20:26	06:45 19:38	07:07 (TRQ02) 18:45	07:18 09:28 (TRQ05)
9	05:45 20:52 37	19:45 (TRQ03) 20:22 (TRQ03) 20:25	06:14 20:25	06:46 19:36	07:07 (TRQ02) 18:43	07:19 09:29 (TRQ05)
10	05:46 20:52 35	19:47 (TRQ03) 20:22 (TRQ03) 20:23	06:15 20:23	06:47 19:34	07:08 (TRQ02) 18:42	07:20 09:29 (TRQ05)
11	05:47 20:52 34	19:48 (TRQ03) 20:22 (TRQ03) 20:22	06:16 20:22	06:48 19:32	07:09 (TRQ02) 18:40	07:21 09:30 (TRQ05)
12	05:47 20:51 32	19:49 (TRQ03) 20:21 (TRQ03) 20:20	06:17 20:20	06:50 19:31	07:10 (TRQ02) 18:38	07:22 09:30 (TRQ05)
13	05:48 20:51 29	19:50 (TRQ03) 20:19 (TRQ03) 20:19	06:18 20:19	06:51 19:29	07:11 (TRQ02) 18:37	07:23 09:30 (TRQ05)
14	05:49 20:50 28	19:51 (TRQ03) 20:19 (TRQ03) 20:18	06:19 20:18	06:52 19:27	07:12 (TRQ02) 18:35	07:24 09:30 (TRQ05)
15	05:50 20:49 24	19:53 (TRQ03) 20:17 (TRQ03) 20:16	06:20 20:16	06:53 19:25	07:13 (TRQ02) 18:34	07:26 09:30 (TRQ05)
16	05:50 20:49 21	19:55 (TRQ03) 20:16 (TRQ03) 20:15	06:21 20:15	06:54 19:24	07:16 (TRQ02) 18:32	07:27 09:31 (TRQ05)
17	05:51 20:48 17	19:56 (TRQ03) 20:13 (TRQ03) 20:13	06:22 20:13	06:55 19:22	07:24 (TRQ02) 18:32	07:28 09:31 (TRQ05)
18	05:52 20:47 10	20:00 (TRQ03) 20:10 (TRQ03) 20:12	06:23 20:12	06:56 19:20	07:29 18:29	07:07 09:31 (TRQ05)
19	05:53 20:47 10	20:00 (TRQ03) 20:10 (TRQ03) 20:10	06:24 20:10	06:57 19:18	07:30 18:27	07:08 08:17 (TRQ05)
20	05:54 20:46 10	20:09 (TRQ03) 20:09 20:09	06:25 20:09	06:58 19:16	07:31 18:26	07:09 09:31 (TRQ05)
21	05:55 20:45 10	20:07 (TRQ03) 20:07 20:07	06:26 20:07	06:59 19:15	07:33 18:24	07:11 09:30 (TRQ05)
22	05:56 20:44 10	20:06 (TRQ03) 20:06 20:06	06:27 20:06	07:00 19:13	07:34 18:23	07:12 09:30 (TRQ05)
23	05:57 20:43 10	20:05 (TRQ03) 20:04 20:04	06:28 20:04	07:01 19:11	07:35 18:21	07:13 09:29 (TRQ05)
24	05:58 20:43 10	20:03 (TRQ03) 20:03 20:03	06:29 20:03	07:02 19:09	08:54 (TRQ05) 09:03 (TRQ05)	07:14 18:20
25	05:59 20:42 10	20:01 (TRQ03) 20:01 20:01	06:30 20:01	07:03 19:08	08:47 (TRQ05) 09:09 (TRQ05)	07:15 17:18
26	05:59 20:41 10	20:00 (TRQ03) 19:59 19:59	06:32 20:00	07:04 19:06	08:43 (TRQ05) 09:13 (TRQ05)	07:17 17:17
27	06:00 20:40 10	20:00 (TRQ03) 20:00 20:00	06:33 20:00	07:05 19:05	08:40 (TRQ05) 09:15 (TRQ05)	07:18 17:15
28	06:01 20:39 10	20:00 (TRQ03) 20:00 20:00	06:34 20:00	07:07 19:04	08:37 (TRQ05) 09:17 (TRQ05)	07:19 17:14
29	06:02 20:38 10	20:00 (TRQ03) 20:00 20:00	06:35 20:00	07:08 19:01	08:35 (TRQ05) 09:19 (TRQ05)	07:20 17:13
30	06:03 20:37 10	20:00 (TRQ03) 20:00 20:00	06:36 20:00	07:09 18:59	08:33 (TRQ05) 09:21 (TRQ05)	07:21 17:11
31	06:04 20:35 10	20:00 (TRQ03) 20:00 20:00	06:37 20:00	07:11 18:59	09:21 (TRQ05) 17:10	07:21 17:10
Potential sun hours	463	430	376	344	295	284
Total, worst case	597	149	671	2099	933	
Sun reduction	0,71	0,70	0,62	0,55	0,46	
Oper. time red.	0,95	0,95	0,95	0,95	0,95	
Wind dir. red.	0,51	0,63	0,59	0,51	0,51	
Total reduction	0,34	0,42	0,35	0,26	0,22	
Total, real	202	62	233	553	204	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: L - 31
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (January to June) and rows for days (1 to 31). Includes columns for sun rise, sun set, and sun hours. Includes a summary section for 'Potential sun hours' and 'Total reduction'.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: L - 31
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (July to December) and rows for each day of the month, showing sun rise/set times, shadow reduction, and operational time.

Table layout: For each day in each month the following matrix apply

Matrix with 5 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker (WTG causing flicker first time), Last time (hh:mm) with flicker (WTG causing flicker last time)



SHADOW - Calendar

Calculation: Shadow\_realShadow receptor: M - 32
Assumptions for shadow calculations

Table with 12 columns: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec. Values represent average daily sunshine hours.

Operational time

Table with 12 columns: N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum. Values represent operational time.

Main shadow calculation table with columns for months (July to December) and rows for each day of the month. Includes sub-rows for sunrise, sunset, and shadow times. Summary rows at the bottom include potential sun hours and various reduction factors.

Table layout: For each day in each month the following matrix apply

Summary table for each day in each month, including Day in month, Sun rise/set, Minutes with flicker, and First/Last time with flicker (WTG causing flicker).



## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** N - 33  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:28	07:59 (TRQ06)	06:51	08:06 (TRQ05)	06:58
2	16:51	17:27	09:08 (TRQ05)	18:03	09:01 (TRQ05)	19:39
3	07:43	07:27	08:00 (TRQ06)	06:49	08:08 (TRQ05)	06:56
4	16:52	17:28	09:09 (TRQ05)	18:04	09:00 (TRQ05)	19:40
5	07:43	07:26	08:01 (TRQ06)	06:48	08:09 (TRQ05)	06:55
6	16:53	17:29	09:09 (TRQ05)	18:05	08:58 (TRQ05)	19:41
7	07:43	07:25	08:02 (TRQ06)	06:46	08:10 (TRQ05)	06:53
8	16:54	17:31	09:10 (TRQ05)	18:06	08:56 (TRQ05)	19:42
9	07:43	07:24	08:03 (TRQ05)	06:44	08:12 (TRQ05)	06:51
10	16:55	17:32	09:11 (TRQ05)	18:07	08:54 (TRQ05)	19:43
11	07:43	07:23	08:02 (TRQ05)	06:43	08:13 (TRQ05)	06:50
12	16:56	17:33	09:11 (TRQ05)	18:09	08:51 (TRQ05)	19:44
13	07:43	07:22	08:01 (TRQ05)	06:41	08:15 (TRQ05)	06:48
14	16:57	17:35	09:11 (TRQ05)	18:10	08:48 (TRQ05)	19:45
15	07:43	08:05 (TRQ06)	07:21	08:01 (TRQ05)	06:39	07:20 (TRQ02)
16	16:58	17:36	09:12 (TRQ05)	18:11	08:45 (TRQ05)	19:47
17	07:43	08:05 (TRQ06)	07:19	08:02 (TRQ05)	06:38	07:20 (TRQ02)
18	16:59	17:37	09:12 (TRQ05)	18:12	08:40 (TRQ05)	19:48
19	07:43	08:05 (TRQ06)	07:18	08:01 (TRQ05)	06:36	07:22 (TRQ02)
20	17:00	17:39	09:12 (TRQ05)	18:13	09:49	24
21	07:42	08:05 (TRQ06)	07:17	08:01 (TRQ05)	06:34	07:23 (TRQ02)
22	17:01	17:40	09:13 (TRQ05)	18:15	19:50	20
23	07:42	08:04 (TRQ06)	07:16	08:01 (TRQ05)	06:33	07:25 (TRQ02)
24	17:02	17:41	09:13 (TRQ05)	18:16	19:51	15
25	07:42	08:04 (TRQ06)	07:14	08:00 (TRQ05)	06:31	07:29 (TRQ02)
26	17:03	17:43	09:12 (TRQ05)	18:17	19:52	8
27	07:41	08:03 (TRQ06)	07:13	08:01 (TRQ05)	06:29	07:37 (TRQ02)
28	17:04	17:44	09:13 (TRQ05)	18:18	19:53	
29	07:41	08:03 (TRQ06)	07:12	08:01 (TRQ05)	06:28	
30	17:06	17:45	09:13 (TRQ05)	18:19	19:54	
31	07:40	08:02 (TRQ06)	07:10	08:00 (TRQ05)	06:26	
32	17:07	17:46	09:12 (TRQ05)	18:20	19:56	
33	07:40	08:02 (TRQ06)	07:09	08:01 (TRQ05)	06:24	
34	17:08	17:48	09:12 (TRQ05)	18:22	19:57	
35	07:39	08:01 (TRQ06)	07:08	08:01 (TRQ05)	06:22	
36	17:09	17:49	09:11 (TRQ05)	18:23	19:58	
37	07:39	08:00 (TRQ06)	07:06	08:01 (TRQ05)	06:21	
38	17:10	17:50	09:11 (TRQ05)	18:24	19:59	
39	07:38	08:00 (TRQ06)	07:05	08:01 (TRQ05)	06:19	
40	17:12	17:51	09:10 (TRQ05)	18:25	20:00	
41	07:38	07:59 (TRQ06)	07:03	08:02 (TRQ05)	06:17	
42	17:13	17:53	09:10 (TRQ05)	18:26	20:01	
43	07:37	07:58 (TRQ06)	07:02	08:02 (TRQ05)	06:15	
44	17:14	17:54	09:09 (TRQ05)	18:27	20:02	
45	07:36	07:57 (TRQ06)	07:00	08:03 (TRQ05)	06:14	
46	17:15	17:55	09:09 (TRQ05)	18:28	20:03	
47	07:36	07:57 (TRQ06)	06:59	08:03 (TRQ05)	06:12	
48	17:17	17:56	09:08 (TRQ05)	18:30	20:04	
49	07:35	07:57 (TRQ06)	06:57	08:04 (TRQ05)	06:10	
50	17:18	17:58	09:07 (TRQ05)	18:31	20:05	
51	07:34	07:57 (TRQ06)	06:56	08:04 (TRQ05)	06:09	
52	17:19	17:59	09:06 (TRQ05)	18:32	20:07	
53	07:33	07:57 (TRQ06)	06:54	08:04 (TRQ05)	06:07	
54	17:20	18:00	09:04 (TRQ05)	18:33	20:08	
55	07:32	07:57 (TRQ06)	06:52	08:06 (TRQ05)	06:05	
56	17:22	18:01	09:03 (TRQ05)	18:34	20:09	
57	07:31	07:58 (TRQ06)	07:03	08:05 (TRQ05)	06:03	
58	17:23	18:02	09:03 (TRQ05)	18:35	20:10	
59	07:30	07:58 (TRQ06)	07:02	08:05 (TRQ05)	06:02	
60	17:24	18:03	09:02 (TRQ05)	18:36	20:11	
61	07:29	07:59 (TRQ06)	07:00	08:05 (TRQ05)	06:00	
62	17:26	18:04	09:02 (TRQ05)	18:37	20:12	
Potential sun hours	294	295	369	400	452	457
Total, worst case	1094	1913	586	348	785	1745
Sun reduction	0,42	0,46	0,46	0,49	0,57	0,61
Oper. time red.	0,95	0,95	0,95	0,95	0,95	0,95
Wind dir. red.	0,50	0,50	0,54	0,62	0,51	0,51
Total reduction	0,20	0,22	0,24	0,29	0,28	0,30
Total, real	218	418	139	100	216	516

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: Shadow\_realShadow receptor: N - 33
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

Table with 12 columns (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum) and 12 rows of numerical data.

Main shadow calculation table with columns for months (July to December) and rows for each day of the month, including sunrise/set times, shadow reduction, and potential sun hours.

Table layout: For each day in each month the following matrix apply

Summary matrix for each day in each month, including Sun rise/set (hh:mm), Minutes with flicker, and First/Last time (hh:mm) with flicker (WTG causing flicker).

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: O - 34  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June
1	07:43	08:06 (TRQ06)	07:28	08:34 (TRQ05)	06:51	06:58
2	16:51	92 09:38 (TRQ05)	17:27	78 09:52 (TRQ05)	18:03	19:39
3	07:43	08:06 (TRQ06)	07:27	08:34 (TRQ05)	06:49	06:56
4	16:52	93 09:39 (TRQ05)	17:28	78 09:52 (TRQ05)	18:04	19:40
5	07:43	08:06 (TRQ06)	07:26	08:35 (TRQ05)	06:48	06:55
6	16:53	94 09:40 (TRQ05)	17:29	77 09:52 (TRQ05)	18:05	19:41
7	07:43	08:06 (TRQ06)	07:25	08:35 (TRQ05)	06:46	06:53
8	16:54	94 09:40 (TRQ05)	17:31	76 09:51 (TRQ05)	18:06	19:42
9	07:43	08:06 (TRQ06)	07:24	08:36 (TRQ05)	06:44	06:51
10	16:55	95 09:41 (TRQ05)	17:32	75 09:51 (TRQ05)	18:07	19:43
11	07:43	08:06 (TRQ06)	07:23	08:36 (TRQ05)	06:43	06:50
12	16:56	96 09:42 (TRQ05)	17:33	74 09:50 (TRQ05)	18:09	19:44
13	07:43	08:06 (TRQ06)	07:22	08:36 (TRQ05)	06:41	06:48
14	16:57	97 09:43 (TRQ05)	17:35	74 09:50 (TRQ05)	18:10	19:45
15	07:43	08:05 (TRQ06)	07:21	08:37 (TRQ05)	06:39	06:46
16	16:58	98 09:43 (TRQ05)	17:36	72 09:49 (TRQ05)	18:11	19:47
17	07:43	08:05 (TRQ06)	07:19	08:38 (TRQ05)	06:38	06:45
18	16:59	99 09:44 (TRQ05)	17:37	71 09:49 (TRQ05)	18:12	19:48
19	07:43	08:05 (TRQ06)	07:18	08:38 (TRQ05)	06:36	06:43
20	17:00	99 09:44 (TRQ05)	17:39	69 09:47 (TRQ05)	18:13	19:49
21	07:42	08:06 (TRQ06)	07:17	08:39 (TRQ05)	06:34	06:41
22	17:01	99 09:45 (TRQ05)	17:40	68 09:47 (TRQ05)	18:15	19:50
23	07:42	08:06 (TRQ06)	07:16	08:40 (TRQ05)	06:33	06:40
24	17:02	99 09:45 (TRQ05)	17:41	66 09:46 (TRQ05)	18:16	19:51
25	07:42	08:07 (TRQ06)	07:14	08:41 (TRQ05)	06:31	06:38
26	17:03	99 09:46 (TRQ05)	17:43	63 09:44 (TRQ05)	18:17	19:52
27	07:41	08:06 (TRQ06)	07:13	08:42 (TRQ05)	06:29	06:36
28	17:04	101 09:47 (TRQ05)	17:44	61 09:43 (TRQ05)	18:18	19:53
29	07:41	08:07 (TRQ06)	07:12	08:43 (TRQ05)	06:28	06:35
30	17:06	101 09:48 (TRQ05)	17:45	59 09:42 (TRQ05)	18:19	19:54
31	07:40	08:07 (TRQ06)	07:10	08:44 (TRQ05)	06:26	06:33
32	17:07	101 09:48 (TRQ05)	17:46	56 09:40 (TRQ05)	18:20	19:56
33	07:40	08:08 (TRQ06)	07:09	08:46 (TRQ05)	06:24	06:31
34	17:08	101 09:49 (TRQ05)	17:48	53 09:39 (TRQ05)	18:22	19:57
35	07:39	08:08 (TRQ06)	07:08	08:47 (TRQ05)	06:22	06:29
36	17:09	101 09:49 (TRQ05)	17:49	50 09:37 (TRQ05)	18:23	19:58
37	07:39	08:08 (TRQ06)	07:06	08:49 (TRQ05)	06:21	06:28
38	17:10	101 09:49 (TRQ05)	17:50	46 09:35 (TRQ05)	18:24	19:59
39	07:38	08:10 (TRQ06)	07:05	08:50 (TRQ05)	06:19	06:26
40	17:12	100 09:50 (TRQ05)	17:51	42 09:32 (TRQ05)	18:25	20:00
41	07:38	08:10 (TRQ06)	07:03	08:52 (TRQ05)	06:17	06:24
42	17:13	100 09:50 (TRQ05)	17:53	38 09:30 (TRQ05)	18:26	20:01
43	07:37	08:10 (TRQ06)	07:02	08:55 (TRQ05)	06:15	06:22
44	17:14	100 09:50 (TRQ05)	17:54	31 09:26 (TRQ05)	18:27	20:02
45	07:36	08:11 (TRQ06)	07:00	08:58 (TRQ05)	06:14	06:21
46	17:15	99 09:50 (TRQ05)	17:55	25 09:23 (TRQ05)	18:28	20:03
47	07:36	08:13 (TRQ06)	06:59	09:03 (TRQ05)	06:12	06:19
48	17:17	99 09:52 (TRQ05)	17:56	13 09:16 (TRQ05)	18:30	20:04
49	07:35	08:13 (TRQ06)	06:57		06:10	06:17
50	17:18	99 09:52 (TRQ05)	17:58		18:31	20:06
51	07:34	08:14 (TRQ06)	06:56		06:09	06:16
52	17:19	98 09:52 (TRQ05)	17:59		18:32	20:07
53	07:33	08:16 (TRQ06)	06:54		06:07	06:14
54	17:20	96 09:52 (TRQ05)	18:00		18:33	20:08
55	07:32	08:17 (TRQ06)	06:52		06:05	06:12
56	17:22	95 09:52 (TRQ05)	18:01		18:34	20:09
57	07:31	08:19 (TRQ06)			07:03	07:10
58	17:23	93 09:52 (TRQ05)			19:35	20:10
59	07:30	08:21 (TRQ06)			07:02	07:09
60	17:24	91 09:52 (TRQ05)			19:36	20:11
61	07:29	08:26 (TRQ06)			07:00	07:07
62	17:26	82 09:52 (TRQ05)			19:38	20:12
Potential sun hours	294	295	369	400	452	457
Total, worst case	3012	1415	440	361	1569	1824
Sun reduction	0,42	0,46	0,46	0,49	0,57	0,61
Oper. time red.	0,95	0,95	0,95	0,95	0,95	0,95
Wind dir. red.	0,48	0,47	0,60	0,57	0,51	0,51
Total reduction	0,19	0,20	0,26	0,27	0,28	0,29
Total, real	566	289	114	96	432	536

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: O - 34
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Table with 12 columns (Jan-Dec) and 1 row of values: 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

Table with 13 columns (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum) and 1 row of values: 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Main shadow calculation table with columns for months (July-December) and rows for each day (1-31) showing sun rise/set times, shadow reduction, and potential sun hours.

Table layout: For each day in each month the following matrix apply

Matrix layout table with 4 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** P - 35  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	08:18 (TRQ06)	07:28	06:51	06:58	06:11
	16:51	98 10:09 (TRQ05)	17:27	18:03	19:39	20:12
2	07:43	08:19 (TRQ06)	07:27	06:49	06:56	48 19:26 (TRQ03)
	16:52	98 10:10 (TRQ05)	17:28	18:04	19:40	20:13
3	07:43	08:20 (TRQ06)	07:26	06:48	06:55	47 19:26 (TRQ03)
	16:53	96 10:10 (TRQ05)	17:29	18:05	19:41	20:14
4	07:43	08:20 (TRQ06)	07:25	06:46	06:53	45 19:25 (TRQ03)
	16:54	96 10:10 (TRQ05)	17:31	18:06	19:42	20:15
5	07:43	08:21 (TRQ06)	07:24	06:44	06:51	45 19:24 (TRQ03)
	16:55	96 10:11 (TRQ05)	17:32	18:07	19:43	20:16
6	07:43	08:22 (TRQ06)	07:23	06:43	06:50	43 19:23 (TRQ03)
	16:56	94 10:11 (TRQ05)	17:33	18:09	19:44	20:17
7	07:43	08:23 (TRQ06)	07:22	06:41	06:48	42 19:23 (TRQ03)
	16:57	92 10:11 (TRQ05)	17:35	18:10	19:45	20:18
8	07:43	08:23 (TRQ06)	07:21	06:39	06:46	39 19:22 (TRQ03)
	16:58	91 10:11 (TRQ05)	17:36	18:11	19:46	20:19
9	07:43	08:24 (TRQ06)	07:19	06:38	06:45	39 19:22 (TRQ03)
	16:59	90 10:11 (TRQ05)	17:37	18:12	19:47	20:20
10	07:43	08:26 (TRQ06)	07:18	06:36	06:43	35 19:19 (TRQ03)
	17:00	87 10:11 (TRQ05)	17:39	18:13	19:49	20:21
11	07:42	08:27 (TRQ06)	07:17	06:34	06:41	33 19:18 (TRQ03)
	17:01	86 10:12 (TRQ05)	17:40	18:15	19:50	20:22
12	07:42	08:27 (TRQ06)	07:16	06:33	06:40	29 19:16 (TRQ03)
	17:02	84 10:11 (TRQ05)	17:41	18:16	19:51	20:23
13	07:42	08:29 (TRQ06)	07:14	06:31	06:38	27 19:15 (TRQ03)
	17:03	81 10:11 (TRQ05)	17:43	18:17	19:52	20:24
14	07:41	08:30 (TRQ06)	07:13	06:29	06:36	27 19:15 (TRQ03)
	17:04	76 10:10 (TRQ05)	17:44	18:18	19:53	20:25
15	07:41	08:32 (TRQ06)	07:12	06:28	06:35	26 20:02 (TRQ01)
	17:06	74 10:11 (TRQ05)	17:45	18:19	19:54	20:26
16	07:40	08:34 (TRQ06)	07:10	06:26	06:33	21 20:03 (TRQ01)
	17:07	68 10:10 (TRQ05)	17:46	18:20	19:56	20:27
17	07:40	09:13 (TRQ05)	07:09	06:24	06:31	13 20:04 (TRQ01)
	17:08	57 10:10 (TRQ05)	17:48	18:22	19:57	20:28
18	07:39	09:14 (TRQ05)	07:08	06:22	06:30	15 20:05 (TRQ01)
	17:09	55 10:09 (TRQ05)	17:49	18:23	19:58	20:29
19	07:39	09:14 (TRQ05)	07:06	06:21	06:28	16 20:05 (TRQ01)
	17:10	54 10:08 (TRQ05)	17:50	18:24	19:59	20:30
20	07:38	09:16 (TRQ05)	07:05	06:19	06:27	18 20:07 (TRQ01)
	17:12	52 10:08 (TRQ05)	17:51	18:25	20:00	19:49 (TRQ01)
21	07:38	09:17 (TRQ05)	07:03	06:17	06:25	19 20:08 (TRQ01)
	17:13	50 10:07 (TRQ05)	17:53	18:26	20:01	20:08 (TRQ01)
22	07:37	09:18 (TRQ05)	07:02	06:15	06:24	21 20:09 (TRQ01)
	17:14	48 10:06 (TRQ05)	17:54	18:27	20:02	19:48 (TRQ01)
23	07:36	09:19 (TRQ05)	07:00	06:14	06:22	21 20:09 (TRQ01)
	17:15	46 10:05 (TRQ05)	17:55	18:28	20:03	20:09 (TRQ01)
24	07:36	09:21 (TRQ05)	06:59	06:12	06:21	23 20:10 (TRQ01)
	17:17	44 10:05 (TRQ05)	17:56	18:30	20:04	19:48 (TRQ01)
25	07:35	09:23 (TRQ05)	06:57	06:10	06:19	24 20:12 (TRQ01)
	17:18	40 10:03 (TRQ05)	17:58	18:31	20:06	19:47 (TRQ01)
26	07:34	09:24 (TRQ05)	06:56	06:09	06:18	25 20:12 (TRQ01)
	17:19	37 10:01 (TRQ05)	17:59	18:32	20:07	19:47 (TRQ01)
27	07:33	09:26 (TRQ05)	06:54	06:07	06:16	26 20:13 (TRQ01)
	17:20	33 09:59 (TRQ05)	18:00	18:33	20:08	20:13 (TRQ01)
28	07:32	09:29 (TRQ05)	06:52	06:05	06:15	27 20:14 (TRQ01)
	17:22	28 09:57 (TRQ05)	18:01	18:34	20:09	19:47 (TRQ01)
29	07:31	09:32 (TRQ05)		07:03	06:13	27 20:14 (TRQ01)
	17:23	22 09:54 (TRQ05)		19:35	20:10	19:48 (TRQ01)
30	07:30	09:36 (TRQ05)		07:02	06:12	28 20:16 (TRQ01)
	17:24	14 09:50 (TRQ05)		19:36	20:11	19:47 (TRQ01)
31	07:29			07:00		29 20:16 (TRQ01)
	17:26			19:38		19:48 (TRQ01)
Potential sun hours	294	295	369	400	452	457
Total, worst case	1987		671	1122		840
Sun reduction	0,42		0,46	0,49		0,57
Oper. time red.	0,95		0,95	0,95		0,95
Wind dir. red.	0,50		0,56	0,57		0,55
Total reduction	0,20		0,24	0,27		0,29
Total, real	390		163	298		247

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



Project:

Tarquini<sup>1</sup>

Licensed user:

**MONTANA SPA**  
 VIA ANGELO CARLO FUMAGALLI 6  
 IT-20143 MILANO  
 0254118173  
 Andrea / fronteddu@montanambiente.com  
 Calculated:  
 06/08/2022 14:40/3.5.584

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** Q - 39  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51	08:06 (TRQ08)   07:28 08:31 (TRQ08)   17:27	08:16 (TRQ08)   06:51 08:39 (TRQ08)   18:03	06:58 19:39	06:10 20:12	05:40 20:43
2	07:43 16:52	08:06 (TRQ08)   07:27 08:32 (TRQ08)   17:28	08:18 (TRQ08)   06:49 08:37 (TRQ08)   18:04	06:56 19:40	06:09 20:13	05:40 20:44
3	07:43 16:53	08:06 (TRQ08)   07:26 08:32 (TRQ08)   17:29	08:20 (TRQ08)   06:48 08:35 (TRQ08)   18:05	06:55 19:41	06:08 20:15	05:39 20:45
4	07:43 16:54	08:06 (TRQ08)   07:25 08:33 (TRQ08)   17:31	08:24 (TRQ08)   06:46 08:32 (TRQ08)   18:06	06:53 19:42	06:06 20:16	05:39 20:46
5	07:43 16:55	08:06 (TRQ08)   07:24 08:34 (TRQ08)   17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46
6	07:43 16:56	08:06 (TRQ08)   07:23 08:35 (TRQ08)   17:33	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47
7	07:43 16:57	08:06 (TRQ08)   07:22 08:36 (TRQ08)   17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48
8	07:43 16:58	08:05 (TRQ08)   07:21 08:36 (TRQ08)   17:36	06:39 18:11	06:46 19:46	06:01 20:20	05:37 20:48
9	07:43 16:59	08:05 (TRQ08)   07:19 08:37 (TRQ08)   17:37	06:38 18:12	06:44 19:48	06:00 20:21	05:37 20:49
10	07:43 17:00	08:05 (TRQ08)   07:18 08:38 (TRQ08)   17:39	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49
11	07:42 17:01	08:05 (TRQ08)   07:17 08:39 (TRQ08)   17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50
12	07:42 17:02	08:05 (TRQ08)   07:16 08:39 (TRQ08)   17:41	06:33 18:16	06:39 19:51	05:57 20:24	05:37 20:51
13	07:42 17:03	08:05 (TRQ08)   07:14 08:40 (TRQ08)   17:42	06:31 18:17	06:38 19:52	05:56 20:25	05:37 20:51
14	07:41 17:04	08:05 (TRQ08)   07:13 08:40 (TRQ08)   17:44	06:29 18:18	06:36 19:53	05:55 20:26	05:36 20:51
15	07:41 17:06	08:06 (TRQ08)   07:12 08:41 (TRQ08)   17:45	06:28 18:19	06:35 19:54	05:53 20:27	05:36 20:52
16	07:40 17:07	08:06 (TRQ08)   07:10 08:41 (TRQ08)   17:46	06:26 18:20	06:33 19:55	05:52 20:29	05:36 20:52
17	07:40 17:08	08:06 (TRQ08)   07:09 08:42 (TRQ08)   17:48	06:24 18:22	06:31 19:57	05:51 20:30	05:36 20:53
18	07:39 17:09	08:06 (TRQ08)   07:07 08:42 (TRQ08)   17:49	06:22 18:23	06:30 19:58	05:50 20:31	05:36 20:53
19	07:39 17:10	08:06 (TRQ08)   07:06 08:42 (TRQ08)   17:50	06:21 18:24	06:28 19:59	05:50 20:32	05:37 20:53
20	07:38 17:12	08:07 (TRQ08)   07:05 08:43 (TRQ08)   17:51	06:19 18:25	06:27 20:00	05:49 20:33	05:37 20:54
21	07:38 17:13	08:07 (TRQ08)   07:03 08:43 (TRQ08)   17:53	06:17 18:26	06:25 20:01	05:48 20:34	05:37 20:54
22	07:37 17:14	08:07 (TRQ08)   07:02 08:43 (TRQ08)   17:54	06:15 18:27	06:24 20:02	05:47 20:34	05:37 20:54
23	07:36 17:15	08:08 (TRQ08)   07:00 08:43 (TRQ08)   17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54
24	07:36 17:16	08:09 (TRQ08)   06:59 08:43 (TRQ08)   17:56	06:12 18:30	06:21 20:04	05:45 20:36	05:38 20:54
25	07:35 17:18	08:09 (TRQ08)   06:57 08:43 (TRQ08)   17:58	06:10 18:31	06:19 20:06	05:44 20:37	05:38 20:55
26	07:34 17:19	08:10 (TRQ08)   06:56 08:43 (TRQ08)   17:59	06:08 18:32	06:18 20:07	05:44 20:38	05:38 20:55
27	07:33 17:20	08:11 (TRQ08)   06:54 08:42 (TRQ08)   18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:39 20:55
28	07:32 17:22	08:11 (TRQ08)   06:52 08:42 (TRQ08)   18:01	06:05 18:34	06:15 20:09	05:42 20:40	05:39 20:55
29	07:31 17:23	08:12 (TRQ08)   06:51 08:41 (TRQ08)   18:00	06:03 19:35	06:13 20:10	05:42 20:41	05:39 20:55
30	07:30 17:24	08:13 (TRQ08)   06:50 08:41 (TRQ08)   18:00	06:02 19:36	06:12 20:11	05:41 20:42	05:40 20:55
31	07:29 17:25	08:15 (TRQ08)   06:49 08:40 (TRQ08)   18:00	06:00 19:37	06:11 20:12	05:40 20:43	05:40 20:55
Potential sun hours	294	295	369	400	452	457
Total, worst case	991	65				
Sun reduction	0,42	0,46				
Oper. time red.	0,95	0,95				
Wind dir. red.	0,49	0,49				
Total reduction	0,20	0,22				
Total, real	195	14				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** Q - 39  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December	
1	05:40	06:05	06:38	07:10	06:46	07:22	07:47 (TRQ08)
	20:54	20:34	19:49	18:57	17:08	16:43	34 08:21 (TRQ08)
2	05:41	06:06	06:39	07:11	06:47	07:23	07:48 (TRQ08)
	20:54	20:33	19:48	18:55	17:07	16:42	33 08:21 (TRQ08)
3	05:41	06:07	06:40	07:12	06:48	07:24	07:49 (TRQ08)
	20:54	20:32	19:46	18:54	17:06	16:42	32 08:21 (TRQ08)
4	05:42	06:08	06:41	07:13	06:50	07:25	07:50 (TRQ08)
	20:54	20:31	19:44	18:52	17:05	16:42	31 08:21 (TRQ08)
5	05:42	06:09	06:42	07:14	06:51	07:26	07:51 (TRQ08)
	20:54	20:30	19:43	18:50	17:03	16:42	30 08:21 (TRQ08)
6	05:43	06:10	06:43	07:15	06:52	07:27	07:52 (TRQ08)
	20:53	20:28	19:41	18:48	17:02	16:41	29 08:21 (TRQ08)
7	05:44	06:11	06:44	07:16	06:53	07:53 (TRQ08)	07:28 07:53 (TRQ08)
	20:53	20:27	19:39	18:47	17:01	9 08:02 (TRQ08)	16:41 28 08:21 (TRQ08)
8	05:44	06:13	06:45	07:18	06:55	07:50 (TRQ08)	07:29 07:54 (TRQ08)
	20:53	20:26	19:37	18:45	17:00	15 08:05 (TRQ08)	16:41 27 08:21 (TRQ08)
9	05:45	06:14	06:46	07:19	06:56	07:49 (TRQ08)	07:30 07:55 (TRQ08)
	20:52	20:25	19:36	18:43	16:59	19 08:08 (TRQ08)	16:41 26 08:21 (TRQ08)
10	05:46	06:15	06:47	07:20	06:57	07:47 (TRQ08)	07:31 07:56 (TRQ08)
	20:52	20:23	19:34	18:42	16:58	23 08:10 (TRQ08)	16:41 26 08:22 (TRQ08)
11	05:46	06:16	06:48	07:21	06:58	07:45 (TRQ08)	07:32 07:56 (TRQ08)
	20:52	20:22	19:32	18:40	16:57	26 08:11 (TRQ08)	16:41 25 08:21 (TRQ08)
12	05:47	06:17	06:49	07:22	07:00	07:45 (TRQ08)	07:33 07:57 (TRQ08)
	20:51	20:20	19:31	18:38	16:56	28 08:13 (TRQ08)	16:41 24 08:21 (TRQ08)
13	05:48	06:18	06:51	07:23	07:01	07:44 (TRQ08)	07:34 07:58 (TRQ08)
	20:51	20:19	19:29	18:37	16:55	29 08:13 (TRQ08)	16:41 24 08:22 (TRQ08)
14	05:49	06:19	06:52	07:24	07:02	07:43 (TRQ08)	07:34 07:59 (TRQ08)
	20:50	20:18	19:27	18:35	16:54	31 08:14 (TRQ08)	16:42 23 08:22 (TRQ08)
15	05:50	06:20	06:53	07:25	07:03	07:44 (TRQ08)	07:35 08:00 (TRQ08)
	20:49	20:16	19:25	18:33	16:53	31 08:15 (TRQ08)	16:42 22 08:22 (TRQ08)
16	05:50	06:21	06:54	07:27	07:05	07:43 (TRQ08)	07:36 08:00 (TRQ08)
	20:49	20:15	19:23	18:32	16:52	33 08:16 (TRQ08)	16:42 22 08:22 (TRQ08)
17	05:51	06:22	06:55	07:28	07:06	07:42 (TRQ08)	07:37 08:01 (TRQ08)
	20:48	20:13	19:22	18:30	16:51	34 08:16 (TRQ08)	16:42 22 08:23 (TRQ08)
18	05:52	06:23	06:56	07:29	07:07	07:43 (TRQ08)	07:37 08:02 (TRQ08)
	20:47	20:12	19:20	18:29	16:50	34 08:17 (TRQ08)	16:43 21 08:23 (TRQ08)
19	05:53	06:24	06:57	07:30	07:08	07:43 (TRQ08)	07:38 08:02 (TRQ08)
	20:47	20:10	19:18	18:27	16:49	35 08:18 (TRQ08)	16:43 21 08:23 (TRQ08)
20	05:54	06:25	06:58	07:31	07:10	07:42 (TRQ08)	07:39 08:03 (TRQ08)
	20:46	20:09	19:16	18:26	16:49	36 08:18 (TRQ08)	16:43 21 08:24 (TRQ08)
21	05:55	06:26	06:59	07:33	07:11	07:43 (TRQ08)	07:39 08:03 (TRQ08)
	20:45	20:07	19:15	18:24	16:48	36 08:19 (TRQ08)	16:44 21 08:24 (TRQ08)
22	05:56	06:27	07:00	07:34	07:12	07:43 (TRQ08)	07:40 08:04 (TRQ08)
	20:44	20:06	19:13	18:23	16:47	36 08:19 (TRQ08)	16:44 21 08:25 (TRQ08)
23	05:57	06:28	07:01	07:35	07:13	07:43 (TRQ08)	07:40 08:04 (TRQ08)
	20:43	20:04	19:11	18:21	16:47	36 08:19 (TRQ08)	16:45 21 08:25 (TRQ08)
24	05:57	06:29	07:02	07:36	07:14	07:43 (TRQ08)	07:41 08:05 (TRQ08)
	20:43	20:03	19:09	18:20	16:46	36 08:19 (TRQ08)	16:45 21 08:26 (TRQ08)
25	05:58	06:30	07:03	06:37	07:15	07:44 (TRQ08)	07:41 08:05 (TRQ08)
	20:42	20:01	19:08	17:18	16:45	36 08:20 (TRQ08)	16:46 21 08:26 (TRQ08)
26	05:59	06:32	07:04	06:39	07:17	07:45 (TRQ08)	07:41 08:05 (TRQ08)
	20:41	19:59	19:06	17:17	16:45	35 08:20 (TRQ08)	16:47 22 08:27 (TRQ08)
27	06:00	06:33	07:05	06:40	07:18	07:45 (TRQ08)	07:42 08:05 (TRQ08)
	20:40	19:58	19:04	17:15	16:44	35 08:20 (TRQ08)	16:47 22 08:27 (TRQ08)
28	06:01	06:34	07:06	06:41	07:19	07:45 (TRQ08)	07:42 08:06 (TRQ08)
	20:39	19:56	19:02	17:14	16:44	35 08:20 (TRQ08)	16:48 22 08:28 (TRQ08)
29	06:02	06:35	07:08	06:42	07:20	07:45 (TRQ08)	07:42 08:06 (TRQ08)
	20:38	19:54	19:01	17:12	16:43	35 08:20 (TRQ08)	16:49 23 08:29 (TRQ08)
30	06:03	06:36	07:09	06:43	07:21	07:46 (TRQ08)	07:43 08:06 (TRQ08)
	20:37	19:53	18:59	17:11	16:43	34 08:20 (TRQ08)	16:49 23 08:29 (TRQ08)
31	06:04	06:37		06:45			07:43 08:06 (TRQ08)
	20:35	19:51		17:10			16:50 24 08:30 (TRQ08)
Potential sun hours	463	430	376	344	295	284	762
Total, worst case					737		0,43
Sun reduction					0,46		0,95
Oper. time red.					0,95		0,49
Wind dir. red.					0,49		0,20
Total reduction					0,21		154
Total, real					157		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)







## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** T - 44  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	July	August	September	October	November	December	
1   07:43	16:05 (TRQ08)	07:28	06:51	06:58	06:10	05:40	05:40	06:05	06:38	07:10	06:46	07:22	15:52 (TRQ08)
2   07:43	16:05 (TRQ08)	07:27	06:49	06:56	06:09	05:40	05:41	06:06	06:39	07:11	06:47	07:23	15:53 (TRQ08)
3   07:43	16:06 (TRQ08)	07:26	06:47	06:55	06:08	05:39	05:41	06:07	06:40	07:12	06:48	07:24	15:53 (TRQ08)
4   07:43	16:06 (TRQ08)	07:25	06:46	06:53	06:06	05:39	05:42	06:08	06:41	07:13	06:50	07:25	15:53 (TRQ08)
5   07:43	16:07 (TRQ08)	07:24	06:44	06:51	06:05	05:38	05:42	06:09	06:42	07:14	06:51	07:26	15:53 (TRQ08)
6   07:43	16:08 (TRQ08)	07:23	06:43	06:49	06:04	05:38	05:43	06:10	06:43	07:15	06:52	07:27	15:54 (TRQ08)
7   07:43	16:08 (TRQ08)	07:22	06:41	06:48	06:02	05:38	05:44	06:11	06:44	07:16	06:53	07:28	15:54 (TRQ08)
8   07:43	16:08 (TRQ08)	07:21	06:39	06:46	06:01	05:37	05:44	06:12	06:45	07:17	06:55	07:29	15:54 (TRQ08)
9   07:43	16:09 (TRQ08)	07:19	06:38	06:44	06:00	05:37	05:45	06:13	06:46	07:19	06:56	07:30	15:55 (TRQ08)
10   07:42	16:10 (TRQ08)	07:18	06:36	06:43	05:59	05:37	05:46	06:15	06:47	07:20	06:57	07:31	15:54 (TRQ08)
11   07:42	16:10 (TRQ08)	07:17	06:34	06:41	05:58	05:37	05:46	06:16	06:48	07:21	06:58	07:32	15:55 (TRQ08)
12   07:42	16:11 (TRQ08)	07:16	06:33	06:39	05:57	05:36	05:47	06:17	06:49	07:22	07:00	07:33	15:55 (TRQ08)
13   07:42	16:13 (TRQ08)	07:14	06:31	06:38	05:55	05:36	05:48	06:18	06:50	07:23	07:01	07:34	15:56 (TRQ08)
14   07:41	16:13 (TRQ08)	07:13	06:29	06:36	05:54	05:36	05:49	06:19	06:51	07:24	07:02	07:34	15:57 (TRQ08)
15   07:41	16:14 (TRQ08)	07:12	06:27	06:34	05:53	05:36	05:49	06:20	06:53	07:25	07:03	07:35	15:56 (TRQ08)
16   07:40	16:15 (TRQ08)	07:10	06:26	06:33	05:52	05:36	05:50	06:21	06:54	07:27	07:04	07:36	15:57 (TRQ08)
17   07:40	16:17 (TRQ08)	07:09	06:24	06:31	05:51	05:36	05:51	06:22	06:55	07:28	07:06	07:37	15:58 (TRQ08)
18   07:39	16:18 (TRQ08)	07:07	06:22	06:30	05:50	05:36	05:52	06:23	06:56	07:29	07:07	07:37	15:58 (TRQ08)
19   07:39	16:20 (TRQ08)	07:06	06:21	06:28	05:49	05:36	05:53	06:24	06:57	07:30	07:08	07:38	15:59 (TRQ08)
20   07:38	16:23 (TRQ08)	07:04	06:19	06:27	05:48	05:37	05:54	06:25	06:58	07:31	07:09	07:38	16:00 (TRQ08)
21   07:38	16:31 (TRQ08)	07:03	06:17	06:25	05:48	05:37	05:55	06:26	06:59	07:32	07:11	07:39	16:00 (TRQ08)
22   07:37	16:32 (TRQ08)	07:02	06:15	06:23	05:47	05:37	05:55	06:27	07:00	07:34	07:12	07:40	16:00 (TRQ08)
23   07:36	16:34 (TRQ08)	07:00	06:14	06:22	05:46	05:37	05:56	06:28	07:01	07:35	07:13	07:40	16:00 (TRQ08)
24   07:35	16:36 (TRQ08)	06:59	06:12	06:20	05:45	05:37	05:57	06:29	07:02	07:36	07:14	07:41	16:01 (TRQ08)
25   07:35	16:37 (TRQ08)	06:58	06:11	06:19	05:44	05:38	05:58	06:30	07:03	07:37	07:15	07:41	16:02 (TRQ08)
26   07:34	16:39 (TRQ08)	06:56	06:09	06:17	05:44	05:38	05:59	06:31	07:04	07:38	07:17	07:41	16:02 (TRQ08)
27   07:33	16:41 (TRQ08)	06:54	06:07	06:16	05:43	05:38	06:00	06:32	07:05	07:39	07:18	07:42	16:02 (TRQ08)
28   07:32	16:43 (TRQ08)	06:52	06:05	06:15	05:42	05:39	06:01	06:34	07:06	07:40	07:19	07:42	16:03 (TRQ08)
29   07:31	16:45 (TRQ08)	06:50	06:03	06:13	05:41	05:39	06:02	06:35	07:07	07:41	07:20	07:42	16:04 (TRQ08)
30   07:30	16:47 (TRQ08)	06:48	06:01	06:11	05:40	05:40	06:03	06:36	07:09	07:42	07:21	07:42	16:04 (TRQ08)
31   07:29	16:49 (TRQ08)	06:46	05:59	06:09	05:39	05:41	06:04	06:37	07:10	07:43	07:22	07:43	16:04 (TRQ08)
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284	604
Total, worst case	405										166		604
Sun reduction	0,42										0,46		0,43
Oper. time red.	0,95										0,95		0,95
Wind dir. red.	0,76										0,76		0,76
Total reduction	0,30										0,33		0,31
Total, real	122										54		187

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** U - 48  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June		
1	07:43 16:51	16:13 (TRQ06) 16:25 (TRQ06)	07:28 17:27	06:51 18:02	16:09 (TRQ07) 17:39 (TRQ02)	06:58 19:39	06:10 20:12	05:40 20:43
2	07:43 16:52	16:13 (TRQ06) 16:25 (TRQ06)	07:27 17:28	06:49 18:04	16:09 (TRQ07) 17:37 (TRQ02)	06:56 19:40	06:09 20:13	05:40 20:44
3	07:43 16:53	16:14 (TRQ06) 16:26 (TRQ06)	07:26 17:29	06:48 18:05	16:10 (TRQ07) 17:36 (TRQ02)	06:55 19:41	06:08 20:14	05:39 20:45
4	07:43 16:54	16:14 (TRQ06) 16:27 (TRQ06)	07:25 17:31	06:46 18:06	16:09 (TRQ07) 17:32 (TRQ02)	06:53 19:42	06:06 20:16	05:39 20:45
5	07:43 16:55	16:15 (TRQ06) 16:28 (TRQ06)	07:24 17:32	06:44 18:07	16:10 (TRQ07) 17:17 (TRQ07)	06:51 19:43	06:05 20:17	05:38 20:46
6	07:43 16:56	16:16 (TRQ06) 16:30 (TRQ06)	07:23 17:33	06:43 18:09	16:10 (TRQ07) 17:16 (TRQ07)	06:49 19:44	06:04 20:18	05:38 20:47
7	07:43 16:57	16:16 (TRQ06) 16:31 (TRQ06)	07:22 17:35	06:41 18:10	16:10 (TRQ07) 17:15 (TRQ07)	06:48 19:45	06:03 20:19	05:38 20:47
8	07:43 16:58	16:16 (TRQ06) 16:31 (TRQ06)	07:21 17:36	06:39 18:11	16:10 (TRQ07) 17:14 (TRQ07)	06:46 19:46	06:01 20:20	05:37 20:48
9	07:43 16:59	16:17 (TRQ06) 16:32 (TRQ06)	07:19 17:37	06:38 18:12	16:12 (TRQ07) 17:14 (TRQ07)	06:44 19:48	06:00 20:21	05:37 20:49
10	07:42 17:00	16:18 (TRQ06) 16:34 (TRQ06)	07:18 17:38	06:36 18:13	16:12 (TRQ07) 17:13 (TRQ07)	06:43 19:49	05:59 20:22	05:37 20:49
11	07:42 17:01	16:18 (TRQ06) 16:34 (TRQ06)	07:17 17:40	06:34 18:14	16:13 (TRQ07) 17:11 (TRQ07)	06:41 19:50	05:58 20:23	05:37 20:50
12	07:42 17:02	16:20 (TRQ06) 16:36 (TRQ06)	07:16 17:41	06:33 18:16	16:14 (TRQ07) 17:11 (TRQ07)	06:39 19:51	05:57 20:24	05:37 20:50
13	07:42 17:03	16:21 (TRQ06) 16:37 (TRQ06)	07:14 17:42	06:31 18:17	16:15 (TRQ07) 17:09 (TRQ07)	06:38 19:52	05:56 20:25	05:36 20:51
14	07:41 17:04	16:22 (TRQ06) 16:36 (TRQ06)	07:13 17:44	06:29 18:18	16:16 (TRQ07) 17:08 (TRQ07)	06:36 19:53	05:54 20:26	05:36 20:51
15	07:41 17:06	16:23 (TRQ06) 16:36 (TRQ06)	07:12 17:45	06:27 18:19	16:17 (TRQ07) 17:06 (TRQ07)	06:35 19:54	05:53 20:27	05:36 20:52
16	07:40 17:07	16:24 (TRQ06) 16:34 (TRQ06)	07:10 17:46	06:26 18:20	16:19 (TRQ07) 17:05 (TRQ07)	06:33 19:55	05:52 20:28	05:36 20:52
17	07:40 17:08	16:27 (TRQ06) 16:33 (TRQ06)	07:09 17:48	06:24 18:21	16:20 (TRQ07) 17:02 (TRQ07)	06:31 19:57	05:51 20:29	05:36 20:53
18	07:39 17:09	07:07 17:49	07:07 17:49	06:22 18:23	16:22 (TRQ07) 17:00 (TRQ07)	06:30 19:58	05:50 20:30	05:36 20:53
19	07:39 17:10	07:06 17:50	07:06 17:50	06:21 18:24	16:24 (TRQ07) 16:57 (TRQ07)	06:28 19:59	05:49 20:31	05:37 20:53
20	07:38 17:11	07:05 17:51	07:05 17:51	06:19 18:25	16:27 (TRQ07) 16:55 (TRQ07)	06:27 20:00	05:49 20:32	05:37 20:54
21	07:38 17:13	07:03 17:53	07:03 17:53	06:17 18:26	16:31 (TRQ07) 16:50 (TRQ07)	06:25 20:01	05:48 20:33	05:37 20:54
22	07:37 17:14	07:02 17:54	07:02 17:54	06:15 18:27	06:23 20:02	06:23 20:02	05:47 20:34	05:37 20:54
23	07:36 17:15	07:00 17:55	07:00 17:55	06:14 18:28	06:22 20:03	06:22 20:03	05:46 20:35	05:37 20:54
24	07:35 17:16	06:59 17:56	06:59 17:56	06:12 18:29	06:20 20:04	06:20 20:04	05:45 20:36	05:38 20:54
25	07:35 17:18	06:57 17:58	06:57 17:58	06:10 18:31	06:19 20:05	06:19 20:05	05:44 20:37	05:38 20:54
26	07:34 17:19	06:55 17:59	06:55 17:59	06:08 18:32	06:17 20:07	06:17 20:07	05:44 20:38	05:38 20:55
27	07:33 17:20	06:54 18:00	06:54 18:00	06:07 18:33	06:16 20:08	06:16 20:08	05:43 20:39	05:39 20:55
28	07:32 17:22	06:52 18:01	06:52 18:01	06:05 18:34	06:15 20:09	06:15 20:09	05:42 20:40	05:39 20:55
29	07:31 17:23			07:03 19:35	06:13 20:10	06:13 20:10	05:42 20:41	05:39 20:55
30	07:30 17:24			07:01 19:36	06:12 20:11	06:12 20:11	05:41 20:42	05:40 20:54
31	07:29 17:25			07:00 19:37			05:41 20:42	
Potential sun hours	294	295	369	400	452	457		
Total, worst case	228	1502	1192					
Sun reduction	0,42	0,46	0,46					
Oper. time red.	0,95	0,95	0,95					
Wind dir. red.	0,75	0,71	0,71					
Total reduction	0,30	0,31	0,31					
Total, real	69	469	370					

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** U - 48  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	16:53 (TRQ07) 17:08	15:52 (TRQ07) 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	16:52 (TRQ07) 17:07	15:53 (TRQ07) 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:53	16:50 (TRQ07) 17:06	15:55 (TRQ07) 16:42
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	16:50 (TRQ07) 17:05	15:57 (TRQ07) 16:42
5	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	16:49 (TRQ07) 17:03	15:59 (TRQ07) 16:42
6	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	16:47 (TRQ07) 17:02	16:03 (TRQ07) 16:41
7	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	16:46 (TRQ07) 17:01	16:07 (TRQ07) 16:41
8	05:44 20:53	06:12 20:26	06:45 19:37	07:17 18:45	16:45 (TRQ07) 17:00	16:07 (TRQ07) 16:41
9	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	16:44 (TRQ07) 17:00	16:07 (TRQ07) 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	16:44 (TRQ07) 16:58	16:07 (TRQ07) 16:41
11	05:46 20:51	06:16 20:22	06:48 19:32	07:21 18:40	16:44 (TRQ07) 16:57	16:07 (TRQ07) 16:41
12	05:47 20:51	06:17 20:20	06:49 19:30	07:22 18:38	16:43 (TRQ07) 16:56	16:07 (TRQ07) 16:41
13	05:48 20:50	06:18 20:19	06:50 19:29	07:23 18:37	16:43 (TRQ07) 16:55	16:07 (TRQ07) 16:41
14	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	16:42 (TRQ07) 16:54	16:07 (TRQ07) 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	07:25 18:33	16:42 (TRQ07) 16:53	16:07 (TRQ07) 16:42
16	05:50 20:49	06:21 20:15	06:54 19:23	07:27 18:32	16:41 (TRQ07) 16:52	16:07 (TRQ07) 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	16:42 (TRQ07) 16:51	16:07 (TRQ07) 16:42
18	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	16:42 (TRQ07) 16:50	16:07 (TRQ07) 16:43
19	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	16:41 (TRQ07) 16:49	16:07 (TRQ07) 16:43
20	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	16:41 (TRQ07) 16:49	16:07 (TRQ07) 16:43
21	05:55 20:45	06:26 20:07	06:59 19:15	07:32 18:24	16:42 (TRQ07) 16:48	16:07 (TRQ07) 16:44
22	05:56 20:44	06:27 20:06	07:00 19:13	17:18 (TRQ07) 17:34 (TRQ07)	16:43 (TRQ07) 18:22	16:07 (TRQ07) 16:44
23	05:56 20:43	06:28 20:04	07:01 19:11	17:13 (TRQ07) 17:38 (TRQ07)	16:43 (TRQ07) 18:21	16:07 (TRQ07) 16:45
24	05:57 20:42	06:29 20:02	07:02 19:09	17:09 (TRQ07) 17:41 (TRQ07)	16:43 (TRQ07) 18:19	16:07 (TRQ07) 16:45
25	05:58 20:41	06:30 20:01	07:03 19:07	17:06 (TRQ07) 17:43 (TRQ07)	16:37 17:18	16:05 (TRQ06) 16:45
26	05:59 20:41	06:31 19:59	07:04 19:06	17:03 (TRQ07) 17:44 (TRQ07)	16:45 (TRQ07) 17:17	16:04 (TRQ06) 16:47
27	06:00 20:40	06:33 19:58	07:05 19:04	17:01 (TRQ07) 17:46 (TRQ07)	16:45 (TRQ07) 17:15	16:02 (TRQ06) 16:47
28	06:01 20:39	06:34 19:56	07:06 19:02	16:59 (TRQ07) 17:47 (TRQ07)	16:44 (TRQ07) 17:14	16:02 (TRQ06) 16:48
29	06:02 20:38	06:35 19:54	07:07 19:00	16:57 (TRQ07) 17:48 (TRQ07)	16:42 (TRQ07) 17:12	16:01 (TRQ06) 16:49
30	06:03 20:36	06:36 19:53	07:09 18:59	16:55 (TRQ07) 17:48 (TRQ07)	16:43 (TRQ07) 17:11	16:01 (TRQ06) 16:49
31	06:04 20:35	06:37 19:51		06:45 17:10	15:50 (TRQ07) 16:38 (TRQ07)	16:07 (TRQ07) 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case			348	2154	298	358
Sun reduction			0,62	0,55	0,46	0,43
Oper. time red.			0,95	0,95	0,95	0,95
Wind dir. red.			0,72	0,71	0,72	0,75
Total reduction			0,42	0,37	0,31	0,31
Total, real			148	798	93	111

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** V - 49  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:28	06:51	06:58	06:10	18:44 (TRQ07) 05:40
	16:51	17:27	18:02	19:38	20:12	46 19:30 (TRQ07) 20:43
2	07:43	07:27	06:49	06:56	06:09	18:45 (TRQ07) 05:40
	16:52	17:28	18:04	19:40	20:13	45 19:30 (TRQ07) 20:44
3	07:43	07:26	06:47	06:55	06:08	18:45 (TRQ07) 05:39
	16:53	17:29	18:05	19:41	20:14	44 19:29 (TRQ07) 20:45
4	07:43	07:25	06:46	06:53	06:06	18:45 (TRQ07) 05:39
	16:54	17:31	18:06	19:42	20:15	43 19:28 (TRQ07) 20:45
5	07:43	07:24	06:44	06:51	06:05	18:46 (TRQ07) 05:38
	16:55	17:32	18:07	19:43	20:17	41 19:27 (TRQ07) 20:46
6	07:43	07:23	06:43	06:49	06:04	18:47 (TRQ07) 05:38
	16:56	17:33	18:09	19:44	20:18	39 19:26 (TRQ07) 20:47
7	07:43	07:22	06:41	06:48	06:03	18:48 (TRQ07) 05:38
	16:57	17:35	18:10	19:45	20:19	38 19:26 (TRQ07) 20:47
8	07:43	07:21	06:39	06:46	19:06 (TRQ07) 06:01	18:48 (TRQ07) 05:37
	16:58	17:36	18:11	19:46	12 19:18 (TRQ07) 20:20	36 19:24 (TRQ07) 20:48
9	07:43	07:19	06:38	06:44	19:01 (TRQ07) 06:00	18:49 (TRQ07) 05:37
	16:59	17:37	18:12	19:47	20 19:21 (TRQ07) 20:21	34 19:23 (TRQ07) 20:49
10	07:42	07:18	06:36	06:43	18:59 (TRQ07) 05:59	18:51 (TRQ07) 05:37
	17:00	17:38	18:13	19:49	26 19:25 (TRQ07) 20:22	31 19:22 (TRQ07) 20:49
11	07:42	07:17	06:34	06:41	18:56 (TRQ07) 05:58	18:52 (TRQ07) 05:37
	17:01	17:40	18:14	19:50	30 19:26 (TRQ07) 20:23	28 19:20 (TRQ07) 20:50
12	07:42	07:16	06:33	06:39	18:54 (TRQ07) 05:57	18:54 (TRQ07) 05:37
	17:02	17:41	18:16	19:51	33 19:27 (TRQ07) 20:24	25 19:19 (TRQ07) 20:50
13	07:42	07:14	06:31	06:38	18:52 (TRQ07) 05:56	18:56 (TRQ07) 05:36
	17:03	17:42	18:17	19:52	37 19:29 (TRQ07) 20:25	21 19:17 (TRQ07) 20:51
14	07:41	07:13	06:29	06:36	18:51 (TRQ07) 05:54	18:58 (TRQ07) 05:36
	17:04	17:44	18:18	19:53	38 19:29 (TRQ07) 20:26	17 19:15 (TRQ07) 20:51
15	07:41	07:12	06:27	17:55 (TRQ02) 06:34	18:49 (TRQ07) 05:53	19:01 (TRQ07) 05:36
	17:05	17:45	18:19	2 17:57 (TRQ02) 19:54	41 19:30 (TRQ07) 20:27	10 19:11 (TRQ07) 20:52
16	07:40	07:10	06:26	17:54 (TRQ02) 06:33	18:48 (TRQ07) 05:52	05:36
	17:07	17:46	18:20	5 17:59 (TRQ02) 19:55	43 19:31 (TRQ07) 20:28	20:52
17	07:40	07:09	06:24	17:52 (TRQ02) 06:31	18:47 (TRQ07) 05:51	05:36
	17:08	17:48	18:21	8 18:00 (TRQ02) 19:56	44 19:31 (TRQ07) 20:29	20:53
18	07:39	07:07	06:22	17:51 (TRQ02) 06:30	18:47 (TRQ07) 05:50	05:36
	17:09	17:49	18:23	10 18:01 (TRQ02) 19:58	45 19:32 (TRQ07) 20:30	20:53
19	07:39	07:06	06:21	17:50 (TRQ02) 06:28	18:45 (TRQ07) 05:49	05:37
	17:10	17:50	18:24	12 18:02 (TRQ02) 19:59	47 19:32 (TRQ07) 20:31	20:53
20	07:38	07:04	06:19	17:50 (TRQ02) 06:27	18:45 (TRQ07) 05:49	05:37
	17:11	17:51	18:25	14 18:04 (TRQ02) 20:00	48 19:33 (TRQ07) 20:32	20:54
21	07:37	07:03	06:17	17:50 (TRQ02) 06:25	18:44 (TRQ07) 05:48	05:37
	17:13	17:53	18:26	15 18:05 (TRQ02) 20:01	48 19:32 (TRQ07) 20:33	20:54
22	07:37	07:02	06:15	17:50 (TRQ02) 06:23	18:44 (TRQ07) 05:47	05:37
	17:14	17:54	18:27	16 18:06 (TRQ02) 20:02	49 19:33 (TRQ07) 20:34	20:54
23	07:36	07:00	06:14	17:50 (TRQ02) 06:22	18:43 (TRQ07) 05:46	05:37
	17:15	17:55	18:28	16 18:06 (TRQ02) 20:03	49 19:32 (TRQ07) 20:35	20:54
24	07:35	06:59	06:12	17:51 (TRQ02) 06:20	18:44 (TRQ07) 05:45	05:38
	17:16	17:56	18:29	17 18:08 (TRQ02) 20:04	49 19:33 (TRQ07) 20:36	20:54
25	07:35	06:57	06:10	17:52 (TRQ02) 06:19	18:43 (TRQ07) 05:44	05:38
	17:18	17:58	18:31	13 18:05 (TRQ02) 20:05	49 19:32 (TRQ07) 20:37	20:54
26	07:34	06:55	06:08	17:54 (TRQ02) 06:17	18:43 (TRQ07) 05:44	05:38
	17:19	17:59	18:32	8 18:02 (TRQ02) 20:07	49 19:32 (TRQ07) 20:38	20:54
27	07:33	06:54	06:07	20:08	48 18:44 (TRQ07) 05:43	05:38
	17:20	18:00	18:33	20:08	48 19:32 (TRQ07) 20:39	20:55
28	07:32	06:52	06:05	06:15	18:43 (TRQ07) 05:42	05:39
	17:22	18:01	18:34	20:09	48 19:31 (TRQ07) 20:40	20:55
29	07:31		07:03	06:13	18:44 (TRQ07) 05:42	05:39
	17:23		19:35	20:10	47 19:31 (TRQ07) 20:41	20:54
30	07:30		07:01	06:12	18:43 (TRQ07) 05:41	05:40
	17:24		19:36	20:11	47 19:30 (TRQ07) 20:42	20:54
31	07:29		07:00		05:41	
	17:25		19:37		20:42	
Potential sun hours	294	295	369	400	452	457
Total, worst case			136	947	498	
Sun reduction			0,46	0,49	0,57	
Oper. time red.			0,95	0,95	0,95	
Wind dir. red.			0,63	0,56	0,56	
Total reduction			0,27	0,27	0,31	
Total, real			37	251	152	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** V - 49  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	19:04 (TRQ07) 19:30 (TRQ07)	06:38 19:49	18:55 (TRQ07) 18:25 (TRQ07)	07:10 17:08
2	05:41 20:54	06:06 20:33	19:02 (TRQ07) 19:31 (TRQ07)	06:39 19:48	18:57 (TRQ07) 19:23 (TRQ07)	07:11 17:07
3	05:41 20:54	06:07 20:32	19:01 (TRQ07) 19:33 (TRQ07)	06:40 19:46	18:59 (TRQ07) 19:19 (TRQ07)	07:12 17:06
4	05:42 20:54	06:08 20:31	19:00 (TRQ07) 19:34 (TRQ07)	06:41 19:44	19:03 (TRQ07) 19:15 (TRQ07)	07:13 17:05
5	05:42 20:54	06:09 20:30	18:59 (TRQ07) 19:35 (TRQ07)	06:42 19:43	07:14 18:50	06:51 17:03
6	05:43 20:53	06:10 20:28	18:57 (TRQ07) 19:36 (TRQ07)	06:43 19:41	07:15 18:48	06:52 17:02
7	05:44 20:53	06:11 20:27	18:56 (TRQ07) 19:36 (TRQ07)	06:44 19:39	07:16 18:47	06:53 17:01
8	05:44 20:53	06:12 20:26	18:56 (TRQ07) 19:37 (TRQ07)	06:45 19:37	07:17 18:45	06:54 17:00
9	05:45 20:52	06:14 20:24	18:55 (TRQ07) 19:37 (TRQ07)	06:46 19:36	07:19 18:43	06:56 16:59
10	05:46 20:52	06:15 20:23	18:54 (TRQ07) 19:38 (TRQ07)	06:47 19:34	07:20 18:42	06:57 16:58
11	05:46 20:51	06:16 20:22	18:53 (TRQ07) 19:38 (TRQ07)	06:48 19:32	07:21 18:40	06:58 16:57
12	05:47 20:51	06:17 20:20	18:52 (TRQ07) 19:39 (TRQ07)	06:49 19:30	07:22 18:38	06:59 16:56
13	05:48 20:50	06:18 20:19	18:52 (TRQ07) 19:39 (TRQ07)	06:50 19:29	07:23 18:37	07:01 16:55
14	05:49 20:50	06:19 20:18	18:51 (TRQ07) 19:39 (TRQ07)	06:51 19:27	07:24 18:35	07:02 16:54
15	05:49 20:49	06:20 20:16	18:51 (TRQ07) 19:39 (TRQ07)	06:53 19:25	07:25 18:33	07:03 16:53
16	05:50 20:49	06:21 20:15	18:50 (TRQ07) 19:39 (TRQ07)	06:54 19:23	07:27 18:32	07:04 16:52
17	05:51 20:48	06:22 20:13	18:50 (TRQ07) 19:39 (TRQ07)	06:55 19:22	18:44 (TRQ02) 18:50 (TRQ02)	07:28 18:30
18	05:52 20:47	06:23 20:12	18:50 (TRQ07) 19:39 (TRQ07)	06:56 19:20	18:40 (TRQ02) 18:52 (TRQ02)	07:29 18:29
19	05:53 20:46	06:24 20:10	18:49 (TRQ07) 19:38 (TRQ07)	06:57 19:18	18:38 (TRQ02) 18:54 (TRQ02)	07:30 18:27
20	05:54 20:46	06:25 20:09	18:49 (TRQ07) 19:38 (TRQ07)	06:58 19:16	18:37 (TRQ02) 18:53 (TRQ02)	07:31 18:25
21	05:55 20:45	06:26 20:07	18:49 (TRQ07) 19:38 (TRQ07)	06:59 19:15	18:35 (TRQ02) 18:51 (TRQ02)	07:32 18:24
22	05:56 20:44	06:27 20:06	18:49 (TRQ07) 19:37 (TRQ07)	07:00 19:13	18:35 (TRQ02) 18:50 (TRQ02)	07:34 18:22
23	05:56 20:43	06:28 20:04	18:49 (TRQ07) 19:36 (TRQ07)	07:01 19:11	18:35 (TRQ02) 18:49 (TRQ02)	07:35 18:21
24	05:57 20:42	06:29 20:02	18:49 (TRQ07) 19:36 (TRQ07)	07:02 19:09	18:34 (TRQ02) 18:47 (TRQ02)	07:36 18:19
25	05:58 20:41	06:30 20:01	18:49 (TRQ07) 19:35 (TRQ07)	07:03 19:07	18:34 (TRQ02) 18:45 (TRQ02)	06:37 17:18
26	05:59 20:41	06:31 19:59	18:50 (TRQ07) 19:34 (TRQ07)	07:04 19:06	18:34 (TRQ02) 18:43 (TRQ02)	06:38 17:17
27	06:00 20:40	06:33 19:58	18:50 (TRQ07) 19:33 (TRQ07)	07:05 19:04	18:35 (TRQ02) 18:41 (TRQ02)	06:40 17:15
28	06:01 20:39	06:34 19:56	18:51 (TRQ07) 19:32 (TRQ07)	07:06 19:02	18:36 (TRQ02) 18:39 (TRQ02)	06:41 17:14
29	06:02 20:37	19:10 (TRQ07) 19:23 (TRQ07)	06:35 19:54	18:52 (TRQ07) 19:00	07:07 17:12	06:42 16:43
30	06:03 20:36	19:08 (TRQ07) 19:26 (TRQ07)	06:36 19:53	18:52 (TRQ07) 19:09	07:09 17:11	07:42 16:43
31	06:04 20:35	19:05 (TRQ07) 19:28 (TRQ07)	06:37 19:51	18:54 (TRQ07) 19:27 (TRQ07)	07:11 17:10	07:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case	54	1316	225			
Sun reduction	0,71	0,70	0,62			
Oper. time red.	0,95	0,95	0,95			
Wind dir. red.	0,56	0,56	0,60			
Total reduction	0,38	0,38	0,36			
Total, real	20	494	81			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** W - 51  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51	07:28 17:27	16:39 (TRQ07) 17:02 (TRQ07)	06:51 18:02	06:58 19:38	06:10 20:12
2	07:43 16:52	07:27 17:28	16:39 (TRQ07) 17:04 (TRQ07)	06:49 18:04	06:56 19:40	06:09 20:13
3	07:43 16:53	07:26 17:29	16:40 (TRQ07) 17:05 (TRQ07)	06:47 18:05	06:55 19:41	06:08 20:14
4	07:43 16:54	07:25 17:31	16:40 (TRQ07) 17:07 (TRQ07)	06:46 18:06	06:53 19:42	06:06 20:15
5	07:43 16:55	07:24 17:32	16:39 (TRQ07) 17:08 (TRQ07)	06:44 18:07	06:51 19:43	19:17 (TRQ08) 20:17
6	07:43 16:56	07:23 17:33	16:40 (TRQ07) 17:09 (TRQ07)	06:43 18:09	06:49 19:44	19:21 (TRQ08) 20:18
7	07:43 16:57	07:22 17:35	16:41 (TRQ07) 17:09 (TRQ07)	06:41 18:10	06:48 19:45	19:14 (TRQ08) 20:19
8	07:43 16:58	07:21 17:36	16:42 (TRQ07) 17:09 (TRQ07)	06:39 18:11	06:46 19:46	19:22 (TRQ08) 20:20
9	07:43 16:59	07:19 17:37	16:42 (TRQ07) 17:08 (TRQ07)	06:38 18:12	06:44 19:47	19:13 (TRQ08) 20:21
10	07:42 17:00	07:18 17:38	16:44 (TRQ07) 17:07 (TRQ07)	06:36 18:13	06:43 19:49	19:24 (TRQ08) 20:22
11	07:42 17:01	07:17 17:40	16:45 (TRQ07) 17:06 (TRQ07)	06:34 18:14	06:41 19:50	19:10 (TRQ08) 20:23
12	07:42 17:02	07:16 17:41	16:47 (TRQ07) 17:05 (TRQ07)	06:33 18:16	06:39 19:51	19:08 (TRQ08) 20:24
13	07:42 17:03	07:14 17:42	16:49 (TRQ07) 17:02 (TRQ07)	06:31 18:17	06:38 19:52	19:28 (TRQ08) 20:25
14	07:41 17:04	07:13 17:44	16:49 (TRQ07) 17:02 (TRQ07)	06:29 18:18	06:36 19:53	19:30 (TRQ08) 20:26
15	07:41 17:05	07:12 17:45	16:49 (TRQ07) 17:02 (TRQ07)	06:27 18:19	06:34 19:54	19:08 (TRQ08) 20:27
16	07:40 17:07	07:10 17:46	16:49 (TRQ07) 17:02 (TRQ07)	06:26 18:20	06:33 19:55	19:31 (TRQ08) 20:28
17	07:40 17:08	07:09 17:47	16:49 (TRQ07) 17:02 (TRQ07)	06:24 18:21	06:31 19:56	19:09 (TRQ08) 20:29
18	07:39 17:09	07:07 17:49	16:49 (TRQ07) 17:02 (TRQ07)	06:22 18:23	06:30 19:58	19:34 (TRQ08) 20:30
19	07:39 17:10	07:06 17:50	16:49 (TRQ07) 17:02 (TRQ07)	06:21 18:24	06:28 19:59	19:10 (TRQ08) 20:31
20	07:38 17:11	07:04 17:51	16:49 (TRQ07) 17:02 (TRQ07)	06:19 18:25	06:27 20:00	19:32 (TRQ08) 20:32
21	07:37 17:13	07:03 17:53	16:49 (TRQ07) 17:02 (TRQ07)	06:17 18:26	06:25 20:01	19:13 (TRQ08) 20:33
22	07:37 17:14	07:02 17:54	16:49 (TRQ07) 17:02 (TRQ07)	06:15 18:27	06:23 20:02	19:29 (TRQ08) 20:34
23	07:36 17:15	07:00 17:55	16:49 (TRQ07) 17:02 (TRQ07)	06:14 18:28	06:22 20:03	19:16 (TRQ08) 20:35
24	07:35 17:16	06:59 17:56	16:49 (TRQ07) 17:02 (TRQ07)	06:12 18:29	06:20 20:04	19:26 (TRQ08) 20:36
25	07:35 17:18	06:57 17:58	16:49 (TRQ07) 17:02 (TRQ07)	06:10 18:31	06:19 20:05	19:10 (TRQ08) 20:37
26	07:34 17:19	06:55 17:59	16:49 (TRQ07) 17:02 (TRQ07)	06:08 18:32	06:17 20:07	19:09 (TRQ08) 20:38
27	07:33 17:20	06:54 18:00	16:49 (TRQ07) 17:02 (TRQ07)	06:07 18:33	06:16 20:08	19:08 (TRQ08) 20:39
28	07:32 17:22	06:52 18:01	16:49 (TRQ07) 17:02 (TRQ07)	06:05 18:34	06:15 20:09	19:07 (TRQ08) 20:40
29	07:31 17:23	06:51 18:02	16:49 (TRQ07) 17:02 (TRQ07)	07:03 19:35	06:13 20:10	19:06 (TRQ08) 20:41
30	07:30 17:24	06:50 18:03	16:49 (TRQ07) 17:02 (TRQ07)	07:01 19:36	06:12 20:11	19:05 (TRQ08) 20:42
31	07:29 17:25	06:49 18:04	16:49 (TRQ07) 17:02 (TRQ07)	07:00 19:37	06:11 20:12	19:04 (TRQ08) 20:43
Potential sun hours	294	295	369	400	452	457
Total, worst case	148	314			313	
Sun reduction	0,42	0,46			0,49	
Oper. time red.	0,95	0,95			0,95	
Wind dir. red.	0,73	0,73			0,57	
Total reduction	0,30	0,33			0,27	
Total, real	44	102			85	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: W - 51  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December		
1	05:40 20:54	06:05 20:34	06:38 19:49	19:08 (TRQ08) 19:27 (TRQ08)	07:10 18:57	06:46 17:08	16:13 (TRQ07) 16:37 (TRQ07)	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	19:08 (TRQ08) 19:25 (TRQ08)	07:11 18:55	06:47 17:07	16:12 (TRQ07) 16:37 (TRQ07)	07:23 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	19:08 (TRQ08) 19:23 (TRQ08)	07:12 18:53	06:48 17:06	16:12 (TRQ07) 16:39 (TRQ07)	07:24 16:42
4	05:42 20:54	06:08 20:31	06:41 19:44	19:09 (TRQ08) 19:22 (TRQ08)	07:13 18:52	06:49 17:05	16:11 (TRQ07) 16:39 (TRQ07)	07:25 16:42
5	05:42 20:54	06:09 20:30	06:42 19:43	19:09 (TRQ08) 19:20 (TRQ08)	07:14 18:50	06:51 17:03	16:10 (TRQ07) 16:39 (TRQ07)	07:26 16:41
6	05:43 20:53	06:10 20:28	06:43 19:41	19:10 (TRQ08) 19:18 (TRQ08)	07:15 18:48	06:52 17:02	16:10 (TRQ07) 16:38 (TRQ07)	07:27 16:41
7	05:44 20:53	06:11 20:27	06:44 19:39	19:12 (TRQ08) 19:16 (TRQ08)	07:16 18:47	06:53 17:01	16:10 (TRQ07) 16:37 (TRQ07)	07:28 16:41
8	05:44 20:53	06:12 20:26	06:45 19:37	19:14 (TRQ08) 19:15 (TRQ08)	07:17 18:45	06:54 17:00	16:09 (TRQ07) 16:35 (TRQ07)	07:29 16:41
9	05:45 20:52	06:13 20:24	06:46 19:36	19:15 (TRQ08) 19:32 (TRQ08)	07:19 18:43	06:56 16:59	16:10 (TRQ07) 16:35 (TRQ07)	07:30 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	19:34 (TRQ08) 19:34 (TRQ08)	07:20 18:42	06:57 16:58	16:10 (TRQ07) 16:33 (TRQ07)	07:31 16:41
11	05:46 20:51	06:16 20:22	06:48 19:32	19:34 (TRQ08) 19:32 (TRQ08)	07:21 18:40	06:58 16:57	16:10 (TRQ07) 16:32 (TRQ07)	07:32 16:41
12	05:47 20:51	06:17 20:20	06:49 19:30	19:32 (TRQ08) 19:30 (TRQ08)	07:22 18:38	06:59 16:56	16:11 (TRQ07) 16:31 (TRQ07)	07:33 16:41
13	05:48 20:50	06:18 20:19	06:50 19:29	19:30 (TRQ08) 19:29 (TRQ08)	07:23 18:37	07:01 16:55	16:11 (TRQ07) 16:30 (TRQ07)	07:34 16:41
14	05:49 20:50	06:19 20:18	06:51 19:27	19:27 (TRQ08) 19:27 (TRQ08)	07:24 18:35	07:02 16:54	16:11 (TRQ07) 16:29 (TRQ07)	07:34 16:42
15	05:49 20:49	06:20 20:16	06:53 19:25	19:25 (TRQ08) 19:25 (TRQ08)	07:25 18:33	07:03 16:53	16:13 (TRQ07) 16:28 (TRQ07)	07:35 16:42
16	05:50 20:49	06:21 20:15	06:54 19:23	19:23 (TRQ08) 19:23 (TRQ08)	07:27 18:32	07:04 16:52	16:13 (TRQ07) 16:27 (TRQ07)	07:36 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	19:22 (TRQ08) 19:22 (TRQ08)	07:28 18:30	07:06 16:51	16:14 (TRQ07) 16:26 (TRQ07)	07:37 16:42
18	05:52 20:47	06:23 20:12	06:56 19:20	19:20 (TRQ08) 19:20 (TRQ08)	07:29 18:29	07:07 16:50	16:15 (TRQ07) 16:25 (TRQ07)	07:37 16:43
19	05:53 20:46	06:24 20:10	06:57 19:18	19:18 (TRQ08) 19:18 (TRQ08)	07:30 18:27	07:08 16:49	16:16 (TRQ07) 16:25 (TRQ07)	07:38 16:43
20	05:54 20:46	06:25 20:09	06:58 19:16	19:16 (TRQ08) 19:16 (TRQ08)	07:31 18:25	07:09 16:49	16:18 (TRQ07) 16:23 (TRQ07)	07:38 16:43
21	05:55 20:45	06:26 20:07	06:59 19:14	19:20 (TRQ08) 19:32 (TRQ08)	07:32 18:24	07:11 16:48	16:19 (TRQ07) 16:22 (TRQ07)	07:39 16:44
22	05:56 20:44	06:27 20:06	07:00 19:13	19:17 (TRQ08) 19:34 (TRQ08)	07:34 18:22	07:12 16:47	16:22 (TRQ07) 16:47 (TRQ07)	07:40 16:44
23	05:56 20:43	06:28 20:04	07:01 19:11	19:15 (TRQ08) 19:35 (TRQ08)	07:35 18:21	07:13 16:46	16:47 (TRQ07) 16:46 (TRQ07)	07:40 16:45
24	05:57 20:42	06:29 20:02	07:02 19:09	19:14 (TRQ08) 19:36 (TRQ08)	07:36 18:19	07:14 16:46	16:46 (TRQ07) 16:46 (TRQ07)	07:40 16:45
25	05:58 20:41	06:30 20:01	07:03 19:07	19:13 (TRQ08) 19:37 (TRQ08)	07:37 17:18	07:15 16:45	16:46 (TRQ07) 16:45 (TRQ07)	07:41 16:46
26	05:59 20:41	06:31 19:59	07:04 19:06	19:11 (TRQ08) 19:36 (TRQ08)	07:38 17:17	07:17 16:45	16:46 (TRQ07) 16:45 (TRQ07)	07:41 16:47
27	06:00 20:40	06:32 19:58	07:05 19:04	19:11 (TRQ08) 19:35 (TRQ08)	07:39 17:15	07:18 16:44	16:46 (TRQ07) 16:44 (TRQ07)	07:42 16:47
28	06:01 20:39	06:34 19:56	07:06 19:02	19:10 (TRQ08) 19:33 (TRQ08)	07:40 17:14	07:19 16:44	16:44 (TRQ07) 16:44 (TRQ07)	07:42 16:48
29	06:02 20:37	06:35 19:54	07:07 19:00	19:09 (TRQ08) 19:32 (TRQ08)	07:41 17:12	07:20 16:43	16:44 (TRQ07) 16:43 (TRQ07)	07:42 16:49
30	06:03 20:36	06:36 19:53	07:09 18:59	19:09 (TRQ08) 19:30 (TRQ08)	07:42 17:11	07:21 16:43	16:44 (TRQ07) 16:43 (TRQ07)	07:42 16:49
31	06:04 20:35	06:37 19:51	07:10 19:28 (TRQ08)	19:08 (TRQ08) 19:28 (TRQ08)	07:43 17:10	07:22 16:43	16:44 (TRQ07) 16:36 (TRQ07)	07:43 16:50
Potential sun hours	463	430	376	344	295	284		
Total, worst case		231	88	58	409			
Sun reduction		0,70	0,62	0,55	0,46			
Oper. time red.		0,95	0,95	0,95	0,95			
Wind dir. red.		0,57	0,57	0,73	0,73			
Total reduction		0,39	0,34	0,39	0,32			
Total, real		89	30	22	132			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** X - 52  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51	07:28 17:27	16:55 (TRQ07) 17:02 (TRQ07)	06:51 18:02	06:58 19:38	06:10 20:12
2	07:43 16:52	07:27 17:28	16:54 (TRQ07) 17:04 (TRQ07)	06:49 18:04	06:56 19:40	06:09 20:13
3	07:43 16:53	07:26 17:29	16:53 (TRQ07) 17:05 (TRQ07)	06:47 18:05	06:55 19:41	06:08 20:14
4	07:43 16:54	07:25 17:31	16:52 (TRQ07) 17:07 (TRQ07)	06:46 18:06	06:53 19:42	06:06 20:15
5	07:43 16:55	07:24 17:32	16:50 (TRQ07) 17:08 (TRQ07)	06:44 18:07	06:51 19:43	06:05 20:17
6	07:43 16:56	07:23 17:33	16:49 (TRQ07) 17:09 (TRQ07)	06:43 18:09	06:49 19:44	06:04 20:18
7	07:43 16:57	07:22 17:35	16:49 (TRQ07) 17:11 (TRQ07)	06:41 18:10	06:48 19:45	06:03 20:19
8	07:43 16:58	07:21 17:36	16:49 (TRQ07) 17:12 (TRQ07)	06:39 18:11	06:46 19:46	06:01 20:20
9	07:43 16:59	07:19 17:37	16:48 (TRQ07) 17:13 (TRQ07)	06:38 18:12	06:44 19:47	06:00 20:21
10	07:42 17:00	07:18 17:38	16:48 (TRQ07) 17:15 (TRQ07)	06:36 18:13	06:43 19:49	05:59 20:22
11	07:42 17:01	07:17 17:40	16:48 (TRQ07) 17:17 (TRQ07)	06:34 18:14	06:41 19:50	05:58 20:23
12	07:42 17:02	07:16 17:41	16:48 (TRQ07) 17:18 (TRQ07)	06:33 18:16	06:39 19:51	05:57 20:24
13	07:42 17:03	07:14 17:42	16:48 (TRQ07) 17:19 (TRQ07)	06:31 18:17	06:38 19:52	05:55 20:25
14	07:41 17:04	07:13 17:44	16:48 (TRQ07) 17:21 (TRQ07)	06:29 18:18	06:36 19:53	05:54 20:26
15	07:41 17:05	07:12 17:45	16:48 (TRQ07) 17:21 (TRQ07)	06:27 18:19	06:34 19:54	05:53 20:27
16	07:40 17:07	07:10 17:46	16:49 (TRQ07) 17:21 (TRQ07)	06:26 18:20	06:33 19:55	05:52 20:28
17	07:40 17:08	07:09 17:47	16:50 (TRQ07) 17:21 (TRQ07)	06:24 18:21	06:31 19:56	05:51 20:29
18	07:39 17:09	07:07 17:49	16:50 (TRQ07) 17:20 (TRQ07)	06:22 18:23	06:30 19:58	05:50 20:30
19	07:39 17:10	07:06 17:50	16:51 (TRQ07) 17:19 (TRQ07)	06:21 18:24	06:28 19:59	05:49 20:31
20	07:38 17:11	07:04 17:51	16:52 (TRQ07) 17:17 (TRQ07)	06:19 18:25	06:27 20:00	05:49 20:32
21	07:37 17:13	07:03 17:53	16:54 (TRQ07) 17:16 (TRQ07)	06:17 18:26	06:25 20:01	05:48 20:33
22	07:37 17:14	07:02 17:54	16:55 (TRQ07) 17:14 (TRQ07)	06:15 18:27	06:23 20:02	05:47 20:34
23	07:36 17:15	07:00 17:55	16:58 (TRQ07) 17:12 (TRQ07)	06:14 18:28	06:22 20:03	05:46 20:35
24	07:35 17:16	06:59 17:56	17:02 (TRQ07) 17:07 (TRQ07)	06:12 18:29	06:20 20:04	05:45 20:36
25	07:35 17:18	06:57 17:58	06:57 17:58	06:10 18:31	06:19 20:05	05:44 20:37
26	07:34 17:19	06:55 17:59	06:55 17:59	06:08 18:32	06:17 20:07	05:44 20:38
27	07:33 17:20	06:54 18:00	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39
28	07:32 17:22	06:52 18:01	06:52 18:01	06:05 18:34	06:15 20:09	05:42 20:40
29	07:31 17:23			07:03 19:35	06:13 20:10	05:42 20:41
30	07:30 17:24			07:01 19:36	06:12 20:11	05:41 20:42
31	07:29 17:25	16:57 (TRQ07) 17:01 (TRQ07)		07:00 19:37		05:41 20:42
Potential sun hours	294	295	369	400	452	457
Total, worst case	4	541			241	192
Sun reduction	0,42	0,46			0,49	0,57
Oper. time red.	0,95	0,95			0,95	0,95
Wind dir. red.	0,72	0,72			0,53	0,53
Total reduction	0,29	0,32			0,25	0,29
Total, real	1	173			61	56

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** X - 52  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December		
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:08	16:18 (TRQ07) 16:44 (TRQ07)	07:22 16:43	
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	16:18 (TRQ07) 16:43 (TRQ07)	07:23 16:42	
3	05:41 20:54	06:07 20:32	19:43 (TRQ08) 19:47 (TRQ08)	06:40 19:46	07:12 18:53	06:48 17:06	16:19 (TRQ07) 16:42 (TRQ07)	07:24 16:42
4	05:42 20:54	06:08 20:31	19:39 (TRQ08) 19:51 (TRQ08)	06:41 19:44	07:13 18:52	06:49 17:05	16:19 (TRQ07) 16:40 (TRQ07)	07:25 16:42
5	05:42 20:54	06:09 20:30	19:37 (TRQ08) 19:53 (TRQ08)	06:42 19:43	07:14 18:50	06:51 17:03	16:19 (TRQ07) 16:39 (TRQ07)	07:26 16:41
6	05:43 20:53	06:10 20:28	19:35 (TRQ08) 19:54 (TRQ08)	06:43 19:41	07:15 18:48	06:52 17:02	16:21 (TRQ07) 16:38 (TRQ07)	07:27 16:41
7	05:44 20:53	06:11 20:27	19:34 (TRQ08) 19:55 (TRQ08)	06:44 19:39	07:16 18:47	06:53 17:01	16:22 (TRQ07) 16:37 (TRQ07)	07:28 16:41
8	05:44 20:53	06:12 20:26	19:33 (TRQ08) 19:56 (TRQ08)	06:45 19:37	07:17 18:45	06:54 17:00	16:23 (TRQ07) 16:35 (TRQ07)	07:29 16:41
9	05:45 20:52	06:13 20:24	19:32 (TRQ08) 19:57 (TRQ08)	06:46 19:36	07:19 18:43	06:56 16:59	16:25 (TRQ07) 16:35 (TRQ07)	07:30 16:41
10	05:46 20:52	06:15 20:23	19:31 (TRQ08) 19:58 (TRQ08)	06:47 19:34	07:20 18:42	06:57 16:58	16:26 (TRQ07) 16:33 (TRQ07)	07:31 16:41
11	05:46 20:51	06:16 20:22	19:30 (TRQ08) 19:58 (TRQ08)	06:48 19:32	07:21 18:40	06:58 16:57	16:28 (TRQ07) 16:32 (TRQ07)	07:32 16:41
12	05:47 20:51	06:17 20:20	19:30 (TRQ08) 19:57 (TRQ08)	06:49 19:30	07:22 18:38	06:59 16:56	16:25 (TRQ07) 16:35 (TRQ07)	07:33 16:41
13	05:48 20:50	06:18 20:19	19:29 (TRQ08) 19:56 (TRQ08)	06:50 19:29	07:23 18:37	07:01 16:55	16:25 (TRQ07) 16:35 (TRQ07)	07:34 16:41
14	05:49 20:50	06:19 20:18	19:29 (TRQ08) 19:54 (TRQ08)	06:51 19:27	07:24 18:35	07:02 16:54	16:26 (TRQ07) 16:33 (TRQ07)	07:34 16:42
15	05:49 20:49	06:20 20:16	19:28 (TRQ08) 19:53 (TRQ08)	06:53 19:25	07:25 18:33	07:03 16:53	16:28 (TRQ07) 16:35 (TRQ07)	07:35 16:42
16	05:50 20:49	06:21 20:15	19:28 (TRQ08) 19:52 (TRQ08)	06:54 19:23	07:27 18:32	07:04 16:52	16:28 (TRQ07) 16:35 (TRQ07)	07:36 16:42
17	05:51 20:48	06:22 20:13	19:28 (TRQ08) 19:50 (TRQ08)	06:55 19:22	07:28 18:30	07:06 16:51	16:28 (TRQ07) 16:35 (TRQ07)	07:37 16:42
18	05:52 20:47	06:23 20:12	19:28 (TRQ08) 19:49 (TRQ08)	06:56 19:20	07:29 18:29	17:31 (TRQ07) 17:40 (TRQ07)	07:07 16:50	07:37 16:43
19	05:53 20:46	06:24 20:10	19:28 (TRQ08) 19:47 (TRQ08)	06:57 19:18	07:30 18:27	17:27 (TRQ07) 17:44 (TRQ07)	07:08 16:49	07:38 16:43
20	05:54 20:46	06:25 20:09	19:28 (TRQ08) 19:46 (TRQ08)	06:58 19:16	07:31 18:25	17:25 (TRQ07) 17:45 (TRQ07)	07:09 16:49	07:38 16:43
21	05:55 20:45	06:26 20:07	19:29 (TRQ08) 19:44 (TRQ08)	06:59 19:14	07:32 18:24	17:24 (TRQ07) 17:47 (TRQ07)	07:11 16:48	07:39 16:44
22	05:56 20:44	06:27 20:06	19:29 (TRQ08) 19:43 (TRQ08)	07:00 19:13	07:34 18:22	17:22 (TRQ07) 17:48 (TRQ07)	07:12 16:47	07:40 16:44
23	05:56 20:43	06:28 20:04	19:30 (TRQ08) 19:41 (TRQ08)	07:01 19:11	07:35 18:21	17:20 (TRQ07) 17:49 (TRQ07)	07:13 16:46	07:40 16:45
24	05:57 20:42	06:29 20:02	19:31 (TRQ08) 19:40 (TRQ08)	07:02 19:09	07:36 18:19	17:19 (TRQ07) 17:49 (TRQ07)	07:14 16:46	07:40 16:45
25	05:58 20:41	06:30 20:01	19:33 (TRQ08) 19:38 (TRQ08)	07:03 19:07	06:37 17:18	16:19 (TRQ07) 16:51 (TRQ07)	07:15 16:45	07:41 16:46
26	05:59 20:41	06:31 19:59	19:35 (TRQ08) 19:36 (TRQ08)	07:04 19:06	06:38 17:17	16:18 (TRQ07) 16:51 (TRQ07)	07:17 16:45	07:41 16:47
27	06:00 20:40	06:33 19:58		07:05 19:04	06:40 17:15	16:17 (TRQ07) 16:51 (TRQ07)	07:18 16:44	07:42 16:47
28	06:01 20:39	06:34 19:56		07:06 19:02	06:41 17:14	16:18 (TRQ07) 16:50 (TRQ07)	07:19 16:44	07:42 16:48
29	06:02 20:37	06:35 19:54		07:07 19:00	06:42 17:12	16:17 (TRQ07) 16:48 (TRQ07)	07:20 16:43	07:42 16:49
30	06:03 20:36	06:36 19:53		07:09 18:59	06:43 17:11	16:17 (TRQ07) 16:47 (TRQ07)	07:21 16:43	07:42 16:49
31	06:04 20:35	06:37 19:51			06:45 17:10	16:18 (TRQ07) 16:46 (TRQ07)		07:43 16:50
Potential sun hours	463	430	376	344	295		284	
Total, worst case		438		374		180		
Sun reduction		0,70		0,55		0,46		
Oper. time red.		0,95		0,95		0,95		
Wind dir. red.		0,53		0,72		0,72		
Total reduction		0,36		0,38		0,32		
Total, real		157		142		57		

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: Y - 55  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	
1	07:43	16:23 (TRQ07)   07:28	16:19 (TRQ07)	06:51	06:58	06:10	19:12 (TRQ08)   05:40
	16:51	2 16:25 (TRQ07)   17:27	37 16:56 (TRQ07)	18:02	19:38	20:12	32 19:44 (TRQ08)   20:43
2	07:43	16:22 (TRQ07)   07:27	16:20 (TRQ07)	06:49	06:56	06:09	19:13 (TRQ08)   05:40
	16:52	3 16:25 (TRQ07)   17:28	36 16:56 (TRQ07)	18:04	19:40	20:13	30 19:43 (TRQ08)   20:44
3	07:43	16:21 (TRQ07)   07:26	16:21 (TRQ07)	06:47	06:55	06:08	19:14 (TRQ08)   05:39
	16:53	5 16:26 (TRQ07)   17:29	34 16:55 (TRQ07)	18:05	19:41	20:14	28 19:42 (TRQ08)   20:45
4	07:43	16:21 (TRQ07)   07:25	16:22 (TRQ07)	06:46	06:53	06:06	19:14 (TRQ08)   05:39
	16:54	6 16:27 (TRQ07)   17:31	33 16:55 (TRQ07)	18:06	19:42	20:16	27 19:41 (TRQ08)   20:45
5	07:43	16:20 (TRQ07)   07:24	16:22 (TRQ07)	06:44	06:51	06:05	19:15 (TRQ08)   05:38
	16:55	8 16:28 (TRQ07)   17:32	32 16:54 (TRQ07)	18:07	19:43	20:17	25 19:40 (TRQ08)   20:46
6	07:43	16:20 (TRQ07)   07:23	16:23 (TRQ07)	06:43	06:49	06:04	19:17 (TRQ08)   05:38
	16:56	10 16:30 (TRQ07)   17:33	30 16:53 (TRQ07)	18:09	19:44	20:18	21 19:38 (TRQ08)   20:47
7	07:43	16:20 (TRQ07)   07:22	16:25 (TRQ07)	06:41	06:48	06:03	19:19 (TRQ08)   05:38
	16:57	11 16:31 (TRQ07)   17:35	27 16:52 (TRQ07)	18:10	19:45	20:19	18 19:37 (TRQ08)   20:47
8	07:43	16:19 (TRQ07)   07:21	16:27 (TRQ07)	06:39	06:46	06:01	19:20 (TRQ08)   05:37
	16:58	12 16:31 (TRQ07)   17:36	24 16:51 (TRQ07)	18:11	19:46	20:20	14 19:34 (TRQ08)   20:48
9	07:43	16:18 (TRQ07)   07:19	16:28 (TRQ07)	06:38	06:44	06:00	19:23 (TRQ08)   05:37
	16:59	14 16:32 (TRQ07)   17:37	21 16:49 (TRQ07)	18:12	19:47	20:21	7 19:30 (TRQ08)   20:49
10	07:42	16:18 (TRQ07)   07:18	16:30 (TRQ07)	06:36	06:43	05:59	05:37
	17:00	16 16:34 (TRQ07)   17:38	17 16:47 (TRQ07)	18:13	19:49	20:22	20:49
11	07:42	16:17 (TRQ07)   07:17	16:35 (TRQ07)	06:34	06:41	05:58	05:37
	17:01	17 16:34 (TRQ07)   17:40	8 16:43 (TRQ07)	18:14	19:50	20:23	20:50
12	07:42	16:18 (TRQ07)   07:16	06:33	06:39	05:57	05:37	
	17:02	18 16:36 (TRQ07)   17:41	18:16	19:51	20:24	20:50	
13	07:42	16:18 (TRQ07)   07:14	06:31	06:38	19:26 (TRQ08)	05:56	05:36
	17:03	19 16:37 (TRQ07)   17:42	18:17	19:52	4 19:30 (TRQ08)	20:25	20:51
14	07:41	16:17 (TRQ07)   07:13	06:29	06:36	19:22 (TRQ08)	05:54	05:36
	17:04	21 16:38 (TRQ07)   17:44	18:18	19:53	9 19:31 (TRQ08)	20:26	20:51
15	07:41	16:17 (TRQ07)   07:12	06:27	06:34	19:20 (TRQ08)	05:53	05:36
	17:05	23 16:40 (TRQ07)   17:45	18:19	19:54	11 19:31 (TRQ08)	20:27	20:52
16	07:40	16:17 (TRQ07)   07:10	06:26	06:33	19:18 (TRQ08)	05:52	05:36
	17:07	24 16:41 (TRQ07)   17:46	18:20	19:55	15 19:33 (TRQ08)	20:28	20:52
17	07:40	16:17 (TRQ07)   07:09	06:24	06:31	19:16 (TRQ08)	05:51	05:36
	17:08	25 16:42 (TRQ07)   17:47	18:21	19:56	18 19:34 (TRQ08)	20:29	20:53
18	07:39	16:17 (TRQ07)   07:07	06:22	06:30	19:16 (TRQ08)	05:50	05:36
	17:09	26 16:43 (TRQ07)   17:49	18:23	19:58	19 19:35 (TRQ08)	20:30	20:53
19	07:39	16:16 (TRQ07)   07:06	06:21	06:28	19:14 (TRQ08)	05:49	05:37
	17:10	28 16:44 (TRQ07)   17:50	18:24	19:59	22 19:36 (TRQ08)	20:31	20:53
20	07:38	16:17 (TRQ07)   07:04	06:19	06:27	19:14 (TRQ08)	05:49	05:37
	17:11	29 16:46 (TRQ07)   17:51	18:25	20:00	23 19:37 (TRQ08)	20:32	20:54
21	07:38	16:16 (TRQ07)   07:03	06:17	06:25	19:13 (TRQ08)	05:48	05:37
	17:13	31 16:47 (TRQ07)   17:53	18:26	20:01	25 19:38 (TRQ08)	20:33	20:54
22	07:37	16:16 (TRQ07)   07:02	06:15	06:23	19:12 (TRQ08)	05:47	05:37
	17:14	32 16:48 (TRQ07)   17:54	18:27	20:02	28 19:40 (TRQ08)	20:34	20:54
23	07:36	16:16 (TRQ07)   07:00	06:14	06:22	19:11 (TRQ08)	05:46	05:37
	17:15	34 16:50 (TRQ07)   17:55	18:28	20:03	29 19:40 (TRQ08)	20:35	20:54
24	07:35	16:17 (TRQ07)   06:59	06:12	06:20	19:12 (TRQ08)	05:45	05:37
	17:16	35 16:52 (TRQ07)   17:56	18:29	20:04	30 19:42 (TRQ08)	20:36	20:54
25	07:35	16:17 (TRQ07)   06:57	06:10	06:19	19:11 (TRQ08)	05:44	05:38
	17:18	36 16:53 (TRQ07)   17:58	18:31	20:05	31 19:42 (TRQ08)	20:37	20:54
26	07:34	16:17 (TRQ07)   06:55	06:08	06:17	19:11 (TRQ08)	05:44	05:38
	17:19	37 16:54 (TRQ07)   17:59	18:32	20:07	33 19:44 (TRQ08)	20:38	20:54
27	07:33	16:17 (TRQ07)   06:54	06:07	06:16	19:11 (TRQ08)	05:43	05:38
	17:20	38 16:55 (TRQ07)   18:00	18:33	20:08	33 19:44 (TRQ08)	20:39	20:55
28	07:32	16:17 (TRQ07)   06:52	06:05	06:15	19:11 (TRQ08)	05:42	05:39
	17:22	39 16:56 (TRQ07)   18:01	18:34	20:09	34 19:45 (TRQ08)	20:40	20:55
29	07:31	16:18 (TRQ07)	07:03	06:13	19:12 (TRQ08)	05:42	05:39
	17:23	38 16:56 (TRQ07)	19:35	20:10	33 19:45 (TRQ08)	20:41	20:55
30	07:30	16:18 (TRQ07)	07:01	06:12	19:11 (TRQ08)	05:41	05:40
	17:24	38 16:56 (TRQ07)	19:36	20:11	33 19:44 (TRQ08)	20:42	20:54
31	07:29	16:19 (TRQ07)	07:00			05:41	
	17:25	37 16:56 (TRQ07)	19:37			20:42	
Potential sun hours	294	295	369	400	452	457	
Total, worst case	712	299				202	
Sun reduction	0,42	0,46				0,57	
Oper. time red.	0,95	0,95				0,95	
Wind dir. red.	0,75	0,75				0,54	
Total reduction	0,30	0,33				0,30	
Total, real	217	100		112		61	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker
			(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** Y - 55  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34		06:38 19:49	07:10 18:57	06:46 17:08
2	05:41 20:54	06:06 20:33		06:39 19:48	07:11 18:55	17:07 16:19
3	05:41 20:54	06:07 20:32		06:40 19:46	07:12 18:53	06:48 17:06
4	05:42 20:54	06:08 20:31	11	19:32 (TRQ08) 19:43 (TRQ08)	06:41 19:44	07:13 18:52
5	05:42 20:54	06:09 20:30	15	19:30 (TRQ08) 19:45 (TRQ08)	06:42 19:43	07:14 18:50
6	05:43 20:53	06:10 20:28	19	19:28 (TRQ08) 19:47 (TRQ08)	06:43 19:41	07:15 18:48
7	05:44 20:53	06:11 20:27	23	19:26 (TRQ08) 19:49 (TRQ08)	06:44 19:39	07:16 18:47
8	05:44 20:53	06:12 20:26	25	19:25 (TRQ08) 19:50 (TRQ08)	06:45 19:37	07:17 18:45
9	05:45 20:52	06:13 20:24	28	19:23 (TRQ08) 19:51 (TRQ08)	06:46 19:36	07:19 18:43
10	05:46 20:52	06:15 20:23	29	19:22 (TRQ08) 19:51 (TRQ08)	06:47 19:34	07:20 18:42
11	05:46 20:51	06:16 20:22	31	19:21 (TRQ08) 19:52 (TRQ08)	06:48 19:32	07:21 18:40
12	05:47 20:51	06:17 20:20	31	19:21 (TRQ08) 19:52 (TRQ08)	06:49 19:30	07:22 18:38
13	05:48 20:50	06:18 20:19	33	19:20 (TRQ08) 19:53 (TRQ08)	06:50 19:29	07:23 18:37
14	05:49 20:50	06:19 20:18	34	19:19 (TRQ08) 19:53 (TRQ08)	06:51 19:27	07:24 18:35
15	05:49 20:49	06:20 20:16	34	19:19 (TRQ08) 19:53 (TRQ08)	06:53 19:25	07:25 18:33
16	05:50 20:49	06:21 20:15	34	19:18 (TRQ08) 19:52 (TRQ08)	06:54 19:23	07:27 18:32
17	05:51 20:48	06:22 20:13	32	19:18 (TRQ08) 19:50 (TRQ08)	06:55 19:22	07:28 18:30
18	05:52 20:47	06:23 20:12	31	19:18 (TRQ08) 19:49 (TRQ08)	06:56 19:20	07:29 18:29
19	05:53 20:47	06:24 20:10	30	19:17 (TRQ08) 19:47 (TRQ08)	06:57 19:18	07:30 18:27
20	05:54 20:46	06:25 20:09	29	19:17 (TRQ08) 19:46 (TRQ08)	06:58 19:16	07:31 18:25
21	05:55 20:45	06:26 20:07	27	19:17 (TRQ08) 19:44 (TRQ08)	06:59 19:15	07:32 18:24
22	05:56 20:44	06:27 20:06	26	19:17 (TRQ08) 19:43 (TRQ08)	07:00 19:13	07:34 18:22
23	05:56 20:43	06:28 20:04	23	19:18 (TRQ08) 19:41 (TRQ08)	07:01 19:11	07:35 18:21
24	05:57 20:42	06:29 20:02	22	19:18 (TRQ08) 19:40 (TRQ08)	07:02 19:09	07:36 18:19
25	05:58 20:41	06:30 20:01	19	19:19 (TRQ08) 19:38 (TRQ08)	07:03 19:07	06:37 17:18
26	05:59 20:41	06:31 19:59	17	19:19 (TRQ08) 19:36 (TRQ08)	07:04 19:06	06:38 17:17
27	06:00 20:40	06:33 19:58	15	19:20 (TRQ08) 19:35 (TRQ08)	07:05 19:04	06:40 17:15
28	06:01 20:39	06:34 19:56	11	19:22 (TRQ08) 19:33 (TRQ08)	07:06 19:02	06:41 17:14
29	06:02 20:38	06:35 19:54	8	19:24 (TRQ08) 19:32 (TRQ08)	07:07 19:00	06:42 17:12
30	06:03 20:36	06:36 19:53	3	19:27 (TRQ08) 19:30 (TRQ08)	07:09 18:59	06:43 17:11
31	06:04 20:35	06:37 19:51			06:45 17:10	16:03 (TRQ07) 16:14 (TRQ07)
Potential sun hours	463	430		376	344	295
Total, worst case			640			903
Sun reduction			0,70			0,46
Oper. time red.			0,95			0,95
Wind dir. red.			0,54			0,75
Total reduction			0,37		0,40	0,33
Total, real		236			4	298

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: Z - 57  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:28	06:51	06:58	06:10	05:40
	16:51	17:27	18:02	19:38	20:12	20:43
2	07:43	07:27	06:49	06:56	06:09	05:40
	16:52	17:28	18:04	19:40	20:13	20:44
3	07:43	07:26	06:47	06:55	06:08	05:39
	16:53	17:29	18:05	19:41	20:14	20:45
4	07:43	07:25	06:46	06:53	06:06	05:39
	16:54	17:31	18:06	19:42	20:15	20:45
5	07:43	07:24	06:44	06:51	06:05	05:38
	16:55	17:32	18:07	19:43	20:17	20:46
6	07:43	07:23	06:43	06:49	06:04	05:38
	16:56	17:33	18:09	19:44	20:18	20:47
7	07:43	07:22	06:41	17:40 (TRQ07)	06:48	06:03
	16:57	17:35	18:10	17:48 (TRQ07)	19:45	20:19
8	07:43	07:21	06:39	17:36 (TRQ07)	06:46	06:01
	16:58	17:36	18:11	17:49 (TRQ07)	19:46	20:20
9	07:43	07:19	06:38	17:34 (TRQ07)	06:44	06:00
	16:59	17:37	18:12	17:51 (TRQ07)	19:47	20:21
10	07:42	07:18	06:36	17:32 (TRQ07)	06:43	05:59
	17:00	17:38	18:13	17:52 (TRQ07)	19:49	20:22
11	07:42	07:17	06:34	17:30 (TRQ07)	06:41	05:58
	17:01	17:40	18:14	17:53 (TRQ07)	19:50	20:23
12	07:42	07:16	06:33	17:29 (TRQ07)	06:39	05:57
	17:02	17:41	18:16	17:55 (TRQ07)	19:51	20:24
13	07:42	07:14	06:31	17:27 (TRQ07)	06:38	05:56
	17:03	17:42	18:17	17:55 (TRQ07)	19:52	20:25
14	07:41	07:13	06:29	17:26 (TRQ07)	06:36	05:54
	17:04	17:44	18:18	17:56 (TRQ07)	19:53	20:26
15	07:41	07:12	06:27	17:25 (TRQ07)	06:34	05:53
	17:05	17:45	18:19	17:57 (TRQ07)	19:54	20:27
16	07:40	07:10	06:26	17:25 (TRQ07)	06:33	05:52
	17:07	17:46	18:20	17:59 (TRQ07)	19:55	20:28
17	07:40	07:09	06:24	17:24 (TRQ07)	06:31	05:51
	17:08	17:47	18:21	18:00 (TRQ07)	19:56	20:29
18	07:39	07:07	06:22	17:23 (TRQ07)	06:30	05:50
	17:09	17:49	18:23	18:01 (TRQ07)	19:58	20:30
19	07:39	07:06	06:21	17:23 (TRQ07)	06:28	05:49
	17:10	17:50	18:24	18:02 (TRQ07)	19:59	20:31
20	07:38	07:04	06:19	17:23 (TRQ07)	06:27	05:49
	17:11	17:51	18:25	18:02 (TRQ07)	20:00	20:32
21	07:37	07:03	06:17	17:23 (TRQ07)	06:25	05:48
	17:13	17:53	18:26	18:01 (TRQ07)	20:01	20:33
22	07:37	07:02	06:15	17:23 (TRQ07)	06:23	05:47
	17:14	17:54	18:27	18:00 (TRQ07)	20:02	20:34
23	07:36	07:00	06:14	17:23 (TRQ07)	06:22	05:46
	17:15	17:55	18:28	17:59 (TRQ07)	20:03	20:35
24	07:35	06:59	06:12	17:24 (TRQ07)	06:20	05:45
	17:16	17:56	18:29	17:59 (TRQ07)	20:04	20:36
25	07:35	06:57	06:10	17:24 (TRQ07)	06:19	05:44
	17:18	17:58	18:31	17:58 (TRQ07)	20:05	20:37
26	07:34	06:55	06:08	17:25 (TRQ07)	06:17	05:44
	17:19	17:59	18:32	17:56 (TRQ07)	20:07	20:38
27	07:33	06:54	06:07	17:26 (TRQ07)	06:16	05:43
	17:20	18:00	18:33	17:54 (TRQ07)	20:08	20:39
28	07:32	06:52	06:05	17:28 (TRQ07)	06:15	05:42
	17:22	18:01	18:34	17:53 (TRQ07)	20:09	20:40
29	07:31		07:03	18:29 (TRQ07)	06:13	05:42
	17:23		19:35	18:51 (TRQ07)	20:10	20:41
30	07:30		07:01	18:31 (TRQ07)	06:12	05:41
	17:24		19:36	18:47 (TRQ07)	20:11	20:42
31	07:29		07:00	18:36 (TRQ07)		05:41
	17:25		19:37	18:43 (TRQ07)		20:42
Potential sun hours	294	295	369	400	452	457
Total, worst case			692			422
Sun reduction			0,46		5	0,61
Oper. time red.			0,95		0,95	0,95
Wind dir. red.			0,64		0,50	0,50
Total reduction			0,28		0,27	0,29
Total, real			194		1	124

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** Z - 57  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December		
1	05:40	20:13 (TRQ08)	06:05	06:38	07:10	18:07 (TRQ07)	06:46	07:22
	20:54	15 20:28 (TRQ08)	20:34	19:49	18:57	27 18:34 (TRQ07)	17:08	16:43
2	05:41	20:14 (TRQ08)	06:06	06:39	07:11	18:08 (TRQ07)	06:47	07:23
	20:54	14 20:28 (TRQ08)	20:33	19:48	18:55	24 18:32 (TRQ07)	17:07	16:42
3	05:41	20:15 (TRQ08)	06:07	06:40	07:12	18:09 (TRQ07)	06:48	07:24
	20:54	14 20:29 (TRQ08)	20:32	19:46	18:53	21 18:30 (TRQ07)	17:06	16:42
4	05:42	20:15 (TRQ08)	06:08	06:41	07:13	18:10 (TRQ07)	06:49	07:25
	20:54	13 20:28 (TRQ08)	20:31	19:44	18:52	18 18:28 (TRQ07)	17:05	16:42
5	05:42	20:16 (TRQ08)	06:09	06:42	07:14	18:12 (TRQ07)	06:51	07:26
	20:54	12 20:28 (TRQ08)	20:30	19:43	18:50	15 18:27 (TRQ07)	17:03	16:42
6	05:43	20:16 (TRQ08)	06:10	06:43	07:15	18:15 (TRQ07)	06:52	07:27
	20:53	11 20:27 (TRQ08)	20:28	19:41	18:48	10 18:25 (TRQ07)	17:02	16:41
7	05:44	20:17 (TRQ08)	06:11	06:44	07:16	18:21 (TRQ07)	06:53	07:28
	20:53	10 20:27 (TRQ08)	20:27	19:39	18:47	2 18:23 (TRQ07)	17:01	16:41
8	05:44	20:18 (TRQ08)	06:12	06:45	07:17	18:24 (TRQ07)	06:54	07:29
	20:53	9 20:27 (TRQ08)	20:26	19:37	18:45	17:00	16:41	16:41
9	05:45	20:18 (TRQ08)	06:13	06:46	07:19	18:27 (TRQ07)	06:56	07:30
	20:52	8 20:26 (TRQ08)	20:24	19:36	18:43	16:59	16:41	16:41
10	05:46	20:19 (TRQ08)	06:15	06:47	07:20	18:30 (TRQ07)	06:57	07:31
	20:52	7 20:26 (TRQ08)	20:23	19:34	18:42	16:58	16:41	16:41
11	05:46	20:20 (TRQ08)	06:16	06:48	07:21	18:33 (TRQ07)	06:58	07:32
	20:51	6 20:26 (TRQ08)	20:22	19:32	18:40	16:57	16:41	16:41
12	05:47	20:21 (TRQ08)	06:17	06:49	18:29 (TRQ07)	07:22	06:59	07:33
	20:51	4 20:25 (TRQ08)	20:20	19:30	4 18:33 (TRQ07)	18:38	16:56	16:41
13	05:48	20:22 (TRQ08)	06:18	06:50	18:23 (TRQ07)	07:23	07:01	07:34
	20:50	3 20:25 (TRQ08)	20:19	19:29	15 18:38 (TRQ07)	18:37	16:55	16:41
14	05:49	20:23 (TRQ08)	06:19	06:51	18:20 (TRQ07)	07:24	07:02	07:34
	20:50	20:18	19:27	21 18:41 (TRQ07)	18:35	16:54	16:42	16:42
15	05:49	20:24 (TRQ08)	06:20	06:53	18:17 (TRQ07)	07:25	07:03	07:35
	20:49	20:16	19:25	25 18:42 (TRQ07)	18:33	16:53	16:42	16:42
16	05:50	20:25 (TRQ08)	06:21	06:54	18:15 (TRQ07)	07:27	07:04	07:36
	20:49	20:15	19:23	28 18:43 (TRQ07)	18:32	16:52	16:42	16:42
17	05:51	20:26 (TRQ08)	06:22	06:55	18:13 (TRQ07)	07:28	07:06	07:37
	20:48	20:13	19:22	31 18:44 (TRQ07)	18:30	16:51	16:42	16:42
18	05:52	20:27 (TRQ08)	06:23	06:56	18:12 (TRQ07)	07:29	07:07	07:37
	20:47	20:12	19:20	33 18:45 (TRQ07)	18:29	16:50	16:43	16:43
19	05:53	20:28 (TRQ08)	06:24	06:57	18:11 (TRQ07)	07:30	07:08	07:38
	20:46	20:10	19:18	34 18:45 (TRQ07)	18:27	16:49	16:43	16:43
20	05:54	20:29 (TRQ08)	06:25	06:58	18:09 (TRQ07)	07:31	07:09	07:38
	20:46	20:09	19:16	37 18:46 (TRQ07)	18:25	16:49	16:43	16:43
21	05:55	20:30 (TRQ08)	06:26	06:59	18:08 (TRQ07)	07:32	07:11	07:39
	20:45	20:07	19:15	38 18:46 (TRQ07)	18:24	16:48	16:44	16:44
22	05:56	20:31 (TRQ08)	06:27	07:00	18:08 (TRQ07)	07:34	07:12	07:40
	20:44	20:06	19:13	38 18:46 (TRQ07)	18:22	16:47	16:44	16:44
23	05:56	20:32 (TRQ08)	06:28	07:01	18:08 (TRQ07)	07:35	07:13	07:40
	20:43	20:04	19:11	38 18:46 (TRQ07)	18:21	16:46	16:45	16:45
24	05:57	20:33 (TRQ08)	06:29	07:02	18:07 (TRQ07)	07:36	07:14	07:40
	20:42	20:02	19:09	39 18:46 (TRQ07)	18:19	16:46	16:45	16:45
25	05:58	20:34 (TRQ08)	06:30	07:03	18:07 (TRQ07)	06:37	07:15	07:41
	20:41	20:01	19:07	38 18:45 (TRQ07)	17:18	16:45	16:46	16:46
26	05:59	20:35 (TRQ08)	06:31	07:04	18:07 (TRQ07)	06:38	07:17	07:41
	20:40	19:59	19:06	36 18:43 (TRQ07)	17:17	16:45	16:47	16:47
27	06:00	20:36 (TRQ08)	06:33	07:05	18:06 (TRQ07)	06:40	07:18	07:42
	20:40	19:58	19:04	35 18:41 (TRQ07)	17:15	16:44	16:47	16:47
28	06:01	20:37 (TRQ08)	06:34	07:06	18:06 (TRQ07)	06:41	07:19	07:42
	20:39	19:56	19:02	33 18:39 (TRQ07)	17:14	16:44	16:48	16:48
29	06:02	20:38 (TRQ08)	06:35	07:07	18:06 (TRQ07)	06:42	07:20	07:42
	20:37	19:54	19:00	31 18:37 (TRQ07)	17:12	16:43	16:49	16:49
30	06:03	20:39 (TRQ08)	06:36	07:09	18:07 (TRQ07)	06:43	07:21	07:42
	20:36	19:53	18:59	29 18:36 (TRQ07)	17:11	16:43	16:49	16:49
31	06:04	20:40 (TRQ08)	06:37	07:10	18:06 (TRQ07)	06:44	07:22	07:43
	20:35	19:51	18:58	28 18:35 (TRQ07)	17:10	16:43	16:49	16:49
Potential sun hours	463	430	376	344	295	284		
Total, worst case	126		583		117			
Sun reduction	0,71		0,62		0,55			
Oper. time red.	0,95		0,95		0,95			
Wind dir. red.	0,50		0,64		0,64			
Total reduction	0,34		0,38		0,34			
Total, real	43		223		39			

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** AA - 61  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June
1	07:43 16:51	07:28 17:27	06:51 18:02	17:17 (TRQ07) 17:41 (TRQ07)	06:58 19:38	06:10 20:12
2	07:43 16:52	07:27 17:28	06:49 18:04	24 17:15 (TRQ07) 26 17:41 (TRQ07)	06:56 19:40	06:09 20:13
3	07:43 16:53	07:26 17:29	06:47 18:05	29 17:14 (TRQ07) 29 17:43 (TRQ07)	06:55 19:41	06:08 20:14
4	07:43 16:54	07:25 17:31	06:46 18:06	31 17:13 (TRQ07) 31 17:44 (TRQ07)	06:53 19:42	06:06 20:15
5	07:43 16:55	07:24 17:32	06:44 18:07	33 17:13 (TRQ07) 33 17:46 (TRQ07)	06:51 19:43	06:05 20:17
6	07:43 16:56	07:23 17:33	06:43 18:09	35 17:12 (TRQ07) 35 17:47 (TRQ07)	06:49 19:44	06:04 20:18
7	07:43 16:57	07:22 17:35	06:41 18:10	37 17:11 (TRQ07) 37 17:48 (TRQ07)	06:48 19:45	06:03 20:19
8	07:43 16:58	07:21 17:36	06:39 18:11	39 17:10 (TRQ07) 39 17:49 (TRQ07)	06:46 19:46	06:01 20:20
9	07:43 16:59	07:19 17:37	06:38 18:12	41 17:10 (TRQ07) 41 17:51 (TRQ07)	06:44 19:47	06:00 20:21
10	07:42 17:00	07:18 17:38	06:36 18:13	42 17:09 (TRQ07) 42 17:51 (TRQ07)	06:43 19:49	05:59 20:22
11	07:42 17:01	07:17 17:40	06:34 18:14	42 17:09 (TRQ07) 42 17:51 (TRQ07)	06:41 19:50	05:58 20:23
12	07:42 17:02	07:16 17:41	06:33 18:16	41 17:10 (TRQ07) 41 17:51 (TRQ07)	06:39 19:51	05:57 20:24
13	07:42 17:03	07:14 17:42	06:31 18:17	41 17:09 (TRQ07) 41 17:50 (TRQ07)	06:38 19:52	05:56 20:25
14	07:41 17:04	07:13 17:44	06:29 18:18	40 17:09 (TRQ07) 40 17:49 (TRQ07)	06:36 19:53	05:54 20:26
15	07:41 17:05	07:12 17:45	06:27 18:19	39 17:09 (TRQ07) 39 17:48 (TRQ07)	06:34 19:54	05:53 20:27
16	07:40 17:07	07:10 17:46	06:26 18:20	37 17:11 (TRQ07) 37 17:48 (TRQ07)	06:33 19:55	05:52 20:28
17	07:40 17:08	07:09 17:47	06:24 18:21	36 17:11 (TRQ07) 36 17:47 (TRQ07)	06:31 19:56	05:51 20:29
18	07:39 17:09	07:07 17:49	06:22 18:23	33 17:12 (TRQ07) 33 17:45 (TRQ07)	06:30 19:58	05:50 20:30
19	07:39 17:10	07:06 17:50	06:21 18:24	31 17:12 (TRQ07) 31 17:43 (TRQ07)	06:28 19:59	05:49 20:31
20	07:38 17:11	07:04 17:51	06:19 18:25	28 17:14 (TRQ07) 28 17:42 (TRQ07)	06:27 20:00	05:49 20:32
21	07:37 17:13	07:03 17:53	06:17 18:26	24 17:16 (TRQ07) 24 17:40 (TRQ07)	06:25 20:01	05:48 20:33
22	07:37 17:14	07:02 17:54	06:15 18:27	18 17:18 (TRQ07) 18 17:36 (TRQ07)	06:23 20:02	05:47 20:34
23	07:36 17:15	07:00 17:55	06:14 18:28	11 17:21 (TRQ07) 11 17:32 (TRQ07)	06:22 20:03	05:46 20:35
24	07:35 17:16	06:59 17:56	06:12 18:29	06:20 20:04	05:45 20:36	20:35
25	07:35 17:18	06:57 17:58	17:27 (TRQ07) 17:35 (TRQ07)	06:10 18:31	05:44 20:05	20:11 (TRQ08) 20:12 (TRQ08)
26	07:34 17:19	06:55 17:59	17:24 (TRQ07) 17:37 (TRQ07)	06:08 18:32	05:44 20:07	20:09 (TRQ08) 20:13 (TRQ08)
27	07:33 17:20	06:54 18:00	17:20 (TRQ07) 17:38 (TRQ07)	06:07 18:33	05:43 20:08	20:08 (TRQ08) 20:14 (TRQ08)
28	07:32 17:22	06:52 18:01	17:19 (TRQ07) 17:40 (TRQ07)	06:05 18:34	05:42 20:09	20:07 (TRQ08) 20:14 (TRQ08)
29	07:31 17:23	07:03 17:53	07:03 19:35	06:13 20:10	05:42 20:41	20:07 (TRQ08) 20:16 (TRQ08)
30	07:30 17:24	07:01 19:36	07:01 19:36	06:12 20:11	05:41 20:42	20:05 (TRQ08) 20:16 (TRQ08)
31	07:29 17:25	07:00 19:37	07:00 19:37	06:11 20:12	05:41 20:42	20:05 (TRQ08) 20:17 (TRQ08)
Potential sun hours	294	295	369	400	452	457
Total, worst case		60	758		50	612
Sun reduction		0,46	0,46		0,57	0,61
Oper. time red.		0,95	0,95		0,95	0,95
Wind dir. red.		0,65	0,65		0,51	0,51
Total reduction		0,29	0,29		0,28	0,30
Total, real		17	218		14	181

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real**Shadow receptor:** AA - 61  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December	
1	05:40 20:07 (TRQ08)	06:05 20:28 (TRQ08)	06:38 20:34	07:10 18:57	17:48 (TRQ07) 18:30 (TRQ07)	06:46 17:08	07:22 16:43
2	05:41 20:54	06:06 20:28 (TRQ08)	06:39 20:33	07:11 18:55	17:48 (TRQ07) 18:29 (TRQ07)	06:47 17:07	07:23 16:42
3	05:41 20:54	06:07 20:09 (TRQ08)	06:40 20:32	07:12 18:53	17:47 (TRQ07) 18:29 (TRQ07)	06:48 17:06	07:24 16:42
4	05:42 20:54	06:08 20:09 (TRQ08)	06:41 20:31	07:13 18:52	17:47 (TRQ07) 18:28 (TRQ07)	06:49 17:05	07:25 16:42
5	05:42 20:54	06:09 20:09 (TRQ08)	06:42 20:30	07:14 18:50	17:47 (TRQ07) 18:27 (TRQ07)	06:51 17:03	07:26 16:42
6	05:43 20:53	06:10 20:09 (TRQ08)	06:43 20:28	07:15 18:48	17:47 (TRQ07) 18:25 (TRQ07)	06:52 17:02	07:27 16:41
7	05:44 20:53	06:11 20:27 (TRQ08)	06:44 20:27	07:16 18:47	17:47 (TRQ07) 18:24 (TRQ07)	06:53 17:01	07:28 16:41
8	05:44 20:53	06:12 20:11 (TRQ08)	06:45 20:26	07:17 18:45	17:47 (TRQ07) 18:22 (TRQ07)	06:54 17:00	07:29 16:41
9	05:45 20:52	06:13 20:27 (TRQ08)	06:46 20:24	07:19 18:43	17:47 (TRQ07) 18:20 (TRQ07)	06:56 16:59	07:30 16:41
10	05:46 20:52	06:15 20:12 (TRQ08)	06:47 20:23	07:20 18:42	17:48 (TRQ07) 18:18 (TRQ07)	06:57 16:58	07:31 16:41
11	05:46 20:51	06:16 20:26 (TRQ08)	06:48 20:22	07:21 18:40	17:49 (TRQ07) 18:17 (TRQ07)	06:58 16:57	07:32 16:41
12	05:47 20:51	06:17 20:12 (TRQ08)	06:49 20:20	07:22 18:38	17:50 (TRQ07) 18:15 (TRQ07)	06:59 16:56	07:33 16:41
13	05:48 20:50	06:18 20:13 (TRQ08)	06:50 20:19	07:23 18:37	17:51 (TRQ07) 18:13 (TRQ07)	07:01 16:55	07:34 16:41
14	05:49 20:49	06:19 20:15 (TRQ08)	06:51 20:18	07:24 18:35	17:52 (TRQ07) 18:11 (TRQ07)	07:02 16:54	07:34 16:42
15	05:49 20:49	06:20 20:16 (TRQ08)	06:53 19:25	07:25 18:33	17:54 (TRQ07) 18:10 (TRQ07)	07:03 16:53	07:35 16:42
16	05:50 20:49	06:21 20:16 (TRQ08)	06:54 19:25	07:27 18:32	17:56 (TRQ07) 18:08 (TRQ07)	07:04 16:52	07:36 16:42
17	05:51 20:48	06:22 20:18 (TRQ08)	06:55 19:22	07:28 18:30	18:02 (TRQ07) 18:07 (TRQ07)	07:06 16:51	07:37 16:42
18	05:52 20:47	06:23 20:19 (TRQ08)	06:56 19:20	07:29 18:29	18:02 (TRQ07) 18:02 (TRQ07)	07:07 16:50	07:37 16:43
19	05:53 20:46	06:24 20:20	06:57 19:18	07:30 18:27	18:02 (TRQ07) 18:02 (TRQ07)	07:08 16:49	07:38 16:43
20	05:54 20:46	06:25 20:09	06:58 19:16	18:10 (TRQ07) 18:16 (TRQ07)	07:31 18:25	07:09 16:49	07:38 16:43
21	05:55 20:45	06:26 20:07	06:59 19:15	18:04 (TRQ07) 18:21 (TRQ07)	07:32 18:24	07:11 16:48	07:39 16:44
22	05:56 20:44	06:27 20:06	07:00 19:13	18:01 (TRQ07) 18:23 (TRQ07)	07:34 18:22	07:12 16:47	07:40 16:44
23	05:56 20:43	06:28 20:04	07:01 19:11	17:59 (TRQ07) 18:26 (TRQ07)	07:35 18:21	07:13 16:46	07:40 16:45
24	05:57 20:42	06:29 20:02	07:02 19:09	17:57 (TRQ07) 18:27 (TRQ07)	07:36 18:19	07:14 16:46	07:40 16:45
25	05:58 20:41	06:30 20:01	07:03 19:07	17:55 (TRQ07) 18:28 (TRQ07)	06:37 17:18	07:15 16:45	07:41 16:46
26	05:59 20:41	06:31 19:59	07:04 19:06	17:54 (TRQ07) 18:29 (TRQ07)	06:38 17:17	07:17 16:45	07:41 16:47
27	06:00 20:40	06:33 19:58	07:05 19:04	17:52 (TRQ07) 18:29 (TRQ07)	06:40 17:15	07:18 16:44	07:42 16:47
28	06:01 20:39	06:34 19:56	07:06 19:02	17:51 (TRQ07) 18:30 (TRQ07)	06:41 17:14	07:19 16:44	07:42 16:48
29	06:02 20:37	06:35 19:54	07:07 19:00	17:50 (TRQ07) 18:30 (TRQ07)	06:42 17:12	07:20 16:43	07:42 16:49
30	06:03 20:36	06:36 19:53	07:09 18:59	17:49 (TRQ07) 18:30 (TRQ07)	06:43 17:11	07:21 16:43	07:42 16:49
31	06:04 20:35	06:37 19:51	07:10 19:20	06:45 17:10	06:45 17:10	07:22 16:50	07:43 16:50
Potential sun hours	463	430	376	344	295	284	
Total, worst case	249		327		506		
Sun reduction	0,71		0,62		0,55		
Oper. time red.	0,95		0,95		0,95		
Wind dir. red.	0,51		0,65		0,65		
Total reduction	0,34		0,39		0,34		
Total, real	85		128		174		

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real**Shadow receptor:** AB - 67  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June
1	07:43	07:28	06:51	17:16 (TRQ08)	06:58	06:10
	16:51	17:27	18:02	25 17:41 (TRQ08)	19:39	20:12
2	07:43	07:27	06:49	17:13 (TRQ08)	06:56	06:09
	16:52	17:28	18:04	28 17:41 (TRQ08)	19:40	20:13
3	07:43	07:26	06:48	17:13 (TRQ08)	06:55	06:08
	16:53	17:29	18:05	30 17:43 (TRQ08)	19:41	20:14
4	07:43	07:25	06:46	17:11 (TRQ08)	06:53	06:06
	16:54	17:31	18:06	33 17:44 (TRQ08)	19:42	20:16
5	07:43	07:24	06:44	17:10 (TRQ08)	06:51	06:05
	16:55	17:32	18:07	36 17:46 (TRQ08)	19:43	20:17
6	07:43	07:23	06:43	17:09 (TRQ08)	06:49	06:04
	16:56	17:33	18:09	38 17:47 (TRQ08)	19:44	20:18
7	07:43	07:22	06:41	17:07 (TRQ08)	06:48	06:03
	16:57	17:35	18:10	41 17:48 (TRQ08)	19:45	20:19
8	07:43	07:21	06:39	17:06 (TRQ08)	06:46	06:01
	16:58	17:36	18:11	43 17:49 (TRQ08)	19:46	20:20
9	07:43	07:19	06:38	17:06 (TRQ08)	06:44	06:00
	16:59	17:37	18:12	45 17:51 (TRQ08)	19:48	20:21
10	07:42	07:18	06:36	17:05 (TRQ08)	06:43	05:59
	17:00	17:38	18:13	47 17:52 (TRQ08)	19:49	20:22
11	07:42	07:17	06:34	17:05 (TRQ08)	06:41	05:58
	17:01	17:40	18:14	48 17:53 (TRQ08)	19:50	20:23
12	07:42	07:16	06:33	17:05 (TRQ08)	06:39	05:57
	17:02	17:41	18:16	50 17:55 (TRQ08)	19:51	20:24
13	07:42	07:14	06:31	17:04 (TRQ08)	06:38	05:56
	17:03	17:42	18:17	51 17:55 (TRQ08)	19:52	20:25
14	07:41	07:13	06:29	17:04 (TRQ08)	06:36	05:54
	17:04	17:44	18:18	50 17:54 (TRQ08)	19:53	20:26
15	07:41	07:12	06:27	17:03 (TRQ08)	06:34	05:53
	17:05	17:45	18:19	50 17:53 (TRQ08)	19:54	20:27
16	07:40	07:10	06:26	17:04 (TRQ08)	06:33	05:52
	17:07	17:46	18:20	50 17:54 (TRQ08)	19:55	20:28
17	07:40	07:09	06:24	17:04 (TRQ08)	06:31	05:51
	17:08	17:48	18:21	49 17:53 (TRQ08)	19:57	20:29
18	07:39	07:07	06:22	17:04 (TRQ08)	06:30	05:50
	17:09	17:49	18:23	48 17:52 (TRQ08)	19:58	20:30
19	07:39	07:06	06:21	17:04 (TRQ08)	06:28	05:49
	17:10	17:50	18:24	47 17:51 (TRQ08)	19:59	20:31
20	07:38	07:05	06:19	17:05 (TRQ08)	06:27	05:49
	17:11	17:51	18:25	46 17:51 (TRQ08)	20:00	20:32
21	07:38	07:03	06:17	17:05 (TRQ08)	06:25	05:48
	17:13	17:53	18:26	44 17:49 (TRQ08)	20:01	20:33
22	07:37	07:02	06:15	17:06 (TRQ08)	06:23	05:47
	17:14	17:54	18:27	42 17:48 (TRQ08)	20:02	20:34
23	07:36	07:00	06:14	17:07 (TRQ08)	06:22	05:46
	17:15	17:55	18:28	40 17:47 (TRQ08)	20:03	20:35
24	07:35	06:59	06:12	17:08 (TRQ08)	06:20	05:45
	17:16	17:56	18:29	37 17:45 (TRQ08)	20:04	20:36
25	07:35	06:57	06:10	17:09 (TRQ08)	06:19	05:44
	17:18	17:58	18:31	34 17:43 (TRQ08)	20:05	20:37
26	07:34	06:55	17:24 (TRQ08)	06:08	17:11 (TRQ08)	06:17
	17:19	17:59	18:32	30 17:41 (TRQ08)	20:07	20:38
27	07:33	06:54	17:20 (TRQ08)	06:07	17:13 (TRQ08)	06:16
	17:20	18:00	18:33	26 17:39 (TRQ08)	20:08	20:39
28	07:32	06:52	17:18 (TRQ08)	06:05	17:16 (TRQ08)	06:15
	17:22	18:01	18:34	20 17:36 (TRQ08)	20:09	20:40
29	07:31		07:03	18:20 (TRQ08)	06:13	05:42
	17:23		19:35	11 18:31 (TRQ08)	20:10	20:41
30	07:30		07:01		06:12	05:41
	17:24		19:36		20:11	20:42
31	07:29		07:00			05:41
	17:25		19:37			20:42
Potential sun hours	294	295	369	400	452	457
Total, worst case		53	1139			
Sun reduction		0,46	0,46			
Oper. time red.		0,95	0,95			
Wind dir. red.		0,65	0,65			
Total reduction		0,29	0,28			
Total, real		15	323			

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: AB - 67  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	17:43 (TRQ08) 18:34 (TRQ08)	06:46 17:08
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	17:43 (TRQ08) 18:32 (TRQ08)	06:47 17:07
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:53	17:43 (TRQ08) 18:30 (TRQ08)	06:48 17:06
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	17:44 (TRQ08) 18:29 (TRQ08)	06:50 17:05
5	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	17:44 (TRQ08) 18:27 (TRQ08)	06:51 17:03
6	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	17:44 (TRQ08) 18:25 (TRQ08)	06:52 17:02
7	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	17:44 (TRQ08) 18:24 (TRQ08)	06:53 17:01
8	05:44 20:53	06:12 20:26	06:45 19:37	07:17 18:45	17:44 (TRQ08) 18:22 (TRQ08)	06:55 17:00
9	05:45 20:52	06:13 20:24	06:46 19:36	07:19 18:43	17:45 (TRQ08) 18:20 (TRQ08)	06:56 16:59
10	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	17:46 (TRQ08) 18:18 (TRQ08)	06:57 16:58
11	05:46 20:51	06:16 20:22	06:48 19:32	07:21 18:40	17:47 (TRQ08) 18:17 (TRQ08)	06:58 16:57
12	05:47 20:51	06:17 20:20	06:49 19:30	07:22 18:38	17:49 (TRQ08) 18:15 (TRQ08)	07:00 16:56
13	05:48 20:50	06:18 20:19	06:50 19:29	07:23 18:37	17:50 (TRQ08) 18:13 (TRQ08)	07:01 16:55
14	05:49 20:50	06:19 20:18	06:52 19:27	18:11 (TRQ08) 18:20 (TRQ08)	07:24 18:35	07:02 16:54
15	05:49 20:49	06:20 20:16	06:53 19:25	18:05 (TRQ08) 18:24 (TRQ08)	07:25 18:33	07:03 16:53
16	05:50 20:49	06:21 20:15	06:54 19:23	18:02 (TRQ08) 18:27 (TRQ08)	07:27 18:32	07:05 16:52
17	05:51 20:48	06:22 20:13	06:55 19:22	17:59 (TRQ08) 18:29 (TRQ08)	07:28 18:30	07:06 16:51
18	05:52 20:47	06:23 20:12	06:56 19:20	17:57 (TRQ08) 18:30 (TRQ08)	07:29 18:29	07:07 16:50
19	05:53 20:47	06:24 20:10	06:57 19:18	17:55 (TRQ08) 18:31 (TRQ08)	07:30 18:27	07:08 16:49
20	05:54 20:46	06:25 20:09	06:58 19:16	17:53 (TRQ08) 18:32 (TRQ08)	07:31 18:25	07:09 16:49
21	05:55 20:45	06:26 20:07	06:59 19:15	17:52 (TRQ08) 18:33 (TRQ08)	07:32 18:24	07:11 16:48
22	05:56 20:44	06:27 20:06	07:00 19:13	17:51 (TRQ08) 18:34 (TRQ08)	07:34 18:22	07:12 16:47
23	05:56 20:43	06:28 20:04	07:01 19:11	17:50 (TRQ08) 18:35 (TRQ08)	07:35 18:21	07:13 16:46
24	05:57 20:42	06:29 20:02	07:02 19:09	17:49 (TRQ08) 18:35 (TRQ08)	07:36 18:19	07:14 16:46
25	05:58 20:41	06:30 20:01	07:03 19:07	17:48 (TRQ08) 18:35 (TRQ08)	06:37 17:18	07:15 16:45
26	05:59 20:41	06:31 19:59	07:04 19:06	17:47 (TRQ08) 18:35 (TRQ08)	06:38 17:17	07:17 16:45
27	06:00 20:40	06:33 19:58	07:05 19:04	17:46 (TRQ08) 18:35 (TRQ08)	06:40 17:15	07:18 16:44
28	06:01 20:39	06:34 19:56	07:06 19:02	17:45 (TRQ08) 18:35 (TRQ08)	06:41 17:14	07:19 16:44
29	06:02 20:38	06:35 19:54	07:07 19:00	17:44 (TRQ08) 18:35 (TRQ08)	06:42 17:12	07:20 16:43
30	06:03 20:36	06:36 19:53	07:09 18:59	17:44 (TRQ08) 18:34 (TRQ08)	06:43 17:11	07:21 16:43
31	06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case			661	545		
Sun reduction			0,62	0,55		
Oper. time red.			0,95	0,95		
Wind dir. red.			0,65	0,65		
Total reduction			0,39	0,34		
Total, real			256	185		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: AC - 72
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (January to June) and rows for each day of the month, showing sun rise/set times and shadow reduction factors.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** AC - 72  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December		
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:08	15:23 (TRQ08) 16:09 (TRQ08)	07:22 16:43	15:22 (TRQ08) 16:16 (TRQ08)
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	15:22 (TRQ08) 16:10 (TRQ08)	07:23 16:42	15:24 (TRQ08) 16:17 (TRQ08)
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:53	06:48 17:06	15:21 (TRQ08) 16:12 (TRQ08)	07:24 16:42	15:24 (TRQ08) 16:16 (TRQ08)
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	06:50 17:05	15:20 (TRQ08) 16:12 (TRQ08)	07:25 16:42	15:25 (TRQ08) 16:16 (TRQ08)
5	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	06:51 17:03	15:19 (TRQ08) 16:13 (TRQ08)	07:26 16:42	15:26 (TRQ08) 16:16 (TRQ08)
6	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	06:52 17:02	15:19 (TRQ08) 16:14 (TRQ08)	07:27 16:41	15:26 (TRQ08) 16:16 (TRQ08)
7	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	06:53 17:01	15:18 (TRQ08) 16:14 (TRQ08)	07:28 16:41	15:27 (TRQ08) 16:15 (TRQ08)
8	05:44 20:53	06:12 20:26	06:45 19:37	07:17 18:45	06:55 17:00	15:17 (TRQ08) 16:14 (TRQ08)	07:29 16:41	15:28 (TRQ08) 16:15 (TRQ08)
9	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	06:56 16:59	15:18 (TRQ08) 16:16 (TRQ08)	07:30 16:41	15:28 (TRQ08) 16:15 (TRQ08)
10	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	15:17 (TRQ08) 16:16 (TRQ08)	07:31 16:41	15:29 (TRQ08) 16:15 (TRQ08)
11	05:46 20:51	06:16 20:22	06:48 19:32	07:21 18:40	06:58 16:57	15:16 (TRQ08) 16:16 (TRQ08)	07:32 16:41	15:29 (TRQ08) 16:15 (TRQ08)
12	05:47 20:51	06:17 20:20	06:49 19:30	07:22 18:38	07:00 16:56	15:17 (TRQ08) 16:17 (TRQ08)	07:33 16:41	15:30 (TRQ08) 16:15 (TRQ08)
13	05:48 20:50	06:18 20:19	06:50 19:29	07:23 18:37	07:01 16:55	15:16 (TRQ08) 16:17 (TRQ08)	07:34 16:41	15:31 (TRQ08) 16:15 (TRQ08)
14	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	15:16 (TRQ08) 16:17 (TRQ08)	07:34 16:42	15:32 (TRQ08) 16:15 (TRQ08)
15	05:49 20:49	06:20 20:16	06:53 19:25	07:25 18:33	07:03 16:53	15:17 (TRQ08) 16:18 (TRQ08)	07:35 16:42	15:31 (TRQ08) 16:15 (TRQ08)
16	05:50 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	15:16 (TRQ08) 16:18 (TRQ08)	07:36 16:42	15:32 (TRQ08) 16:15 (TRQ08)
17	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	15:16 (TRQ08) 16:18 (TRQ08)	07:37 16:42	15:33 (TRQ08) 16:16 (TRQ08)
18	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	15:17 (TRQ08) 16:19 (TRQ08)	07:37 16:43	15:33 (TRQ08) 16:16 (TRQ08)
19	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:49	15:17 (TRQ08) 16:18 (TRQ08)	07:38 16:43	15:34 (TRQ08) 16:16 (TRQ08)
20	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:09 16:49	15:17 (TRQ08) 16:18 (TRQ08)	07:38 16:43	15:35 (TRQ08) 16:17 (TRQ08)
21	05:55 20:45	06:26 20:07	06:59 19:15	07:32 18:24	07:11 16:48	15:17 (TRQ08) 16:18 (TRQ08)	07:39 16:44	15:35 (TRQ08) 16:17 (TRQ08)
22	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:22	07:12 16:47	15:18 (TRQ08) 16:19 (TRQ08)	07:40 16:44	15:36 (TRQ08) 16:18 (TRQ08)
23	05:56 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:46	15:18 (TRQ08) 16:19 (TRQ08)	07:40 16:45	15:36 (TRQ08) 16:18 (TRQ08)
24	05:57 20:42	06:29 20:02	07:02 19:09	07:36 18:19	16:45 (TRQ08) 16:46	15:19 (TRQ08) 16:19 (TRQ08)	07:41 16:45	15:36 (TRQ08) 16:18 (TRQ08)
25	05:58 20:42	06:30 20:01	07:03 19:07	07:37 17:18	15:38 (TRQ08) 15:56 (TRQ08)	16:15 (TRQ08) 16:45	07:41 16:46	15:37 (TRQ08) 16:20 (TRQ08)
26	05:59 20:41	06:31 19:59	07:04 19:06	07:38 17:17	15:34 (TRQ08) 16:00 (TRQ08)	16:45 (TRQ08) 16:45	07:41 16:47	15:37 (TRQ08) 16:20 (TRQ08)
27	06:00 20:40	06:33 19:58	07:05 19:04	07:39 17:15	15:31 (TRQ08) 16:02 (TRQ08)	16:45 (TRQ08) 16:44	07:42 16:47	15:37 (TRQ08) 16:20 (TRQ08)
28	06:01 20:39	06:34 19:56	07:06 19:02	07:40 17:14	15:30 (TRQ08) 16:04 (TRQ08)	16:44 (TRQ08) 16:44	07:42 16:48	15:38 (TRQ08) 16:22 (TRQ08)
29	06:02 20:38	06:35 19:54	07:08 19:00	07:41 17:12	15:27 (TRQ08) 16:06 (TRQ08)	16:44 (TRQ08) 16:43	07:42 16:49	15:39 (TRQ08) 16:22 (TRQ08)
30	06:03 20:36	06:36 19:53	07:09 18:59	07:42 17:11	15:25 (TRQ08) 16:07 (TRQ08)	16:43 (TRQ08) 16:43	07:43 16:49	15:39 (TRQ08) 16:23 (TRQ08)
31	06:04 20:35	06:37 19:51	07:10 18:57	07:43 17:10	15:25 (TRQ08) 16:09 (TRQ08)	16:43 (TRQ08) 16:43	07:43 16:50	15:39 (TRQ08) 16:24 (TRQ08)
Potential sun hours	463	430	376	344	295		284	
Total, worst case				237		1738		1406
Sun reduction				0,55		0,46		0,43
Oper. time red.				0,95		0,95		0,95
Wind dir. red.				0,76		0,76		0,76
Total reduction				0,39		0,33		0,31
Total, real				93		568		435

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: AE - 80
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Table with 12 columns (Jan-Dec) and 1 row of data: 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

Table with 13 columns (N-Sum) and 1 row of data: 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Main data table with 13 columns (Jan-Dec) and 33 rows (1-31) of shadow data. Each cell contains a 2x2 matrix of times. Summary rows at the bottom include Potential sun hours, Total worst case, and Total reduction.

Table layout: For each day in each month the following matrix apply

Table with 4 columns: Day in month, Sun rise/set (hh:mm), Minutes with flicker, and First/Last time (hh:mm) with flicker (WTG causing flicker).

Project:

Tarquini1

Licensed user:

MONTANA SPA
VIA ANGELO CARLO FUMAGALLI 6
IT-20143 MILANO
0254118173
Andrea / fronteddu@montanambiente.com
Calculated:
06/08/2022 14:40/3.5.584

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: AF - 81
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (January to December) and rows for days (1 to 31), showing sun rise and set times for each day.

Table layout: For each day in each month the following matrix apply

Matrix defining table layout: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)





## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** AG - 84  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:03	06:58 19:39	06:10 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:08	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:29	06:48 18:05	06:55 19:41	06:08 20:14	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:06 20:16	05:39 20:46	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	06:51 17:03	07:26 16:42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:49 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:41
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:01 20:20	05:37 20:48	05:44 20:53	06:12 20:26	06:45 19:37	07:17 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:44 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:42 17:00	07:18 17:38	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50	05:46 20:51	06:16 20:22	06:48 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:39 19:51	05:57 20:24	05:37 20:50	05:47 20:51	06:17 20:20	06:49 19:30	07:22 18:38	07:00 16:56	07:33 16:41
13	07:42 17:03	07:14 17:42	06:31 18:17	06:38 19:52	05:56 20:25	05:36 20:51	05:48 20:50	06:18 20:19	06:50 19:29	07:23 18:37	07:01 16:55	07:34 16:41
14	07:41 17:04	07:13 17:44	06:29 18:18	06:36 19:53	05:54 20:26	05:36 20:51	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
15	07:41 17:05	07:12 17:45	06:27 18:19	06:35 19:54	05:53 20:27	05:36 20:52	05:49 20:49	06:20 20:16	06:53 19:25	07:25 18:33	07:03 16:53	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55	05:52 20:28	05:36 20:52	05:50 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:21	06:31 19:57	05:51 20:29	05:36 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:42
18	07:39 17:09	07:07 17:49	06:22 18:23	06:30 19:58	05:50 20:30	05:36 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:49 20:31	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:49	07:38 16:43
20	07:38 17:11	07:05 17:51	06:19 18:25	06:27 20:00	05:49 20:32	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:09 16:49	07:39 16:43
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:32 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:23 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:22	07:12 16:47	07:40 16:44
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54	05:56 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:46	07:40 16:45
24	07:35 17:16	06:59 17:56	06:12 18:29	06:20 20:04	05:45 20:36	05:37 20:54	05:57 20:42	06:29 20:03	07:02 19:09	07:36 18:19	07:14 16:46	07:41 16:45
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:44 20:37	05:38 20:54	05:58 20:42	06:30 20:01	07:03 19:07	07:37 17:18	07:15 16:45	07:41 16:46
26	07:34 17:19	06:55 17:59	06:08 18:32	06:17 20:07	05:44 20:38	05:38 20:55	05:59 20:41	06:31 19:59	07:04 19:06	07:38 17:17	07:17 16:45	07:41 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:38 20:55	06:00 20:40	06:33 19:58	07:05 19:04	07:39 17:15	07:18 16:44	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:42 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:06 19:02	07:40 17:14	07:19 16:44	07:42 16:48
29	07:31 17:23		07:03 19:35	06:13 20:10	05:42 20:41	05:39 20:55	06:02 20:38	06:35 19:54	07:08 19:00	07:41 17:12	07:20 16:43	07:42 16:49
30	07:30 17:24		07:01 19:36	06:12 20:11	05:41 20:42	05:40 20:55	06:03 20:37	06:36 19:53	07:09 18:59	07:42 17:11	07:21 16:43	07:43 16:49
31	07:29 17:25		07:00 19:37		05:41 20:42		06:04 20:35	06:37 19:51		07:43 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AH - 85  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43	07:28	06:51	06:58	06:10	05:40	05:40	06:05	06:38	07:10	06:46	07:22
	16:51	17:27	18:03	19:39	20:12	20:43	20:54	20:34	19:49	18:57	17:08	16:43
2	07:43	07:27	06:49	06:56	06:09	05:40	05:41	06:06	06:39	07:11	06:47	07:23
	16:52	17:28	18:04	19:40	20:13	20:44	20:54	20:33	19:48	18:55	17:07	16:42
3	07:43	07:26	06:48	06:55	06:08	05:39	05:41	06:07	06:40	07:12	06:48	07:24
	16:53	17:29	18:05	19:41	20:14	20:45	20:54	20:32	19:46	18:54	17:06	16:42
4	07:43	07:25	06:46	06:53	06:06	05:39	05:42	06:08	06:41	07:13	06:50	07:25
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	16:55	17:32	18:07	19:43	20:17	20:46	20:54	20:30	19:43	18:50	17:03	16:42
6	07:43	07:23	06:43	06:49	06:04	05:38	05:43	06:10	06:43	07:15	06:52	07:27
	16:56	17:33	18:09	19:44	20:18	20:47	20:53	20:28	19:41	18:48	17:02	16:41
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	16:58	17:36	18:11	19:46	20:20	20:48	20:53	20:26	19:37	18:45	17:00	16:41
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	17:00	17:38	18:13	19:49	20:22	20:49	20:52	20:23	19:34	18:42	16:58	16:41
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	17:01	17:40	18:15	19:50	20:23	20:50	20:52	20:22	19:32	18:40	16:57	16:41
12	07:42	07:16	06:33	06:39	05:57	05:37	05:47	06:17	06:49	07:22	07:00	07:33
	17:02	17:41	18:16	19:51	20:24	20:51	20:51	20:20	19:30	18:38	16:56	16:41
13	07:42	07:14	06:31	06:38	05:56	05:36	05:48	06:18	06:50	07:23	07:01	07:34
	17:03	17:42	18:17	19:52	20:25	20:51	20:50	20:19	19:29	18:37	16:55	16:41
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	17:05	17:45	18:19	19:54	20:27	20:52	20:49	20:16	19:25	18:33	16:53	16:42
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18	07:39	07:07	06:22	06:30	05:50	05:36	05:52	06:23	06:56	07:29	07:07	07:37
	17:09	17:49	18:23	19:58	20:31	20:53	20:47	20:12	19:20	18:29	16:50	16:43
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20	07:38	07:05	06:19	06:27	05:49	05:37	05:54	06:25	06:58	07:31	07:09	07:39
	17:11	17:51	18:25	20:00	20:33	20:54	20:46	20:09	19:16	18:26	16:49	16:43
21	07:38	07:03	06:17	06:25	05:48	05:37	05:55	06:26	06:59	07:32	07:11	07:39
	17:13	17:53	18:26	20:01	20:33	20:54	20:45	20:07	19:15	18:24	16:48	16:44
22	07:37	07:02	06:15	06:23	05:47	05:37	05:56	06:27	07:00	07:34	07:12	07:40
	17:14	17:54	18:27	20:02	20:34	20:54	20:44	20:06	19:13	18:22	16:47	16:44
23	07:36	07:00	06:14	06:22	05:46	05:37	05:56	06:28	07:01	07:35	07:13	07:40
	17:15	17:55	18:28	20:03	20:35	20:54	20:43	20:04	19:11	18:21	16:46	16:45
24	07:35	06:59	06:12	06:20	05:45	05:37	05:57	06:29	07:02	07:36	07:14	07:41
	17:16	17:56	18:30	20:04	20:36	20:54	20:42	20:03	19:09	18:20	16:46	16:45
25	07:35	06:57	06:10	06:19	05:44	05:38	05:58	06:30	07:03	07:37	07:15	07:41
	17:18	17:58	18:31	20:06	20:37	20:55	20:42	20:01	19:07	17:18	16:45	16:46
26	07:34	06:56	06:08	06:17	05:44	05:38	05:59	06:31	07:04	07:38	07:17	07:41
	17:19	17:59	18:32	20:07	20:38	20:55	20:41	19:59	19:06	17:17	16:45	16:47
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29	07:31		07:03	06:13	05:42	05:39	06:02	06:35	07:08	07:42	07:20	07:42
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	17:24		19:36	20:11	20:42	20:55	20:37	19:53	18:59	17:11	16:43	16:49
31	07:29		07:00		05:41		06:04	06:37		06:45		07:43
	17:25		19:37		20:42		20:35	19:51		17:10		16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: AI - 86  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43	07:28	06:51	06:58	06:10	05:40	05:40	06:05	06:38	07:10	06:46	07:22
	16:51	17:27	18:02	19:39	20:12	20:43	20:54	20:34	19:49	18:57	17:08	16:43
2	07:43	07:27	06:49	06:56	06:09	05:40	05:41	06:06	06:39	07:11	06:47	07:23
	16:52	17:28	18:04	19:40	20:13	20:44	20:54	20:33	19:48	18:55	17:07	16:42
3	07:43	07:26	06:48	06:55	06:08	05:39	05:41	06:07	06:40	07:12	06:48	07:24
	16:53	17:29	18:05	19:41	20:14	20:45	20:54	20:32	19:46	18:53	17:06	16:42
4	07:43	07:25	06:46	06:53	06:06	05:39	05:42	06:08	06:41	07:13	06:50	07:25
	16:54	17:31	18:06	19:42	20:16	20:46	20:54	20:31	19:44	18:52	17:05	16:42
5	07:43	07:24	06:44	06:51	06:05	05:38	05:42	06:09	06:42	07:14	06:51	07:26
	16:55	17:32	18:07	19:43	20:17	20:46	20:54	20:30	19:43	18:50	17:03	16:41
6	07:43	07:23	06:43	06:49	06:04	05:38	05:43	06:10	06:43	07:15	06:52	07:27
	16:56	17:33	18:09	19:44	20:18	20:47	20:53	20:28	19:41	18:48	17:02	16:41
7	07:43	07:22	06:41	06:48	06:03	05:38	05:44	06:11	06:44	07:16	06:53	07:28
	16:57	17:35	18:10	19:45	20:19	20:48	20:53	20:27	19:39	18:47	17:01	16:41
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	16:58	17:36	18:11	19:46	20:20	20:48	20:53	20:26	19:37	18:45	17:00	16:41
9	07:43	07:19	06:38	06:44	06:00	05:37	05:45	06:13	06:46	07:19	06:56	07:30
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	17:01	17:40	18:14	19:50	20:23	20:50	20:51	20:22	19:32	18:40	16:57	16:41
12	07:42	07:16	06:33	06:39	05:57	05:37	05:47	06:17	06:49	07:22	07:00	07:33
	17:02	17:41	18:16	19:51	20:24	20:50	20:51	20:20	19:30	18:38	16:56	16:41
13	07:42	07:14	06:31	06:38	05:55	05:36	05:48	06:18	06:50	07:23	07:01	07:34
	17:03	17:42	18:17	19:52	20:25	20:51	20:50	20:19	19:29	18:37	16:55	16:41
14	07:41	07:13	06:29	06:36	05:54	05:36	05:49	06:19	06:52	07:24	07:02	07:34
	17:04	17:44	18:18	19:53	20:26	20:51	20:50	20:18	19:27	18:35	16:54	16:42
15	07:41	07:12	06:27	06:34	05:53	05:36	05:49	06:20	06:53	07:25	07:03	07:35
	17:05	17:45	18:19	19:54	20:27	20:52	20:49	20:16	19:25	18:33	16:53	16:42
16	07:40	07:10	06:26	06:33	05:52	05:36	05:50	06:21	06:54	07:27	07:05	07:36
	17:07	17:46	18:20	19:55	20:28	20:52	20:49	20:15	19:23	18:32	16:52	16:42
17	07:40	07:09	06:24	06:31	05:51	05:36	05:51	06:22	06:55	07:28	07:06	07:37
	17:08	17:47	18:21	19:57	20:29	20:53	20:48	20:13	19:22	18:30	16:51	16:42
18	07:39	07:07	06:22	06:30	05:50	05:36	05:52	06:23	06:56	07:29	07:07	07:37
	17:09	17:49	18:23	19:58	20:30	20:53	20:47	20:12	19:20	18:29	16:50	16:43
19	07:39	07:06	06:21	06:28	05:49	05:36	05:53	06:24	06:57	07:30	07:08	07:38
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20	07:38	07:05	06:19	06:27	05:49	05:37	05:54	06:25	06:58	07:31	07:09	07:39
	17:11	17:51	18:25	20:00	20:32	20:54	20:46	20:09	19:16	18:25	16:49	16:43
21	07:38	07:03	06:17	06:25	05:48	05:37	05:55	06:26	06:59	07:32	07:11	07:39
	17:13	17:53	18:26	20:01	20:33	20:54	20:45	20:07	19:15	18:24	16:48	16:44
22	07:37	07:02	06:15	06:23	05:47	05:37	05:56	06:27	07:00	07:34	07:12	07:40
	17:14	17:54	18:27	20:02	20:34	20:54	20:44	20:06	19:13	18:22	16:47	16:44
23	07:36	07:00	06:14	06:22	05:46	05:37	05:56	06:28	07:01	07:35	07:13	07:40
	17:15	17:55	18:28	20:03	20:35	20:54	20:43	20:04	19:11	18:21	16:46	16:45
24	07:35	06:59	06:12	06:20	05:45	05:37	05:57	06:29	07:02	07:36	07:14	07:41
	17:16	17:56	18:29	20:04	20:36	20:54	20:42	20:02	19:09	18:19	16:46	16:45
25	07:35	06:57	06:10	06:19	05:44	05:38	05:58	06:30	07:03	06:37	07:15	07:41
	17:18	17:58	18:31	20:06	20:37	20:55	20:42	20:01	19:07	17:18	16:45	16:46
26	07:34	06:55	06:08	06:17	05:44	05:38	05:59	06:31	07:04	06:38	07:17	07:41
	17:19	17:59	18:32	20:07	20:38	20:55	20:41	19:59	19:06	17:17	16:45	16:47
27	07:33	06:54	06:07	06:16	05:43	05:38	06:00	06:33	07:05	06:40	07:18	07:42
	17:20	18:00	18:33	20:08	20:39	20:55	20:40	19:58	19:04	17:15	16:44	16:47
28	07:32	06:52	06:05	06:15	05:42	05:39	06:01	06:34	07:06	06:41	07:19	07:42
	17:22	18:01	18:34	20:09	20:40	20:55	20:39	19:56	19:02	17:14	16:44	16:48
29	07:31		07:03	06:13	05:42	05:39	06:02	06:35	07:08	06:42	07:20	07:42
	17:23		19:35	20:10	20:41	20:55	20:38	19:54	19:00	17:12	16:43	16:49
30	07:30		07:01	06:12	05:41	05:40	06:03	06:36	07:09	06:43	07:21	07:43
	17:24		19:36	20:11	20:42	20:55	20:37	19:53	18:59	17:11	16:43	16:49
31	07:29		07:00		05:41		06:04	06:37		06:45		07:43
	17:25		19:37		20:42		20:35	19:51		17:10		16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: AJ - 87  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:02	06:58 19:39	06:10 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:08	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:29	06:48 18:05	06:55 19:41	06:08 20:14	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:53	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:06 20:16	05:39 20:46	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	06:51 17:03	07:26 16:41
6	07:43 16:56	07:23 17:33	06:43 18:09	06:49 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:41
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:01 20:20	05:37 20:48	05:44 20:53	06:12 20:26	06:45 19:37	07:17 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:44 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:13 20:24	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:42 17:00	07:18 17:38	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:14	06:41 19:50	05:58 20:23	05:37 20:50	05:46 20:51	06:16 20:22	06:48 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:39 19:51	05:57 20:24	05:37 20:50	05:47 20:51	06:17 20:20	06:49 19:30	07:22 18:38	07:00 16:56	07:33 16:41
13	07:42 17:03	07:14 17:42	06:31 18:17	06:38 19:52	05:55 20:25	05:36 20:51	05:48 20:50	06:18 20:19	06:50 19:29	07:23 18:37	07:01 16:55	07:34 16:41
14	07:41 17:04	07:13 17:44	06:29 18:18	06:36 19:53	05:54 20:26	05:36 20:51	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
15	07:41 17:05	07:12 17:45	06:27 18:19	06:34 19:54	05:53 20:27	05:36 20:52	05:49 20:49	06:20 20:16	06:53 19:25	07:25 18:33	07:03 16:53	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55	05:52 20:28	05:36 20:52	05:50 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:47	06:24 18:21	06:31 19:57	05:51 20:29	05:36 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:42
18	07:39 17:09	07:07 17:49	06:22 18:23	06:30 19:58	05:50 20:30	05:36 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:49 20:31	05:36 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:49	07:38 16:43
20	07:38 17:11	07:05 17:51	06:19 18:25	06:27 20:00	05:49 20:32	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:25	07:09 16:49	07:39 16:43
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:32 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:23 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:22	07:12 16:47	07:40 16:44
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54	05:56 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:46	07:40 16:45
24	07:35 17:16	06:59 17:56	06:12 18:29	06:20 20:04	05:45 20:36	05:37 20:54	05:57 20:42	06:29 20:02	07:02 19:09	07:36 18:19	07:14 16:46	07:41 16:45
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:44 20:37	05:38 20:54	05:58 20:42	06:30 20:01	07:03 19:07	06:37 17:18	07:15 16:45	07:41 16:46
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29	07:31 17:23		07:03 19:35	06:13 20:10	05:42 20:41	05:39 20:55	06:02 20:38	06:35 19:54	07:08 19:00	06:42 17:12	07:20 16:43	07:42 16:49
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31	07:29 17:25		07:00 19:37		05:41 20:42		06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_realShadow receptor: AK - 89  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43	07:28	06:51	06:58	06:10	05:40	05:40	06:05	06:38	07:10	06:46	07:22
	16:51	17:27	18:02	19:39	20:12	20:43	20:54	20:34	19:49	18:57	17:08	16:43
2	07:43	07:27	06:49	06:56	06:09	05:40	05:41	06:06	06:39	07:11	06:47	07:23
	16:52	17:28	18:04	19:40	20:13	20:44	20:54	20:33	19:48	18:55	17:07	16:42
3	07:43	07:26	06:48	06:55	06:08	05:39	05:41	06:07	06:40	07:12	06:48	07:24
	16:53	17:29	18:05	19:41	20:14	20:45	20:54	20:32	19:46	18:53	17:06	16:42
4	07:43	07:25	06:46	06:53	06:06	05:39	05:42	06:08	06:41	07:13	06:50	07:25
	16:54	17:31	18:06	19:42	20:16	20:45	20:54	20:31	19:44	18:52	17:05	16:42
5	07:43	07:24	06:44	06:51	06:05	05:38	05:42	06:09	06:42	07:14	06:51	07:26
	16:55	17:32	18:07	19:43	20:17	20:46	20:54	20:30	19:43	18:50	17:03	16:41
6	07:43	07:23	06:43	06:49	06:04	05:38	05:43	06:10	06:43	07:15	06:52	07:27
	16:56	17:33	18:09	19:44	20:18	20:47	20:53	20:28	19:41	18:48	17:02	16:41
7	07:43	07:22	06:41	06:48	06:03	05:38	05:44	06:11	06:44	07:16	06:53	07:28
	16:57	17:35	18:10	19:45	20:19	20:48	20:53	20:27	19:39	18:47	17:01	16:41
8	07:43	07:21	06:39	06:46	06:01	05:37	05:44	06:12	06:45	07:17	06:55	07:29
	16:58	17:36	18:11	19:46	20:20	20:48	20:53	20:26	19:37	18:45	17:00	16:41
9	07:43	07:19	06:38	06:44	06:00	05:37	05:45	06:13	06:46	07:19	06:56	07:30
	16:59	17:37	18:12	19:48	20:21	20:49	20:52	20:24	19:36	18:43	16:59	16:41
10	07:42	07:18	06:36	06:43	05:59	05:37	05:46	06:15	06:47	07:20	06:57	07:31
	17:00	17:38	18:13	19:49	20:22	20:49	20:52	20:23	19:34	18:42	16:58	16:41
11	07:42	07:17	06:34	06:41	05:58	05:37	05:46	06:16	06:48	07:21	06:58	07:32
	17:01	17:40	18:14	19:50	20:23	20:50	20:51	20:22	19:32	18:40	16:57	16:41
12	07:42	07:16	06:33	06:39	05:57	05:37	05:47	06:17	06:49	07:22	07:00	07:33
	17:02	17:41	18:16	19:51	20:24	20:50	20:51	20:20	19:30	18:38	16:56	16:41
13	07:42	07:14	06:31	06:38	05:55	05:36	05:48	06:18	06:50	07:23	07:01	07:34
	17:03	17:42	18:17	19:52	20:25	20:51	20:50	20:19	19:29	18:37	16:55	16:41
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	17:04	17:44	18:18	19:53	20:26	20:51	20:50	20:18	19:27	18:35	16:54	16:42
15	07:41	07:12	06:27	06:34	05:53	05:36	05:49	06:20	06:53	07:25	07:03	07:35
	17:05	17:45	18:19	19:54	20:27	20:52	20:49	20:16	19:25	18:33	16:53	16:42
16	07:40	07:10	06:26	06:33	05:52	05:36	05:50	06:21	06:54	07:27	07:05	07:36
	17:07	17:46	18:20	19:55	20:28	20:52	20:49	20:15	19:23	18:32	16:52	16:42
17	07:40	07:09	06:24	06:31	05:51	05:36	05:51	06:22	06:55	07:28	07:06	07:37
	17:08	17:47	18:21	19:57	20:29	20:53	20:48	20:13	19:22	18:30	16:51	16:42
18	07:39	07:07	06:22	06:30	05:50	05:36	05:52	06:23	06:56	07:29	07:07	07:37
	17:09	17:49	18:23	19:58	20:30	20:53	20:47	20:12	19:20	18:29	16:50	16:43
19	07:39	07:06	06:21	06:28	05:49	05:36	05:53	06:24	06:57	07:30	07:08	07:38
	17:10	17:50	18:24	19:59	20:31	20:53	20:47	20:10	19:18	18:27	16:49	16:43
20	07:38	07:05	06:19	06:27	05:49	05:37	05:54	06:25	06:58	07:31	07:09	07:39
	17:11	17:51	18:25	20:00	20:32	20:54	20:46	20:09	19:16	18:25	16:49	16:43
21	07:38	07:03	06:17	06:25	05:48	05:37	05:55	06:26	06:59	07:32	07:11	07:39
	17:13	17:53	18:26	20:01	20:33	20:54	20:45	20:07	19:15	18:24	16:48	16:44
22	07:37	07:02	06:15	06:23	05:47	05:37	05:56	06:27	07:00	07:34	07:12	07:40
	17:14	17:54	18:27	20:02	20:34	20:54	20:44	20:06	19:13	18:22	16:47	16:44
23	07:36	07:00	06:14	06:22	05:46	05:37	05:56	06:28	07:01	07:35	07:13	07:40
	17:15	17:55	18:28	20:03	20:35	20:54	20:43	20:04	19:11	18:21	16:46	16:45
24	07:35	06:59	06:12	06:20	05:45	05:37	05:57	06:29	07:02	07:36	07:14	07:41
	17:16	17:56	18:29	20:04	20:36	20:54	20:42	20:02	19:09	18:19	16:46	16:45
25	07:35	06:57	06:10	06:19	05:44	05:38	05:58	06:30	07:03	06:37	07:15	07:41
	17:18	17:58	18:31	20:06	20:37	20:54	20:42	20:01	19:07	17:18	16:45	16:46
26	07:34	06:55	06:08	06:17	05:44	05:38	05:59	06:31	07:04	06:38	07:17	07:41
	17:19	17:59	18:32	20:07	20:38	20:55	20:41	19:59	19:06	17:17	16:45	16:47
27	07:33	06:54	06:07	06:16	05:43	05:38	06:00	06:33	07:05	06:40	07:18	07:42
	17:20	18:00	18:33	20:08	20:39	20:55	20:40	19:58	19:04	17:15	16:44	16:47
28	07:32	06:52	06:05	06:15	05:42	05:39	06:01	06:34	07:06	06:41	07:19	07:42
	17:22	18:01	18:34	20:09	20:40	20:55	20:39	19:56	19:02	17:14	16:44	16:48
29	07:31		07:03	06:13	05:42	05:39	06:02	06:35	07:08	06:42	07:20	07:42
	17:23		19:35	20:10	20:41	20:55	20:38	19:54	19:00	17:12	16:43	16:49
30	07:30		07:01	06:12	05:41	05:40	06:03	06:36	07:09	06:43	07:21	07:43
	17:24		19:36	20:11	20:42	20:55	20:37	19:53	18:59	17:11	16:43	16:49
31	07:29		07:00		05:41		06:04	06:37		06:45		07:43
	17:25		19:37		20:42		20:35	19:51		17:10		16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AL - 90  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:02	06:58 19:39	06:10 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:08	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:29	06:48 18:05	06:55 19:41	06:08 20:14	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:53	06:48 17:06	07:24 16:42
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19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:49 20:31	05:36 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:49	07:38 16:43
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21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:32 18:24	07:11 16:48	07:39 16:44
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30	07:30 17:24		07:01 19:36	06:12 20:11	05:41 20:42	05:40 20:55	06:03 20:37	06:36 19:53	07:09 18:59	06:43 17:11	07:21 16:43	07:43 16:49
31	07:29 17:25		07:00 19:37		05:41 20:42		06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: AM - 94  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43	07:28	06:51	06:58	06:10	05:40	05:40	06:05	06:38	07:10	06:46	07:22
	16:51	17:27	18:02	19:39	20:12	20:43	20:54	20:34	19:49	18:57	17:08	16:43
2	07:43	07:27	06:49	06:56	06:09	05:40	05:41	06:06	06:39	07:11	06:47	07:23
	16:52	17:28	18:04	19:40	20:13	20:44	20:54	20:33	19:48	18:55	17:07	16:42
3	07:43	07:26	06:48	06:55	06:08	05:39	05:41	06:07	06:40	07:12	06:48	07:24
	16:53	17:29	18:05	19:41	20:14	20:45	20:54	20:32	19:46	18:53	17:06	16:42
4	07:43	07:25	06:46	06:53	06:06	05:39	05:42	06:08	06:41	07:13	06:50	07:25
	16:54	17:31	18:06	19:42	20:16	20:45	20:54	20:31	19:44	18:52	17:05	16:42
5	07:43	07:24	06:44	06:51	06:05	05:38	05:42	06:09	06:42	07:14	06:51	07:26
	16:55	17:32	18:07	19:43	20:17	20:46	20:54	20:30	19:43	18:50	17:03	16:41
6	07:43	07:23	06:43	06:49	06:04	05:38	05:43	06:10	06:43	07:15	06:52	07:27
	16:56	17:33	18:09	19:44	20:18	20:47	20:53	20:28	19:41	18:48	17:02	16:41
7	07:43	07:22	06:41	06:48	06:03	05:38	05:44	06:11	06:44	07:16	06:53	07:28
	16:57	17:35	18:10	19:45	20:19	20:48	20:53	20:27	19:39	18:47	17:01	16:41
8	07:43	07:21	06:39	06:46	06:01	05:37	05:44	06:12	06:45	07:17	06:55	07:29
	16:58	17:36	18:11	19:46	20:20	20:48	20:53	20:26	19:37	18:45	17:00	16:41
9	07:43	07:19	06:38	06:44	06:00	05:37	05:45	06:13	06:46	07:19	06:56	07:30
	16:59	17:37	18:12	19:48	20:21	20:49	20:52	20:24	19:36	18:43	16:59	16:41
10	07:42	07:18	06:36	06:43	05:59	05:37	05:46	06:15	06:47	07:20	06:57	07:31
	17:00	17:38	18:13	19:49	20:22	20:49	20:52	20:23	19:34	18:42	16:58	16:41
11	07:42	07:17	06:34	06:41	05:58	05:37	05:46	06:16	06:48	07:21	06:58	07:32
	17:01	17:40	18:14	19:50	20:23	20:50	20:51	20:22	19:32	18:40	16:57	16:41
12	07:42	07:16	06:33	06:39	05:57	05:37	05:47	06:17	06:49	07:22	07:00	07:33
	17:02	17:41	18:16	19:51	20:24	20:50	20:51	20:20	19:30	18:38	16:56	16:41
13	07:42	07:14	06:31	06:38	05:56	05:36	05:48	06:18	06:50	07:23	07:01	07:34
	17:03	17:42	18:17	19:52	20:25	20:51	20:50	20:19	19:29	18:37	16:55	16:41
14	07:41	07:13	06:29	06:36	05:54	05:36	05:49	06:19	06:52	07:24	07:02	07:34
	17:04	17:44	18:18	19:53	20:26	20:51	20:50	20:18	19:27	18:35	16:54	16:42
15	07:41	07:12	06:27	06:34	05:53	05:36	05:49	06:20	06:53	07:25	07:03	07:35
	17:05	17:45	18:19	19:54	20:27	20:52	20:49	20:16	19:25	18:33	16:53	16:42
16	07:40	07:10	06:26	06:33	05:52	05:36	05:50	06:21	06:54	07:27	07:05	07:36
	17:07	17:46	18:20	19:55	20:28	20:52	20:49	20:15	19:23	18:32	16:52	16:42
17	07:40	07:09	06:24	06:31	05:51	05:36	05:51	06:22	06:55	07:28	07:06	07:37
	17:08	17:48	18:21	19:57	20:29	20:53	20:48	20:13	19:22	18:30	16:51	16:42
18	07:39	07:07	06:22	06:30	05:50	05:36	05:52	06:23	06:56	07:29	07:07	07:37
	17:09	17:49	18:23	19:58	20:30	20:53	20:47	20:12	19:20	18:29	16:50	16:43
19	07:39	07:06	06:21	06:28	05:49	05:36	05:53	06:24	06:57	07:30	07:08	07:38
	17:10	17:50	18:24	19:59	20:31	20:53	20:47	20:10	19:18	18:27	16:49	16:43
20	07:38	07:05	06:19	06:27	05:49	05:37	05:54	06:25	06:58	07:31	07:09	07:38
	17:11	17:51	18:25	20:00	20:32	20:54	20:46	20:09	19:16	18:25	16:49	16:43
21	07:38	07:03	06:17	06:25	05:48	05:37	05:55	06:26	06:59	07:32	07:11	07:39
	17:13	17:53	18:26	20:01	20:33	20:54	20:45	20:07	19:15	18:24	16:48	16:44
22	07:37	07:02	06:15	06:23	05:47	05:37	05:56	06:27	07:00	07:34	07:12	07:40
	17:14	17:54	18:27	20:02	20:34	20:54	20:44	20:06	19:13	18:22	16:47	16:44
23	07:36	07:00	06:14	06:22	05:46	05:37	05:56	06:28	07:01	07:35	07:13	07:40
	17:15	17:55	18:28	20:03	20:35	20:54	20:43	20:04	19:11	18:21	16:46	16:45
24	07:35	06:59	06:12	06:20	05:45	05:37	05:57	06:29	07:02	07:36	07:14	07:41
	17:16	17:56	18:29	20:04	20:36	20:54	20:42	20:02	19:09	18:19	16:46	16:45
25	07:35	06:57	06:10	06:19	05:44	05:38	05:58	06:30	07:03	06:37	07:15	07:41
	17:18	17:58	18:31	20:06	20:37	20:54	20:42	20:01	19:07	17:18	16:45	16:46
26	07:34	06:55	06:08	06:17	05:44	05:38	05:59	06:31	07:04	06:38	07:17	07:41
	17:19	17:59	18:32	20:07	20:38	20:55	20:41	19:59	19:06	17:17	16:45	16:47
27	07:33	06:54	06:07	06:16	05:43	05:38	06:00	06:33	07:05	06:40	07:18	07:42
	17:20	18:00	18:33	20:08	20:39	20:55	20:40	19:58	19:04	17:15	16:44	16:47
28	07:32	06:52	06:05	06:15	05:42	05:39	06:01	06:34	07:06	06:41	07:19	07:42
	17:22	18:01	18:34	20:09	20:40	20:55	20:39	19:56	19:02	17:14	16:44	16:48
29	07:31		07:03	06:13	05:42	05:39	06:02	06:35	07:08	06:42	07:20	07:42
	17:23		19:35	20:10	20:41	20:55	20:38	19:54	19:00	17:12	16:43	16:49
30	07:30		07:01	06:12	05:41	05:40	06:03	06:36	07:09	06:43	07:21	07:43
	17:24		19:36	20:11	20:42	20:55	20:36	19:53	18:59	17:11	16:43	16:49
31	07:29		07:00		05:41		06:04	06:37		06:45		07:43
	17:25		19:37		20:42		20:35	19:51		17:10		16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AN - 96  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:02	06:58 19:39	06:10 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:08	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:29	06:48 18:05	06:55 19:41	06:08 20:14	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:53	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:06 20:16	05:39 20:45	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	06:51 17:03	07:26 16:41
6	07:43 16:56	07:23 17:33	06:43 18:09	06:49 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:41
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:01 20:20	05:37 20:48	05:44 20:53	06:12 20:26	06:45 19:37	07:17 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:44 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:13 20:24	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:42 17:00	07:18 17:38	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:14	06:41 19:50	05:58 20:23	05:37 20:50	05:46 20:51	06:16 20:22	06:48 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:39 19:51	05:57 20:24	05:37 20:50	05:47 20:51	06:17 20:20	06:49 19:30	07:22 18:38	07:00 16:56	07:33 16:41
13	07:42 17:03	07:14 17:42	06:31 18:17	06:38 19:52	05:56 20:25	05:36 20:51	05:48 20:50	06:18 20:19	06:50 19:29	07:23 18:37	07:01 16:55	07:34 16:41
14	07:41 17:04	07:13 17:44	06:29 18:18	06:36 19:53	05:54 20:26	05:36 20:51	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
15	07:41 17:05	07:12 17:45	06:27 18:19	06:34 19:54	05:53 20:27	05:36 20:52	05:49 20:49	06:20 20:16	06:53 19:25	07:25 18:33	07:03 16:53	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55	05:52 20:28	05:36 20:52	05:50 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:47	06:24 18:21	06:31 19:57	05:51 20:29	05:36 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:42
18	07:39 17:09	07:07 17:49	06:22 18:23	06:30 19:58	05:50 20:30	05:36 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:49 20:31	05:36 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:49	07:38 16:43
20	07:38 17:11	07:05 17:51	06:19 18:25	06:27 20:00	05:49 20:32	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:25	07:09 16:49	07:38 16:43
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:32 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:23 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:22	07:12 16:47	07:40 16:44
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54	05:56 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:46	07:40 16:45
24	07:35 17:16	06:59 17:56	06:12 18:29	06:20 20:04	05:45 20:36	05:37 20:54	05:57 20:42	06:29 20:02	07:02 19:09	07:36 18:19	07:14 16:46	07:41 16:45
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:44 20:37	05:38 20:54	05:58 20:42	06:30 20:01	07:03 19:07	06:37 17:18	07:15 16:45	07:41 16:46
26	07:34 17:19	06:55 17:59	06:08 18:32	06:17 20:07	05:44 20:38	05:38 20:55	05:59 20:41	06:31 19:59	07:04 19:06	06:38 17:17	07:17 16:45	07:41 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:38 20:55	06:00 20:40	06:33 19:58	07:05 19:04	06:40 17:15	07:18 16:44	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:42 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:06 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	07:31 17:23		07:03 19:35	06:13 20:10	05:42 20:41	05:39 20:55	06:02 20:38	06:35 19:54	07:07 19:00	06:42 17:12	07:20 16:43	07:42 16:49
30	07:30 17:24		07:01 19:36	06:12 20:11	05:41 20:42	05:40 20:55	06:03 20:36	06:36 19:53	07:09 18:59	06:43 17:11	07:21 16:43	07:43 16:49
31	07:29 17:25		07:00 19:37		05:41 20:42		06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)





## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AP - 101  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	
1	07:43	07:28	16:40 (TRQ08)	06:51	06:58	06:10	05:40
	16:51	17:27	22 17:02 (TRQ08)	18:02	19:39	20:12	20:43
2	07:43	07:27	16:39 (TRQ08)	06:49	06:56	06:09	05:40
	16:52	17:28	25 17:04 (TRQ08)	18:04	19:40	20:13	20:44
3	07:43	07:26	16:39 (TRQ08)	06:48	06:55	06:08	05:39
	16:53	17:29	26 17:05 (TRQ08)	18:05	19:41	20:14	20:45
4	07:43	07:25	16:39 (TRQ08)	06:46	06:53	06:06	05:39
	16:54	17:31	28 17:07 (TRQ08)	18:06	19:42	20:16	20:45
5	07:43	07:24	16:37 (TRQ08)	06:44	06:51	06:05	05:38
	16:55	17:32	31 17:08 (TRQ08)	18:07	19:43	20:17	20:46
6	07:43	07:23	16:37 (TRQ08)	06:43	06:49	06:04	05:38
	16:56	17:33	32 17:09 (TRQ08)	18:09	19:44	20:18	20:47
7	07:43	07:22	16:37 (TRQ08)	06:41	06:48	06:03	05:38
	16:57	17:35	34 17:11 (TRQ08)	18:10	19:45	20:19	20:48
8	07:43	07:21	16:38 (TRQ08)	06:39	06:46	06:01	05:37
	16:58	17:36	34 17:12 (TRQ08)	18:11	19:46	20:20	20:48
9	07:43	07:19	16:37 (TRQ08)	06:38	06:44	06:00	05:37
	16:59	17:37	36 17:13 (TRQ08)	18:12	19:48	20:21	20:49
10	07:42	07:18	16:37 (TRQ08)	06:36	06:43	05:59	05:37
	17:00	17:38	38 17:15 (TRQ08)	18:13	19:49	20:22	20:49
11	07:42	07:17	16:38 (TRQ08)	06:34	06:41	05:58	05:37
	17:01	17:40	39 17:17 (TRQ08)	18:14	19:50	20:23	20:50
12	07:42	07:16	16:38 (TRQ08)	06:33	06:39	05:57	05:37
	17:02	17:41	39 17:17 (TRQ08)	18:16	19:51	20:24	20:50
13	07:42	07:14	16:38 (TRQ08)	06:31	06:38	05:55	05:36
	17:03	17:42	39 17:17 (TRQ08)	18:17	19:52	20:25	20:51
14	07:41	07:13	16:39 (TRQ08)	06:29	06:36	05:54	05:36
	17:04	17:44	38 17:17 (TRQ08)	18:18	19:53	20:26	20:51
15	07:41	07:12	16:38 (TRQ08)	06:27	06:34	05:53	05:36
	17:05	17:45	38 17:16 (TRQ08)	18:19	19:54	20:27	20:52
16	07:40	07:10	16:39 (TRQ08)	06:26	06:33	05:52	05:36
	17:07	17:46	36 17:15 (TRQ08)	18:20	19:55	20:28	20:52
17	07:40	07:09	16:41 (TRQ08)	06:24	06:31	05:51	05:36
	17:08	17:47	34 17:15 (TRQ08)	18:21	19:57	20:29	20:53
18	07:39	07:07	16:41 (TRQ08)	06:22	06:30	05:50	05:36
	17:09	17:49	32 17:13 (TRQ08)	18:23	19:58	20:30	20:53
19	07:39	07:06	16:43 (TRQ08)	06:21	06:28	05:49	05:36
	17:10	17:50	30 17:13 (TRQ08)	18:24	19:59	20:31	20:53
20	07:38	07:05	16:43 (TRQ08)	06:19	06:27	05:49	05:37
	17:11	17:51	28 17:11 (TRQ08)	18:25	20:00	20:32	20:54
21	07:38	07:03	16:46 (TRQ08)	06:17	06:25	05:48	05:37
	17:13	17:53	24 17:10 (TRQ08)	18:26	20:01	20:33	20:54
22	07:37	07:02	16:47 (TRQ08)	06:15	06:23	05:47	05:37
	17:14	17:54	20 17:07 (TRQ08)	18:27	20:02	20:34	20:54
23	07:36	07:00	16:51 (TRQ08)	06:14	06:22	05:46	05:37
	17:15	17:55	13 17:04 (TRQ08)	18:28	20:03	20:35	20:54
24	07:35	06:59		06:12	06:20	05:45	05:37
	17:16	17:56		18:29	20:04	20:36	20:54
25	07:35	16:49 (TRQ08)	06:57	06:10	06:19	05:44	05:38
	17:18	4 16:53 (TRQ08)	17:58	18:31	20:05	20:37	20:54
26	07:34	16:46 (TRQ08)	06:55	06:08	06:17	05:44	05:38
	17:19	8 16:54 (TRQ08)	17:59	18:32	20:07	20:38	20:55
27	07:33	16:45 (TRQ08)	06:54	06:07	06:16	05:43	05:38
	17:20	10 16:55 (TRQ08)	18:00	18:33	20:08	20:39	20:55
28	07:32	16:43 (TRQ08)	06:52	06:05	06:15	05:42	05:39
	17:22	14 16:57 (TRQ08)	18:01	18:34	20:09	20:40	20:55
29	07:31	16:42 (TRQ08)		07:03	06:13	05:42	05:39
	17:23	16 16:58 (TRQ08)		19:35	20:10	20:41	20:55
30	07:30	16:41 (TRQ08)		07:01	06:12	05:41	05:40
	17:24	19 17:00 (TRQ08)		19:36	20:11	20:42	20:54
31	07:29	16:40 (TRQ08)		07:00		05:41	
	17:25	21 17:01 (TRQ08)		19:37		20:42	
Potential sun hours	294	295	369	400	452	457	
Total, worst case	92	716					
Sun reduction	0,42	0,46					
Oper. time red.	0,95	0,95					
Wind dir. red.	0,73	0,73					
Total reduction	0,29	0,32					
Total, real	27	227					

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_real **Shadow receptor:** AP - 101  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40	06:05	06:38	07:10	06:46	16:07 (TRQ08) 07:22
	20:54	20:34	19:49	18:57	17:08	37 16:44 (TRQ08) 16:43
2	05:41	06:06	06:39	07:11	06:47	16:07 (TRQ08) 07:23
	20:54	20:33	19:48	18:55	17:07	36 16:43 (TRQ08) 16:42
3	05:41	06:07	06:40	07:12	06:48	16:07 (TRQ08) 07:24
	20:54	20:32	19:46	18:53	17:06	35 16:42 (TRQ08) 16:42
4	05:42	06:08	06:41	07:13	06:50	16:07 (TRQ08) 07:25
	20:54	20:31	19:44	18:52	17:05	33 16:40 (TRQ08) 16:42
5	05:42	06:09	06:42	07:14	06:51	16:07 (TRQ08) 07:26
	20:54	20:30	19:43	18:50	17:03	32 16:39 (TRQ08) 16:41
6	05:43	06:10	06:43	07:15	06:52	16:08 (TRQ08) 07:27
	20:53	20:28	19:41	18:48	17:02	30 16:38 (TRQ08) 16:41
7	05:44	06:11	06:44	07:16	06:53	16:09 (TRQ08) 07:28
	20:53	20:27	19:39	18:47	17:01	28 16:37 (TRQ08) 16:41
8	05:44	06:12	06:45	07:17	06:55	16:09 (TRQ08) 07:29
	20:53	20:26	19:37	18:45	17:00	26 16:35 (TRQ08) 16:41
9	05:45	06:13	06:46	07:19	06:56	16:10 (TRQ08) 07:30
	20:52	20:24	19:36	18:43	16:59	25 16:35 (TRQ08) 16:41
10	05:46	06:15	06:47	07:20	06:57	16:11 (TRQ08) 07:31
	20:52	20:23	19:34	18:42	16:58	22 16:33 (TRQ08) 16:41
11	05:46	06:16	06:48	07:21	06:58	16:11 (TRQ08) 07:32
	20:51	20:22	19:32	18:40	16:57	21 16:32 (TRQ08) 16:41
12	05:47	06:17	06:49	07:22	07:00	16:13 (TRQ08) 07:33
	20:51	20:20	19:30	18:38	16:56	18 16:31 (TRQ08) 16:41
13	05:48	06:18	06:50	07:23	07:01	16:14 (TRQ08) 07:34
	20:50	20:19	19:29	18:37	16:55	16 16:30 (TRQ08) 16:41
14	05:49	06:19	06:51	07:24	07:02	16:15 (TRQ08) 07:34
	20:50	20:18	19:27	18:35	16:54	14 16:29 (TRQ08) 16:42
15	05:49	06:20	06:53	07:25	07:03	16:18 (TRQ08) 07:35
	20:49	20:16	19:25	18:33	16:53	10 16:28 (TRQ08) 16:42
16	05:50	06:21	06:54	07:27	07:05	16:20 (TRQ08) 07:36
	20:49	20:15	19:23	18:32	16:52	7 16:27 (TRQ08) 16:42
17	05:51	06:22	06:55	07:28	07:06	16:22 (TRQ08) 07:37
	20:48	20:13	19:22	18:30	16:51	4 16:26 (TRQ08) 16:42
18	05:52	06:23	06:56	07:29	17:25 (TRQ08)	07:07
	20:47	20:12	19:20	18:29	7 17:32 (TRQ08)	16:50
19	05:53	06:24	06:57	07:30	17:20 (TRQ08)	07:08
	20:47	20:10	19:18	18:27	16 17:36 (TRQ08)	16:49
20	05:54	06:25	06:58	07:31	17:17 (TRQ08)	07:09
	20:46	20:09	19:16	18:25	21 17:38 (TRQ08)	16:49
21	05:55	06:26	06:59	07:32	17:16 (TRQ08)	07:11
	20:45	20:07	19:15	18:24	25 17:41 (TRQ08)	16:48
22	05:56	06:27	07:00	07:34	17:14 (TRQ08)	07:12
	20:44	20:06	19:13	18:22	28 17:42 (TRQ08)	16:47
23	05:56	06:28	07:01	07:35	17:12 (TRQ08)	07:13
	20:43	20:04	19:11	18:21	31 17:43 (TRQ08)	16:46
24	05:57	06:29	07:02	07:36	17:10 (TRQ08)	07:14
	20:42	20:02	19:09	18:19	33 17:43 (TRQ08)	16:46
25	05:58	06:30	07:03	06:37	16:10 (TRQ08)	07:15
	20:41	20:01	19:07	17:18	35 16:45 (TRQ08)	16:45
26	05:59	06:31	07:04	06:38	16:09 (TRQ08)	07:17
	20:41	19:59	19:06	17:17	36 16:45 (TRQ08)	16:45
27	06:00	06:33	07:05	06:40	16:08 (TRQ08)	07:18
	20:40	19:58	19:04	17:15	37 16:45 (TRQ08)	16:44
28	06:01	06:34	07:06	06:41	16:08 (TRQ08)	07:19
	20:39	19:56	19:02	17:14	38 16:46 (TRQ08)	16:44
29	06:02	06:35	07:07	06:42	16:07 (TRQ08)	07:20
	20:38	19:54	19:00	17:12	39 16:46 (TRQ08)	16:43
30	06:03	06:36	07:09	06:43	16:07 (TRQ08)	07:21
	20:36	19:53	18:59	17:11	39 16:46 (TRQ08)	16:43
31	06:04	06:37		06:45	16:07 (TRQ08)	07:43
	20:35	19:51		17:10	39 16:46 (TRQ08)	16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case				424		394
Sun reduction				0,55		0,46
Oper. time red.				0,95		0,95
Wind dir. red.				0,73		0,73
Total reduction				0,38		0,31
Total, real				160		124

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AQ - 105  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June		
1	07:43	07:28	16:26 (TRQ08)	06:51	06:58	06:10	05:40	
	16:51	17:27	36 17:02 (TRQ08)	18:02	19:39	20:12	20:43	
2	07:43	07:27	16:27 (TRQ08)	06:49	06:56	06:09	05:40	
	16:52	17:28	37 17:04 (TRQ08)	18:04	19:40	20:13	20:44	
3	07:43	07:26	16:27 (TRQ08)	06:48	06:55	06:08	05:39	
	16:53	17:29	37 17:04 (TRQ08)	18:05	19:41	20:14	20:45	
4	07:43	07:25	16:28 (TRQ08)	06:46	06:53	06:06	05:39	
	16:54	17:31	36 17:04 (TRQ08)	18:06	19:42	20:16	20:45	
5	07:43	07:24	16:28 (TRQ08)	06:44	06:51	06:05	05:38	
	16:55	17:32	35 17:03 (TRQ08)	18:07	19:43	20:17	20:46	
6	07:43	07:23	16:28 (TRQ08)	06:43	06:49	06:04	05:38	
	16:56	17:33	35 17:03 (TRQ08)	18:09	19:44	20:18	20:47	
7	07:43	07:22	16:29 (TRQ08)	06:41	06:48	06:03	05:38	
	16:57	17:35	34 17:03 (TRQ08)	18:10	19:45	20:19	20:48	
8	07:43	07:21	16:30 (TRQ08)	06:39	06:46	06:01	05:37	
	16:58	17:36	33 17:03 (TRQ08)	18:11	19:46	20:20	20:48	
9	07:43	07:19	16:31 (TRQ08)	06:38	06:44	06:00	05:37	
	16:59	17:37	30 17:01 (TRQ08)	18:12	19:48	20:21	20:49	
10	07:42	07:18	16:32 (TRQ08)	06:36	06:43	05:59	05:37	
	17:00	17:38	28 17:00 (TRQ08)	18:13	19:49	20:22	20:49	
11	07:42	07:17	16:34 (TRQ08)	06:34	06:41	05:58	05:37	
	17:01	17:40	25 16:59 (TRQ08)	18:14	19:50	20:23	20:50	
12	07:42	16:34 (TRQ08)	07:16	16:36 (TRQ08)	06:33	06:39	05:57	05:37
	17:02	2 16:36 (TRQ08)	17:41	22 16:58 (TRQ08)	18:16	19:51	20:24	20:50
13	07:42	16:33 (TRQ08)	07:14	16:38 (TRQ08)	06:31	06:38	05:55	05:36
	17:03	4 16:37 (TRQ08)	17:42	17 16:55 (TRQ08)	18:17	19:52	20:25	20:51
14	07:41	16:31 (TRQ08)	07:13	16:41 (TRQ08)	06:29	06:36	05:54	05:36
	17:04	7 16:38 (TRQ08)	17:44	11 16:52 (TRQ08)	18:18	19:53	20:26	20:51
15	07:41	16:31 (TRQ08)	07:12	06:27	06:34	05:53	05:36	
	17:05	9 16:40 (TRQ08)	17:45	18:19	19:54	20:27	20:52	
16	07:40	16:29 (TRQ08)	07:10	06:26	06:33	05:52	05:36	
	17:07	12 16:41 (TRQ08)	17:46	18:20	19:55	20:28	20:52	
17	07:40	16:29 (TRQ08)	07:09	06:24	06:31	05:51	05:36	
	17:08	13 16:42 (TRQ08)	17:47	18:21	19:57	20:29	20:53	
18	07:39	16:28 (TRQ08)	07:07	06:22	06:30	05:50	05:36	
	17:09	15 16:43 (TRQ08)	17:49	18:23	19:58	20:30	20:53	
19	07:39	16:28 (TRQ08)	07:06	06:21	06:28	05:49	05:36	
	17:10	16 16:44 (TRQ08)	17:50	18:24	19:59	20:31	20:53	
20	07:38	16:28 (TRQ08)	07:05	06:19	06:27	05:49	05:37	
	17:11	18 16:46 (TRQ08)	17:51	18:25	20:00	20:32	20:54	
21	07:38	16:27 (TRQ08)	07:03	06:17	06:25	05:48	05:37	
	17:13	20 16:47 (TRQ08)	17:53	18:26	20:01	20:33	20:54	
22	07:37	16:27 (TRQ08)	07:02	06:15	06:23	05:47	05:37	
	17:14	21 16:48 (TRQ08)	17:54	18:27	20:02	20:34	20:54	
23	07:36	16:26 (TRQ08)	07:00	06:14	06:22	05:46	05:37	
	17:15	23 16:49 (TRQ08)	17:55	18:28	20:03	20:35	20:54	
24	07:35	16:27 (TRQ08)	06:59	06:12	06:20	05:45	05:37	
	17:16	25 16:52 (TRQ08)	17:56	18:29	20:04	20:36	20:54	
25	07:35	16:26 (TRQ08)	06:57	06:10	06:19	05:44	05:38	
	17:18	27 16:53 (TRQ08)	17:58	18:31	20:05	20:37	20:54	
26	07:34	16:26 (TRQ08)	06:55	06:08	06:17	05:44	05:38	
	17:19	28 16:54 (TRQ08)	17:59	18:32	20:07	20:38	20:55	
27	07:33	16:26 (TRQ08)	06:54	06:07	06:16	05:43	05:38	
	17:20	29 16:55 (TRQ08)	18:00	18:33	20:08	20:39	20:55	
28	07:32	16:26 (TRQ08)	06:52	06:05	06:15	05:42	05:39	
	17:22	31 16:57 (TRQ08)	18:01	18:34	20:09	20:40	20:55	
29	07:31	16:26 (TRQ08)		07:03	06:13	05:42	05:39	
	17:23	32 16:58 (TRQ08)		19:35	20:10	20:41	20:55	
30	07:30	16:26 (TRQ08)		07:01	06:12	05:41	05:40	
	17:24	34 17:00 (TRQ08)		19:36	20:11	20:42	20:54	
31	07:29	16:26 (TRQ08)		07:00		05:41		
	17:25	35 17:01 (TRQ08)		19:37		20:42		
Potential sun hours	294	295	369	400	452	457		
Total, worst case	401	416						
Sun reduction	0,42	0,46						
Oper. time red.	0,95	0,95						
Wind dir. red.	0,74	0,74						
Total reduction	0,29	0,32						
Total, real	118	135						

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AQ - 105  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40	06:05	06:38	07:10	06:46	16:02 (TRQ08) 07:22
	20:54	20:34	19:49	18:57	17:08	28 16:30 (TRQ08) 16:43
2	05:41	06:06	06:39	07:11	06:47	16:00 (TRQ08) 07:23
	20:54	20:33	19:48	18:55	17:07	31 16:31 (TRQ08) 16:42
3	05:41	06:07	06:40	07:12	06:48	16:00 (TRQ08) 07:24
	20:54	20:32	19:46	18:53	17:06	32 16:32 (TRQ08) 16:42
4	05:42	06:08	06:41	07:13	06:50	15:59 (TRQ08) 07:25
	20:54	20:31	19:44	18:52	17:05	34 16:33 (TRQ08) 16:42
5	05:42	06:09	06:42	07:14	06:51	15:58 (TRQ08) 07:26
	20:54	20:30	19:43	18:50	17:03	35 16:33 (TRQ08) 16:41
6	05:43	06:10	06:43	07:15	06:52	15:58 (TRQ08) 07:27
	20:53	20:28	19:41	18:48	17:02	36 16:34 (TRQ08) 16:41
7	05:44	06:11	06:44	07:16	06:53	15:58 (TRQ08) 07:28
	20:53	20:27	19:39	18:47	17:01	36 16:34 (TRQ08) 16:41
8	05:44	06:12	06:45	07:17	06:55	15:57 (TRQ08) 07:29
	20:53	20:26	19:37	18:45	17:00	37 16:34 (TRQ08) 16:41
9	05:45	06:13	06:46	07:19	06:56	15:58 (TRQ08) 07:30
	20:52	20:24	19:36	18:43	16:59	37 16:35 (TRQ08) 16:41
10	05:46	06:15	06:47	07:20	06:57	15:57 (TRQ08) 07:31
	20:52	20:23	19:34	18:42	16:58	36 16:33 (TRQ08) 16:41
11	05:46	06:16	06:48	07:21	06:58	15:57 (TRQ08) 07:32
	20:51	20:22	19:32	18:40	16:57	35 16:32 (TRQ08) 16:41
12	05:47	06:17	06:49	07:22	07:00	15:58 (TRQ08) 07:33
	20:51	20:20	19:30	18:38	16:56	33 16:31 (TRQ08) 16:41
13	05:48	06:18	06:50	07:23	07:01	15:58 (TRQ08) 07:34
	20:50	20:19	19:29	18:37	16:55	32 16:30 (TRQ08) 16:41
14	05:49	06:19	06:51	07:24	07:02	15:58 (TRQ08) 07:34
	20:50	20:18	19:27	18:35	16:54	31 16:29 (TRQ08) 16:42
15	05:49	06:20	06:53	07:25	07:03	15:59 (TRQ08) 07:35
	20:49	20:16	19:25	18:33	16:53	29 16:28 (TRQ08) 16:42
16	05:50	06:21	06:54	07:27	07:05	15:59 (TRQ08) 07:36
	20:49	20:15	19:23	18:32	16:52	28 16:27 (TRQ08) 16:42
17	05:51	06:22	06:55	07:28	07:06	15:59 (TRQ08) 07:37
	20:48	20:13	19:22	18:30	16:51	27 16:26 (TRQ08) 16:42
18	05:52	06:23	06:56	07:29	07:07	16:01 (TRQ08) 07:37
	20:47	20:12	19:20	18:29	16:50	25 16:26 (TRQ08) 16:43
19	05:53	06:24	06:57	07:30	07:08	16:01 (TRQ08) 07:38
	20:47	20:10	19:18	18:27	16:49	23 16:24 (TRQ08) 16:43
20	05:54	06:25	06:58	07:31	07:09	16:02 (TRQ08) 07:38
	20:46	20:09	19:16	18:25	16:49	21 16:23 (TRQ08) 16:43
21	05:55	06:26	06:59	07:32	07:11	16:02 (TRQ08) 07:39
	20:45	20:07	19:15	18:24	16:48	20 16:22 (TRQ08) 16:44
22	05:56	06:27	07:00	07:34	07:12	16:04 (TRQ08) 07:40
	20:44	20:06	19:13	18:22	16:47	18 16:22 (TRQ08) 16:44
23	05:56	06:28	07:01	07:35	07:13	16:05 (TRQ08) 07:40
	20:43	20:04	19:11	18:21	16:46	16 16:21 (TRQ08) 16:45
24	05:57	06:29	07:02	07:36	07:14	16:05 (TRQ08) 07:41
	20:42	20:02	19:09	18:19	16:46	15 16:20 (TRQ08) 16:45
25	05:58	06:30	07:03	06:37	07:15	16:06 (TRQ08) 07:41
	20:41	20:01	19:07	17:18	16:45	13 16:19 (TRQ08) 16:46
26	05:59	06:31	07:04	06:38	07:17	16:08 (TRQ08) 07:41
	20:41	19:59	19:06	17:17	16:45	12 16:20 (TRQ08) 16:47
27	06:00	06:33	07:05	06:40	07:18	16:10 (TRQ08) 07:42
	20:40	19:58	19:04	17:15	16:44	9 16:19 (TRQ08) 16:47
28	06:01	06:34	07:06	06:41	16:10 (TRQ08) 07:19	16:11 (TRQ08) 07:42
	20:39	19:56	19:02	17:14	13 16:23 (TRQ08) 16:44	7 16:18 (TRQ08) 16:48
29	06:02	06:35	07:07	06:42	16:07 (TRQ08) 07:20	16:13 (TRQ08) 07:42
	20:38	19:54	19:00	17:12	18 16:25 (TRQ08) 16:43	5 16:18 (TRQ08) 16:49
30	06:03	06:36	07:09	06:43	16:04 (TRQ08) 07:21	16:15 (TRQ08) 07:42
	20:36	19:53	18:59	17:11	23 16:27 (TRQ08) 16:43	2 16:17 (TRQ08) 16:49
31	06:04	06:37	07:10	06:45	16:03 (TRQ08) 07:22	07:43
	20:35	19:51	17:10	26 16:29 (TRQ08) 16:44		16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case				80		743
Sun reduction				0,55		0,46
Oper. time red.				0,95		0,95
Wind dir. red.				0,74		0,74
Total reduction				0,38		0,32
Total, real				31		238

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

Tarquinia1

Licensed user:

MONTANA SPA
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0254118173
Andrea / fronteddu@montanambiente.com
Calculated:
06/08/2022 14:40/3.5.584

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: AR - 110
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Table with 12 columns (Jan-Dec) and 2 rows of data for sunshine probability.

Operational time

Table with 13 columns (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum) and 2 rows of data for operational time.

Main shadow calculation table with columns for months (January-December) and rows for each hour of the day (07:43-17:25), including sun rise/set times and shadow reduction percentages.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AS - 111  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	16:07 (TRQ08)   07:28	16:21 (TRQ08)   06:51	06:58	06:10	05:40
	16:51	17 16:24 (TRQ08)   17:27	23 16:44 (TRQ08)   18:02	19:39	20:12	20:43
2	07:43	16:07 (TRQ08)   07:27	16:23 (TRQ08)   06:49	06:56	06:09	05:40
	16:52	18 16:25 (TRQ08)   17:28	19 16:42 (TRQ08)   18:04	19:40	20:13	20:44
3	07:43	16:08 (TRQ08)   07:26	16:26 (TRQ08)   06:48	06:55	06:08	05:39
	16:53	18 16:26 (TRQ08)   17:29	14 16:40 (TRQ08)   18:05	19:41	20:14	20:45
4	07:43	16:08 (TRQ08)   07:25	16:30 (TRQ08)   06:46	06:53	06:06	05:39
	16:54	19 16:27 (TRQ08)   17:31	7 16:37 (TRQ08)   18:06	19:42	20:16	20:45
5	07:43	16:08 (TRQ08)   07:24	06:44	06:51	06:05	05:38
	16:55	20 16:28 (TRQ08)   17:32	18:07	19:43	20:17	20:46
6	07:43	16:08 (TRQ08)   07:23	06:43	06:49	06:04	05:38
	16:56	21 16:29 (TRQ08)   17:33	18:09	19:44	20:18	20:47
7	07:43	16:09 (TRQ08)   07:22	06:41	06:48	06:03	05:38
	16:57	22 16:31 (TRQ08)   17:35	18:10	19:45	20:19	20:48
8	07:43	16:08 (TRQ08)   07:21	06:39	06:46	06:01	05:37
	16:58	23 16:31 (TRQ08)   17:36	18:11	19:46	20:20	20:48
9	07:43	16:08 (TRQ08)   07:19	06:38	06:44	06:00	05:37
	16:59	24 16:32 (TRQ08)   17:37	18:12	19:48	20:21	20:49
10	07:42	16:09 (TRQ08)   07:18	06:36	06:43	05:59	05:37
	17:00	25 16:34 (TRQ08)   17:38	18:13	19:49	20:22	20:49
11	07:42	16:08 (TRQ08)   07:17	06:34	06:41	05:58	05:37
	17:01	26 16:34 (TRQ08)   17:40	18:14	19:50	20:23	20:50
12	07:42	16:09 (TRQ08)   07:16	06:33	06:39	05:57	05:37
	17:02	27 16:36 (TRQ08)   17:41	18:16	19:51	20:24	20:50
13	07:42	16:10 (TRQ08)   07:14	06:31	06:38	05:55	05:36
	17:03	27 16:37 (TRQ08)   17:42	18:17	19:52	20:25	20:51
14	07:41	16:09 (TRQ08)   07:13	06:29	06:36	05:54	05:36
	17:04	29 16:38 (TRQ08)   17:44	18:18	19:53	20:26	20:51
15	07:41	16:10 (TRQ08)   07:12	06:27	06:34	05:53	05:36
	17:05	30 16:40 (TRQ08)   17:45	18:19	19:54	20:27	20:52
16	07:40	16:10 (TRQ08)   07:10	06:26	06:33	05:52	05:36
	17:07	31 16:41 (TRQ08)   17:46	18:20	19:55	20:28	20:52
17	07:40	16:11 (TRQ08)   07:09	06:24	06:31	05:51	05:36
	17:08	31 16:42 (TRQ08)   17:47	18:21	19:57	20:29	20:53
18	07:39	16:11 (TRQ08)   07:07	06:22	06:30	05:50	05:36
	17:09	32 16:43 (TRQ08)   17:49	18:23	19:58	20:30	20:53
19	07:39	16:11 (TRQ08)   07:06	06:21	06:28	05:49	05:36
	17:10	33 16:44 (TRQ08)   17:50	18:24	19:59	20:31	20:53
20	07:38	16:12 (TRQ08)   07:05	06:19	06:27	05:49	05:37
	17:11	34 16:46 (TRQ08)   17:51	18:25	20:00	20:32	20:54
21	07:38	16:12 (TRQ08)   07:03	06:17	06:25	05:48	05:37
	17:13	35 16:47 (TRQ08)   17:53	18:26	20:01	20:33	20:54
22	07:37	16:12 (TRQ08)   07:02	06:15	06:23	05:47	05:37
	17:14	36 16:48 (TRQ08)   17:54	18:27	20:02	20:34	20:54
23	07:36	16:12 (TRQ08)   07:00	06:14	06:22	05:46	05:37
	17:15	36 16:48 (TRQ08)   17:55	18:28	20:03	20:35	20:54
24	07:35	16:14 (TRQ08)   06:59	06:12	06:20	05:45	05:37
	17:16	34 16:48 (TRQ08)   17:56	18:29	20:04	20:36	20:54
25	07:35	16:14 (TRQ08)   06:57	06:10	06:19	05:44	05:38
	17:18	34 16:48 (TRQ08)   17:58	18:31	20:05	20:37	20:54
26	07:34	16:15 (TRQ08)   06:55	06:08	06:17	05:44	05:38
	17:19	33 16:48 (TRQ08)   17:59	18:32	20:07	20:38	20:55
27	07:33	16:15 (TRQ08)   06:54	06:07	06:16	05:43	05:38
	17:20	33 16:48 (TRQ08)   18:00	18:33	20:08	20:39	20:55
28	07:32	16:16 (TRQ08)   06:52	06:05	06:15	05:42	05:39
	17:22	31 16:47 (TRQ08)   18:01	18:34	20:09	20:40	20:55
29	07:31	16:17 (TRQ08)	07:03	06:13	05:42	05:39
	17:23	29 16:46 (TRQ08)	19:35	20:10	20:41	20:55
30	07:30	16:18 (TRQ08)	07:01	06:12	05:41	05:40
	17:24	28 16:46 (TRQ08)	19:36	20:11	20:42	20:54
31	07:29	16:20 (TRQ08)	07:00		05:41	
	17:25	25 16:45 (TRQ08)	19:37		20:42	
Potential sun hours	294	295	369	400	452	457
Total, worst case	861	63				
Sun reduction	0,42	0,46				
Oper. time red.	0,95	0,95				
Wind dir. red.	0,75	0,75				
Total reduction	0,30	0,33				
Total, real	258	21				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: AS - 111
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (July to December) and rows for days (1 to 31). Each row contains sun rise and set times for each month, and a TRQ08 value for December. Summary rows at the bottom show potential sun hours, total worst case, sun reduction, oper. time red., wind dir. red., total reduction, and total real.

Table layout: For each day in each month the following matrix apply

Matrix with columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)



## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AT - 113  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51	16:19 (TRQ08) 17:27	16:29 (TRQ08) 16:50 (TRQ08)	06:51 18:02	06:58 19:38	06:10 20:12
2	07:43 16:52	16:19 (TRQ08) 17:28	16:31 (TRQ08) 16:48 (TRQ08)	06:49 18:04	06:56 19:40	06:09 20:13
3	07:43 16:53	16:19 (TRQ08) 17:29	16:33 (TRQ08) 16:46 (TRQ08)	06:48 18:05	06:55 19:41	06:08 20:14
4	07:43 16:54	16:19 (TRQ08) 17:31	16:38 (TRQ08) 16:42 (TRQ08)	06:46 18:06	06:53 19:42	06:06 20:16
5	07:43 16:55	16:19 (TRQ08) 17:32		06:44 18:07	06:51 19:43	06:05 20:17
6	07:43 16:56	16:20 (TRQ08) 17:33		06:43 18:09	06:49 19:44	06:04 20:18
7	07:43 16:57	16:20 (TRQ08) 17:35		06:41 18:10	06:48 19:45	06:02 20:19
8	07:43 16:58	16:19 (TRQ08) 17:36		06:39 18:11	06:46 19:46	06:01 20:20
9	07:43 16:59	16:19 (TRQ08) 17:37		06:38 18:12	06:44 19:48	06:00 20:21
10	07:42 17:00	16:19 (TRQ08) 17:38		06:36 18:13	06:43 19:49	05:59 20:22
11	07:42 17:01	16:19 (TRQ08) 17:40		06:34 18:14	06:41 19:50	05:58 20:23
12	07:42 17:02	16:19 (TRQ08) 17:41		06:33 18:16	06:39 19:51	05:57 20:24
13	07:42 17:03	16:20 (TRQ08) 17:42		06:31 18:17	06:38 19:52	05:55 20:25
14	07:41 17:04	16:19 (TRQ08) 17:44		06:29 18:18	06:36 19:53	05:54 20:26
15	07:41 17:05	16:20 (TRQ08) 17:45		06:27 18:19	06:34 19:54	05:53 20:27
16	07:40 17:07	16:19 (TRQ08) 17:46		06:26 18:20	06:33 19:55	05:52 20:28
17	07:40 17:08	16:20 (TRQ08) 17:47		06:24 18:21	06:31 19:56	05:51 20:29
18	07:39 17:09	16:20 (TRQ08) 17:49		06:22 18:23	06:30 19:58	05:50 20:30
19	07:39 17:10	16:20 (TRQ08) 17:50		06:21 18:24	06:28 19:59	05:49 20:31
20	07:38 17:11	16:21 (TRQ08) 17:51		06:19 18:25	06:27 20:00	05:48 20:32
21	07:38 17:13	16:21 (TRQ08) 17:53		06:17 18:26	06:25 20:01	05:48 20:33
22	07:37 17:14	16:21 (TRQ08) 17:54		06:15 18:27	06:23 20:02	05:47 20:34
23	07:36 17:15	16:21 (TRQ08) 17:55		06:14 18:28	06:22 20:03	05:46 20:35
24	07:35 17:16	16:22 (TRQ08) 17:56		06:12 18:29	06:20 20:04	05:45 20:36
25	07:35 17:18	16:23 (TRQ08) 17:58		06:10 18:31	06:19 20:05	05:44 20:37
26	07:34 17:19	16:23 (TRQ08) 17:59		06:08 18:32	06:17 20:07	05:44 20:38
27	07:33 17:20	16:24 (TRQ08) 18:00		06:07 18:33	06:16 20:08	05:43 20:39
28	07:32 17:21	16:24 (TRQ08) 18:01		06:05 18:34	06:15 20:09	05:42 20:40
29	07:31 17:23	16:25 (TRQ08)		07:03 19:35	06:13 20:10	05:42 20:41
30	07:30 17:24	16:26 (TRQ08)		07:01 19:36	06:12 20:11	05:41 20:42
31	07:29 17:25	16:28 (TRQ08) 16:51 (TRQ08)		07:00 19:37		05:41 20:42
Potential sun hours	294	295	369	400	452	457
Total, worst case	602	55				
Sun reduction	0,42	0,46				
Oper. time red.	0,95	0,95				
Wind dir. red.	0,75	0,75				
Total reduction	0,30	0,33				
Total, real	179	18				

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: AT - 113  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40	06:05	06:38	07:10	06:46	07:22
	20:54	20:34	19:49	18:57	17:08	16:43
2	05:41	06:06	06:39	07:11	06:47	07:23
	20:54	20:33	19:48	18:55	17:07	16:42
3	05:41	06:07	06:40	07:12	06:48	07:24
	20:54	20:32	19:46	18:53	17:06	16:42
4	05:42	06:08	06:41	07:13	06:50	07:25
	20:54	20:31	19:44	18:52	17:05	16:42
5	05:42	06:09	06:42	07:14	06:51	07:26
	20:54	20:30	19:43	18:50	17:03	16:41
6	05:43	06:10	06:43	07:15	06:52	07:27
	20:53	20:28	19:41	18:48	17:02	16:41
7	05:44	06:11	06:44	07:16	06:53	16:07 (TRQ08) 07:28
	20:53	20:27	19:39	18:47	17:01	6 16:13 (TRQ08) 16:41
8	05:44	06:12	06:45	07:17	06:55	16:03 (TRQ08) 07:29
	20:53	20:26	19:37	18:45	17:00	13 16:16 (TRQ08) 16:41
9	05:45	06:13	06:46	07:19	06:56	16:02 (TRQ08) 07:30
	20:52	20:24	19:36	18:43	16:59	17 16:19 (TRQ08) 16:41
10	05:46	06:15	06:47	07:20	06:57	16:00 (TRQ08) 07:31
	20:52	20:23	19:34	18:42	16:58	21 16:21 (TRQ08) 16:41
11	05:46	06:16	06:48	07:21	06:58	15:58 (TRQ08) 07:32
	20:51	20:22	19:32	18:40	16:57	24 16:22 (TRQ08) 16:41
12	05:47	06:17	06:49	07:22	07:00	15:58 (TRQ08) 07:33
	20:51	20:20	19:30	18:38	16:56	25 16:23 (TRQ08) 16:41
13	05:48	06:18	06:50	07:23	07:01	15:57 (TRQ08) 07:34
	20:50	20:19	19:29	18:37	16:55	27 16:24 (TRQ08) 16:41
14	05:49	06:19	06:51	07:24	07:02	15:56 (TRQ08) 07:34
	20:50	20:18	19:27	18:35	16:54	28 16:24 (TRQ08) 16:42
15	05:49	06:20	06:53	07:25	07:03	15:57 (TRQ08) 07:35
	20:49	20:16	19:25	18:33	16:53	29 16:26 (TRQ08) 16:42
16	05:50	06:21	06:54	07:27	07:04	15:56 (TRQ08) 07:36
	20:49	20:15	19:23	18:32	16:52	30 16:26 (TRQ08) 16:42
17	05:51	06:22	06:55	07:28	07:06	15:56 (TRQ08) 07:37
	20:48	20:13	19:22	18:30	16:51	30 16:26 (TRQ08) 16:42
18	05:52	06:23	06:56	07:29	07:07	15:56 (TRQ08) 07:37
	20:47	20:12	19:20	18:29	16:50	30 16:26 (TRQ08) 16:43
19	05:53	06:24	06:57	07:30	07:08	15:56 (TRQ08) 07:38
	20:47	20:10	19:18	18:27	16:49	28 16:24 (TRQ08) 16:43
20	05:54	06:25	06:58	07:31	07:09	15:56 (TRQ08) 07:38
	20:46	20:09	19:16	18:25	16:49	27 16:23 (TRQ08) 16:43
21	05:55	06:26	06:59	07:32	07:11	15:56 (TRQ08) 07:39
	20:45	20:07	19:15	18:24	16:48	26 16:22 (TRQ08) 16:44
22	05:56	06:27	07:00	07:34	07:12	15:57 (TRQ08) 07:40
	20:44	20:06	19:13	18:22	16:47	25 16:22 (TRQ08) 16:44
23	05:56	06:28	07:01	07:35	07:13	15:57 (TRQ08) 07:40
	20:43	20:04	19:11	18:21	16:46	24 16:21 (TRQ08) 16:45
24	05:57	06:29	07:02	07:36	07:14	15:57 (TRQ08) 07:41
	20:42	20:02	19:09	18:19	16:46	23 16:20 (TRQ08) 16:45
25	05:58	06:30	07:03	06:37	07:15	15:57 (TRQ08) 07:41
	20:41	20:01	19:07	17:18	16:45	22 16:19 (TRQ08) 16:46
26	05:59	06:31	07:04	06:38	07:17	15:58 (TRQ08) 07:41
	20:41	19:59	19:06	17:17	16:45	22 16:20 (TRQ08) 16:47
27	06:00	06:32	07:05	06:40	07:18	15:59 (TRQ08) 07:42
	20:40	19:58	19:04	17:15	16:44	20 16:19 (TRQ08) 16:47
28	06:01	06:34	07:06	06:41	07:19	15:59 (TRQ08) 07:42
	20:39	19:56	19:02	17:14	16:44	19 16:18 (TRQ08) 16:48
29	06:02	06:35	07:07	06:42	07:20	16:00 (TRQ08) 07:42
	20:38	19:54	19:00	17:12	16:43	17 16:17 (TRQ08) 16:49
30	06:03	06:36	07:09	06:43	07:21	16:00 (TRQ08) 07:42
	20:36	19:53	18:59	17:11	16:43	17 16:17 (TRQ08) 16:49
31	06:04	06:37		06:45		07:43
	20:35	19:51		17:10		16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case					550	139
Sun reduction					0,46	0,43
Oper. time red.					0,95	0,95
Wind dir. red.					0,75	0,75
Total reduction					0,32	0,31
Total, real					178	43

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AU - 114  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	
1	07:43	16:15 (TRQ08)   07:28	16:27 (TRQ08)	06:51	06:58	06:10	05:40
	16:51	9 16:24 (TRQ08)   17:27	20 16:47 (TRQ08)	18:02	19:38	20:12	20:43
2	07:43	16:15 (TRQ08)   07:27	16:29 (TRQ08)	06:49	06:56	06:09	05:40
	16:52	10 16:25 (TRQ08)   17:28	16 16:45 (TRQ08)	18:04	19:40	20:13	20:44
3	07:43	16:15 (TRQ08)   07:26	16:32 (TRQ08)	06:48	06:55	06:08	05:39
	16:53	11 16:26 (TRQ08)   17:29	11 16:43 (TRQ08)	18:05	19:41	20:14	20:45
4	07:43	16:15 (TRQ08)   07:25	16:46	06:46	06:53	06:06	05:39
	16:54	12 16:27 (TRQ08)   17:31	18:06	18:06	19:42	20:16	20:45
5	07:43	16:15 (TRQ08)   07:24	16:44	06:44	06:51	06:05	05:38
	16:55	13 16:28 (TRQ08)   17:32	18:07	18:07	19:43	20:17	20:46
6	07:43	16:15 (TRQ08)   07:23	16:43	06:43	06:49	06:04	05:38
	16:56	14 16:29 (TRQ08)   17:33	18:09	18:09	19:44	20:18	20:47
7	07:43	16:16 (TRQ08)   07:22	16:41	06:41	06:48	06:03	05:38
	16:57	15 16:31 (TRQ08)   17:35	18:10	18:10	19:45	20:19	20:48
8	07:43	16:15 (TRQ08)   07:21	16:39	06:39	06:46	06:01	05:37
	16:58	16 16:31 (TRQ08)   17:36	18:11	18:11	19:46	20:20	20:48
9	07:43	16:15 (TRQ08)   07:19	16:38	06:38	06:44	06:00	05:37
	16:59	17 16:32 (TRQ08)   17:37	18:12	18:12	19:48	20:21	20:49
10	07:42	16:16 (TRQ08)   07:18	16:36	06:36	06:43	05:59	05:37
	17:00	18 16:34 (TRQ08)   17:38	18:13	18:13	19:49	20:22	20:49
11	07:42	16:15 (TRQ08)   07:17	16:34	06:34	06:41	05:58	05:37
	17:01	19 16:34 (TRQ08)   17:40	18:14	18:14	19:50	20:23	20:50
12	07:42	16:16 (TRQ08)   07:16	16:33	06:33	06:39	05:57	05:37
	17:02	20 16:36 (TRQ08)   17:41	18:16	18:16	19:51	20:24	20:50
13	07:42	16:16 (TRQ08)   07:14	16:31	06:31	06:38	05:55	05:36
	17:03	21 16:37 (TRQ08)   17:42	18:17	18:17	19:52	20:25	20:51
14	07:41	16:16 (TRQ08)   07:13	16:29	06:29	06:36	05:54	05:36
	17:04	22 16:38 (TRQ08)   17:44	18:18	18:18	19:53	20:26	20:51
15	07:41	16:16 (TRQ08)   07:12	16:27	06:27	06:34	05:53	05:36
	17:05	24 16:40 (TRQ08)   17:45	18:19	18:19	19:54	20:27	20:52
16	07:40	16:16 (TRQ08)   07:10	16:26	06:26	06:33	05:52	05:36
	17:07	25 16:41 (TRQ08)   17:46	18:20	18:20	19:55	20:28	20:52
17	07:40	16:17 (TRQ08)   07:09	16:24	06:24	06:31	05:51	05:36
	17:08	25 16:42 (TRQ08)   17:47	18:21	18:21	19:57	20:29	20:53
18	07:39	16:17 (TRQ08)   07:07	16:22	06:22	06:30	05:50	05:36
	17:09	26 16:43 (TRQ08)   17:49	18:23	18:23	19:58	20:30	20:53
19	07:39	16:17 (TRQ08)   07:06	16:21	06:21	06:28	05:49	05:36
	17:10	27 16:44 (TRQ08)   17:50	18:24	18:24	19:59	20:31	20:53
20	07:38	16:18 (TRQ08)   07:05	16:19	06:19	06:27	05:48	05:37
	17:11	28 16:46 (TRQ08)   17:51	18:25	18:25	20:00	20:32	20:54
21	07:38	16:18 (TRQ08)   07:03	16:17	06:17	06:25	05:48	05:37
	17:13	29 16:47 (TRQ08)   17:53	18:26	18:26	20:01	20:33	20:54
22	07:37	16:18 (TRQ08)   07:02	16:15	06:15	06:23	05:47	05:37
	17:14	30 16:48 (TRQ08)   17:54	18:27	18:27	20:02	20:34	20:54
23	07:36	16:18 (TRQ08)   07:00	16:14	06:14	06:22	05:46	05:37
	17:15	31 16:49 (TRQ08)   17:55	18:28	18:28	20:03	20:35	20:54
24	07:35	16:19 (TRQ08)   06:59	16:12	06:12	06:20	05:45	05:37
	17:16	32 16:51 (TRQ08)   17:56	18:29	18:29	20:04	20:36	20:54
25	07:35	16:20 (TRQ08)   06:57	16:10	06:10	06:19	05:44	05:38
	17:18	31 16:51 (TRQ08)   17:58	18:31	18:31	20:05	20:37	20:54
26	07:34	16:20 (TRQ08)   06:55	16:08	06:08	06:17	05:44	05:38
	17:19	31 16:51 (TRQ08)   17:59	18:32	18:32	20:07	20:38	20:55
27	07:33	16:21 (TRQ08)   06:54	16:07	06:07	06:16	05:43	05:38
	17:20	30 16:51 (TRQ08)   18:00	18:33	18:33	20:08	20:39	20:55
28	07:32	16:22 (TRQ08)   06:52	16:05	06:05	06:15	05:42	05:39
	17:22	28 16:50 (TRQ08)   18:01	18:34	18:34	20:09	20:40	20:55
29	07:31	16:23 (TRQ08)	16:03	06:03	06:13	05:42	05:39
	17:23	27 16:50 (TRQ08)	18:35	18:35	20:10	20:41	20:55
30	07:30	16:24 (TRQ08)	16:01	06:01	06:12	05:41	05:40
	17:24	25 16:49 (TRQ08)	18:36	18:36	20:11	20:42	20:54
31	07:29	16:25 (TRQ08)	16:00	06:00		05:41	
	17:25	23 16:48 (TRQ08)	18:37	18:37		20:42	
Potential sun hours	294	295	369	400	452	457	
Total, worst case	689						47
Sun reduction	0,42						0,46
Oper. time red.	0,95						0,95
Wind dir. red.	0,75						0,75
Total reduction	0,30						0,33
Total, real	206						15

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AU - 114  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December	
1	05:40	06:05	06:38	07:10	06:46	07:22	15:57 (TRQ08)
	20:54	20:34	19:49	18:57	17:08	16:43	19 16:16 (TRQ08)
2	05:41	06:06	06:39	07:11	06:47	07:23	15:59 (TRQ08)
	20:54	20:33	19:48	18:55	17:07	16:42	18 16:17 (TRQ08)
3	05:41	06:07	06:40	07:12	06:48	07:24	15:59 (TRQ08)
	20:54	20:32	19:46	18:53	17:06	16:42	17 16:16 (TRQ08)
4	05:42	06:08	06:41	07:13	06:50	07:25	16:00 (TRQ08)
	20:54	20:31	19:44	18:52	17:05	16:42	16 16:16 (TRQ08)
5	05:42	06:09	06:42	07:14	06:51	07:26	16:01 (TRQ08)
	20:54	20:30	19:43	18:50	17:03	16:41	15 16:16 (TRQ08)
6	05:43	06:10	06:43	07:15	06:52	07:27	16:02 (TRQ08)
	20:53	20:28	19:41	18:48	17:02	16:41	14 16:16 (TRQ08)
7	05:44	06:11	06:44	07:16	06:53	07:28	16:02 (TRQ08)
	20:53	20:27	19:39	18:47	17:01	16:41	13 16:15 (TRQ08)
8	05:44	06:12	06:45	07:17	06:55	16:02 (TRQ08)	07:29
	20:53	20:26	19:37	18:45	17:00	11 16:13 (TRQ08)	16:41
9	05:45	06:13	06:46	07:19	06:56	16:00 (TRQ08)	07:30
	20:52	20:24	19:36	18:43	16:59	16 16:16 (TRQ08)	16:41
10	05:46	06:15	06:47	07:20	06:57	15:58 (TRQ08)	07:31
	20:52	20:23	19:34	18:42	16:58	20 16:18 (TRQ08)	16:41
11	05:46	06:16	06:48	07:21	06:58	15:56 (TRQ08)	07:32
	20:51	20:22	19:32	18:40	16:57	23 16:19 (TRQ08)	16:41
12	05:47	06:17	06:49	07:22	07:00	15:56 (TRQ08)	07:33
	20:51	20:20	19:30	18:38	16:56	25 16:21 (TRQ08)	16:41
13	05:48	06:18	06:50	07:23	07:01	15:55 (TRQ08)	07:34
	20:50	20:19	19:29	18:37	16:55	27 16:22 (TRQ08)	16:41
14	05:49	06:19	06:51	07:24	07:02	15:54 (TRQ08)	07:34
	20:50	20:18	19:27	18:35	16:54	28 16:22 (TRQ08)	16:42
15	05:49	06:20	06:53	07:25	07:03	15:54 (TRQ08)	07:35
	20:49	20:16	19:25	18:33	16:53	30 16:24 (TRQ08)	16:42
16	05:50	06:21	06:54	07:27	07:05	15:53 (TRQ08)	07:36
	20:49	20:15	19:23	18:32	16:52	31 16:24 (TRQ08)	16:42
17	05:51	06:22	06:55	07:28	07:06	15:53 (TRQ08)	07:37
	20:48	20:13	19:22	18:30	16:51	31 16:24 (TRQ08)	16:42
18	05:52	06:23	06:56	07:29	07:07	15:53 (TRQ08)	07:37
	20:47	20:12	19:20	18:29	16:50	32 16:25 (TRQ08)	16:43
19	05:53	06:24	06:57	07:30	07:08	15:53 (TRQ08)	07:38
	20:47	20:10	19:18	18:27	16:49	31 16:24 (TRQ08)	16:43
20	05:54	06:25	06:58	07:31	07:09	15:53 (TRQ08)	07:38
	20:46	20:09	19:16	18:25	16:49	30 16:23 (TRQ08)	16:43
21	05:55	06:26	06:59	07:32	07:11	15:53 (TRQ08)	07:39
	20:45	20:07	19:15	18:24	16:48	29 16:22 (TRQ08)	16:44
22	05:56	06:27	07:00	07:34	07:12	15:54 (TRQ08)	07:40
	20:44	20:06	19:13	18:22	16:47	28 16:22 (TRQ08)	16:44
23	05:56	06:28	07:01	07:35	07:13	15:54 (TRQ08)	07:40
	20:43	20:04	19:11	18:21	16:46	27 16:21 (TRQ08)	16:45
24	05:57	06:29	07:02	07:36	07:14	15:54 (TRQ08)	07:41
	20:42	20:02	19:09	18:19	16:46	26 16:20 (TRQ08)	16:45
25	05:58	06:30	07:03	06:37	07:15	15:54 (TRQ08)	07:41
	20:41	20:01	19:07	17:18	16:45	25 16:19 (TRQ08)	16:46
26	05:59	06:31	07:04	06:38	07:17	15:55 (TRQ08)	07:41
	20:41	19:59	19:06	17:17	16:45	25 16:20 (TRQ08)	16:47
27	06:00	06:33	07:05	06:40	07:18	15:55 (TRQ08)	07:42
	20:40	19:58	19:04	17:15	16:44	24 16:19 (TRQ08)	16:47
28	06:01	06:34	07:06	06:41	07:19	15:56 (TRQ08)	07:42
	20:39	19:56	19:02	17:14	16:44	22 16:18 (TRQ08)	16:48
29	06:02	06:35	07:07	06:42	07:20	15:56 (TRQ08)	07:42
	20:38	19:54	19:00	17:12	16:43	22 16:18 (TRQ08)	16:49
30	06:03	06:36	07:09	06:43	07:21	15:57 (TRQ08)	07:42
	20:36	19:53	18:59	17:11	16:43	20 16:17 (TRQ08)	16:49
31	06:04	06:37		06:45			07:43
	20:35	19:51		17:10			16:50
Potential sun hours	463	430	376	344	295	284	
Total, worst case					583		282
Sun reduction					0,46		0,43
Oper. time red.					0,95		0,95
Wind dir. red.					0,75		0,75
Total reduction					0,32		0,31
Total, real					189		86

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AV - 117  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June
1	07:43 16:51	07:28 17:27	06:51 18:03	06:58 19:39	06:10 20:12	05:40 20:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44
3	07:43 16:53	07:26 17:29	06:48 18:05	06:55 19:41	06:08 20:14	05:39 20:45
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:06 20:16	05:39 20:45
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46
6	07:43 16:56	07:23 17:33	06:43 18:09	06:49 19:44	19:21 (TRQ02) 19:22 (TRQ02)	06:04 20:18
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	19:18 (TRQ02) 19:24 (TRQ02)	06:03 20:19
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	19:15 (TRQ02) 19:24 (TRQ02)	06:01 20:20
9	07:43 16:59	07:19 17:37	06:38 18:12	06:44 19:48	19:13 (TRQ02) 19:25 (TRQ02)	06:00 20:21
10	07:42 17:00	07:18 17:39	06:36 18:13	06:43 19:49	19:12 (TRQ02) 19:27 (TRQ02)	05:59 20:22
11	07:42 17:01	07:17 17:40	17:14 (TRQ06) 17:17 (TRQ06)	06:34 18:14	06:41 19:50	19:10 (TRQ02) 19:28 (TRQ02)
12	07:42 17:02	07:16 17:41	3 17:12 (TRQ06) 6 17:18 (TRQ06)	06:33 18:16	06:39 19:51	19:09 (TRQ02) 19:28 (TRQ02)
13	07:42 17:03	07:14 17:42	9 17:10 (TRQ06) 9 17:19 (TRQ06)	06:31 18:17	06:38 19:52	19:09 (TRQ02) 19:30 (TRQ02)
14	07:41 17:04	07:13 17:44	12 17:09 (TRQ06) 12 17:21 (TRQ06)	06:29 18:18	06:36 19:53	19:08 (TRQ02) 19:31 (TRQ02)
15	07:41 17:06	07:12 17:45	17:08 (TRQ06) 14 17:22 (TRQ06)	06:27 18:19	06:35 19:54	19:08 (TRQ02) 19:32 (TRQ02)
16	07:40 17:07	07:10 17:46	17:08 (TRQ06) 15 17:23 (TRQ06)	06:26 18:20	06:33 19:55	19:07 (TRQ02) 19:33 (TRQ02)
17	07:40 17:08	07:09 17:48	17:07 (TRQ06) 18 17:25 (TRQ06)	06:24 18:21	06:31 19:57	19:07 (TRQ02) 19:34 (TRQ02)
18	07:39 17:09	07:07 17:49	17:07 (TRQ06) 19 17:26 (TRQ06)	06:22 18:23	06:30 19:58	19:07 (TRQ02) 19:35 (TRQ02)
19	07:39 17:10	07:06 17:50	17:07 (TRQ06) 21 17:28 (TRQ06)	06:21 18:24	06:28 19:59	19:07 (TRQ02) 19:34 (TRQ02)
20	07:38 17:11	07:05 17:51	17:06 (TRQ06) 23 17:29 (TRQ06)	06:19 18:25	06:27 20:00	19:08 (TRQ02) 19:34 (TRQ02)
21	07:38 17:13	07:03 17:53	17:07 (TRQ06) 24 17:31 (TRQ06)	06:17 18:26	06:25 20:01	19:08 (TRQ02) 19:33 (TRQ02)
22	07:37 17:14	07:02 17:54	17:07 (TRQ06) 24 17:31 (TRQ06)	06:15 18:27	06:23 20:02	19:09 (TRQ02) 19:32 (TRQ02)
23	07:36 17:15	07:00 17:55	17:08 (TRQ06) 25 17:33 (TRQ06)	06:14 18:28	06:22 20:03	19:10 (TRQ02) 19:30 (TRQ02)
24	07:35 17:16	06:59 17:56	17:08 (TRQ06) 23 17:31 (TRQ06)	06:12 18:29	06:20 20:04	19:12 (TRQ02) 19:28 (TRQ02)
25	07:35 17:18	06:57 17:58	17:09 (TRQ06) 22 17:31 (TRQ06)	06:10 18:31	06:19 20:05	19:14 (TRQ02) 19:25 (TRQ02)
26	07:34 17:19	06:55 17:59	17:10 (TRQ06) 19 17:29 (TRQ06)	06:08 18:32	06:18 20:07	05:44 20:38
27	07:33 17:20	06:54 18:00	17:12 (TRQ06) 14 17:26 (TRQ06)	06:07 18:33	06:16 20:08	05:43 20:39
28	07:32 17:22	06:52 18:01	17:15 (TRQ06) 9 17:24 (TRQ06)	06:05 18:34	06:15 20:09	05:42 20:40
29	07:31 17:23		07:03 19:35	06:13 20:10	05:42 20:41	05:39 20:55
30	07:30 17:24		07:01 19:36	06:12 20:11	05:41 20:42	05:40 20:54
31	07:29 17:25		07:00 19:37		05:41 20:42	
Potential sun hours	294	295	369	400	452	457
Total, worst case		300				377
Sun reduction		0,46				0,49
Oper. time red.		0,95				0,95
Wind dir. red.		0,70				0,57
Total reduction		0,31				0,27
Total, real		92				101

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AV - 117  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	19:09 (TRQ02) 18:57	07:10 17:08	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	19:10 (TRQ02) 18:55	07:11 17:07	07:23 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	19:11 (TRQ02) 18:53	07:12 17:06	07:24 16:42
4	05:42 20:54	06:08 20:31	06:41 19:44	19:12 (TRQ02) 18:52	07:13 17:05	07:25 16:42
5	05:42 20:54	06:09 20:30	06:42 19:43	19:13 (TRQ02) 18:50	07:14 17:03	07:26 16:42
6	05:43 20:53	06:10 20:28	06:43 19:41	19:17 (TRQ02) 18:48	07:15 17:02	07:27 16:41
7	05:44 20:53	06:11 20:27	06:44 19:39	19:18 (TRQ02) 18:47	07:16 17:01	07:28 16:41
8	05:44 20:53	06:12 20:26	06:45 19:37	19:19 18:45	07:17 17:00	07:29 16:41
9	05:45 20:52	06:14 20:24	06:46 19:36	19:19 18:43	07:19 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	19:20 18:42	07:20 16:58	07:31 16:41
11	05:46 20:51	06:16 20:22	06:48 19:32	19:21 18:40	07:21 16:57	07:32 16:41
12	05:47 20:51	06:17 20:20	06:49 19:30	19:22 18:38	07:22 16:56	07:33 16:41
13	05:48 20:50	06:18 20:19	06:50 19:29	19:23 18:37	07:23 16:55	07:34 16:41
14	05:49 20:50	06:19 20:18	06:52 19:27	19:24 (TRQ06) 18:35	17:46 (TRQ06) 16:54	07:02 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	19:25 (TRQ06) 18:33	17:43 (TRQ06) 16:53	07:03 16:42
16	05:50 20:49	06:21 20:15	06:54 19:23	19:26 (TRQ06) 18:32	17:41 (TRQ06) 16:52	07:04 16:42
17	05:51 20:48	06:22 20:13	19:24 (TRQ02) 19:22	19:27 (TRQ06) 18:30	17:40 (TRQ06) 16:51	07:06 16:42
18	05:52 20:47	06:23 20:12	19:20 (TRQ02) 19:20	19:28 (TRQ06) 18:29	17:39 (TRQ06) 16:50	07:07 16:43
19	05:53 20:47	06:24 20:10	19:17 (TRQ02) 19:18	19:29 (TRQ06) 18:27	17:38 (TRQ06) 16:49	07:08 16:43
20	05:54 20:46	06:25 20:09	19:16 (TRQ02) 19:16	19:30 (TRQ06) 18:26	17:37 (TRQ06) 16:49	07:09 16:43
21	05:55 20:45	06:26 20:07	19:14 (TRQ02) 19:15	19:31 (TRQ06) 18:24	17:37 (TRQ06) 16:48	07:11 16:44
22	05:56 20:44	06:27 20:06	19:13 (TRQ02) 19:13	19:32 (TRQ06) 18:22	17:37 (TRQ06) 16:47	07:12 16:44
23	05:57 20:43	06:28 20:04	19:12 (TRQ02) 19:11	19:33 (TRQ06) 18:21	17:36 (TRQ06) 16:47	07:13 16:45
24	05:57 20:42	06:29 20:02	19:11 (TRQ02) 19:09	19:34 (TRQ06) 18:20	17:36 (TRQ06) 16:46	07:14 16:45
25	05:58 20:41	06:30 20:01	19:10 (TRQ02) 19:07	19:35 (TRQ06) 17:18	16:37 (TRQ06) 16:45	07:15 16:46
26	05:59 20:41	06:31 19:59	19:10 (TRQ02) 19:06	19:36 (TRQ06) 17:17	16:37 (TRQ06) 16:45	07:17 16:47
27	06:00 20:40	06:33 19:58	19:09 (TRQ02) 19:04	19:37 (TRQ06) 17:15	16:38 (TRQ06) 16:44	07:18 16:47
28	06:01 20:39	06:34 19:56	19:09 (TRQ02) 19:02	19:38 (TRQ06) 17:14	16:51 (TRQ06) 16:44	16:44 16:48
29	06:02 20:38	06:35 19:54	19:09 (TRQ02) 19:00	19:39 (TRQ06) 17:12	16:50 (TRQ06) 16:43	16:44 16:49
30	06:03 20:36	06:36 19:53	19:09 (TRQ02) 18:59	19:40 (TRQ06) 17:11	16:49 (TRQ06) 16:43	16:45 16:49
31	06:04 20:35	06:37 19:51	19:09 (TRQ02) 19:28 (TRQ02)	19:41 (TRQ06) 17:10	16:44 (TRQ06) 16:46 (TRQ06)	16:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		323	63		304	
Sun reduction		0,70	0,62		0,55	
Oper. time red.		0,95	0,95		0,95	
Wind dir. red.		0,57	0,57		0,70	
Total reduction		0,38	0,34		0,36	
Total, real		123	21		111	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AW - 118  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	08:11 (TRQ04)	07:28	06:51	06:58	06:11
	16:51	28 08:39 (TRQ04)	17:27	18:03	19:39	20:12
2	07:43	08:12 (TRQ04)	07:27	06:49	06:56	06:09
	16:52	27 08:39 (TRQ04)	17:28	18:04	19:40	20:13
3	07:43	08:12 (TRQ04)	07:26	06:48	06:55	06:08
	16:53	28 08:40 (TRQ04)	17:30	18:05	19:41	20:15
4	07:43	08:13 (TRQ04)	07:25	06:46	06:53	07:16 (TRQ05)
	16:54	27 08:40 (TRQ04)	17:31	18:06	19:42	20:16
5	07:43	08:13 (TRQ04)	07:24	06:44	06:51	07:10 (TRQ05)
	16:55	28 08:41 (TRQ04)	17:32	18:08	19:43	20:17
6	07:43	08:14 (TRQ04)	07:23	06:43	06:50	07:08 (TRQ05)
	16:56	27 08:41 (TRQ04)	17:33	18:09	19:44	20:18
7	07:43	08:14 (TRQ04)	07:22	06:41	06:48	07:07 (TRQ05)
	16:57	28 08:42 (TRQ04)	17:35	18:10	19:45	20:19
8	07:43	08:14 (TRQ04)	07:21	06:39	06:46	07:05 (TRQ05)
	16:58	27 08:41 (TRQ04)	17:36	18:11	19:47	20:20
9	07:43	08:15 (TRQ04)	07:20	06:38	06:45	07:03 (TRQ05)
	16:59	27 08:42 (TRQ04)	17:37	18:12	19:48	20:21
10	07:43	08:16 (TRQ04)	07:18	06:36	06:43	07:02 (TRQ05)
	17:00	26 08:42 (TRQ04)	17:39	18:13	19:49	20:22
11	07:42	08:17 (TRQ04)	07:17	06:34	06:41	07:02 (TRQ05)
	17:01	26 08:43 (TRQ04)	17:40	18:15	19:50	20:23
12	07:42	08:17 (TRQ04)	07:16	06:33	06:40	07:02 (TRQ05)
	17:02	25 08:42 (TRQ04)	17:41	18:16	19:51	20:24
13	07:42	08:18 (TRQ04)	07:14	06:31	06:38	07:01 (TRQ05)
	17:03	25 08:43 (TRQ04)	17:43	18:17	19:52	20:25
14	07:41	08:18 (TRQ04)	07:13	06:29	06:36	07:01 (TRQ05)
	17:05	24 08:42 (TRQ04)	17:44	18:18	19:53	20:26
15	07:41	08:19 (TRQ04)	07:12	06:28	06:35	07:01 (TRQ05)
	17:06	24 08:43 (TRQ04)	17:45	18:19	19:54	20:28
16	07:40	08:20 (TRQ04)	07:10	06:26	06:33	07:01 (TRQ05)
	17:07	22 08:42 (TRQ04)	17:46	18:21	19:56	20:29
17	07:40	08:21 (TRQ04)	07:09	06:24	06:31	07:02 (TRQ05)
	17:08	21 08:42 (TRQ04)	17:48	18:22	19:57	20:30
18	07:39	08:22 (TRQ04)	07:08	06:22	06:30	07:03 (TRQ05)
	17:09	19 08:41 (TRQ04)	17:49	18:23	19:58	20:31
19	07:39	08:23 (TRQ04)	07:06	06:21	06:28	07:04 (TRQ05)
	17:10	17 08:40 (TRQ04)	17:50	18:24	19:59	20:32
20	07:38	08:25 (TRQ04)	07:05	06:19	06:27	07:06 (TRQ05)
	17:12	15 08:40 (TRQ04)	17:52	18:25	20:00	20:33
21	07:38	08:27 (TRQ04)	07:03	06:17	06:25	07:09 (TRQ05)
	17:13	12 08:39 (TRQ04)	17:53	18:26	20:01	20:34
22	07:37	08:30 (TRQ04)	07:02	06:16	06:24	07:11 (TRQ05)
	17:14	6 08:36 (TRQ04)	17:54	18:27	20:02	20:35
23	07:36		07:00	06:14	06:22	07:12 (TRQ05)
	17:15		17:55	18:29	20:03	20:36
24	07:36		06:59	06:12	06:21	07:13 (TRQ05)
	17:17		17:57	18:30	20:05	20:37
25	07:35		06:57	06:10	06:19	07:14 (TRQ05)
	17:18		17:58	18:31	20:06	20:38
26	07:34		06:56	06:09	06:18	07:15 (TRQ05)
	17:19		17:59	18:32	20:07	20:39
27	07:33		06:54	06:07	06:16	07:16 (TRQ05)
	17:20		18:00	18:33	20:08	20:40
28	07:32		06:52	06:05	06:15	07:17 (TRQ05)
	17:22		18:01	18:34	20:09	20:41
29	07:31			07:03	06:13	07:18 (TRQ05)
	17:23			19:35	20:10	20:42
30	07:30			07:02	06:12	07:19 (TRQ05)
	17:24			19:36	20:11	20:43
31	07:29			07:00		07:20 (TRQ05)
	17:26			19:38		20:44
Potential sun hours	294	295	369	400	452	457
Total, worst case	509				330	
Sun reduction	0,42				0,49	
Oper. time red.	0,95				0,95	
Wind dir. red.	0,48				0,64	
Total reduction	0,19				0,29	
Total, real	96				97	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** AW - 118  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:55	06:05 20:34	06:38 19:50	07:00 (TRQ05) 18:57	07:10 17:09	06:46 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:00 (TRQ05) 18:55	07:11 17:07	06:47 16:42
3	05:41 20:54	06:08 20:32	06:40 19:46	07:01 (TRQ05) 18:54	07:12 17:06	06:48 16:42
4	05:42 20:54	06:09 20:31	06:41 19:44	07:02 (TRQ05) 18:52	07:13 17:05	06:50 16:42
5	05:43 20:54	06:10 20:30	06:42 19:43	07:03 (TRQ05) 18:50	07:14 17:04	06:51 16:42
6	05:43 20:53	06:11 20:28	06:43 19:41	07:04 (TRQ05) 18:49	07:15 17:02	06:52 16:42
7	05:44 20:53	06:12 20:27	06:44 19:39	07:05 (TRQ05) 18:47	07:16 17:01	06:53 16:41
8	05:45 20:53	06:13 20:26	06:45 19:38	07:09 (TRQ05) 18:45	07:18 17:00	06:55 16:41
9	05:45 20:52	06:14 20:25	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	05:47 20:52	06:16 20:22	06:49 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	05:47 20:51	06:17 20:21	06:50 19:31	07:22 18:38	07:00 16:56	07:33 16:41
13	05:48 20:51	06:18 20:19	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:35 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	07:26 18:34	07:03 16:53	07:35 16:42
16	05:51 20:49	06:21 20:15	06:54 19:24	07:27 18:32	07:05 16:52	07:36 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:43
18	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:50	07:38 16:43
20	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:10 16:49	07:39 16:44
21	05:55 20:45	06:26 20:07	06:59 19:15	07:33 18:24	07:11 16:48	07:39 16:44
22	05:56 20:44	06:27 20:06	07:00 (TRQ05) 19:13	07:34 18:23	07:12 16:47	07:40 16:45
23	05:57 20:43	06:28 20:04	07:01 (TRQ05) 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	05:58 20:43	06:30 20:03	07:02 (TRQ05) 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	05:59 20:42	06:31 20:01	07:03 (TRQ05) 19:08	07:37 17:18	07:16 16:45	07:41 16:46
26	06:00 20:41	06:32 19:59	07:04 (TRQ05) 19:06	07:39 17:17	07:17 16:45	07:41 16:47
27	06:00 20:40	06:33 19:58	07:03 (TRQ05) 19:04	07:40 17:15	07:18 16:44	07:42 16:47
28	06:01 20:39	06:34 19:56	07:02 (TRQ05) 19:02	07:41 17:14	07:19 16:44	07:42 16:48
29	06:02 20:38	06:35 19:55	07:02 (TRQ05) 19:01	07:42 17:13	07:20 16:44	07:42 16:49
30	06:03 20:37	06:36 19:53	07:01 (TRQ05) 18:59	07:43 17:11	07:21 16:43	07:43 16:50
31	06:04 20:36	06:37 19:51	07:01 (TRQ05) 07:26 (TRQ05)	06:45 17:10		07:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		196	142		208	839
Sun reduction		0,70	0,62		0,46	0,43
Oper. time red.		0,95	0,95		0,95	0,95
Wind dir. red.		0,64	0,64		0,48	0,48
Total reduction		0,42	0,37		0,21	0,19
Total, real		82	53		43	163

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AX - 119  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51	08:08 (TRQ04) 08:35 (TRQ04)	07:28 17:27	06:51 18:03	06:58 19:39	05:40 20:43
2	07:43 16:52	08:08 (TRQ04) 08:35 (TRQ04)	07:27 17:28	06:49 18:04	06:56 19:40	05:40 20:44
3	07:43 16:53	08:09 (TRQ04) 08:36 (TRQ04)	07:26 17:30	06:48 18:05	06:55 19:41	05:39 20:45
4	07:43 16:54	08:09 (TRQ04) 08:37 (TRQ04)	07:25 17:31	06:46 18:06	06:53 19:42	05:39 20:46
5	07:43 16:55	08:10 (TRQ04) 08:37 (TRQ04)	07:24 17:32	06:44 18:08	06:51 19:43	05:39 20:46
6	07:43 16:56	08:10 (TRQ04) 08:38 (TRQ04)	07:23 17:33	06:43 18:09	06:50 19:44	05:38 20:47
7	07:43 16:57	08:11 (TRQ04) 08:39 (TRQ04)	07:22 17:35	06:41 18:10	06:48 19:45	05:38 20:48
8	07:43 16:58	08:10 (TRQ04) 08:38 (TRQ04)	07:21 17:36	06:39 18:11	06:46 19:47	05:38 20:48
9	07:43 16:59	08:11 (TRQ04) 08:39 (TRQ04)	07:20 17:37	06:38 18:12	06:45 19:48	05:37 20:49
10	07:43 17:00	08:11 (TRQ04) 08:40 (TRQ04)	07:18 17:39	06:36 18:13	06:43 19:49	05:37 20:49
11	07:42 17:01	08:12 (TRQ04) 08:41 (TRQ04)	07:17 17:40	06:34 18:15	06:41 19:50	05:37 20:50
12	07:42 17:02	08:12 (TRQ04) 08:40 (TRQ04)	07:16 17:41	06:33 18:16	06:40 19:51	05:37 20:51
13	07:42 17:03	08:13 (TRQ04) 08:41 (TRQ04)	07:14 17:43	06:31 18:17	06:38 19:52	05:37 20:51
14	07:41 17:05	08:13 (TRQ04) 08:41 (TRQ04)	07:13 17:44	06:29 18:18	06:36 19:53	05:37 20:52
15	07:41 17:06	08:14 (TRQ04) 08:41 (TRQ04)	07:12 17:45	06:28 18:19	06:35 19:54	05:37 20:52
16	07:40 17:07	08:14 (TRQ04) 08:41 (TRQ04)	07:10 17:46	06:26 18:21	06:33 19:56	05:37 20:52
17	07:40 17:08	08:15 (TRQ04) 08:42 (TRQ04)	07:09 17:48	06:24 18:22	06:31 19:57	05:37 20:53
18	07:39 17:09	08:15 (TRQ04) 08:41 (TRQ04)	07:08 17:49	06:22 18:23	06:30 19:58	05:37 20:53
19	07:39 17:10	08:16 (TRQ04) 08:41 (TRQ04)	07:06 17:50	06:21 18:24	06:28 19:59	05:37 20:53
20	07:38 17:12	08:17 (TRQ04) 08:41 (TRQ04)	07:05 17:52	06:19 18:25	06:27 20:00	05:37 20:54
21	07:38 17:13	08:18 (TRQ04) 08:41 (TRQ04)	07:03 17:53	06:17 18:26	06:25 20:01	05:37 20:54
22	07:37 17:14	08:19 (TRQ04) 08:40 (TRQ04)	07:02 17:54	06:16 18:27	06:24 20:02	05:37 20:54
23	07:36 17:15	08:21 (TRQ04) 08:40 (TRQ04)	07:00 17:55	06:14 18:29	06:22 20:03	05:37 20:54
24	07:36 17:17	08:22 (TRQ04) 08:39 (TRQ04)	06:59 17:57	06:12 18:30	06:21 20:05	05:38 20:54
25	07:35 17:18	08:24 (TRQ04) 08:37 (TRQ04)	06:57 17:58	06:10 18:31	06:19 20:06	05:38 20:55
26	07:34 17:19	08:26 (TRQ04) 08:35 (TRQ04)	06:56 17:59	06:09 18:32	06:18 20:07	05:38 20:55
27	07:33 17:20		06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:55
28	07:32 17:22		06:52 18:01	06:05 18:34	06:15 20:09	05:43 20:55
29	07:31 17:23			07:03 19:35	06:13 20:10	05:42 20:55
30	07:30 17:24			07:02 19:36	06:12 20:11	05:41 20:55
31	07:29 17:26			07:00 19:38		05:41 20:43
Potential sun hours	294	295	369	400	452	457
Total, worst case	648					358
Sun reduction	0,42					0,49
Oper. time red.	0,95					0,95
Wind dir. red.	0,49					0,65
Total reduction	0,19					0,30
Total, real	123					106

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AX - 119  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:55	06:05 20:34	06:38 19:50	06:59 (TRQ05) 18:57	07:10 17:09	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:00 (TRQ05) 18:55	07:11 17:07	07:23 16:42
3	05:41 20:54	06:08 20:32	06:40 19:46	07:02 (TRQ05) 18:54	07:12 17:06	07:24 16:42
4	05:42 20:54	06:09 20:31	06:41 19:44	07:13 (TRQ05) 18:52	07:13 17:05	07:25 16:42
5	05:43 20:54	06:10 20:30	06:42 19:43	07:14 (TRQ05) 18:50	07:14 17:04	07:26 16:42
6	05:43 20:53	06:11 20:28	06:43 19:41	07:15 (TRQ05) 18:49	07:15 17:02	07:27 16:42
7	05:44 20:53	06:12 20:27	06:44 19:39	07:16 (TRQ05) 18:47	07:16 17:01	07:28 16:41
8	05:45 20:53	06:13 20:26	06:45 19:38	07:18 (TRQ05) 18:45	07:18 17:00	07:29 16:41
9	05:45 20:52	06:14 20:25	06:46 19:36	07:19 (TRQ05) 18:43	07:19 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	07:20 (TRQ05) 18:42	07:20 16:58	07:31 16:41
11	05:47 20:52	06:16 20:22	06:49 19:32	07:21 (TRQ05) 18:40	07:21 16:57	07:32 16:41
12	05:47 20:51	06:17 20:21	06:50 19:31	07:22 (TRQ05) 18:38	07:22 16:56	07:33 16:41
13	05:48 20:51	06:18 20:19	06:51 19:29	07:23 (TRQ05) 18:37	07:23 16:55	07:34 16:42
14	05:49 20:50	06:19 20:18	06:52 19:27	07:24 (TRQ05) 18:35	07:24 16:54	07:35 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	07:26 (TRQ05) 18:34	07:26 16:53	07:36 16:42
16	05:51 20:49	06:21 20:15	06:54 19:24	07:27 (TRQ05) 18:32	07:27 16:52	07:36 16:42
17	05:51 20:48	06:22 20:13	07:05 (TRQ05) 19:22	07:28 (TRQ05) 18:30	07:28 16:51	07:37 16:43
18	05:52 20:47	06:23 20:12	07:03 (TRQ05) 19:20	07:29 (TRQ05) 18:29	07:29 16:50	07:37 16:43
19	05:53 20:47	06:24 20:10	07:01 (TRQ05) 19:18	07:30 (TRQ05) 18:27	07:30 16:50	07:38 16:43
20	05:54 20:46	06:25 20:09	07:00 (TRQ05) 19:16	07:31 (TRQ05) 18:26	07:31 16:49	07:39 16:44
21	05:55 20:45	06:26 20:07	06:58 (TRQ05) 19:15	07:33 (TRQ05) 18:24	07:33 16:48	07:39 16:44
22	05:56 20:44	06:27 20:06	06:58 (TRQ05) 19:13	07:34 (TRQ05) 18:23	07:34 16:47	07:40 16:45
23	05:57 20:43	06:28 20:04	06:57 (TRQ05) 19:11	07:35 (TRQ05) 18:21	07:35 16:47	07:40 16:45
24	05:58 20:43	06:30 20:03	06:56 (TRQ05) 19:09	07:36 (TRQ05) 18:20	07:36 16:46	07:41 16:46
25	05:59 20:42	06:31 20:01	06:56 (TRQ05) 19:08	07:37 (TRQ05) 17:18	07:37 16:45	07:41 16:46
26	06:00 20:41	06:32 19:59	06:56 (TRQ05) 19:06	07:39 (TRQ05) 17:17	07:39 16:45	07:41 16:47
27	06:00 20:40	06:33 19:58	06:55 (TRQ05) 19:04	07:40 (TRQ05) 17:15	07:40 16:44	07:42 16:47
28	06:01 20:39	06:34 19:56	06:55 (TRQ05) 19:02	07:41 (TRQ05) 17:14	07:41 16:44	07:42 16:48
29	06:02 20:38	06:35 19:55	06:56 (TRQ05) 19:01	07:42 (TRQ05) 17:13	07:42 16:44	07:42 16:49
30	06:03 20:37	06:36 19:53	06:57 (TRQ05) 18:59	07:43 (TRQ05) 17:11	07:43 16:43	07:43 16:50
31	06:04 20:36	06:37 19:51	06:58 (TRQ05) 19:00	07:44 (TRQ05) 17:10	07:44 16:43	07:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		323	36		342	816
Sun reduction		0,70	0,62		0,46	0,43
Oper. time red.		0,95	0,95		0,95	0,95
Wind dir. red.		0,65	0,65		0,49	0,49
Total reduction		0,42	0,38		0,21	0,20
Total, real		136	14		71	160

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: AY - 120  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	
1	07:43 16:52	07:28 17:27	06:51 18:03	07:22 (TRQ04) 07:51 (TRQ04)	06:58 19:39	06:11 20:12	
2	07:43 16:52	07:27 17:28	06:49 18:04	07:24 (TRQ04) 07:51 (TRQ04)	06:56 19:40	06:09 20:13	
3	07:43 16:53	07:26 17:30	06:48 18:05	07:24 (TRQ04) 07:49 (TRQ04)	06:55 19:41	06:08 20:15	
4	07:43 16:54	07:25 17:31	06:46 18:06	07:25 (TRQ04) 07:47 (TRQ04)	06:53 19:42	06:07 20:16	
5	07:43 16:55	07:24 17:32	06:44 18:08	07:27 (TRQ04) 07:45 (TRQ04)	06:51 19:43	06:05 20:17	
6	07:43 16:56	07:23 17:33	06:43 18:09	07:29 (TRQ04) 07:42 (TRQ04)	06:50 19:44	06:04 20:18	
7	07:43 16:57	07:22 17:35	06:41 18:10	07:42 (TRQ04)	06:48 19:45	06:03 20:19	
8	07:43 16:58	07:21 17:36	06:39 18:11		06:46 19:47	06:02 20:20	
9	07:43 16:59	07:20 17:37	06:38 18:12		06:45 19:48	06:00 20:21	
10	07:43 17:00	07:18 17:39	06:36 18:13		06:43 19:49	05:59 20:22	
11	07:42 17:01	07:17 17:40	06:34 18:15		06:41 19:50	05:58 20:23	
12	07:42 17:02	07:16 17:41	06:33 18:16		06:40 19:51	05:57 20:24	
13	07:42 17:03	07:14 17:43	06:31 18:17		06:38 19:52	05:56 20:25	
14	07:41 17:05	07:13 17:44	06:29 18:18	07:33 (TRQ04) 07:44 (TRQ04)	06:29 19:53	05:55 20:26	
15	07:41 17:06	07:12 17:45	06:28 18:19	07:32 (TRQ04) 07:47 (TRQ04)	06:28 19:54	05:54 20:28	
16	07:40 17:07	07:10 17:46	06:26 18:21	07:30 (TRQ04) 07:48 (TRQ04)	06:26 19:56	05:53 20:29	
17	07:40 17:08	07:09 17:48	06:24 18:22	07:29 (TRQ04) 07:50 (TRQ04)	06:24 19:57	05:52 20:30	
18	07:39 17:09	07:08 17:49	06:22 18:23	07:27 (TRQ04) 07:51 (TRQ04)	06:22 19:58	05:51 20:31	
19	07:39 17:10	07:06 17:50	06:21 18:24	07:26 (TRQ04) 07:52 (TRQ04)	06:21 19:59	05:50 20:32	
20	07:38 17:12	07:05 17:52	06:19 18:25	07:24 (TRQ04) 07:52 (TRQ04)	06:19 20:00	05:49 20:33	
21	07:38 17:13	07:03 17:53	06:17 18:26	07:23 (TRQ04) 07:53 (TRQ04)	06:17 20:01	05:48 20:34	
22	07:37 17:14	07:02 17:54	06:16 18:27	07:22 (TRQ04) 07:53 (TRQ04)	06:16 20:02	05:47 20:35	
23	07:36 17:15	07:00 17:55	06:14 18:29	07:22 (TRQ04) 07:54 (TRQ04)	06:14 20:03	05:46 20:35	
24	07:36 17:17	06:59 17:57	06:12 18:30	07:21 (TRQ04) 07:54 (TRQ04)	06:12 20:05	05:45 20:36	
25	07:35 17:18	06:57 17:58	06:10 18:31	07:22 (TRQ04) 07:54 (TRQ04)	06:10 20:06	05:45 20:37	
26	07:34 17:19	06:56 17:59	06:09 18:32	07:22 (TRQ04) 07:53 (TRQ04)	06:09 20:07	05:44 20:38	
27	07:33 17:20	06:54 18:00	06:07 18:33	07:21 (TRQ04) 07:52 (TRQ04)	06:08 20:08	05:43 20:39	
28	07:32 17:22	06:52 18:01	06:05 18:34	07:22 (TRQ04) 07:52 (TRQ04)	06:05 20:09	05:43 20:40	
29	07:31 17:23		07:03 19:35		06:13 20:10	05:42 20:41	
30	07:30 17:24		07:02 19:36		06:12 20:11	05:41 20:42	
31	07:29 17:26		07:00 19:38		06:11 20:12	05:40 20:43	
Potential sun hours	294	295	369		400	452	
Total, worst case							457
Sun reduction			393	134			699
Oper. time red.			0,46	0,46			0,61
Wind dir. red.			0,95	0,95			0,95
Total reduction			0,51	0,51			0,73
Total, real			0,22	0,22			0,41
			87	29			288

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** AZ - 121  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:28	06:51	07:16 (TRQ04)	06:58	06:11
	16:52	17:27	18:03	07:48 (TRQ04)	19:39	20:12
2	07:43	07:27	06:49	07:17 (TRQ04)	06:56	06:09
	16:52	17:28	18:04	07:49 (TRQ04)	19:40	20:13
3	07:43	07:26	06:48	07:17 (TRQ04)	06:55	06:08
	16:53	17:30	18:05	07:48 (TRQ04)	19:41	20:15
4	07:43	07:25	06:46	07:17 (TRQ04)	06:53	06:07
	16:54	17:31	18:06	07:46 (TRQ04)	19:42	20:16
5	07:43	07:24	06:44	07:18 (TRQ04)	06:51	06:05
	16:55	17:32	18:08	07:46 (TRQ04)	19:43	20:17
6	07:43	07:23	06:43	07:18 (TRQ04)	06:50	06:04
	16:56	17:33	18:09	07:44 (TRQ04)	19:44	20:18
7	07:43	07:22	06:41	07:19 (TRQ04)	06:48	06:03
	16:57	17:35	18:10	07:42 (TRQ04)	19:45	20:19
8	07:43	07:21	06:39	07:21 (TRQ04)	06:46	06:02
	16:58	17:36	18:11	07:41 (TRQ04)	19:47	20:20
9	07:43	07:20	06:38	07:23 (TRQ04)	06:45	06:00
	16:59	17:37	18:12	07:38 (TRQ04)	19:48	20:21
10	07:43	07:18	06:36	07:27 (TRQ04)	06:43	05:59
	17:00	17:39	18:13	07:34 (TRQ04)	19:49	20:22
11	07:42	07:17	06:34		06:41	05:58
	17:01	17:40	18:15		19:50	20:23
12	07:42	07:16	06:33		06:40	05:57
	17:02	17:41	18:16		19:51	20:24
13	07:42	07:14	06:31		06:38	05:56
	17:03	17:43	18:17		19:52	20:25
14	07:41	07:13	06:29		06:36	05:55
	17:05	17:44	18:18		19:53	20:26
15	07:41	07:12	06:28		06:35	05:54
	17:06	17:45	18:19		19:54	20:28
16	07:40	07:10	06:26		06:33	05:53
	17:07	17:46	18:21		19:56	20:29
17	07:40	07:09	06:24	07:31 (TRQ04)	06:31	05:52
	17:08	17:48	18:22	07:37 (TRQ04)	19:57	20:30
18	07:39	07:08	06:22	07:27 (TRQ04)	06:30	05:51
	17:09	17:49	18:23	07:41 (TRQ04)	19:58	20:31
19	07:39	07:06	06:21	07:26 (TRQ04)	06:28	05:50
	17:10	17:50	18:24	07:44 (TRQ04)	19:59	20:32
20	07:38	07:05	06:19	07:24 (TRQ04)	06:27	05:49
	17:12	17:52	18:25	07:45 (TRQ04)	20:00	20:33
21	07:38	07:03	06:17	07:23 (TRQ04)	06:25	05:48
	17:13	17:53	18:26	07:46 (TRQ04)	20:01	20:34
22	07:37	07:02	06:16	07:21 (TRQ04)	06:24	05:47
	17:14	17:54	18:27	07:47 (TRQ04)	20:02	20:35
23	07:36	07:00	06:14	07:20 (TRQ04)	06:22	05:46
	17:15	17:55	18:29	07:48 (TRQ04)	20:03	20:35
24	07:36	06:59	06:12	07:18 (TRQ04)	06:21	05:45
	17:17	17:57	18:30	07:48 (TRQ04)	20:05	20:36
25	07:35	06:57	06:10	07:18 (TRQ04)	06:19	05:45
	17:18	17:58	18:31	07:49 (TRQ04)	20:06	20:37
26	07:34	06:56	06:09	07:17 (TRQ04)	06:18	05:44
	17:19	17:59	18:32	07:49 (TRQ04)	20:07	20:38
27	07:33	06:54	06:07	07:16 (TRQ04)	06:16	05:43
	17:20	18:00	18:33	07:49 (TRQ04)	20:08	20:39
28	07:32	06:52	06:05	07:17 (TRQ04)	06:15	05:43
	17:22	18:01	18:34	07:49 (TRQ04)	20:09	20:40
29	07:31		07:03		06:13	05:42
	17:23		19:35		20:10	20:41
30	07:30		07:02		06:12	05:41
	17:24		19:36		20:11	20:42
31	07:29		07:00			05:41
	17:26		19:38			20:42
Potential sun hours	294	295	369	400	452	457
Total, worst case		294	243		115	698
Sun reduction		0,46	0,46		0,57	0,61
Oper. time red.		0,95	0,95		0,95	0,95
Wind dir. red.		0,51	0,51		0,73	0,73
Total reduction		0,22	0,22		0,39	0,41
Total, real		65	53		44	290

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** BA - 123  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	
1	07:43 16:52	07:28 17:27	06:51 18:03	07:14 (TRQ04) 07:53 (TRQ04)	06:58 19:39	06:11 20:12	
2	07:43 16:52	07:27 17:28	06:49 18:04	07:14 (TRQ04) 07:54 (TRQ04)	06:56 19:40	06:09 20:13	
3	07:43 16:53	07:26 17:30	06:48 18:05	07:13 (TRQ04) 07:54 (TRQ04)	06:55 19:41	06:08 20:15	
4	07:43 16:54	07:25 17:31	06:46 18:06	07:12 (TRQ04) 07:54 (TRQ04)	06:53 19:42	06:07 20:16	
5	07:43 16:55	07:24 17:32	06:44 18:08	07:13 (TRQ04) 07:54 (TRQ04)	06:51 19:43	06:05 20:17	
6	07:43 16:56	07:23 17:33	06:43 18:09	07:12 (TRQ04) 07:54 (TRQ04)	06:50 19:44	06:04 20:18	
7	07:43 16:57	07:22 17:35	06:41 18:10	07:12 (TRQ04) 07:53 (TRQ04)	06:48 19:45	06:03 20:19	
8	07:43 16:58	07:21 17:36	06:39 18:11	07:12 (TRQ04) 07:53 (TRQ04)	06:46 19:47	06:02 20:20	
9	07:43 16:59	07:19 17:37	06:38 18:12	07:12 (TRQ04) 07:52 (TRQ04)	06:45 19:48	06:00 20:21	
10	07:43 17:00	07:18 17:39	06:36 18:13	07:12 (TRQ04) 07:51 (TRQ04)	06:43 19:49	05:59 20:22	
11	07:42 17:01	07:17 17:40	06:34 18:15	07:13 (TRQ04) 07:51 (TRQ04)	06:41 19:50	05:58 20:23	
12	07:42 17:02	07:16 17:41	06:33 18:16	07:13 (TRQ04) 07:50 (TRQ04)	06:40 19:51	05:57 20:24	
13	07:42 17:03	07:14 17:43	06:31 18:17	07:13 (TRQ04) 07:48 (TRQ04)	06:38 19:52	05:56 20:25	
14	07:41 17:05	07:13 17:44	06:29 18:18	07:14 (TRQ04) 07:47 (TRQ04)	06:36 19:53	05:55 20:26	
15	07:41 17:06	07:12 17:45	06:28 18:19	07:16 (TRQ04) 07:46 (TRQ04)	06:35 19:54	05:54 20:27	
16	07:40 17:07	07:10 17:46	06:26 18:20	07:17 (TRQ04) 07:43 (TRQ04)	06:33 19:56	05:53 20:29	
17	07:40 17:08	07:09 17:48	06:24 18:22	07:18 (TRQ04) 07:41 (TRQ04)	06:31 19:57	05:52 20:30	
18	07:39 17:09	07:08 17:49	06:22 18:23	07:20 (TRQ04) 07:38 (TRQ04)	06:30 19:58	06:49 (TRQ06) 20:31	
19	07:39 17:10	07:06 17:50	06:21 18:24	07:25 (TRQ04) 07:33 (TRQ04)	06:28 19:59	06:47 (TRQ06) 20:32	
20	07:38 17:12	07:05 17:52	06:19 18:25	07:33 (TRQ04) 06:17	06:27 20:00	06:53 (TRQ06) 20:33	
21	07:38 17:13	07:03 17:53	07:29 (TRQ04) 07:41 (TRQ04)	06:17 18:26	06:25 20:01	06:44 (TRQ06) 20:34	
22	07:37 17:14	07:02 17:54	07:25 (TRQ04) 07:44 (TRQ04)	06:16 18:27	06:24 20:02	06:55 (TRQ06) 20:34	
23	07:36 17:15	07:00 17:55	07:23 (TRQ04) 07:47 (TRQ04)	06:14 18:29	06:22 20:03	06:43 (TRQ06) 20:35	
24	07:36 17:17	06:59 17:57	07:21 (TRQ04) 07:48 (TRQ04)	06:12 18:30	06:21 20:05	06:40 (TRQ06) 20:36	
25	07:35 17:18	06:57 17:58	07:20 (TRQ04) 07:50 (TRQ04)	06:10 18:31	06:19 20:06	06:56 (TRQ06) 20:37	
26	07:34 17:19	06:56 17:59	07:18 (TRQ04) 07:51 (TRQ04)	06:09 18:32	06:18 20:07	06:37 (TRQ06) 20:38	
27	07:33 17:20	06:54 18:00	07:16 (TRQ04) 07:52 (TRQ04)	06:07 18:33	06:16 20:08	06:55 (TRQ06) 20:39	
28	07:32 17:22	06:52 18:01	07:16 (TRQ04) 07:53 (TRQ04)	06:05 18:34	06:15 20:09	06:36 (TRQ06) 20:40	
29	07:31 17:23		07:03	07:03	06:13	06:37 (TRQ06)	20:42
30	07:30 17:24		19:35	07:02	20:10	06:53 (TRQ06)	20:41
31	07:29 17:26		19:36	07:02	20:11	06:38 (TRQ06)	20:42
Potential sun hours	294	295	369	400	452	457	
Total, worst case		218	654		175	19	
Sun reduction		0,46	0,46		0,49	0,57	
Oper. time red.		0,95	0,95		0,95	0,95	
Wind dir. red.		0,52	0,52		0,66	0,66	
Total reduction		0,23	0,22		0,31	0,35	
Total, real		49	147		54	7	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** BA - 123  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:50	07:10 18:57	07:52 (TRQ04) 17:09	06:46 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	07:51 (TRQ04) 17:07	06:47 16:42
3	05:41 20:54	06:08 20:32	06:40 19:46	07:12 18:54	07:51 (TRQ04) 17:06	06:48 16:42
4	05:42 20:54	06:09 20:31	06:41 19:44	07:13 18:52	07:50 (TRQ04) 17:05	06:50 16:42
5	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	07:49 (TRQ04) 17:04	06:51 16:42
6	05:43 20:53	06:11 20:28	06:43 19:41	07:15 18:49	07:48 (TRQ04) 17:02	06:52 16:42
7	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	07:48 (TRQ04) 17:01	06:53 16:41
8	05:45 20:53	06:13 20:26	06:45 19:38	07:18 18:45	07:47 (TRQ04) 17:00	06:55 16:41
9	05:45 20:52	06:14 20:25	06:46 19:36	07:19 18:43	07:47 (TRQ04) 16:59	06:56 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	07:48 (TRQ04) 16:58	06:57 16:41
11	05:47 20:52	06:16 20:22	06:49 (TRQ06) 19:32	07:21 18:40	07:48 (TRQ04) 16:57	06:58 16:41
12	05:47 20:51	06:17 20:21	06:47 (TRQ06) 19:31	07:22 18:38	07:48 (TRQ04) 16:56	07:00 16:41
13	05:48 20:51	06:18 20:19	06:45 (TRQ06) 19:29	07:23 18:37	07:48 (TRQ04) 16:55	07:01 16:42
14	05:49 20:50	06:19 20:18	06:44 (TRQ06) 19:27	07:24 18:35	07:48 (TRQ04) 16:54	07:02 16:42
15	05:50 20:49	06:20 20:16	06:43 (TRQ06) 19:25	07:26 18:34	07:49 (TRQ04) 16:53	07:03 16:42
16	05:51 20:49	06:21 20:15	06:43 (TRQ06) 19:24	07:27 18:32	07:51 (TRQ04) 16:52	07:05 16:42
17	05:51 20:48	06:22 20:13	06:44 (TRQ06) 19:22	07:28 18:30	07:52 (TRQ04) 16:51	07:06 16:43
18	05:52 20:47	06:23 20:12	06:45 (TRQ06) 19:20	07:29 18:29	07:53 (TRQ04) 16:50	07:07 16:43
19	05:53 20:47	06:24 20:10	06:46 (TRQ06) 19:18	07:30 18:27	07:54 (TRQ04) 16:50	07:08 16:43
20	05:54 20:46	06:25 20:09	06:47 (TRQ06) 19:16	07:31 18:26	07:57 (TRQ04) 16:49	07:10 16:44
21	05:55 20:45	06:26 20:07	06:48 (TRQ06) 19:15	07:33 18:24	08:01 (TRQ04) 16:48	07:11 16:44
22	05:56 20:44	06:27 20:06	06:49 (TRQ06) 19:13	07:34 18:23	08:10 (TRQ04) 16:47	07:12 16:45
23	05:57 20:43	06:28 20:04	06:50 (TRQ06) 19:11	07:35 18:21	08:23 (TRQ04) 16:46	07:13 16:45
24	05:58 20:43	06:30 20:03	06:51 (TRQ06) 19:09	07:36 18:20	08:24 (TRQ04) 16:46	07:14 16:46
25	05:59 20:42	06:31 20:01	06:52 (TRQ06) 19:08	07:37 18:20	08:25 (TRQ04) 16:45	07:15 16:46
26	06:00 20:41	06:32 19:59	07:00 (TRQ06) 19:06	07:38 18:20	08:26 (TRQ04) 16:45	07:16 16:47
27	06:00 20:40	06:33 19:58	07:01 (TRQ06) 19:04	07:39 18:20	08:27 (TRQ04) 16:44	07:17 16:47
28	06:01 20:39	06:34 19:56	07:02 (TRQ06) 19:02	07:40 18:20	08:28 (TRQ04) 16:44	07:18 16:48
29	06:02 20:38	06:35 19:55	07:03 (TRQ06) 19:01	07:41 18:20	08:29 (TRQ04) 16:44	07:19 16:49
30	06:03 20:37	06:36 19:53	07:04 (TRQ06) 18:59	07:42 18:20	08:30 (TRQ04) 16:44	07:20 16:50
31	06:04 20:36	06:37 19:51	07:05 (TRQ06) 18:58	07:43 17:10	08:31 (TRQ04) 16:44	07:21 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		197	157		726	
Sun reduction		0,70	0,62		0,55	
Oper. time red.		0,95	0,95		0,95	
Wind dir. red.		0,66	0,52		0,52	
Total reduction		0,44	0,31		0,27	
Total, real		86	48		195	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BB - 124  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	08:07 (TRQ04)   07:28	08:14 (TRQ04)   06:51	06:58	06:11	06:30 (TRQ05)   05:40
	16:51	17 08:24 (TRQ04)   17:27	23 08:37 (TRQ04)   18:03	19:39	20:12	27 06:57 (TRQ05)   20:43
2	07:43	08:07 (TRQ04)   07:27	08:16 (TRQ04)   06:49	06:56	06:09	06:30 (TRQ05)   05:40
	16:52	18 08:25 (TRQ04)   17:28	20 08:36 (TRQ04)   18:04	19:40	20:13	27 06:57 (TRQ05)   20:44
3	07:43	08:07 (TRQ04)   07:26	08:18 (TRQ04)   06:48	06:55	06:08	06:30 (TRQ05)   05:39
	16:53	19 08:26 (TRQ04)   17:30	16 08:34 (TRQ04)   18:05	19:41	20:15	28 06:58 (TRQ05)   20:45
4	07:43	08:07 (TRQ04)   07:25	08:20 (TRQ04)   06:46	06:53	06:07	06:29 (TRQ05)   05:39
	16:54	20 08:27 (TRQ04)   17:31	12 08:32 (TRQ04)   18:06	19:42	20:16	28 06:57 (TRQ05)   20:46
5	07:43	08:07 (TRQ04)   07:24	06:44	06:51	06:05	06:29 (TRQ05)   05:39
	16:55	21 08:28 (TRQ04)   17:32	18:08	19:43	20:17	28 06:57 (TRQ05)   20:46
6	07:43	08:07 (TRQ04)   07:23	06:43	06:50	06:04	06:30 (TRQ05)   05:38
	16:56	22 08:29 (TRQ04)   17:33	18:09	19:44	20:18	27 06:57 (TRQ05)   20:47
7	07:43	08:07 (TRQ04)   07:22	06:41	06:48	06:03	06:30 (TRQ05)   05:38
	16:57	23 08:30 (TRQ04)   17:35	18:10	19:45	20:19	27 06:57 (TRQ05)   20:48
8	07:43	08:06 (TRQ04)   07:21	06:39	06:46	06:02	06:30 (TRQ05)   05:38
	16:58	24 08:30 (TRQ04)   17:36	18:11	19:47	20:20	26 06:56 (TRQ05)   20:48
9	07:43	08:06 (TRQ04)   07:20	06:38	06:45	06:00	06:31 (TRQ05)   05:37
	16:59	26 08:32 (TRQ04)   17:37	18:12	19:48	20:21	25 06:56 (TRQ05)   20:49
10	07:43	08:06 (TRQ04)   07:18	06:36	06:43	05:59	06:31 (TRQ05)   05:37
	17:00	27 08:33 (TRQ04)   17:39	18:13	19:49	20:22	23 06:54 (TRQ05)   20:49
11	07:42	08:06 (TRQ04)   07:17	06:34	06:41	05:58	06:31 (TRQ05)   05:37
	17:01	28 08:34 (TRQ04)   17:40	18:15	19:50	20:23	23 06:54 (TRQ05)   20:50
12	07:42	08:06 (TRQ04)   07:16	06:33	06:40	05:57	06:32 (TRQ05)   05:37
	17:02	28 08:34 (TRQ04)   17:41	18:16	19:51	20:24	21 06:53 (TRQ05)   20:51
13	07:42	08:06 (TRQ04)   07:14	06:31	06:38	05:56	06:33 (TRQ05)   05:37
	17:03	29 08:35 (TRQ04)   17:43	18:17	19:52	20:25	19 06:52 (TRQ05)   20:51
14	07:41	08:06 (TRQ04)   07:13	06:29	06:36	05:55	06:34 (TRQ05)   05:37
	17:05	30 08:36 (TRQ04)   17:44	18:18	19:53	20:26	17 06:51 (TRQ05)   20:52
15	07:41	08:06 (TRQ04)   07:12	06:28	06:35	05:54	06:36 (TRQ05)   05:37
	17:06	31 08:37 (TRQ04)   17:45	18:19	19:54	20:28	13 06:49 (TRQ05)   20:52
16	07:40	08:06 (TRQ04)   07:10	06:26	06:33	05:53	06:38 (TRQ05)   05:37
	17:07	31 08:37 (TRQ04)   17:46	18:20	19:56	20:29	9 06:47 (TRQ05)   20:52
17	07:40	08:07 (TRQ04)   07:09	06:24	06:31	05:52	05:37
	17:08	31 08:38 (TRQ04)   17:48	18:22	19:57	20:30	20:53
18	07:39	08:06 (TRQ04)   07:08	06:22	06:30	05:51	05:37
	17:09	32 08:38 (TRQ04)   17:49	18:23	19:58	20:31	20:53
19	07:39	08:06 (TRQ04)   07:06	06:21	06:28	05:50	05:37
	17:10	32 08:38 (TRQ04)   17:50	18:24	19:59	20:32	20:53
20	07:38	08:07 (TRQ04)   07:05	06:19	06:27	05:49	05:37
	17:12	32 08:39 (TRQ04)   17:52	18:25	20:00	20:33	20:54
21	07:38	08:07 (TRQ04)   07:03	06:17	06:25	05:48	05:37
	17:13	32 08:39 (TRQ04)   17:53	18:26	20:01	20:34	20:54
22	07:37	08:07 (TRQ04)   07:02	06:16	06:24	05:47	05:37
	17:14	32 08:39 (TRQ04)   17:54	18:27	20:02	20:35	20:54
23	07:36	08:08 (TRQ04)   07:00	06:14	06:22	05:46	05:37
	17:15	32 08:40 (TRQ04)   17:55	18:29	20:03	20:35	20:54
24	07:36	08:08 (TRQ04)   06:59	06:12	06:21	06:40 (TRQ05)   05:45	05:38
	17:17	32 08:40 (TRQ04)   17:57	18:30	20:05	10 06:50 (TRQ05)   20:36	20:54
25	07:35	08:09 (TRQ04)   06:57	06:10	06:19	06:39 (TRQ05)   05:45	05:38
	17:18	31 08:40 (TRQ04)   17:58	18:31	20:06	14 06:53 (TRQ05)   20:37	20:55
26	07:34	08:09 (TRQ04)   06:56	06:09	06:18	06:37 (TRQ05)   05:44	05:38
	17:19	31 08:40 (TRQ04)   17:59	18:32	20:07	17 06:54 (TRQ05)   20:38	20:55
27	07:33	08:10 (TRQ04)   06:54	06:07	06:16	06:36 (TRQ05)   05:43	05:39
	17:20	30 08:40 (TRQ04)   18:00	18:33	20:08	19 06:55 (TRQ05)   20:39	20:55
28	07:32	08:10 (TRQ04)   06:52	06:05	06:15	06:34 (TRQ05)   05:43	05:39
	17:22	29 08:39 (TRQ04)   18:01	18:34	20:09	22 06:56 (TRQ05)   20:40	20:55
29	07:31	08:11 (TRQ04)	07:03	06:13	06:33 (TRQ05)   05:42	05:40
	17:23	28 08:39 (TRQ04)	19:35	20:10	24 06:57 (TRQ05)   20:41	20:55
30	07:30	08:12 (TRQ04)	07:02	06:12	06:32 (TRQ05)   05:41	05:40
	17:24	27 08:39 (TRQ04)	19:36	20:11	25 06:57 (TRQ05)   20:42	20:55
31	07:29	08:13 (TRQ04)	07:00		05:41	
	17:26	25 08:38 (TRQ04)	19:38		20:43	
Potential sun hours	294	295	369	400	452	457
Total, worst case	850	71			368	
Sun reduction	0,42	0,46		131	0,57	
Oper. time red.	0,95	0,95		0,49	0,95	
Wind dir. red.	0,49	0,49		0,95	0,68	
Total reduction	0,19	0,21		0,31	0,36	
Total, real	163	15		40	131	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_real **Shadow receptor:** BB - 124  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40	06:05	06:42 (TRQ05)	06:38	07:10	06:46
	20:55	20:34	22 07:04 (TRQ05)	19:50	18:57	17:09
2	05:41	06:06	06:42 (TRQ05)	06:39	07:11	06:47
	20:54	20:33	23 07:05 (TRQ05)	19:48	18:55	17:07
3	05:41	06:07	06:41 (TRQ05)	06:40	07:12	06:48
	20:54	20:32	24 07:05 (TRQ05)	19:46	18:54	17:06
4	05:42	06:09	06:40 (TRQ05)	06:41	07:13	06:50
	20:53	20:31	26 07:06 (TRQ05)	19:44	18:52	17:05
5	05:43	06:10	06:40 (TRQ05)	06:42	07:14	06:51
	20:54	20:30	26 07:06 (TRQ05)	19:43	18:50	17:04
6	05:43	06:11	06:39 (TRQ05)	06:43	07:15	06:52
	20:53	20:28	27 07:06 (TRQ05)	19:41	18:49	17:02
7	05:44	06:12	06:39 (TRQ05)	06:44	07:16	06:53
	20:53	20:27	28 07:07 (TRQ05)	19:39	18:47	17:01
8	05:45	06:13	06:39 (TRQ05)	06:45	07:18	06:55
	20:53	20:26	28 07:07 (TRQ05)	19:38	18:45	17:00
9	05:45	06:14	06:39 (TRQ05)	06:46	07:19	06:56
	20:52	20:25	27 07:06 (TRQ05)	19:36	18:43	16:59
10	05:46	06:15	06:39 (TRQ05)	06:47	07:20	06:57
	20:52	20:23	27 07:06 (TRQ05)	19:34	18:42	16:58
11	05:47	06:16	06:39 (TRQ05)	06:49	07:21	06:58
	20:52	20:22	27 07:06 (TRQ05)	19:32	18:40	16:57
12	05:47	06:17	06:39 (TRQ05)	06:50	07:22	07:00
	20:51	20:21	26 07:05 (TRQ05)	19:31	18:38	16:56
13	05:48	06:18	06:40 (TRQ05)	06:51	07:23	07:01
	20:51	20:19	25 07:05 (TRQ05)	19:29	18:37	16:55
14	05:49	06:19	06:41 (TRQ05)	06:52	07:24	07:02
	20:50	20:18	23 07:04 (TRQ05)	19:27	18:35	16:54
15	05:50	06:20	06:42 (TRQ05)	06:53	07:26	07:03
	20:49	20:16	21 07:03 (TRQ05)	19:25	18:34	16:53
16	05:51	06:21	06:43 (TRQ05)	06:54	07:27	07:05
	20:49	20:15	19 07:02 (TRQ05)	19:24	18:32	16:52
17	05:51	06:22	06:44 (TRQ05)	06:55	07:28	07:06
	20:48	20:13	16 07:00 (TRQ05)	19:22	18:30	16:51
18	05:52	06:23	06:45 (TRQ05)	06:56	07:29	07:07
	20:47	20:12	13 06:58 (TRQ05)	19:20	18:29	16:50
19	05:53	06:24	06:47 (TRQ05)	06:57	07:30	07:08
	20:47	20:10	8 06:55 (TRQ05)	19:18	18:27	16:50
20	05:54	06:25		06:58	07:31	07:10
	20:46	20:09		19:16	18:26	16:49
21	05:55	06:26		06:59	07:33	07:11
	20:45	20:07		19:15	18:24	16:48
22	05:56	06:27		07:00	07:34	07:12
	20:44	20:06		19:13	18:23	16:47
23	05:57	06:28		07:01	07:35	07:13
	20:43	20:04		19:11	18:21	16:47
24	05:58	06:30		07:02	07:36	07:14
	20:43	20:03		19:09	18:20	16:46
25	05:59	06:31		07:03	06:37	07:16
	20:42	20:01		19:08	17:18	16:45
26	06:00	06:32		07:04	06:39	07:17
	20:41	19:59		19:06	17:17	16:45
27	06:00	06:33	06:51 (TRQ05)	07:06	06:40	07:18
	20:40	19:58	4 06:55 (TRQ05)	19:04	17:15	16:44
28	06:01	06:34	06:48 (TRQ05)	07:07	06:41	07:19
	20:39	19:56	11 06:59 (TRQ05)	19:02	17:14	16:44
29	06:02	06:35	06:46 (TRQ05)	07:08	06:42	07:20
	20:38	19:55	14 07:00 (TRQ05)	19:01	17:13	16:44
30	06:03	06:36	06:44 (TRQ05)	07:09	06:43	07:21
	20:37	19:53	18 07:02 (TRQ05)	18:59	17:11	16:43
31	06:04	06:37	06:43 (TRQ05)		06:45	
	20:36	19:51	20 07:03 (TRQ05)		17:10	
Potential sun hours	463	430		376	344	295
Total, worst case	67	436				679
Sun reduction	0,71	0,70				0,46
Oper. time red.	0,95	0,95				0,95
Wind dir. red.	0,68	0,68				0,49
Total reduction	0,44	0,44				0,21
Total, real	29	191				141

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_real**Shadow receptor:** BC - 125  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

January		February   March		April		May		June		
1	07:43	08:20 (TRQ04)	07:28	06:51	06:58	07:29 (TRQ06)	06:11	06:30 (TRQ05)	05:40	
	16:51	36 08:56 (TRQ04)	17:27	18:03	19:39	8 07:37 (TRQ06)	20:12	27 06:57 (TRQ05)	20:43	
2	07:43	08:21 (TRQ04)	07:27	06:49	06:56		06:09	06:29 (TRQ05)	05:40	
	16:52	36 08:57 (TRQ04)	17:28	18:04	19:40		20:13	29 06:58 (TRQ05)	20:44	
3	07:43	08:21 (TRQ04)	07:26	06:48	06:55		06:08	06:28 (TRQ05)	05:39	
	16:53	36 08:57 (TRQ04)	17:30	18:05	19:41		20:15	30 06:58 (TRQ05)	20:45	
4	07:43	08:22 (TRQ04)	07:25	06:46	06:53		06:07	06:27 (TRQ05)	05:39	
	16:54	35 08:57 (TRQ04)	17:31	18:06	19:42		20:16	31 06:58 (TRQ05)	20:46	
5	07:43	08:23 (TRQ04)	07:24	06:44	06:51		06:05	06:27 (TRQ05)	05:39	
	16:55	35 08:58 (TRQ04)	17:32	18:08	19:43		20:17	31 06:58 (TRQ05)	20:46	
6	07:43	08:24 (TRQ04)	07:23	06:43	06:50		06:04	06:27 (TRQ05)	05:38	
	16:56	34 08:58 (TRQ04)	17:33	18:09	19:44		20:18	31 06:58 (TRQ05)	20:47	
7	07:43	08:24 (TRQ04)	07:22	06:41	06:48		06:03	06:27 (TRQ05)	05:38	
	16:57	34 08:58 (TRQ04)	17:35	18:10	19:45		20:19	31 06:58 (TRQ05)	20:48	
8	07:43	08:24 (TRQ04)	07:21	06:39	06:46		06:02	06:27 (TRQ05)	05:38	
	16:58	34 08:58 (TRQ04)	17:36	18:11	19:47		20:20	31 06:58 (TRQ05)	20:48	
9	07:43	08:25 (TRQ04)	07:20	06:38	06:45		06:00	06:27 (TRQ05)	05:37	
	16:59	33 08:58 (TRQ04)	17:37	18:12	19:48		20:21	31 06:58 (TRQ05)	20:49	
10	07:43	08:26 (TRQ04)	07:18	06:36	06:43		05:59	06:26 (TRQ05)	05:37	
	17:00	33 08:59 (TRQ04)	17:39	18:13	19:49		20:22	31 06:57 (TRQ05)	20:49	
11	07:42	08:27 (TRQ04)	07:17	06:34	06:41		05:58	06:27 (TRQ05)	05:37	
	17:01	32 08:59 (TRQ04)	17:40	18:15	19:50		20:23	30 06:57 (TRQ05)	20:50	
12	07:42	08:28 (TRQ04)	07:16	06:33	06:40		05:57	06:27 (TRQ05)	05:37	
	17:02	30 08:58 (TRQ04)	17:41	18:16	19:51		20:24	29 06:56 (TRQ05)	20:51	
13	07:42	08:29 (TRQ04)	07:14	06:31	06:38		05:56	06:28 (TRQ05)	05:37	
	17:03	30 08:59 (TRQ04)	17:43	18:17	19:52		20:25	28 06:56 (TRQ05)	20:51	
14	07:41	08:29 (TRQ04)	07:13	06:29	06:36		05:55	06:28 (TRQ05)	05:37	
	17:05	29 08:58 (TRQ04)	17:44	18:18	19:53		20:26	27 06:55 (TRQ05)	20:52	
15	07:41	08:31 (TRQ04)	07:12	06:28	06:35		05:54	06:29 (TRQ05)	05:37	
	17:06	27 08:58 (TRQ04)	17:45	18:19	19:54		20:28	26 06:55 (TRQ05)	20:52	
16	07:40	08:31 (TRQ04)	07:10	06:26	06:33		05:53	06:30 (TRQ05)	05:37	
	17:07	26 08:57 (TRQ04)	17:46	18:20	19:56		20:29	24 06:54 (TRQ05)	20:52	
17	07:40	08:33 (TRQ04)	07:09	06:24	06:31		05:52	06:30 (TRQ05)	05:37	
	17:08	24 08:57 (TRQ04)	17:48	18:22	19:57		20:30	23 06:53 (TRQ05)	20:53	
18	07:39	08:34 (TRQ04)	07:08	06:22	06:30		05:51	06:32 (TRQ05)	05:37	
	17:09	22 08:56 (TRQ04)	17:49	18:23	19:58		20:31	21 06:53 (TRQ05)	20:53	
19	07:39	08:35 (TRQ04)	07:06	06:21	06:28		05:50	06:33 (TRQ05)	05:37	
	17:10	19 08:54 (TRQ04)	17:50	18:24	19:59		20:32	19 06:52 (TRQ05)	20:53	
20	07:38	08:38 (TRQ04)	07:05	06:19	06:27	06:38 (TRQ06)	05:49	06:35 (TRQ05)	05:37	
	17:12	16 08:54 (TRQ04)	17:52	18:25	20:00	4 06:42 (TRQ06)	20:33	15 06:50 (TRQ05)	20:54	
21	07:38	08:40 (TRQ04)	07:03	06:17	06:25	06:36 (TRQ06)	05:48	06:36 (TRQ05)	05:37	
	17:13	11 08:51 (TRQ04)	17:53	18:26	20:01	8 06:44 (TRQ06)	20:34	12 06:48 (TRQ05)	20:54	
22	07:37		07:02	06:16	06:24	06:34 (TRQ06)	05:47	06:39 (TRQ05)	05:37	
	17:14		17:54	18:27	20:02	11 06:45 (TRQ06)	20:35	6 06:45 (TRQ05)	20:54	
23	07:36		07:00	06:14	06:22	06:33 (TRQ06)	05:46		05:37	
	17:15		17:55	18:28	20:03	13 06:46 (TRQ06)	20:35		20:54	
24	07:36		06:59	06:12	06:21	06:31 (TRQ06)	05:45		05:38	
	17:17		17:57	18:30	20:05	15 06:46 (TRQ06)	20:36	3 06:46 (TRQ05)	20:54	
25	07:35		06:57	06:10	06:19	06:29 (TRQ06)	05:45	06:39 (TRQ05)	05:38	
	17:18		17:58	18:31	20:06	17 06:46 (TRQ06)	20:37	12 06:51 (TRQ05)	20:55	
26	07:34		06:56	06:09	06:18	06:27 (TRQ06)	05:44	06:37 (TRQ05)	05:38	
	17:19		17:59	18:32	20:07	18 06:45 (TRQ06)	20:38	16 06:53 (TRQ05)	20:55	
27	07:33		06:54	06:07	06:16	06:26 (TRQ06)	05:43	06:36 (TRQ05)	05:39	
	17:20		18:00	18:33	20:08	20 06:46 (TRQ06)	20:39	19 06:55 (TRQ05)	20:55	
28	07:32		06:52	06:05	06:15	06:25 (TRQ06)	05:43	06:34 (TRQ05)	05:39	
	17:22		18:01	18:34	20:09	20 06:45 (TRQ06)	20:40	21 06:55 (TRQ05)	20:55	
29	07:31		07:03	06:13	06:13	07:25 (TRQ06)	05:42	06:33 (TRQ05)	05:40	
	17:23		19:35	18:35	20:10	18 07:43 (TRQ06)	20:41	23 06:56 (TRQ05)	20:55	
30	07:30		07:02	06:12	06:12	07:26 (TRQ06)	05:41	06:32 (TRQ05)	05:40	
	17:24		19:36	18:36	20:11	16 07:42 (TRQ06)	20:42	25 06:57 (TRQ05)	20:55	
31	07:29		07:00	06:11	06:11	07:27 (TRQ06)	05:41		05:40	
	17:26		19:38	18:37	20:12	14 07:41 (TRQ06)	20:42		20:55	
Potential sun hours	294		295	369		400		452		457
Total, worst case		612		174		127		563		
Sun reduction		0,42		0,46		0,49		0,57		
Oper. time red.		0,95		0,95		0,95		0,95		
Wind dir. red.		0,47		0,61		0,68		0,68		
Total reduction		0,18		0,26		0,31		0,36		
Total, real		112		45		39		200		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_real **Shadow receptor:** BC - 125  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December	
1	05:40 20:54	06:05 20:34	06:38 (TRQ05) 19:50	06:38 18:57	06:46 17:09	07:22 16:43	08:09 (TRQ04) 32 08:41 (TRQ04)
2	05:41 20:54	06:06 20:33	06:37 (TRQ05) 19:48	06:39 18:55	06:47 17:07	07:23 16:42	08:09 (TRQ04) 33 08:42 (TRQ04)
3	05:41 20:54	06:07 20:32	06:37 (TRQ05) 19:46	06:40 18:54	06:48 17:06	07:24 16:42	08:09 (TRQ04) 33 08:42 (TRQ04)
4	05:42 20:54	06:09 20:31	06:37 (TRQ05) 19:44	06:41 18:52	06:50 17:05	07:25 16:42	08:09 (TRQ04) 34 08:43 (TRQ04)
5	05:43 20:54	06:10 20:30	06:36 (TRQ05) 19:43	06:42 18:50	06:51 17:04	07:26 16:42	08:09 (TRQ04) 34 08:43 (TRQ04)
6	05:43 20:53	06:11 20:28	06:36 (TRQ05) 19:41	06:43 18:49	06:52 17:02	07:27 16:42	08:10 (TRQ04) 34 08:44 (TRQ04)
7	05:44 20:53	06:12 20:27	06:36 (TRQ05) 19:39	06:44 18:47	06:53 17:01	07:28 16:41	08:10 (TRQ04) 35 08:45 (TRQ04)
8	05:45 20:53	06:13 20:26	06:36 (TRQ05) 19:38	06:45 18:45	06:55 17:00	07:29 16:41	08:10 (TRQ04) 35 08:45 (TRQ04)
9	05:45 20:52	06:14 20:25	06:36 (TRQ05) 19:36	06:46 18:43	06:56 16:59	07:30 16:41	08:11 (TRQ04) 35 08:46 (TRQ04)
10	05:46 20:52	06:15 20:23	06:37 (TRQ05) 19:34	06:47 18:42	06:57 16:58	07:31 16:41	08:11 (TRQ04) 36 08:47 (TRQ04)
11	05:47 20:52	06:16 20:22	06:38 (TRQ05) 19:32	06:49 18:40	06:58 16:57	07:32 16:41	08:10 (TRQ04) 36 08:46 (TRQ04)
12	05:47 20:51	06:17 20:21	06:39 (TRQ05) 19:31	06:50 18:38	07:00 16:56	07:33 16:41	08:11 (TRQ04) 36 08:47 (TRQ04)
13	05:48 20:51	06:18 20:19	06:40 (TRQ05) 19:29	06:51 18:37	07:01 16:55	07:34 16:42	08:12 (TRQ04) 36 08:48 (TRQ04)
14	05:49 20:50	06:19 20:18	06:41 (TRQ05) 19:27	06:52 18:35	07:02 16:54	07:35 16:42	08:12 (TRQ04) 36 08:48 (TRQ04)
15	05:50 20:49	06:20 20:16	06:42 (TRQ05) 19:25	06:53 18:34	07:03 16:53	07:36 16:42	08:13 (TRQ04) 36 08:49 (TRQ04)
16	05:51 20:49	06:21 20:15	06:43 (TRQ05) 19:24	06:54 18:32	07:05 16:52	07:37 16:42	08:13 (TRQ04) 36 08:49 (TRQ04)
17	05:51 20:48	06:22 20:13	06:44 (TRQ05) 19:22	06:55 18:30	07:06 16:51	07:38 16:43	08:13 (TRQ04) 37 08:50 (TRQ04)
18	05:52 20:47	06:23 20:12	06:45 (TRQ05) 19:20	06:56 18:29	07:07 16:50	07:39 16:43	08:14 (TRQ04) 37 08:51 (TRQ04)
19	05:53 20:47	06:24 20:10	06:57 19:18	07:18 (TRQ06) 18:27	07:30 16:50	07:38 16:43	08:14 (TRQ04) 37 08:51 (TRQ04)
20	05:54 20:46	06:25 20:09	06:58 19:16	07:19 (TRQ06) 18:26	07:31 16:49	07:39 16:44	08:15 (TRQ04) 36 08:51 (TRQ04)
21	05:55 20:45	06:26 20:07	06:59 19:15	07:20 (TRQ06) 18:24	07:33 16:48	07:40 16:44	08:15 (TRQ04) 36 08:51 (TRQ04)
22	05:56 20:44	06:27 20:06	07:00 19:13	07:21 (TRQ06) 18:23	07:34 16:47	07:41 16:45	08:16 (TRQ04) 36 08:52 (TRQ04)
23	05:57 20:43	06:28 20:04	07:01 19:11	07:22 (TRQ06) 18:21	07:35 16:47	07:42 16:45	08:16 (TRQ04) 36 08:52 (TRQ04)
24	05:58 20:43	06:29 20:03	07:02 19:09	07:23 (TRQ06) 18:20	07:36 16:46	07:43 16:46	08:17 (TRQ04) 37 08:54 (TRQ04)
25	05:59 20:42	06:30 20:01	07:03 19:08	07:24 (TRQ06) 18:19	07:37 16:45	07:44 16:46	08:17 (TRQ04) 37 08:54 (TRQ04)
26	06:00 20:41	06:31 20:00	07:04 19:06	07:25 (TRQ06) 18:18	07:38 16:45	07:45 16:47	08:17 (TRQ04) 37 08:54 (TRQ04)
27	06:00 20:40	06:32 19:59	07:05 19:04	07:26 (TRQ06) 18:17	07:39 16:44	07:46 16:47	08:17 (TRQ04) 37 08:54 (TRQ04)
28	06:01 20:39	06:33 19:58	07:06 19:02	07:27 (TRQ06) 18:16	07:40 16:44	07:47 16:48	08:19 (TRQ04) 36 08:55 (TRQ04)
29	06:02 20:38	06:34 19:56	07:07 19:01	07:28 (TRQ06) 18:15	07:41 16:44	07:48 16:49	08:19 (TRQ04) 36 08:55 (TRQ04)
30	06:03 20:37	06:35 19:55	07:08 19:00	07:29 (TRQ06) 18:14	07:42 16:43	07:49 16:50	08:19 (TRQ04) 37 08:56 (TRQ04)
31	06:04 20:36	06:36 19:54	07:09 18:59	07:30 (TRQ06) 18:13	07:43 16:43	07:50 16:50	08:20 (TRQ04) 36 08:56 (TRQ04)
Potential sun hours	463	430	376	344	295	284	
Total, worst case	212	479	184		232		1105
Sun reduction	0,71	0,70	0,62		0,46		0,43
Oper. time red.	0,95	0,95	0,95		0,95		0,95
Wind dir. red.	0,68	0,68	0,61		0,47		0,47
Total reduction	0,44	0,44	0,35		0,20		0,19
Total, real	94	210	64		46		208

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



SHADOW - Calendar

Calculation: Shadow\_realShadow receptor: BE - 128
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

Table with 14 columns: N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum. Values: 488, 1.218, 2.039, 904, 404, 473, 641, 645, 678, 389, 220, 210, 8.309

Main table with columns for months (January-December) and rows for individual days (1-31) showing sunrise/sunset times and shadow reduction factors. Includes a summary row at the bottom for Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, and Total, real.

Table layout: For each day in each month the following matrix apply

Matrix defining data points for each day: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BF - 130  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:28	06:51	06:58	06:11	06:30 (TRQ04) 05:40
	16:52	17:27	18:03	19:39	20:12	26 06:56 (TRQ04) 20:43
2	07:43	07:27	06:49	06:56	06:09	06:30 (TRQ04) 05:40
	16:52	17:28	18:04	19:40	20:13	27 06:57 (TRQ04) 20:44
3	07:43	07:26	06:48	06:55	06:08	06:30 (TRQ04) 05:39
	16:53	17:30	18:05	19:41	20:15	27 06:57 (TRQ04) 20:45
4	07:43	07:25	06:46	06:53	06:07	06:30 (TRQ04) 05:39
	16:54	17:31	18:06	19:42	20:16	27 06:57 (TRQ04) 20:46
5	07:43	07:24	06:44	06:51	06:05	06:29 (TRQ04) 05:39
	16:55	17:32	18:08	19:43	20:17	27 06:56 (TRQ04) 20:46
6	07:43	07:23	06:43	06:50	06:04	06:29 (TRQ04) 05:38
	16:56	17:34	18:09	19:44	20:18	27 06:56 (TRQ04) 20:47
7	07:43	07:22	06:41	06:48	06:03	06:30 (TRQ04) 05:38
	16:57	17:35	18:10	19:45	20:19	26 06:56 (TRQ04) 20:48
8	07:43	07:21	06:39	06:46	06:02	06:30 (TRQ04) 05:38
	16:58	17:36	18:11	19:47	20:20	25 06:55 (TRQ04) 20:48
9	07:43	07:20	06:38	06:45	06:00	06:31 (TRQ04) 05:37
	16:59	17:37	18:12	19:48	20:21	24 06:55 (TRQ04) 20:49
10	07:43	07:18	06:36	06:43	05:59	06:30 (TRQ04) 05:37
	17:00	17:39	18:14	19:49	20:22	23 06:53 (TRQ04) 20:49
11	07:42	07:17	06:34	06:41	05:58	06:31 (TRQ04) 05:37
	17:01	17:40	18:15	19:50	20:23	22 06:53 (TRQ04) 20:50
12	07:42	07:16	06:33	06:40	05:57	06:32 (TRQ04) 05:37
	17:02	17:41	18:16	19:51	20:24	20 06:52 (TRQ04) 20:51
13	07:42	07:14	06:31	06:38	05:56	06:33 (TRQ04) 05:37
	17:03	17:43	18:17	19:52	20:25	18 06:51 (TRQ04) 20:51
14	07:41	07:13	06:29	06:36	05:55	06:35 (TRQ04) 05:37
	17:05	17:44	18:18	19:53	20:26	14 06:49 (TRQ04) 20:51
15	07:41	07:12	06:28	06:35	05:54	06:36 (TRQ04) 05:37
	17:06	17:45	18:19	19:54	20:28	11 06:47 (TRQ04) 20:52
16	07:40	07:10	06:26	06:33	05:53	06:40 (TRQ04) 05:37
	17:07	17:46	18:21	19:56	20:29	4 06:44 (TRQ04) 20:52
17	07:40	07:09	06:24	06:32	05:52	05:37
	17:08	17:48	18:22	19:57	20:30	20:53
18	07:39	07:08	06:22	06:30	05:51	05:37
	17:09	17:49	18:23	19:58	20:31	20:53
19	07:39	07:06	06:21	06:28	05:50	05:37
	17:11	17:50	18:24	19:59	20:32	20:53
20	07:38	07:05	06:19	06:27	05:49	05:37
	17:12	17:52	18:25	20:00	20:33	20:54
21	07:38	07:03	06:17	06:25	05:48	05:37
	17:13	17:53	18:26	20:01	20:34	20:54
22	07:37	07:02	06:16	06:24	05:47	05:37
	17:14	17:54	18:27	20:02	20:34	20:54
23	07:36	07:00	06:14	06:22	05:46	05:38
	17:15	17:55	18:29	20:03	20:35	20:54
24	07:36	06:59	06:12	06:21	06:40 (TRQ04)	05:45
	17:17	17:57	18:30	20:05	10 06:50 (TRQ04)	20:36
25	07:35	06:57	06:10	06:19	06:39 (TRQ04)	05:45
	17:18	17:58	18:31	20:06	14 06:53 (TRQ04)	20:37
26	07:34	06:56	06:09	06:18	06:37 (TRQ04)	05:44
	17:19	17:59	18:32	20:07	16 06:53 (TRQ04)	20:38
27	07:33	06:54	06:07	06:16	06:36 (TRQ04)	05:43
	17:21	18:00	18:33	20:08	19 06:55 (TRQ04)	20:39
28	07:32	06:52	06:05	06:15	06:34 (TRQ04)	05:43
	17:22	18:01	18:34	20:09	21 06:55 (TRQ04)	20:40
29	07:31		07:03	06:13	06:33 (TRQ04)	05:42
	17:23		19:35	20:10	23 06:56 (TRQ04)	20:41
30	07:30		07:02	06:12	06:32 (TRQ04)	05:41
	17:24		19:36	20:11	25 06:57 (TRQ04)	20:42
31	07:29		07:00			05:41
	17:26		19:38			20:42
Potential sun hours	294	295	369	400	452	457
Total, worst case				128		348
Sun reduction				0,49		0,57
Oper. time red.				0,95		0,95
Wind dir. red.				0,68		0,68
Total reduction				0,32		0,37
Total, real				41		127

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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**SHADOW - Calendar**

**Calculation:** Shadow\_real **Shadow receptor:** BF - 130  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December	
1	05:41	06:06	06:42 (TRQ04)	06:38	07:10	06:46	07:22
	20:54	20:34	21 07:03 (TRQ04)	19:50	18:57	17:09	16:43
2	05:41	06:07	06:41 (TRQ04)	06:39	07:11	06:47	07:23
	20:54	20:33	22 07:03 (TRQ04)	19:48	18:55	17:07	16:43
3	05:42	06:08	06:41 (TRQ04)	06:40	07:12	06:48	07:24
	20:54	20:32	23 07:04 (TRQ04)	19:46	18:54	17:06	16:42
4	05:42	06:09	06:40 (TRQ04)	06:41	07:13	06:50	07:25
	20:54	20:31	25 07:05 (TRQ04)	19:44	18:52	17:05	16:42
5	05:43	06:10	06:40 (TRQ04)	06:42	07:14	06:51	07:26
	20:54	20:30	25 07:05 (TRQ04)	19:43	18:50	17:04	16:42
6	05:43	06:11	06:39 (TRQ04)	06:43	07:15	06:52	07:27
	20:53	20:28	26 07:05 (TRQ04)	19:41	18:49	17:02	16:42
7	05:44	06:12	06:39 (TRQ04)	06:44	07:16	06:53	07:28
	20:53	20:27	27 07:06 (TRQ04)	19:39	18:47	17:01	16:42
8	05:45	06:13	06:39 (TRQ04)	06:45	07:18	06:55	07:29
	20:53	20:26	27 07:06 (TRQ04)	19:38	18:45	17:00	16:41
9	05:45	06:14	06:38 (TRQ04)	06:46	07:19	06:56	07:30
	20:52	20:25	28 07:06 (TRQ04)	19:36	18:43	16:59	16:41
10	05:46	06:15	06:38 (TRQ04)	06:48	07:20	06:57	07:31
	20:52	20:23	27 07:05 (TRQ04)	19:34	18:42	16:58	16:41
11	05:47	06:16	06:38 (TRQ04)	06:49	07:21	06:58	07:32
	20:52	20:22	27 07:05 (TRQ04)	19:32	18:40	16:57	16:41
12	05:47	06:17	06:39 (TRQ04)	06:50	07:22	07:00	07:33
	20:51	20:21	26 07:05 (TRQ04)	19:31	18:38	16:56	16:42
13	05:48	06:18	06:40 (TRQ04)	06:51	07:23	07:01	07:34
	20:51	20:19	24 07:04 (TRQ04)	19:29	18:37	16:55	16:42
14	05:49	06:19	06:41 (TRQ04)	06:52	07:24	07:02	07:34
	20:50	20:18	22 07:03 (TRQ04)	19:27	18:35	16:54	16:42
15	05:50	06:20	06:42 (TRQ04)	06:53	07:26	07:03	07:35
	20:49	20:16	20 07:02 (TRQ04)	19:25	18:34	16:53	16:42
16	05:51	06:21	06:43 (TRQ04)	06:54	07:27	07:05	07:36
	20:49	20:15	18 07:01 (TRQ04)	19:24	18:32	16:52	16:42
17	05:51	06:22	06:44 (TRQ04)	06:55	07:28	07:06	07:37
	20:48	20:13	16 07:00 (TRQ04)	19:22	18:30	16:51	16:43
18	05:52	06:23	06:45 (TRQ04)	06:56	07:29	07:07	07:37
	20:47	20:12	13 06:58 (TRQ04)	19:20	18:29	16:50	16:43
19	05:53	06:24	06:46 (TRQ04)	06:57	07:30	07:08	07:38
	20:47	20:10	9 06:55 (TRQ04)	19:18	18:27	16:50	16:43
20	05:54	06:25		06:58	07:31	07:10	07:39
	20:46	20:09		19:16	18:26	16:49	16:44
21	05:55	06:26		06:59	07:33	07:11	07:39
	20:45	20:07		19:15	18:24	16:48	16:44
22	05:56	06:27		07:00	07:34	07:12	07:40
	20:44	20:06		19:13	18:23	16:47	16:45
23	05:57	06:29		07:01	07:35	07:13	07:40
	20:43	20:04		19:11	18:21	16:47	16:45
24	05:58	06:30		07:02	07:36	07:14	07:41
	20:43	20:03		19:09	18:20	16:46	16:46
25	05:59	06:31		07:03	06:37	07:16	07:41
	20:42	20:01		19:08	17:18	16:46	16:46
26	06:00	06:32		07:04	06:39	07:17	07:41
	20:41	19:59		19:06	17:17	16:45	16:47
27	06:01	06:33		07:06	06:40	07:18	07:42
	20:40	19:58		19:04	17:15	16:44	16:48
28	06:02	06:49 (TRQ04)	06:34	07:07	06:41	07:19	07:42
	20:39	7 06:56 (TRQ04)	19:56	19:02	17:14	16:44	16:48
29	06:03	06:46 (TRQ04)	06:35	07:08	06:42	07:20	07:42
	20:38	13 06:59 (TRQ04)	19:55	19:01	17:13	16:44	16:49
30	06:03	06:45 (TRQ04)	06:36	07:09	06:43	07:21	07:43
	20:37	15 07:00 (TRQ04)	19:53	18:59	17:11	16:43	16:50
31	06:04	06:43 (TRQ04)	06:37		06:45		07:43
	20:36	19 07:02 (TRQ04)	19:51		17:10		16:50
Potential sun hours	463	430		376	344	295	284
Total, worst case	54	426					
Sun reduction	0,71	0,70					
Oper. time red.	0,95	0,95					
Wind dir. red.	0,68	0,68					
Total reduction	0,45	0,45					
Total, real	24	191					

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BG - 131  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:28	06:51	06:58	06:11	06:30 (TRQ04) 05:40
	16:52	17:27	18:03	19:39	20:12	23 06:53 (TRQ04) 20:43
2	07:43	07:27	06:49	06:56	06:09	06:29 (TRQ04) 05:40
	16:52	17:28	18:04	19:40	20:13	25 06:54 (TRQ04) 20:44
3	07:43	07:26	06:48	06:55	06:08	06:28 (TRQ04) 05:39
	16:53	17:30	18:05	19:41	20:15	26 06:54 (TRQ04) 20:45
4	07:43	07:25	06:46	06:53	06:07	06:28 (TRQ04) 05:39
	16:54	17:31	18:06	19:42	20:16	27 06:55 (TRQ04) 20:46
5	07:43	07:24	06:44	06:51	06:05	06:27 (TRQ04) 05:39
	16:55	17:32	18:08	19:43	20:17	27 06:54 (TRQ04) 20:46
6	07:43	07:23	06:43	06:50	06:04	06:27 (TRQ04) 05:38
	16:56	17:34	18:09	19:44	20:18	27 06:54 (TRQ04) 20:47
7	07:43	07:22	06:41	06:48	06:03	06:27 (TRQ04) 05:38
	16:57	17:35	18:10	19:45	20:19	27 06:54 (TRQ04) 20:48
8	07:43	07:21	06:39	06:46	06:02	06:27 (TRQ04) 05:38
	16:58	17:36	18:11	19:47	20:20	27 06:54 (TRQ04) 20:48
9	07:43	07:20	06:38	06:45	06:00	06:28 (TRQ04) 05:37
	16:59	17:37	18:12	19:48	20:21	26 06:54 (TRQ04) 20:49
10	07:43	07:18	06:36	06:43	05:59	06:27 (TRQ04) 05:37
	17:00	17:39	18:14	19:49	20:22	26 06:53 (TRQ04) 20:49
11	07:42	07:17	06:34	06:41	05:58	06:28 (TRQ04) 05:37
	17:01	17:40	18:15	19:50	20:23	24 06:52 (TRQ04) 20:50
12	07:42	07:16	06:33	06:40	05:57	06:28 (TRQ04) 05:37
	17:02	17:41	18:16	19:51	20:24	23 06:51 (TRQ04) 20:51
13	07:42	07:14	06:31	06:38	05:56	06:29 (TRQ04) 05:37
	17:03	17:43	18:17	19:52	20:25	22 06:51 (TRQ04) 20:51
14	07:41	07:13	06:29	06:36	05:55	06:30 (TRQ04) 05:37
	17:05	17:44	18:18	19:53	20:26	20 06:50 (TRQ04) 20:51
15	07:41	07:12	06:28	06:35	05:54	06:31 (TRQ04) 05:37
	17:06	17:45	18:19	19:54	20:28	18 06:49 (TRQ04) 20:52
16	07:40	07:10	06:26	06:33	05:53	06:32 (TRQ04) 05:37
	17:07	17:46	18:21	19:56	20:29	16 06:48 (TRQ04) 20:52
17	07:40	07:09	06:24	06:32	05:52	06:33 (TRQ04) 05:37
	17:08	17:48	18:22	19:57	20:30	13 06:46 (TRQ04) 20:53
18	07:39	07:08	06:22	06:30	05:51	06:37 (TRQ04) 05:37
	17:09	17:49	18:23	19:58	20:31	8 06:45 (TRQ04) 20:53
19	07:39	07:06	06:21	06:28	05:50	05:37
	17:11	17:50	18:24	19:59	20:32	20:53
20	07:38	07:05	06:19	06:27	05:49	05:37
	17:12	17:52	18:25	20:00	20:33	20:54
21	07:38	07:03	06:17	06:25	05:48	05:37
	17:13	17:53	18:26	20:01	20:34	20:54
22	07:37	07:02	06:16	06:24	05:47	05:37
	17:14	17:54	18:27	20:02	20:34	20:54
23	07:36	07:00	06:14	06:22	05:46	05:38
	17:15	17:55	18:29	20:03	20:35	20:54
24	07:36	06:59	06:12	06:21	05:45	05:38
	17:17	17:57	18:30	20:05	20:36	20:54
25	07:35	06:57	06:10	06:19	05:45	05:38
	17:18	17:58	18:31	20:06	5 06:40 (TRQ04) 20:37	20:55
26	07:34	06:56	06:09	06:18	05:44	05:38
	17:19	17:59	18:32	20:07	11 06:48 (TRQ04) 20:38	20:55
27	07:33	06:54	06:07	06:16	05:43	05:39
	17:21	18:00	18:33	20:08	14 06:50 (TRQ04) 20:39	20:55
28	07:32	06:52	06:05	06:15	05:43	05:39
	17:22	18:01	18:34	20:09	17 06:51 (TRQ04) 20:40	20:55
29	07:31		07:03	06:13	05:42	05:40
	17:23		19:35	20:10	19 06:52 (TRQ04) 20:41	20:55
30	07:30		07:02	06:12	05:41	05:40
	17:24		19:36	20:11	21 06:53 (TRQ04) 20:42	20:55
31	07:29		07:00		05:41	
	17:26		19:38		20:42	
Potential sun hours	294	295	369	400	452	457
Total, worst case				87		405
Sun reduction				0,49		0,57
Oper. time red.				0,95		0,95
Wind dir. red.				0,68		0,68
Total reduction				0,32		0,37
Total, real				28		149

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** BG - 131  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December	
1	05:41 20:54	06:06 20:34	06:39 (TRQ04) 07:02 (TRQ04)	06:38 19:50	07:10 18:57	06:46 17:09	07:22 16:43
2	05:41 20:54	06:07 20:33	06:38 (TRQ04) 07:03 (TRQ04)	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:43
3	05:42 20:54	06:08 20:32	06:38 (TRQ04) 07:03 (TRQ04)	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42
4	05:42 20:54	06:09 20:31	06:37 (TRQ04) 07:04 (TRQ04)	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	05:43 20:54	06:10 20:30	06:37 (TRQ04) 07:04 (TRQ04)	06:42 19:43	07:14 18:50	06:51 17:04	07:26 16:42
6	05:43 20:53	06:11 20:28	06:37 (TRQ04) 07:04 (TRQ04)	06:43 19:41	07:15 18:49	06:52 17:02	07:27 16:42
7	05:44 20:53	06:12 20:27	06:36 (TRQ04) 07:04 (TRQ04)	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:42
8	05:45 20:53	06:13 20:26	06:36 (TRQ04) 07:04 (TRQ04)	06:45 19:38	07:18 18:45	06:55 17:00	07:29 16:41
9	05:45 20:52	06:14 20:25	06:36 (TRQ04) 07:03 (TRQ04)	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:37 (TRQ04) 07:03 (TRQ04)	06:48 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	05:47 20:52	06:16 20:22	06:38 (TRQ04) 07:03 (TRQ04)	06:49 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	05:47 20:51	06:17 20:21	06:39 (TRQ04) 07:02 (TRQ04)	06:50 19:31	07:22 18:38	07:00 16:56	07:33 16:42
13	05:48 20:51	06:18 20:19	06:40 (TRQ04) 07:01 (TRQ04)	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	05:49 20:50	06:19 20:18	06:41 (TRQ04) 07:00 (TRQ04)	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
15	05:50 20:49	06:20 20:16	06:42 (TRQ04) 06:58 (TRQ04)	06:53 19:25	07:26 18:34	07:03 16:53	07:35 16:42
16	05:51 20:49	06:21 20:15	06:43 (TRQ04) 06:57 (TRQ04)	06:54 19:24	07:27 18:32	07:05 16:52	07:36 16:42
17	05:51 20:48	06:22 20:13	06:44 (TRQ04) 06:54 (TRQ04)	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:43
18	05:52 20:47	06:23 20:12		06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	05:53 20:47	06:24 20:10		06:57 19:18	07:30 18:27	07:08 16:50	07:38 16:43
20	05:54 20:46	06:25 20:09		06:58 19:16	07:31 18:26	07:10 16:49	07:39 16:44
21	05:55 20:45	06:26 20:07		06:59 19:15	07:33 18:24	07:11 16:48	07:39 16:44
22	05:56 20:44	06:27 20:06		07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:45
23	05:57 20:43	06:29 20:04		07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	05:58 20:43	06:30 20:03		07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	05:59 20:42	06:31 06:49 (TRQ04)	06:31 06:53 (TRQ04)	07:03 19:08	06:37 17:18	07:16 16:46	07:41 16:46
26	06:00 20:41	06:32 06:45 (TRQ04)	06:32 06:55 (TRQ04)	07:04 19:06	06:39 17:17	07:17 16:45	07:41 16:47
27	06:01 20:40	06:33 06:43 (TRQ04)	06:33 06:57 (TRQ04)	07:06 19:04	06:40 17:15	07:18 16:44	07:42 16:48
28	06:02 20:39	06:34 06:42 (TRQ04)	06:34 06:59 (TRQ04)	07:07 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	06:03 20:38	06:35 06:41 (TRQ04)	06:35 07:00 (TRQ04)	07:08 19:01	06:42 17:13	07:20 16:44	07:42 16:49
30	06:03 20:37	06:36 06:40 (TRQ04)	06:36 07:01 (TRQ04)	07:09 18:59	06:43 17:11	07:21 16:43	07:43 16:50
31	06:04 20:36	06:37 06:39 (TRQ04)	06:37 07:02 (TRQ04)		06:45 17:10		07:43 16:50
Potential sun hours	463	430		376	344	295	284
Total, worst case	108	391					
Sun reduction	0,71	0,70					
Oper. time red.	0,95	0,95					
Wind dir. red.	0,68	0,68					
Total reduction	0,46	0,45					
Total, real	49	177					

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BH - 132  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	
1	07:43	07:28	06:51	06:58	06:11	05:40	06:14 (TRQ04)
	16:52	17:27	18:03	19:39	20:12	20:43	24 06:38 (TRQ04)
2	07:43	07:27	06:49	06:56	06:09	05:40	06:15 (TRQ04)
	16:52	17:28	18:04	19:40	20:13	20:44	23 06:38 (TRQ04)
3	07:43	07:26	06:48	06:55	06:08	05:39	06:16 (TRQ04)
	16:53	17:30	18:05	19:41	20:15	20:45	22 06:38 (TRQ04)
4	07:43	07:25	06:46	06:53	06:07	05:39	06:16 (TRQ04)
	16:54	17:31	18:06	19:42	20:16	20:46	21 06:37 (TRQ04)
5	07:43	07:24	06:44	06:51	06:05	05:39	06:17 (TRQ04)
	16:55	17:32	18:08	19:43	20:17	20:46	20 06:37 (TRQ04)
6	07:43	07:23	06:43	06:50	06:04	05:38	06:18 (TRQ04)
	16:56	17:34	18:09	19:44	20:18	20:47	19 06:37 (TRQ04)
7	07:43	07:22	06:41	06:48	06:03	05:38	06:18 (TRQ04)
	16:57	17:35	18:10	19:45	20:19	20:48	18 06:36 (TRQ04)
8	07:43	07:21	06:39	06:46	06:02	06:22 (TRQ04)	05:38
	16:58	17:36	18:11	19:47	20:20	7 06:29 (TRQ04)	20:48
9	07:43	07:20	06:38	06:45	06:00	06:21 (TRQ04)	05:37
	16:59	17:37	18:12	19:48	20:21	11 06:32 (TRQ04)	20:49
10	07:43	07:18	06:36	06:43	05:59	06:19 (TRQ04)	05:37
	17:00	17:39	18:14	19:49	20:22	14 06:33 (TRQ04)	20:49
11	07:42	07:17	06:34	06:41	05:58	06:18 (TRQ04)	05:37
	17:01	17:40	18:15	19:50	20:23	16 06:34 (TRQ04)	20:50
12	07:42	07:16	06:33	06:40	05:57	06:17 (TRQ04)	05:37
	17:02	17:41	18:16	19:51	20:24	19 06:36 (TRQ04)	20:51
13	07:42	07:14	06:31	06:38	05:56	06:16 (TRQ04)	05:37
	17:03	17:43	18:17	19:52	20:25	20 06:36 (TRQ04)	20:51
14	07:41	07:13	06:29	06:36	05:55	06:15 (TRQ04)	05:37
	17:05	17:44	18:18	19:53	20:26	22 06:37 (TRQ04)	20:51
15	07:41	07:12	06:28	06:35	05:54	06:14 (TRQ04)	05:37
	17:06	17:45	18:19	19:54	20:27	24 06:38 (TRQ04)	20:52
16	07:40	07:10	06:26	06:33	05:53	06:13 (TRQ04)	05:37
	17:07	17:46	18:21	19:56	20:29	25 06:38 (TRQ04)	20:52
17	07:40	07:09	06:24	06:32	05:52	06:12 (TRQ04)	05:37
	17:08	17:48	18:22	19:57	20:30	26 06:38 (TRQ04)	20:53
18	07:39	07:08	06:22	06:30	05:51	06:12 (TRQ04)	05:37
	17:09	17:49	18:23	19:58	20:31	27 06:39 (TRQ04)	20:53
19	07:39	07:06	06:21	06:28	05:50	06:12 (TRQ04)	05:37
	17:11	17:50	18:24	19:59	20:32	28 06:40 (TRQ04)	20:53
20	07:38	07:05	06:19	06:27	05:49	06:12 (TRQ04)	05:37
	17:12	17:52	18:25	20:00	20:33	28 06:40 (TRQ04)	20:54
21	07:38	07:03	06:17	06:25	05:48	06:11 (TRQ04)	05:37
	17:13	17:53	18:26	20:01	20:34	28 06:39 (TRQ04)	20:54
22	07:37	07:02	06:16	06:24	05:47	06:11 (TRQ04)	05:37
	17:14	17:54	18:27	20:02	20:34	28 06:39 (TRQ04)	20:54
23	07:36	07:00	06:14	06:22	05:46	06:12 (TRQ04)	05:38
	17:15	17:55	18:29	20:03	20:35	28 06:40 (TRQ04)	20:54
24	07:36	06:59	06:12	06:21	05:45	06:12 (TRQ04)	05:38
	17:17	17:57	18:30	20:05	20:36	28 06:40 (TRQ04)	20:54
25	07:35	06:57	06:10	06:19	05:45	06:12 (TRQ04)	05:38
	17:18	17:58	18:31	20:06	20:37	27 06:39 (TRQ04)	20:55
26	07:34	06:56	06:09	06:18	05:44	06:13 (TRQ04)	05:38
	17:19	17:59	18:32	20:07	20:38	27 06:40 (TRQ04)	20:55
27	07:33	06:54	06:07	06:16	05:43	06:13 (TRQ04)	05:39
	17:21	18:00	18:33	20:08	20:39	26 06:39 (TRQ04)	20:55
28	07:32	06:52	06:05	06:15	05:43	06:13 (TRQ04)	05:39
	17:22	18:01	18:34	20:09	20:40	26 06:39 (TRQ04)	20:55
29	07:31		07:03	06:13	05:42	06:14 (TRQ04)	05:40
	17:23		19:35	20:10	20:41	25 06:39 (TRQ04)	20:55
30	07:30		07:02	06:12	05:41	06:14 (TRQ04)	05:40
	17:24		19:36	20:11	20:42	25 06:39 (TRQ04)	20:55
31	07:29		07:00		05:41	06:14 (TRQ04)	
	17:26		19:38		20:42	25 06:39 (TRQ04)	
Potential sun hours	294	295	369	400	452	457	
Total, worst case					560		399
Sun reduction					0,57		0,61
Oper. time red.					0,95		0,95
Wind dir. red.					0,71		0,71
Total reduction					0,38		0,41
Total, real					214		164

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** BH - 132  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:41 20:54	06:26 (TRQ04) 20:34	06:06 18	06:28 (TRQ04) 19:50	07:10 18:57	06:46 17:09
2	05:41 20:54	06:25 (TRQ04) 20:33	06:07 16	06:29 (TRQ04) 19:48	07:11 18:55	06:47 17:07
3	05:42 20:54	06:25 (TRQ04) 20:32	06:08 13	06:30 (TRQ04) 19:46	07:12 18:54	06:48 17:06
4	05:42 20:54	06:24 (TRQ04) 20:31	06:09 10	06:31 (TRQ04) 19:44	07:13 18:52	06:50 17:05
5	05:43 20:54	06:24 (TRQ04) 20:30	06:10 1	06:35 (TRQ04) 19:43	07:14 18:50	06:51 17:04
6	05:43 20:53	06:25 (TRQ04) 20:28		06:43 19:41	07:15 18:49	06:52 17:02
7	05:44 20:53	06:24 (TRQ04) 20:27		06:44 19:39	07:16 18:47	06:53 17:01
8	05:45 20:53	06:43 (TRQ04) 20:26		06:45 19:38	07:18 18:45	06:55 17:00
9	05:45 20:52	06:23 (TRQ04) 20:25		06:46 19:36	07:19 18:43	06:56 16:59
10	05:46 20:52	06:23 (TRQ04) 20:23		06:48 19:34	07:20 18:42	06:57 16:58
11	05:47 20:52	06:23 (TRQ04) 20:22		06:49 19:32	07:21 18:40	06:58 16:57
12	05:47 20:51	06:23 (TRQ04) 20:21		06:50 19:31	07:22 18:38	07:00 16:56
13	05:48 20:51	06:22 (TRQ04) 20:19		06:51 19:29	07:23 18:37	07:01 16:55
14	05:49 20:50	06:22 (TRQ04) 20:18		06:52 19:27	07:24 18:35	07:02 16:54
15	05:50 20:49	06:22 (TRQ04) 20:16		06:53 19:25	07:26 18:34	07:03 16:53
16	05:51 20:49	06:22 (TRQ04) 20:15		06:54 19:24	07:27 18:32	07:05 16:52
17	05:51 20:48	06:22 (TRQ04) 20:13		06:55 19:22	07:28 18:30	07:06 16:51
18	05:52 20:47	06:21 (TRQ04) 20:12		06:56 19:20	07:29 18:29	07:07 16:50
19	05:53 20:47	06:21 (TRQ04) 20:10		06:57 19:18	07:30 18:27	07:08 16:50
20	05:54 20:46	06:22 (TRQ04) 20:09		06:58 19:16	07:31 18:26	07:10 16:49
21	05:55 20:45	06:22 (TRQ04) 20:07		06:59 19:15	07:33 18:24	07:11 16:48
22	05:56 20:44	06:22 (TRQ04) 20:06		07:00 19:13	07:34 18:23	07:12 16:47
23	05:57 20:43	06:22 (TRQ04) 20:04		07:01 19:11	07:35 18:21	07:13 16:47
24	05:58 20:43	06:22 (TRQ04) 20:03		07:02 19:09	07:36 18:20	07:14 16:46
25	05:59 20:42	06:50 (TRQ04) 20:01		07:03 19:08	06:37 17:18	07:16 16:46
26	06:00 20:41	06:22 (TRQ04) 19:59		07:04 19:06	06:39 17:17	07:17 16:45
27	06:01 20:40	06:23 (TRQ04) 19:58		07:06 19:04	06:40 17:15	07:18 16:44
28	06:02 20:39	06:24 (TRQ04) 19:56		07:07 19:02	06:41 17:14	07:19 16:44
29	06:03 20:38	06:25 (TRQ04) 19:55		07:08 19:01	06:42 17:13	07:20 16:44
30	06:03 20:37	06:26 (TRQ04) 19:53		07:09 18:59	06:43 17:11	07:21 16:43
31	06:04 20:36	06:27 (TRQ04) 19:51			06:45 17:10	07:22 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case	720	58				
Sun reduction	0,71	0,70				
Oper. time red.	0,95	0,95				
Wind dir. red.	0,71	0,71				
Total reduction	0,47	0,47				
Total, real	342	27				

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BI - 133  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with 13 columns for months (January to December) and rows for days (1 to 31). Each cell contains a time range (e.g., 07:43 - 16:52). Summary rows at the bottom include: Potential sun hours, Total, worst case Sun reduction, Oper. time red., Wind dir. red., Total reduction, Total, real.

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise (hh:mm) / Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker / Last time (hh:mm) with flicker. Notes: (WTG causing flicker first time), (WTG causing flicker last time).

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BJ - 134
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with 13 columns (January to December) and 33 rows of shadow data. Includes columns for sun rise, sun set, and various reduction factors. Summary row at the bottom shows potential sun hours and total reduction.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BK - 136
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with 13 columns (January to December) and 33 rows of shadow data. Includes potential sun hours and reduction metrics at the bottom.

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise/set times, Minutes with flicker, and First/Last time with flicker (WTG causing flicker).





**SHADOW - Calendar**

**Calculation:** Shadow\_real **Shadow receptor:** BM - 138  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:52	07:28 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:09	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:14	05:39 20:45	05:42 20:54	06:08 20:32	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:45	05:42 20:54	06:09 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:08	06:51 19:43	06:05 20:17	05:39 20:46	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	06:51 17:04	07:26 16:42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:11 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:42
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:02 20:20	05:38 20:48	05:45 20:53	06:13 20:26	06:45 19:38	07:18 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:25	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:42 17:00	07:18 17:39	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50	05:47 20:51	06:16 20:22	06:49 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	05:57 20:24	05:37 20:50	05:47 20:51	06:17 20:20	06:50 19:31	07:22 18:38	07:00 16:56	07:33 16:42
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	05:56 20:25	05:37 20:51	05:48 20:50	06:18 20:19	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	05:55 20:26	05:37 20:51	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	05:54 20:27	05:37 20:52	05:50 20:49	06:20 20:16	06:53 19:25	07:25 18:34	07:03 16:53	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55	05:53 20:28	05:37 20:52	05:51 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	05:52 20:29	05:37 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:43
18	07:39 17:09	07:07 17:49	06:22 18:23	06:30 19:58	05:51 20:30	05:37 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:50 20:31	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:50	07:38 16:43
20	07:38 17:12	07:05 17:51	06:19 18:25	06:27 20:00	05:49 20:32	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:09 16:49	07:38 16:44
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:33 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:24 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:45
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:38 20:54	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	07:35 17:17	06:59 17:57	06:12 18:30	06:21 20:04	05:45 20:36	05:38 20:54	05:58 20:42	06:30 20:03	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:45 20:37	05:38 20:54	05:59 20:42	06:31 20:01	07:03 19:08	06:37 17:18	07:15 16:45	07:41 16:46
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	05:44 20:38	05:38 20:55	06:00 20:41	06:32 19:59	07:04 19:06	06:39 17:17	07:17 16:45	07:41 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:39 20:55	06:01 20:40	06:33 19:58	07:05 19:04	06:40 17:15	07:18 16:44	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:43 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:07 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	07:31 17:23	07:00 18:00	06:03 19:35	06:13 20:10	05:42 20:41	05:40 20:55	06:02 20:38	06:35 19:54	07:08 19:01	06:42 17:13	07:20 16:44	07:42 16:49
30	07:30 17:24	07:00 19:36	06:02 19:36	06:12 20:11	05:41 20:42	05:40 20:54	06:03 20:37	06:36 19:53	07:09 18:59	06:43 17:11	07:21 16:43	07:43 16:50
31	07:29 17:26	07:00 19:37	07:00 19:37	06:00 19:37	05:41 20:42	05:40 20:54	06:04 20:35	06:37 19:51	07:09 19:10	06:45 17:10	07:21 16:43	07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BN - 139
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (January to December) and rows for daily shadow times (sunrise, sunset, and reduction times) and a summary row for 'Potential sun hours'.

Table layout: For each day in each month the following matrix apply

Matrix with columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)



SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BP - 142  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with 12 columns (January to December) and 31 rows of daily data. Each row contains time intervals and TRQ04 codes. Summary rows at the bottom include 'Potential sun hours', 'Total, worst case', 'Sun reduction', 'Oper. time red.', 'Wind dir. red.', 'Total reduction', and 'Total, real'.

Table layout: For each day in each month the following matrix apply

Matrix with 2 rows and 4 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time).

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** BQ - 144  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:03	06:58 19:39	18:53 (TRQ04) 19:11 (TRQ04)	06:10 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:08
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	18:54 (TRQ04) 19:09 (TRQ04)	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07
3	07:43 16:53	07:26 17:29	06:48 18:05	06:55 19:41	18:56 (TRQ04) 19:05 (TRQ04)	06:08 20:14	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	06:48 17:06
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42		06:06 20:16	05:39 20:45	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	06:50 17:05
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43		06:05 20:17	05:38 20:46	05:43 20:54	06:09 20:30	06:42 19:43	07:14 18:50	06:51 17:03
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44		06:04 20:18	05:38 20:47	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	06:52 17:02
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45		06:03 20:19	05:38 20:47	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	06:53 17:01
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46		06:01 20:20	05:37 20:48	05:44 20:53	06:13 20:26	06:45 19:37	07:17 18:45	06:55 17:00
9	07:43 16:59	07:19 17:37	06:38 18:12	06:44 19:48		06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:24	06:46 19:36	18:51 (TRQ04) 18:59 (TRQ04)	07:19 18:43
10	07:42 17:00	07:18 17:39	06:36 18:13	06:43 19:49		05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	18:48 (TRQ04) 19:01 (TRQ04)	07:20 18:42
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50		05:58 20:23	05:37 20:50	05:47 20:51	06:16 20:22	06:48 19:32	18:46 (TRQ04) 19:03 (TRQ04)	07:21 18:40
12	07:42 17:02	07:16 17:41	06:33 18:16	06:39 19:51		05:57 20:24	05:37 20:50	05:47 20:51	06:17 20:20	06:49 19:30	18:44 (TRQ04) 19:04 (TRQ04)	07:22 18:38
13	07:42 17:03	07:14 17:42	06:31 18:17	06:38 19:52		05:56 20:25	05:37 20:51	05:48 20:50	06:18 20:19	06:51 19:29	18:43 (TRQ04) 19:04 (TRQ04)	07:23 18:37
14	07:41 17:04	07:13 17:44	06:29 18:18	06:36 19:53		05:55 20:26	05:36 20:51	05:49 20:50	06:19 20:18	06:52 19:27	18:42 (TRQ04) 19:04 (TRQ04)	07:24 18:35
15	07:41 17:06	07:12 17:45	06:27 18:19	06:35 19:54		05:53 20:27	05:36 20:52	05:50 20:49	06:20 20:16	06:53 19:25	18:41 (TRQ04) 19:02 (TRQ04)	07:25 18:33
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55		05:52 20:28	05:36 20:52	05:50 20:49	06:21 20:15	06:54 19:23	18:40 (TRQ04) 19:00 (TRQ04)	07:27 18:32
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57		05:51 20:29	05:36 20:53	05:51 20:48	06:22 20:13	06:55 19:22	18:40 (TRQ04) 18:59 (TRQ04)	07:28 18:30
18	07:39 17:09	07:07 17:49	06:22 18:23	06:30 19:58		05:50 20:30	05:37 20:53	05:52 20:47	06:23 20:12	06:56 19:20	18:40 (TRQ04) 18:57 (TRQ04)	07:29 18:29
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59		05:50 20:31	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	18:40 (TRQ04) 18:55 (TRQ04)	07:30 18:27
20	07:38 17:12	07:05 17:51	06:19 18:25	06:27 20:00	18:01 (TRQ04) 18:04 (TRQ04)	06:27 20:00	05:49 20:54	05:54 20:46	06:25 20:09	06:58 19:16	18:40 (TRQ04) 18:53 (TRQ04)	07:31 18:26
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	17:58 (TRQ04) 18:05 (TRQ04)	06:25 20:01	05:48 20:54	05:55 20:45	06:26 20:07	06:59 19:15	18:42 (TRQ04) 18:52 (TRQ04)	07:32 18:24
22	07:37 17:14	07:02 17:54	06:15 18:27	06:24 20:02	17:56 (TRQ04) 18:06 (TRQ04)	06:24 20:02	05:47 20:54	05:56 20:44	06:27 20:06	07:00 19:13	18:43 (TRQ04) 18:50 (TRQ04)	07:34 18:23
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	17:55 (TRQ04) 18:07 (TRQ04)	06:22 20:03	05:46 20:54	05:57 20:43	06:28 20:04	07:01 19:11	18:44 (TRQ04) 18:49 (TRQ04)	07:35 18:21
24	07:35 17:17	06:59 17:56	06:12 18:30	06:21 20:04	17:54 (TRQ04) 18:08 (TRQ04)	06:21 20:04	05:45 20:54	05:58 20:42	06:29 20:02	07:02 19:09	18:42 (TRQ04) 18:53 (TRQ04)	07:36 18:26
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:05	17:52 (TRQ04) 18:09 (TRQ04)	06:19 20:05	05:45 20:54	05:58 20:41	06:30 20:01	07:03 19:08	18:40 (TRQ04) 18:55 (TRQ04)	07:37 18:27
26	07:34 17:19	06:55 17:59	06:08 18:32	06:18 20:07	17:52 (TRQ04) 18:10 (TRQ04)	06:18 20:07	05:44 20:54	05:59 20:41	06:32 19:59	07:04 19:06	18:40 (TRQ04) 18:57 (TRQ04)	07:38 18:29
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	18:12 (TRQ04) 18:33 (TRQ04)	06:16 20:08	05:43 20:55	06:00 20:40	06:33 19:58	07:05 19:04	18:40 (TRQ04) 18:55 (TRQ04)	07:39 18:28
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	17:52 (TRQ04) 18:13 (TRQ04)	06:15 20:09	05:42 20:55	06:01 20:39	06:34 19:56	07:06 19:02	18:40 (TRQ04) 18:55 (TRQ04)	07:40 18:29
29	07:31 17:23		07:03 19:35	06:13 20:10	18:51 (TRQ04) 19:14 (TRQ04)	06:13 20:10	05:42 20:55	06:02 20:38	06:35 19:54	07:08 19:00	18:40 (TRQ04) 18:55 (TRQ04)	07:41 18:30
30	07:30 17:24		07:02 19:36	06:12 20:11	18:51 (TRQ04) 19:13 (TRQ04)	06:12 20:11	05:41 20:42	06:03 20:36	06:36 19:53	07:09 18:59	18:40 (TRQ04) 18:55 (TRQ04)	07:42 18:31
31	07:29 17:26		07:00 19:37	06:11 20:12	18:53 (TRQ04) 19:13 (TRQ04)	06:11 20:12	05:41 20:42	06:04 20:35	06:37 19:51	07:09 19:04	18:40 (TRQ04) 18:55 (TRQ04)	07:43 18:32
Potential sun hours	294	295	369	400		452	457	463	430	376	344	295
Total, worst case			187	42						228		284
Sun reduction			0,46	0,49						0,62		
Oper. time red.			0,95	0,95						0,95		
Wind dir. red.			0,62	0,62						0,62		
Total reduction			0,27	0,29						0,37		
Total, real			50	12						83		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

Tarquinia1

Licensed user:

MONTANA SPA
VIA ANGELO CARLO FUMAGALLI 6
IT-20143 MILANO
0254118173
Andrea / fronteddu@montanambiente.com
Calculated:
06/08/2022 14:40/3.5.584

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BR - 146
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (January to December) and rows for each day of the month (1-31), showing sun rise and set times and shadow calculations. Includes a summary row at the bottom with values like Potential sun hours, Total, worst case, Sun reduction, etc.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)



SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BS - 147
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Table with columns: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec. Values: 3,98, 4,87, 5,46, 6,60, 8,30, 9,30, 10,54, 9,73, 7,82, 6,08, 4,48, 3,95

Operational time

Table with columns: N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum. Values: 488, 1.218, 2.039, 904, 404, 473, 641, 645, 678, 389, 220, 210, 8.309

Main shadow calculation table with columns for months (January to June) and rows for sun hours, reduction factors, and potential sun hours. Includes sub-rows for 'Total, worst case', 'Sun reduction', 'Oper. time red.', 'Wind dir. red.', 'Total reduction', and 'Total, real'.

Table layout: For each day in each month the following matrix apply

Matrix with columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** BS - 147  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40   20:54	06:05   20:34	06:38   19:49	07:10   18:57	17:27 (TRQ06)   17:08	06:46   16:43
2	05:41   20:54	06:06   20:33	06:39   19:48	07:11   18:55	17:28 (TRQ06)   17:07	16:24 (TRQ04)   16:42
3	05:41   20:54	06:07   20:32	06:40   19:46	18:03 (TRQ06)   18:54	17:28 (TRQ06)   17:06	16:22 (TRQ04)   16:42
4	05:42   20:54	06:08   20:31	06:41   19:44	18:15 (TRQ06)   18:52	17:29 (TRQ06)   17:05	16:33 (TRQ04)   16:42
5	05:42   20:54	06:09   20:30	19:35 (TRQ05)   19:43	17:54 (TRQ06)   18:50	17:30 (TRQ06)   17:03	16:35 (TRQ04)   16:42
6	05:43   20:53	06:10   20:28	19:42 (TRQ05)   19:41	18:22 (TRQ06)   18:48	17:31 (TRQ06)   17:02	16:36 (TRQ04)   16:41
7	05:44   20:53	06:11   20:27	19:45 (TRQ05)   19:39	17:51 (TRQ06)   18:47	18:21 (TRQ06)   17:01	16:37 (TRQ04)   16:41
8	05:44   20:53	06:13   20:26	19:29 (TRQ05)   19:37	19:47 (TRQ05)   18:45	18:26 (TRQ06)   17:00	16:37 (TRQ04)   16:41
9	05:45   20:52	06:14   20:24	19:28 (TRQ05)   19:36	19:48 (TRQ05)   18:43	18:27 (TRQ06)   18:43	16:35 (TRQ04)   16:41
10	05:46   20:52	06:15   20:23	19:27 (TRQ05)   19:34	17:44 (TRQ06)   18:42	17:34 (TRQ06)   16:58	16:35 (TRQ04)   16:41
11	05:46   20:51	06:16   20:22	19:25 (TRQ05)   19:32	17:42 (TRQ06)   18:40	17:35 (TRQ06)   16:57	16:33 (TRQ04)   16:41
12	05:47   20:51	06:17   20:20	19:24 (TRQ05)   19:30	17:39 (TRQ06)   18:38	17:40 (TRQ06)   16:56	16:17 (TRQ04)   16:41
13	05:48   20:50	06:18   20:19	19:23 (TRQ05)   19:29	19:52 (TRQ05)   18:37	17:38 (TRQ06)   18:37	16:17 (TRQ04)   16:41
14	05:49   20:50	06:19   20:18	19:22 (TRQ05)   19:27	19:52 (TRQ05)   18:35	17:37 (TRQ06)   16:54	16:30 (TRQ04)   16:42
15	05:50   20:49	06:20   20:16	19:22 (TRQ05)   19:25	19:22 (TRQ05)   18:33	17:35 (TRQ06)   17:03	16:19 (TRQ04)   16:42
16	05:50   20:49	06:21   20:15	19:21 (TRQ05)   19:23	19:21 (TRQ05)   18:32	17:34 (TRQ06)   17:02	16:19 (TRQ04)   16:42
17	05:51   20:48	06:22   20:13	19:21 (TRQ05)   19:22	19:21 (TRQ05)   18:30	17:33 (TRQ06)   16:51	16:20 (TRQ04)   16:42
18	05:52   20:47	06:23   20:12	19:21 (TRQ05)   19:20	19:21 (TRQ05)   18:29	17:32 (TRQ06)   16:50	16:21 (TRQ04)   16:43
19	05:53   20:47	06:24   20:10	19:21 (TRQ05)   19:18	19:49 (TRQ05)   18:27	17:31 (TRQ06)   16:49	16:22 (TRQ04)   16:43
20	05:54   20:46	06:25   20:09	19:21 (TRQ05)   19:16	19:21 (TRQ05)   18:26	17:30 (TRQ06)   16:49	16:25 (TRQ04)   16:43
21	05:55   20:45	06:26   20:07	19:21 (TRQ05)   19:15	19:21 (TRQ05)   18:24	17:30 (TRQ06)   16:48	16:25 (TRQ04)   16:44
22	05:56   20:44	06:27   20:06	19:21 (TRQ05)   19:13	19:21 (TRQ05)   18:23	17:30 (TRQ06)   16:47	16:26 (TRQ04)   16:44
23	05:57   20:43	06:28   20:04	19:21 (TRQ05)   19:11	19:43 (TRQ05)   18:22	17:29 (TRQ06)   16:47	16:27 (TRQ04)   16:45
24	05:57   20:42	06:29   20:02	19:21 (TRQ05)   19:09	19:21 (TRQ05)   18:20	17:29 (TRQ06)   16:46	16:28 (TRQ04)   16:45
25	05:58   20:41	06:30   20:01	19:23 (TRQ05)   19:08	19:23 (TRQ05)   17:18	17:28 (TRQ06)   16:45	16:29 (TRQ04)   16:46
26	05:59   20:41	06:32   19:59	19:24 (TRQ05)   19:06	19:38 (TRQ05)   17:17	17:28 (TRQ06)   16:45	16:30 (TRQ04)   16:47
27	06:00   20:40	06:33   19:58	19:26 (TRQ05)   19:04	19:36 (TRQ05)   17:15	17:27 (TRQ06)   16:44	16:31 (TRQ04)   16:47
28	06:01   20:39	06:34   19:56	19:35 (TRQ05)   19:02	19:35 (TRQ05)   17:14	18:30 (TRQ06)   16:43	16:32 (TRQ04)   16:48
29	06:02   20:38	06:35   19:54	19:33 (TRQ05)   19:00	19:28 (TRQ05)   17:12	17:27 (TRQ06)   16:42	16:33 (TRQ04)   16:49
30	06:03   20:36	06:36   19:53	19:00   18:59	18:29 (TRQ06)   17:11	17:27 (TRQ06)   16:41	16:34 (TRQ04)   16:49
31	06:04   20:35	06:37   19:51	07:09   18:59	18:28 (TRQ06)   17:10	17:27 (TRQ06)   16:40	16:35 (TRQ04)   16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		512	1457	591	229	
Sun reduction		0,70	0,62	0,55	0,46	
Oper. time red.		0,95	0,95	0,95	0,95	
Wind dir. red.		0,54	0,65	0,65	0,73	
Total reduction		0,36	0,39	0,34	0,32	
Total, real		185	567	202	73	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** BT - 149  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June		
1	07:43	07:28	06:51	06:58	18:36 (TRQ06)	06:10	19:27 (TRQ05)	05:40
	16:51	17:27	18:03	19:39	41 19:17 (TRQ06)	20:12	19 19:46 (TRQ05)	20:43
2	07:43	07:27	06:49	06:56	18:36 (TRQ06)	06:09	19:28 (TRQ05)	05:40
	16:52	17:28	18:04	19:40	40 19:16 (TRQ06)	20:13	17 19:45 (TRQ05)	20:44
3	07:43	07:26	06:48	06:55	18:35 (TRQ06)	06:08	19:30 (TRQ05)	05:39
	16:53	17:29	18:05	19:41	41 19:16 (TRQ06)	20:14	13 19:43 (TRQ05)	20:45
4	07:43	07:25	06:46	06:53	18:36 (TRQ06)	06:06	19:31 (TRQ05)	05:39
	16:54	17:31	18:06	19:42	40 19:16 (TRQ06)	20:16	9 19:40 (TRQ05)	20:45
5	07:43	07:24	06:44	06:51	18:35 (TRQ06)	06:05		05:38
	16:55	17:32	18:07	19:43	40 19:15 (TRQ06)	20:17		20:46
6	07:43	07:23	06:43	06:49	18:35 (TRQ06)	06:04		05:38
	16:56	17:33	18:09	19:44	39 19:14 (TRQ06)	20:18		20:47
7	07:43	07:22	06:41	06:48	18:36 (TRQ06)	06:03		05:38
	16:57	17:35	18:10	19:45	38 19:14 (TRQ06)	20:19		20:47
8	07:43	07:21	06:39	06:46	18:36 (TRQ06)	06:01		05:37
	16:58	17:36	18:11	19:46	37 19:13 (TRQ06)	20:20		20:48
9	07:43	07:19	06:38	06:44	18:36 (TRQ06)	06:00		05:37
	16:59	17:37	18:12	19:48	35 19:11 (TRQ06)	20:21		20:49
10	07:42	07:18	06:36	06:43	18:38 (TRQ06)	05:59		05:37
	17:00	17:39	18:13	19:49	33 19:11 (TRQ06)	20:22		20:49
11	07:42	07:17	06:34	06:41	18:38 (TRQ06)	05:58		05:37
	17:01	17:40	18:15	19:50	31 19:09 (TRQ06)	20:23		20:50
12	07:42	07:16	06:33	06:39	18:39 (TRQ06)	05:57		05:37
	17:02	17:41	18:16	19:51	28 19:07 (TRQ06)	20:24		20:50
13	07:42	07:14	06:31	06:38	18:41 (TRQ06)	05:56		05:37
	17:03	17:42	18:17	19:52	25 19:06 (TRQ06)	20:25		20:51
14	07:41	07:13	06:29	06:36	18:42 (TRQ06)	05:55		05:36
	17:04	17:44	18:18	19:53	21 19:03 (TRQ06)	20:26		20:51
15	07:41	07:12	06:27	06:35	18:45 (TRQ06)	05:53		05:36
	17:06	17:45	18:19	19:54	16 19:01 (TRQ06)	20:27		20:52
16	07:40	07:10	06:26	06:33	18:50 (TRQ06)	05:52		05:36
	17:07	17:46	18:20	19:55	5 18:55 (TRQ06)	20:28		20:52
17	07:40	07:09	06:24	06:31		05:51		05:36
	17:08	17:48	18:22	19:57		20:29		20:53
18	07:39	07:07	06:22	06:30	19:32 (TRQ05)	05:50		05:37
	17:09	17:49	18:23	19:58	3 19:35 (TRQ05)	20:30		20:53
19	07:39	07:06	06:21	06:28	19:30 (TRQ05)	05:50		05:37
	17:10	17:50	18:24	19:59	6 19:36 (TRQ05)	20:31		20:53
20	07:38	07:05	06:19	06:27	19:29 (TRQ05)	05:49		05:37
	17:12	17:51	18:25	20:00	8 19:37 (TRQ05)	20:32		20:54
21	07:38	07:03	06:17	17:55 (TRQ06)	06:25	19:27 (TRQ05)	05:48	05:37
	17:13	17:53	18:26	10 18:05 (TRQ06)	20:01	11 19:38 (TRQ05)	20:33	20:54
22	07:37	07:02	06:15	17:50 (TRQ06)	06:24	19:27 (TRQ05)	05:47	05:37
	17:14	17:54	18:27	16 18:06 (TRQ06)	20:02	13 19:40 (TRQ05)	20:34	20:54
23	07:36	07:00	06:14	17:48 (TRQ06)	06:22	19:26 (TRQ05)	05:46	05:37
	17:15	17:55	18:28	19 18:07 (TRQ06)	20:03	14 19:40 (TRQ05)	20:35	20:54
24	07:35	06:59	06:12	17:45 (TRQ06)	06:20	19:26 (TRQ05)	05:45	05:38
	17:17	17:56	18:29	23 18:08 (TRQ06)	20:04	16 19:42 (TRQ05)	20:36	20:54
25	07:35	06:57	06:10	17:43 (TRQ06)	06:19	19:25 (TRQ05)	05:45	05:38
	17:18	17:58	18:31	26 18:09 (TRQ06)	20:05	17 19:42 (TRQ05)	20:37	20:54
26	07:34	06:55	06:08	17:41 (TRQ06)	06:18	19:25 (TRQ05)	05:44	05:38
	17:19	17:59	18:32	29 18:10 (TRQ06)	20:07	19 19:44 (TRQ05)	20:38	20:54
27	07:33	06:54	06:07	17:41 (TRQ06)	06:16	19:26 (TRQ05)	05:43	05:39
	17:20	18:00	18:33	31 18:12 (TRQ06)	20:08	19 19:45 (TRQ05)	20:39	20:55
28	07:32	06:52	06:05	17:39 (TRQ06)	06:15	19:25 (TRQ05)	05:42	05:39
	17:22	18:01	18:34	34 18:13 (TRQ06)	20:09	20 19:45 (TRQ05)	20:40	20:55
29	07:31		07:03	18:38 (TRQ06)	06:13	19:26 (TRQ05)	05:42	05:39
	17:23		19:35	36 19:14 (TRQ06)	20:10	21 19:47 (TRQ05)	20:41	20:55
30	07:30		07:01	18:37 (TRQ06)	06:12	19:26 (TRQ05)	05:41	05:40
	17:24		19:36	37 19:14 (TRQ06)	20:11	20 19:46 (TRQ05)	20:42	20:54
31	07:29		07:00	18:37 (TRQ06)			05:41	
	17:25		19:37	39 19:16 (TRQ06)			20:42	
Potential sun hours	294	295	369	400	452		457	
Total, worst case			300		697		58	
Sun reduction			0,46		0,49		0,57	
Oper. time red.			0,95		0,95		0,95	
Wind dir. red.			0,61		0,59		0,53	
Total reduction			0,27		0,28		0,29	
Total, real			80		194		17	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BT - 149  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	18:37 (TRQ06) 19:08 (TRQ06)	07:10 18:57	06:46 17:08
2	05:41 20:54	06:06 20:33	06:39 19:48	18:36 (TRQ06) 19:09 (TRQ06)	07:11 18:55	06:47 17:07
3	05:41 20:54	06:07 20:32	06:40 19:46	18:34 (TRQ06) 19:09 (TRQ06)	07:12 18:54	06:48 17:06
4	05:42 20:54	06:08 20:31	06:41 19:44	18:33 (TRQ06) 19:10 (TRQ06)	07:13 18:52	06:50 17:05
5	05:42 20:54	06:09 20:30	06:42 19:43	18:32 (TRQ06) 19:10 (TRQ06)	07:14 18:50	06:51 17:03
6	05:43 20:53	06:10 20:28	06:43 19:41	18:31 (TRQ06) 19:10 (TRQ06)	07:15 18:48	06:52 17:02
7	05:44 20:53	06:11 20:27	06:44 19:39	18:30 (TRQ06) 19:10 (TRQ06)	07:16 18:47	06:53 17:01
8	05:44 20:53	06:13 20:26	19:44 (TRQ05) 19:47 (TRQ05)	06:45 19:37	18:30 (TRQ06) 19:10 (TRQ06)	07:17 18:45
9	05:45 20:52	06:14 20:24	19:40 (TRQ05) 19:51 (TRQ05)	06:46 19:36	18:29 (TRQ06) 19:10 (TRQ06)	07:19 18:43
10	05:46 20:52	06:15 20:23	19:38 (TRQ05) 19:53 (TRQ05)	06:47 19:34	18:29 (TRQ06) 19:09 (TRQ06)	07:20 18:42
11	05:46 20:51	06:16 20:22	19:37 (TRQ05) 19:54 (TRQ05)	06:48 19:32	18:29 (TRQ06) 19:09 (TRQ06)	07:21 18:40
12	05:47 20:51	06:17 20:20	19:35 (TRQ05) 19:55 (TRQ05)	06:49 19:30	18:28 (TRQ06) 19:08 (TRQ06)	07:22 18:38
13	05:48 20:50	06:18 20:19	19:34 (TRQ05) 19:55 (TRQ05)	06:50 19:29	18:28 (TRQ06) 19:06 (TRQ06)	07:23 18:37
14	05:49 20:50	06:19 20:18	19:33 (TRQ05) 19:54 (TRQ05)	06:52 19:27	18:28 (TRQ06) 19:04 (TRQ06)	07:24 18:35
15	05:50 20:49	06:20 20:16	19:33 (TRQ05) 19:53 (TRQ05)	06:53 19:25	18:29 (TRQ06) 19:02 (TRQ06)	07:25 18:33
16	05:50 20:49	06:21 20:15	19:32 (TRQ05) 19:51 (TRQ05)	06:54 19:23	18:29 (TRQ06) 19:00 (TRQ06)	07:27 18:32
17	05:51 20:48	06:22 20:13	19:32 (TRQ05) 19:50 (TRQ05)	06:55 19:22	18:30 (TRQ06) 18:59 (TRQ06)	07:28 18:30
18	05:52 20:47	06:23 20:12	19:32 (TRQ05) 19:49 (TRQ05)	06:56 19:20	18:30 (TRQ06) 18:57 (TRQ06)	07:29 18:29
19	05:53 20:47	06:24 20:10	19:32 (TRQ05) 19:47 (TRQ05)	06:57 19:18	18:31 (TRQ06) 18:55 (TRQ06)	07:30 18:27
20	05:54 20:46	06:25 20:09	19:32 (TRQ05) 19:46 (TRQ05)	06:58 19:16	18:33 (TRQ06) 18:53 (TRQ06)	07:31 18:26
21	05:55 20:45	06:26 20:07	19:32 (TRQ05) 19:44 (TRQ05)	06:59 19:15	18:36 (TRQ06) 18:52 (TRQ06)	07:32 18:24
22	05:56 20:44	06:27 20:06	19:32 (TRQ05) 19:43 (TRQ05)	07:00 19:13	18:39 (TRQ06) 18:50 (TRQ06)	07:34 18:23
23	05:57 20:43	06:28 20:04	19:33 (TRQ05) 19:41 (TRQ05)	07:01 19:11	18:35 (TRQ06)	07:35 18:21
24	05:57 20:42	06:29 20:02	19:34 (TRQ05) 19:40 (TRQ05)	07:02 19:09	18:31 (TRQ06)	07:36 18:19
25	05:58 20:41	06:30 20:01	19:36 (TRQ05) 19:38 (TRQ05)	07:03 19:07	18:20 (TRQ06)	07:37 18:17
26	05:59 20:41	06:32 19:59	19:07 19:06	07:04 19:06	17:18 17:17	16:45 16:45
27	06:00 20:40	06:33 19:58	18:51 (TRQ06) 18:58 (TRQ06)	07:05 19:04	17:15 17:15	16:44 16:44
28	06:01 20:39	06:34 19:56	18:46 (TRQ06) 19:02 (TRQ06)	07:06 19:02	17:14 17:14	16:44 16:44
29	06:02 20:38	06:35 19:54	18:43 (TRQ06) 19:04 (TRQ06)	07:08 19:00	17:12 17:12	16:43 16:43
30	06:03 20:36	06:36 19:53	18:41 (TRQ06) 19:06 (TRQ06)	07:09 18:59	17:11 17:11	16:43 16:43
31	06:04 20:35	06:37 19:51	18:39 (TRQ06) 19:07 (TRQ06)	07:10 19:07	17:10 17:10	16:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		347	719			
Sun reduction		0,70	0,62			
Oper. time red.		0,95	0,95			
Wind dir. red.		0,55	0,61			
Total reduction		0,37	0,36			
Total, real		128	262			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** BU - 150  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51	07:28 17:27	06:51 18:02	06:58 19:38	06:10 20:12	19:32 (TRQ02) 20:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	19:45 (TRQ02) 19:34 (TRQ02) 20:44
3	07:43 16:53	07:26 17:29	06:47 18:05	06:55 19:41	06:08 20:14	05:39 20:45
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:06 20:15	05:39 20:45
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46
6	07:43 16:56	07:23 17:33	06:43 18:09	06:49 19:44	06:04 20:18	05:38 20:47
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:47
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:01 20:20	05:37 20:48
9	07:43 16:59	07:19 17:37	06:38 18:12	06:44 19:47	06:00 20:21	05:37 20:49
10	07:42 17:00	07:18 17:38	06:36 18:13	17:49 (TRQ06) 06:43 17:52 (TRQ06) 19:49	06:43 19:49 20:22	05:37 20:49
11	07:42 17:01	07:17 17:40	06:34 18:14	17:47 (TRQ06) 06:41 17:53 (TRQ06) 19:50	06:41 20:23	05:37 20:50
12	07:42 17:02	07:16 17:41	06:33 18:16	17:47 (TRQ06) 06:39 17:55 (TRQ06) 19:51	06:39 20:24	05:37 20:50
13	07:42 17:03	07:14 17:42	06:31 18:17	17:46 (TRQ06) 06:38 17:55 (TRQ06) 19:52	06:38 20:25	05:36 20:51
14	07:41 17:04	07:13 17:44	06:29 18:18	17:45 (TRQ06) 06:36 17:56 (TRQ06) 19:53	06:36 20:26	05:36 20:51
15	07:41 17:06	07:12 17:45	06:27 18:19	17:45 (TRQ06) 06:34 17:57 (TRQ06) 19:54	06:34 20:27	05:36 20:52
16	07:40 17:07	07:10 17:46	06:26 18:20	17:45 (TRQ06) 06:33 17:59 (TRQ06) 19:55	06:33 20:28	05:36 20:52
17	07:40 17:08	07:09 17:48	06:24 18:21	17:45 (TRQ06) 06:31 18:00 (TRQ06) 19:56	06:31 20:29	05:36 20:53
18	07:39 17:09	07:07 17:49	06:22 18:23	17:46 (TRQ06) 06:30 18:01 (TRQ06) 19:58	06:30 20:30	05:36 20:53
19	07:39 17:10	07:06 17:50	06:21 18:24	17:46 (TRQ06) 06:28 18:01 (TRQ06) 19:59	06:28 05:49 19:34 (TRQ02) 20:31	05:37 20:53
20	07:38 17:11	07:04 17:51	06:19 18:25	17:49 (TRQ06) 06:27 17:59 (TRQ06) 20:00	06:27 20:32	05:37 20:53
21	07:37 17:13	07:03 17:53	06:17 18:26	06:25 20:01	4 19:32 (TRQ02) 05:48 6 19:38 (TRQ02) 20:33	05:37 20:54
22	07:37 17:14	07:02 17:54	06:15 18:27	06:23 20:02	9 19:31 (TRQ02) 05:47 9 19:40 (TRQ02) 20:34	05:37 20:54
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	10 19:30 (TRQ02) 05:46 10 19:40 (TRQ02) 20:35	05:37 20:54
24	07:35 17:16	06:59 17:56	06:12 18:29	06:20 20:04	12 19:30 (TRQ02) 05:45 12 19:42 (TRQ02) 20:36	05:38 20:54
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:05	13 19:29 (TRQ02) 05:44 13 19:42 (TRQ02) 20:37	05:38 20:54
26	07:34 17:19	06:55 17:59	06:08 18:32	06:17 20:07	15 19:29 (TRQ02) 05:44 15 19:44 (TRQ02) 20:38	05:38 20:54
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	15 19:30 (TRQ02) 05:43 15 19:45 (TRQ02) 20:39	05:39 20:54
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	15 19:30 (TRQ02) 05:42 15 19:45 (TRQ02) 20:40	05:39 20:55
29	07:31 17:23	07:03 19:35	07:03 18:34	06:13 20:10	16 19:31 (TRQ02) 05:42 16 19:47 (TRQ02) 20:41	05:39 20:54
30	07:30 17:24	07:01 19:36	07:01 19:36	06:12 20:11	15 19:31 (TRQ02) 05:41 15 19:46 (TRQ02) 20:41	05:40 20:54
31	07:29 17:25	07:00 19:37	07:00 19:37			
Potential sun hours	294	295	369	400	452	457
Total, worst case			118	132		23
Sun reduction			0,46	0,49		0,57
Oper. time red.			0,95	0,95		0,95
Wind dir. red.			0,64	0,53		0,53
Total reduction			0,28	0,25		0,29
Total, real			33	33		7

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** BU - 150  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	18:25 (TRQ06) 17:08	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	18:34 (TRQ06) 17:07	07:23 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:53	18:32 (TRQ06) 17:06	07:24 16:42
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	18:30 (TRQ06) 17:05	07:25 16:42
5	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	18:28 (TRQ06) 17:04	07:26 16:42
6	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	18:26 (TRQ06) 17:03	07:27 16:41
7	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	18:24 (TRQ06) 17:02	07:28 16:41
8	05:44 20:53	06:12 20:26	06:45 19:37	07:17 18:45	18:22 (TRQ06) 17:01	07:29 16:41
9	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	18:20 (TRQ06) 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	19:45 (TRQ02) 19:34	06:47 19:34	07:20 18:42	07:31 16:41
11	05:46 20:51	06:16 20:22	19:42 (TRQ02) 19:32	06:48 19:32	07:21 18:40	07:32 16:41
12	05:47 20:51	06:17 20:20	19:53 (TRQ02) 19:30	06:49 19:30	07:22 18:38	07:33 16:41
13	05:48 20:50	06:18 20:19	19:54 (TRQ02) 19:29	06:50 19:29	07:23 18:37	07:34 16:41
14	05:49 20:50	06:19 20:18	19:55 (TRQ02) 19:27	06:51 19:27	07:24 18:35	07:34 16:42
15	05:50 20:49	06:20 20:16	19:54 (TRQ02) 19:25	06:52 19:25	07:25 18:33	07:35 16:42
16	05:50 20:49	06:21 20:15	19:53 (TRQ02) 19:23	06:54 19:23	07:27 18:32	07:36 16:42
17	05:51 20:48	06:22 20:13	19:51 (TRQ02) 19:22	06:55 19:22	07:28 18:30	07:37 16:42
18	05:52 20:47	06:23 20:12	19:50 (TRQ02) 19:20	06:56 19:20	07:29 18:29	07:37 16:43
19	05:53 20:46	06:24 20:10	19:49 (TRQ02) 19:18	06:57 19:18	07:30 18:27	07:38 16:43
20	05:54 20:46	06:25 20:09	19:47 (TRQ02) 19:16	06:58 19:16	07:31 18:26	07:38 16:43
21	05:55 20:45	06:26 20:07	19:46 (TRQ02) 19:15	06:59 19:15	07:32 18:24	07:39 16:44
22	05:56 20:44	06:27 20:06	19:44 (TRQ02) 19:13	07:00 19:13	07:34 18:22	07:40 16:44
23	05:56 20:43	06:28 20:04	19:43 (TRQ02) 19:11	07:01 19:11	18:34 (TRQ06) 18:21	07:40 16:45
24	05:57 20:42	06:29 20:02	19:41 (TRQ02) 19:09	07:02 19:09	18:43 (TRQ06) 18:19	07:40 16:45
25	05:58 20:41	06:30 20:01	19:38 (TRQ02) 19:07	07:03 19:07	18:45 (TRQ06) 17:18	07:41 16:46
26	05:59 20:40	06:31 19:59	19:36 (TRQ02) 19:06	07:04 19:06	18:45 (TRQ06) 17:17	07:41 16:47
27	06:00 20:40	06:33 19:58	19:35 (TRQ02) 19:04	07:05 19:04	18:43 (TRQ06) 17:15	07:42 16:47
28	06:01 20:39	06:34 19:56	19:41 (TRQ02) 19:02	07:06 19:02	18:41 (TRQ06) 17:14	07:42 16:48
29	06:02 20:37	06:35 19:54	19:39 (TRQ02) 19:00	07:07 19:00	18:39 (TRQ06) 17:12	07:42 16:49
30	06:03 20:36	06:36 19:53	19:37 (TRQ02) 18:59	07:09 18:59	18:27 (TRQ06) 17:11	07:42 16:49
31	06:04 20:35	06:37 19:51			18:36 (TRQ06) 17:10	07:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		161	103			
Sun reduction		0,70	0,62		0,55	
Oper. time red.		0,95	0,95		0,95	
Wind dir. red.		0,53	0,64		0,64	
Total reduction		0,35	0,38		0,33	
Total, real		57	39		7	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

Tarquinia1

Licensed user:

MONTANA SPA

VIA ANGELO CARLO FUMAGALLI 6

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Calculated:

06/08/2022 14:40/3.5.584

### SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BV - 151  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:28	06:51	06:58	06:10	19:33 (TRQ02) 05:40
	16:51	17:27	18:02	19:38	20:12	16 19:49 (TRQ02) 20:43
2	07:43	07:27	06:49	06:56	06:09	19:33 (TRQ02) 05:40
	16:52	17:28	18:04	19:40	20:13	17 19:50 (TRQ02) 20:44
3	07:43	07:26	06:47	06:55	06:08	19:34 (TRQ02) 05:39
	16:53	17:29	18:05	19:41	20:14	17 19:51 (TRQ02) 20:45
4	07:43	07:25	06:46	06:53	06:06	19:34 (TRQ02) 05:39
	16:54	17:31	18:06	19:42	20:15	18 19:52 (TRQ02) 20:45
5	07:43	07:24	06:44	06:51	06:05	19:35 (TRQ02) 05:38
	16:55	17:32	18:07	19:43	20:17	16 19:51 (TRQ02) 20:46
6	07:43	07:23	06:43	06:49	06:04	19:37 (TRQ02) 05:38
	16:56	17:33	18:09	19:44	20:18	13 19:50 (TRQ02) 20:47
7	07:43	07:22	06:41	06:48	06:03	19:38 (TRQ02) 05:38
	16:57	17:35	18:10	19:45	20:19	10 19:48 (TRQ02) 20:47
8	07:43	07:21	06:39	06:46	06:01	05:37
	16:58	17:36	18:11	19:46	20:20	20:48
9	07:43	07:19	06:38	06:44	06:00	05:37
	16:59	17:37	18:12	19:47	20:21	20:49
10	07:42	07:18	06:36	06:43	05:59	05:37
	17:00	17:38	18:13	19:49	20:22	20:49
11	07:42	07:17	06:34	06:41	05:58	05:37
	17:01	17:40	18:14	19:50	20:23	20:50
12	07:42	07:16	06:33	17:53 (TRQ06) 06:39	05:57	05:37
	17:02	17:41	18:16	2 17:55 (TRQ06) 19:51	20:24	20:50
13	07:42	07:14	06:31	17:51 (TRQ06) 06:38	05:56	05:36
	17:03	17:42	18:17	4 17:55 (TRQ06) 19:52	20:25	20:51
14	07:41	07:13	06:29	17:49 (TRQ06) 06:36	05:54	05:36
	17:04	17:44	18:18	7 17:56 (TRQ06) 19:53	20:26	20:51
15	07:41	07:12	06:27	17:48 (TRQ06) 06:35	05:53	05:36
	17:06	17:45	18:19	9 17:57 (TRQ06) 19:54	20:27	20:52
16	07:40	07:10	06:26	17:48 (TRQ06) 06:33	05:52	05:36
	17:07	17:46	18:20	11 17:59 (TRQ06) 19:55	20:28	20:52
17	07:40	07:09	06:24	17:47 (TRQ06) 06:31	05:51	05:36
	17:08	17:48	18:21	13 18:00 (TRQ06) 19:56	20:29	20:53
18	07:39	07:07	06:22	17:47 (TRQ06) 06:30	05:50	05:36
	17:09	17:49	18:23	14 18:01 (TRQ06) 19:58	20:30	20:53
19	07:39	07:06	06:21	17:46 (TRQ06) 06:28	05:49	05:37
	17:10	17:50	18:24	16 18:02 (TRQ06) 19:59	20:31	20:53
20	07:38	07:04	06:19	17:48 (TRQ06) 06:27	05:49	05:37
	17:11	17:51	18:25	16 18:04 (TRQ06) 20:00	20:32	20:53
21	07:37	07:03	06:17	17:48 (TRQ06) 06:25	05:48	05:37
	17:13	17:53	18:26	17 18:05 (TRQ06) 20:01	20:33	20:54
22	07:37	07:02	06:15	17:49 (TRQ06) 06:23	05:47	05:37
	17:14	17:54	18:27	14 18:03 (TRQ06) 20:02	20:34	20:54
23	07:36	07:00	06:14	17:50 (TRQ06) 06:22	19:38 (TRQ02) 05:46	05:37
	17:15	17:55	18:28	10 18:00 (TRQ06) 20:03	2 19:40 (TRQ02) 20:35	20:54
24	07:35	06:59	06:12	06:20	19:37 (TRQ02) 05:45	05:38
	17:16	17:56	18:29	20:04	5 19:42 (TRQ02) 20:36	20:54
25	07:35	06:57	06:10	06:19	19:35 (TRQ02) 05:44	05:38
	17:18	17:58	18:31	20:05	7 19:42 (TRQ02) 20:37	20:54
26	07:34	06:55	06:08	06:17	19:35 (TRQ02) 05:44	05:38
	17:19	17:59	18:32	20:07	9 19:44 (TRQ02) 20:38	20:54
27	07:33	06:54	06:07	06:16	19:34 (TRQ02) 05:43	05:39
	17:20	18:00	18:33	20:08	11 19:45 (TRQ02) 20:39	20:54
28	07:32	06:52	06:05	06:15	19:33 (TRQ02) 05:42	05:39
	17:22	18:01	18:34	20:09	12 19:45 (TRQ02) 20:40	20:55
29	07:31		07:03	06:13	19:33 (TRQ02) 05:42	05:39
	17:23		19:35	20:10	14 19:47 (TRQ02) 20:41	20:54
30	07:30		07:01	06:12	19:33 (TRQ02) 05:41	05:40
	17:24		19:36	20:11	14 19:47 (TRQ02) 20:41	20:54
31	07:29		07:00		05:41	
	17:25		19:37		20:42	
Potential sun hours	294	295	369	400	452	457
Total, worst case			133	74	107	
Sun reduction			0,46	0,49	0,57	
Oper. time red.			0,95	0,95	0,95	
Wind dir. red.			0,63	0,52	0,52	
Total reduction			0,28	0,24	0,28	
Total, real			37	18	30	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real**Shadow receptor:** BV - 151  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	18:31 (TRQ06) 18:34 (TRQ06)	06:46 17:08
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55		06:47 17:07
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:53		06:48 17:06
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52		06:49 17:05
5	05:42 20:54	06:09 20:30	19:50 (TRQ02) 19:56 (TRQ02)	06:42 19:43	07:14 18:50	06:51 17:03
6	05:43 20:53	06:10 20:28	19:47 (TRQ02) 19:58 (TRQ02)	06:43 19:41	07:15 18:48	06:52 17:02
7	05:44 20:53	06:11 20:27	19:46 (TRQ02) 20:00 (TRQ02)	06:44 19:39	07:16 18:47	06:53 17:01
8	05:44 20:53	06:12 20:26	19:44 (TRQ02) 20:01 (TRQ02)	06:45 19:37	07:17 18:45	06:54 17:00
9	05:45 20:52	06:14 20:24	19:43 (TRQ02) 20:01 (TRQ02)	06:46 19:36	07:19 18:43	06:56 16:59
10	05:46 20:52	06:15 20:23	19:43 (TRQ02) 20:00 (TRQ02)	06:47 19:34	07:20 18:42	06:57 16:58
11	05:46 20:51	06:16 20:22	19:42 (TRQ02) 19:58 (TRQ02)	06:48 19:32	07:21 18:40	06:58 16:57
12	05:47 20:51	06:17 20:20	19:42 (TRQ02) 19:57 (TRQ02)	06:49 19:30	07:22 18:38	06:59 16:56
13	05:48 20:50	06:18 20:19	19:41 (TRQ02) 19:56 (TRQ02)	06:50 19:29	07:23 18:37	07:01 16:55
14	05:49 20:50	06:19 20:18	19:41 (TRQ02) 19:54 (TRQ02)	06:52 19:27	07:24 18:35	07:02 16:54
15	05:50 20:49	06:20 20:16	19:41 (TRQ02) 19:53 (TRQ02)	06:53 19:25	07:25 18:33	07:03 16:53
16	05:50 20:49	06:21 20:15	19:41 (TRQ02) 19:51 (TRQ02)	06:54 19:23	07:27 18:32	07:04 16:52
17	05:51 20:48	06:22 20:13	19:41 (TRQ02) 19:50 (TRQ02)	06:55 19:22	07:28 18:30	07:06 16:51
18	05:52 20:47	06:23 20:12	19:42 (TRQ02) 19:49 (TRQ02)	06:56 19:20	07:29 18:29	07:07 16:50
19	05:53 20:46	06:24 20:10	19:43 (TRQ02) 19:47 (TRQ02)	06:57 19:18	07:30 18:27	07:08 16:49
20	05:54 20:46	06:25 20:09	19:44 (TRQ02) 19:46 (TRQ02)	06:58 19:16	18:38 (TRQ06) 18:45 (TRQ06)	07:09 16:49
21	05:55 20:45	06:26 20:07	06:59 19:15	7 18:45 (TRQ06) 13 18:48 (TRQ06)	18:35 (TRQ06) 18:24	07:11 16:48
22	05:56 20:44	06:27 20:06	07:00 19:13	16 18:34 (TRQ06) 16 18:50 (TRQ06)	18:24 18:22	07:12 16:47
23	05:56 20:43	06:28 20:04	07:01 19:11	17 18:32 (TRQ06) 17 18:49 (TRQ06)	18:22 18:21	07:13 16:46
24	05:57 20:42	06:29 20:02	07:02 19:09	16 18:31 (TRQ06) 16 18:47 (TRQ06)	18:21 18:19	07:14 16:46
25	05:58 20:41	06:30 20:01	07:03 19:07	15 18:30 (TRQ06) 15 18:45 (TRQ06)	18:19 17:18	07:15 16:45
26	05:59 20:40	06:31 19:59	07:04 19:06	13 18:30 (TRQ06) 13 18:43 (TRQ06)	17:18 17:17	07:16 16:45
27	06:00 20:40	06:33 19:58	07:05 19:04	12 18:29 (TRQ06) 12 18:41 (TRQ06)	17:17 17:15	07:18 16:44
28	06:01 20:39	06:34 19:56	07:06 19:02	10 18:29 (TRQ06) 10 18:39 (TRQ06)	17:15 17:14	07:19 16:44
29	06:02 20:37	06:35 19:54	07:07 19:00	8 18:29 (TRQ06) 8 18:37 (TRQ06)	17:14 17:12	07:20 16:43
30	06:03 20:36	06:36 19:53	07:09 18:59	6 18:30 (TRQ06) 6 18:36 (TRQ06)	17:13 17:11	07:21 16:43
31	06:04 20:35	06:37 19:51			06:45 17:10	07:22 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		186	133		3	
Sun reduction		0,70	0,62		0,55	
Oper. time red.		0,95	0,95		0,95	
Wind dir. red.		0,52	0,63		0,63	
Total reduction		0,35	0,38		0,33	
Total, real		64	50		1	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** BW - 152  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	
1	07:43	07:28	06:51	06:58	06:10	19:33 (TRQ02)	05:40
	16:51	17:27	18:02	19:38	20:12	14 19:47 (TRQ02)	20:43
2	07:43	07:27	06:49	06:56	06:09	19:35 (TRQ02)	05:40
	16:52	17:28	18:04	19:40	20:13	11 19:46 (TRQ02)	20:44
3	07:43	07:26	06:47	06:55	06:08	19:37 (TRQ02)	05:39
	16:53	17:29	18:05	19:41	20:14	7 19:44 (TRQ02)	20:45
4	07:43	07:25	06:46	06:53	06:06		05:39
	16:54	17:31	18:06	19:42	20:15		20:45
5	07:43	07:24	06:44	06:51	06:05		05:38
	16:55	17:32	18:07	19:43	20:17		20:46
6	07:43	07:23	06:43	06:49	06:04		05:38
	16:56	17:33	18:09	19:44	20:18		20:47
7	07:43	07:22	06:41	06:48	06:03		05:38
	16:57	17:35	18:10	19:45	20:19		20:47
8	07:43	07:21	06:39	06:46	06:01		05:37
	16:58	17:36	18:11	19:46	20:20		20:48
9	07:43	07:19	06:38	06:44	06:00		05:37
	16:59	17:37	18:12	19:47	20:21		20:49
10	07:42	07:18	06:36	06:43	05:59		05:37
	17:00	17:38	18:13	19:49	20:22		20:49
11	07:42	07:17	06:34	06:41	05:58		05:37
	17:01	17:40	18:14	19:50	20:23		20:50
12	07:42	07:16	06:33	17:52 (TRQ06)	06:39		05:37
	17:02	17:41	18:16	3 17:55 (TRQ06)	19:51		20:50
13	07:41	07:14	06:31	17:50 (TRQ06)	06:38		05:36
	17:03	17:42	18:17	5 17:55 (TRQ06)	19:52		20:51
14	07:41	07:13	06:29	17:49 (TRQ06)	06:36		05:36
	17:04	17:44	18:18	7 17:56 (TRQ06)	19:53		20:51
15	07:41	07:12	06:27	17:48 (TRQ06)	06:34		05:36
	17:06	17:45	18:19	9 17:57 (TRQ06)	19:54		20:52
16	07:40	07:10	06:26	17:48 (TRQ06)	06:33		05:36
	17:07	17:46	18:20	11 17:59 (TRQ06)	19:55		20:52
17	07:40	07:09	06:24	17:48 (TRQ06)	06:31		05:36
	17:08	17:48	18:21	12 18:00 (TRQ06)	19:56		20:53
18	07:39	07:07	06:22	17:47 (TRQ06)	06:30		05:36
	17:09	17:49	18:23	14 18:01 (TRQ06)	19:58		20:53
19	07:39	07:06	06:21	17:48 (TRQ06)	06:28		05:37
	17:10	17:50	18:24	14 18:02 (TRQ06)	19:59		20:53
20	07:38	07:04	06:19	17:49 (TRQ06)	06:27	19:36 (TRQ02)	05:37
	17:11	17:51	18:25	15 18:04 (TRQ06)	20:00	1 19:37 (TRQ02)	20:53
21	07:37	07:03	06:17	17:50 (TRQ06)	06:25	19:34 (TRQ02)	05:37
	17:13	17:53	18:26	13 18:03 (TRQ06)	20:01	4 19:38 (TRQ02)	20:54
22	07:37	07:02	06:15	17:52 (TRQ06)	06:23	19:33 (TRQ02)	05:37
	17:14	17:54	18:27	7 17:59 (TRQ06)	20:02	7 19:40 (TRQ02)	20:54
23	07:36	07:00	06:14		06:22	19:32 (TRQ02)	05:37
	17:15	17:55	18:28		20:03	8 19:40 (TRQ02)	20:54
24	07:35	06:59	06:12		06:20	19:32 (TRQ02)	05:38
	17:16	17:56	18:29		20:04	10 19:42 (TRQ02)	20:54
25	07:35	06:57	06:10		06:19	19:31 (TRQ02)	05:38
	17:18	17:58	18:31		20:05	11 19:42 (TRQ02)	20:54
26	07:34	06:55	06:08		06:17	19:31 (TRQ02)	05:38
	17:19	17:59	18:32		20:07	13 19:44 (TRQ02)	20:54
27	07:33	06:54	06:07		06:16	19:31 (TRQ02)	05:39
	17:20	18:00	18:33		20:08	14 19:45 (TRQ02)	20:54
28	07:32	06:52	06:05		06:15	19:31 (TRQ02)	05:39
	17:22	18:01	18:34		20:09	14 19:45 (TRQ02)	20:55
29	07:31		07:03		06:13	19:32 (TRQ02)	05:39
	17:23		19:35		20:10	15 19:47 (TRQ02)	20:54
30	07:30		07:01		06:12	19:32 (TRQ02)	05:40
	17:24		19:36		20:11	15 19:47 (TRQ02)	20:54
31	07:29		07:00				05:41
	17:25		19:37				20:42
Potential sun hours	294	295	369	400	452		457
Total, worst case			110		112		32
Sun reduction			0,46		0,49		0,57
Oper. time red.			0,95		0,95		0,95
Wind dir. red.			0,64		0,53		0,53
Total reduction			0,28		0,25		0,29
Total, real			31		28		9

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** BW - 152  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	18:30 (TRQ06) 17:08	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	18:31 (TRQ06) 17:07	07:23 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:53	18:32 (TRQ06) 17:06	07:24 16:42
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	17:05	07:25 16:42
5	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	06:51 17:03	07:26 16:42
6	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:41
7	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	05:44 20:53	06:12 20:26	06:45 19:37	07:17 18:45	06:54 17:00	07:29 16:41
9	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	19:45 (TRQ02) 19:34	06:47 19:34	07:20 18:42	06:57 16:58
11	05:46 20:51	06:16 20:22	19:43 (TRQ02) 19:32	06:48 19:32	07:21 18:40	06:58 16:57
12	05:47 20:51	06:17 20:20	19:41 (TRQ02) 19:30	06:49 19:30	07:22 18:38	06:59 16:56
13	05:48 20:50	06:18 20:19	19:40 (TRQ02) 19:29	06:50 19:29	07:23 18:37	07:01 16:55
14	05:49 20:50	06:19 20:18	19:39 (TRQ02) 19:27	06:51 19:27	07:24 18:35	07:02 16:54
15	05:50 20:49	06:20 20:16	19:39 (TRQ02) 19:25	06:53 19:25	07:25 18:33	07:03 16:53
16	05:50 20:49	06:21 20:15	19:38 (TRQ02) 19:23	06:54 19:23	07:27 18:32	07:04 16:52
17	05:51 20:48	06:22 20:13	19:38 (TRQ02) 19:22	06:55 19:22	07:28 18:30	07:06 16:51
18	05:52 20:47	06:23 20:12	19:38 (TRQ02) 19:20	06:56 19:20	07:29 18:29	07:07 16:50
19	05:53 20:46	06:24 20:10	19:38 (TRQ02) 19:18	06:57 19:18	07:30 18:27	07:08 16:49
20	05:54 20:46	06:25 20:09	19:38 (TRQ02) 19:16	06:58 19:16	07:31 18:26	07:09 16:49
21	05:55 20:45	06:26 20:07	19:38 (TRQ02) 19:15	06:59 19:15	18:39 (TRQ06) 18:44 (TRQ06)	07:32 18:24
22	05:56 20:44	06:27 20:06	19:39 (TRQ02) 19:13	07:00 19:13	18:35 (TRQ06) 18:46 (TRQ06)	07:34 18:22
23	05:56 20:43	06:28 20:04	19:40 (TRQ02) 19:11	07:01 19:11	18:34 (TRQ06) 18:49 (TRQ06)	07:35 18:21
24	05:57 20:42	06:29 20:02	19:41 (TRQ02) 19:09	07:02 19:09	18:32 (TRQ06) 18:47 (TRQ06)	07:36 18:19
25	05:58 20:41	06:30 20:01	19:40 (TRQ02) 19:07	07:03 19:07	18:31 (TRQ06) 18:45 (TRQ06)	06:37 17:18
26	05:59 20:40	06:31 19:59	19:40 (TRQ02) 19:06	07:04 19:06	18:30 (TRQ06) 18:43 (TRQ06)	06:38 17:17
27	06:00 20:40	06:33 19:58	19:40 (TRQ02) 19:04	07:05 19:04	18:30 (TRQ06) 18:41 (TRQ06)	06:40 17:15
28	06:01 20:39	06:34 19:56	19:40 (TRQ02) 19:02	07:06 19:02	18:29 (TRQ06) 18:39 (TRQ06)	06:41 17:14
29	06:02 20:37	06:35 19:54	19:40 (TRQ02) 19:00	07:07 19:00	18:29 (TRQ06) 18:37 (TRQ06)	06:42 17:12
30	06:03 20:36	06:36 19:53	19:40 (TRQ02) 18:59	07:09 18:59	18:29 (TRQ06) 18:36 (TRQ06)	06:43 17:11
31	06:04 20:35	06:37 19:51			06:45 17:10	07:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		145	109		5	
Sun reduction		0,70	0,62		0,55	
Oper. time red.		0,95	0,95		0,95	
Wind dir. red.		0,53	0,64		0,64	
Total reduction		0,35	0,38		0,33	
Total, real		51	41		2	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** BX - 153  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51	07:28 17:27	06:51 18:02	06:58 19:38	06:10 20:12	19:33 (TRQ02) 05:40
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	10 19:43 (TRQ02) 05:40
3	07:43 16:53	07:26 17:29	06:47 18:05	06:55 19:41	06:08 20:14	4 19:40 (TRQ02) 05:39
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:06 20:15	05:39 20:45
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46
6	07:43 16:56	07:23 17:33	06:43 18:09	06:49 19:44	06:04 20:18	05:38 20:47
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:47
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:01 20:20	05:37 20:48
9	07:43 16:59	07:19 17:37	06:38 18:12	06:44 19:47	06:00 20:21	05:37 20:49
10	07:42 17:00	07:18 17:38	06:36 18:13	17:50 (TRQ06) 06:43	06:59 19:49	05:37 20:49
11	07:42 17:01	07:17 17:40	06:34 18:14	17:48 (TRQ06) 06:41	05:58 20:23	05:37 20:50
12	07:42 17:02	07:16 17:41	06:33 18:16	17:53 (TRQ06) 06:39	05:57 20:24	05:37 20:50
13	07:42 17:03	07:14 17:42	06:31 18:17	17:46 (TRQ06) 06:38	05:56 20:25	05:36 20:51
14	07:41 17:04	07:13 17:44	06:29 18:18	17:55 (TRQ06) 06:36	05:54 20:26	05:36 20:51
15	07:41 17:06	07:12 17:45	06:27 18:19	17:45 (TRQ06) 06:34	05:53 20:27	05:36 20:52
16	07:40 17:07	07:10 17:46	06:26 18:20	17:57 (TRQ06) 06:33	05:52 20:28	05:36 20:52
17	07:40 17:08	07:09 17:48	06:24 18:21	17:46 (TRQ06) 06:31	05:51 20:29	05:36 20:53
18	07:39 17:09	07:07 17:49	06:22 18:23	18:00 (TRQ06) 06:30	05:50 20:30	05:36 20:53
19	07:39 17:10	07:06 17:50	06:21 18:24	17:47 (TRQ06) 06:28	05:49 19:33 (TRQ02)	05:37 20:53
20	07:38 17:11	07:04 17:51	06:19 18:25	18:01 (TRQ06) 06:27	3 19:36 (TRQ02) 05:49	05:37 20:53
21	07:37 17:13	07:03 17:53	06:17 18:26	17:59 (TRQ06) 06:25	5 19:37 (TRQ02) 05:48	20:53 05:37
22	07:37 17:14	07:02 17:54	06:15 18:27	06:23 20:02	7 19:38 (TRQ02) 05:47	20:54 05:37
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	10 19:40 (TRQ02) 05:46	20:54 05:37
24	07:35 17:16	06:59 17:56	06:12 18:29	06:20 20:04	11 19:40 (TRQ02) 05:45	20:54 05:38
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:05	13 19:42 (TRQ02) 05:44	20:54 05:38
26	07:34 17:19	06:55 17:59	06:08 18:32	06:17 20:07	13 19:42 (TRQ02) 05:44	05:38 20:54
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	15 19:44 (TRQ02) 05:43	05:39 20:54
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	15 19:45 (TRQ02) 05:42	05:39 20:55
29	07:31 17:23	07:03 19:35	07:03 18:34	06:13 20:10	15 19:45 (TRQ02) 05:42	05:39 20:54
30	07:30 17:24	07:01 19:36	07:01 19:36	06:12 20:11	16 19:47 (TRQ02) 05:41	05:40 20:54
31	07:29 17:25	07:00 19:37	07:00 19:37		14 19:45 (TRQ02) 05:41	20:54 20:42
Potential sun hours	294	295	369	400	452	457
Total, worst case			113	137		14
Sun reduction			0,46	0,49		0,57
Oper. time red.			0,95	0,95		0,95
Wind dir. red.			0,64	0,53		0,53
Total reduction			0,28	0,25		0,29
Total, real			32	34		4

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real**Shadow receptor:** BX - 153  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	18:26 (TRQ06) 17:08	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	18:26 (TRQ06) 17:07	07:23 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:53	18:27 (TRQ06) 17:06	07:24 16:42
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	18:30 (TRQ06) 17:06	07:25 16:42
5	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	17:05 17:03	07:26 16:42
6	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	17:04 17:02	07:27 16:41
7	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	17:03 17:01	07:28 16:41
8	05:44 20:53	06:12 20:26	06:45 19:37	07:17 18:45	17:02 17:00	07:29 16:41
9	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	17:00 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	16:58 16:58	07:31 16:41
11	05:46 20:51	06:16 20:22	19:44 (TRQ02) 19:50 (TRQ02)	06:48 19:32	07:21 18:40	06:58 16:57
12	05:47 20:51	06:17 20:20	6 19:51 (TRQ02) 12 19:53 (TRQ02)	06:49 19:30	07:22 18:38	06:59 16:56
13	05:48 20:50	06:18 20:19	14 19:54 (TRQ02)	06:50 19:29	07:23 18:37	07:01 16:55
14	05:49 20:50	06:19 20:18	16 19:54 (TRQ02)	06:51 19:27	07:24 18:35	07:02 16:54
15	05:50 20:49	06:20 20:16	16 19:53 (TRQ02)	06:53 19:25	07:25 18:33	07:03 16:53
16	05:50 20:49	06:21 20:15	15 19:51 (TRQ02)	06:54 19:23	07:27 18:32	07:04 16:52
17	05:51 20:48	06:22 20:13	14 19:50 (TRQ02)	06:55 19:22	07:28 18:30	07:06 16:51
18	05:52 20:47	06:23 20:12	14 19:49 (TRQ02)	06:56 19:20	07:29 18:29	07:07 16:50
19	05:53 20:46	06:24 20:10	12 19:47 (TRQ02)	06:57 19:18	07:30 18:27	07:08 16:49
20	05:54 20:46	06:25 20:09	11 19:46 (TRQ02)	06:58 19:16	07:31 18:26	07:09 16:48
21	05:55 20:45	06:26 20:07	9 19:44 (TRQ02)	06:59 19:15	07:32 18:24	07:11 16:48
22	05:56 20:44	06:27 20:06	7 19:43 (TRQ02)	07:00 19:13	07:34 18:22	16:48 16:47
23	05:56 20:43	06:28 20:04	5 19:41 (TRQ02)	07:01 19:11	18:35 (TRQ06) 18:43 (TRQ06)	07:13 18:21
24	05:57 20:42	06:29 20:02	3 19:40 (TRQ02)	07:02 19:09	13 18:45 (TRQ06)	07:14 18:19
25	05:58 20:41	06:30 20:01	19:07	07:03 19:07	15 18:45 (TRQ06)	06:37 17:18
26	05:59 20:40	06:31 19:59	07:04 19:06	15 18:43 (TRQ06)	06:38 17:17	07:16 16:45
27	06:00 20:40	06:33 19:58	07:05 19:04	14 18:41 (TRQ06)	06:40 17:15	07:18 16:44
28	06:01 20:39	06:34 19:56	07:06 19:02	12 18:39 (TRQ06)	06:41 17:14	07:19 16:44
29	06:02 20:37	06:35 19:54	07:07 19:00	11 18:37 (TRQ06)	06:42 17:12	07:20 16:43
30	06:03 20:36	06:36 19:53	07:09 18:59	10 18:36 (TRQ06)	06:43 17:11	07:21 16:43
31	06:04 20:35	06:37 19:51			06:45 17:10	07:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		154				
Sun reduction		0,70				
Oper. time red.		0,95				
Wind dir. red.		0,53				
Total reduction		0,35				
Total, real		55				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** BY - 154  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:28	06:51	06:58	06:10	05:40
	16:51	17:27	18:02	19:38	20:12	20:43
2	07:43	07:27	06:49	06:56	06:09	05:40
	16:52	17:28	18:04	19:40	20:13	20:44
3	07:43	07:26	06:47	06:55	06:08	05:39
	16:53	17:29	18:05	19:41	20:14	20:45
4	07:43	07:25	06:46	06:53	06:06	05:39
	16:54	17:31	18:06	19:42	20:15	20:45
5	07:43	07:24	06:44	06:51	06:05	05:38
	16:55	17:32	18:07	19:43	20:17	20:46
6	07:43	07:23	06:43	06:49	06:04	05:38
	16:56	17:33	18:09	19:44	20:18	20:47
7	07:43	07:22	06:41	06:48	06:03	05:38
	16:57	17:35	18:10	19:45	20:19	20:47
8	07:43	07:21	06:39	17:47 (TRQ06) 06:46	06:01	05:37
	16:58	17:36	18:11	2 17:49 (TRQ06) 19:46	20:20	20:48
9	07:43	07:19	06:38	17:46 (TRQ06) 06:44	06:00	05:37
	16:59	17:37	18:12	5 17:51 (TRQ06) 19:47	20:21	20:49
10	07:42	07:18	06:36	17:45 (TRQ06) 06:43	05:59	05:37
	17:00	17:38	18:13	7 17:52 (TRQ06) 19:49	20:22	20:49
11	07:42	07:17	06:34	17:44 (TRQ06) 06:41	05:58	05:37
	17:01	17:40	18:14	9 17:53 (TRQ06) 19:50	20:23	20:50
12	07:42	07:16	06:33	17:44 (TRQ06) 06:39	05:57	05:37
	17:02	17:41	18:16	11 17:55 (TRQ06) 19:51	20:24	20:50
13	07:42	07:14	06:31	17:43 (TRQ06) 06:38	05:56	05:36
	17:03	17:42	18:17	12 17:55 (TRQ06) 19:52	20:25	20:51
14	07:41	07:13	06:29	17:43 (TRQ06) 06:36	05:54	05:36
	17:04	17:44	18:18	13 17:56 (TRQ06) 19:53	20:26	20:51
15	07:41	07:12	06:27	17:43 (TRQ06) 06:34	05:53	05:36
	17:06	17:45	18:19	14 17:57 (TRQ06) 19:54	20:27	20:52
16	07:40	07:10	06:26	17:44 (TRQ06) 06:33	05:52	05:36
	17:07	17:46	18:20	15 17:59 (TRQ06) 19:55	20:28	20:52
17	07:40	07:09	06:24	17:45 (TRQ06) 06:31	19:31 (TRQ02) 05:51	05:36
	17:08	17:48	18:21	15 18:00 (TRQ06) 19:56	3 19:34 (TRQ02) 20:29	20:53
18	07:39	07:07	06:22	17:46 (TRQ06) 06:30	19:30 (TRQ02) 05:50	05:36
	17:09	17:49	18:23	11 17:57 (TRQ06) 19:58	5 19:35 (TRQ02) 20:30	20:53
19	07:39	07:06	06:21	17:50 (TRQ06) 06:28	19:29 (TRQ02) 05:49	05:37
	17:10	17:50	18:24	3 17:53 (TRQ06) 19:59	7 19:36 (TRQ02) 20:31	20:53
20	07:38	07:04	06:19	06:27	19:28 (TRQ02) 05:49	05:37
	17:11	17:51	18:25	9 20:00	19:37 (TRQ02) 20:32	20:53
21	07:37	07:03	06:17	06:25	19:27 (TRQ02) 05:48	05:37
	17:13	17:53	18:26	11 20:01	19:38 (TRQ02) 20:33	20:54
22	07:37	07:02	06:15	06:23	19:27 (TRQ02) 05:47	05:37
	17:14	17:54	18:27	13 20:02	19:40 (TRQ02) 20:34	20:54
23	07:36	07:00	06:14	06:22	19:27 (TRQ02) 05:46	05:37
	17:15	17:55	18:28	13 20:03	19:40 (TRQ02) 20:35	20:54
24	07:35	06:59	06:12	06:20	19:27 (TRQ02) 05:45	05:38
	17:16	17:56	18:29	15 20:04	19:42 (TRQ02) 20:36	20:54
25	07:35	06:57	06:10	06:19	19:27 (TRQ02) 05:44	05:38
	17:18	17:58	18:31	15 20:05	19:42 (TRQ02) 20:37	20:54
26	07:34	06:55	06:08	06:17	19:28 (TRQ02) 05:44	05:38
	17:19	17:59	18:32	16 20:07	19:44 (TRQ02) 20:38	20:54
27	07:33	06:54	06:07	06:16	19:29 (TRQ02) 05:43	05:39
	17:20	18:00	18:33	16 20:08	19:45 (TRQ02) 20:39	20:54
28	07:32	06:52	06:05	06:15	19:29 (TRQ02) 05:42	05:39
	17:22	18:01	18:34	14 20:09	19:43 (TRQ02) 20:40	20:55
29	07:31		07:03	06:13	19:31 (TRQ02) 05:42	05:39
	17:23		19:35	20:10	10 19:41 (TRQ02) 20:41	20:54
30	07:30		07:01	06:12	19:34 (TRQ02) 05:41	05:40
	17:24		19:36	20:11	3 19:37 (TRQ02) 20:41	20:54
31	07:29		07:00			05:41
	17:25		19:37			20:42
Potential sun hours	294	295	369	400	452	457
Total, worst case			117		150	
Sun reduction			0,46		0,49	
Oper. time red.			0,95		0,95	
Wind dir. red.			0,64		0,54	
Total reduction			0,28		0,25	
Total, real			33		38	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** BY - 154  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	18:22 (TRQ06) 17:08	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	18:22 (TRQ06) 17:07	07:23 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:53	18:22 (TRQ06) 17:06	07:24 16:42
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	18:23 (TRQ06) 17:05	07:25 16:42
5	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	18:24 (TRQ06) 17:03	07:26 16:42
6	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	18:27 (TRQ06) 17:02	07:27 16:41
7	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	17:01	07:28 16:41
8	05:44 20:53	06:12 20:26	06:45 19:37	07:17 18:45	06:54 17:00	07:29 16:41
9	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	05:46 20:51	06:16 20:22	06:48 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	05:47 20:51	06:17 20:20	06:49 19:30	07:22 18:38	06:59 16:56	07:33 16:41
13	05:48 20:50	06:18 20:19	19:41 (TRQ02) 19:47 (TRQ02)	06:50 19:29	07:23 18:37	07:01 16:55
14	05:49 20:50	06:19 20:18	19:38 (TRQ02) 19:50 (TRQ02)	06:51 19:27	07:24 18:35	07:02 16:54
15	05:50 20:49	06:20 20:16	19:37 (TRQ02) 19:51 (TRQ02)	06:53 19:25	07:25 18:33	07:03 16:53
16	05:50 20:49	06:21 20:15	19:35 (TRQ02) 19:51 (TRQ02)	06:54 19:23	07:27 18:32	07:04 16:52
17	05:51 20:48	06:22 20:13	19:34 (TRQ02) 19:50 (TRQ02)	06:55 19:22	07:28 18:30	07:06 16:51
18	05:52 20:47	06:23 20:12	19:33 (TRQ02) 19:49 (TRQ02)	06:56 19:20	07:29 18:29	07:07 16:50
19	05:53 20:46	06:24 20:10	19:33 (TRQ02) 19:47 (TRQ02)	06:57 19:18	07:30 18:27	07:08 16:49
20	05:54 20:46	06:25 20:09	19:32 (TRQ02) 19:46 (TRQ02)	06:58 19:16	07:31 18:26	07:09 16:49
21	05:55 20:45	06:26 20:07	19:32 (TRQ02) 19:44 (TRQ02)	06:59 19:15	07:32 18:24	07:11 16:48
22	05:56 20:44	06:27 20:06	19:32 (TRQ02) 19:43 (TRQ02)	07:00 19:13	07:34 18:22	07:12 16:47
23	05:56 20:43	06:28 20:04	19:32 (TRQ02) 19:41 (TRQ02)	07:01 19:11	07:35 18:21	07:13 16:46
24	05:57 20:42	06:29 20:02	19:33 (TRQ02) 19:40 (TRQ02)	07:02 19:09	07:36 18:19	07:14 16:45
25	05:58 20:41	06:30 20:01	19:33 (TRQ02) 19:38 (TRQ02)	07:03 19:07	18:30 (TRQ06) 18:40 (TRQ06)	07:15 16:45
26	05:59 20:40	06:31 19:59	19:34 (TRQ02) 19:36 (TRQ02)	07:04 19:06	17:18 18:28 (TRQ06)	07:16 16:45
27	06:00 20:40	06:33 19:58	07:05 19:04	18:26 (TRQ06) 18:41 (TRQ06)	06:40 17:15	07:18 16:44
28	06:01 20:39	06:34 19:56	07:06 19:02	18:25 (TRQ06) 18:39 (TRQ06)	06:41 17:14	07:19 16:44
29	06:02 20:37	06:35 19:54	07:07 19:00	18:24 (TRQ06) 18:37 (TRQ06)	06:42 17:12	07:20 16:43
30	06:03 20:36	06:36 19:53	07:09 18:59	18:23 (TRQ06) 18:36 (TRQ06)	06:43 17:11	07:21 16:43
31	06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		154	79		38	
Sun reduction		0,70	0,62		0,55	
Oper. time red.		0,95	0,95		0,95	
Wind dir. red.		0,54	0,64		0,64	
Total reduction		0,36	0,38		0,34	
Total, real		55	30		13	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: BZ - 156
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

Table with 12 columns: N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum. Values range from 488 to 8.309.

Main shadow calculation table with columns for months (January to December) and rows for each day of the month, including sunrise/sunset times and shadow reduction percentages.

Table layout: For each day in each month the following matrix apply

Matrix defining day in month, sun rise/set, minutes with flicker, and first/last time with flicker.

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: CA - 158
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with 13 columns (January to December) and 32 rows of data, including sunrise/sunset times, potential sun hours, and reduction factors.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker
First time (hh:mm) with flicker Last time (hh:mm) with flicker
(WTG causing flicker first time) (WTG causing flicker last time)



## SHADOW - Calendar

### Calculation: Shadow\_realShadow receptor: CB - 162 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:43 16:51	07:28 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	32 07:31 (TRQ06)	07:10 18:57	06:46 17:09	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	30 07:30 (TRQ06)	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:15	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	28 07:29 (TRQ06)	07:12 18:54	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:46	05:42 20:54	06:08 20:31	06:41 19:44	26 07:28 (TRQ06)	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46	05:43 20:54	06:10 20:30	06:42 19:43	24 07:27 (TRQ06)	07:14 18:50	06:51 17:04	07:26 16:42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:11 20:28	06:43 19:41	21 07:25 (TRQ06)	07:15 18:48	06:52 17:02	07:27 16:42
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48	05:44 20:53	06:12 20:27	06:44 19:39	19 07:24 (TRQ06)	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:47	06:01 20:20	05:38 20:48	05:44 20:53	06:13 20:26	06:45 19:38	15 07:21 (TRQ06)	07:18 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:25	06:46 19:36	11 07:18 (TRQ06)	07:19 18:43	06:56 17:06	07:30 16:41
10	07:43 17:00	07:18 17:39	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	11 07:17 (TRQ06)	07:20 18:42	06:57 17:06	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	06:03 20:23	05:37 20:50	05:47 20:52	06:16 20:22	06:48 19:32	11 07:18 (TRQ06)	07:21 18:41	06:58 17:06	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	06:02 20:24	05:37 20:51	05:47 20:51	06:17 20:20	06:50 19:31	11 07:17 (TRQ06)	07:22 18:38	07:00 17:06	07:33 16:41
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	06:01 20:25	05:37 20:51	05:48 20:50	06:18 20:19	06:51 19:29	11 07:16 (TRQ06)	07:23 18:37	07:01 17:06	07:34 16:42
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	06:00 20:26	05:37 20:51	05:49 20:50	06:19 20:18	06:52 19:27	11 07:15 (TRQ06)	07:24 18:35	07:02 17:06	07:34 16:42
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	06:00 20:27	05:37 20:52	05:50 20:49	06:20 20:16	06:53 19:25	11 07:14 (TRQ06)	07:25 18:34	07:03 17:06	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:56	06:00 20:28	05:37 20:52	05:50 20:49	06:21 20:15	06:54 19:24	11 07:13 (TRQ06)	07:26 18:33	07:04 17:06	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	06:00 20:30	05:37 20:53	05:51 20:48	06:22 20:13	06:55 19:22	11 07:12 (TRQ06)	07:27 18:32	07:05 17:06	07:37 16:42
18	07:39 17:09	07:08 17:49	06:22 18:23	06:30 19:58	06:00 20:31	05:37 20:53	05:52 20:47	06:23 20:12	06:56 19:20	3 07:11 (TRQ06)	07:28 18:31	07:06 17:06	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	06:00 20:32	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	13 07:10 (TRQ06)	07:29 18:30	07:07 17:06	07:38 16:43
20	07:38 17:12	07:05 17:51	06:19 18:25	06:27 20:00	06:00 20:33	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	18 07:09 (TRQ06)	07:30 18:29	07:08 17:06	07:39 16:44
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	06:00 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	22 07:08 (TRQ06)	07:31 18:28	07:09 17:06	07:40 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:24 20:02	06:00 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	24 07:07 (TRQ06)	07:32 18:27	07:10 17:06	07:41 16:44
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	06:00 20:35	05:37 20:54	05:57 20:43	06:28 20:04	07:01 19:11	27 07:06 (TRQ06)	07:33 18:26	07:11 17:06	07:40 16:45
24	07:36 17:17	06:59 17:56	06:12 18:30	06:21 20:04	06:00 20:36	05:38 20:54	05:58 20:42	06:30 20:03	07:02 19:09	28 07:05 (TRQ06)	07:34 18:25	07:12 17:06	07:41 16:46
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	06:00 20:37	05:38 20:55	05:59 20:42	06:31 20:01	07:03 19:08	30 07:04 (TRQ06)	07:35 18:24	07:13 17:06	07:41 16:46
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	06:00 20:38	05:38 20:55	05:59 20:41	06:32 19:59	07:04 19:06	31 07:03 (TRQ06)	07:36 18:23	07:14 17:06	07:42 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	06:00 20:39	05:39 20:55	06:00 20:40	06:33 19:58	07:05 19:04	31 07:02 (TRQ06)	07:37 18:22	07:15 17:06	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	06:00 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:06 19:02	32 07:01 (TRQ06)	07:38 18:21	07:16 17:06	07:42 16:48
29	07:31 17:23	07:03 19:35	06:13 19:35	06:13 20:10	06:00 20:41	05:39 20:55	06:02 20:38	06:35 19:54	07:07 19:01	33 07:00 (TRQ06)	07:39 18:20	07:17 17:06	07:42 16:49
30	07:30 17:24	07:02 19:36	06:12 19:36	06:12 20:11	06:00 20:42	05:40 20:55	06:03 20:37	06:36 19:53	07:08 18:59	33 07:00 (TRQ06)	07:40 18:19	07:18 17:06	07:43 16:50
31	07:29 17:26	07:00 19:38	06:10 19:38	06:10 20:11	06:00 20:42	05:41 20:55	06:04 20:35	06:37 19:51	07:09 19:09	32 07:00 (TRQ06)	07:41 18:18	07:19 17:06	07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284	
Total, worst case					554				357		206		
Sun reduction					0,49				0,70		0,62		
Oper. time red.					0,95				0,95		0,95		
Wind dir. red.					0,64				0,64		0,64		
Total reduction					0,30				0,42		0,38		
Total, real					166				152		78		

#### Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_realShadow receptor: CC - 165  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	
1	07:43	07:28	06:51	06:58	06:11	05:40	19:16 (TRQ04)
	16:51	17:27	18:03	19:39	20:12	20:43	46 20:02 (TRQ04)
2	07:43	07:27	06:49	06:56	06:09	19:33 (TRQ04)	05:40
	16:52	17:28	18:04	19:40	20:13	20:44	46 20:03 (TRQ04)
3	07:43	07:26	06:48	06:55	06:08	19:30 (TRQ04)	05:39
	16:53	17:29	18:05	19:41	20:14	20:45	46 20:02 (TRQ04)
4	07:43	07:25	06:46	06:53	06:07	19:26 (TRQ04)	05:39
	16:54	17:31	18:06	19:42	20:16	20:45	46 20:03 (TRQ04)
5	07:43	07:24	06:44	06:51	06:05	19:24 (TRQ04)	05:38
	16:55	17:32	18:07	19:43	20:17	20:46	45 20:03 (TRQ04)
6	07:43	07:23	06:43	06:50	06:04	19:23 (TRQ04)	05:38
	16:56	17:33	18:09	19:44	20:18	20:47	45 20:02 (TRQ04)
7	07:43	07:22	06:41	06:48	06:03	19:22 (TRQ04)	05:38
	16:57	17:35	18:10	19:45	20:19	20:48	45 20:03 (TRQ04)
8	07:43	07:21	06:39	06:46	06:01	19:21 (TRQ04)	05:38
	16:58	17:36	18:11	19:46	20:20	20:48	45 20:03 (TRQ04)
9	07:43	07:19	06:38	06:45	06:00	19:19 (TRQ04)	05:37
	16:59	17:37	18:12	19:48	20:21	20:49	44 20:03 (TRQ04)
10	07:42	07:18	06:36	06:43	05:59	19:18 (TRQ04)	05:37
	17:00	17:39	18:13	19:49	20:22	20:49	44 20:03 (TRQ04)
11	07:42	07:17	06:34	06:41	05:58	19:17 (TRQ04)	05:37
	17:01	17:40	18:15	19:50	20:23	20:50	43 20:02 (TRQ04)
12	07:42	07:16	06:33	06:40	05:57	19:17 (TRQ04)	05:37
	17:02	17:41	18:16	19:51	20:24	20:50	44 20:03 (TRQ04)
13	07:42	07:14	06:31	06:38	05:56	19:16 (TRQ04)	05:37
	17:03	17:43	18:17	19:52	20:25	20:51	43 20:03 (TRQ04)
14	07:41	07:13	06:29	06:36	05:55	19:16 (TRQ04)	05:37
	17:05	17:44	18:18	19:53	20:26	20:51	43 20:03 (TRQ04)
15	07:41	07:12	06:28	06:35	05:54	19:15 (TRQ04)	05:37
	17:06	17:45	18:19	19:54	20:27	20:52	43 20:03 (TRQ04)
16	07:40	07:10	06:26	06:33	05:53	19:15 (TRQ04)	05:37
	17:07	17:46	18:20	19:55	20:28	20:52	42 20:03 (TRQ04)
17	07:40	07:09	06:24	06:31	05:52	19:15 (TRQ04)	05:37
	17:08	17:48	18:22	19:57	20:29	20:53	42 20:03 (TRQ04)
18	07:39	07:07	06:22	06:30	05:51	19:14 (TRQ04)	05:37
	17:09	17:49	18:23	19:58	20:30	20:53	42 20:04 (TRQ04)
19	07:39	07:06	06:21	06:28	05:50	19:15 (TRQ04)	05:37
	17:10	17:50	18:24	19:59	20:31	20:53	42 20:04 (TRQ04)
20	07:38	07:05	06:19	06:27	05:49	19:15 (TRQ04)	05:37
	17:12	17:51	18:25	20:00	20:32	20:54	42 20:04 (TRQ04)
21	07:38	07:03	06:17	06:25	05:48	19:14 (TRQ04)	05:37
	17:13	17:53	18:26	20:01	20:33	20:54	42 20:04 (TRQ04)
22	07:37	07:02	06:15	06:24	05:47	19:14 (TRQ04)	05:37
	17:14	17:54	18:27	20:02	20:34	20:54	42 20:04 (TRQ04)
23	07:36	07:00	06:14	06:22	05:46	19:14 (TRQ04)	05:37
	17:15	17:55	18:28	20:03	20:35	20:54	42 20:05 (TRQ04)
24	07:35	06:59	06:12	06:21	05:45	19:15 (TRQ04)	05:38
	17:17	17:56	18:30	20:04	20:36	20:54	42 20:05 (TRQ04)
25	07:35	06:57	06:10	06:19	05:45	19:14 (TRQ04)	05:38
	17:18	17:58	18:31	20:06	20:37	20:54	42 20:05 (TRQ04)
26	07:34	06:56	06:08	06:18	05:44	19:14 (TRQ04)	05:38
	17:19	17:59	18:32	20:07	20:38	20:55	42 20:05 (TRQ04)
27	07:33	06:54	06:07	06:16	05:43	19:15 (TRQ04)	05:39
	17:20	18:00	18:33	20:08	20:39	20:55	42 20:06 (TRQ04)
28	07:32	06:52	06:05	06:15	05:43	19:15 (TRQ04)	05:39
	17:22	18:01	18:34	20:09	20:40	20:55	43 20:06 (TRQ04)
29	07:31		07:03	06:13	05:42	19:16 (TRQ04)	05:39
	17:23		19:35	20:10	20:41	20:55	43 20:07 (TRQ04)
30	07:30		07:02	06:12	05:41	19:15 (TRQ04)	05:40
	17:24		19:36	20:11	20:42	20:54	43 20:07 (TRQ04)
31	07:29		07:00		05:41	19:16 (TRQ04)	
	17:26		19:37		20:42	20:03 (TRQ04)	
Potential sun hours	294	295	369	400	452	457	
Total, worst case					1222		1301
Sun reduction					0,57		0,61
Oper. time red.					0,95		0,95
Wind dir. red.					0,51		0,51
Total reduction					0,28		0,30
Total, real					339		387

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** CC - 165  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40	19:24 (TRQ04)   06:05	19:28 (TRQ04)   06:38	07:10	06:46	07:22
	20:54	44   20:08 (TRQ04)   20:34	41   20:09 (TRQ04)   19:49	18:57	17:09	16:43
2	05:41	19:24 (TRQ04)   06:06	19:28 (TRQ04)   06:39	07:11	06:47	07:23
	20:54	43   20:07 (TRQ04)   20:33	40   20:08 (TRQ04)   19:48	18:55	17:07	16:42
3	05:41	19:24 (TRQ04)   06:07	19:29 (TRQ04)   06:40	07:12	06:48	07:24
	20:54	44   20:08 (TRQ04)   20:32	38   20:07 (TRQ04)   19:46	18:54	17:06	16:42
4	05:42	19:24 (TRQ04)   06:08	19:30 (TRQ04)   06:41	07:13	06:50	07:25
	20:54	44   20:08 (TRQ04)   20:31	36   20:06 (TRQ04)   19:44	18:52	17:05	16:42
5	05:43	19:24 (TRQ04)   06:09	19:31 (TRQ04)   06:42	07:14	06:51	07:26
	20:54	45   20:09 (TRQ04)   20:30	34   20:05 (TRQ04)   19:43	18:50	17:04	16:42
6	05:43	19:24 (TRQ04)   06:11	19:32 (TRQ04)   06:43	07:15	06:52	07:27
	20:53	44   20:08 (TRQ04)   20:28	32   20:04 (TRQ04)   19:41	18:48	17:02	16:42
7	05:44	19:24 (TRQ04)   06:12	19:33 (TRQ04)   06:44	07:16	06:53	07:28
	20:53	45   20:09 (TRQ04)   20:27	29   20:02 (TRQ04)   19:39	18:47	17:01	16:41
8	05:44	19:24 (TRQ04)   06:13	19:35 (TRQ04)   06:45	07:17	06:55	07:29
	20:53	46   20:10 (TRQ04)   20:26	26   20:01 (TRQ04)   19:37	18:45	17:00	16:41
9	05:45	19:24 (TRQ04)   06:14	19:37 (TRQ04)   06:46	07:19	06:56	07:30
	20:52	45   20:09 (TRQ04)   20:24	21   19:58 (TRQ04)   19:36	18:43	16:59	16:41
10	05:46	19:24 (TRQ04)   06:15	19:39 (TRQ04)   06:47	07:20	06:57	07:31
	20:52	46   20:10 (TRQ04)   20:23	17   19:56 (TRQ04)   19:34	18:42	16:58	16:41
11	05:47	19:24 (TRQ04)   06:16	19:44 (TRQ04)   06:48	07:21	06:58	07:32
	20:51	47   20:11 (TRQ04)   20:22	7   19:51 (TRQ04)   19:32	18:40	16:57	16:41
12	05:47	19:24 (TRQ04)   06:17	06:50	07:22	07:00	07:33
	20:51	47   20:11 (TRQ04)   20:20	19:30	18:38	16:56	16:41
13	05:48	19:24 (TRQ04)   06:18	06:51	07:23	07:01	07:34
	20:50	47   20:11 (TRQ04)   20:19	19:29	18:37	16:55	16:42
14	05:49	19:24 (TRQ04)   06:19	06:52	07:24	07:02	07:34
	20:50	47   20:11 (TRQ04)   20:18	19:27	18:35	16:54	16:42
15	05:50	19:24 (TRQ04)   06:20	06:53	07:25	07:03	07:35
	20:49	47   20:11 (TRQ04)   20:16	19:25	18:33	16:53	16:42
16	05:50	19:24 (TRQ04)   06:21	06:54	07:27	07:05	07:36
	20:49	48   20:12 (TRQ04)   20:15	19:23	18:32	16:52	16:42
17	05:51	19:24 (TRQ04)   06:22	06:55	07:28	07:06	07:37
	20:48	47   20:11 (TRQ04)   20:13	19:22	18:30	16:51	16:42
18	05:52	19:24 (TRQ04)   06:23	06:56	07:29	07:07	07:37
	20:47	48   20:12 (TRQ04)   20:12	19:20	18:29	16:50	16:43
19	05:53	19:24 (TRQ04)   06:24	06:57	07:30	07:08	07:38
	20:47	48   20:12 (TRQ04)   20:10	19:18	18:27	16:49	16:43
20	05:54	19:24 (TRQ04)   06:25	06:58	07:31	07:09	07:38
	20:46	48   20:12 (TRQ04)   20:09	19:16	18:26	16:49	16:44
21	05:55	19:25 (TRQ04)   06:26	06:59	07:32	07:11	07:39
	20:45	47   20:12 (TRQ04)   20:07	19:15	18:24	16:48	16:44
22	05:56	19:25 (TRQ04)   06:27	07:00	07:34	07:12	07:40
	20:44	47   20:12 (TRQ04)   20:06	19:13	18:23	16:47	16:44
23	05:57	19:25 (TRQ04)   06:28	07:01	07:35	07:13	07:40
	20:43	47   20:12 (TRQ04)   20:04	19:11	18:21	16:47	16:45
24	05:58	19:24 (TRQ04)   06:29	07:02	07:36	07:14	07:41
	20:42	47   20:11 (TRQ04)   20:03	19:09	18:20	16:46	16:46
25	05:59	19:25 (TRQ04)   06:31	07:03	06:37	07:15	07:41
	20:42	46   20:11 (TRQ04)   20:01	19:08	17:18	16:45	16:46
26	05:59	19:25 (TRQ04)   06:32	07:04	06:38	07:17	07:41
	20:41	46   20:11 (TRQ04)   19:59	19:06	17:17	16:45	16:47
27	06:00	19:25 (TRQ04)   06:33	07:05	06:40	07:18	07:42
	20:40	46   20:11 (TRQ04)   19:58	19:04	17:15	16:44	16:47
28	06:01	19:26 (TRQ04)   06:34	07:06	06:41	07:19	07:42
	20:39	45   20:11 (TRQ04)   19:56	19:02	17:14	16:44	16:48
29	06:02	19:26 (TRQ04)   06:35	07:08	06:42	07:20	07:42
	20:38	44   20:10 (TRQ04)   19:54	19:01	17:13	16:43	16:49
30	06:03	19:26 (TRQ04)   06:36	07:09	06:43	07:21	07:42
	20:36	44   20:10 (TRQ04)   19:53	18:59	17:11	16:43	16:50
31	06:04	19:27 (TRQ04)   06:37		06:45		07:43
	20:35	42   20:09 (TRQ04)   19:51		17:10		16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case	1421	321				
Sun reduction	0,71	0,70				
Oper. time red.	0,95	0,95				
Wind dir. red.	0,51	0,51				
Total reduction	0,34	0,34				
Total, real	488	109				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: CD - 167  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:09	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:29	06:48 18:05	06:55 19:41	06:08 20:14	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:45	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	06:51 17:04	07:26 16:42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:11 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:42
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:01 20:20	05:38 20:48	05:44 20:53	06:13 20:26	06:45 19:37	07:17 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:42 17:00	07:18 17:39	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50	05:47 20:51	06:16 20:22	06:48 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	05:57 20:24	05:37 20:50	05:47 20:51	06:17 20:20	06:50 19:30	07:22 18:38	07:00 16:56	07:33 16:41
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	05:56 20:25	05:37 20:51	05:48 20:50	06:18 20:19	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	05:55 20:26	05:37 20:51	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	05:54 20:27	05:37 20:52	05:50 20:49	06:20 20:16	06:53 19:25	07:25 18:33	07:03 16:53	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55	05:53 20:28	05:37 20:52	05:50 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	05:52 20:29	05:37 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:42
18	07:39 17:09	07:07 17:49	06:22 18:23	06:30 19:58	05:51 20:30	05:37 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:50 20:31	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:49	07:38 16:43
20	07:38 17:12	07:05 17:51	06:19 18:25	06:27 20:00	05:49 20:32	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:09 16:49	07:38 16:44
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:32 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:24 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:44
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	07:35 17:17	06:59 17:56	06:12 18:30	06:21 20:04	05:45 20:36	05:38 20:54	05:58 20:42	06:29 20:03	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:45 20:37	05:38 20:54	05:59 20:41	06:31 20:01	07:03 19:08	06:37 17:18	07:15 16:45	07:41 16:46
26	07:34 17:19	06:56 17:59	06:08 18:32	06:18 20:07	05:44 20:38	05:38 20:55	05:59 20:41	06:32 19:59	07:04 19:06	06:38 17:17	07:17 16:45	07:41 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:39 20:55	06:00 20:40	06:33 19:58	07:05 19:04	06:40 17:15	07:18 16:44	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:43 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:06 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	07:31 17:23		07:03 19:35	06:13 20:10	05:42 20:41	05:39 20:55	06:02 20:38	06:35 19:54	07:08 19:01	06:42 17:13	07:20 16:43	07:42 16:49
30	07:30 17:24		07:02 19:36	06:12 20:11	05:41 20:42	05:40 20:54	06:03 20:36	06:36 19:53	07:09 18:59	06:43 17:11	07:21 16:43	07:42 16:50
31	07:29 17:26		07:00 19:37		05:41 20:42		06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_realShadow receptor: CE - 168  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:43	07:28	06:51	06:58	06:10	05:40	05:40	06:05	06:38	19:15 (TRQ04)	07:10	06:46	07:22	
	16:51	17:27	18:03	19:39	20:12	20:43	20:54	20:34	19:49	12	19:27 (TRQ04)	18:57	17:08	16:43
2	07:43	07:27	06:49	06:56	06:09	05:40	05:41	06:06	06:39	19:16 (TRQ04)	07:11	06:47	07:23	
	16:52	17:28	18:04	19:40	20:13	20:44	20:54	20:33	19:48	9	19:25 (TRQ04)	18:55	17:07	16:42
3	07:43	07:26	06:48	06:55	06:08	05:39	05:41	06:07	06:40	19:19 (TRQ04)	07:12	06:48	07:24	
	16:53	17:29	18:05	19:41	20:14	20:45	20:54	20:32	19:46	4	19:23 (TRQ04)	18:54	17:06	16:42
4	07:43	07:25	06:46	06:53	06:06	05:39	05:42	06:08	06:41		07:13	06:50	07:25	
	16:54	17:31	18:06	19:42	20:16	20:45	20:54	20:31	19:44		18:52	17:05	16:42	
5	07:43	07:24	06:44	06:51	06:05	05:38	05:43	06:09	06:42		07:14	06:51	07:26	
	16:55	17:32	18:07	19:43	20:17	20:46	20:54	20:30	19:43		18:50	17:03	16:42	
6	07:43	07:23	06:43	06:50	06:04	05:38	05:43	06:10	06:43		07:15	06:52	07:27	
	16:56	17:33	18:09	19:44	20:18	20:47	20:53	20:28	19:41		18:48	17:02	16:41	
7	07:43	07:22	06:41	06:48	06:03	05:38	05:44	06:12	06:44		07:16	06:53	07:28	
	16:57	17:35	18:10	19:45	20:19	20:47	20:53	20:27	19:39		18:47	17:01	16:41	
8	07:43	07:21	06:39	06:46	06:01	05:37	05:44	06:13	06:45		07:17	06:55	07:29	
	16:58	17:36	18:11	19:46	20:20	20:48	20:53	20:26	19:37		18:45	17:00	16:41	
9	07:43	07:19	06:38	06:44	19:22 (TRQ04)	06:00	05:37	06:45	06:46		07:19	06:56	07:30	
	16:59	17:37	18:12	19:48	3	19:25 (TRQ04)	20:21	20:49	19:36		18:43	16:59	16:41	
10	07:42	07:18	06:36	06:43	19:18 (TRQ04)	05:59	05:37	06:46	06:47		07:20	06:57	07:31	
	17:00	17:39	18:13	19:49	9	19:27 (TRQ04)	20:22	20:49	19:34		18:42	16:58	16:41	
11	07:42	07:17	06:34	06:41	19:15 (TRQ04)	05:58	05:37	06:47	06:48		07:21	06:58	07:32	
	17:01	17:40	18:15	19:50	13	19:28 (TRQ04)	20:23	20:50	19:32		18:40	16:57	16:41	
12	07:42	07:16	06:33	06:39	19:13 (TRQ04)	05:57	05:37	06:47	06:49		07:22	07:00	07:33	
	17:02	17:41	18:16	19:51	15	19:28 (TRQ04)	20:24	20:50	19:30		18:38	16:56	16:41	
13	07:42	07:14	06:31	06:38	19:13 (TRQ04)	05:56	05:37	06:48	06:51		07:23	07:01	07:34	
	17:03	17:42	18:17	19:52	17	19:30 (TRQ04)	20:25	20:51	19:29		18:37	16:55	16:42	
14	07:41	07:13	06:29	06:36	19:11 (TRQ04)	05:55	05:37	06:49	06:52		07:24	07:02	07:34	
	17:04	17:44	18:18	19:53	20	19:31 (TRQ04)	20:26	20:51	19:27		18:35	16:54	16:42	
15	07:41	07:12	06:27	06:35	19:11 (TRQ04)	05:54	05:36	06:50	06:53		07:25	07:03	07:35	
	17:06	17:45	18:19	19:54	21	19:32 (TRQ04)	20:27	20:52	19:25		18:33	16:53	16:42	
16	07:40	07:10	06:26	06:33	19:10 (TRQ04)	05:52	05:36	06:50	06:54		07:27	07:05	07:36	
	17:07	17:46	18:20	19:55	23	19:33 (TRQ04)	20:28	20:52	19:23		18:32	16:52	16:42	
17	07:40	07:09	06:24	06:31	19:09 (TRQ04)	05:51	05:37	06:51	06:55		07:28	07:06	07:37	
	17:08	17:48	18:22	19:57	25	19:34 (TRQ04)	20:29	20:53	19:22		18:30	16:51	16:42	
18	07:39	07:07	06:22	06:30	19:09 (TRQ04)	05:51	05:37	06:52	06:56		07:29	07:07	07:37	
	17:09	17:49	18:23	19:58	26	19:35 (TRQ04)	20:30	20:53	19:20		18:29	16:50	16:43	
19	07:39	07:06	06:21	06:28	19:08 (TRQ04)	05:50	05:37	06:53	06:57		07:30	07:08	07:38	
	17:10	17:50	18:24	19:59	28	19:36 (TRQ04)	20:31	20:53	19:18		18:27	16:49	16:43	
20	07:38	07:05	06:19	06:27	19:09 (TRQ04)	05:49	05:37	06:54	06:58		07:31	07:09	07:38	
	17:12	17:51	18:25	20:00	28	19:37 (TRQ04)	20:32	20:54	19:16		18:26	16:49	16:44	
21	07:38	07:03	06:17	06:25	19:08 (TRQ04)	05:48	05:37	06:55	06:59		07:32	07:11	07:39	
	17:13	17:53	18:26	20:01	28	19:36 (TRQ04)	20:33	20:54	19:15		18:24	16:48	16:44	
22	07:37	07:02	06:15	06:24	19:09 (TRQ04)	05:47	05:37	06:56	07:00		07:34	07:12	07:40	
	17:14	17:54	18:27	20:02	27	19:36 (TRQ04)	20:34	20:54	19:13		18:23	16:47	16:44	
23	07:36	07:00	06:14	06:22	19:09 (TRQ04)	05:46	05:37	06:57	07:01		07:35	07:13	07:40	
	17:15	17:55	18:28	20:03	25	19:34 (TRQ04)	20:35	20:54	19:11		18:21	16:47	16:45	
24	07:35	06:59	06:12	06:21	19:10 (TRQ04)	05:45	05:38	06:58	07:02		07:36	07:14	07:40	
	17:17	17:56	18:30	20:04	24	19:34 (TRQ04)	20:36	20:54	19:09		18:20	16:46	16:46	
25	07:35	06:57	06:10	06:19	19:10 (TRQ04)	05:45	05:38	06:58	07:03		07:37	07:15	07:41	
	17:18	17:58	18:31	20:06	22	19:32 (TRQ04)	20:37	20:54	19:08		17:18	16:45	16:46	
26	07:34	06:55	06:08	06:18	19:11 (TRQ04)	05:44	05:38	06:59	07:04		07:38	07:17	07:41	
	17:19	17:59	18:32	20:07	20	19:31 (TRQ04)	20:38	20:54	19:06		17:17	16:45	16:47	
27	07:33	06:54	06:07	06:16	19:13 (TRQ04)	05:43	05:39	06:00	07:05		07:39	07:18	07:42	
	17:20	18:00	18:33	20:08	17	19:30 (TRQ04)	20:39	20:55	19:04		17:15	16:44	16:47	
28	07:32	06:52	06:05	06:15	19:15 (TRQ04)	05:42	05:39	06:01	07:06		07:40	07:19	07:42	
	17:22	18:01	18:34	20:09	12	19:27 (TRQ04)	20:40	20:55	19:02		17:14	16:44	16:48	
29	07:31		07:03	06:13	19:19 (TRQ04)	05:42	05:39	06:02	07:08		07:41	07:20	07:42	
	17:23		19:35	20:10	4	19:23 (TRQ04)	20:41	20:55	19:01		17:12	16:43	16:49	
30	07:30		07:02	06:12	05:41	05:40	06:03	06:36	07:09		07:42	07:21	07:42	
	17:24		19:36	20:11	20:42	20:54	20:36	19:53	18	19:30 (TRQ04)	18:59	17:11	16:43	
31	07:29		07:00		05:41		06:04	06:37	15	19:13 (TRQ04)		06:45	07:43	
	17:26		19:37		20:42		20:35	19:51		19:28 (TRQ04)		17:10	16:50	
Potential sun hours	294	295	369	400	452	457	463	430	376		344	295	284	
Total, worst case				407				390	25					
Sun reduction				0,49				0,70	0,62					
Oper. time red.				0,95				0,95	0,95					
Wind dir. red.				0,56				0,56	0,56					
Total reduction				0,26				0,37	0,33					
Total, real				107				145	8					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: CF - 169  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43   16:51	07:28   17:27	06:51   18:03	06:58   19:39	06:11   20:12	05:40   20:43	05:40   20:54	06:05   20:34	06:38   19:49	07:10   18:57	06:46   17:09	07:22   16:43
2	07:43   16:52	07:27   17:28	06:49   18:04	06:56   19:40	06:09   20:13	05:40   20:44	05:41   20:54	06:06   20:33	06:39   19:48	07:11   18:55	06:47   17:07	07:23   16:42
3	07:43   16:53	07:26   17:30	06:48   18:05	06:55   19:41	06:08   20:15	05:39   20:45	05:41   20:54	06:07   20:32	06:40   19:46	07:12   18:54	06:48   17:06	07:24   16:42
4	07:43   16:54	07:25   17:31	06:46   18:06	06:53   19:42	06:07   20:16	05:39   20:46	05:42   20:54	06:09   20:31	06:41   19:44	07:13   18:52	06:50   17:05	07:25   16:42
5	07:43   16:55	07:24   17:32	06:44   18:08	06:51   19:43	06:05   20:17	05:39   20:46	05:43   20:54	06:10   20:30	06:42   19:43	07:14   18:50	06:51   17:04	07:26   16:42
6	07:43   16:56	07:23   17:33	06:43   18:09	06:50   19:44	06:04   20:18	05:38   20:47	05:43   20:53	06:11   20:28	06:43   19:41	07:15   18:48	06:52   17:02	07:27   16:42
7	07:43   16:57	07:22   17:35	06:41   18:10	06:48   19:45	06:03   20:19	05:38   20:48	05:44   20:53	06:12   20:27	06:44   19:39	07:16   18:47	06:53   17:01	07:28   16:41
8	07:43   16:58	07:21   17:36	06:39   18:11	06:46   19:47	06:02   20:20	05:38   20:48	05:45   20:53	06:13   20:26	06:45   19:38	07:18   18:45	06:55   17:00	07:29   16:41
9	07:43   16:59	07:19   17:37	06:38   18:12	06:45   19:48	06:00   20:21	05:37   20:49	05:45   20:52	06:14   20:25	06:46   19:36	07:19   18:43	06:56   16:59	07:30   16:41
10	07:42   17:00	07:18   17:39	06:36   18:13	06:43   19:49	05:59   20:22	05:37   20:49	05:46   20:52	06:15   20:23	06:47   19:34	07:20   18:42	06:57   16:58	07:31   16:41
11	07:42   17:01	07:17   17:40	06:34   18:15	06:41   19:50	05:58   20:23	05:37   20:50	05:47   20:51	06:16   20:22	06:49   19:32	07:21   18:40	06:58   16:57	07:32   16:41
12	07:42   17:02	07:16   17:41	06:33   18:16	06:40   19:51	05:57   20:24	05:37   20:50	05:47   20:51	06:17   20:20	06:50   19:31	07:22   18:38	07:00   16:56	07:33   16:41
13	07:42   17:03	07:14   17:43	06:31   18:17	06:38   19:52	05:56   20:25	05:37   20:51	05:48   20:50	06:18   20:19	06:51   19:29	07:23   18:37	07:01   16:55	07:34   16:42
14	07:41   17:05	07:13   17:44	06:29   18:18	06:36   19:53	05:55   20:26	05:37   20:51	05:49   20:50	06:19   20:18	06:52   19:27	07:24   18:35	07:02   16:54	07:34   16:42
15	07:41   17:06	07:12   17:45	06:28   18:19	06:35   19:54	05:54   20:27	05:37   20:52	05:50   20:49	06:20   20:16	06:53   19:25	07:26   18:34	07:03   16:53	07:35   16:42
16	07:40   17:07	07:10   17:46	06:26   18:20	06:33   19:55	05:53   20:28	05:37   20:52	05:51   20:49	06:21   20:15	06:54   19:24	07:27   18:32	07:05   16:52	07:36   16:42
17	07:40   17:08	07:09   17:48	06:24   18:22	06:31   19:57	05:52   20:29	05:37   20:53	05:51   20:48	06:22   20:13	06:55   19:22	07:28   18:30	07:06   16:51	07:37   16:43
18	07:39   17:09	07:08   17:49	06:22   18:23	06:30   19:58	05:51   20:31	05:37   20:53	05:52   20:47	06:23   20:12	06:56   19:20	07:29   18:29	07:07   16:50	07:37   16:43
19	07:39   17:10	07:06   17:50	06:21   18:24	06:28   19:59	05:50   20:32	05:37   20:53	05:53   20:47	06:24   20:10	06:57   19:18	07:30   18:27	07:08   16:50	07:38   16:43
20	07:38   17:12	07:05   17:51	06:19   18:25	06:27   20:00	05:49   20:32	05:37   20:54	05:54   20:46	06:25   20:09	06:58   19:16	07:31   18:26	07:09   16:49	07:39   16:44
21	07:38   17:13	07:03   17:53	06:17   18:26	06:25   20:01	05:48   20:33	05:37   20:54	05:55   20:45	06:26   20:07	06:59   19:15	07:33   18:24	07:11   16:48	07:39   16:44
22	07:37   17:14	07:02   17:54	06:15   18:27	06:24   20:02	05:47   20:34	05:37   20:54	05:56   20:44	06:27   20:06	07:00   19:13	07:34   18:23	07:12   16:47	07:40   16:45
23	07:36   17:15	07:00   17:55	06:14   18:28	06:22   20:03	05:46   20:35	05:37   20:54	05:57   20:43	06:28   20:04	07:01   19:11	07:35   18:21	07:13   16:47	07:40   16:45
24	07:35   17:17	06:59   17:57	06:12   18:30	06:21   20:04	05:45   20:36	05:38   20:54	05:58   20:42	06:30   20:03	07:02   19:09	07:36   18:20	07:14   16:46	07:41   16:46
25	07:35   17:18	06:57   17:58	06:10   18:31	06:19   20:06	05:45   20:37	05:38   20:54	05:59   20:42	06:31   20:01	07:03   19:08	07:37   18:18	07:15   16:45	07:41   16:46
26	07:34   17:19	06:56   17:59	06:09   18:32	06:18   20:07	05:44   20:38	05:38   20:55	06:00   20:41	06:32   20:00	07:04   19:06	07:38   18:17	07:17   16:45	07:41   16:47
27	07:33   17:20	06:54   18:00	06:07   18:33	06:16   20:08	05:43   20:39	05:39   20:55	06:00   20:40	06:33   20:00	07:05   19:04	07:39   18:16	07:18   16:44	07:42   16:47
28	07:32   17:22	06:52   18:01	06:05   18:34	06:15   20:09	05:43   20:40	05:39   20:55	06:01   20:39	06:34   20:00	07:07   19:02	07:40   18:15	07:19   16:44	07:42   16:48
29	07:31   17:23	06:51   18:02	06:04   18:35	06:14   20:10	05:42   20:41	05:40   20:55	06:02   20:38	06:35   20:00	07:08   19:01	07:41   18:14	07:20   16:44	07:42   16:49
30	07:30   17:24	06:50   18:03	06:03   18:36	06:13   20:11	05:41   20:42	05:40   20:55	06:03   20:37	06:36   20:00	07:09   18:59	07:42   18:13	07:21   16:43	07:43   16:50
31	07:29   17:26	06:50   18:04	06:02   18:37	06:12   20:12	05:41   20:43	05:40   20:55	06:04   20:36	06:37   20:00	07:10   18:58	07:43   18:12	07:22   16:43	07:43   16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** CG - 170  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:09	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:15	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:46	05:42 20:54	06:09 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:08	06:51 19:43	06:05 20:17	05:39 20:46	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	06:51 17:04	07:26 16:42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:11 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:42
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:47	06:02 20:20	05:38 20:48	05:45 20:53	06:13 20:26	06:45 19:38	07:18 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:25	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:42 17:00	07:18 17:39	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50	05:47 20:51	06:16 20:22	06:49 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	05:57 20:24	05:37 20:50	05:47 20:51	06:17 20:20	06:50 19:31	07:22 18:38	07:00 16:56	07:33 16:41
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	05:56 20:25	05:37 20:51	05:48 20:50	06:18 20:19	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	05:55 20:26	05:37 20:51	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	05:54 20:27	05:37 20:52	05:50 20:49	06:20 20:16	06:53 19:25	07:26 18:34	07:03 16:53	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55	05:53 20:28	05:37 20:52	05:51 20:49	06:21 20:15	06:54 19:24	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	05:52 20:30	05:37 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:43
18	07:39 17:09	07:08 17:49	06:22 18:23	06:30 19:58	05:51 20:31	05:37 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:50 20:32	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:50	07:38 16:43
20	07:38 17:12	07:05 17:51	06:19 18:25	06:27 20:00	05:49 20:33	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:09 16:49	07:39 16:44
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:33 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:24 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:45
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	07:35 17:17	06:59 17:57	06:12 18:30	06:21 20:04	05:45 20:36	05:38 20:54	05:58 20:42	06:30 20:03	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:45 20:37	05:38 20:54	05:59 20:42	06:31 20:01	07:03 19:08	06:37 17:18	07:15 16:45	07:41 16:46
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	05:44 20:38	05:38 20:55	06:00 20:41	06:32 19:59	07:04 19:06	06:39 17:17	07:17 16:45	07:41 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:39 20:55	06:00 20:40	06:33 19:58	07:05 19:04	06:40 17:15	07:18 16:44	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:43 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:07 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	07:31 17:23		07:03 19:35	06:13 20:10	05:42 20:41	05:40 20:55	06:02 20:38	06:35 19:54	07:08 19:01	06:42 17:13	07:20 16:44	07:42 16:49
30	07:30 17:24		07:02 19:36	06:12 20:11	05:41 20:42	05:40 20:55	06:03 20:37	06:36 19:53	07:09 18:59	06:43 17:11	07:21 16:43	07:43 16:50
31	07:29 17:26		07:00 19:38		05:41 20:42		06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** CH - 171  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:52	07:28 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:09	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:15	05:39 20:45	05:42 20:54	06:08 20:32	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:46	05:42 20:54	06:09 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:08	06:51 19:43	06:05 20:17	05:39 20:46	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	06:51 17:04	07:26 16:42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:11 20:28	06:43 19:41	07:15 18:49	06:52 17:02	07:27 16:42
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:47	06:02 20:20	05:38 20:48	05:45 20:53	06:13 20:26	06:45 19:38	07:18 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:25	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:43 17:00	07:18 17:39	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50	05:47 20:51	06:16 20:22	06:49 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	05:57 20:24	05:37 20:50	05:47 20:51	06:17 20:20	06:50 19:31	07:22 18:38	07:00 16:56	07:33 16:42
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	05:56 20:25	05:37 20:51	05:48 20:50	06:18 20:19	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	05:55 20:26	05:37 20:51	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	05:54 20:27	05:37 20:52	05:50 20:49	06:20 20:16	06:53 19:25	07:26 18:34	07:03 16:53	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:56	05:53 20:28	05:37 20:52	05:51 20:49	06:21 20:15	06:54 19:24	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	05:52 20:30	05:37 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:43
18	07:39 17:09	07:08 17:49	06:22 18:23	06:30 19:58	05:51 20:31	05:37 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:50 20:32	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:50	07:38 16:43
20	07:38 17:12	07:05 17:52	06:19 18:25	06:27 20:00	05:49 20:33	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:09 16:49	07:39 16:44
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:33 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:16 18:27	06:24 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:45
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	07:36 17:17	06:59 17:57	06:12 18:30	06:21 20:04	05:45 20:36	05:38 20:54	05:58 20:42	06:30 20:03	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:45 20:37	05:38 20:55	05:59 20:42	06:31 20:01	07:03 19:08	06:37 17:18	07:15 16:45	07:41 16:46
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	05:44 20:38	05:38 20:55	06:00 20:41	06:32 19:59	07:04 19:06	06:39 17:17	07:17 16:45	07:41 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:39 20:55	06:01 20:40	06:33 19:58	07:05 19:04	06:40 17:15	07:18 16:44	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:43 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:07 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	07:31 17:23		07:03 19:35	06:13 20:10	05:42 20:41	05:40 20:55	06:02 20:38	06:35 19:54	07:08 19:01	06:42 17:13	07:20 16:44	07:42 16:49
30	07:30 17:24		07:02 19:36	06:12 20:11	05:41 20:42	05:40 20:55	06:03 20:37	06:36 19:53	07:09 18:59	06:43 17:11	07:21 16:43	07:43 16:50
31	07:29 17:26		07:00 19:38		05:41 20:42		06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

TarquiniA1

Licensed user:

MONTANA SPA

VIA ANGELO CARLO FUMAGALLI 6

IT-20143 MILANO

0254118173

Andrea / fronteddu@montanambiente.com

Calculated:

06/08/2022 14:40/3.5.584

### SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: CI - 172  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:28	06:51	06:58	06:11	07:09 (TRQ04) 05:40
	16:52	17:27	18:03	19:39	20:12	31 07:40 (TRQ04) 20:43 15 06:24 (TRQ06)
2	07:43	07:27	06:49	06:56	07:25 (TRQ04) 06:09	07:11 (TRQ04) 05:40 06:11 (TRQ06)
	16:52	17:28	18:04	19:40	20:13	28 07:39 (TRQ04) 20:44 13 06:24 (TRQ06)
3	07:43	07:26	06:48	06:55	07:21 (TRQ04) 06:08	07:12 (TRQ04) 05:39 06:11 (TRQ06)
	16:53	17:30	18:05	19:41	20:15	25 07:37 (TRQ04) 20:45 12 06:23 (TRQ06)
4	07:43	07:25	06:46	06:53	07:18 (TRQ04) 06:07	07:14 (TRQ04) 05:39 06:12 (TRQ06)
	16:54	17:31	18:06	19:42	20:16	20 07:34 (TRQ04) 20:46 10 06:22 (TRQ06)
5	07:43	07:24	06:44	06:51	07:16 (TRQ04) 06:05	07:17 (TRQ04) 05:39 06:14 (TRQ06)
	16:55	17:32	18:08	19:43	20:17	14 07:31 (TRQ04) 20:46 8 06:22 (TRQ06)
6	07:43	07:23	06:43	06:50	07:13 (TRQ04) 06:04	07:24 (TRQ04) 05:38 06:15 (TRQ06)
	16:56	17:33	18:09	19:44	20:18	1 07:25 (TRQ04) 20:47 6 06:21 (TRQ06)
7	07:43	07:22	06:41	06:48	07:13 (TRQ04) 06:03	05:38
	16:57	17:35	18:10	19:45	20:19	20:48
8	07:43	07:21	06:39	06:46	07:11 (TRQ04) 06:02	05:38
	16:58	17:36	18:11	19:47	20:20	20:48
9	07:43	07:19	06:38	06:45	07:09 (TRQ04) 06:00	05:37
	16:59	17:37	18:12	19:48	20:21	20:49
10	07:43	07:18	06:36	06:43	07:09 (TRQ04) 05:59	05:37
	17:00	17:39	18:13	19:49	20:22	20:49
11	07:42	07:17	06:34	06:41	07:07 (TRQ04) 05:58	05:37
	17:01	17:40	18:15	19:50	20:23	20:50
12	07:42	07:16	06:33	06:40	07:07 (TRQ04) 05:57	06:17 (TRQ06) 05:37
	17:02	17:41	18:16	19:51	20:24	3 06:20 (TRQ06) 20:51
13	07:42	07:14	06:31	06:38	07:06 (TRQ04) 05:56	06:16 (TRQ06) 05:37
	17:03	17:43	18:17	19:52	20:25	6 06:22 (TRQ06) 20:51
14	07:41	07:13	06:29	06:36	07:05 (TRQ04) 05:55	06:15 (TRQ06) 05:37
	17:05	17:44	18:18	19:53	20:26	8 06:23 (TRQ06) 20:51
15	07:41	07:12	06:28	06:35	07:05 (TRQ04) 05:54	06:14 (TRQ06) 05:37
	17:06	17:45	18:19	19:54	20:27	10 06:24 (TRQ06) 20:52
16	07:40	07:10	06:26	06:33	07:04 (TRQ04) 05:53	06:13 (TRQ06) 05:37
	17:07	17:46	18:20	19:56	20:29	11 06:24 (TRQ06) 20:52
17	07:40	07:09	06:24	06:31	07:04 (TRQ04) 05:52	06:12 (TRQ06) 05:37
	17:08	17:48	18:22	19:57	20:30	13 06:25 (TRQ06) 20:53
18	07:39	07:08	06:22	06:30	07:04 (TRQ04) 05:51	06:12 (TRQ06) 05:37
	17:09	17:49	18:23	19:58	20:31	14 06:26 (TRQ06) 20:53
19	07:39	07:06	06:21	06:28	07:03 (TRQ04) 05:50	06:11 (TRQ06) 05:37
	17:10	17:50	18:24	19:59	20:32	15 06:26 (TRQ06) 20:53
20	07:38	07:05	06:19	06:27	07:03 (TRQ04) 05:49	06:10 (TRQ06) 05:37
	17:12	17:52	18:25	20:00	20:33	16 06:26 (TRQ06) 20:54
21	07:38	07:03	06:17	06:25	07:03 (TRQ04) 05:48	06:09 (TRQ06) 05:37
	17:13	17:53	18:26	20:01	20:34	17 06:26 (TRQ06) 20:54
22	07:37	07:02	06:16	06:24	07:04 (TRQ04) 05:47	06:08 (TRQ06) 05:37
	17:14	17:54	18:27	20:02	20:34	18 06:26 (TRQ06) 20:54
23	07:36	07:00	06:14	06:22	07:03 (TRQ04) 05:46	06:08 (TRQ06) 05:37
	17:15	17:55	18:28	20:03	20:35	19 06:27 (TRQ06) 20:54
24	07:36	06:59	06:12	06:21	07:04 (TRQ04) 05:45	06:07 (TRQ06) 05:38
	17:17	17:57	18:30	20:04	20:36	19 06:26 (TRQ06) 20:54
25	07:35	06:57	06:10	06:19	07:05 (TRQ04) 05:45	06:06 (TRQ06) 05:38
	17:18	17:58	18:31	20:06	20:37	20 06:26 (TRQ06) 20:55
26	07:34	06:56	06:09	06:18	07:05 (TRQ04) 05:44	06:07 (TRQ06) 05:38
	17:19	17:59	18:32	20:07	20:38	19 06:26 (TRQ06) 20:55
27	07:33	06:54	06:07	06:16	07:06 (TRQ04) 05:43	06:07 (TRQ06) 05:39
	17:20	18:00	18:33	20:08	20:39	19 06:26 (TRQ06) 20:55
28	07:32	06:52	06:05	06:15	07:06 (TRQ04) 05:43	06:07 (TRQ06) 05:39
	17:22	18:01	18:34	20:09	20:40	18 06:25 (TRQ06) 20:55
29	07:31		07:03	06:13	07:07 (TRQ04) 05:42	06:08 (TRQ06) 05:40
	17:23		19:35	20:10	20:41	17 06:25 (TRQ06) 20:55
30	07:30		07:02	06:12	07:08 (TRQ04) 05:41	06:08 (TRQ06) 05:40
	17:24		19:36	20:11	20:42	17 06:25 (TRQ06) 20:55
31	07:29		07:00		05:41	06:09 (TRQ06)
	17:26		19:38		20:42	16 06:25 (TRQ06)
Potential sun hours	294	295	369	400	452	457
Total, worst case				1183		64
Sun reduction				0,49	0,57	0,61
Oper. time red.				0,95	0,95	0,95
Wind dir. red.				0,64	0,69	0,72
Total reduction				0,30	0,37	0,41
Total, real				352	155	27

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

## SHADOW - Calendar

**Calculation: Shadow\_real**  
**Shadow receptor: CI - 172**  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40	06:05	06:28 (TRQ06)	06:38	07:06 (TRQ04)	07:10
	20:54	20:34	2 06:30 (TRQ06)	19:50	45 07:51 (TRQ04)	18:57
2	05:41	06:06		06:39	07:07 (TRQ04)	07:11
	20:54	20:33		19:48	43 07:50 (TRQ04)	18:55
3	05:41	06:08		06:40	07:07 (TRQ04)	07:12
	20:54	20:32		19:46	42 07:49 (TRQ04)	18:54
4	05:42	06:09		06:41	07:08 (TRQ04)	07:13
	20:54	20:31		19:44	40 07:48 (TRQ04)	18:52
5	05:43	06:10		06:42	07:09 (TRQ04)	07:14
	20:54	20:30		19:43	37 07:46 (TRQ04)	18:50
6	05:43	06:21 (TRQ06)	06:11	06:43	07:09 (TRQ04)	07:15
	20:53	4 06:25 (TRQ06)	20:28	19:41	35 07:44 (TRQ04)	18:49
7	05:44	06:20 (TRQ06)	06:12	07:29 (TRQ04)	06:44	07:11 (TRQ04)
	20:53	7 06:27 (TRQ06)	20:27	9 07:38 (TRQ04)	19:39	31 07:42 (TRQ04)
8	05:45	06:20 (TRQ06)	06:13	07:25 (TRQ04)	06:45	07:12 (TRQ04)
	20:53	9 06:29 (TRQ06)	20:26	17 07:42 (TRQ04)	19:38	28 07:40 (TRQ04)
9	05:45	06:18 (TRQ06)	06:14	07:23 (TRQ04)	06:46	07:14 (TRQ04)
	20:52	11 06:29 (TRQ06)	20:25	21 07:44 (TRQ04)	19:36	23 07:37 (TRQ04)
10	05:46	06:18 (TRQ06)	06:15	07:21 (TRQ04)	06:47	07:17 (TRQ04)
	20:52	13 06:31 (TRQ06)	20:23	25 07:46 (TRQ04)	19:34	17 07:34 (TRQ04)
11	05:47	06:18 (TRQ06)	06:16	07:19 (TRQ04)	06:49	07:21
	20:52	14 06:32 (TRQ06)	20:22	29 07:48 (TRQ04)	19:32	18:40
12	05:47	06:18 (TRQ06)	06:17	07:17 (TRQ04)	06:50	07:22
	20:51	15 06:33 (TRQ06)	20:21	32 07:49 (TRQ04)	19:31	18:38
13	05:48	06:17 (TRQ06)	06:18	07:16 (TRQ04)	06:51	07:23
	20:50	16 06:33 (TRQ06)	20:19	34 07:50 (TRQ04)	19:29	18:37
14	05:49	06:16 (TRQ06)	06:19	07:14 (TRQ04)	06:52	07:24
	20:50	18 06:34 (TRQ06)	20:18	37 07:51 (TRQ04)	19:27	18:35
15	05:50	06:16 (TRQ06)	06:20	07:13 (TRQ04)	06:53	07:26
	20:49	18 06:34 (TRQ06)	20:16	39 07:52 (TRQ04)	19:25	18:34
16	05:51	06:16 (TRQ06)	06:21	07:12 (TRQ04)	06:54	07:27
	20:49	19 06:35 (TRQ06)	20:15	41 07:53 (TRQ04)	19:24	18:32
17	05:51	06:15 (TRQ06)	06:22	07:11 (TRQ04)	06:55	07:28
	20:48	20 06:35 (TRQ06)	20:13	42 07:53 (TRQ04)	19:22	18:30
18	05:52	06:15 (TRQ06)	06:23	07:10 (TRQ04)	06:56	07:29
	20:47	20 06:35 (TRQ06)	20:12	44 07:54 (TRQ04)	19:20	18:29
19	05:53	06:16 (TRQ06)	06:24	07:10 (TRQ04)	06:57	07:30
	20:47	20 06:36 (TRQ06)	20:10	44 07:54 (TRQ04)	19:18	18:27
20	05:54	06:17 (TRQ06)	06:25	07:09 (TRQ04)	06:58	07:31
	20:46	19 06:36 (TRQ06)	20:09	46 07:55 (TRQ04)	19:16	18:26
21	05:55	06:18 (TRQ06)	06:26	07:08 (TRQ04)	06:59	07:33
	20:45	18 06:36 (TRQ06)	20:07	47 07:55 (TRQ04)	19:15	18:24
22	05:56	06:19 (TRQ06)	06:27	07:08 (TRQ04)	07:00	07:34
	20:44	18 06:37 (TRQ06)	20:06	47 07:55 (TRQ04)	19:13	18:23
23	05:57	06:20 (TRQ06)	06:28	07:07 (TRQ04)	07:01	07:35
	20:43	17 06:37 (TRQ06)	20:04	48 07:55 (TRQ04)	19:11	18:21
24	05:58	06:21 (TRQ06)	06:30	07:07 (TRQ04)	07:02	07:36
	20:43	16 06:37 (TRQ06)	20:03	48 07:55 (TRQ04)	19:09	18:20
25	05:59	06:21 (TRQ06)	06:31	07:06 (TRQ04)	07:03	06:37
	20:42	15 06:36 (TRQ06)	20:01	49 07:55 (TRQ04)	19:08	17:18
26	06:00	06:22 (TRQ06)	06:32	07:06 (TRQ04)	07:04	06:39
	20:41	13 06:35 (TRQ06)	19:59	49 07:55 (TRQ04)	19:06	17:17
27	06:01	06:23 (TRQ06)	06:33	07:06 (TRQ04)	07:05	06:40
	20:40	12 06:35 (TRQ06)	19:58	48 07:54 (TRQ04)	19:04	17:15
28	06:01	06:24 (TRQ06)	06:34	07:06 (TRQ04)	07:07	06:41
	20:39	11 06:35 (TRQ06)	19:56	48 07:54 (TRQ04)	19:02	17:14
29	06:02	06:25 (TRQ06)	06:35	07:06 (TRQ04)	07:08	06:42
	20:38	9 06:34 (TRQ06)	19:55	47 07:53 (TRQ04)	19:01	17:13
30	06:03	06:26 (TRQ06)	06:36	07:06 (TRQ04)	07:09	06:43
	20:37	7 06:33 (TRQ06)	19:53	47 07:53 (TRQ04)	18:59	17:11
31	06:04	06:27 (TRQ06)	06:37	07:06 (TRQ04)		06:45
	20:35	5 06:32 (TRQ06)	19:51	46 07:52 (TRQ04)		17:10
Potential sun hours	463	430		376	344	295
Total, worst case	364		986		341	
Sun reduction	0,71		0,70		0,62	
Oper. time red.	0,95		0,95		0,95	
Wind dir. red.	0,72		0,64		0,64	
Total reduction	0,48		0,42		0,38	
Total, real	174		416		128	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** CJ - 173  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:52	07:28 17:27	06:51 18:03	06:58 19:39	06:11 20:12	06:55 (TRQ04) 06:03 (TRQ06)
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	46 07:41 (TRQ04) 20:43 20 06:23 (TRQ06)
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:15	45 07:40 (TRQ04) 20:44 19 06:23 (TRQ06)
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	44 07:40 (TRQ04) 20:45 18 06:22 (TRQ06)
5	07:43 16:55	07:24 17:32	06:44 18:08	06:51 19:43	06:05 20:17	42 07:38 (TRQ04) 20:46 19 06:23 (TRQ06)
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	41 07:38 (TRQ04) 20:46 18 06:23 (TRQ06)
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	39 07:37 (TRQ04) 20:47 17 06:23 (TRQ06)
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:47	06:02 20:20	37 07:36 (TRQ04) 20:48 16 06:22 (TRQ06)
9	07:43 16:59	07:19 17:37	06:38 18:12	06:45 19:48	06:00 20:21	35 07:35 (TRQ04) 20:48 15 06:22 (TRQ06)
10	07:43 17:00	07:18 17:39	06:36 18:13	06:43 19:49	05:59 20:22	33 07:34 (TRQ04) 20:49 15 06:22 (TRQ06)
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	31 07:32 (TRQ04) 20:49 14 06:22 (TRQ06)
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	05:57 20:24	27 07:30 (TRQ04) 20:50 13 06:22 (TRQ06)
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	05:56 20:25	24 07:29 (TRQ04) 20:51 13 06:21 (TRQ06)
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	05:55 20:26	20 07:27 (TRQ04) 20:51 12 06:21 (TRQ06)
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	05:54 20:27	15 07:24 (TRQ04) 20:51 11 06:21 (TRQ06)
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:56	05:53 20:29	7 07:19 (TRQ04) 20:52 11 06:21 (TRQ06)
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	05:52 20:30	4 06:17 (TRQ06) 20:52 10 06:21 (TRQ06)
18	07:39 17:09	07:08 17:49	06:22 18:23	06:30 19:58	05:51 20:31	6 06:18 (TRQ06) 20:53 9 06:21 (TRQ06)
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:50 20:32	8 06:20 (TRQ06) 20:53 9 06:21 (TRQ06)
20	07:38 17:12	07:05 17:52	06:19 18:25	06:27 20:00	05:49 20:33	10 06:21 (TRQ06) 20:53 8 06:21 (TRQ06)
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:34	11 06:21 (TRQ06) 20:54 8 06:21 (TRQ06)
22	07:37 17:14	07:02 17:54	06:16 18:27	06:24 20:02	05:47 20:34	13 06:22 (TRQ06) 20:54 8 06:21 (TRQ06)
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	14 06:22 (TRQ06) 20:54 8 06:21 (TRQ06)
24	07:36 17:17	06:59 17:57	06:12 18:30	06:21 20:04	05:45 20:36	15 06:23 (TRQ06) 20:54 8 06:22 (TRQ06)
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:45 20:37	16 06:23 (TRQ06) 20:54 9 06:22 (TRQ06)
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	05:44 20:38	17 06:23 (TRQ06) 20:55 9 06:22 (TRQ06)
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	18 06:24 (TRQ06) 20:55 9 06:23 (TRQ06)
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:43 20:40	18 06:24 (TRQ06) 20:55 9 06:23 (TRQ06)
29	07:31 17:23	06:51 19:35	06:03 19:35	06:13 20:10	05:42 20:41	19 06:23 (TRQ06) 20:55 11 06:24 (TRQ06)
30	07:30 17:24	06:50 19:36	06:02 19:36	06:12 20:11	05:41 20:42	19 06:23 (TRQ06) 20:55 12 06:25 (TRQ06)
31	07:29 17:26	06:49 19:38	06:01 19:38	06:11 20:11	05:41 20:42	20 06:23 (TRQ06) 20:55 12 06:25 (TRQ06)
Potential sun hours	294	295	369	400	452	457
Total, worst case				999	714	372
Sun reduction				0,49	0,57	0,61
Oper. time red.				0,95	0,95	0,95
Wind dir. red.				0,64	0,67	0,72
Total reduction				0,30	0,36	0,42
Total, real				302	258	155

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_real**Shadow receptor:** CJ - 173  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December			
1	05:40	06:13 (TRQ06)	06:05	07:15 (TRQ04)	06:38	07:05 (TRQ04)	07:10	06:46	07:22
	20:54	13 06:26 (TRQ06)	20:34	25 07:40 (TRQ04)	19:50	33 07:38 (TRQ04)	18:57	17:09	16:43
2	05:41	06:12 (TRQ06)	06:06	07:13 (TRQ04)	06:39	07:07 (TRQ04)	07:11	06:47	07:23
	20:54	14 06:26 (TRQ06)	20:33	28 07:41 (TRQ04)	19:48	29 07:36 (TRQ04)	18:55	17:07	16:42
3	05:41	06:13 (TRQ06)	06:08	07:12 (TRQ04)	06:40	07:09 (TRQ04)	07:12	06:48	07:24
	20:54	14 06:27 (TRQ06)	20:32	31 07:43 (TRQ04)	19:46	25 07:34 (TRQ04)	18:54	17:06	16:42
4	05:42	06:12 (TRQ06)	06:09	07:10 (TRQ04)	06:41	07:11 (TRQ04)	07:13	06:50	07:25
	20:54	15 06:27 (TRQ06)	20:31	34 07:44 (TRQ04)	19:44	19 07:30 (TRQ04)	18:52	17:05	16:42
5	05:43	06:12 (TRQ06)	06:10	07:09 (TRQ04)	06:42	07:16 (TRQ04)	07:14	06:51	07:26
	20:54	16 06:28 (TRQ06)	20:30	36 07:45 (TRQ04)	19:43	9 07:25 (TRQ04)	18:50	17:04	16:42
6	05:43	06:11 (TRQ06)	06:11	07:08 (TRQ04)	06:43		07:15	06:52	07:27
	20:53	17 06:28 (TRQ06)	20:28	38 07:46 (TRQ04)	19:41		18:49	17:02	16:42
7	05:44	06:12 (TRQ06)	06:12	07:07 (TRQ04)	06:44		07:16	06:53	07:28
	20:53	17 06:29 (TRQ06)	20:27	40 07:47 (TRQ04)	19:39		18:47	17:01	16:41
8	05:45	06:12 (TRQ06)	06:13	07:06 (TRQ04)	06:45		07:18	06:55	07:29
	20:53	18 06:30 (TRQ06)	20:26	42 07:48 (TRQ04)	19:38		18:45	17:00	16:41
9	05:45	06:11 (TRQ06)	06:14	07:05 (TRQ04)	06:46		07:19	06:56	07:30
	20:52	19 06:30 (TRQ06)	20:25	43 07:48 (TRQ04)	19:36		18:43	16:59	16:41
10	05:46	06:11 (TRQ06)	06:15	07:05 (TRQ04)	06:47		07:20	06:57	07:31
	20:52	19 06:30 (TRQ06)	20:23	44 07:49 (TRQ04)	19:34		18:42	16:58	16:41
11	05:47	06:11 (TRQ06)	06:16	07:04 (TRQ04)	06:49		07:21	06:58	07:32
	20:52	20 06:31 (TRQ06)	20:22	45 07:49 (TRQ04)	19:32		18:40	16:57	16:41
12	05:47	06:12 (TRQ06)	06:17	07:03 (TRQ04)	06:50		07:22	07:00	07:33
	20:51	20 06:32 (TRQ06)	20:21	47 07:50 (TRQ04)	19:31		18:38	16:56	16:41
13	05:48	06:11 (TRQ06)	06:18	07:03 (TRQ04)	06:51		07:23	07:01	07:34
	20:50	20 06:31 (TRQ06)	20:19	47 07:50 (TRQ04)	19:29		18:37	16:55	16:42
14	05:49	06:12 (TRQ06)	06:19	07:02 (TRQ04)	06:52		07:24	07:02	07:34
	20:50	20 06:32 (TRQ06)	20:18	48 07:50 (TRQ04)	19:27		18:35	16:54	16:42
15	05:50	06:13 (TRQ06)	06:20	07:02 (TRQ04)	06:53		07:26	07:03	07:35
	20:49	19 06:32 (TRQ06)	20:16	48 07:50 (TRQ04)	19:25		18:34	16:53	16:42
16	05:51	06:14 (TRQ06)	06:21	07:01 (TRQ04)	06:54		07:27	07:05	07:36
	20:49	19 06:33 (TRQ06)	20:15	50 07:51 (TRQ04)	19:24		18:32	16:52	16:42
17	05:51	06:14 (TRQ06)	06:22	07:01 (TRQ04)	06:55		07:28	07:06	07:37
	20:48	18 06:32 (TRQ06)	20:13	50 07:51 (TRQ04)	19:22		18:30	16:51	16:43
18	05:52	06:15 (TRQ06)	06:23	07:01 (TRQ04)	06:56		07:29	07:07	07:37
	20:47	17 06:32 (TRQ06)	20:12	49 07:50 (TRQ04)	19:20		18:29	16:50	16:43
19	05:53	06:16 (TRQ06)	06:24	07:00 (TRQ04)	06:57		07:30	07:08	07:38
	20:47	16 06:32 (TRQ06)	20:10	50 07:50 (TRQ04)	19:18		18:27	16:50	16:43
20	05:54	06:17 (TRQ06)	06:25	07:00 (TRQ04)	06:58		07:31	07:10	07:39
	20:46	15 06:32 (TRQ06)	20:09	50 07:50 (TRQ04)	19:16		18:26	16:49	16:44
21	05:55	06:18 (TRQ06)	06:26	07:00 (TRQ04)	06:59		07:33	07:11	07:39
	20:45	14 06:32 (TRQ06)	20:07	50 07:50 (TRQ04)	19:15		18:24	16:48	16:44
22	05:56	06:19 (TRQ06)	06:27	07:00 (TRQ04)	07:00		07:34	07:12	07:40
	20:44	13 06:32 (TRQ06)	20:06	49 07:49 (TRQ04)	19:13		18:23	16:47	16:45
23	05:57	06:20 (TRQ06)	06:28	07:00 (TRQ04)	07:01		07:35	07:13	07:40
	20:43	12 06:32 (TRQ06)	20:04	49 07:49 (TRQ04)	19:11		18:21	16:47	16:45
24	05:58	06:21 (TRQ06)	06:30	07:00 (TRQ04)	07:02		07:36	07:14	07:41
	20:43	11 06:32 (TRQ06)	20:03	48 07:48 (TRQ04)	19:09		18:20	16:46	16:46
25	05:59	06:21 (TRQ06)	06:31	07:00 (TRQ04)	07:03		07:37	07:15	07:41
	20:42	9 06:30 (TRQ06)	20:01	47 07:47 (TRQ04)	19:08		17:18	16:45	16:46
26	06:00	06:22 (TRQ06)	06:32	07:01 (TRQ04)	07:04		06:39	07:17	07:41
	20:41	7 06:29 (TRQ06)	19:59	46 07:47 (TRQ04)	19:06		17:17	16:45	16:47
27	06:01	06:23 (TRQ06)	06:33	07:01 (TRQ04)	07:05		06:40	07:18	07:42
	20:40	5 06:28 (TRQ06)	19:58	45 07:46 (TRQ04)	19:04		17:15	16:44	16:47
28	06:01	06:24 (TRQ06)	06:34	07:02 (TRQ04)	07:07		06:41	07:19	07:42
	20:39	3 06:27 (TRQ06)	19:56	43 07:45 (TRQ04)	19:02		17:14	16:44	16:48
29	06:02	07:22 (TRQ04)	06:35	07:02 (TRQ04)	07:08		06:42	07:20	07:42
	20:38	10 07:32 (TRQ04)	19:55	41 07:43 (TRQ04)	19:01		17:13	16:44	16:49
30	06:03	07:19 (TRQ04)	06:36	07:03 (TRQ04)	07:09		06:43	07:21	07:43
	20:37	17 07:36 (TRQ04)	19:53	39 07:42 (TRQ04)	18:59		17:11	16:43	16:50
31	06:04	07:16 (TRQ04)	06:37	07:04 (TRQ04)			06:45		07:43
	20:35	22 07:38 (TRQ04)	19:51	36 07:40 (TRQ04)			17:10		16:50
Potential sun hours	463	430	376	344	295	284			
Total, worst case	469	1338	115						
Sun reduction	0,71	0,70	0,62						
Oper. time red.	0,95	0,95	0,95						
Wind dir. red.	0,71	0,64	0,64						
Total reduction	0,48	0,43	0,38						
Total, real	224	573	44						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_realShadow receptor: CK - 176  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June		July		August	September	October	November	December
1	07:43	07:28	06:51	06:58	06:11	05:40	06:09 (TRQ04)	05:40	06:13 (TRQ04)	06:05	06:38	07:10	06:46	07:22
	16:52	17:27	18:03	19:39	20:12	20:43	44 06:53 (TRQ04)	20:54	50 07:03 (TRQ04)	20:34	19:50	18:57	17:09	16:43
2	07:43	07:27	06:49	06:56	06:09	05:40	06:10 (TRQ04)	05:41	06:13 (TRQ04)	06:06	06:39	07:11	06:47	07:23
	16:52	17:28	18:04	19:40	20:13	20:44	44 06:54 (TRQ04)	20:54	49 07:02 (TRQ04)	20:33	19:48	18:55	17:07	16:42
3	07:43	07:26	06:48	06:55	06:08	05:39	06:09 (TRQ04)	05:42	06:13 (TRQ04)	06:08	06:40	07:12	06:48	07:24
	16:53	17:30	18:05	19:41	20:15	20:45	45 06:54 (TRQ04)	20:54	50 07:03 (TRQ04)	20:32	19:46	18:54	17:06	16:42
4	07:43	07:25	06:46	06:53	06:07	05:39	06:09 (TRQ04)	05:42	06:13 (TRQ04)	06:09	06:41	07:13	06:50	07:25
	16:54	17:31	18:06	19:42	20:16	20:46	46 06:55 (TRQ04)	20:54	49 07:02 (TRQ04)	20:31	19:44	18:52	17:05	16:42
5	07:43	07:24	06:44	06:51	06:05	05:39	06:09 (TRQ04)	05:43	06:14 (TRQ04)	06:10	06:42	07:14	06:51	07:26
	16:55	17:32	18:08	19:43	20:17	20:46	47 06:56 (TRQ04)	20:54	49 07:03 (TRQ04)	20:30	19:43	18:50	17:04	16:42
6	07:43	07:23	06:43	06:50	06:04	05:38	06:09 (TRQ04)	05:43	06:14 (TRQ04)	06:11	06:43	07:15	06:52	07:27
	16:56	17:33	18:09	19:44	20:18	20:47	48 06:57 (TRQ04)	20:53	48 07:02 (TRQ04)	20:28	19:41	18:49	17:02	16:42
7	07:43	07:22	06:41	06:48	06:03	05:38	06:08 (TRQ04)	05:44	06:15 (TRQ04)	06:12	06:44	07:16	06:53	07:28
	16:57	17:35	18:10	19:45	20:19	20:48	48 06:56 (TRQ04)	20:53	47 07:02 (TRQ04)	20:27	19:39	18:47	17:01	16:41
8	07:43	07:21	06:39	06:46	06:02	05:38	06:08 (TRQ04)	05:45	06:16 (TRQ04)	06:13	06:45	07:18	06:55	07:29
	16:58	17:36	18:11	19:47	20:20	20:48	49 06:57 (TRQ04)	20:53	46 07:02 (TRQ04)	20:26	19:38	18:45	17:00	16:41
9	07:43	07:19	06:38	06:45	06:00	05:37	06:08 (TRQ04)	05:45	06:16 (TRQ04)	06:14	06:46	07:19	06:56	07:30
	16:59	17:37	18:12	19:48	20:21	20:49	50 06:58 (TRQ04)	20:52	45 07:01 (TRQ04)	20:25	19:36	18:43	16:59	16:41
10	07:43	07:18	06:36	06:43	05:59	05:37	06:09 (TRQ04)	05:46	06:17 (TRQ04)	06:15	06:47	07:20	06:57	07:31
	17:00	17:39	18:13	19:49	20:22	20:49	49 06:58 (TRQ04)	20:52	44 07:01 (TRQ04)	20:23	19:34	18:42	16:58	16:41
11	07:42	07:17	06:34	06:41	05:58	05:37	06:09 (TRQ04)	05:47	06:18 (TRQ04)	06:16	06:49	07:21	06:58	07:32
	17:01	17:40	18:15	19:50	20:23	20:50	50 06:59 (TRQ04)	20:52	43 07:01 (TRQ04)	20:22	19:32	18:40	16:57	16:41
12	07:42	07:16	06:33	06:40	05:57	05:37	06:08 (TRQ04)	05:47	06:18 (TRQ04)	06:17	06:50	07:22	07:00	07:33
	17:02	17:41	18:16	19:51	20:24	20:50	50 06:58 (TRQ04)	20:51	43 07:01 (TRQ04)	20:20	19:31	18:38	16:56	16:41
13	07:42	07:14	06:31	06:38	05:56	05:37	06:08 (TRQ04)	05:48	06:18 (TRQ04)	06:18	06:51	07:23	07:01	07:34
	17:03	17:43	18:17	19:47	20:20	20:51	50 06:58 (TRQ04)	20:50	42 07:00 (TRQ04)	20:19	19:29	18:37	16:55	16:42
14	07:41	07:13	06:29	06:36	05:55	05:37	06:08 (TRQ04)	05:49	06:19 (TRQ04)	06:19	06:52	07:24	07:02	07:34
	17:05	17:44	18:18	19:53	20:26	20:51	51 06:59 (TRQ04)	20:50	41 07:00 (TRQ04)	20:18	19:27	18:35	16:54	16:42
15	07:41	07:12	06:28	06:35	05:54	05:37	06:08 (TRQ04)	05:50	06:20 (TRQ04)	06:20	06:53	07:26	07:03	07:35
	17:06	17:45	18:19	19:54	20:27	20:52	51 06:59 (TRQ04)	20:49	40 07:00 (TRQ04)	20:16	19:25	18:34	16:53	16:42
16	07:40	07:10	06:26	06:33	05:53	05:37	06:08 (TRQ04)	05:51	06:22 (TRQ04)	06:21	06:54	07:27	07:05	07:36
	17:07	17:46	18:20	19:56	20:28	20:52	51 06:59 (TRQ04)	20:49	37 06:59 (TRQ04)	20:15	19:24	18:32	16:52	16:42
17	07:40	07:09	06:24	06:31	05:52	05:37	06:09 (TRQ04)	05:51	06:22 (TRQ04)	06:22	06:55	07:28	07:06	07:37
	17:08	17:48	18:22	19:57	20:30	20:53	52 07:01 (TRQ04)	20:48	36 06:58 (TRQ04)	20:13	19:22	18:30	16:51	16:43
18	07:39	07:08	06:22	06:30	05:51	05:37	06:09 (TRQ04)	05:52	06:23 (TRQ04)	06:23	06:56	07:29	07:07	07:37
	17:09	17:49	18:23	19:58	20:31	20:53	52 07:01 (TRQ04)	20:47	34 06:57 (TRQ04)	20:12	19:20	18:29	16:50	16:43
19	07:39	07:06	06:21	06:28	05:50	05:37	06:09 (TRQ04)	05:53	06:24 (TRQ04)	06:24	06:57	07:30	07:08	07:38
	17:10	17:50	18:24	19:59	20:32	7 06:34 (TRQ04)	20:53	52 07:01 (TRQ04)	20:47	32 06:56 (TRQ04)	20:10	19:18	18:27	16:50
20	07:38	07:05	06:19	06:27	05:49	06:23 (TRQ04)	05:37	06:09 (TRQ04)	05:54	06:26 (TRQ04)	06:25	06:58	07:31	07:10
	17:12	17:52	18:25	20:00	20:33	15 06:38 (TRQ04)	20:54	52 07:01 (TRQ04)	20:46	29 06:55 (TRQ04)	20:09	19:16	18:26	16:49
21	07:38	07:03	06:17	06:25	05:48	06:20 (TRQ04)	05:37	06:09 (TRQ04)	05:55	06:27 (TRQ04)	06:26	06:59	07:33	07:11
	17:13	17:53	18:26	20:01	20:33	21 06:41 (TRQ04)	20:54	52 07:01 (TRQ04)	20:45	27 06:54 (TRQ04)	20:07	19:15	18:24	16:48
22	07:37	07:02	06:16	06:24	05:47	06:18 (TRQ04)	05:37	06:09 (TRQ04)	05:56	06:29 (TRQ04)	06:27	07:00	07:34	07:12
	17:14	17:54	18:27	20:02	20:34	24 06:42 (TRQ04)	20:54	52 07:01 (TRQ04)	20:44	23 06:52 (TRQ04)	20:06	19:13	18:23	16:47
23	07:36	07:00	06:14	06:22	05:46	06:17 (TRQ04)	05:37	06:10 (TRQ04)	05:57	06:32 (TRQ04)	06:28	07:01	07:35	07:13
	17:15	17:55	18:28	20:03	20:35	28 06:45 (TRQ04)	20:54	52 07:02 (TRQ04)	20:43	18 06:50 (TRQ04)	20:04	19:11	18:21	16:47
24	07:36	06:59	06:12	06:21	05:45	06:15 (TRQ04)	05:38	06:10 (TRQ04)	05:58	06:35 (TRQ04)	06:30	07:02	07:36	07:14
	17:17	17:57	18:30	20:04	20:36	31 06:46 (TRQ04)	20:54	52 07:02 (TRQ04)	20:42	12 06:47 (TRQ04)	20:03	19:09	18:20	16:46
25	07:35	06:57	06:10	06:19	05:45	06:14 (TRQ04)	05:38	06:10 (TRQ04)	05:59	06:31	07:03	06:37	07:15	07:41
	17:18	17:58	18:31	20:06	20:37	33 06:47 (TRQ04)	20:55	52 07:02 (TRQ04)	20:42	20:01	19:08	17:18	16:45	16:46
26	07:34	06:56	06:09	06:18	05:44	06:14 (TRQ04)	05:38	06:11 (TRQ04)	06:00	06:32	07:04	06:39	07:17	07:41
	17:19	17:59	18:32	20:07	20:38	35 06:49 (TRQ04)	20:55	51 07:02 (TRQ04)	20:41	19:59	19:06	17:17	16:45	16:47
27	07:33	06:54	06:07	06:16	05:43	06:13 (TRQ04)	05:39	06:11 (TRQ04)	06:01	06:33	07:05	06:40	07:18	07:42
	17:20	18:00	18:33	20:08	20:39	36 06:49 (TRQ04)	20:55	51 07:02 (TRQ04)	20:40	19:58	19:04	17:15	16:44	16:47
28	07:32	06:52	06:05	06:15	05:43	06:11 (TRQ04)	05:39	06:11 (TRQ04)	06:01	06:34	07:07	06:41	07:19	07:42
	17:22	18:01	18:34	20:09	20:40	39 06:50 (TRQ04)	20:55	51 07:02 (TRQ04)	20:39	19:56	19:02	17:14	16:44	16:48
29	07:31	07:03	06:13	06:21	05:42	06:11 (TRQ04)	05:40	06:12 (TRQ04)	06:02	06:35	07:08	06:42	07:20	07:42
	17:23	18:03	18:36	20:10	20:41	40 06:51 (TRQ04)	20:55	51 07:03 (TRQ04)	20:38	19:54	19:01	17:13	16:44	16:49
30	07:30	07:02	06:12	06:20	05:41	06:10 (TRQ04)	05:40	06:12 (TRQ04)	06:03	06:36	07:09	06:43	07:21	07:43
	17:24	18:03	18:36	20:11	20:42	42 06:52 (TRQ04)	20:55	50 07:02 (TRQ04)	20:37	19:53	18:59	17:11	16:43	16:50
31	07:29	07:00	06:10	06:18	05:41	06:10 (TRQ04)	05:40	06:10	06:04	06:37	07:10	06:45	07:18	07:43
	17:26	18:05	18:38	20:12	20:42	43 06:53 (TRQ04)	20:55	50 07:02 (TRQ04)	20:35	19:51	18:57	17:10	16:44	16:50
Potential sun hours	294	295	369	400	452	457	457	463	430	376	344	295	284	
Total, worst case					394		1495		934					
Sun reduction					0,57		0,61		0,7					

Project:

Tarquini1

Licensed user:

MONTANA SPA
VIA ANGELO CARLO FUMAGALLI 6
IT-20143 MILANO
0254118173
Andrea / fronteddu@montanambiente.com
Calculated:
06/08/2022 14:40/3.5.584

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: CL - 177
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with 12 columns for months (January to December) and 31 rows of daily data. Each row contains time intervals (e.g., 07:43-07:28) and TRQ04 codes. Summary rows at the bottom show 'Potential sun hours', 'Total, worst case', 'Sun reduction', 'Oper. time red.', 'Wind dir. red.', 'Total reduction', and 'Total, real'.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)



**SHADOW - Calendar**

Calculation: Shadow\_realShadow receptor: CM - 178  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with 13 columns for months and 31 rows for days. Columns: January, February, March, April, May, June, July, August, September, October, November, December. Rows contain sunrise and sunset times (hh:mm) for each day. Includes summary rows for 'Potential sun hours', 'Total, worst case', and 'Total, real'.

Table layout: For each day in each month the following matrix apply

Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real**Shadow receptor:** CN - 180  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:09	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:14	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:45	05:42 20:54	06:09 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:39 20:46	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	06:51 17:04	07:26 16:42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:11 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:42
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:01 20:20	05:38 20:48	05:45 20:53	06:13 20:26	06:45 19:37	07:18 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:42 17:00	07:18 17:39	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50	05:47 20:51	06:16 20:22	06:48 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	05:57 20:24	05:37 20:50	05:47 20:51	06:17 20:20	06:50 19:31	07:22 18:38	07:00 16:56	07:33 16:41
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	05:56 20:25	05:37 20:51	05:48 20:50	06:18 20:19	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	05:55 20:26	05:37 20:51	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	05:54 20:27	05:37 20:52	05:50 20:49	06:20 20:16	06:53 19:25	07:25 18:34	07:03 16:53	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55	05:53 20:28	05:37 20:52	05:51 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	05:52 20:29	05:37 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:43
18	07:39 17:09	07:07 17:49	06:22 18:23	06:30 19:58	05:51 20:30	05:37 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:50 20:31	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:50	07:38 16:43
20	07:38 17:12	07:05 17:51	06:19 18:25	06:27 20:00	05:49 20:32	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:09 16:49	07:38 16:44
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:32 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:24 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:45
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	07:35 17:17	06:59 17:56	06:12 18:30	06:21 20:04	05:45 20:36	05:38 20:54	05:58 20:42	06:30 20:03	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:45 20:37	05:38 20:54	05:59 20:42	06:31 20:01	07:03 19:08	06:37 17:18	07:15 16:45	07:41 16:46
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	05:44 20:38	05:38 20:55	06:00 20:41	06:32 19:59	07:04 19:06	06:38 17:17	07:17 16:45	07:41 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:39 20:55	06:00 20:40	06:33 19:58	07:05 19:04	06:40 17:15	07:18 16:44	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:43 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:07 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	07:31 17:23		07:03 19:35	06:13 20:10	05:42 20:41	05:40 20:55	06:02 20:38	06:35 19:54	07:08 19:01	06:42 17:13	07:20 16:44	07:42 16:49
30	07:30 17:24		07:02 19:36	06:12 20:11	05:41 20:42	05:40 20:54	06:03 20:37	06:36 19:53	07:09 18:59	06:43 17:11	07:21 16:43	07:43 16:50
31	07:29 17:26		07:00 19:37		05:41 20:42		06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** CO - 183  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51 38	15:43 (TRQ03)   07:28 16:21 (TRQ03)   17:27	06:51 18:03	06:58 19:39 18	07:17 (TRQ08)   06:11 07:35 (TRQ08)   20:12	05:40 20:43
2	07:43 16:52 38	15:43 (TRQ03)   07:27 16:21 (TRQ03)   17:28	06:49 18:04	06:56 19:40 19	07:15 (TRQ08)   06:09 07:34 (TRQ08)   20:13	05:40 20:44
3	07:43 16:53 38	15:44 (TRQ03)   07:26 16:22 (TRQ03)   17:29	06:48 18:05	17:38 (TRQ01)   06:55 17:43 (TRQ01)   19:41	07:14 (TRQ08)   06:08 07:34 (TRQ08)   20:15	05:39 20:45
4	07:43 16:54 37	15:45 (TRQ03)   07:25 16:22 (TRQ03)   17:31	06:46 18:06	06:53 19:42 20	07:13 (TRQ08)   06:06 07:33 (TRQ08)   20:16	05:39 20:46
5	07:43 16:55 38	15:45 (TRQ03)   07:24 16:23 (TRQ03)   17:32	06:44 18:07	9 17:44 (TRQ01)   19:42 17:34 (TRQ01)   06:51	07:13 (TRQ08)   06:05 07:32 (TRQ08)   20:17	05:38 20:46
6	07:43 16:56 37	15:46 (TRQ03)   07:23 16:23 (TRQ03)   17:33	06:43 18:09	12 17:46 (TRQ01)   19:43 17:32 (TRQ01)   06:50	19 07:32 (TRQ08)   20:17 07:14 (TRQ08)   06:04	05:38 20:47
7	07:43 16:57 37	15:47 (TRQ03)   07:22 16:24 (TRQ03)   17:35	06:41 18:10	15 17:47 (TRQ01)   19:44 17:31 (TRQ01)   06:48	16 07:30 (TRQ08)   20:18 07:15 (TRQ08)   06:03	05:38 20:48
8	07:43 16:58 37	15:47 (TRQ03)   07:21 16:23 (TRQ03)   17:36	06:39 18:11	17 17:48 (TRQ01)   19:45 17:30 (TRQ01)   06:46	14 07:29 (TRQ08)   20:19 07:17 (TRQ08)   06:01	05:37 20:48
9	07:43 16:59 37	15:47 (TRQ03)   07:19 16:24 (TRQ03)   17:37	06:38 18:12	20 17:50 (TRQ01)   19:47 17:30 (TRQ01)   06:45	9 07:26 (TRQ08)   20:20 20:21	05:37 20:49
10	07:43 17:00 36	15:48 (TRQ03)   07:18 16:24 (TRQ03)   17:39	06:36 18:13	21 17:51 (TRQ01)   19:48 17:29 (TRQ01)   06:43	20:22 05:59	05:37 20:49
11	07:42 17:01 36	15:49 (TRQ03)   07:17 16:25 (TRQ03)   17:40	06:34 18:15	23 17:52 (TRQ01)   19:49 17:28 (TRQ01)   06:41	20:22 05:58	05:37 20:50
12	07:42 17:02 35	15:49 (TRQ03)   07:16 16:24 (TRQ03)   17:41	06:33 18:16	25 17:53 (TRQ01)   19:50 17:29 (TRQ01)   06:40	20:23 05:57	05:37 20:51
13	07:42 17:03 35	15:50 (TRQ03)   07:14 16:25 (TRQ03)   17:42	06:31 18:17	26 17:55 (TRQ01)   19:51 17:29 (TRQ01)   06:38	20:24 05:56	05:37 20:51
14	07:41 17:04 34	15:50 (TRQ03)   07:13 16:24 (TRQ03)   17:44	06:29 18:18	26 17:55 (TRQ01)   19:53 17:30 (TRQ01)   06:35	20:25 05:55	05:36 20:52
15	07:41 17:06 33	15:52 (TRQ03)   07:12 16:25 (TRQ03)   17:45	06:28 18:19	24 17:54 (TRQ01)   19:54 17:30 (TRQ01)   06:33	20:26 05:54	05:36 20:52
16	07:40 17:07 32	15:52 (TRQ03)   07:10 16:24 (TRQ03)   17:46	06:26 18:20	23 17:53 (TRQ01)   19:56 17:31 (TRQ01)   06:31	20:27 05:52	05:36 20:52
17	07:40 17:08 32	15:53 (TRQ03)   07:09 16:25 (TRQ03)   17:48	06:24 18:22	20 17:51 (TRQ01)   19:57 17:32 (TRQ01)   06:30	20:29 05:51	05:36 20:53
18	07:39 17:09 30	15:54 (TRQ03)   07:08 16:24 (TRQ03)   17:49	06:22 18:23	17 17:49 (TRQ01)   19:58 17:35 (TRQ01)   06:28	20:30 05:50	05:37 20:53
19	07:39 17:10 28	15:55 (TRQ03)   07:06 16:23 (TRQ03)   17:50	06:21 18:24	11 17:46 (TRQ01)   19:59 06:27	20:31 05:49	05:37 20:54
20	07:38 17:12 26	15:57 (TRQ03)   07:05 16:23 (TRQ03)   17:51	06:19 18:25	06:25	20:33 05:48	05:37 20:54
21	07:38 17:13 24	15:58 (TRQ03)   07:03 16:22 (TRQ03)   17:53	06:17 18:26	20:01	20:34 05:47	05:37 20:54
22	07:37 17:14 22	15:59 (TRQ03)   07:02 16:21 (TRQ03)   17:54	06:15 18:27	06:24	20:34 05:46	05:37 20:54
23	07:36 17:15 19	16:01 (TRQ03)   07:00 16:20 (TRQ03)   17:55	06:14 18:28	06:22	20:35 05:45	05:37 20:54
24	07:36 17:17 15	16:04 (TRQ03)   06:59 16:19 (TRQ03)   17:56	06:12 18:30	20:03 20:04	20:36 05:45	05:38 20:54
25	07:35 17:18 11	16:06 (TRQ03)   06:57 16:17 (TRQ03)   17:58	06:10 18:31	06:19 20:06	20:37 05:44	05:38 20:55
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	20:38 05:43	05:38 20:55
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	20:39 05:42	05:39 20:55
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	20:40 05:42	05:39 20:55
29	07:31 17:23	07:03	07:03 19:35	06:13 20:10	20:41 05:41	05:39 20:55
30	07:30 17:24	07:02	07:20 (TRQ08)   20:11 19:36	06:12 20:11	20:42 05:41	05:40 20:55
31	07:29 17:26	07:00 19:38	07:00 19:38	06:19 20:06	20:42 05:41	05:41 20:55
Potential sun hours	294	295	369	400	452	457
Total, worst case	785		380		135	
Sun reduction	0,42		0,46		0,49	
Oper. time red.	0,95		0,95		0,95	
Wind dir. red.	0,76		0,65		0,62	
Total reduction	0,31		0,28		0,30	
Total, real	239		107		40	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_real**Shadow receptor:** CO - 183  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40 20:55	06:05 20:34	06:38 19:49	07:10 18:57	18:07 (TRQ01) 17:09	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	18:07 (TRQ01) 17:07	07:23 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	18:07 (TRQ01) 17:06	07:24 16:42
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	18:07 (TRQ01) 17:05	07:25 16:42
5	05:43 20:54	06:09 20:30	06:42 19:43	07:14 (TRQ08) 07:25 (TRQ08)	18:07 (TRQ01) 17:03	07:26 16:42
6	05:43 20:53	06:10 20:28	06:43 19:41	07:15 (TRQ08) 07:16 (TRQ08)	18:07 (TRQ01) 17:02	07:27 16:41
7	05:44 20:53	06:12 20:27	06:44 19:39	07:16 (TRQ08) 07:17 (TRQ08)	18:07 (TRQ01) 17:01	07:28 16:41
8	05:44 20:53	06:13 20:26	06:45 19:38	07:18 (TRQ08) 07:19 (TRQ08)	18:08 (TRQ01) 17:00	07:29 16:41
9	05:45 20:52	06:14 20:25	06:46 19:36	07:19 (TRQ08) 07:20 (TRQ08)	18:09 (TRQ01) 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	07:21 (TRQ08) 07:22 (TRQ08)	18:10 (TRQ01) 16:58	07:31 16:41
11	05:47 20:52	06:16 20:22	06:48 19:32	07:22 (TRQ08) 07:23 (TRQ08)	18:11 (TRQ01) 16:57	07:32 16:41
12	05:47 20:51	06:17 20:21	06:50 19:31	07:23 (TRQ08) 07:24 (TRQ08)	18:12 (TRQ01) 16:56	07:33 16:41
13	05:48 20:51	06:18 20:19	06:51 19:29	07:24 (TRQ08) 07:25 (TRQ08)	18:13 (TRQ01) 16:55	07:34 16:42
14	05:49 20:50	06:19 20:18	06:52 19:27	07:26 (TRQ08) 07:27 (TRQ08)	18:14 (TRQ01) 16:54	07:35 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	07:28 (TRQ08) 07:29 (TRQ08)	18:15 (TRQ01) 16:53	07:36 16:42
16	05:50 20:49	06:21 20:15	06:54 19:23	07:30 (TRQ08) 07:31 (TRQ08)	18:16 (TRQ01) 16:52	07:37 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	07:32 (TRQ08) 07:33 (TRQ08)	18:17 (TRQ01) 16:51	07:38 16:42
18	05:52 20:47	06:23 20:12	06:56 19:20	07:34 (TRQ08) 07:35 (TRQ08)	18:18 (TRQ01) 16:50	07:39 16:43
19	05:53 20:47	06:24 20:10	06:57 19:18	07:36 (TRQ08) 07:37 (TRQ08)	18:19 (TRQ01) 16:49	07:40 16:43
20	05:54 20:46	06:25 20:09	06:58 19:16	07:38 (TRQ08) 07:39 (TRQ08)	18:20 (TRQ01) 16:48	07:41 16:44
21	05:55 20:45	06:26 20:07	06:59 19:15	07:40 (TRQ08) 07:41 (TRQ08)	18:21 (TRQ01) 16:47	07:42 16:44
22	05:56 20:44	06:27 20:06	07:00 19:13	07:42 (TRQ08) 07:43 (TRQ08)	18:22 (TRQ01) 16:46	07:43 16:44
23	05:57 20:43	06:28 20:04	07:01 19:11	07:44 (TRQ08) 07:45 (TRQ08)	18:23 (TRQ01) 16:45	07:44 16:44
24	05:58 20:43	06:29 20:03	07:02 19:09	07:46 (TRQ08) 07:47 (TRQ08)	18:24 (TRQ01) 16:44	07:45 16:44
25	05:58 20:42	06:31 20:01	07:03 19:08	07:48 (TRQ08) 07:49 (TRQ08)	18:25 (TRQ01) 16:43	07:46 16:44
26	05:59 20:41	06:32 19:59	07:04 19:06	07:50 (TRQ08) 07:51 (TRQ08)	18:26 (TRQ01) 16:42	07:47 16:44
27	06:00 20:40	06:33 19:58	07:05 19:04	07:52 (TRQ08) 07:53 (TRQ08)	18:27 (TRQ01) 16:41	07:48 16:44
28	06:01 20:39	06:34 19:56	07:06 19:02	07:54 (TRQ08) 07:55 (TRQ08)	18:28 (TRQ01) 16:40	07:49 16:44
29	06:02 20:38	06:35 19:54	07:07 19:01	07:56 (TRQ08) 07:57 (TRQ08)	18:29 (TRQ01) 16:39	07:50 16:44
30	06:03 20:37	06:36 19:53	07:08 18:59	07:58 (TRQ08) 07:59 (TRQ08)	18:30 (TRQ01) 16:38	07:51 16:44
31	06:04 20:36	06:37 19:51	07:09 18:57	08:00 (TRQ08) 08:01 (TRQ08)	18:31 (TRQ01) 16:37	07:52 16:44
Potential sun hours	463	430	376	344	295	284
Total, worst case			338	190	375	1169
Sun reduction			0,62	0,55	0,46	0,43
Oper. time red.			0,95	0,95	0,95	0,95
Wind dir. red.			0,63	0,65	0,76	0,76
Total reduction			0,38	0,34	0,33	0,31
Total, real			128	65	124	366

**Table layout: For each day in each month the following matrix apply**

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: CP - 184  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January		February		March		April		May		June	
1	07:43	08:28 (TRQ02)	07:28		16:10 (TRQ03)	06:51		06:58		07:17 (TRQ08)	06:11	05:40
	16:51	60	16:25 (TRQ03)	17:27	14	16:24 (TRQ03)	18:03		7	07:24 (TRQ08)	20:12	20:43
2	07:43	08:29 (TRQ02)	07:27		16:17 (TRQ03)	06:49		06:56		07:15 (TRQ08)	06:09	05:40
	16:52	59	16:25 (TRQ03)	17:28	1	16:18 (TRQ03)	18:04		10	07:25 (TRQ08)	20:13	20:44
3	07:43	08:30 (TRQ02)	07:26			06:48		06:55		07:14 (TRQ08)	06:08	05:39
	16:53	59	16:26 (TRQ03)	17:29		18:05		19:41	12	07:26 (TRQ08)	20:15	20:45
4	07:43	08:31 (TRQ02)	07:25			06:46		06:53		07:12 (TRQ08)	06:06	05:39
	16:54	58	16:27 (TRQ03)	17:31		18:06		19:42	14	07:26 (TRQ08)	20:16	20:46
5	07:43	08:32 (TRQ02)	07:24			06:44		06:51		07:10 (TRQ08)	06:05	05:38
	16:55	58	16:28 (TRQ03)	17:32		18:07		19:43	16	07:26 (TRQ08)	20:17	20:46
6	07:43	08:34 (TRQ02)	07:23			06:43		06:50		07:08 (TRQ08)	06:04	05:38
	16:56	56	16:29 (TRQ03)	17:33		18:09		19:44	17	07:25 (TRQ08)	20:18	20:47
7	07:43	08:35 (TRQ02)	07:22			06:41		06:48		07:07 (TRQ08)	06:03	05:38
	16:57	55	16:30 (TRQ03)	17:35		18:10		19:45	19	07:26 (TRQ08)	20:19	20:48
8	07:43	08:36 (TRQ02)	07:21			06:39		06:46		07:05 (TRQ08)	06:01	05:37
	16:58	52	16:29 (TRQ03)	17:36		18:11	17:49 (TRQ01)	19:47	20	07:25 (TRQ08)	20:20	20:48
9	07:43	08:39 (TRQ02)	07:19			06:38	17:50 (TRQ01)	06:45		07:04 (TRQ08)	06:00	05:37
	16:59	48	16:30 (TRQ03)	17:37		18:12	17:44 (TRQ01)	19:48	20	07:24 (TRQ08)	20:21	20:49
10	07:43	15:50 (TRQ03)	07:18			06:36	17:51 (TRQ01)	06:43		07:06 (TRQ08)	05:59	05:37
	17:00	41	16:31 (TRQ03)	17:39		18:13	17:41 (TRQ01)	19:49	17	07:23 (TRQ08)	20:22	20:49
11	07:42	15:51 (TRQ03)	07:17			06:34	17:52 (TRQ01)	06:41		07:06 (TRQ08)	05:58	05:37
	17:01	41	16:32 (TRQ03)	17:40		18:15	17:39 (TRQ01)	19:50	15	07:21 (TRQ08)	20:23	20:50
12	07:42	15:51 (TRQ03)	07:16			06:33	17:53 (TRQ01)	06:40		07:07 (TRQ08)	05:57	05:37
	17:02	41	16:32 (TRQ03)	17:41		18:16	17:38 (TRQ01)	19:51	12	07:19 (TRQ08)	20:24	20:51
13	07:42	15:51 (TRQ03)	07:14			06:31	17:55 (TRQ01)	06:38		07:11 (TRQ08)	05:56	05:37
	17:03	41	16:32 (TRQ03)	17:42		18:17	17:37 (TRQ01)	19:52	5	07:16 (TRQ08)	20:25	20:51
14	07:41	15:51 (TRQ03)	07:13			06:29	17:55 (TRQ01)	06:36			05:55	05:36
	17:04	41	16:32 (TRQ03)	17:44		18:18	17:36 (TRQ01)	19:53			20:26	20:52
15	07:41	15:52 (TRQ03)	07:12			06:28	17:56 (TRQ01)	06:35			05:54	05:36
	17:06	41	16:33 (TRQ03)	17:45		18:19	17:36 (TRQ01)	19:54			20:27	20:52
16	07:40	15:52 (TRQ03)	07:10			06:26	17:58 (TRQ01)	06:33			05:52	05:36
	17:07	41	16:33 (TRQ03)	17:46		18:20	17:35 (TRQ01)	19:56			20:29	20:52
17	07:40	15:53 (TRQ03)	07:09			06:24	17:59 (TRQ01)	06:31			05:51	05:36
	17:08	40	16:33 (TRQ03)	17:48		18:22	17:34 (TRQ01)	19:57			20:30	20:53
18	07:39	15:53 (TRQ03)	07:08			06:22	18:00 (TRQ01)	06:30			05:51	05:37
	17:09	40	16:33 (TRQ03)	17:49		18:23	17:34 (TRQ01)	19:58			20:31	20:53
19	07:39	15:54 (TRQ03)	07:06			06:21	18:01 (TRQ01)	06:28			05:50	05:37
	17:10	39	16:33 (TRQ03)	17:50		18:24	17:34 (TRQ01)	19:59			20:32	20:53
20	07:38	15:55 (TRQ03)	07:05			06:19	18:03 (TRQ01)	06:27			05:49	05:37
	17:12	39	16:34 (TRQ03)	17:51		18:25	17:35 (TRQ01)	20:00			20:33	20:54
21	07:38	15:55 (TRQ03)	07:03			06:17	18:02 (TRQ01)	06:25			05:48	05:37
	17:13	38	16:33 (TRQ03)	17:53		18:26	17:34 (TRQ01)	06:25			20:34	20:54
22	07:37	15:56 (TRQ03)	07:02			06:15	18:01 (TRQ01)	06:24			05:47	05:37
	17:14	37	16:33 (TRQ03)	17:54		18:27	17:35 (TRQ01)	20:02			20:34	20:54
23	07:36	15:56 (TRQ03)	07:00			06:14	17:59 (TRQ01)	06:22			05:46	05:37
	17:15	37	16:33 (TRQ03)	17:55		18:28	17:36 (TRQ01)	20:03			20:35	20:54
24	07:36	15:58 (TRQ03)	06:59			06:12	18:28 (TRQ01)	06:21			05:45	05:38
	17:17	35	16:33 (TRQ03)	17:56		18:30	17:37 (TRQ01)	20:04			20:36	20:54
25	07:35	15:59 (TRQ03)	06:57			06:10	17:57 (TRQ01)	06:19			05:45	05:38
	17:18	34	16:33 (TRQ03)	17:58		18:31	17:39 (TRQ01)	20:06			20:37	20:55
26	07:34	16:00 (TRQ03)	06:56			06:09	17:54 (TRQ01)	06:18			05:44	05:38
	17:19	32	16:32 (TRQ03)	17:59		18:32	17:41 (TRQ01)	20:07	9		20:38	20:55
27	07:33	16:01 (TRQ03)	06:54			06:07	17:50 (TRQ01)	06:16			05:43	05:39
	17:20	30	16:31 (TRQ03)	18:00		18:33		20:08			20:39	20:55
28	07:32	16:02 (TRQ03)	06:52			06:05		06:15			05:42	05:39
	17:22	28	16:30 (TRQ03)	18:01		18:34		20:09			20:40	20:55
29	07:31	16:04 (TRQ03)				07:03		06:13			05:42	05:39
	17:23	25	16:29 (TRQ03)			19:35		20:10			20:41	20:55
30	07:30	16:05 (TRQ03)				07:02		06:12			05:41	05:40
	17:24	23	16:28 (TRQ03)			19:36		20:11			20:42	20:55
31	07:29	16:08 (TRQ03)				07:00					05:41	
	17:26	18	16:26 (TRQ03)			19:38	07:19 (TRQ08)				20:42	
Potential sun hours	294		295			369	3	400			452	457
Total, worst case	1287		15			365		184				
Sun reduction	0,42		0,46			0,46		0,49				
Oper. time red.	0,95		0,95			0,95		0,95				
Wind dir. red.	0,72		0,76			0,64		0,63				
Total reduction	0,29		0,33			0,28		0,30				
Total, real	373		5			102		55				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: CP - 184
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Table with 12 columns (Jan-Dec) and 1 row of values: 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

Table with 13 columns (N-Sum) and 1 row of values: 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Main shadow calculation table with columns for months (July-December) and rows for sun hours and reduction factors.

Table layout: For each day in each month the following matrix apply

Matrix table with 4 columns: Day in month, Sun rise/set, Minutes with flicker, First/Last time with flicker.

### SHADOW - Calendar

Calculation: Shadow\_realShadow receptor: CQ - 185  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January		February		March		April		May		June	
1	07:43	14:39 (TRQ06)	07:28	14:57 (TRQ06)	06:51	06:58	18:42 (TRQ05)	06:10	05:40			
	16:51	97	16:20 (TRQ04)	17:27	65	16:02 (TRQ06)	18:03	19:39	35	19:17 (TRQ05)	20:12	20:43
2	07:43	14:40 (TRQ06)	07:27	14:58 (TRQ06)	06:49	06:56	18:41 (TRQ05)	06:09	05:40			
	16:52	96	16:20 (TRQ04)	17:28	63	16:01 (TRQ06)	18:04	19:40	37	19:18 (TRQ05)	20:13	20:44
3	07:43	14:40 (TRQ06)	07:26	15:00 (TRQ06)	06:48	06:55	18:40 (TRQ05)	06:08	05:39			
	16:53	96	16:20 (TRQ04)	17:29	61	16:01 (TRQ06)	18:05	19:41	38	19:18 (TRQ05)	20:14	20:45
4	07:43	14:41 (TRQ06)	07:25	15:01 (TRQ06)	06:46	06:53	18:41 (TRQ05)	06:06	05:39			
	16:54	94	16:20 (TRQ04)	17:31	59	16:00 (TRQ06)	18:06	19:42	38	19:19 (TRQ05)	20:16	20:45
5	07:43	14:41 (TRQ06)	07:24	15:02 (TRQ06)	06:44	06:51	18:40 (TRQ05)	06:05	05:38			
	16:55	94	16:20 (TRQ04)	17:32	56	15:58 (TRQ06)	18:07	19:43	38	19:18 (TRQ05)	20:17	20:46
6	07:43	14:42 (TRQ06)	07:23	15:03 (TRQ06)	06:43	06:50	18:40 (TRQ05)	06:04	05:38			
	16:56	92	16:20 (TRQ04)	17:33	55	15:58 (TRQ06)	18:09	19:44	37	19:17 (TRQ05)	20:18	20:47
7	07:43	14:42 (TRQ06)	07:22	15:05 (TRQ06)	06:41	06:48	18:41 (TRQ05)	06:03	05:38			
	16:57	91	16:20 (TRQ04)	17:35	52	15:57 (TRQ06)	18:10	19:45	36	19:17 (TRQ05)	20:19	20:48
8	07:43	14:42 (TRQ06)	07:21	15:07 (TRQ06)	06:39	06:46	18:40 (TRQ05)	06:01	05:37			
	16:58	90	16:19 (TRQ04)	17:36	49	15:56 (TRQ06)	18:11	19:46	36	19:16 (TRQ05)	20:20	20:48
9	07:43	14:43 (TRQ06)	07:19	15:09 (TRQ06)	06:38	06:44	18:40 (TRQ05)	06:00	05:37			
	16:59	86	16:18 (TRQ04)	17:37	46	15:55 (TRQ06)	18:12	19:48	35	19:15 (TRQ05)	20:21	20:49
10	07:42	14:43 (TRQ06)	07:18	15:11 (TRQ06)	06:36	06:43	18:42 (TRQ05)	05:59	05:37			
	17:00	83	16:17 (TRQ04)	17:39	41	15:52 (TRQ06)	18:13	19:49	33	19:15 (TRQ05)	20:22	20:49
11	07:42	14:43 (TRQ06)	07:17	15:14 (TRQ06)	06:34	06:41	18:42 (TRQ05)	05:58	05:37			
	17:01	78	16:01 (TRQ06)	17:40	36	15:50 (TRQ06)	18:15	19:50	31	19:13 (TRQ05)	20:23	20:50
12	07:42	14:44 (TRQ06)	07:16	15:17 (TRQ06)	06:33	06:39	18:43 (TRQ05)	05:57	05:37			
	17:02	78	16:02 (TRQ06)	17:41	31	15:48 (TRQ06)	18:16	19:51	28	19:11 (TRQ05)	20:24	20:50
13	07:42	14:45 (TRQ06)	07:14	15:20 (TRQ06)	06:31	06:38	18:44 (TRQ05)	05:56	05:37			
	17:03	77	16:02 (TRQ06)	17:42	24	15:44 (TRQ06)	18:17	19:52	26	19:10 (TRQ05)	20:25	20:51
14	07:41	14:45 (TRQ06)	07:13	15:26 (TRQ06)	06:29	06:36	18:46 (TRQ05)	05:55	05:36			
	17:04	77	16:02 (TRQ06)	17:44	14	15:40 (TRQ06)	18:18	19:53	22	19:08 (TRQ05)	20:26	20:51
15	07:41	14:46 (TRQ06)	07:12		06:28	06:35	18:48 (TRQ05)	05:53	05:36			
	17:06	77	16:03 (TRQ06)	17:45		18:19	19:54	18	19:06 (TRQ05)	20:27	20:52	
16	07:40	14:46 (TRQ06)	07:10		06:26	06:33	18:51 (TRQ05)	05:52	05:36			
	17:07	77	16:03 (TRQ06)	17:46		18:20	19:55	10	19:01 (TRQ05)	20:28	20:52	
17	07:40	14:47 (TRQ06)	07:09		06:24	06:31			20:51	05:36		
	17:08	77	16:04 (TRQ06)	17:48		18:22	19:57		20:29	20:53		
18	07:39	14:47 (TRQ06)	07:07		06:22	06:30			05:50	05:37		
	17:09	77	16:04 (TRQ06)	17:49		18:23	19:58		20:30	20:53		
19	07:39	14:47 (TRQ06)	07:06		06:21	06:28			05:50	05:37		
	17:10	76	16:03 (TRQ06)	17:50		18:24	19:59		20:31	20:53		
20	07:38	14:48 (TRQ06)	07:05		06:19	06:27			05:49	05:37		
	17:12	76	16:04 (TRQ06)	17:51		18:25	20:00		20:32	20:54		
21	07:38	14:48 (TRQ06)	07:03		06:17	06:25			05:48	05:37		
	17:13	76	16:04 (TRQ06)	17:53		18:26	20:01		20:33	20:54		
22	07:37	14:49 (TRQ06)	07:02		06:15	06:24			05:47	05:37		
	17:14	75	16:04 (TRQ06)	17:54		18:27	20:02		20:34	20:54		
23	07:36	14:49 (TRQ06)	07:00		06:14	06:22	17:57 (TRQ05)	06:22	05:46	05:37		
	17:15	75	16:04 (TRQ06)	17:55		18:28	10	18:07 (TRQ05)	20:03	20:35	20:54	
24	07:35	14:51 (TRQ06)	06:59		06:12	06:21	17:53 (TRQ05)	06:21	05:45	05:38		
	17:17	73	16:04 (TRQ06)	17:56		18:30	15	18:08 (TRQ05)	20:04	20:36	20:54	
25	07:35	14:51 (TRQ06)	06:57		06:10	06:19	17:51 (TRQ05)	06:19	05:45	05:38		
	17:18	73	16:04 (TRQ06)	17:58		18:31	18	18:09 (TRQ05)	20:06	20:37	20:54	
26	07:34	14:52 (TRQ06)	06:56		06:08	06:18	17:48 (TRQ05)	06:18	05:44	05:38		
	17:19	72	16:04 (TRQ06)	17:59		18:32	22	18:10 (TRQ05)	20:07	20:38	20:55	
27	07:33	14:53 (TRQ06)	06:54		06:07	06:16	17:47 (TRQ05)	06:16	05:43	05:39		
	17:20	71	16:04 (TRQ06)	18:00		18:33	25	18:12 (TRQ05)	20:08	20:39	20:55	
28	07:32	14:53 (TRQ06)	06:52		06:05	06:15	17:46 (TRQ05)	06:15	05:42	05:39		
	17:22	70	16:03 (TRQ06)	18:01		18:34	27	18:13 (TRQ05)	20:09	20:40	20:55	
29	07:31	14:54 (TRQ06)			07:03	06:13	18:44 (TRQ05)	06:13	05:42	05:39		
	17:23	69	16:03 (TRQ06)		19:35	30	19:14 (TRQ05)	20:10	20:41	20:55		
30	07:30	14:55 (TRQ06)			07:02	06:12	18:43 (TRQ05)	06:12	05:41	05:40		
	17:24	68	16:03 (TRQ06)		19:36	31	19:14 (TRQ05)	20:11	20:42	20:54		
31	07:29	14:56 (TRQ06)			07:00		18:43 (TRQ05)		05:41			
	17:26	66	16:02 (TRQ06)		19:37	33	19:16 (TRQ05)		20:42			
Potential sun hours	294		295		369		400		452	457		
Total, worst case	2477		652		211		498					
Sun reduction	0,42		0,46		0,46		0,49					
Oper. time red.	0,95		0,95		0,95		0,95					
Wind dir. red.	0,77		0,77		0,61		0,61					
Total reduction	0,31		0,34		0,27		0,29					
Total, real	766		222		56		143					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_real**Shadow receptor:** CQ - 185  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	18:41 (TRQ05) 18:57	07:10 17:08	06:46 14:40 (TRQ06)
2	05:41 20:54	06:06 20:33	06:39 19:48	18:40 (TRQ05) 19:13 (TRQ05)	07:11 18:55	42 17:07
3	05:41 20:54	06:07 20:32	06:40 19:46	18:38 (TRQ05) 19:13 (TRQ05)	07:12 18:54	46 17:06
4	05:42 20:54	06:08 20:31	06:41 19:44	18:37 (TRQ05) 19:13 (TRQ05)	07:13 18:52	49 17:05
5	05:42 20:54	06:09 20:30	06:42 19:43	18:37 (TRQ05) 19:13 (TRQ05)	07:14 18:50	52 17:03
6	05:43 20:53	06:10 20:28	06:43 19:41	18:36 (TRQ05) 19:13 (TRQ05)	07:15 18:48	55 17:02
7	05:44 20:53	06:12 20:27	06:44 19:39	18:35 (TRQ05) 19:13 (TRQ05)	07:16 18:47	57 17:01
8	05:44 20:53	06:13 20:26	06:45 19:37	18:35 (TRQ05) 19:13 (TRQ05)	07:17 18:45	59 17:00
9	05:45 20:52	06:14 20:24	06:46 19:36	18:34 (TRQ05) 19:13 (TRQ05)	07:19 18:43	59 16:59
10	05:46 20:52	06:15 20:23	06:47 19:34	18:34 (TRQ05) 19:11 (TRQ05)	07:20 18:42	63 16:58
11	05:46 20:51	06:16 20:22	06:48 19:32	18:34 (TRQ05) 19:09 (TRQ05)	07:21 18:40	65 16:57
12	05:47 20:51	06:17 20:20	06:49 19:30	18:34 (TRQ05) 19:08 (TRQ05)	07:22 18:38	66 17:00
13	05:48 20:50	06:18 20:19	06:51 19:29	18:34 (TRQ05) 19:06 (TRQ05)	07:23 18:37	68 16:56
14	05:49 20:50	06:19 20:18	06:52 19:27	18:34 (TRQ05) 19:04 (TRQ05)	07:24 18:35	69 16:55
15	05:50 20:49	06:20 20:16	06:53 19:25	18:35 (TRQ05) 19:02 (TRQ05)	07:25 18:33	70 16:54
16	05:50 20:49	06:21 20:15	06:54 19:23	18:35 (TRQ05) 19:00 (TRQ05)	07:27 18:32	72 16:52
17	05:51 20:48	06:22 20:13	06:55 19:22	18:36 (TRQ05) 18:59 (TRQ05)	07:28 18:30	72 16:51
18	05:52 20:47	06:23 20:12	06:56 19:20	18:37 (TRQ05) 18:57 (TRQ05)	07:29 18:29	73 16:50
19	05:53 20:47	06:24 20:10	06:57 19:18	18:39 (TRQ05) 18:55 (TRQ05)	07:30 18:27	73 16:49
20	05:54 20:46	06:25 20:09	06:58 19:16	18:42 (TRQ05) 18:53 (TRQ05)	07:31 18:26	75 16:49
21	05:55 20:45	06:26 20:07	06:59 19:15	18:42 (TRQ05) 18:24	07:32 18:24	75 16:48
22	05:56 20:44	06:27 20:06	07:00 19:13	18:42 (TRQ05) 18:23	07:33 18:23	76 16:47
23	05:57 20:43	06:28 20:04	07:01 19:11	18:42 (TRQ05) 18:21	07:35 18:21	76 16:47
24	05:57 20:42	06:29 20:03	07:02 19:09	18:42 (TRQ05) 18:20	07:36 18:20	76 16:46
25	05:58 20:42	06:30 20:01	07:03 19:08	18:42 (TRQ05) 17:18	07:37 17:18	77 16:45
26	05:59 20:41	06:32 19:59	07:04 19:06	18:42 (TRQ05) 17:17	07:38 17:17	77 16:45
27	06:00 20:40	06:33 19:58	18:53 (TRQ05) 19:04	07:05 17:15	06:40 17:15	77 16:44
28	06:01 20:39	06:34 19:56	18:49 (TRQ05) 19:02	07:06 17:14	14:54 (TRQ06) 17:14	77 16:44
29	06:02 20:38	06:35 19:54	18:46 (TRQ05) 19:09 (TRQ05)	07:08 17:12	14:49 (TRQ06) 15:15 (TRQ06)	77 16:43
30	06:03 20:36	06:36 19:53	18:44 (TRQ05) 19:10 (TRQ05)	07:09 17:11	14:45 (TRQ06) 15:18 (TRQ06)	78 16:43
31	06:04 20:35	06:37 19:51	18:43 (TRQ05) 19:11 (TRQ05)	07:10 17:10	14:43 (TRQ06) 15:21 (TRQ06)	78 16:43
Potential sun hours	463	430	376	344	295	284
Total, worst case		106	613	114	2032	2964
Sun reduction		0,70	0,62	0,55	0,46	0,43
Oper. time red.		0,95	0,95	0,95	0,95	0,95
Wind dir. red.		0,61	0,61	0,77	0,77	0,77
Total reduction		0,41	0,36	0,40	0,34	0,32
Total, real		43	222	46	682	940

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real**Shadow receptor:** CR - 191  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:52	07:29 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43 42
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:14	05:40 20:44 42
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:15	05:39 20:45 42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:46 41
5	07:43 16:55	07:24 17:32	06:44 18:08	06:51 19:43	06:05 20:17	05:39 20:46 42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47 41
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48 41
8	07:43 16:58	07:21 17:36	06:40 18:11	06:46 19:47	06:02 20:20	05:38 20:48 41
9	07:43 16:59	07:20 17:37	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49 41
10	07:43 17:00	07:18 17:39	06:36 18:14	06:43 19:49	05:59 20:22	05:37 20:50 40
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50 41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	05:57 20:24	05:37 20:51 41
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	05:56 20:25	05:37 20:51 40
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	05:55 20:27	05:37 20:52 40
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	05:54 20:28	05:37 20:52 40
16	07:41 17:07	07:10 17:46	06:26 18:21	06:33 19:56	05:53 20:29	05:37 20:52 40
17	07:40 17:08	07:09 17:48	06:24 18:22	06:32 19:57	05:52 20:30	05:37 20:53 39
18	07:40 17:09	07:08 17:49	06:22 18:23	06:30 19:58	05:51 20:31	05:37 20:53 39
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:50 20:32	05:37 20:53 40
20	07:38 17:12	07:05 17:52	06:19 18:25	06:27 20:00	05:49 20:33	05:37 20:54 40
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:34	05:37 20:54 40
22	07:37 17:14	07:02 17:54	06:16 18:27	06:24 20:02	05:47 20:35	05:37 20:54 40
23	07:36 17:15	07:00 17:55	06:14 18:29	06:22 20:03	05:46 20:36	05:37 20:54 40
24	07:36 17:17	06:59 17:57	06:12 18:30	06:21 20:05	05:45 20:36	05:38 20:55 39
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:45 20:37	05:38 20:55 39
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	05:44 20:38	05:38 20:55 39
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:39 20:55 40
28	07:32 17:22	06:53 18:01	06:05 18:34	06:15 20:09	05:43 20:40	05:39 20:55 40
29	07:31 17:23	07:03 19:35	07:03 19:35	06:13 20:10	05:42 20:41	05:40 20:55 40
30	07:30 17:24	07:02 19:36	07:02 19:36	06:12 20:11	05:41 20:42	05:40 20:55 40
31	07:30 17:26	07:00 19:38	07:00 19:38	06:11 20:11	05:41 20:43	05:40 20:55 40
Potential sun hours	294	295	369	400	452	457
Total, worst case			162		833	1210
Sun reduction			0,46		0,57	0,61
Oper. time red.			0,95		0,95	0,95
Wind dir. red.			0,58		0,70	0,70
Total reduction			0,25		0,38	0,41
Total, real			41		316	493

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** CR - 191  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40	06:25 (TRQ03)	06:05	06:35 (TRQ03)	06:38	07:10
	20:55	41 07:06 (TRQ03)	20:34	26 07:01 (TRQ03)	19:50	18:57
2	05:41	06:25 (TRQ03)	06:06	06:37 (TRQ03)	06:39	07:11
	20:54	40 07:05 (TRQ03)	20:33	23 07:00 (TRQ03)	19:48	18:55
3	05:41	06:25 (TRQ03)	06:08	06:38 (TRQ03)	06:40	07:12
	20:54	41 07:06 (TRQ03)	20:32	20 06:58 (TRQ03)	19:46	18:54
4	05:42	06:25 (TRQ03)	06:09	06:41 (TRQ03)	06:41	07:13
	20:54	41 07:06 (TRQ03)	20:31	15 06:56 (TRQ03)	19:44	18:52
5	05:43	06:25 (TRQ03)	06:10	06:45 (TRQ03)	06:42	07:14
	20:54	42 07:07 (TRQ03)	20:30	6 06:51 (TRQ03)	19:43	18:50
6	05:43	06:25 (TRQ03)	06:11	06:43	06:43	07:15
	20:54	41 07:06 (TRQ03)	20:28	19:41	18:49	07:15
7	05:44	06:25 (TRQ03)	06:12	06:44	06:44	07:17
	20:53	42 07:07 (TRQ03)	20:27	19:39	18:47	07:17
8	05:45	06:26 (TRQ03)	06:13	06:45	06:45	07:18
	20:53	41 07:07 (TRQ03)	20:26	19:38	18:45	07:18
9	05:45	06:25 (TRQ03)	06:14	06:46	06:46	07:19
	20:52	42 07:07 (TRQ03)	20:25	19:36	18:43	07:19
10	05:46	06:26 (TRQ03)	06:15	06:48	06:48	07:20
	20:52	42 07:08 (TRQ03)	20:23	19:34	18:42	07:20
11	05:47	06:26 (TRQ03)	06:16	06:49	06:49	07:21
	20:52	42 07:08 (TRQ03)	20:22	19:32	18:40	07:21
12	05:47	06:27 (TRQ03)	06:17	06:50	06:50	07:22
	20:51	42 07:09 (TRQ03)	20:21	19:31	18:38	07:22
13	05:48	06:26 (TRQ03)	06:18	06:51	06:51	07:23
	20:51	42 07:08 (TRQ03)	20:19	19:29	18:37	07:23
14	05:49	06:26 (TRQ03)	06:19	06:52	06:52	07:24
	20:50	42 07:08 (TRQ03)	20:18	19:27	18:35	07:24
15	05:50	06:27 (TRQ03)	06:20	06:53	06:53	07:26
	20:49	42 07:09 (TRQ03)	20:16	19:25	18:34	07:26
16	05:51	06:27 (TRQ03)	06:21	06:54	06:54	07:27
	20:49	42 07:09 (TRQ03)	20:15	19:24	18:32	07:27
17	05:51	06:27 (TRQ03)	06:22	06:55	06:55	07:28
	20:48	41 07:08 (TRQ03)	20:13	19:22	18:30	07:28
18	05:52	06:27 (TRQ03)	06:23	06:56	06:56	07:29
	20:47	41 07:08 (TRQ03)	20:12	19:20	18:29	07:29
19	05:53	06:27 (TRQ03)	06:24	06:57	06:57	07:30
	20:47	41 07:08 (TRQ03)	20:10	19:18	18:27	07:30
20	05:54	06:28 (TRQ03)	06:25	06:58	06:58	07:31
	20:46	40 07:08 (TRQ03)	20:09	19:17	18:26	07:31
21	05:55	06:28 (TRQ03)	06:26	06:59	07:31 (TRQ05)	07:33
	20:45	40 07:08 (TRQ03)	20:07	19:15	10 07:41 (TRQ05)	18:24
22	05:56	06:29 (TRQ03)	06:27	07:00	07:29 (TRQ05)	07:34
	20:44	39 07:08 (TRQ03)	20:06	19:13	13 07:42 (TRQ05)	18:23
23	05:57	06:29 (TRQ03)	06:29	07:01	07:27 (TRQ05)	07:35
	20:43	39 07:08 (TRQ03)	20:04	19:11	16 07:43 (TRQ05)	18:21
24	05:58	06:30 (TRQ03)	06:30	07:02	07:26 (TRQ05)	07:36
	20:43	38 07:08 (TRQ03)	20:03	19:09	17 07:43 (TRQ05)	18:20
25	05:59	06:29 (TRQ03)	06:31	07:03	07:25 (TRQ05)	06:37
	20:42	38 07:07 (TRQ03)	20:01	19:08	19 07:44 (TRQ05)	17:18
26	06:00	06:30 (TRQ03)	06:32	07:04	07:25 (TRQ05)	06:39
	20:41	36 07:06 (TRQ03)	19:59	19:06	18 07:43 (TRQ05)	17:17
27	06:01	06:30 (TRQ03)	06:33	07:06	07:26 (TRQ05)	06:40
	20:40	36 07:06 (TRQ03)	19:58	19:04	17 07:43 (TRQ05)	17:15
28	06:01	06:31 (TRQ03)	06:34	07:07	07:27 (TRQ05)	06:41
	20:39	34 07:05 (TRQ03)	19:56	19:02	15 07:42 (TRQ05)	17:14
29	06:02	06:32 (TRQ03)	06:35	07:08	07:28 (TRQ05)	06:42
	20:38	33 07:05 (TRQ03)	19:55	19:01	13 07:41 (TRQ05)	17:13
30	06:03	06:33 (TRQ03)	06:36	07:09	07:29 (TRQ05)	06:44
	20:37	31 07:04 (TRQ03)	19:53	18:59	11 07:40 (TRQ05)	17:11
31	06:04	06:34 (TRQ03)	06:37			06:45
	20:36	29 07:03 (TRQ03)	19:51			17:10
Potential sun hours	463	430	376	344	295	284
Total, worst case	1221	90	149	12		
Sun reduction	0,71	0,70	0,62	0,55		
Oper. time red.	0,95	0,95	0,95	0,95		
Wind dir. red.	0,70	0,70	0,58	0,58		
Total reduction	0,47	0,47	0,34	0,30		
Total, real	575	42	51	4		

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_real**Shadow receptor:** CS - 193  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	
1	07:43 16:51	07:29 17:27	06:51 18:03	06:58 19:39	06:11 20:12	06:39 (TRQ03) 07:24 (TRQ03)	05:40 20:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	06:38 (TRQ03) 07:24 (TRQ03)	05:40 20:44
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:15	06:38 (TRQ03) 07:25 (TRQ03)	05:39 20:45
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	06:37 (TRQ03) 07:24 (TRQ03)	05:39 20:46
5	07:43 16:55	07:24 17:32	06:44 18:08	06:51 19:43	06:05 20:17	06:37 (TRQ03) 07:24 (TRQ03)	05:39 20:46
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	06:37 (TRQ03) 07:25 (TRQ03)	05:38 20:47
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	06:37 (TRQ03) 07:25 (TRQ03)	05:38 20:48
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:47	06:02 20:20	06:37 (TRQ03) 07:25 (TRQ03)	05:38 20:48
9	07:43 16:59	07:20 17:37	06:38 18:12	06:45 19:48	06:00 20:21	06:37 (TRQ03) 07:25 (TRQ03)	05:37 20:49
10	07:43 17:00	07:18 17:39	06:36 18:14	06:43 19:49	05:59 20:22	06:36 (TRQ03) 07:24 (TRQ03)	05:37 20:50
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	06:36 (TRQ03) 07:23 (TRQ03)	05:37 20:50
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	05:57 20:24	06:37 (TRQ03) 07:23 (TRQ03)	05:37 20:51
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	05:56 20:25	06:37 (TRQ03) 07:23 (TRQ03)	05:37 20:51
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	05:55 20:27	06:37 (TRQ03) 07:23 (TRQ03)	05:37 20:52
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	05:54 20:28	06:37 (TRQ03) 07:22 (TRQ03)	05:37 20:52
16	07:41 17:07	07:10 17:46	06:26 18:21	06:33 19:56	05:53 20:29	06:38 (TRQ03) 07:22 (TRQ03)	05:37 20:52
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	05:52 20:30	06:38 (TRQ03) 07:21 (TRQ03)	05:37 20:53
18	07:40 17:09	07:08 17:49	06:22 18:23	06:30 19:58	05:51 20:31	06:39 (TRQ03) 07:22 (TRQ03)	05:37 20:53
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:50 20:32	06:40 (TRQ03) 07:21 (TRQ03)	05:37 20:53
20	07:38 17:12	07:05 17:52	06:19 18:25	06:27 20:00	05:49 20:33	06:40 (TRQ03) 07:20 (TRQ03)	05:37 20:54
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:34	06:41 (TRQ03) 07:20 (TRQ03)	05:37 20:54
22	07:37 17:14	07:02 17:54	06:16 18:27	06:24 20:02	05:47 20:35	06:41 (TRQ03) 07:19 (TRQ03)	05:37 20:54
23	07:36 17:15	07:00 17:55	06:14 18:29	06:22 20:03	05:46 20:36	06:42 (TRQ03) 07:19 (TRQ03)	05:37 20:54
24	07:36 17:17	06:59 17:57	06:12 18:30	06:21 20:05	05:45 20:36	06:43 (TRQ03) 07:18 (TRQ03)	05:38 20:55
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:45 20:37	06:43 (TRQ03) 07:17 (TRQ03)	05:38 20:55
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	05:44 20:38	06:45 (TRQ03) 07:17 (TRQ03)	05:38 20:55
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	06:44 (TRQ03) 07:16 (TRQ03)	05:39 20:55
28	07:32 17:22	06:53 18:01	06:05 18:34	06:15 20:09	05:43 20:40	06:46 (TRQ03) 07:15 (TRQ03)	05:39 20:55
29	07:31 17:23	07:03 19:35	07:03 19:35	06:13 20:10	05:42 20:41	06:47 (TRQ03) 07:15 (TRQ03)	05:40 20:55
30	07:30 17:24	07:02 19:36	07:02 19:36	06:12 20:11	05:41 20:42	06:48 (TRQ03) 07:13 (TRQ03)	05:40 20:55
31	07:30 17:26	07:00 19:38	07:00 19:38	06:11 20:11	05:41 20:43	06:50 (TRQ03) 07:13 (TRQ03)	05:40 20:55
Potential sun hours	294	295	369	400	452		457
Total, worst case			165	368		1264	82
Sun reduction			0,46	0,49		0,57	0,61
Oper. time red.			0,95	0,95		0,95	0,95
Wind dir. red.			0,55	0,66		0,66	0,66
Total reduction			0,24	0,31		0,36	0,38
Total, real			40	114		451	31

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** CS - 193  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December		
1	05:40 20:55	06:05 20:34	06:47 (TRQ03) 07:34 (TRQ03)	06:38 19:50	07:10 18:57	07:38 (TRQ05) 17:09	07:22 16:43	
2	05:41 20:54	06:06 20:33	06:47 (TRQ03) 07:34 (TRQ03)	06:39 19:48	07:11 18:55	07:36 (TRQ05) 17:07	07:23 16:42	
3	05:41 20:54	06:08 20:32	06:47 (TRQ03) 07:34 (TRQ03)	06:40 19:46	07:12 18:54	07:36 (TRQ05) 17:06	07:24 16:42	
4	05:42 20:54	06:09 20:31	06:47 (TRQ03) 07:34 (TRQ03)	06:41 19:44	07:13 18:52	07:34 (TRQ05) 17:05	07:26 16:42	
5	05:43 20:54	06:10 20:30	06:47 (TRQ03) 07:34 (TRQ03)	06:42 19:43	07:14 18:50	07:35 (TRQ05) 17:04	07:27 16:42	
6	05:43 20:54	06:11 20:28	06:47 (TRQ03) 07:34 (TRQ03)	06:43 19:41	07:15 18:49	07:36 (TRQ05) 17:02	07:28 16:42	
7	05:44 20:53	07:05 (TRQ03) 07:12 (TRQ03)	06:12 20:27	06:47 (TRQ03) 07:34 (TRQ03)	06:44 19:39	07:17 18:47	06:53 17:01	07:28 16:41
8	05:45 20:53	07:03 (TRQ03) 07:14 (TRQ03)	06:13 20:26	06:47 (TRQ03) 07:34 (TRQ03)	06:45 19:38	07:18 18:45	06:55 17:00	07:29 16:41
9	05:45 20:52	07:01 (TRQ03) 07:16 (TRQ03)	06:14 20:25	06:47 (TRQ03) 07:34 (TRQ03)	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	05:46 20:52	07:00 (TRQ03) 07:17 (TRQ03)	06:15 20:23	06:47 (TRQ03) 07:33 (TRQ03)	06:48 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	05:47 20:52	06:59 (TRQ03) 07:19 (TRQ03)	06:16 20:22	06:47 (TRQ03) 07:33 (TRQ03)	06:49 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	05:47 20:51	06:58 (TRQ03) 07:21 (TRQ03)	06:17 20:21	06:47 (TRQ03) 07:32 (TRQ03)	06:50 19:31	07:22 18:38	07:00 16:56	07:33 16:41
13	05:48 20:51	06:57 (TRQ03) 07:21 (TRQ03)	06:18 20:19	06:48 (TRQ03) 07:32 (TRQ03)	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	05:49 20:50	06:56 (TRQ03) 07:23 (TRQ03)	06:19 20:18	06:48 (TRQ03) 07:31 (TRQ03)	06:52 19:27	07:24 18:35	07:02 16:54	07:35 16:42
15	05:50 20:49	06:56 (TRQ03) 07:24 (TRQ03)	06:20 20:16	06:49 (TRQ03) 07:30 (TRQ03)	06:53 19:25	07:26 18:34	07:03 16:53	07:35 16:42
16	05:51 20:49	06:55 (TRQ03) 07:25 (TRQ03)	06:21 20:15	06:49 (TRQ03) 07:29 (TRQ03)	06:54 19:24	07:27 18:32	07:05 16:52	07:36 16:42
17	05:51 20:48	06:54 (TRQ03) 07:25 (TRQ03)	06:22 20:13	06:50 (TRQ03) 07:28 (TRQ03)	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:43
18	05:52 20:47	06:53 (TRQ03) 07:26 (TRQ03)	06:23 20:12	06:51 (TRQ03) 07:26 (TRQ03)	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	05:53 20:47	06:53 (TRQ03) 07:27 (TRQ03)	06:24 20:10	06:52 (TRQ03) 07:25 (TRQ03)	06:57 19:18	07:30 18:27	07:08 16:50	07:38 16:43
20	05:54 20:46	06:52 (TRQ03) 07:28 (TRQ03)	06:25 20:09	06:53 (TRQ03) 07:23 (TRQ03)	06:58 19:16	07:31 18:26	07:10 16:49	07:39 16:44
21	05:55 20:45	06:52 (TRQ03) 07:29 (TRQ03)	06:26 20:07	06:55 (TRQ03) 07:21 (TRQ03)	06:59 19:15	07:33 18:24	07:11 16:48	07:39 16:44
22	05:56 20:44	06:51 (TRQ03) 07:30 (TRQ03)	06:27 20:06	06:57 (TRQ03) 07:18 (TRQ03)	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:45
23	05:57 20:43	06:51 (TRQ03) 07:31 (TRQ03)	06:29 20:04	07:00 (TRQ03) 07:14 (TRQ03)	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	05:58 20:43	06:50 (TRQ03) 07:31 (TRQ03)	06:30 20:03	07:02 19:09	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	05:59 20:42	06:49 (TRQ03) 07:31 (TRQ03)	06:31 20:01	07:03 19:08	07:03 19:08	06:37 17:18	07:16 16:45	07:41 16:46
26	06:00 20:41	06:49 (TRQ03) 07:32 (TRQ03)	06:32 19:59	07:04 19:06	07:04 19:06	06:39 17:17	07:17 16:45	07:42 16:47
27	06:00 20:40	06:48 (TRQ03) 07:32 (TRQ03)	06:33 19:58	07:06 19:04	07:06 19:04	06:40 17:15	07:18 16:44	07:42 16:47
28	06:01 20:39	06:48 (TRQ03) 07:33 (TRQ03)	06:34 19:56	07:07 19:02	07:07 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	06:02 20:38	06:48 (TRQ03) 07:33 (TRQ03)	06:35 19:55	07:08 19:01	07:08 19:01	06:42 17:13	07:20 16:44	07:42 16:49
30	06:03 20:37	06:48 (TRQ03) 07:33 (TRQ03)	06:36 19:53	07:09 18:59	07:09 18:59	06:44 17:11	07:21 16:43	07:43 16:50
31	06:04 20:36	06:47 (TRQ03) 07:34 (TRQ03)	06:37 19:51			06:45 17:10		07:43 16:50
Potential sun hours	463	430	376	344	295	284		
Total, worst case	804	925	8	164				
Sun reduction	0,71	0,70	0,62	0,55				
Oper. time red.	0,95	0,95	0,95	0,95				
Wind dir. red.	0,66	0,66	0,55	0,55				
Total reduction	0,44	0,44	0,33	0,29				
Total, real	356	406	3	47				

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** CT - 194  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June
1	07:43 16:51	07:29 17:27	06:51 18:03	06:58 19:39	06:11 20:12	06:37 (TRQ03) 20:43 43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	06:36 (TRQ03) 20:44 42
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:15	06:35 (TRQ03) 20:45 41
4	07:43 16:54	07:25 17:31	06:46 18:06	07:05 (TRQ05) 07:10 (TRQ05) 19:42	06:53 19:42	06:33 (TRQ03) 20:46 41
5	07:43 16:55	07:24 17:32	06:44 18:08	07:04 (TRQ05) 07:12 (TRQ05) 19:43	06:51 19:43	06:33 (TRQ03) 20:46 41
6	07:43 16:56	07:23 17:33	06:43 18:09	07:02 (TRQ05) 07:13 (TRQ05) 19:44	06:50 19:44	06:32 (TRQ03) 20:47 39
7	07:43 16:57	07:22 17:35	06:41 18:10	07:00 (TRQ05) 07:13 (TRQ05) 19:45	06:48 19:45	06:32 (TRQ03) 20:48 39
8	07:43 16:58	07:21 17:36	06:39 18:11	06:59 (TRQ05) 07:14 (TRQ05) 19:47	06:46 19:47	06:31 (TRQ03) 20:48 38
9	07:43 16:59	07:20 17:37	06:38 18:12	06:57 (TRQ05) 07:14 (TRQ05) 19:48	06:45 19:48	06:31 (TRQ03) 20:49 37
10	07:43 17:00	07:18 17:39	06:36 18:14	06:55 (TRQ05) 07:14 (TRQ05) 19:49	06:43 19:49	06:29 (TRQ03) 20:50 37
11	07:42 17:01	07:17 17:40	06:34 18:15	06:54 (TRQ05) 07:14 (TRQ05) 19:50	06:41 19:50	06:29 (TRQ03) 20:51 36
12	07:42 17:02	07:16 17:41	06:33 18:16	06:54 (TRQ05) 07:13 (TRQ05) 19:51	06:40 19:51	06:29 (TRQ03) 20:51 36
13	07:42 17:03	07:14 17:43	06:31 18:17	06:54 (TRQ05) 07:11 (TRQ05) 19:52	06:38 19:52	06:29 (TRQ03) 20:51 35
14	07:41 17:05	07:13 17:44	06:29 18:18	06:55 (TRQ05) 07:10 (TRQ05) 19:53	06:36 19:53	06:29 (TRQ03) 20:52 35
15	07:41 17:06	07:12 17:45	06:28 18:19	06:57 (TRQ05) 07:08 (TRQ05) 19:54	06:35 19:54	06:28 (TRQ03) 20:52 34
16	07:41 17:07	07:10 17:46	06:26 18:21	07:00 (TRQ05) 07:05 (TRQ05) 19:56	06:33 19:56	06:28 (TRQ03) 20:52 34
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	06:31 20:30	06:28 (TRQ03) 20:53 34
18	07:39 17:09	07:08 17:49	06:22 18:23	06:30 19:58	06:30 20:31	06:29 (TRQ03) 20:53 33
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	06:28 20:32	06:29 (TRQ03) 20:53 33
20	07:38 17:12	07:05 17:52	06:19 18:25	06:27 20:00	06:27 20:33	06:29 (TRQ03) 20:54 33
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	06:25 20:34	06:29 (TRQ03) 20:54 33
22	07:37 17:14	07:02 17:54	06:16 18:27	06:24 20:02	06:24 20:35	06:29 (TRQ03) 20:54 33
23	07:36 17:15	07:00 17:55	06:14 18:29	06:22 20:03	06:22 20:36	06:30 (TRQ03) 20:54 33
24	07:36 17:17	06:59 17:57	06:12 18:30	06:21 20:05	06:21 20:36	06:30 (TRQ03) 20:55 33
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	06:19 20:37	06:30 (TRQ03) 20:55 34
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	06:18 20:38	06:31 (TRQ03) 20:55 34
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	06:16 20:39	06:31 (TRQ03) 20:55 34
28	07:32 17:22	06:53 18:01	06:05 18:34	06:15 20:09	06:15 20:40	06:31 (TRQ03) 20:55 34
29	07:31 17:23	07:03 19:35	07:03 19:35	06:13 20:10	06:13 20:41	06:32 (TRQ03) 20:55 35
30	07:30 17:24	07:02 19:36	07:02 19:36	06:12 20:11	06:12 20:42	06:32 (TRQ03) 20:55 35
31	07:30 17:26	07:00 19:38	07:00 19:38	06:11 20:12	06:11 20:43	06:33 (TRQ03) 20:55 35
Potential sun hours	294	295	369	400	452	457
Total, worst case			175	97	1399	1078
Sun reduction			0,46	0,49	0,57	0,61
Oper. time red.			0,95	0,95	0,95	0,95
Wind dir. red.			0,56	0,68	0,68	0,68
Total reduction			0,24	0,32	0,37	0,39
Total, real			43	31	513	425

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** CT - 194  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40	06:42 (TRQ03)	06:05	06:40 (TRQ03)	06:38	07:10
	20:55	36 07:18 (TRQ03)	20:34	47 07:27 (TRQ03)	19:50	18:57
2	05:41	06:42 (TRQ03)	06:06	06:40 (TRQ03)	06:39	07:11
	20:54	36 07:18 (TRQ03)	20:33	47 07:27 (TRQ03)	19:48	18:55
3	05:41	06:42 (TRQ03)	06:08	06:40 (TRQ03)	06:40	07:12
	20:54	37 07:19 (TRQ03)	20:32	47 07:27 (TRQ03)	19:46	18:54
4	05:42	06:41 (TRQ03)	06:09	06:41 (TRQ03)	06:41	07:13
	20:54	38 07:19 (TRQ03)	20:31	45 07:26 (TRQ03)	19:44	18:52
5	05:43	06:42 (TRQ03)	06:10	06:41 (TRQ03)	06:42	07:14
	20:54	38 07:20 (TRQ03)	20:30	45 07:26 (TRQ03)	19:43	18:50
6	05:43	06:41 (TRQ03)	06:11	06:41 (TRQ03)	06:43	07:15
	20:54	39 07:20 (TRQ03)	20:28	44 07:25 (TRQ03)	19:41	18:49
7	05:44	06:41 (TRQ03)	06:12	06:42 (TRQ03)	06:44	07:17
	20:53	40 07:21 (TRQ03)	20:27	42 07:24 (TRQ03)	19:39	18:47
8	05:45	06:41 (TRQ03)	06:13	06:43 (TRQ03)	06:45	07:18
	20:53	41 07:22 (TRQ03)	20:26	40 07:23 (TRQ03)	19:38	18:45
9	05:45	06:41 (TRQ03)	06:14	06:43 (TRQ03)	06:46	07:19
	20:52	41 07:22 (TRQ03)	20:25	39 07:22 (TRQ03)	19:36	18:43
10	05:46	06:41 (TRQ03)	06:15	06:44 (TRQ03)	06:48	07:20
	20:52	41 07:22 (TRQ03)	20:23	37 07:21 (TRQ03)	19:34	18:42
11	05:47	06:41 (TRQ03)	06:16	06:45 (TRQ03)	06:49	07:21
	20:52	42 07:23 (TRQ03)	20:22	35 07:20 (TRQ03)	19:32	18:40
12	05:47	06:41 (TRQ03)	06:17	06:46 (TRQ03)	06:50	07:22
	20:51	43 07:24 (TRQ03)	20:21	33 07:19 (TRQ03)	19:31	18:38
13	05:48	06:40 (TRQ03)	06:18	06:48 (TRQ03)	06:51	07:23
	20:51	44 07:24 (TRQ03)	20:19	29 07:17 (TRQ03)	19:29	18:37
14	05:49	06:40 (TRQ03)	06:19	06:49 (TRQ03)	06:52	07:24
	20:50	44 07:24 (TRQ03)	20:18	26 07:15 (TRQ03)	19:27	18:35
15	05:50	06:40 (TRQ03)	06:20	06:52 (TRQ03)	06:53	07:26
	20:49	45 07:25 (TRQ03)	20:16	20 07:12 (TRQ03)	19:25	18:34
16	05:51	06:40 (TRQ03)	06:21	06:55 (TRQ03)	06:54	07:27
	20:49	46 07:26 (TRQ03)	20:15	14 07:09 (TRQ03)	19:24	18:32
17	05:51	06:39 (TRQ03)	06:22		06:55	07:28
	20:48	46 07:25 (TRQ03)	20:13		19:22	18:30
18	05:52	06:39 (TRQ03)	06:23		06:56	07:29
	20:47	47 07:26 (TRQ03)	20:12		19:20	18:29
19	05:53	06:39 (TRQ03)	06:24		06:57	07:30
	20:47	47 07:26 (TRQ03)	20:10		19:18	18:27
20	05:54	06:39 (TRQ03)	06:25		06:58	07:31
	20:46	48 07:27 (TRQ03)	20:09		19:16	18:26
21	05:55	06:39 (TRQ03)	06:26		06:59	07:33
	20:45	48 07:27 (TRQ03)	20:07		19:15	18:24
22	05:56	06:39 (TRQ03)	06:27		07:00	07:34
	20:44	48 07:27 (TRQ03)	20:06		19:13	18:23
23	05:57	06:40 (TRQ03)	06:29		07:01	07:35
	20:43	48 07:28 (TRQ03)	20:04		19:11	18:21
24	05:58	06:40 (TRQ03)	06:30		07:02	07:36
	20:43	48 07:28 (TRQ03)	20:03		19:09	18:20
25	05:59	06:39 (TRQ03)	06:31		07:03	06:37
	20:42	48 07:27 (TRQ03)	20:01		19:08	17:18
26	06:00	06:39 (TRQ03)	06:32		07:04	06:39
	20:41	48 07:27 (TRQ03)	19:59		19:06	17:17
27	06:00	06:39 (TRQ03)	06:33		07:06	06:40
	20:40	49 07:28 (TRQ03)	19:58		19:04	17:15
28	06:01	06:39 (TRQ03)	06:34		07:07	06:41
	20:39	49 07:28 (TRQ03)	19:56		19:02	17:14
29	06:02	06:39 (TRQ03)	06:35		07:08	06:42
	20:38	49 07:28 (TRQ03)	19:55		19:01	17:13
30	06:03	06:39 (TRQ03)	06:36		07:09	06:44
	20:37	49 07:28 (TRQ03)	19:53		18:59	17:11
31	06:04	06:39 (TRQ03)	06:37			06:45
	20:36	48 07:27 (TRQ03)	19:51			17:10
Potential sun hours	463	430	376	344	295	284
Total, worst case	1371	590	41	136		
Sun reduction	0,71	0,70	0,62	0,55		
Oper. time red.	0,95	0,95	0,95	0,95		
Wind dir. red.	0,68	0,68	0,56	0,56		
Total reduction	0,45	0,45	0,33	0,29		
Total, real	623	266	14	40		

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** CU - 195  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June
1	07:43	07:29	06:51	06:58	06:11	06:50 (TRQ03) 05:40
	16:52	17:27	18:03	19:39	20:12	33 07:23 (TRQ03) 20:43
2	07:43	07:27	06:49	06:56	06:09	06:51 (TRQ03) 05:40
	16:52	17:28	18:04	19:40	20:14	32 07:23 (TRQ03) 20:44
3	07:43	07:26	06:48	06:55	06:08	06:52 (TRQ03) 05:39
	16:53	17:30	18:05	19:41	20:15	30 07:22 (TRQ03) 20:45
4	07:43	07:25	06:46	06:53	06:07	06:52 (TRQ03) 05:39
	16:54	17:31	18:06	19:42	20:16	28 07:20 (TRQ03) 20:46
5	07:43	07:24	06:44	06:51	06:05	06:54 (TRQ03) 05:39
	16:55	17:32	18:08	19:43	20:17	25 07:19 (TRQ03) 20:46
6	07:43	07:23	06:43	06:50	06:04	06:55 (TRQ03) 05:38
	16:56	17:33	18:09	19:44	20:18	22 07:17 (TRQ03) 20:47
7	07:43	07:22	06:41	06:48	06:03	06:57 (TRQ03) 05:38
	16:57	17:35	18:10	19:45	20:19	19 07:16 (TRQ03) 20:48
8	07:43	07:21	06:40	06:46	06:02	07:00 (TRQ03) 05:38
	16:58	17:36	18:11	19:47	20:20	14 07:14 (TRQ03) 20:48
9	07:43	07:20	06:38	06:45	06:00	07:04 (TRQ03) 05:37
	16:59	17:37	18:12	19:48	20:21	6 07:10 (TRQ03) 20:49
10	07:43	07:18	06:36	06:43	05:59	05:37
	17:00	17:39	18:14	19:49	20:22	20:50
11	07:42	07:17	06:34	06:41	07:06 (TRQ03) 05:58	05:37
	17:01	17:40	18:15	19:50	11 07:17 (TRQ03) 20:23	20:50
12	07:42	07:16	06:33	06:40	07:03 (TRQ03) 05:57	05:37
	17:02	17:41	18:16	19:51	18 07:21 (TRQ03) 20:24	20:51
13	07:42	07:14	06:31	06:38	07:00 (TRQ03) 05:56	05:37
	17:03	17:43	18:17	19:52	23 07:23 (TRQ03) 20:25	20:51
14	07:41	07:13	06:29	06:36	06:58 (TRQ03) 05:55	05:37
	17:05	17:44	18:18	19:53	26 07:24 (TRQ03) 20:27	20:52
15	07:41	07:12	06:28	06:35	06:57 (TRQ03) 05:54	05:37
	17:06	17:45	18:19	19:54	28 07:25 (TRQ03) 20:28	20:52
16	07:41	07:10	06:26	06:33	06:55 (TRQ03) 05:53	05:37
	17:07	17:46	18:21	19:56	31 07:26 (TRQ03) 20:29	20:52
17	07:40	07:09	06:24	06:32	06:54 (TRQ03) 05:52	05:37
	17:08	17:48	18:22	19:57	33 07:27 (TRQ03) 20:30	20:53
18	07:40	07:08	06:22	06:30	06:53 (TRQ03) 05:51	05:37
	17:09	17:49	18:23	19:58	34 07:27 (TRQ03) 20:31	20:53
19	07:39	07:06	06:21	06:28	06:51 (TRQ03) 05:50	05:37
	17:10	17:50	18:24	19:59	36 07:27 (TRQ03) 20:32	20:53
20	07:38	07:05	06:19	06:27	06:51 (TRQ03) 05:49	05:37
	17:12	17:52	18:25	20:00	37 07:28 (TRQ03) 20:33	20:54
21	07:38	07:03	06:17	06:25	06:50 (TRQ03) 05:48	05:37
	17:13	17:53	18:26	20:01	37 07:27 (TRQ03) 20:34	20:54
22	07:37	07:02	06:16	06:24	06:50 (TRQ03) 05:47	05:37
	17:14	17:54	18:27	20:02	38 07:28 (TRQ03) 20:35	20:54
23	07:36	07:00	06:14	06:22	06:49 (TRQ03) 05:46	05:37
	17:15	17:55	18:29	20:03	38 07:27 (TRQ03) 20:36	20:54
24	07:36	06:59	06:12	06:21	06:49 (TRQ03) 05:45	05:38
	17:17	17:57	18:30	20:05	38 07:27 (TRQ03) 20:36	20:55
25	07:35	06:57	06:10	06:19	06:50 (TRQ03) 05:45	05:38
	17:18	17:58	18:31	20:06	38 07:28 (TRQ03) 20:37	20:55
26	07:34	06:56	06:09	06:18	06:49 (TRQ03) 05:44	05:38
	17:19	17:59	18:32	20:07	38 07:27 (TRQ03) 20:38	20:55
27	07:33	06:54	06:07	06:16	06:50 (TRQ03) 05:43	05:39
	17:20	18:00	18:33	20:08	37 07:27 (TRQ03) 20:39	20:55
28	07:32	06:53	06:05	06:15	06:49 (TRQ03) 05:43	05:39
	17:22	18:01	18:34	20:09	36 07:25 (TRQ03) 20:40	20:55
29	07:31		07:03	06:13	06:50 (TRQ03) 05:42	05:40
	17:23		19:35	20:10	35 07:25 (TRQ03) 20:41	20:55
30	07:30		07:02	06:12	06:50 (TRQ03) 05:41	05:40
	17:24		19:36	20:11	35 07:25 (TRQ03) 20:42	20:55
31	07:30		07:00		05:41	
	17:26		19:38		20:43	
Potential sun hours	294	295	369	400	452	457
Total, worst case				647		209
Sun reduction				0,49		0,57
Oper. time red.				0,95		0,95
Wind dir. red.				0,65		0,65
Total reduction				0,30		0,35
Total, real				197		73

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** CU - 195  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December	
1	05:40 20:55	06:05 20:34	06:38 19:50	07:05 (TRQ03) 07:16 (TRQ03)	07:10 18:57	06:46 17:09	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48		07:11 18:55	06:47 17:07	07:23 16:42
3	05:41 20:54	06:08 20:32	06:40 19:46		07:12 18:54	06:48 17:06	07:24 16:42
4	05:42 20:54	06:09 20:31	07:11 (TRQ03) 07:21 (TRQ03)	06:41 19:44	07:13 18:52	06:50 17:05	07:26 16:42
5	05:43 20:54	06:10 20:30	10 07:08 (TRQ03) 16 07:24 (TRQ03)	06:42 19:43	07:14 18:50	06:51 17:04	07:27 16:42
6	05:43 20:54	06:11 20:29	07:06 (TRQ03) 07:26 (TRQ03)	06:43 19:41	07:15 18:49	06:52 17:02	07:28 16:42
7	05:44 20:53	06:12 20:27	07:05 (TRQ03) 07:28 (TRQ03)	06:44 19:39	07:17 18:47	06:53 17:01	07:28 16:41
8	05:45 20:53	06:13 20:26	07:03 (TRQ03) 07:29 (TRQ03)	06:45 19:38	07:18 18:45	06:55 17:00	07:29 16:41
9	05:45 20:52	06:14 20:25	07:02 (TRQ03) 07:30 (TRQ03)	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	07:01 (TRQ03) 07:31 (TRQ03)	06:48 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	05:47 20:52	06:16 20:22	07:00 (TRQ03) 07:32 (TRQ03)	06:49 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	05:47 20:51	06:17 20:21	06:59 (TRQ03) 07:32 (TRQ03)	06:50 19:31	07:22 18:38	07:00 16:56	07:33 16:41
13	05:48 20:51	06:18 20:19	06:58 (TRQ03) 07:33 (TRQ03)	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	05:49 20:50	06:19 20:18	06:57 (TRQ03) 07:33 (TRQ03)	06:52 19:27	07:24 18:35	07:02 16:54	07:35 16:42
15	05:50 20:49	06:20 20:16	06:57 (TRQ03) 07:33 (TRQ03)	06:53 19:25	07:26 18:34	07:03 16:53	07:35 16:42
16	05:51 20:49	06:21 20:15	06:56 (TRQ03) 07:33 (TRQ03)	06:54 19:24	07:27 18:32	07:05 16:52	07:36 16:42
17	05:51 20:48	06:22 20:13	06:56 (TRQ03) 07:33 (TRQ03)	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:43
18	05:52 20:47	06:23 20:12	06:55 (TRQ03) 07:33 (TRQ03)	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	05:53 20:47	06:24 20:10	06:55 (TRQ03) 07:33 (TRQ03)	06:57 19:18	07:30 18:27	07:08 16:50	07:38 16:43
20	05:54 20:46	06:25 20:09	06:55 (TRQ03) 07:33 (TRQ03)	06:58 19:17	07:31 18:26	07:10 16:49	07:39 16:44
21	05:55 20:45	06:26 20:07	06:55 (TRQ03) 07:33 (TRQ03)	06:59 19:15	07:33 18:24	07:11 16:48	07:39 16:44
22	05:56 20:44	06:27 20:06	06:55 (TRQ03) 07:32 (TRQ03)	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:45
23	05:57 20:43	06:29 20:04	06:55 (TRQ03) 07:32 (TRQ03)	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	05:58 20:43	06:30 20:03	06:55 (TRQ03) 07:31 (TRQ03)	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	05:59 20:42	06:31 20:01	06:56 (TRQ03) 07:30 (TRQ03)	07:03 19:08	06:37 17:18	07:16 16:45	07:41 16:46
26	06:00 20:41	06:32 19:59	06:56 (TRQ03) 07:29 (TRQ03)	07:04 19:06	06:39 17:17	07:17 16:45	07:42 16:47
27	06:01 20:40	06:33 19:58	06:57 (TRQ03) 07:28 (TRQ03)	07:06 19:04	06:40 17:15	07:18 16:44	07:42 16:47
28	06:01 20:39	06:34 19:56	06:58 (TRQ03) 07:26 (TRQ03)	07:07 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	06:02 20:38	06:35 19:55	06:59 (TRQ03) 07:24 (TRQ03)	07:08 19:01	06:42 17:13	07:20 16:44	07:42 16:49
30	06:03 20:37	06:36 19:53	07:00 (TRQ03) 07:22 (TRQ03)	07:09 18:59	06:44 17:11	07:21 16:43	07:43 16:50
31	06:04 20:36	06:37 19:51	07:02 (TRQ03) 07:20 (TRQ03)		06:45 17:10		07:43 16:50
Potential sun hours	463	430	376	344	295	284	
Total, worst case		852					
Sun reduction		0,70					
Oper. time red.		0,95					
Wind dir. red.		0,65					
Total reduction		0,43					
Total, real		368	4				

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

**Tarquini1**

Licensed user:

**MONTANA SPA**

VIA ANGELO CARLO FUMAGALLI 6

IT-20143 MILANO

0254118173

Andrea / fronteddu@montanambiente.com

Calculated:

06/08/2022 14:40/3.5.584

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** CV - 196  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:52	07:29 17:27	06:51 18:03	06:58 19:39	07:23 (TRQ03) 08:01 (TRQ03)	06:11 20:12
2	07:43 16:52	07:28 17:28	06:49 18:04	06:56 19:40	07:23 (TRQ03) 08:00 (TRQ03)	06:09 20:14
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	07:23 (TRQ03) 08:01 (TRQ03)	06:08 20:15
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	07:23 (TRQ03) 08:00 (TRQ03)	06:07 20:16
5	07:43 16:55	07:24 17:32	06:44 18:08	06:51 19:43	07:22 (TRQ03) 07:59 (TRQ03)	06:05 20:17
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	07:23 (TRQ03) 07:59 (TRQ03)	06:04 20:18
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	07:23 (TRQ03) 07:57 (TRQ03)	06:03 20:19
8	07:43 16:58	07:21 17:36	06:40 18:11	06:46 19:47	07:23 (TRQ03) 07:56 (TRQ03)	06:02 20:20
9	07:43 16:59	07:20 17:37	06:38 18:12	06:45 19:48	07:24 (TRQ03) 07:54 (TRQ03)	06:00 20:21
10	07:43 17:00	07:18 17:39	06:36 18:14	06:43 19:49	07:25 (TRQ03) 07:53 (TRQ03)	05:59 20:22
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	07:26 (TRQ03) 07:51 (TRQ03)	05:58 20:23
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	07:28 (TRQ03) 07:50 (TRQ03)	05:57 20:24
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	07:30 (TRQ03) 07:47 (TRQ03)	05:56 20:25
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	07:33 (TRQ03) 07:42 (TRQ03)	05:55 20:27
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54		05:54 20:28
16	07:41 17:07	07:10 17:46	06:26 18:21	06:33 19:56		05:53 20:29
17	07:40 17:08	07:09 17:48	06:24 18:22	06:32 19:57		05:52 20:30
18	07:40 17:09	07:08 17:49	06:22 18:23	06:30 19:58		05:51 20:31
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59		05:50 20:32
20	07:38 17:12	07:05 17:52	06:19 18:25	06:27 20:00		05:49 20:33
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	06:40 (TRQ03) 06:51 (TRQ03)	05:48 20:34
22	07:37 17:14	07:02 17:54	06:16 18:27	06:24 20:02	06:36 (TRQ03) 06:54 (TRQ03)	05:47 20:35
23	07:36 17:15	07:00 17:55	06:14 18:29	06:22 20:03	06:34 (TRQ03) 06:57 (TRQ03)	05:46 20:36
24	07:36 17:17	06:59 17:57	06:12 18:30	06:21 20:05	06:32 (TRQ03) 06:58 (TRQ03)	05:45 20:36
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	06:30 (TRQ03) 06:59 (TRQ03)	05:45 20:37
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	06:28 (TRQ03) 07:00 (TRQ03)	05:44 20:38
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	06:27 (TRQ03) 07:01 (TRQ03)	05:43 20:39
28	07:32 17:22	06:53 18:01	06:05 18:34	06:15 20:09	06:26 (TRQ03) 07:01 (TRQ03)	05:43 20:40
29	07:31 17:23		07:03 19:35	06:13 20:10	07:25 (TRQ03) 08:01 (TRQ03)	05:42 20:41
30	07:30 17:24		07:02 19:36	06:12 20:11	07:25 (TRQ03) 08:02 (TRQ03)	05:41 20:42
31	07:30 17:26		07:00 19:38	06:11 20:12	07:24 (TRQ03) 08:02 (TRQ03)	05:41 20:43
Potential sun hours	294	295	369	400	452	457
Total, worst case			319	421		
Sun reduction			0,46	0,49		
Oper. time red.			0,95	0,95		
Wind dir. red.			0,61	0,61		
Total reduction			0,27	0,29		
Total, real			85	121		

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** CV - 196  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40 20:55	06:05 20:34	06:38 19:50	07:25 (TRQ03) 07:50 (TRQ03)	07:10 18:57	06:46 17:09
2	05:41 20:54	06:06 20:33	06:39 19:48	07:23 (TRQ03) 07:51 (TRQ03)	07:11 18:55	06:47 17:07
3	05:41 20:54	06:08 20:32	06:40 19:46	07:22 (TRQ03) 07:52 (TRQ03)	07:12 18:54	06:48 17:06
4	05:42 20:54	06:09 20:31	06:41 19:44	07:20 (TRQ03) 07:53 (TRQ03)	07:13 18:52	06:50 17:05
5	05:43 20:54	06:10 20:30	06:42 19:43	07:19 (TRQ03) 07:53 (TRQ03)	07:14 18:50	06:51 17:04
6	05:43 20:54	06:11 20:29	06:43 19:41	07:18 (TRQ03) 07:54 (TRQ03)	07:15 18:49	06:52 17:02
7	05:44 20:53	06:12 20:27	06:44 19:39	07:17 (TRQ03) 07:54 (TRQ03)	07:17 18:47	06:53 17:01
8	05:45 20:53	06:13 20:26	06:45 19:38	07:17 (TRQ03) 07:54 (TRQ03)	07:18 18:45	06:55 17:00
9	05:45 20:52	06:14 20:25	06:46 19:36	07:16 (TRQ03) 07:54 (TRQ03)	07:19 18:43	06:56 16:59
10	05:46 20:52	06:15 20:23	06:48 19:34	07:16 (TRQ03) 07:54 (TRQ03)	07:20 18:42	06:57 16:58
11	05:47 20:52	06:16 20:22	06:49 19:32	07:15 (TRQ03) 07:53 (TRQ03)	07:21 18:40	06:58 16:57
12	05:47 20:51	06:17 20:21	06:50 19:31	07:15 (TRQ03) 07:53 (TRQ03)	07:22 18:38	07:00 16:56
13	05:48 20:51	06:18 20:19	06:51 19:29	07:15 (TRQ03) 07:52 (TRQ03)	07:23 18:37	07:01 16:55
14	05:49 20:50	06:19 20:18	06:52 19:27	07:15 (TRQ03) 07:51 (TRQ03)	07:24 18:35	07:02 16:54
15	05:50 20:49	06:20 20:16	06:53 19:25	07:15 (TRQ03) 07:50 (TRQ03)	07:26 18:34	07:03 16:53
16	05:51 20:49	06:21 20:15	06:54 19:24	07:16 (TRQ03) 07:50 (TRQ03)	07:27 18:32	07:05 16:52
17	05:51 20:48	06:22 20:13	06:55 19:22	07:17 (TRQ03) 07:49 (TRQ03)	07:28 18:30	07:06 16:51
18	05:52 20:47	06:23 20:12	06:56 19:20	07:18 (TRQ03) 07:48 (TRQ03)	07:29 18:29	07:07 16:50
19	05:53 20:47	06:24 20:10	06:57 19:18	07:19 (TRQ03) 07:46 (TRQ03)	07:30 18:27	07:08 16:50
20	05:54 20:46	06:25 20:09	06:58 19:17	07:20 (TRQ03) 07:44 (TRQ03)	07:31 18:26	07:10 16:49
21	05:55 20:45	06:26 20:07	06:59 19:15	07:22 (TRQ03) 07:41 (TRQ03)	07:33 18:24	07:11 16:48
22	05:56 20:44	06:27 20:06	07:00 19:13	07:24 (TRQ03) 07:37 (TRQ03)	07:34 18:23	07:12 16:47
23	05:57 20:43	06:29 20:04	07:01 19:11		07:35 18:21	07:13 16:47
24	05:58 20:43	06:30 20:03	07:02 19:09		07:36 18:20	07:14 16:46
25	05:59 20:42	06:31 20:01	07:03 19:08		06:37 17:18	07:16 16:45
26	06:00 20:41	06:32 19:59	07:04 19:06		06:39 17:17	07:17 16:45
27	06:01 20:40	06:33 19:58	07:06 19:04		06:40 17:15	07:18 16:44
28	06:01 20:39	06:34 19:56	07:07 19:02		06:41 17:14	07:19 16:44
29	06:02 20:38	06:35 19:55	07:08 19:01	07:34 (TRQ03) 07:43 (TRQ03)	06:42 17:13	07:20 16:44
30	06:03 20:37	06:36 19:53	07:09 18:59	07:30 (TRQ03) 07:47 (TRQ03)	06:44 17:11	07:21 16:43
31	06:04 20:36	06:37 19:51	07:10 18:59	07:27 (TRQ03) 07:49 (TRQ03)	06:45 17:10	07:22 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		48	699			
Sun reduction		0,70	0,62			
Oper. time red.		0,95	0,95			
Wind dir. red.		0,61	0,61			
Total reduction		0,41	0,36			
Total, real		19	253			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** CW - 198  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51	07:29 17:27	06:51 18:03	06:58 19:39	07:45 (TRQ03) 08:20 (TRQ03)	06:11 20:12
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	07:46 (TRQ03) 08:18 (TRQ03)	06:09 20:14
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	07:48 (TRQ03) 08:16 (TRQ03)	06:08 20:15
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	07:49 (TRQ03) 08:14 (TRQ03)	06:07 20:16
5	07:43 16:55	07:24 17:32	06:44 18:08	06:51 19:43	07:51 (TRQ03) 08:11 (TRQ03)	06:05 20:17
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	07:55 (TRQ03) 08:07 (TRQ03)	06:04 20:18
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48
8	07:43 16:58	07:21 17:36	06:40 18:11	06:46 19:47	06:02 20:20	05:38 20:48
9	07:43 16:59	07:20 17:37	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49
10	07:43 17:00	07:18 17:39	06:36 18:14	07:02 (TRQ03) 07:16 (TRQ03)	06:43 19:49	05:59 20:22
11	07:42 17:01	07:17 17:40	06:34 18:15	06:59 (TRQ03) 07:20 (TRQ03)	06:41 19:50	05:58 20:23
12	07:42 17:02	07:16 17:41	06:33 18:16	06:56 (TRQ03) 07:22 (TRQ03)	06:40 19:51	05:57 20:24
13	07:42 17:03	07:14 17:43	06:31 18:17	06:54 (TRQ03) 07:23 (TRQ03)	06:38 19:52	05:56 20:25
14	07:41 17:05	07:13 17:44	06:29 18:18	06:52 (TRQ03) 07:25 (TRQ03)	06:36 19:53	05:55 20:27
15	07:41 17:06	07:12 17:45	06:28 18:19	06:51 (TRQ03) 07:26 (TRQ03)	06:35 19:54	05:54 20:28
16	07:41 17:07	07:10 17:46	06:26 18:21	06:49 (TRQ03) 07:27 (TRQ03)	06:33 19:56	05:53 20:29
17	07:40 17:08	07:09 17:48	06:24 18:22	06:48 (TRQ03) 07:27 (TRQ03)	06:31 19:57	05:52 20:30
18	07:40 17:09	07:08 17:49	06:22 18:23	06:46 (TRQ03) 07:27 (TRQ03)	06:30 19:58	05:51 20:31
19	07:39 17:10	07:06 17:50	06:21 18:24	06:46 (TRQ03) 07:28 (TRQ03)	06:28 19:59	05:50 20:32
20	07:38 17:12	07:05 17:52	06:19 18:25	06:45 (TRQ03) 07:28 (TRQ03)	06:27 20:00	05:49 20:33
21	07:38 17:13	07:03 17:53	06:17 18:26	06:44 (TRQ03) 07:28 (TRQ03)	06:25 20:01	05:48 20:34
22	07:37 17:14	07:02 17:54	06:16 18:27	06:43 (TRQ03) 07:27 (TRQ03)	06:24 20:02	05:47 20:35
23	07:36 17:15	07:00 17:55	06:14 18:29	06:44 (TRQ03) 07:28 (TRQ03)	06:22 20:03	05:46 20:36
24	07:36 17:17	06:59 17:57	06:12 18:30	06:43 (TRQ03) 07:27 (TRQ03)	06:21 20:05	05:45 20:36
25	07:35 17:18	06:57 17:58	06:10 18:31	06:43 (TRQ03) 07:27 (TRQ03)	06:19 20:06	05:45 20:37
26	07:34 17:19	06:56 17:59	06:09 18:32	06:42 (TRQ03) 07:26 (TRQ03)	06:18 20:07	05:44 20:38
27	07:33 17:20	06:54 18:00	06:07 18:33	06:43 (TRQ03) 07:26 (TRQ03)	06:16 20:08	05:43 20:39
28	07:32 17:22	06:53 18:01	06:05 18:34	06:43 (TRQ03) 07:25 (TRQ03)	06:15 20:09	05:43 20:40
29	07:31 17:23	06:51 18:02	06:03 18:35	07:43 (TRQ03) 08:23 (TRQ03)	06:13 20:10	05:42 20:41
30	07:30 17:24	06:50 18:03	06:02 18:36	07:44 (TRQ03) 08:23 (TRQ03)	06:12 20:11	05:41 20:42
31	07:30 17:26	06:50 18:03	06:02 18:36	07:45 (TRQ03) 08:21 (TRQ03)	06:11 20:11	05:41 20:43
Potential sun hours	294	295	369	400	452	457
Total, worst case			825		152	
Sun reduction			0,46		0,49	
Oper. time red.			0,95		0,95	
Wind dir. red.			0,58		0,58	
Total reduction			0,25		0,27	
Total, real			207		41	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: CW - 198  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:55	06:05 20:34	06:38 19:50	07:10 18:57	07:34 (TRQ03) 06:46	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	07:36 (TRQ03) 06:47	07:23 16:42
3	05:41 20:54	06:08 20:32	06:40 19:46	07:12 18:54	07:39 (TRQ03) 06:48	07:24 16:42
4	05:42 20:54	06:09 20:31	06:41 19:44	07:13 18:52	07:57 (TRQ03) 06:50	07:26 16:42
5	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	07:51 (TRQ03) 06:51	07:27 16:42
6	05:43 20:54	06:11 20:29	06:43 19:41	07:15 18:49	06:52 17:02	07:28 16:42
7	05:44 20:53	06:12 20:27	06:44 19:39	07:17 18:47	07:46 (TRQ03) 17:01	07:28 16:41
8	05:45 20:53	06:13 20:26	06:45 19:38	07:18 18:45	07:43 (TRQ03) 17:00	07:29 16:41
9	05:45 20:52	06:14 20:25	06:46 19:36	07:19 18:43	07:41 (TRQ03) 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:48 19:34	07:20 18:42	07:39 (TRQ03) 16:58	07:31 16:41
11	05:47 20:52	06:16 20:22	06:49 19:32	07:21 18:40	08:11 (TRQ03) 16:57	07:32 16:41
12	05:47 20:51	06:17 20:21	06:50 19:31	07:22 18:38	07:36 (TRQ03) 16:56	07:33 16:41
13	05:48 20:51	06:18 20:19	06:51 19:29	07:23 18:37	07:35 (TRQ03) 16:55	07:34 16:42
14	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	08:13 (TRQ03) 16:54	07:35 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	07:26 18:34	07:32 (TRQ03) 16:53	07:35 16:42
16	05:51 20:49	06:21 20:15	06:54 19:24	07:27 18:32	08:14 (TRQ03) 16:52	16:42 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:32 (TRQ03) 16:51	07:28 16:43
18	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	08:15 (TRQ03) 16:50	07:37 16:43
19	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:31 (TRQ03) 16:50	07:38 16:43
20	05:54 20:46	06:25 20:09	06:58 19:17	07:31 18:26	08:15 (TRQ03) 16:49	16:43 16:44
21	05:55 20:45	06:26 20:07	06:59 19:15	07:33 18:24	08:14 (TRQ03) 16:48	07:39 16:44
22	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:30 (TRQ03) 16:47	07:40 16:45
23	05:57 20:43	06:29 20:04	07:01 19:11	07:35 18:21	08:13 (TRQ03) 16:47	07:40 16:45
24	05:58 20:43	06:30 20:03	07:02 19:09	07:36 18:20	07:29 (TRQ03) 16:46	16:45 16:46
25	05:59 20:42	06:31 20:01	07:03 19:08	07:37 18:18	08:12 (TRQ03) 16:45	07:41 16:46
26	06:00 20:41	06:32 19:59	07:04 19:06	07:39 18:17	08:11 (TRQ03) 16:45	07:42 16:47
27	06:00 20:40	06:33 19:58	07:06 19:04	07:40 18:15	08:10 (TRQ03) 16:44	07:42 16:47
28	06:01 20:39	06:34 19:56	07:07 19:02	07:41 18:14	08:09 (TRQ03) 16:44	16:47 16:48
29	06:02 20:38	06:35 19:55	07:08 19:01	07:42 18:13	08:07 (TRQ03) 16:44	07:42 16:49
30	06:03 20:37	06:36 19:53	07:09 18:59	07:44 18:11	08:06 (TRQ03) 16:43	16:49 16:50
31	06:04 20:36	06:37 19:51		06:45 17:10	07:33 (TRQ03) 16:43	07:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case			920			76
Sun reduction			0,62			0,55
Oper. time red.			0,95			0,95
Wind dir. red.			0,58			0,58
Total reduction			0,34			0,30
Total, real			315			23

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** CX - 200  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43	07:28	06:51	06:58	06:11	05:40	05:40	06:05	06:38	07:10	06:46	07:22
	16:51	17:27	18:03	19:39	20:12	20:43	20:54	20:34	19:49	18:57	17:09	16:43
2	07:43	07:27	06:49	06:56	06:09	05:40	05:41	06:06	06:39	07:11	06:47	07:23
	16:52	17:28	18:04	19:40	20:13	20:44	20:54	20:33	19:48	18:55	17:07	16:42
3	07:43	07:26	06:48	06:55	06:08	05:39	05:41	06:07	06:40	07:12	06:48	07:24
	16:53	17:29	18:05	19:41	20:14	20:45	20:54	20:32	19:46	18:54	17:06	16:42
4	07:43	07:25	06:46	06:53	06:07	05:39	05:42	06:08	06:41	07:13	06:50	07:25
	16:54	17:31	18:06	19:42	20:16	20:45	20:54	20:31	19:44	18:52	17:05	16:42
5	07:43	07:24	06:44	06:51	06:05	05:38	05:43	06:10	06:42	07:14	06:51	07:26
	16:55	17:32	18:07	19:43	20:17	20:46	20:54	20:30	19:43	18:50	17:04	16:42
6	07:43	07:23	06:43	06:50	06:04	05:38	05:43	06:11	06:43	07:15	06:52	07:27
	16:56	17:33	18:09	19:44	20:18	20:47	20:53	20:28	19:41	18:48	17:02	16:42
7	07:43	07:22	06:41	06:48	06:03	05:38	05:44	06:12	06:44	07:16	06:53	07:28
	16:57	17:35	18:10	19:45	20:19	20:48	20:53	20:27	19:39	18:47	17:01	16:41
8	07:43	07:21	06:39	06:46	06:01	05:38	05:44	06:13	06:45	07:17	06:55	07:29
	16:58	17:36	18:11	19:46	20:20	20:48	20:53	20:26	19:37	18:45	17:00	16:41
9	07:43	07:19	06:38	06:45	06:00	05:37	05:45	06:14	06:46	07:19	06:56	07:30
	16:59	17:37	18:12	19:48	20:21	20:49	20:52	20:24	19:36	18:43	16:59	16:41
10	07:42	07:18	06:36	06:43	05:59	05:37	05:46	06:15	06:47	07:20	06:57	07:31
	17:00	17:39	18:13	19:49	20:22	20:49	20:52	20:23	19:34	18:42	16:58	16:41
11	07:42	07:17	06:34	06:41	05:58	05:37	05:47	06:16	06:48	07:21	06:58	07:32
	17:01	17:40	18:15	19:50	20:23	20:50	20:51	20:22	19:32	18:40	16:57	16:41
12	07:42	07:16	06:33	06:40	05:57	05:37	05:47	06:17	06:50	07:22	07:00	07:33
	17:02	17:41	18:16	19:51	20:24	20:50	20:51	20:20	19:30	18:38	16:56	16:41
13	07:42	07:14	06:31	06:38	05:56	05:37	05:48	06:18	06:51	07:23	07:01	07:34
	17:03	17:43	18:17	19:52	20:25	20:51	20:50	20:19	19:29	18:37	16:55	16:42
14	07:41	07:13	06:29	06:36	05:55	05:37	05:49	06:19	06:52	07:24	07:02	07:34
	17:05	17:44	18:18	19:53	20:26	20:51	20:50	20:18	19:27	18:35	16:54	16:42
15	07:41	07:12	06:28	06:35	05:54	05:37	05:50	06:20	06:53	07:25	07:03	07:35
	17:06	17:45	18:19	19:54	20:27	20:52	20:49	20:16	19:25	18:33	16:53	16:42
16	07:40	07:10	06:26	06:33	05:53	05:37	05:50	06:21	06:54	07:27	07:05	07:36
	17:07	17:46	18:20	19:55	20:28	20:52	20:49	20:15	19:23	18:32	16:52	16:42
17	07:40	07:09	06:24	06:31	05:52	05:37	05:51	06:22	06:55	07:28	07:06	07:37
	17:08	17:48	18:22	19:57	20:29	20:53	20:48	20:13	19:22	18:30	16:51	16:42
18	07:39	07:07	06:22	06:30	05:51	05:37	05:52	06:23	06:56	07:29	07:07	07:37
	17:09	17:49	18:23	19:58	20:30	20:53	20:47	20:12	19:20	18:29	16:50	16:43
19	07:39	07:06	06:21	06:28	05:50	05:37	05:53	06:24	06:57	07:30	07:08	07:38
	17:10	17:50	18:24	19:59	20:31	20:53	20:47	20:10	19:18	18:27	16:49	16:43
20	07:38	07:05	06:19	06:27	05:49	05:37	05:54	06:25	06:58	07:31	07:09	07:38
	17:12	17:51	18:25	20:00	20:32	20:54	20:46	20:09	19:16	18:26	16:49	16:44
21	07:38	07:03	06:17	06:25	05:48	05:37	05:55	06:26	06:59	07:32	07:11	07:39
	17:13	17:53	18:26	20:01	20:33	20:54	20:45	20:07	19:15	18:24	16:48	16:44
22	07:37	07:02	06:15	06:24	05:47	05:37	05:56	06:27	07:00	07:34	07:12	07:40
	17:14	17:54	18:27	20:02	20:34	20:54	20:44	20:06	19:13	18:23	16:47	16:44
23	07:36	07:00	06:14	06:22	05:46	05:37	05:57	06:28	07:01	07:35	07:13	07:40
	17:15	17:55	18:28	20:03	20:35	20:54	20:43	20:04	19:11	18:21	16:47	16:45
24	07:35	06:59	06:12	06:21	05:45	05:38	05:58	06:29	07:02	07:36	07:14	07:41
	17:17	17:56	18:30	20:04	20:36	20:54	20:42	20:03	19:09	18:20	16:46	16:46
25	07:35	06:57	06:10	06:19	05:45	05:38	05:59	06:31	07:03	07:37	07:15	07:41
	17:18	17:58	18:31	20:06	20:37	20:54	20:41	20:01	19:08	18:19	16:45	16:46
26	07:34	06:56	06:08	06:18	05:44	05:38	05:59	06:32	07:04	07:38	07:17	07:41
	17:19	17:59	18:32	20:07	20:38	20:55	20:41	19:59	19:06	18:17	16:45	16:47
27	07:33	06:54	06:07	06:16	05:43	05:39	06:00	06:33	07:05	07:39	07:18	07:42
	17:20	18:00	18:33	20:08	20:39	20:55	20:40	19:58	19:04	18:15	16:44	16:47
28	07:32	06:52	06:05	06:15	05:43	05:39	06:01	06:34	07:06	07:40	07:19	07:42
	17:22	18:01	18:34	20:09	20:40	20:55	20:39	19:56	19:02	18:14	16:44	16:48
29	07:31		07:03	06:13	05:42	05:39	06:02	06:35	07:08	07:42	07:20	07:42
	17:23		19:35	20:10	20:41	20:55	20:38	19:54	19:01	18:13	16:43	16:49
30	07:30		07:02	06:12	05:41	05:40	06:03	06:36	07:09	07:43	07:21	07:42
	17:24		19:36	20:11	20:42	20:54	20:36	19:53	18:59	18:11	16:43	16:50
31	07:29		07:00		05:41		06:04	06:37		06:45		07:43
	17:26		19:37		20:42		20:35	19:51		17:10		16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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**SHADOW - Calendar**

Calculation: Shadow\_real Shadow receptor: CY - 201  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June		
1	07:43	07:28	06:51	06:58	06:11	05:40		19:24 (TRQ04)
	16:51	17:27	18:03	19:39	20:12	20:43	47	20:11 (TRQ04)
2	07:43	07:27	06:49	06:56	06:09	05:40		19:25 (TRQ04)
	16:52	17:28	18:04	19:40	20:13	20:44	46	20:11 (TRQ04)
3	07:43	07:26	06:48	06:55	06:08	05:39		19:24 (TRQ04)
	16:53	17:29	18:05	19:41	20:14	20:45	47	20:11 (TRQ04)
4	07:43	07:25	06:46	06:53	06:07	05:39		19:25 (TRQ04)
	16:54	17:31	18:06	19:42	20:16	20:45	47	20:12 (TRQ04)
5	07:43	07:24	06:44	06:51	06:05	05:38		19:25 (TRQ04)
	16:55	17:32	18:07	19:43	20:17	20:46	47	20:12 (TRQ04)
6	07:43	07:23	06:43	06:50	06:04	05:38		19:25 (TRQ04)
	16:56	17:33	18:09	19:44	20:18	20:47	47	20:12 (TRQ04)
7	07:43	07:22	06:41	06:48	06:03	05:38		19:25 (TRQ04)
	16:57	17:35	18:10	19:45	20:19	20:48	47	20:12 (TRQ04)
8	07:43	07:21	06:39	06:46	06:01	05:38		19:26 (TRQ04)
	16:58	17:36	18:11	19:46	20:20	20:48	46	20:12 (TRQ04)
9	07:43	07:19	06:38	06:45	06:00	19:43 (TRQ04)	05:37	19:26 (TRQ04)
	16:59	17:37	18:12	19:48	20:21	6 19:49 (TRQ04)	20:49	47 20:13 (TRQ04)
10	07:42	07:18	06:36	06:43	05:59	19:38 (TRQ04)	05:37	19:26 (TRQ04)
	17:00	17:39	18:13	19:49	20:22	16 19:54 (TRQ04)	20:49	47 20:13 (TRQ04)
11	07:42	07:17	06:34	06:41	05:58	19:36 (TRQ04)	05:37	19:26 (TRQ04)
	17:01	17:40	18:15	19:50	20:23	20 19:56 (TRQ04)	20:50	47 20:13 (TRQ04)
12	07:42	07:16	06:33	06:40	05:57	19:34 (TRQ04)	05:37	19:26 (TRQ04)
	17:02	17:41	18:16	19:51	20:24	24 19:58 (TRQ04)	20:50	47 20:13 (TRQ04)
13	07:42	07:14	06:31	06:38	05:56	19:32 (TRQ04)	05:37	19:26 (TRQ04)
	17:03	17:43	18:17	19:52	20:25	28 20:00 (TRQ04)	20:51	47 20:13 (TRQ04)
14	07:41	07:13	06:29	06:36	05:55	19:31 (TRQ04)	05:37	19:27 (TRQ04)
	17:05	17:44	18:18	19:53	20:26	30 20:01 (TRQ04)	20:51	46 20:13 (TRQ04)
15	07:41	07:12	06:28	06:35	05:54	19:30 (TRQ04)	05:37	19:27 (TRQ04)
	17:06	17:45	18:19	19:54	20:27	32 20:02 (TRQ04)	20:52	46 20:13 (TRQ04)
16	07:40	07:10	06:26	06:33	05:53	19:29 (TRQ04)	05:37	19:27 (TRQ04)
	17:07	17:46	18:20	19:55	20:28	34 20:03 (TRQ04)	20:52	47 20:14 (TRQ04)
17	07:40	07:09	06:24	06:31	05:52	19:28 (TRQ04)	05:37	19:27 (TRQ04)
	17:08	17:48	18:22	19:57	20:29	36 20:04 (TRQ04)	20:53	47 20:14 (TRQ04)
18	07:39	07:07	06:22	06:30	05:51	19:27 (TRQ04)	05:37	19:28 (TRQ04)
	17:09	17:49	18:23	19:58	20:30	38 20:05 (TRQ04)	20:53	47 20:15 (TRQ04)
19	07:39	07:06	06:21	06:28	05:50	19:27 (TRQ04)	05:37	19:28 (TRQ04)
	17:10	17:50	18:24	19:59	20:31	39 20:06 (TRQ04)	20:53	47 20:15 (TRQ04)
20	07:38	07:05	06:19	06:27	05:49	19:27 (TRQ04)	05:37	19:29 (TRQ04)
	17:12	17:51	18:25	20:00	20:32	40 20:07 (TRQ04)	20:54	46 20:15 (TRQ04)
21	07:38	07:03	06:17	06:25	05:48	19:26 (TRQ04)	05:37	19:29 (TRQ04)
	17:13	17:53	18:26	20:01	20:33	41 20:07 (TRQ04)	20:54	46 20:15 (TRQ04)
22	07:37	07:02	06:15	06:24	05:47	19:25 (TRQ04)	05:37	19:29 (TRQ04)
	17:14	17:54	18:27	20:02	20:34	42 20:07 (TRQ04)	20:54	46 20:15 (TRQ04)
23	07:36	07:00	06:14	06:22	05:46	19:25 (TRQ04)	05:37	19:29 (TRQ04)
	17:15	17:55	18:28	20:03	20:35	43 20:08 (TRQ04)	20:54	47 20:16 (TRQ04)
24	07:35	06:59	06:12	06:21	05:45	19:25 (TRQ04)	05:38	19:29 (TRQ04)
	17:17	17:56	18:30	20:04	20:36	44 20:09 (TRQ04)	20:54	47 20:16 (TRQ04)
25	07:35	06:57	06:10	06:19	05:45	19:25 (TRQ04)	05:38	19:29 (TRQ04)
	17:18	17:58	18:31	20:06	20:37	44 20:09 (TRQ04)	20:54	47 20:16 (TRQ04)
26	07:34	06:56	06:08	06:18	05:44	19:24 (TRQ04)	05:38	19:29 (TRQ04)
	17:19	17:59	18:32	20:07	20:38	45 20:09 (TRQ04)	20:55	47 20:16 (TRQ04)
27	07:33	06:54	06:07	06:16	05:43	19:25 (TRQ04)	05:39	19:30 (TRQ04)
	17:20	18:00	18:33	20:08	20:39	45 20:10 (TRQ04)	20:55	47 20:17 (TRQ04)
28	07:32	06:52	06:05	06:15	05:43	19:24 (TRQ04)	05:39	19:30 (TRQ04)
	17:22	18:01	18:34	20:09	20:40	46 20:10 (TRQ04)	20:55	46 20:16 (TRQ04)
29	07:31		07:03	06:13	05:42	19:25 (TRQ04)	05:39	19:30 (TRQ04)
	17:23		19:35	20:10	20:41	46 20:11 (TRQ04)	20:55	47 20:17 (TRQ04)
30	07:30		07:02	06:12	05:41	19:24 (TRQ04)	05:40	19:30 (TRQ04)
	17:24		19:36	20:11	20:42	46 20:10 (TRQ04)	20:54	47 20:17 (TRQ04)
31	07:29		07:00		05:41	19:25 (TRQ04)		
	17:26		19:37		20:42	46 20:11 (TRQ04)		
Potential sun hours	294	295	369	400	452		457	
Total, worst case					831			1402
Sun reduction					0,57			0,61
Oper. time red.					0,95			0,95
Wind dir. red.					0,51			0,51
Total reduction					0,28			0,30
Total, real					230			416

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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**SHADOW - Calendar**

**Calculation:** Shadow\_real **Shadow receptor:** CY - 201

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July		August		September		October		November		December	
1	05:40	19:31 (TRQ04)	06:05	19:45 (TRQ04)	06:38	07:10	06:46	07:22				
	20:54	47 20:18 (TRQ04)	20:34	23 20:08 (TRQ04)	19:49	18:57	17:09	16:43				
2	05:41	19:31 (TRQ04)	06:06	19:47 (TRQ04)	06:39	07:11	06:47	07:23				
	20:54	46 20:17 (TRQ04)	20:33	19 20:06 (TRQ04)	19:48	18:55	17:07	16:42				
3	05:41	19:31 (TRQ04)	06:07	19:50 (TRQ04)	06:40	07:12	06:48	07:24				
	20:54	47 20:18 (TRQ04)	20:32	13 20:03 (TRQ04)	19:46	18:54	17:06	16:42				
4	05:42	19:31 (TRQ04)	06:08		06:41	07:13	06:50	07:25				
	20:54	47 20:18 (TRQ04)	20:31		19:44	18:52	17:05	16:42				
5	05:43	19:31 (TRQ04)	06:09		06:42	07:14	06:51	07:26				
	20:54	47 20:18 (TRQ04)	20:30		19:43	18:50	17:04	16:42				
6	05:43	19:31 (TRQ04)	06:11		06:43	07:15	06:52	07:27				
	20:53	47 20:18 (TRQ04)	20:28		19:41	18:48	17:02	16:42				
7	05:44	19:32 (TRQ04)	06:12		06:44	07:16	06:53	07:28				
	20:53	46 20:18 (TRQ04)	20:27		19:39	18:47	17:01	16:41				
8	05:44	19:32 (TRQ04)	06:13		06:45	07:17	06:55	07:29				
	20:53	47 20:19 (TRQ04)	20:26		19:37	18:45	17:00	16:41				
9	05:45	19:32 (TRQ04)	06:14		06:46	07:19	06:56	07:30				
	20:52	46 20:18 (TRQ04)	20:24		19:36	18:43	16:59	16:41				
10	05:46	19:32 (TRQ04)	06:15		06:47	07:20	06:57	07:31				
	20:52	47 20:19 (TRQ04)	20:23		19:34	18:42	16:58	16:41				
11	05:47	19:33 (TRQ04)	06:16		06:48	07:21	06:58	07:32				
	20:51	46 20:19 (TRQ04)	20:22		19:32	18:40	16:57	16:41				
12	05:47	19:33 (TRQ04)	06:17		06:50	07:22	07:00	07:33				
	20:51	46 20:19 (TRQ04)	20:20		19:30	18:38	16:56	16:41				
13	05:48	19:33 (TRQ04)	06:18		06:51	07:23	07:01	07:34				
	20:50	46 20:19 (TRQ04)	20:19		19:29	18:37	16:55	16:42				
14	05:49	19:33 (TRQ04)	06:19		06:52	07:24	07:02	07:34				
	20:50	46 20:19 (TRQ04)	20:18		19:27	18:35	16:54	16:42				
15	05:50	19:34 (TRQ04)	06:20		06:53	07:25	07:03	07:35				
	20:49	45 20:19 (TRQ04)	20:16		19:25	18:33	16:53	16:42				
16	05:50	19:34 (TRQ04)	06:21		06:54	07:27	07:05	07:36				
	20:49	45 20:19 (TRQ04)	20:15		19:23	18:32	16:52	16:42				
17	05:51	19:34 (TRQ04)	06:22		06:55	07:28	07:06	07:37				
	20:48	44 20:18 (TRQ04)	20:13		19:22	18:30	16:51	16:42				
18	05:52	19:34 (TRQ04)	06:23		06:56	07:29	07:07	07:37				
	20:47	44 20:18 (TRQ04)	20:12		19:20	18:29	16:50	16:43				
19	05:53	19:35 (TRQ04)	06:24		06:57	07:30	07:08	07:38				
	20:47	43 20:18 (TRQ04)	20:10		19:18	18:27	16:49	16:43				
20	05:54	19:35 (TRQ04)	06:25		06:58	07:31	07:09	07:38				
	20:46	43 20:18 (TRQ04)	20:09		19:16	18:26	16:49	16:44				
21	05:55	19:36 (TRQ04)	06:26		06:59	07:32	07:11	07:39				
	20:45	42 20:18 (TRQ04)	20:07		19:15	18:24	16:48	16:44				
22	05:56	19:36 (TRQ04)	06:27		07:00	07:34	07:12	07:40				
	20:44	42 20:18 (TRQ04)	20:06		19:13	18:23	16:47	16:44				
23	05:57	19:37 (TRQ04)	06:28		07:01	07:35	07:13	07:40				
	20:43	40 20:17 (TRQ04)	20:04		19:11	18:21	16:47	16:45				
24	05:58	19:37 (TRQ04)	06:29		07:02	07:36	07:14	07:41				
	20:42	39 20:16 (TRQ04)	20:03		19:09	18:20	16:46	16:46				
25	05:59	19:37 (TRQ04)	06:31		07:03	06:37	07:15	07:41				
	20:42	39 20:16 (TRQ04)	20:01		19:08	17:18	16:45	16:46				
26	05:59	19:38 (TRQ04)	06:32		07:04	06:38	07:17	07:41				
	20:41	37 20:15 (TRQ04)	19:59		19:06	17:17	16:45	16:47				
27	06:00	19:39 (TRQ04)	06:33		07:05	06:40	07:18	07:42				
	20:40	35 20:14 (TRQ04)	19:58		19:04	17:15	16:44	16:47				
28	06:01	19:40 (TRQ04)	06:34		07:06	06:41	07:19	07:42				
	20:39	33 20:13 (TRQ04)	19:56		19:02	17:14	16:44	16:48				
29	06:02	19:41 (TRQ04)	06:35		07:08	06:42	07:20	07:42				
	20:38	31 20:12 (TRQ04)	19:54		19:01	17:13	16:43	16:49				
30	06:03	19:42 (TRQ04)	06:36		07:09	06:43	07:21	07:42				
	20:36	29 20:11 (TRQ04)	19:53		18:59	17:11	16:43	16:50				
31	06:04	19:44 (TRQ04)	06:37			06:45		07:43				
	20:35	26 20:10 (TRQ04)	19:51			17:10		16:50				
Potential sun hours	463		430		376	344	295	284				
Total, worst case	1308		55									
Sun reduction	0,71		0,70									
Oper. time red.	0,95		0,95									
Wind dir. red.	0,51		0,51									
Total reduction	0,34		0,34									
Total, real	448		19									

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** CZ - 202  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June
1	07:43	07:28	06:51	06:58	06:11	05:40
	16:51	17:27	18:03	19:39	20:12	20:43
2	07:43	07:27	06:49	06:56	06:09	05:40
	16:52	17:28	18:04	19:40	20:13	20:44
3	07:43	07:26	06:48	06:55	06:08	05:39
	16:53	17:29	18:05	19:41	20:14	20:45
4	07:43	07:25	06:46	06:53	06:07	05:39
	16:54	17:31	18:06	19:42	20:16	20:45
5	07:43	07:24	06:44	06:51	06:05	05:38
	16:55	17:32	18:07	19:43	20:17	20:46
6	07:43	07:23	06:43	06:50	06:04	05:38
	16:56	17:33	18:09	19:44	20:18	20:47
7	07:43	07:22	06:41	06:48	06:03	05:38
	16:57	17:35	18:10	19:45	20:19	20:48
8	07:43	07:21	06:39	06:46	06:01	19:39 (TRQ04)
	16:58	17:36	18:11	19:46	20:20	20:48
9	07:43	07:19	06:38	06:45	06:00	19:35 (TRQ04)
	16:59	17:37	18:12	19:48	20:21	20:49
10	07:42	07:18	06:36	06:43	05:59	19:33 (TRQ04)
	17:00	17:39	18:13	19:49	20:22	20:49
11	07:42	07:17	06:34	06:41	05:58	19:32 (TRQ04)
	17:01	17:40	18:15	19:50	20:23	20:50
12	07:42	07:16	06:33	06:40	05:57	19:30 (TRQ04)
	17:02	17:41	18:16	19:51	20:24	20:50
13	07:42	07:14	06:31	06:38	05:56	19:29 (TRQ04)
	17:03	17:43	18:17	19:52	20:25	20:51
14	07:41	07:13	06:29	06:36	05:55	19:28 (TRQ04)
	17:05	17:44	18:18	19:53	20:26	20:51
15	07:41	07:12	06:28	06:35	05:54	19:27 (TRQ04)
	17:06	17:45	18:19	19:54	20:27	20:52
16	07:40	07:10	06:26	06:33	05:53	19:27 (TRQ04)
	17:07	17:46	18:20	19:55	20:28	20:52
17	07:40	07:09	06:24	06:31	05:52	19:26 (TRQ04)
	17:08	17:48	18:22	19:57	20:29	20:53
18	07:39	07:07	06:22	06:30	05:51	19:25 (TRQ04)
	17:09	17:49	18:23	19:58	20:30	20:53
19	07:39	07:06	06:21	06:28	05:50	19:26 (TRQ04)
	17:10	17:50	18:24	19:59	20:31	20:53
20	07:38	07:05	06:19	06:27	05:49	19:25 (TRQ04)
	17:12	17:51	18:25	20:00	20:32	20:54
21	07:38	07:03	06:17	06:25	05:48	19:25 (TRQ04)
	17:13	17:53	18:26	20:01	20:33	20:54
22	07:37	07:02	06:15	06:24	05:47	19:24 (TRQ04)
	17:14	17:54	18:27	20:02	20:34	20:54
23	07:36	07:00	06:14	06:22	05:46	19:24 (TRQ04)
	17:15	17:55	18:28	20:03	20:35	20:54
24	07:35	06:59	06:12	06:21	05:45	19:24 (TRQ04)
	17:17	17:56	18:30	20:04	20:36	20:54
25	07:35	06:57	06:10	06:19	05:45	19:24 (TRQ04)
	17:18	17:58	18:31	20:06	20:37	20:54
26	07:34	06:56	06:08	06:18	05:44	19:23 (TRQ04)
	17:19	17:59	18:32	20:07	20:38	20:55
27	07:33	06:54	06:07	06:16	05:43	19:24 (TRQ04)
	17:20	18:00	18:33	20:08	20:39	20:55
28	07:32	06:52	06:05	06:15	05:43	19:24 (TRQ04)
	17:22	18:01	18:34	20:09	20:40	20:55
29	07:31		07:03	06:13	05:42	19:24 (TRQ04)
	17:23		19:35	20:10	20:41	20:55
30	07:30		07:02	06:12	05:41	19:24 (TRQ04)
	17:24		19:36	20:11	20:42	20:54
31	07:29		07:00		05:41	19:24 (TRQ04)
	17:26		19:37		20:42	20:10 (TRQ04)
Potential sun hours	294	295	369	400	452	457
Total, worst case					899	1324
Sun reduction					0,57	0,61
Oper. time red.					0,95	0,95
Wind dir. red.					0,51	0,51
Total reduction					0,28	0,30
Total, real					249	393

**Table layout: For each day in each month the following matrix apply**

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** CZ - 202  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40	19:31 (TRQ04)   06:05	19:42 (TRQ04)   06:38	07:10	06:46	07:22
	20:54	44   20:15 (TRQ04)   20:34	28   20:10 (TRQ04)   19:49	18:57	17:09	16:43
2	05:41	19:31 (TRQ04)   06:06	19:43 (TRQ04)   06:39	07:11	06:47	07:23
	20:54	44   20:15 (TRQ04)   20:33	26   20:09 (TRQ04)   19:48	18:55	17:07	16:42
3	05:41	19:31 (TRQ04)   06:07	19:45 (TRQ04)   06:40	07:12	06:48	07:24
	20:54	45   20:16 (TRQ04)   20:32	22   20:07 (TRQ04)   19:46	18:54	17:06	16:42
4	05:42	19:31 (TRQ04)   06:08	19:47 (TRQ04)   06:41	07:13	06:50	07:25
	20:54	45   20:16 (TRQ04)   20:31	18   20:05 (TRQ04)   19:44	18:52	17:05	16:42
5	05:43	19:32 (TRQ04)   06:09	19:50 (TRQ04)   06:42	07:14	06:51	07:26
	20:54	44   20:16 (TRQ04)   20:30	11   20:01 (TRQ04)   19:43	18:50	17:04	16:42
6	05:43	19:31 (TRQ04)   06:11	06:43	07:15	06:52	07:27
	20:53	45   20:16 (TRQ04)   20:28	19:41	18:48	17:02	16:42
7	05:44	19:32 (TRQ04)   06:12	06:44	07:16	06:53	07:28
	20:53	44   20:16 (TRQ04)   20:27	19:39	18:47	17:01	16:41
8	05:44	19:32 (TRQ04)   06:13	06:45	07:17	06:55	07:29
	20:53	45   20:17 (TRQ04)   20:26	19:37	18:45	17:00	16:41
9	05:45	19:31 (TRQ04)   06:14	06:46	07:19	06:56	07:30
	20:52	46   20:17 (TRQ04)   20:24	19:36	18:43	16:59	16:41
10	05:46	19:32 (TRQ04)   06:15	06:47	07:20	06:57	07:31
	20:52	45   20:17 (TRQ04)   20:23	19:34	18:42	16:58	16:41
11	05:47	19:32 (TRQ04)   06:16	06:48	07:21	06:58	07:32
	20:51	45   20:17 (TRQ04)   20:22	19:32	18:40	16:57	16:41
12	05:47	19:32 (TRQ04)   06:17	06:50	07:22	07:00	07:33
	20:51	45   20:17 (TRQ04)   20:20	19:30	18:38	16:56	16:41
13	05:48	19:32 (TRQ04)   06:18	06:51	07:23	07:01	07:34
	20:50	45   20:17 (TRQ04)   20:19	19:29	18:37	16:55	16:42
14	05:49	19:33 (TRQ04)   06:19	06:52	07:24	07:02	07:34
	20:50	45   20:18 (TRQ04)   20:18	19:27	18:35	16:54	16:42
15	05:50	19:33 (TRQ04)   06:20	06:53	07:25	07:03	07:35
	20:49	45   20:18 (TRQ04)   20:16	19:25	18:33	16:53	16:42
16	05:50	19:33 (TRQ04)   06:21	06:54	07:27	07:05	07:36
	20:49	45   20:18 (TRQ04)   20:15	19:23	18:32	16:52	16:42
17	05:51	19:33 (TRQ04)   06:22	06:55	07:28	07:06	07:37
	20:48	44   20:17 (TRQ04)   20:13	19:22	18:30	16:51	16:42
18	05:52	19:33 (TRQ04)   06:23	06:56	07:29	07:07	07:37
	20:47	44   20:17 (TRQ04)   20:12	19:20	18:29	16:50	16:43
19	05:53	19:34 (TRQ04)   06:24	06:57	07:30	07:08	07:38
	20:47	43   20:17 (TRQ04)   20:10	19:18	18:27	16:49	16:43
20	05:54	19:34 (TRQ04)   06:25	06:58	07:31	07:09	07:38
	20:46	43   20:17 (TRQ04)   20:09	19:16	18:26	16:49	16:44
21	05:55	19:34 (TRQ04)   06:26	06:59	07:32	07:11	07:39
	20:45	43   20:17 (TRQ04)   20:07	19:15	18:24	16:48	16:44
22	05:56	19:35 (TRQ04)   06:27	07:00	07:34	07:12	07:40
	20:44	42   20:17 (TRQ04)   20:06	19:13	18:23	16:47	16:44
23	05:57	19:35 (TRQ04)   06:28	07:01	07:35	07:13	07:40
	20:43	42   20:17 (TRQ04)   20:04	19:11	18:21	16:47	16:45
24	05:58	19:35 (TRQ04)   06:29	07:02	07:36	07:14	07:41
	20:42	41   20:16 (TRQ04)   20:03	19:09	18:20	16:46	16:46
25	05:59	19:35 (TRQ04)   06:31	07:03	06:37	07:15	07:41
	20:42	40   20:15 (TRQ04)   20:01	19:08	17:18	16:45	16:46
26	05:59	19:36 (TRQ04)   06:32	07:04	06:38	07:17	07:41
	20:41	39   20:15 (TRQ04)   19:59	19:06	17:17	16:45	16:47
27	06:00	19:37 (TRQ04)   06:33	07:05	06:40	07:18	07:42
	20:40	37   20:14 (TRQ04)   19:58	19:04	17:15	16:44	16:47
28	06:01	19:38 (TRQ04)   06:34	07:06	06:41	07:19	07:42
	20:39	36   20:14 (TRQ04)   19:56	19:02	17:14	16:44	16:48
29	06:02	19:38 (TRQ04)   06:35	07:08	06:42	07:20	07:42
	20:38	35   20:13 (TRQ04)   19:54	19:01	17:13	16:43	16:49
30	06:03	19:39 (TRQ04)   06:36	07:09	06:43	07:21	07:42
	20:36	33   20:12 (TRQ04)   19:53	18:59	17:11	16:43	16:50
31	06:04	19:40 (TRQ04)   06:37	06:45	07:10	07:22	07:43
	20:35	31   20:11 (TRQ04)   19:51	17:10	16:43	16:44	16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case	1310					
Sun reduction	0,71					
Oper. time red.	0,95					
Wind dir. red.	0,51					
Total reduction	0,34					
Total, real	449	36				

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

Tarquinia1

Licensed user:

MONTANA SPA
VIA ANGELO CARLO FUMAGALLI 6
IT-20143 MILANO
0254118173
Andrea / fronteddu@montanambiente.com
Calculated:
06/08/2022 14:40/3.5.584

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DA - 203
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Table with 12 columns (Jan-Dec) and 1 row of values: 3,98, 4,87, 5,46, 6,60, 8,30, 9,30, 10,54, 9,73, 7,82, 6,08, 4,48, 3,95

Operational time

Table with 13 columns (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum) and 1 row of values: 488, 1.218, 2.039, 904, 404, 473, 641, 645, 678, 389, 220, 210, 8.309

Main shadow calculation table with columns for months (January-December) and rows for each day (1-31) showing sun hours and various reduction factors.

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise/set, Minutes with flicker, and First/Last time with flicker (WTG causing flicker).



### SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DB - 189  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43	07:28	06:51	06:58	06:11	05:40	05:40	06:05	06:38	07:10	06:46	07:22
	16:51	17:27	18:03	19:39	20:12	20:43	20:54	20:34	19:49	18:57	17:09	16:43
2	07:43	07:27	06:49	06:56	06:09	05:40	05:41	06:06	06:39	07:11	06:47	07:23
	16:52	17:28	18:04	19:40	20:13	20:44	20:54	20:33	19:48	18:55	17:07	16:42
3	07:43	07:26	06:48	06:55	06:08	05:39	05:41	06:07	06:40	07:12	06:48	07:24
	16:53	17:30	18:05	19:41	20:14	20:45	20:54	20:32	19:46	18:54	17:06	16:42
4	07:43	07:25	06:46	06:53	06:07	05:39	05:42	06:09	06:41	07:13	06:50	07:25
	16:54	17:31	18:06	19:42	20:16	20:45	20:54	20:31	19:44	18:52	17:05	16:42
5	07:43	07:24	06:44	06:51	06:05	05:39	05:43	06:10	06:42	07:14	06:51	07:26
	16:55	17:32	18:07	19:43	20:17	20:46	20:54	20:30	19:43	18:50	17:04	16:42
6	07:43	07:23	06:43	06:50	06:04	05:38	05:43	06:11	06:43	07:15	06:52	07:27
	16:56	17:33	18:09	19:44	20:18	20:47	20:53	20:28	19:41	18:48	17:02	16:42
7	07:43	07:22	06:41	06:48	06:03	05:38	05:44	06:12	06:44	07:16	06:53	07:28
	16:57	17:35	18:10	19:45	20:19	20:48	20:53	20:27	19:39	18:47	17:01	16:41
8	07:43	07:21	06:39	06:46	06:02	05:38	05:45	06:13	06:45	07:18	06:55	07:29
	16:58	17:36	18:11	19:46	20:20	20:48	20:53	20:26	19:38	18:45	17:00	16:41
9	07:43	07:19	06:38	06:45	06:00	05:37	05:45	06:14	06:46	07:19	06:56	07:30
	16:59	17:37	18:12	19:48	20:21	20:49	20:52	20:25	19:36	18:43	16:59	16:41
10	07:42	07:18	06:36	06:43	05:59	05:37	05:46	06:15	06:47	07:20	06:57	07:31
	17:00	17:39	18:13	19:49	20:22	20:49	20:52	20:23	19:34	18:42	16:58	16:41
11	07:42	07:17	06:34	06:41	05:58	05:37	05:47	06:16	06:49	07:21	06:58	07:32
	17:01	17:40	18:15	19:50	20:23	20:50	20:51	20:22	19:32	18:40	16:57	16:41
12	07:42	07:16	06:33	06:40	05:57	05:37	05:47	06:17	06:50	07:22	07:00	07:33
	17:02	17:41	18:16	19:51	20:24	20:50	20:51	20:20	19:31	18:38	16:56	16:41
13	07:42	07:14	06:31	06:38	05:56	05:37	05:48	06:18	06:51	07:23	07:01	07:34
	17:03	17:43	18:17	19:52	20:25	20:51	20:50	20:19	19:29	18:37	16:55	16:42
14	07:41	07:13	06:29	06:36	05:55	05:37	05:49	06:19	06:52	07:24	07:02	07:34
	17:05	17:44	18:18	19:53	20:26	20:51	20:50	20:18	19:27	18:35	16:54	16:42
15	07:41	07:12	06:28	06:35	05:54	05:37	05:50	06:20	06:53	07:25	07:03	07:35
	17:06	17:45	18:19	19:54	20:27	20:52	20:49	20:16	19:25	18:34	16:53	16:42
16	07:40	07:10	06:26	06:33	05:53	05:37	05:51	06:21	06:54	07:27	07:05	07:36
	17:07	17:46	18:20	19:55	20:28	20:52	20:49	20:15	19:23	18:32	16:52	16:42
17	07:40	07:09	06:24	06:31	05:52	05:37	05:51	06:22	06:55	07:28	07:06	07:37
	17:08	17:48	18:22	19:57	20:29	20:53	20:48	20:13	19:22	18:30	16:51	16:43
18	07:39	07:07	06:22	06:30	05:51	05:37	05:52	06:23	06:56	07:29	07:07	07:37
	17:09	17:49	18:23	19:58	20:30	20:53	20:47	20:12	19:20	18:29	16:50	16:43
19	07:39	07:06	06:21	06:28	05:50	05:37	05:53	06:24	06:57	07:30	07:08	07:38
	17:10	17:50	18:24	19:59	20:31	20:53	20:47	20:10	19:18	18:27	16:50	16:43
20	07:38	07:05	06:19	06:27	05:49	05:37	05:54	06:25	06:58	07:31	07:09	07:39
	17:12	17:51	18:25	20:00	20:32	20:54	20:46	20:09	19:16	18:26	16:49	16:44
21	07:38	07:03	06:17	06:25	05:48	05:37	05:55	06:26	06:59	07:33	07:11	07:39
	17:13	17:53	18:26	20:01	20:33	20:54	20:45	20:07	19:15	18:24	16:48	16:44
22	07:37	07:02	06:15	06:24	05:47	05:37	05:56	06:27	07:00	07:34	07:12	07:40
	17:14	17:54	18:27	20:02	20:34	20:54	20:44	20:06	19:13	18:23	16:47	16:45
23	07:36	07:00	06:14	06:22	05:46	05:37	05:57	06:28	07:01	07:35	07:13	07:40
	17:15	17:55	18:28	20:03	20:35	20:54	20:43	20:04	19:11	18:21	16:47	16:45
24	07:35	06:59	06:12	06:21	05:45	05:38	05:58	06:30	07:02	07:36	07:14	07:41
	17:17	17:56	18:30	20:04	20:36	20:54	20:42	20:03	19:09	18:20	16:46	16:46
25	07:35	06:57	06:10	06:19	05:45	05:38	05:59	06:31	07:03	06:37	07:15	07:41
	17:18	17:58	18:31	20:06	20:37	20:54	20:42	20:01	19:08	17:18	16:45	16:46
26	07:34	06:56	06:09	06:18	05:44	05:38	06:00	06:32	07:04	06:39	07:17	07:41
	17:19	17:59	18:32	20:07	20:38	20:55	20:41	19:59	19:06	17:17	16:45	16:47
27	07:33	06:54	06:07	06:16	05:43	05:39	06:00	06:33	07:05	06:40	07:18	07:42
	17:20	18:00	18:33	20:08	20:39	20:55	20:40	19:58	19:04	17:15	16:44	16:47
28	07:32	06:52	06:05	06:15	05:43	05:39	06:01	06:34	07:07	06:41	07:19	07:42
	17:22	18:01	18:34	20:09	20:40	20:55	20:39	19:56	19:02	17:14	16:44	16:48
29	07:31		07:03	06:13	05:42	05:40	06:02	06:35	07:08	06:42	07:20	07:42
	17:23		19:35	20:10	20:41	20:55	20:38	19:54	19:01	17:13	16:44	16:49
30	07:30		07:02	06:12	05:41	05:40	06:03	06:36	07:09	06:43	07:21	07:43
	17:24		19:36	20:11	20:42	20:55	20:37	19:53	18:59	17:11	16:43	16:50
31	07:29		07:00		05:41		06:04	06:37		06:45		07:43
	17:26		19:37		20:42		20:35	19:51		17:10		16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

Tarquinia1

Licensed user:

**MONTANA SPA**  
 VIA ANGELO CARLO FUMAGALLI 6  
 IT-20143 MILANO  
 0254118173  
 Andrea / fronteddu@montanambiente.com  
 Calculated:  
 06/08/2022 14:40/3.5.584

# SHADOW - Calendar

Calculation: Shadow\_real  
 Shadow receptor: DC - 205  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43   16:51	07:28   17:27	06:51   18:03	06:58   19:39	06:11   20:12	05:40   20:43	05:40   20:54	06:05   20:34	06:38   19:49	07:10   18:57	06:46   17:09	07:22   16:43
2	07:43   16:52	07:27   17:28	06:49   18:04	06:56   19:40	06:09   20:13	05:40   20:44	05:41   20:54	06:06   20:33	06:39   19:48	07:11   18:55	06:47   17:07	07:23   16:42
3	07:43   16:53	07:26   17:30	06:48   18:05	06:55   19:41	06:08   20:14	05:39   20:45	05:41   20:54	06:07   20:32	06:40   19:46	07:12   18:54	06:48   17:06	07:24   16:42
4	07:43   16:54	07:25   17:31	06:46   18:06	06:53   19:42	06:07   20:16	05:39   20:45	05:42   20:54	06:08   20:31	06:41   19:44	07:13   18:52	06:50   17:05	07:25   16:42
5	07:43   16:55	07:24   17:32	06:44   18:07	06:51   19:43	06:05   20:17	05:38   20:46	05:43   20:54	06:10   20:30	06:42   19:43	07:14   18:50	06:51   17:04	07:26   16:42
6	07:43   16:56	07:23   17:33	06:43   18:09	06:50   19:44	06:04   20:18	05:38   20:47	05:43   20:53	06:11   20:28	06:43   19:41	07:15   18:48	06:52   17:02	07:27   16:42
7	07:43   16:57	07:22   17:35	06:41   18:10	06:48   19:45	06:03   20:19	05:38   20:47	05:44   20:53	06:12   20:27	06:44   19:39	07:16   18:47	06:53   17:01	07:28   16:41
8	07:43   16:58	07:21   17:36	06:39   18:11	06:46   19:46	06:01   20:20	05:38   20:48	05:44   20:53	06:13   20:26	06:45   19:37	07:17   18:45	06:55   17:00	07:29   16:41
9	07:43   16:59	07:19   17:37	06:38   18:12	06:45   19:48	06:00   20:21	05:37   20:49	05:45   20:52	06:14   20:24	06:46   19:36	07:19   18:43	06:56   16:59	07:30   16:41
10	07:42   17:00	07:18   17:39	06:36   18:13	06:43   19:49	05:59   20:22	05:37   20:49	05:46   20:52	06:15   20:23	06:47   19:34	07:20   18:42	06:57   16:58	07:31   16:41
11	07:42   17:01	07:17   17:40	06:34   18:15	06:41   19:50	05:58   20:23	05:37   20:50	05:47   20:51	06:16   20:22	06:48   19:32	07:21   18:40	06:58   16:57	07:32   16:41
12	07:42   17:02	07:16   17:41	06:33   18:16	06:40   19:51	05:57   20:24	05:37   20:50	05:47   20:51	06:17   20:20	06:50   19:30	07:22   18:38	07:00   16:56	07:33   16:41
13	07:42   17:03	07:14   17:43	06:31   18:17	06:38   19:52	05:56   20:25	05:37   20:51	05:48   20:50	06:18   20:19	06:51   19:29	07:23   18:37	07:01   16:55	07:34   16:42
14	07:41   17:05	07:13   17:44	06:29   18:18	06:36   19:53	05:55   20:26	05:37   20:51	05:49   20:50	06:19   20:18	06:52   19:27	07:24   18:35	07:02   16:54	07:34   16:42
15	07:41   17:06	07:12   17:45	06:28   18:19	06:35   19:54	05:54   20:27	05:37   20:52	05:50   20:49	06:20   20:16	06:53   19:25	07:25   18:34	07:03   16:53	07:35   16:42
16	07:40   17:07	07:10   17:46	06:26   18:20	06:33   19:55	05:53   20:28	05:37   20:52	05:51   20:49	06:21   20:15	06:54   19:23	07:27   18:32	07:05   16:52	07:36   16:42
17	07:40   17:08	07:09   17:48	06:24   18:22	06:31   19:57	05:52   20:29	05:37   20:53	05:51   20:48	06:22   20:13	06:55   19:22	07:28   18:30	07:06   16:51	07:37   16:42
18	07:39   17:09	07:07   17:49	06:22   18:23	06:30   19:58	05:51   20:30	05:37   20:53	05:52   20:47	06:23   20:12	06:56   19:20	07:29   18:29	07:07   16:50	07:37   16:43
19	07:39   17:10	07:06   17:50	06:21   18:24	06:28   19:59	05:50   20:31	05:37   20:53	05:53   20:47	06:24   20:10	06:57   19:18	07:30   18:27	07:08   16:49	07:38   16:43
20	07:38   17:12	07:05   17:51	06:19   18:25	06:27   20:00	05:49   20:32	05:37   20:54	05:54   20:46	06:25   20:09	06:58   19:16	07:31   18:26	07:09   16:49	07:38   16:44
21	07:38   17:13	07:03   17:53	06:17   18:26	06:25   20:01	05:48   20:33	05:37   20:54	05:55   20:45	06:26   20:07	06:59   19:15	07:32   18:24	07:11   16:48	07:39   16:44
22	07:37   17:14	07:02   17:54	06:15   18:27	06:24   20:02	05:47   20:34	05:37   20:54	05:56   20:44	06:27   20:06	07:00   19:13	07:34   18:23	07:12   16:47	07:40   16:44
23	07:36   17:15	07:00   17:55	06:14   18:28	06:22   20:03	05:46   20:35	05:37   20:54	05:57   20:43	06:28   20:04	07:01   19:11	07:35   18:21	07:13   16:47	07:40   16:45
24	07:35   17:17	06:59   17:56	06:12   18:30	06:21   20:04	05:45   20:36	05:38   20:54	05:58   20:42	06:29   20:03	07:02   19:09	07:36   18:20	07:14   16:46	07:41   16:46
25	07:35   17:18	06:57   17:58	06:10   18:31	06:19   20:06	05:45   20:37	05:38   20:54	05:59   20:41	06:31   20:01	07:03   19:08	06:37   17:18	07:15   16:45	07:41   16:46
26	07:34   17:19	06:56   17:59	06:08   18:32	06:18   20:07	05:44   20:38	05:38   20:55	05:59   20:41	06:32   19:59	07:04   19:06	06:38   17:17	07:17   16:45	07:41   16:47
27	07:33   17:20	06:54   18:00	06:07   18:33	06:16   20:08	05:43   20:39	05:39   20:55	06:00   20:40	06:33   19:58	07:05   19:04	06:40   17:15	07:18   16:44	07:42   16:47
28	07:32   17:22	06:52   18:01	06:05   18:34	06:15   20:09	05:43   20:40	05:39   20:55	06:01   20:39	06:34   19:56	07:06   19:02	06:41   17:14	07:19   16:44	07:42   16:48
29	07:31   17:23	06:51   18:02	06:03   18:35	06:13   20:10	05:42   20:41	05:39   20:55	06:02   20:38	06:35   19:54	07:08   19:01	06:42   17:13	07:20   16:43	07:42   16:49
30	07:30   17:24	06:50   18:03	06:02   18:36	06:12   20:11	05:41   20:42	05:40   20:54	06:03   20:36	06:36   19:53	07:09   18:59	06:43   17:11	07:21   16:43	07:42   16:50
31	07:29   17:26	06:49   18:04	06:00   18:37	06:11   20:12	05:41   20:43	05:40   20:54	06:04   20:35	06:37   19:51	07:10   18:58	06:45   17:10	07:22   16:43	07:43   16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month     Sun rise (hh:mm)     Sun set (hh:mm)     Minutes with flicker     First time (hh:mm) with flicker     Last time (hh:mm) with flicker     (WTG causing flicker first time)     (WTG causing flicker last time)





Project:

Tarquini1

Licensed user:

**MONTANA SPA**

VIA ANGELO CARLO FUMAGALLI 6

IT-20143 MILANO

0254118173

Andrea / fronteddu@montanambiente.com

Calculated:

06/08/2022 14:40/3.5.584

## SHADOW - Calendar

**Calculation:** Shadow\_real**Shadow receptor:** DD - 206  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:43	07:29	06:51	06:58	06:11	06:34 (TRQ03)	05:40	05:40	06:05	06:38	07:10	06:46	07:22	
	16:52	17:27	18:03	19:39	20:12	20:43	20:55	20:34	20:55	19:50	18:57	17:09	16:43	
2	07:43	07:28	06:49	06:57	06:09	06:35 (TRQ03)	05:40	05:41	06:07	06:39	07:11	06:47	07:23	
	16:52	17:28	18:04	19:40	20:14	20:44	20:54	20:33	20:54	19:48	18:55	17:07	16:42	
3	07:43	07:26	06:48	06:55	06:08	06:35 (TRQ03)	05:39	05:42	06:08	06:52 (TRQ03)	06:40	07:12	06:48	07:24
	16:53	17:30	18:05	19:41	20:15	20:45	20:54	20:32	20:54	19:46	18:54	17:06	16:42	
4	07:43	07:25	06:46	06:53	06:07	06:36 (TRQ03)	05:39	05:42	06:09	06:50 (TRQ03)	06:41	07:13	06:50	07:26
	16:54	17:31	18:06	19:42	20:16	20:46	20:54	20:31	20:54	19:45	18:52	17:05	16:42	
5	07:43	07:24	06:44	06:51	06:05	06:36 (TRQ03)	05:39	05:43	06:10	06:48 (TRQ03)	06:42	07:14	06:51	07:27
	16:55	17:32	18:08	19:43	20:17	20:46	20:54	20:30	20:54	19:43	18:50	17:04	16:42	
6	07:43	07:23	06:43	06:50	06:04	06:37 (TRQ03)	05:38	05:43	06:11	06:47 (TRQ03)	06:43	07:15	06:52	07:28
	16:56	17:34	18:09	19:44	20:18	20:47	20:54	20:29	20:54	19:41	18:49	17:02	16:42	
7	07:43	07:22	06:41	06:48	06:03	06:38 (TRQ03)	05:38	05:44	06:12	06:46 (TRQ03)	06:44	07:17	06:53	07:29
	16:57	17:35	18:10	19:45	20:19	20:48	20:53	20:27	20:53	19:39	18:47	17:01	16:42	
8	07:43	07:21	06:40	06:46	06:02	06:39 (TRQ03)	05:38	05:45	06:13	06:45 (TRQ03)	06:45	07:18	06:55	07:29
	16:58	17:36	18:11	19:47	20:20	20:48	20:53	20:26	20:53	19:38	18:45	17:00	16:41	
9	07:43	07:20	06:38	06:45	06:00	06:41 (TRQ03)	05:37	05:45	06:14	06:44 (TRQ03)	06:46	07:19	06:56	07:30
	16:59	17:37	18:12	19:48	20:21	20:49	20:53	20:25	20:53	19:36	18:43	16:59	16:41	
10	07:43	07:18	06:36	06:43	05:59	06:42 (TRQ03)	05:37	05:46	06:15	06:44 (TRQ03)	06:48	07:20	06:57	07:31
	17:00	17:39	18:14	19:49	20:22	20:50	20:52	20:23	20:52	19:34	18:42	16:58	16:41	
11	07:42	07:17	06:34	06:41	05:58	06:52 (TRQ03)	05:37	05:47	06:16	06:43 (TRQ03)	06:49	07:21	06:58	07:32
	17:01	17:40	18:15	19:50	20:23	20:50	20:52	20:22	20:52	19:32	18:40	16:57	16:41	
12	07:42	07:16	06:33	06:40	05:57	05:37	05:47	06:17	06:43	06:43 (TRQ03)	06:50	07:22	07:00	07:33
	17:02	17:41	18:16	19:51	20:24	20:51	20:51	20:21	20:51	19:31	18:39	16:56	16:42	
13	07:42	07:14	06:31	06:38	05:56	05:37	05:48	06:18	06:43	06:43 (TRQ03)	06:51	07:23	07:01	07:34
	17:03	17:43	18:17	19:52	20:25	20:51	20:51	20:19	20:51	19:29	18:37	16:55	16:42	
14	07:41	07:13	06:29	06:36	05:55	05:37	05:49	06:19	06:42	06:42 (TRQ03)	06:52	07:24	07:02	07:35
	17:05	17:44	18:18	19:53	20:27	20:52	20:50	20:18	20:50	19:27	18:35	16:54	16:42	
15	07:41	07:12	06:28	06:35	05:54	05:37	05:50	06:20	06:42	06:42 (TRQ03)	06:53	07:26	07:03	07:35
	17:06	17:45	18:19	19:54	20:28	20:52	20:49	20:16	20:49	19:25	18:34	16:53	16:42	
16	07:41	07:10	06:26	06:33	05:53	05:37	05:51	06:21	06:43	06:43 (TRQ03)	06:54	07:27	07:05	07:36
	17:07	17:46	18:21	19:56	20:29	20:52	20:49	20:15	20:49	19:24	18:32	16:52	16:42	
17	07:40	07:09	06:24	06:32	05:52	05:37	05:51	06:22	06:44	06:44 (TRQ03)	06:55	07:28	07:06	07:37
	17:08	17:48	18:22	19:57	20:30	20:53	20:48	20:13	20:48	19:22	18:30	16:51	16:43	
18	07:40	07:08	06:23	06:30	05:51	05:37	05:52	06:23	06:45	06:45 (TRQ03)	06:56	07:29	07:07	07:37
	17:09	17:49	18:23	19:58	20:31	20:53	20:47	20:12	20:47	19:20	18:29	16:50	16:43	
19	07:39	07:06	06:21	06:28	05:50	06:48 (TRQ03)	05:50	06:24	06:46	06:46 (TRQ03)	06:57	07:30	07:08	07:38
	17:10	17:50	18:24	19:59	20:32	20:53	20:47	20:10	20:47	19:18	18:27	16:50	16:43	
20	07:38	07:05	06:19	06:27	05:49	06:46 (TRQ03)	05:49	06:25	06:47	06:47 (TRQ03)	06:58	07:31	07:10	07:39
	17:12	17:52	18:25	20:00	20:33	20:54	20:46	20:09	20:46	19:17	18:26	16:49	16:44	
21	07:38	07:03	06:17	06:25	05:48	06:44 (TRQ03)	05:48	06:26	06:48	06:48 (TRQ03)	06:59	07:33	07:11	07:39
	17:13	17:53	18:26	20:01	20:34	20:54	20:45	20:07	20:45	19:15	18:24	16:48	16:44	
22	07:37	07:02	06:16	06:24	05:47	06:43 (TRQ03)	05:47	06:27	06:49	06:49 (TRQ03)	07:00	07:34	07:12	07:40
	17:14	17:54	18:27	20:02	20:35	20:54	20:44	20:06	20:43	19:13	18:23	16:47	16:45	
23	07:36	07:00	06:14	06:22	05:46	06:41 (TRQ03)	05:46	06:29	06:50	06:50 (TRQ03)	07:01	07:35	07:13	07:40
	17:15	17:55	18:29	20:03	20:36	20:54	20:43	20:04	20:43	19:11	18:21	16:47	16:45	
24	07:36	06:59	06:12	06:21	05:45	06:40 (TRQ03)	05:45	06:30	06:53	06:53 (TRQ03)	07:02	07:36	07:14	07:41
	17:17	17:57	18:30	20:05	20:36	20:55	20:43	20:03	20:43	19:09	18:20	16:46	16:46	
25	07:35	06:57	06:10	06:19	05:45	06:39 (TRQ03)	05:45	06:31	06:55	06:55 (TRQ03)	07:03	07:37	07:16	07:41
	17:18	17:58	18:31	20:06	20:37	20:55	20:42	20:01	20:42	19:08	17:18	16:46	16:46	
26	07:34	06:56	06:09	06:18	05:44	06:37 (TRQ03)	05:44	06:32	06:56	06:56 (TRQ03)	07:04	07:39	07:17	07:42
	17:19	17:59	18:32	20:07	20:38	20:55	20:41	20:01	20:41	19:06	17:17	16:45	16:47	
27	07:33	06:54	06:07	06:16	05:43	06:36 (TRQ03)	05:43	06:33	06:57	06:57 (TRQ03)	07:06	07:40	07:18	07:42
	17:21	18:00	18:33	20:08	20:39	20:55	20:40	20:02	20:40	19:04	17:15	16:44	16:47	
28	07:32	06:53	06:05	06:15	05:43	06:35 (TRQ03)	05:43	06:34	06:58	06:58 (TRQ03)	07:07	07:41	07:19	07:42
	17:22	18:02	18:34	20:09	20:40	20:55	20:39	20:03	20:39	19:02	17:14	16:44	16:48	
29	07:31		07:03	06:13	05:42	06:35 (TRQ03)	05:42	06:35	06:59	06:59 (TRQ03)	07:08	07:42	07:20	07:42
	17:23		19:35	20:10	20:41	20:55	20:38	20:05	20:38	19:01	17:13	16:44	16:49	
30	07:30		07:02	06:12	05:41	06:35 (TRQ03)	05:41	06:36	06:59	06:59 (TRQ03)	07:09	07:43	07:21	07:43
	17:24		19:36	20:11	20:42	20:55	20:37	20:04	20:37	18:59	17:11	16:43	16:50	16:50
31	07:30		07:00		05:41	07:03 (TRQ03)	05:41	06:37	06:59	06:59 (TRQ03)	07:10	07:43	07:21	07:43
	17:26		19:38		20:43		20:36	20:03	20:36	19:51	17:10	16:45	16:50	16:50
Potential sun hours	294	295	369	400	452		457	463	430		376	344	295	284
Total, worst case				248	213				469					
Sun reduction				0,49	0,57				0,70					
Oper. time red.				0,95	0,95				0,95					
Wind dir. red.				0,66	0,66				0,66					
Total reduction				0,31	0,36				0,44					
Total, real				77	76				207					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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**SHADOW - Calendar**

**Calculation:** Shadow\_real**Shadow receptor:** DE - 207  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June
1	07:43	07:29	06:51	06:58	06:11	06:30 (TRQ03) 05:40
	16:52	17:27	18:03	19:39	20:12	22 06:52 (TRQ03) 20:43
2	07:43	07:28	06:49	06:57	06:09	06:29 (TRQ03) 05:40
	16:52	17:28	18:04	19:40	20:14	24 06:53 (TRQ03) 20:44
3	07:43	07:26	06:48	06:55	06:08	06:28 (TRQ03) 05:39
	16:53	17:30	18:05	19:41	20:15	25 06:53 (TRQ03) 20:45
4	07:43	07:25	06:46	06:53	06:07	06:27 (TRQ03) 05:39
	16:54	17:31	18:06	19:42	20:16	27 06:54 (TRQ03) 20:46
5	07:43	07:24	06:44	06:51	06:05	06:25 (TRQ03) 05:39
	16:55	17:32	18:08	19:43	20:17	28 06:53 (TRQ03) 20:46
6	07:43	07:23	06:43	06:50	06:04	06:25 (TRQ03) 05:38
	16:56	17:34	18:09	19:44	20:18	28 06:53 (TRQ03) 20:47
7	07:43	07:22	06:41	06:48	06:03	06:25 (TRQ03) 05:38
	16:57	17:35	18:10	19:45	20:19	28 06:53 (TRQ03) 20:48
8	07:43	07:21	06:40	06:46	06:02	06:25 (TRQ03) 05:38
	16:58	17:36	18:11	19:47	20:20	28 06:53 (TRQ03) 20:48
9	07:43	07:20	06:38	06:45	06:00	06:26 (TRQ03) 05:37
	16:59	17:37	18:12	19:48	20:21	27 06:53 (TRQ03) 20:49
10	07:43	07:18	06:36	06:43	05:59	06:25 (TRQ03) 05:37
	17:00	17:39	18:14	19:49	20:22	27 06:52 (TRQ03) 20:50
11	07:42	07:17	06:34	06:41	05:58	06:25 (TRQ03) 05:37
	17:01	17:40	18:15	19:50	20:23	26 06:51 (TRQ03) 20:50
12	07:42	07:16	06:33	06:40	05:57	06:26 (TRQ03) 05:37
	17:02	17:41	18:16	19:51	20:24	25 06:51 (TRQ03) 20:51
13	07:42	07:14	06:31	06:38	05:56	06:27 (TRQ03) 05:37
	17:03	17:43	18:17	19:52	20:25	23 06:50 (TRQ03) 20:51
14	07:41	07:13	06:29	06:36	05:55	06:27 (TRQ03) 05:37
	17:05	17:44	18:18	19:53	20:27	22 06:49 (TRQ03) 20:52
15	07:41	07:12	06:28	06:35	05:54	06:28 (TRQ03) 05:37
	17:06	17:45	18:19	19:54	20:28	21 06:49 (TRQ03) 20:52
16	07:41	07:10	06:26	06:33	05:53	06:29 (TRQ03) 05:37
	17:07	17:46	18:21	19:56	20:29	19 06:48 (TRQ03) 20:52
17	07:40	07:09	06:24	06:32	05:52	06:30 (TRQ03) 05:37
	17:08	17:48	18:22	19:57	20:30	16 06:46 (TRQ03) 20:53
18	07:40	07:08	06:23	06:30	05:51	06:33 (TRQ03) 05:37
	17:09	17:49	18:23	19:58	20:31	13 06:46 (TRQ03) 20:53
19	07:39	07:06	06:21	06:28	05:50	06:35 (TRQ03) 05:37
	17:10	17:50	18:24	19:59	20:32	8 06:43 (TRQ03) 20:53
20	07:38	07:05	06:19	06:27	05:49	05:37
	17:12	17:52	18:25	20:00	20:33	20:54
21	07:38	07:03	06:17	06:25	05:48	05:37
	17:13	17:53	18:26	20:01	20:34	20:54
22	07:37	07:02	06:16	06:24	05:47	05:37
	17:14	17:54	18:27	20:02	20:35	20:54
23	07:36	07:00	06:14	06:22	05:46	05:38
	17:15	17:55	18:29	20:03	20:36	20:54
24	07:36	06:59	06:12	06:21	05:45	05:38
	17:17	17:57	18:30	20:05	20:36	20:55
25	07:35	06:57	06:10	06:19	05:45	05:38
	17:18	17:58	18:31	20:06	20:37	20:55
26	07:34	06:56	06:09	06:18	05:44	05:38
	17:19	17:59	18:32	20:07	9 06:46 (TRQ03) 20:38	20:55
27	07:33	06:54	06:07	06:16	06:36 (TRQ03) 05:43	05:39
	17:21	18:00	18:33	20:08	13 06:49 (TRQ03) 20:39	20:55
28	07:32	06:53	06:05	06:15	06:34 (TRQ03) 05:43	05:39
	17:22	18:02	18:34	20:09	16 06:50 (TRQ03) 20:40	20:55
29	07:31		07:03	06:13	06:33 (TRQ03) 05:42	05:40
	17:23		19:35	20:10	18 06:51 (TRQ03) 20:41	20:55
30	07:30		07:02	06:12	06:32 (TRQ03) 05:41	05:40
	17:24		19:36	20:11	20 06:52 (TRQ03) 20:42	20:55
31	07:30		07:00		05:41	
	17:26		19:38		20:43	
Potential sun hours	294	295	369	400	452	457
Total, worst case				76		437
Sun reduction				0,49		0,57
Oper. time red.				0,95		0,95
Wind dir. red.				0,68		0,68
Total reduction				0,32		0,37
Total, real				24		161

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** DE - 207  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

July		August		September	October	November	December
1	05:40	06:06	06:36 (TRQ03)	06:38	07:10	06:46	07:22
	20:55	20:34	26 07:02 (TRQ03)	19:50	18:57	17:09	16:43
2	05:41	06:07	06:36 (TRQ03)	06:39	07:11	06:47	07:23
	20:54	20:33	26 07:02 (TRQ03)	19:48	18:55	17:07	16:42
3	05:42	06:08	06:36 (TRQ03)	06:40	07:12	06:48	07:24
	20:54	20:32	26 07:02 (TRQ03)	19:46	18:54	17:06	16:42
4	05:42	06:09	06:35 (TRQ03)	06:41	07:13	06:50	07:26
	20:54	20:31	28 07:03 (TRQ03)	19:45	18:52	17:05	16:42
5	05:43	06:10	06:35 (TRQ03)	06:42	07:14	06:51	07:27
	20:54	20:30	28 07:03 (TRQ03)	19:43	18:50	17:04	16:42
6	05:43	06:11	06:35 (TRQ03)	06:43	07:15	06:52	07:28
	20:54	20:29	28 07:03 (TRQ03)	19:41	18:49	17:02	16:42
7	05:44	06:12	06:35 (TRQ03)	06:44	07:17	06:53	07:29
	20:53	20:27	28 07:03 (TRQ03)	19:39	18:47	17:01	16:42
8	05:45	06:13	06:35 (TRQ03)	06:45	07:18	06:55	07:29
	20:53	20:26	28 07:03 (TRQ03)	19:38	18:45	17:00	16:41
9	05:45	06:14	06:36 (TRQ03)	06:46	07:19	06:56	07:30
	20:52	20:25	26 07:02 (TRQ03)	19:36	18:43	16:59	16:41
10	05:46	06:15	06:37 (TRQ03)	06:48	07:20	06:57	07:31
	20:52	20:23	25 07:02 (TRQ03)	19:34	18:42	16:58	16:41
11	05:47	06:16	06:38 (TRQ03)	06:49	07:21	06:58	07:32
	20:52	20:22	23 07:01 (TRQ03)	19:32	18:40	16:57	16:41
12	05:47	06:17	06:39 (TRQ03)	06:50	07:22	07:00	07:33
	20:51	20:21	21 07:00 (TRQ03)	19:31	18:39	16:56	16:42
13	05:48	06:18	06:40 (TRQ03)	06:51	07:23	07:01	07:34
	20:51	20:19	20 07:00 (TRQ03)	19:29	18:37	16:55	16:42
14	05:49	06:19	06:41 (TRQ03)	06:52	07:24	07:02	07:35
	20:50	20:18	17 06:58 (TRQ03)	19:27	18:35	16:54	16:42
15	05:50	06:20	06:42 (TRQ03)	06:53	07:26	07:03	07:35
	20:49	20:16	15 06:57 (TRQ03)	19:25	18:34	16:53	16:42
16	05:51	06:21	06:43 (TRQ03)	06:54	07:27	07:05	07:36
	20:49	20:15	12 06:55 (TRQ03)	19:24	18:32	16:52	16:42
17	05:51	06:22	06:44 (TRQ03)	06:55	07:28	07:06	07:37
	20:48	20:13	8 06:52 (TRQ03)	19:22	18:30	16:51	16:43
18	05:52	06:23		06:56	07:29	07:07	07:37
	20:47	20:12		19:20	18:29	16:50	16:43
19	05:53	06:24		06:57	07:30	07:08	07:38
	20:47	20:10		19:18	18:27	16:50	16:43
20	05:54	06:25		06:58	07:31	07:10	07:39
	20:46	20:09		19:17	18:26	16:49	16:44
21	05:55	06:26		06:59	07:33	07:11	07:39
	20:45	20:07		19:15	18:24	16:48	16:44
22	05:56	06:27		07:00	07:34	07:12	07:40
	20:44	20:06		19:13	18:23	16:47	16:45
23	05:57	06:29		07:01	07:35	07:13	07:40
	20:43	20:04		19:11	18:21	16:47	16:45
24	05:58	06:47 (TRQ03)	06:30	07:02	07:36	07:14	07:41
	20:43	5 06:52 (TRQ03)	20:03	19:09	18:20	16:46	16:46
25	05:59	06:44 (TRQ03)	06:31	07:03	06:37	07:16	07:41
	20:42	11 06:55 (TRQ03)	20:01	19:08	17:18	16:46	16:46
26	06:00	06:42 (TRQ03)	06:32	07:04	06:39	07:17	07:42
	20:41	14 06:56 (TRQ03)	19:59	19:06	17:17	16:45	16:47
27	06:01	06:40 (TRQ03)	06:33	07:06	06:40	07:18	07:42
	20:40	17 06:57 (TRQ03)	19:58	19:04	17:15	16:44	16:47
28	06:02	06:39 (TRQ03)	06:34	07:07	06:41	07:19	07:42
	20:39	20 06:59 (TRQ03)	19:56	19:02	17:14	16:44	16:48
29	06:02	06:38 (TRQ03)	06:35	07:08	06:42	07:20	07:42
	20:38	22 07:00 (TRQ03)	19:55	19:01	17:13	16:44	16:49
30	06:03	06:38 (TRQ03)	06:36	07:09	06:44	07:21	07:43
	20:37	22 07:00 (TRQ03)	19:53	18:59	17:11	16:43	16:50
31	06:04	06:37 (TRQ03)	06:37		06:45		07:43
	20:36	24 07:01 (TRQ03)	19:51		17:10		16:50
Potential sun hours	463	430		376	344	295	284
Total, worst case	135	385					
Sun reduction	0,71	0,70					
Oper. time red.	0,95	0,95					
Wind dir. red.	0,68	0,68					
Total reduction	0,46	0,45					
Total, real	62	175					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real**Shadow receptor:** DF - 208  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June		
1	07:43	07:29	06:51	06:58	06:11	05:40		
	16:52	17:27	18:03	19:39	20:12	20:43		
2	07:43	07:28	06:49	06:57	06:09	05:40		
	16:52	17:28	18:04	19:40	20:14	20:44		
3	07:43	07:26	06:48	06:55	06:08	05:39		
	16:53	17:30	18:05	19:41	20:15	20:45		
4	07:43	07:25	06:46	06:53	06:07	05:39		
	16:54	17:31	18:06	19:42	20:16	20:46		
5	07:43	07:24	06:45	06:51	06:05	05:39		
	16:55	17:32	18:08	19:43	20:17	20:46		
6	07:43	07:23	06:43	06:50	06:04	05:38		
	16:56	17:34	18:09	19:44	20:18	20:47		
7	07:43	07:22	06:41	06:48	06:03	05:38		
	16:57	17:35	18:10	19:46	20:19	20:48		
8	07:43	07:21	06:40	06:46	06:02	05:38		
	16:58	17:36	18:11	19:47	20:20	20:48		
9	07:43	07:20	06:38	06:45	07:04 (TRQ03)	06:00	05:37	
	16:59	17:37	18:12	19:48	4 07:08 (TRQ03)	20:21	20:49	
10	07:43	07:18	06:36	06:43	07:02 (TRQ03)	05:59	05:37	
	17:00	17:39	18:14	19:49	8 07:10 (TRQ03)	20:22	20:50	
11	07:42	07:17	06:35	06:41	07:00 (TRQ03)	05:58	05:37	
	17:01	17:40	18:15	19:50	11 07:11 (TRQ03)	20:23	20:50	
12	07:42	07:16	06:33	06:40	06:59 (TRQ03)	05:57	05:37	
	17:02	17:41	18:16	19:51	13 07:12 (TRQ03)	20:24	20:51	
13	07:42	07:14	06:31	06:38	06:57 (TRQ03)	05:56	05:37	
	17:03	17:43	18:17	19:52	15 07:12 (TRQ03)	20:26	20:51	
14	07:41	07:13	06:29	06:36	06:55 (TRQ03)	05:55	05:37	
	17:05	17:44	18:18	19:53	17 07:12 (TRQ03)	20:27	20:52	
15	07:41	07:12	06:28	06:35	06:54 (TRQ03)	05:54	05:37	05:59 (TRQ01)
	17:06	17:45	18:19	19:55	18 07:12 (TRQ03)	20:28	20:52	3 06:02 (TRQ01)
16	07:41	07:10	06:26	06:33	06:52 (TRQ03)	05:53	05:37	05:59 (TRQ01)
	17:07	17:46	18:21	19:56	20 07:12 (TRQ03)	20:29	20:52	4 06:03 (TRQ01)
17	07:40	07:09	06:24	06:32	06:51 (TRQ03)	05:52	05:37	06:00 (TRQ01)
	17:08	17:48	18:22	19:57	21 07:12 (TRQ03)	20:30	20:53	5 06:05 (TRQ01)
18	07:40	07:08	06:23	06:30	06:50 (TRQ03)	05:51	05:37	06:00 (TRQ01)
	17:09	17:49	18:23	19:58	21 07:11 (TRQ03)	20:31	20:53	6 06:06 (TRQ01)
19	07:39	07:06	06:21	06:28	06:51 (TRQ03)	05:50	05:37	06:00 (TRQ01)
	17:11	17:50	18:24	19:59	20 07:11 (TRQ03)	20:32	20:53	6 06:06 (TRQ01)
20	07:38	07:05	06:19	06:27	06:51 (TRQ03)	05:49	05:37	06:00 (TRQ01)
	17:12	17:52	18:25	20:00	18 07:09 (TRQ03)	20:33	20:54	6 06:06 (TRQ01)
21	07:38	07:03	06:17	06:25	06:51 (TRQ03)	05:48	05:37	06:00 (TRQ01)
	17:13	17:53	18:26	20:01	16 07:07 (TRQ03)	20:34	20:54	6 06:06 (TRQ01)
22	07:37	07:02	06:16	06:24	06:53 (TRQ03)	05:47	05:37	06:00 (TRQ01)
	17:14	17:54	18:27	20:02	13 07:06 (TRQ03)	20:35	20:54	6 06:06 (TRQ01)
23	07:36	07:00	06:14	06:22	06:55 (TRQ03)	05:46	05:38	06:01 (TRQ01)
	17:15	17:55	18:29	20:03	9 07:04 (TRQ03)	20:36	20:54	6 06:07 (TRQ01)
24	07:36	06:59	06:12	06:21	05:45	05:38	06:01 (TRQ01)	
	17:17	17:57	18:30	20:05	20:36	20:55	6 06:07 (TRQ01)	
25	07:35	06:57	06:10	06:19	05:45	05:38	06:01 (TRQ01)	
	17:18	17:58	18:31	20:06	20:37	20:55	5 06:06 (TRQ01)	
26	07:34	06:56	06:09	06:18	05:44	05:38	06:02 (TRQ01)	
	17:19	17:59	18:32	20:07	20:38	20:55	5 06:07 (TRQ01)	
27	07:33	06:54	06:07	06:16	05:43	05:39	06:02 (TRQ01)	
	17:21	18:00	18:33	20:08	20:39	20:55	4 06:06 (TRQ01)	
28	07:32	06:53	06:05	06:15	05:43	05:39	06:02 (TRQ01)	
	17:22	18:02	18:34	20:09	20:40	20:55	2 06:04 (TRQ01)	
29	07:31		07:03	06:13	05:42	05:40		
	17:23		19:35	20:10	20:41	20:55		
30	07:31		07:02	06:12	05:41	05:40		
	17:24		19:36	20:11	20:42	20:55		
31	07:30		07:00		05:41			
	17:26		19:38		20:43			
Potential sun hours	294	295	369	400	452	457		
Total, worst case				224			70	
Sun reduction				0,49			0,61	
Oper. time red.				0,95			0,95	
Wind dir. red.				0,65			0,74	
Total reduction				0,30			0,43	
Total, real				68			30	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DF - 208

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December	
1	05:40 20:55	06:06 20:34	06:38 19:50	06:59 (TRQ03) 07:10 (TRQ03)	07:10 18:57	06:46 17:09	07:22 16:43
2	05:41 20:54	06:07 20:33	06:39 19:48	07:00 (TRQ03) 07:08 (TRQ03)	07:11 18:55	06:47 17:07	07:23 16:43
3	05:42 20:54	06:08 20:32	06:40 19:46	07:01 (TRQ03) 07:05 (TRQ03)	07:12 18:54	06:49 17:06	07:25 16:42
4	05:42 20:54	06:09 20:31	06:41 19:45	07:13 18:52	07:14 17:05	06:50 17:05	07:26 16:42
5	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	07:15 17:04	06:51 17:04	07:27 16:42
6	05:43 20:54	06:11 20:29	06:43 19:41	07:15 18:49	07:16 17:02	06:52 17:02	07:28 16:42
7	05:44 20:53	06:12 20:27	06:44 19:39	07:17 18:47	07:17 17:01	06:54 17:01	07:29 16:42
8	05:45 20:53	06:13 20:26	06:45 19:38	07:18 18:45	07:18 17:00	06:55 17:00	07:29 16:41
9	05:45 20:53	06:14 20:25	06:47 19:36	07:19 18:44	07:19 16:59	06:56 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:48 19:34	07:20 18:42	07:20 16:58	06:57 16:58	07:31 16:41
11	05:47 20:52	06:16 20:22	06:49 19:32	07:21 18:40	07:21 16:57	06:59 16:57	07:32 16:41
12	05:47 20:51	06:17 20:21	06:50 19:31	07:22 18:39	07:22 16:56	07:00 16:56	07:33 16:42
13	05:48 20:51	06:18 20:19	06:51 19:29	07:23 18:37	07:23 16:55	07:01 16:55	07:34 16:42
14	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:24 16:54	07:02 16:54	07:35 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	07:26 18:34	07:26 16:53	07:03 16:53	07:35 16:42
16	05:51 20:49	06:21 20:15	06:54 19:24	07:27 18:32	07:27 16:52	07:05 16:52	07:36 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:28 16:51	07:06 16:51	07:37 16:43
18	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:29 16:50	07:07 16:50	07:37 16:43
19	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:30 16:50	07:08 16:50	07:38 16:43
20	05:54 20:46	06:25 20:09	07:00 (TRQ03) 07:09 (TRQ03)	06:58 19:17	07:31 18:26	07:10 16:49	07:39 16:44
21	05:55 20:45	06:26 20:07	06:57 (TRQ03) 07:11 (TRQ03)	06:59 19:15	07:33 18:24	07:11 16:48	07:39 16:44
22	05:56 20:44	06:27 20:06	06:56 (TRQ03) 07:12 (TRQ03)	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:45
23	05:57 20:44	06:29 20:04	06:54 (TRQ03) 07:13 (TRQ03)	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	05:58 20:43	06:30 20:03	06:53 (TRQ03) 07:14 (TRQ03)	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	05:59 20:42	06:31 20:01	06:53 (TRQ03) 07:14 (TRQ03)	07:03 19:08	06:37 17:18	07:16 16:46	07:41 16:46
26	06:00 20:41	06:32 19:59	06:53 (TRQ03) 07:14 (TRQ03)	07:04 19:06	06:39 17:17	07:17 16:45	07:42 16:47
27	06:01 20:40	06:33 19:58	06:54 (TRQ03) 07:14 (TRQ03)	07:06 19:04	06:40 17:15	07:18 16:44	07:42 16:48
28	06:02 20:39	06:34 19:56	06:55 (TRQ03) 07:13 (TRQ03)	07:07 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	06:03 20:38	06:35 19:55	06:56 (TRQ03) 07:13 (TRQ03)	07:08 19:01	06:42 17:13	07:20 16:44	07:42 16:49
30	06:04 20:37	06:36 19:53	06:57 (TRQ03) 07:12 (TRQ03)	07:09 18:59	06:44 17:11	07:21 16:43	07:43 16:50
31	06:05 20:36	06:37 19:51	06:58 (TRQ03) 07:11 (TRQ03)	07:11 18:58	06:45 17:10	07:22 16:43	07:43 16:50
Potential sun hours	463	430	376	344	295	284	
Total, worst case		204					
Sun reduction		0,70					
Oper. time red.		0,95					
Wind dir. red.		0,65					
Total reduction		0,43					
Total, real		88					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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# SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** DG - 209  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:43 16:52	07:29 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43	05:40 20:55	06:06 20:34	06:38 19:50	06:59 (TRQ03) 07:00 (TRQ03)	07:10 18:57	06:46 17:09	07:22 16:43
2	07:43 16:52	07:28 17:28	06:49 18:04	06:57 19:40	06:09 20:14	05:40 20:44	05:41 20:54	06:07 20:33	06:39 19:48		07:11 18:55	06:47 17:07	07:23 16:43
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:15	05:39 20:45	05:42 20:54	06:08 20:32	06:40 19:46		07:12 18:54	06:49 17:06	07:25 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:46	05:42 20:54	06:09 20:31	06:41 19:45		07:13 18:52	06:50 17:05	07:26 16:42
5	07:43 16:55	07:24 17:32	06:45 18:08	06:51 19:43	06:05 20:17	05:39 20:46	05:43 20:54	06:10 20:30	06:42 19:43		07:14 18:50	06:51 17:04	07:27 16:42
6	07:43 16:56	07:23 17:34	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47	05:43 20:54	06:11 20:29	06:43 19:41		07:15 18:49	06:52 17:02	07:28 16:42
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:46	06:03 20:19	05:38 20:48	05:44 20:53	06:12 20:27	06:44 19:39		07:17 18:47	06:54 17:01	07:29 16:42
8	07:43 16:58	07:21 17:36	06:40 18:11	06:46 19:47	06:02 20:20	05:38 20:48	05:45 20:53	06:13 20:26	06:45 19:38		07:18 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:20 17:37	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49	05:45 20:53	06:14 20:25	06:47 19:36		07:19 18:44	06:56 16:59	07:30 16:41
10	07:43 17:00	07:18 17:39	06:36 18:14	06:43 19:49	05:59 20:22	05:37 20:50	05:46 20:52	06:15 20:23	06:48 19:34		07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:35 18:15	06:41 19:50	07:00 (TRQ03) 07:01 (TRQ03)	05:58 20:23	05:37 20:50	06:16 20:22	06:49 19:32		07:21 18:40	06:59 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	06:59 (TRQ03) 07:05 (TRQ03)	05:57 20:24	05:37 20:51	06:17 20:21	06:50 19:31		07:22 18:39	07:00 16:56	07:33 16:42
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	06:57 (TRQ03) 07:06 (TRQ03)	05:56 20:26	05:37 20:51	06:18 20:19	06:51 19:29		07:23 18:37	07:01 16:55	07:34 16:42
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	06:55 (TRQ03) 07:07 (TRQ03)	05:55 20:27	05:37 20:52	06:19 20:18	06:52 19:27		07:24 18:35	07:02 16:54	07:35 16:42
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	06:54 (TRQ03) 07:08 (TRQ03)	05:54 20:28	05:37 20:52	06:20 20:16	06:53 19:25		07:26 18:34	07:03 16:53	07:35 16:42
16	07:41 17:07	07:10 17:46	06:26 18:21	06:33 19:56	06:52 (TRQ03) 07:08 (TRQ03)	05:53 20:29	05:37 20:52	06:21 20:15	06:54 19:24		07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:22	06:32 19:57	06:51 (TRQ03) 07:09 (TRQ03)	05:52 20:30	05:37 20:53	06:22 20:13	06:55 19:22	06:57 (TRQ03) 07:07 (TRQ03)	06:55 19:22	07:06 16:51	07:37 16:43
18	07:40 17:09	07:08 17:49	06:23 18:23	06:30 19:58	06:49 (TRQ03) 07:08 (TRQ03)	05:51 20:31	05:37 20:53	06:23 20:12	06:56 19:20	06:55 (TRQ03) 07:09 (TRQ03)	06:56 19:20	07:07 16:50	07:37 16:43
19	07:39 17:11	07:06 17:50	06:21 18:24	06:28 19:59	06:48 (TRQ03) 07:08 (TRQ03)	05:50 20:32	05:37 20:53	06:24 20:10	06:57 19:18	06:53 (TRQ03) 07:10 (TRQ03)	06:57 19:18	07:08 16:50	07:38 16:43
20	07:38 17:12	07:05 17:52	06:19 18:25	06:27 20:00	06:46 (TRQ03) 07:07 (TRQ03)	05:49 20:33	05:37 20:54	06:25 20:09	06:58 19:17	06:52 (TRQ03) 07:10 (TRQ03)	06:58 19:17	07:09 16:49	07:39 16:44
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	06:45 (TRQ03) 07:06 (TRQ03)	05:48 20:34	05:37 20:54	06:26 20:07	06:59 19:15	06:51 (TRQ03) 07:11 (TRQ03)	06:59 19:15	07:10 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:16 18:27	06:24 20:02	06:44 (TRQ03) 07:06 (TRQ03)	05:47 20:35	05:37 20:54	06:27 20:06	06:50 19:13	06:50 (TRQ03) 07:11 (TRQ03)	07:00 19:13	07:11 16:47	07:40 16:45
23	07:36 17:15	07:00 17:55	06:14 18:29	06:22 20:03	06:47 (TRQ03) 07:06 (TRQ03)	05:46 20:36	05:38 20:54	06:29 20:04	06:51 19:11	06:50 (TRQ03) 07:11 (TRQ03)	07:01 19:11	07:12 16:47	07:40 16:45
24	07:36 17:17	06:59 17:57	06:12 18:30	06:21 20:05	06:47 (TRQ03) 07:04 (TRQ03)	05:45 20:36	05:38 20:55	06:30 20:03	06:52 19:09	06:51 (TRQ03) 07:11 (TRQ03)	07:02 19:09	07:14 16:46	07:41 16:46
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	06:49 (TRQ03) 07:02 (TRQ03)	05:45 20:37	05:38 20:55	06:31 20:01	06:53 19:08	06:52 (TRQ03) 07:11 (TRQ03)	07:03 19:08	07:16 16:46	07:41 16:46
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	06:51 (TRQ03) 06:59 (TRQ03)	05:44 20:38	05:38 20:55	06:32 20:41	06:54 19:06	06:53 (TRQ03) 07:10 (TRQ03)	07:04 19:06	07:17 16:45	07:42 16:47
27	07:33 17:21	06:54 18:00	06:07 18:33	06:16 20:08	06:50 (TRQ03) 20:39	05:43 20:55	05:39 20:40	06:33 19:58	06:55 19:04	06:54 (TRQ03) 07:10 (TRQ03)	07:06 19:04	07:18 16:44	07:42 16:48
28	07:32 17:22	06:53 18:02	06:05 18:34	06:15 20:09	06:49 (TRQ03) 20:40	05:43 20:55	05:39 20:39	06:34 19:56	06:56 19:02	06:55 (TRQ03) 07:09 (TRQ03)	07:07 19:02	07:19 16:44	07:42 16:48
29	07:31 17:23	06:52 19:35	06:03 19:35	06:13 20:10	06:48 (TRQ03) 20:41	05:42 20:55	05:40 20:38	06:35 19:55	06:57 19:01	06:56 (TRQ03) 07:08 (TRQ03)	07:08 19:01	07:20 16:44	07:42 16:49
30	07:31 17:24	06:51 19:36	06:02 19:36	06:12 20:11	06:47 (TRQ03) 20:42	05:41 20:55	05:40 20:55	06:36 19:53	06:58 18:59	06:57 (TRQ03) 07:06 (TRQ03)	07:09 18:59	07:21 16:43	07:43 16:50
31	07:30 17:26	06:50 19:38	06:00 19:38		06:46 (TRQ03) 20:43	05:41 20:55	05:40 20:36	06:37 19:51	06:59 18:59	06:58 (TRQ03) 07:04 (TRQ03)	07:09 18:59	07:22 16:45	07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376		344	295	284
Total, worst case				234				234	1				
Sun reduction				0,49				0,70	0,62				
Oper. time red.				0,95				0,95	0,95				
Wind dir. red.				0,65				0,65	0,65				
Total reduction				0,31				0,43	0,39				
Total, real				72				101	0				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DH - 210  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June
1	07:43	07:29	06:51	06:58	06:11	05:40
	16:52	17:27	18:03	19:39	20:12	20:43
2	07:43	07:28	06:49	06:57	06:09	05:40
	16:52	17:28	18:04	19:40	20:14	20:44
3	07:43	07:26	06:48	06:55	06:08	05:39
	16:53	17:30	18:05	19:41	20:15	20:45
4	07:43	07:25	06:46	06:53	06:07	05:39
	16:54	17:31	18:06	19:42	20:16	20:46
5	07:43	07:24	06:45	06:51	06:05	05:39
	16:55	17:32	18:08	19:43	20:17	20:46
6	07:43	07:23	06:43	06:50	06:04	05:38
	16:56	17:34	18:09	19:44	20:18	20:47
7	07:43	07:22	06:41	06:48	07:07 (TRQ03)	06:03
	16:57	17:35	18:10	19:46	6 07:13 (TRQ03)	05:38
8	07:43	07:21	06:40	06:46	07:05 (TRQ03)	06:02
	16:58	17:36	18:11	19:47	9 07:14 (TRQ03)	05:38
9	07:43	07:20	06:38	06:45	07:04 (TRQ03)	06:00
	16:59	17:37	18:12	19:48	12 07:16 (TRQ03)	05:37
10	07:43	07:18	06:36	06:43	07:02 (TRQ03)	06:00
	17:00	17:39	18:14	19:49	14 07:16 (TRQ03)	05:37
11	07:42	07:17	06:35	06:41	07:00 (TRQ03)	06:00
	17:01	17:40	18:15	19:50	16 07:16 (TRQ03)	05:37
12	07:42	07:16	06:33	06:40	06:59 (TRQ03)	06:00
	17:02	17:41	18:16	19:51	18 07:17 (TRQ03)	05:37
13	07:42	07:14	06:31	06:38	06:57 (TRQ03)	06:14
	17:03	17:43	18:17	19:52	20 07:17 (TRQ03)	05:37
14	07:41	07:13	06:29	06:36	06:55 (TRQ03)	06:14
	17:05	17:44	18:18	19:53	21 07:16 (TRQ03)	05:37
15	07:41	07:12	06:28	06:35	06:54 (TRQ03)	06:14
	17:06	17:45	18:19	19:55	22 07:16 (TRQ03)	05:37
16	07:41	07:10	06:26	06:33	06:54 (TRQ03)	06:15
	17:07	17:46	18:21	19:56	21 07:15 (TRQ03)	05:37
17	07:40	07:09	06:24	06:32	06:55 (TRQ03)	06:15
	17:08	17:48	18:22	19:57	20 07:15 (TRQ03)	05:37
18	07:40	07:08	06:23	06:30	06:55 (TRQ03)	06:16
	17:09	17:49	18:23	19:58	18 07:13 (TRQ03)	05:37
19	07:39	07:06	06:21	06:28	06:57 (TRQ03)	06:17
	17:11	17:50	18:24	19:59	15 07:12 (TRQ03)	05:37
20	07:38	07:05	06:19	06:27	06:58 (TRQ03)	06:17
	17:12	17:52	18:25	20:00	11 07:09 (TRQ03)	05:37
21	07:38	07:03	06:17	06:25	07:01 (TRQ03)	06:17
	17:13	17:53	18:26	20:01	4 07:05 (TRQ03)	05:37
22	07:37	07:02	06:16	06:24	05:47	06:17
	17:14	17:54	18:27	20:02	05:47	06:17
23	07:36	07:00	06:14	06:22	05:46	06:18
	17:15	17:55	18:29	20:03	20:36	06:01
24	07:36	06:59	06:12	06:21	05:45	06:18
	17:17	17:57	18:30	20:05	20:36	06:01
25	07:35	06:57	06:10	06:19	05:45	06:18
	17:18	17:58	18:31	20:06	05:45	06:01
26	07:34	06:56	06:09	06:18	20:37	06:17
	17:19	17:59	18:32	20:07	05:44	06:02
27	07:33	06:54	06:07	06:16	20:38	06:18
	17:21	18:00	18:33	20:08	05:43	06:02
28	07:32	06:53	06:05	06:15	20:39	06:18
	17:22	18:02	18:34	20:09	05:43	06:02
29	07:31		07:03	06:13	20:40	06:17
	17:23		19:35	20:10	05:42	06:03
30	07:31		07:02	06:12	20:41	06:18
	17:24		19:36	20:11	05:41	06:03
31	07:30		07:00		20:42	06:17
	17:26		19:38		05:41	
Potential sun hours	294	295	369	400	452	457
Total, worst case				227		378
Sun reduction				0,49		0,61
Oper. time red.				0,95		0,95
Wind dir. red.				0,64		0,74
Total reduction				0,30		0,43
Total, real				68		162

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real**Shadow receptor:** DH - 210  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December		
1	05:40	06:04 (TRQ01)	06:06	06:38	06:59 (TRQ03)	07:10	06:46	07:22
	20:55	14 06:18 (TRQ01)	20:34	19:50	16 07:15 (TRQ03)	18:57	17:09	16:43
2	05:41	06:04 (TRQ01)	06:07	06:39	07:00 (TRQ03)	07:11	06:47	07:23
	20:54	13 06:17 (TRQ01)	20:33	19:48	14 07:14 (TRQ03)	18:55	17:07	16:43
3	05:42	06:05 (TRQ01)	06:08	06:40	07:01 (TRQ03)	07:12	06:49	07:25
	20:54	12 06:17 (TRQ01)	20:32	19:46	12 07:13 (TRQ03)	18:54	17:06	16:42
4	05:42	06:05 (TRQ01)	06:09	06:41	07:02 (TRQ03)	07:13	06:50	07:26
	20:54	11 06:16 (TRQ01)	20:31	19:45	9 07:11 (TRQ03)	18:52	17:05	16:42
5	05:43	06:06 (TRQ01)	06:10	06:42	07:03 (TRQ03)	07:14	06:51	07:27
	20:54	10 06:16 (TRQ01)	20:30	19:43	6 07:09 (TRQ03)	18:50	17:04	16:42
6	05:43	06:07 (TRQ01)	06:11	06:43	07:15	07:15	06:52	07:28
	20:54	9 06:16 (TRQ01)	20:29	19:41	18:49	17:02	16:42	16:42
7	05:44	06:07 (TRQ01)	06:12	06:44	07:17	06:54	07:29	07:29
	20:53	7 06:14 (TRQ01)	20:27	19:39	18:47	17:01	16:42	16:42
8	05:45	06:08 (TRQ01)	06:13	06:45	07:18	06:55	07:29	07:29
	20:53	5 06:13 (TRQ01)	20:26	19:38	18:45	17:00	16:41	16:41
9	05:45	06:06 (TRQ01)	06:14	06:47	07:19	06:56	07:30	07:30
	20:53	20:25	19:36	18:44	16:59	16:41	16:41	16:41
10	05:46	06:15	06:48	07:20	06:57	07:31	07:31	07:31
	20:52	20:23	19:34	18:42	16:58	16:41	16:41	16:41
11	05:47	06:16	06:49	07:21	06:59	07:32	07:32	07:32
	20:52	20:22	19:32	18:40	16:57	16:41	16:41	16:41
12	05:47	06:17	06:50	07:22	07:00	07:33	07:33	07:33
	20:51	20:21	19:31	18:39	16:56	16:42	16:42	16:42
13	05:48	06:18	06:51	07:23	07:01	07:34	07:34	07:34
	20:51	20:19	19:29	18:37	16:55	16:42	16:42	16:42
14	05:49	06:19	06:52	07:24	07:02	07:35	07:35	07:35
	20:50	20:18	19:27	18:35	16:54	16:42	16:42	16:42
15	05:50	06:20	06:53	07:26	07:03	07:35	07:35	07:35
	20:49	20:16	19:25	18:34	16:53	16:42	16:42	16:42
16	05:51	06:21	06:54	07:27	07:05	07:36	07:36	07:36
	20:49	20:15	19:24	18:32	16:52	16:42	16:42	16:42
17	05:51	06:22	06:55	07:28	07:06	07:37	07:37	07:37
	20:48	20:13	19:22	18:30	16:51	16:43	16:43	16:43
18	05:52	06:23	06:56	07:29	07:07	07:37	07:37	07:37
	20:47	20:12	19:20	18:29	16:50	16:43	16:43	16:43
19	05:53	06:24	06:57	07:30	07:08	07:38	07:38	07:38
	20:47	20:10	19:18	18:27	16:50	16:43	16:43	16:43
20	05:54	06:25	06:58	07:31	07:10	07:39	07:39	07:39
	20:46	20:09	19:17	18:26	16:49	16:44	16:44	16:44
21	05:55	06:26	06:59	07:33	07:11	07:39	07:39	07:39
	20:45	20:07	19:15	18:24	16:48	16:44	16:44	16:44
22	05:56	06:27	07:00	07:34	07:12	07:40	07:40	07:40
	20:44	20:06	6 07:11 (TRQ03)	19:13	18:23	16:47	16:45	16:45
23	05:57	06:29	07:01 (TRQ03)	07:01	07:35	07:13	07:40	07:40
	20:44	20:04	13 07:14 (TRQ03)	19:11	18:21	16:47	16:45	16:45
24	05:58	06:30	07:00 (TRQ03)	07:02	07:36	07:14	07:41	07:41
	20:43	20:03	15 07:15 (TRQ03)	19:09	18:20	16:46	16:46	16:46
25	05:59	06:31	06:58 (TRQ03)	07:03	06:37	07:16	07:41	07:41
	20:42	20:01	18 07:16 (TRQ03)	19:08	17:18	16:46	16:46	16:46
26	06:00	06:32	06:57 (TRQ03)	07:04	06:39	07:17	07:42	07:42
	20:41	19:59	19 07:16 (TRQ03)	19:06	17:17	16:45	16:47	16:47
27	06:01	06:33	06:56 (TRQ03)	07:06	06:40	07:18	07:42	07:42
	20:40	19:58	21 07:17 (TRQ03)	19:04	17:15	16:44	16:48	16:48
28	06:02	06:34	06:55 (TRQ03)	07:07	06:41	07:19	07:42	07:42
	20:39	19:56	22 07:17 (TRQ03)	19:02	17:14	16:44	16:48	16:48
29	06:03	06:35	06:56 (TRQ03)	07:08	06:42	07:20	07:42	07:42
	20:38	19:55	21 07:17 (TRQ03)	19:01	17:13	16:44	16:49	16:49
30	06:04	06:36	06:57 (TRQ03)	07:09	06:44	07:21	07:43	07:43
	20:37	19:53	19 07:16 (TRQ03)	18:59	17:11	16:43	16:50	16:50
31	06:05	06:37	06:58 (TRQ03)	07:10	06:45	07:22	07:43	07:43
	20:36	19:51	18 07:16 (TRQ03)	18:58	17:10	16:50	16:50	16:50
Potential sun hours	463	430	376	344	295	284		
Total, worst case	81	172	57					
Sun reduction	0,71	0,70	0,62					
Oper. time red.	0,95	0,95	0,95					
Wind dir. red.	0,74	0,64	0,64					
Total reduction	0,49	0,43	0,38					
Total, real	40	74	22					

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Shadow\_real  
Shadow receptor: DI - 211  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January   February   March   April					May   June			
1	07:43   16:52	07:29   17:27	06:51   18:03	06:58   19:39	5	07:17 (TRQ03)   07:22 (TRQ03)	06:11   20:12	05:40   20:43	06:02 (TRQ01)   06:26 (TRQ01)
2	07:43   16:52	07:28   17:28	06:49   18:04	06:57   19:40	9	07:15 (TRQ03)   07:24 (TRQ03)	06:09   20:14	05:40   20:44	06:02 (TRQ01)   06:27 (TRQ01)
3	07:43   16:53	07:26   17:30	06:48   18:05	06:55   19:41	12	07:14 (TRQ03)   07:26 (TRQ03)	06:08   20:15	05:39   20:45	06:02 (TRQ01)   06:28 (TRQ01)
4	07:43   16:54	07:25   17:31	06:46   18:06	06:53   19:42	14	07:12 (TRQ03)   07:26 (TRQ03)	06:07   20:16	05:39   20:46	06:01 (TRQ01)   06:27 (TRQ01)
5	07:43   16:55	07:24   17:32	06:45   18:08	06:51   19:43	16	07:10 (TRQ03)   07:26 (TRQ03)	06:05   20:17	05:39   20:46	06:01 (TRQ01)   06:28 (TRQ01)
6	07:43   16:56	07:23   17:34	06:43   18:09	06:50   19:44	18	07:09 (TRQ03)   07:27 (TRQ03)	06:04   20:18	05:38   20:47	06:01 (TRQ01)   06:29 (TRQ01)
7	07:43   16:57	07:22   17:35	06:41   18:10	06:48   19:46	20	07:07 (TRQ03)   07:27 (TRQ03)	06:03   20:19	05:38   20:48	06:00 (TRQ01)   06:28 (TRQ01)
8	07:43   16:58	07:21   17:36	06:40   18:11	06:46   19:47	21	07:05 (TRQ03)   07:26 (TRQ03)	06:02   20:20	05:38   20:48	06:00 (TRQ01)   06:29 (TRQ01)
9	07:43   16:59	07:20   17:37	06:38   18:12	06:45   19:48	21	07:05 (TRQ03)   07:26 (TRQ03)	06:00   20:21	05:37   20:49	06:00 (TRQ01)   06:29 (TRQ01)
10	07:43   17:00	07:18   17:39	06:36   18:14	06:43   19:49	21	07:04 (TRQ03)   07:25 (TRQ03)	05:59   20:22	05:37   20:50	06:00 (TRQ01)   06:30 (TRQ01)
11	07:42   17:01	07:17   17:40	06:35   18:15	06:41   19:50	20	07:04 (TRQ03)   07:24 (TRQ03)	05:58   20:23	05:37   20:50	06:00 (TRQ01)   06:30 (TRQ01)
12	07:42   17:02	07:16   17:41	06:33   18:16	06:40   19:51	17	07:06 (TRQ03)   07:23 (TRQ03)	05:57   20:24	05:37   20:51	06:01 (TRQ01)   06:31 (TRQ01)
13	07:42   17:03	07:15   17:43	06:31   18:17	06:38   19:52	15	07:06 (TRQ03)   07:21 (TRQ03)	05:56   20:26	05:37   20:51	06:00 (TRQ01)   06:30 (TRQ01)
14	07:41   17:05	07:13   17:44	06:29   18:18	06:36   19:53	12	07:07 (TRQ03)   07:19 (TRQ03)	05:55   20:27	05:37   20:52	06:00 (TRQ01)   06:30 (TRQ01)
15	07:41   17:06	07:12   17:45	06:28   18:19	06:35   19:55	5	07:11 (TRQ03)   07:16 (TRQ03)	05:54   20:28	05:37   20:52	06:00 (TRQ01)   06:30 (TRQ01)
16	07:41   17:07	07:10   17:46	06:26   18:21	06:33   19:56			05:53   20:29	05:37   20:52	06:00 (TRQ01)   06:31 (TRQ01)
17	07:40   17:08	07:09   17:48	06:24   18:22	06:32   19:57			05:52   20:30	05:37   20:53	06:01 (TRQ01)   06:32 (TRQ01)
18	07:40   17:09	07:08   17:49	06:23   18:23	06:30   19:58			05:51   20:31	05:37   20:53	06:02 (TRQ01)   06:32 (TRQ01)
19	07:39   17:11	07:06   17:50	06:21   18:24	06:28   19:59			05:50   20:32	05:37   20:53	06:02 (TRQ01)   06:32 (TRQ01)
20	07:38   17:12	07:05   17:52	06:19   18:25	06:27   20:00			05:49   20:33	05:37   20:54	06:02 (TRQ01)   06:32 (TRQ01)
21	07:38   17:13	07:03   17:53	06:17   18:26	06:25   20:01			05:48   20:34	05:37   20:54	06:02 (TRQ01)   06:32 (TRQ01)
22	07:37   17:14	07:02   17:54	06:16   18:27	06:24   20:02			05:47   20:35	05:37   20:54	06:02 (TRQ01)   06:32 (TRQ01)
23	07:36   17:15	07:00   17:55	06:14   18:29	06:22   20:03		8	05:46   20:36	05:38   20:54	06:03 (TRQ01)   06:33 (TRQ01)
24	07:36   17:17	06:59   17:57	06:12   18:30	06:21   20:05	11	06:08 (TRQ01)   06:07 (TRQ01)	05:45   20:37	05:38   20:54	06:03 (TRQ01)   06:33 (TRQ01)
25	07:35   17:18	06:57   17:58	06:10   18:31	06:19   20:06	13	06:20 (TRQ01)   06:21 (TRQ01)	05:45   20:37	05:38   20:55	06:03 (TRQ01)   06:33 (TRQ01)
26	07:34   17:19	06:56   17:59	06:09   18:32	06:18   20:07	15	06:06 (TRQ01)   06:23 (TRQ01)	05:44   20:38	05:38   20:55	06:03 (TRQ01)   06:34 (TRQ01)
27	07:33   17:21	06:54   18:00	06:07   18:33	06:16   20:08	17	06:05 (TRQ01)   06:23 (TRQ01)	05:43   20:39	05:39   20:55	06:03 (TRQ01)   06:33 (TRQ01)
28	07:32   17:22	06:53   18:02	06:05   18:34	06:15   20:09	18	06:04 (TRQ01)   06:24 (TRQ01)	05:43   20:40	05:39   20:55	06:03 (TRQ01)   06:33 (TRQ01)
29	07:31   17:23		07:03   19:35	06:13   20:10	20	06:04 (TRQ01)   06:25 (TRQ01)	05:42   20:41	05:40   20:55	06:04 (TRQ01)   06:34 (TRQ01)
30	07:31   17:24		07:02   19:36	06:12   20:11	21	06:03 (TRQ01)   06:25 (TRQ01)	05:41   20:42	05:40   20:55	06:04 (TRQ01)   06:34 (TRQ01)
31	07:30   17:26		07:00   19:38		22	06:03 (TRQ01)   06:26 (TRQ01)	05:41   20:43	05:40   20:55	06:04 (TRQ01)   06:34 (TRQ01)
Potential sun hours	294	295	369	400		452		457	
Total, worst case				226			168		875
Sun reduction				0,49			0,57		0,61
Oper. time red.				0,95			0,95		0,95
Wind dir. red.				0,63			0,73		0,73
Total reduction				0,30			0,39		0,42
Total, real				67			66		369

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DI - 211
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (July to December) and rows for each day of the month. Columns include Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, and WTG causing flicker first/last time. Summary rows at the bottom show Potential sun hours, Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, and Total, real.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)

### SHADOW - Calendar

**Calculation:** Shadow\_real**Shadow receptor:** DJ - 212  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

**Operational time**

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:29	06:51	06:58	07:17 (TRQ01)	05:40
	16:52	17:27	18:03	19:39	06:11	20:43
2	07:43	07:28	06:49	06:57	07:15 (TRQ01)	05:40
	16:52	17:28	18:04	19:40	06:09	20:44
3	07:43	07:27	06:48	07:07 (TRQ03)	07:14 (TRQ01)	05:39
	16:53	17:30	18:05	07:09 (TRQ03)	06:08	20:45
4	07:43	07:25	06:46	07:05 (TRQ03)	07:31 (TRQ01)	05:39
	16:54	17:31	18:06	06:53	06:07	20:46
5	07:43	07:24	06:45	07:11 (TRQ03)	07:32 (TRQ01)	05:39
	16:55	17:32	18:08	07:04 (TRQ03)	06:05	20:46
6	07:43	07:23	06:43	07:13 (TRQ03)	07:32 (TRQ01)	05:38
	16:56	17:34	18:09	07:02 (TRQ03)	06:04	20:47
7	07:43	07:22	06:41	07:13 (TRQ03)	07:33 (TRQ01)	05:38
	16:57	17:35	18:10	07:00 (TRQ03)	06:03	20:48
8	07:43	07:21	06:40	07:13 (TRQ03)	07:32 (TRQ01)	05:38
	16:58	17:36	18:11	06:59 (TRQ03)	06:02	20:48
9	07:43	07:20	06:38	07:14 (TRQ03)	07:32 (TRQ01)	05:37
	16:59	17:37	18:12	06:57 (TRQ03)	06:00	20:49
10	07:43	07:18	06:36	07:13 (TRQ03)	07:32 (TRQ01)	05:37
	17:00	17:39	18:14	06:55 (TRQ03)	06:43	20:50
11	07:42	07:17	06:35	07:12 (TRQ03)	07:31 (TRQ01)	05:37
	17:01	17:40	18:15	06:54 (TRQ03)	06:41	20:53
12	07:42	07:16	06:33	07:12 (TRQ03)	07:30 (TRQ01)	05:37
	17:02	17:41	18:16	06:55 (TRQ03)	06:40	20:50
13	07:42	07:15	06:31	07:11 (TRQ03)	07:30 (TRQ01)	05:37
	17:03	17:43	18:17	06:55 (TRQ03)	06:38	20:51
14	07:41	07:13	06:29	07:09 (TRQ03)	07:28 (TRQ01)	05:37
	17:05	17:44	18:18	06:57 (TRQ03)	06:36	20:52
15	07:41	07:12	06:28	07:06 (TRQ03)	07:26 (TRQ01)	05:37
	17:06	17:45	18:19	06:55 (TRQ03)	06:35	20:52
16	07:41	07:10	06:26	06:55 (TRQ03)	07:25 (TRQ01)	05:37
	17:07	17:46	18:21	06:33	06:53	20:53
17	07:40	07:09	06:24	06:32	07:23 (TRQ01)	05:37
	17:08	17:48	18:22	19:56	07:13 (TRQ01)	20:52
18	07:40	07:08	06:23	19:57	07:08 (TRQ01)	05:37
	17:09	17:49	18:23	06:30	07:25 (TRQ01)	20:52
19	07:39	07:06	06:21	19:58	07:09 (TRQ01)	05:37
	17:11	17:50	18:24	06:28	07:23 (TRQ01)	20:52
20	07:38	07:05	06:19	06:27	07:13 (TRQ01)	05:37
	17:12	17:52	18:25	20:00	07:20 (TRQ01)	20:53
21	07:38	07:03	06:17	06:25	07:06 (TRQ01)	05:37
	17:13	17:53	18:26	06:25	07:08 (TRQ01)	20:54
22	07:37	07:02	06:16	06:24	07:25 (TRQ01)	05:37
	17:14	17:54	18:27	06:24	07:09 (TRQ01)	20:54
23	07:36	07:00	06:14	06:22	07:23 (TRQ01)	05:38
	17:15	17:55	18:29	20:02	07:13 (TRQ01)	20:54
24	07:36	06:59	06:12	06:21	07:06 (TRQ01)	05:38
	17:17	17:57	18:30	20:05	07:28 (TRQ01)	20:55
25	07:35	06:57	06:10	06:19	07:06 (TRQ01)	05:38
	17:18	17:58	18:31	20:06	07:26 (TRQ01)	20:55
26	07:34	06:56	06:09	06:18	07:06 (TRQ01)	05:38
	17:19	17:59	18:32	20:07	07:26 (TRQ01)	20:55
27	07:33	06:54	06:07	06:16	07:06 (TRQ01)	05:39
	17:21	18:00	18:33	20:08	07:26 (TRQ01)	20:55
28	07:32	06:53	06:05	06:15	07:06 (TRQ01)	05:39
	17:22	18:02	18:34	20:09	07:26 (TRQ01)	20:55
29	07:31		07:03	06:13	07:06 (TRQ01)	05:40
	17:23		19:35	20:10	07:26 (TRQ01)	20:55
30	07:31		07:02	06:12	07:06 (TRQ01)	05:40
	17:24		19:37	20:11	07:26 (TRQ01)	20:55
31	07:30		07:00	07:19 (TRQ01)		
	17:26		19:38	07:26 (TRQ01)		
Potential sun hours	294	295	369	400	452	457
Total, worst case			153		345	
Sun reduction			0,46		0,49	
Oper. time red.			0,95		0,95	
Wind dir. red.			0,56		0,63	
Total reduction			0,24		0,30	
Total, real			37		102	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real**Shadow receptor:** DJ - 212

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:55	06:06 20:35	06:38 19:50	07:03 (TRQ01) 18:57	07:10 17:09	06:46 16:43
2	05:41 20:54	06:07 20:33	06:39 19:48	07:03 (TRQ01) 18:55	07:11 17:07	06:47 16:42
3	05:42 20:54	06:08 20:32	06:40 19:46	07:02 (TRQ01) 18:54	07:12 17:06	06:49 16:42
4	05:42 20:54	06:09 20:31	06:41 19:45	07:02 (TRQ01) 18:52	07:13 17:05	06:50 16:42
5	05:43 20:54	06:10 20:30	06:42 19:43	07:03 (TRQ01) 18:50	07:14 17:04	06:51 16:42
6	05:43 20:54	06:11 20:29	06:43 19:41	07:04 (TRQ01) 18:49	07:15 17:02	06:52 16:42
7	05:44 20:53	06:12 20:27	06:44 19:39	07:05 (TRQ01) 18:47	07:17 17:01	06:54 16:42
8	05:45 20:53	06:13 20:26	06:45 19:38	07:06 (TRQ01) 18:45	07:18 17:00	06:55 16:41
9	05:45 20:53	06:14 20:25	06:47 19:36	07:07 (TRQ01) 18:44	07:19 17:00	06:56 16:41
10	05:46 20:52	06:15 20:23	06:48 19:34	07:08 (TRQ01) 18:42	07:20 16:58	06:57 16:41
11	05:47 20:52	06:16 20:22	06:49 19:32	07:09 (TRQ01) 18:40	07:21 16:57	06:59 16:41
12	05:47 20:51	06:17 20:21	06:50 19:31	07:10 (TRQ01) 18:39	07:22 16:56	07:00 16:42
13	05:48 20:51	06:18 20:19	06:51 19:29	07:11 (TRQ01) 18:37	07:23 16:55	07:01 16:42
14	05:49 20:50	06:19 20:18	06:52 19:27	07:12 (TRQ01) 18:35	07:24 16:54	07:02 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	07:13 (TRQ01) 18:34	07:26 16:53	07:04 16:42
16	05:51 20:49	06:21 20:15	06:54 19:24	07:14 (TRQ01) 18:32	07:27 16:52	07:05 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	07:15 (TRQ01) 18:30	07:28 16:51	07:06 16:43
18	05:52 20:48	06:23 20:12	06:56 19:20	07:16 (TRQ01) 18:29	07:29 16:50	07:07 16:43
19	05:53 20:47	06:24 20:10	06:57 19:18	07:17 (TRQ01) 18:27	07:30 16:50	07:08 16:43
20	05:54 20:46	06:25 20:09	06:58 19:17	07:18 (TRQ01) 18:26	07:31 16:49	07:10 16:44
21	05:55 20:45	06:26 20:07	06:59 19:15	07:19 (TRQ01) 18:24	07:33 16:48	07:11 16:44
22	05:56 20:44	06:27 20:06	07:00 19:13	07:20 (TRQ01) 18:23	07:34 16:47	07:12 16:45
23	05:57 20:44	06:29 20:04	07:01 19:11	07:21 (TRQ01) 18:21	07:35 16:47	07:13 16:45
24	05:58 20:43	06:30 20:03	07:02 19:09	07:22 (TRQ01) 18:20	07:36 16:46	07:14 16:46
25	05:59 20:42	06:31 20:01	07:03 19:08	07:23 (TRQ01) 17:18	07:37 16:46	07:16 16:46
26	06:00 20:41	06:32 20:00	07:04 19:06	07:24 (TRQ01) 17:17	07:38 16:45	07:17 16:47
27	06:01 20:40	06:33 19:58	07:05 19:04	07:25 (TRQ01) 17:15	07:39 16:44	07:18 16:48
28	06:02 20:39	06:34 19:56	07:06 19:02	07:26 (TRQ01) 17:14	07:40 16:44	07:19 16:48
29	06:03 20:38	06:35 19:55	07:07 19:01	07:27 (TRQ01) 17:13	07:41 (TRQ03) 16:44	07:20 16:49
30	06:03 20:37	06:36 19:53	07:08 18:59	07:28 (TRQ01) 17:11	07:42 (TRQ03) 16:43	07:21 16:50
31	06:05 20:36	06:37 19:51	07:09 18:59	07:29 (TRQ01) 17:10	07:43 (TRQ03) 16:43	07:22 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		107	267		130	
Sun reduction		0,70	0,62		0,55	
Oper. time red.		0,95	0,95		0,95	
Wind dir. red.		0,63	0,63		0,56	
Total reduction		0,42	0,37		0,29	
Total, real		45	99		38	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** DK - 214  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:52	07:29 17:27	06:51 18:03	06:58 19:39	06:11 20:12	06:52 (TRQ01) 07:04 (TRQ01)
2	07:43 16:52	07:28 17:28	06:49 18:04	06:57 19:40	06:09 20:14	06:57 (TRQ01) 06:59 (TRQ01)
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:15	05:39 20:45
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:46
5	07:43 16:55	07:24 17:32	06:45 18:08	06:51 19:43	06:05 20:17	05:39 20:46
6	07:43 16:56	07:23 17:34	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:46	06:03 20:19	05:38 20:48
8	07:43 16:58	07:21 17:36	06:40 18:11	06:46 19:47	06:02 20:20	05:38 20:48
9	07:43 16:59	07:20 17:37	06:38 18:12	06:57 (TRQ03) 06:59 (TRQ03)	06:45 19:48	06:00 20:21
10	07:43 17:00	07:18 17:39	06:36 18:14	06:55 (TRQ03) 07:01 (TRQ03)	06:43 19:49	05:59 20:22
11	07:42 17:01	07:17 17:40	06:35 18:15	06:54 (TRQ03) 07:03 (TRQ03)	06:41 19:50	07:00 (TRQ01) 07:05 (TRQ01)
12	07:42 17:02	07:16 17:41	06:33 18:16	06:52 (TRQ03) 07:04 (TRQ03)	06:40 19:51	06:59 (TRQ01) 07:10 (TRQ01)
13	07:42 17:03	07:15 17:43	06:31 18:17	06:50 (TRQ03) 07:04 (TRQ03)	06:38 19:52	06:57 (TRQ01) 07:11 (TRQ01)
14	07:41 17:05	07:13 17:44	06:29 18:18	06:48 (TRQ03) 07:04 (TRQ03)	06:36 19:53	06:55 (TRQ01) 07:12 (TRQ01)
15	07:41 17:06	07:12 17:45	06:28 18:19	06:47 (TRQ03) 07:04 (TRQ03)	06:35 19:55	06:54 (TRQ01) 07:14 (TRQ01)
16	07:41 17:07	07:10 17:46	06:26 18:21	06:45 (TRQ03) 07:04 (TRQ03)	06:33 19:56	06:52 (TRQ01) 07:14 (TRQ01)
17	07:40 17:08	07:09 17:48	06:24 18:22	06:43 (TRQ03) 07:03 (TRQ03)	06:32 19:57	06:51 (TRQ01) 07:15 (TRQ01)
18	07:40 17:09	07:08 17:49	06:23 18:23	06:44 (TRQ03) 07:03 (TRQ03)	06:30 19:58	06:49 (TRQ01) 07:15 (TRQ01)
19	07:39 17:11	07:06 17:50	06:21 18:24	06:44 (TRQ03) 07:01 (TRQ03)	06:28 19:59	06:48 (TRQ01) 07:15 (TRQ01)
20	07:38 17:12	07:05 17:52	06:19 18:25	06:45 (TRQ03) 06:59 (TRQ03)	06:27 20:00	06:46 (TRQ01) 07:15 (TRQ01)
21	07:38 17:13	07:03 17:53	06:17 18:26	06:46 (TRQ03) 06:56 (TRQ03)	06:25 20:01	06:45 (TRQ01) 07:14 (TRQ01)
22	07:37 17:14	07:02 17:54	06:16 18:27	06:24 20:02	06:24 20:02	06:45 (TRQ01) 07:14 (TRQ01)
23	07:36 17:15	07:00 17:55	06:14 18:29	06:22 20:03	06:22 20:03	06:46 (TRQ01) 07:15 (TRQ01)
24	07:36 17:17	06:59 17:57	06:12 18:30	06:21 20:05	06:21 20:05	06:46 (TRQ01) 07:13 (TRQ01)
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	06:19 20:06	06:46 (TRQ01) 07:13 (TRQ01)
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	06:18 20:07	06:46 (TRQ01) 07:12 (TRQ01)
27	07:33 17:21	06:54 18:00	06:07 18:33	06:16 20:08	06:16 20:08	06:47 (TRQ01) 07:11 (TRQ01)
28	07:32 17:22	06:53 18:02	06:05 18:34	06:15 20:09	06:15 20:09	06:47 (TRQ01) 07:09 (TRQ01)
29	07:31 17:23	07:03 19:35	06:13 18:34	06:13 20:10	06:13 20:10	06:49 (TRQ01) 07:08 (TRQ01)
30	07:31 17:24	07:02 19:37	06:12 18:34	06:12 20:11	06:12 20:11	06:51 (TRQ01) 07:07 (TRQ01)
31	07:30 17:26	07:00 19:38	06:11 18:34	06:11 20:11	06:11 20:11	06:51 (TRQ01) 07:07 (TRQ01)
Potential sun hours	294	295	369	400	452	457
Total, worst case			175	443		14
Sun reduction			0,46	0,49		0,57
Oper. time red.			0,95	0,95		0,95
Wind dir. red.			0,58	0,65		0,65
Total reduction			0,25	0,30		0,35
Total, real			44	135		5

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DK - 214  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December	
1	05:40 20:55	06:06 20:35	06:38 19:50	06:59 (TRQ01) 07:04 (TRQ01)	07:10 18:57	07:30 (TRQ03) 17:09	07:22 16:43
2	05:41 20:54	06:07 20:33	06:39 19:48		07:11 18:55	07:32 (TRQ03) 17:07	07:23 16:42
3	05:42 20:54	06:08 20:32	06:40 19:46		07:12 18:54	07:33 (TRQ03) 17:06	07:25 16:42
4	05:42 20:54	06:09 20:31	06:41 19:45		07:13 18:52	07:34 (TRQ03) 17:05	07:26 16:42
5	05:43 20:54	06:10 20:30	06:42 19:43		07:14 18:50	06:51 17:04	07:27 16:42
6	05:43 20:54	06:11 20:29	06:43 19:41		07:15 18:49	06:52 17:02	07:28 16:42
7	05:44 20:53	06:12 20:27	06:44 19:39		07:17 18:47	06:54 17:01	07:29 16:42
8	05:45 20:53	06:13 20:26	06:45 19:38		07:18 18:45	06:55 17:00	07:29 16:41
9	05:45 20:53	06:14 20:25	06:47 19:36		07:19 18:44	06:56 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:48 19:34		07:20 18:42	06:57 16:58	07:31 16:41
11	05:47 20:52	06:16 20:22	07:03 (TRQ01) 07:10 (TRQ01)	06:49 19:32	07:21 18:40	06:59 16:57	07:32 16:41
12	05:47 20:51	06:17 20:21	07:00 (TRQ01) 07:13 (TRQ01)	06:50 19:31	07:22 18:39	07:00 16:56	07:33 16:42
13	05:48 20:51	06:18 20:19	06:58 (TRQ01) 07:15 (TRQ01)	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	05:49 20:50	06:19 20:18	06:56 (TRQ01) 07:16 (TRQ01)	06:52 19:27	07:24 18:35	07:02 16:54	07:35 16:42
15	05:50 20:49	06:20 20:16	06:55 (TRQ01) 07:17 (TRQ01)	06:53 19:25	07:26 18:34	07:04 16:53	07:35 16:42
16	05:51 20:49	06:21 20:15	06:54 (TRQ01) 07:18 (TRQ01)	06:54 19:24	07:27 18:32	07:05 16:52	07:36 16:42
17	05:51 20:48	06:22 20:13	06:53 (TRQ01) 07:19 (TRQ01)	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:43
18	05:52 20:47	06:23 20:12	06:52 (TRQ01) 07:19 (TRQ01)	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	05:53 20:47	06:24 20:10	06:51 (TRQ01) 07:19 (TRQ01)	06:57 19:18	07:30 18:27	07:08 16:50	07:38 16:43
20	05:54 20:46	06:25 20:09	06:51 (TRQ01) 07:19 (TRQ01)	06:58 19:17	07:31 18:26	07:10 16:49	07:39 16:44
21	05:55 20:45	06:26 20:07	06:50 (TRQ01) 07:19 (TRQ01)	06:59 19:15	07:33 (TRQ03) 18:24	07:11 16:48	07:39 16:44
22	05:56 20:44	06:27 20:06	06:50 (TRQ01) 07:19 (TRQ01)	07:00 19:13	07:34 (TRQ03) 18:23	07:12 16:47	07:40 16:45
23	05:57 20:44	06:29 20:04	06:50 (TRQ01) 07:19 (TRQ01)	07:01 19:11	07:30 (TRQ03) 18:21	07:13 16:47	07:40 16:45
24	05:58 20:43	06:30 20:03	06:51 (TRQ01) 07:18 (TRQ01)	07:02 19:09	07:43 (TRQ03) 18:20	07:14 16:46	07:41 16:46
25	05:59 20:42	06:31 20:01	06:52 (TRQ01) 07:18 (TRQ01)	07:03 19:08	07:26 (TRQ03) 17:18	06:37 16:46	07:41 16:46
26	06:00 20:41	06:32 20:00	06:53 (TRQ01) 07:17 (TRQ01)	07:05 19:06	07:25 (TRQ03) 17:17	06:39 16:45	07:42 16:47
27	06:01 20:40	06:33 19:58	06:54 (TRQ01) 07:16 (TRQ01)	07:06 19:04	07:26 (TRQ03) 17:15	06:40 16:44	07:42 16:47
28	06:02 20:39	06:34 19:56	06:55 (TRQ01) 07:15 (TRQ01)	07:07 19:02	07:27 (TRQ03) 17:14	06:41 16:44	07:42 16:48
29	06:03 20:38	06:35 19:55	06:56 (TRQ01) 07:13 (TRQ01)	07:08 19:01	07:28 (TRQ03) 17:13	06:42 16:44	07:42 16:49
30	06:03 20:37	06:36 19:53	06:57 (TRQ01) 07:11 (TRQ01)	07:09 18:59	07:29 (TRQ03) 17:11	06:44 16:43	07:43 16:50
31	06:04 20:36	06:37 19:51	06:58 (TRQ01) 07:09 (TRQ01)		06:45 17:10		07:43 16:50
Potential sun hours	463	430	376	344	295	284	
Total, worst case		460	148		33		
Sun reduction		0,70	0,62		0,55		
Oper. time red.		0,95	0,95		0,95		
Wind dir. red.		0,65	0,58		0,58		
Total reduction		0,43	0,34		0,30		
Total, real		199	51		10		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DL - 215 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE] Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Main data table with columns for months (January to December) and rows for each day (1 to 31) showing sun rise/set times, shadow reduction, and operational time. Includes a summary table at the bottom for 'Potential sun hours' and 'Total, worst case'.

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise (hh:mm) / Sun set (hh:mm), Minutes with flicker, and First/Last time (hh:mm) with flicker (WTG causing flicker first/last time).

Project:

Tarquini1

Licensed user:

MONTANA SPA
VIA ANGELO CARLO FUMAGALLI 6
IT-20143 MILANO
0254118173
Andrea / fronteddu@montanambiente.com
Calculated:
06/08/2022 14:40/3.5.584

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DM - 216
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Table with 12 columns (Jan-Dec) and 1 row of values: 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

Table with 13 columns (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum) and 1 row of values: 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Main shadow calculation table with columns for months (January-December) and rows for sun hours, reductions, and real sun hours.

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise/set, Minutes with flicker, First/Last time with flicker (WTG causing flicker).



## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** DN - 217  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:52	07:29 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43
2	07:43 16:52	07:28 17:28	06:49 18:04	06:57 19:40	06:09 20:14	05:40 20:44
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:15	05:39 20:45
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:46
5	07:43 16:55	07:24 17:32	06:45 18:08	07:04 (TRQ01) 07:17 (TRQ01)	06:51 19:43	06:05 20:17
6	07:43 16:56	07:23 17:34	06:43 18:09	07:02 (TRQ01) 07:19 (TRQ01)	06:50 19:44	06:04 20:18
7	07:43 16:57	07:22 17:35	06:41 18:10	07:00 (TRQ01) 07:21 (TRQ01)	06:48 19:46	06:03 20:19
8	07:43 16:58	07:21 17:36	07:41 (TRQ03) 07:45 (TRQ03)	06:40 18:11	06:59 (TRQ01) 07:23 (TRQ01)	06:46 19:47
9	07:43 16:59	07:20 17:37	07:40 (TRQ03) 07:47 (TRQ03)	06:38 18:12	06:57 (TRQ01) 07:23 (TRQ01)	06:45 19:48
10	07:43 17:00	07:18 17:39	07:38 (TRQ03) 07:48 (TRQ03)	06:36 18:14	06:55 (TRQ01) 07:24 (TRQ01)	06:43 19:49
11	07:42 17:01	07:17 17:40	07:37 (TRQ03) 07:49 (TRQ03)	06:35 18:15	06:54 (TRQ01) 07:25 (TRQ01)	06:41 19:50
12	07:42 17:02	07:16 17:41	07:36 (TRQ03) 07:50 (TRQ03)	06:33 18:16	06:53 (TRQ01) 07:25 (TRQ01)	06:40 19:51
13	07:42 17:03	07:15 17:43	07:34 (TRQ03) 07:50 (TRQ03)	06:31 18:17	06:52 (TRQ01) 07:24 (TRQ01)	06:38 19:52
14	07:41 17:05	07:13 17:44	07:33 (TRQ03) 07:51 (TRQ03)	06:29 18:18	06:51 (TRQ01) 07:24 (TRQ01)	06:36 19:53
15	07:41 17:06	07:12 17:45	07:32 (TRQ03) 07:51 (TRQ03)	06:28 18:19	06:51 (TRQ01) 07:24 (TRQ01)	06:35 19:55
16	07:41 17:07	07:10 17:46	07:30 (TRQ03) 07:51 (TRQ03)	06:26 18:21	06:51 (TRQ01) 07:24 (TRQ01)	06:33 19:56
17	07:40 17:08	07:09 17:48	07:29 (TRQ03) 07:51 (TRQ03)	06:24 18:22	06:51 (TRQ01) 07:23 (TRQ01)	06:32 19:57
18	07:40 17:09	07:08 17:49	07:29 (TRQ03) 07:50 (TRQ03)	06:23 18:23	06:51 (TRQ01) 07:22 (TRQ01)	06:30 19:58
19	07:39 17:10	07:06 17:50	07:30 (TRQ03) 07:49 (TRQ03)	06:21 18:24	06:52 (TRQ01) 07:21 (TRQ01)	06:28 19:59
20	07:38 17:12	07:05 17:52	07:31 (TRQ03) 07:48 (TRQ03)	06:19 18:25	06:52 (TRQ01) 07:20 (TRQ01)	06:27 20:00
21	07:38 17:13	07:03 17:53	07:32 (TRQ03) 07:47 (TRQ03)	06:17 18:26	06:53 (TRQ01) 07:18 (TRQ01)	06:25 20:01
22	07:37 17:14	07:02 17:54	07:34 (TRQ03) 07:44 (TRQ03)	06:16 18:27	06:55 (TRQ01) 07:17 (TRQ01)	06:24 20:02
23	07:36 17:15	07:00 17:55	06:14 18:29	06:56 (TRQ01) 07:15 (TRQ01)	06:22 20:03	05:46 20:36
24	07:36 17:17	06:59 17:57	06:12 18:30	06:58 (TRQ01) 07:11 (TRQ01)	06:21 20:05	05:45 20:37
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	06:19 20:37	05:45 20:55
26	07:34 17:19	06:56 17:59	06:09 18:32	06:18 20:07	06:18 20:38	05:44 20:55
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	06:16 20:39	05:43 20:55
28	07:32 17:22	06:53 18:02	06:05 18:34	06:15 20:09	06:15 20:40	05:43 20:55
29	07:31 17:23	06:53 18:02	07:03 19:35	06:13 20:10	06:13 20:41	05:42 20:55
30	07:31 17:24	06:53 18:02	07:02 19:36	06:12 20:11	06:12 20:42	05:41 20:55
31	07:30 17:26	06:53 18:02	07:00 19:38	06:11 20:11	06:11 20:43	05:41 20:55
Potential sun hours	294	295	369	400	452	457
Total, worst case		225		523		
Sun reduction		0,46		0,46		
Oper. time red.		0,95		0,95		
Wind dir. red.		0,51		0,56		
Total reduction		0,22		0,24		
Total, real		50		128		

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DN - 217  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40	06:05	06:38	07:10	07:31 (TRQ01)	07:22
	20:55	20:35	19:50	18:57	08:03 (TRQ01)	16:43
2	05:41	06:07	06:39	07:11	07:32 (TRQ01)	07:23
	20:54	20:33	19:48	18:55	08:03 (TRQ01)	16:42
3	05:42	06:08	06:40	07:12	07:33 (TRQ01)	07:25
	20:54	20:32	19:46	18:54	08:02 (TRQ01)	16:42
4	05:42	06:09	06:41	07:13	07:34 (TRQ01)	07:26
	20:54	20:31	19:45	18:52	08:01 (TRQ01)	16:42
5	05:43	06:10	06:42	07:14	07:35 (TRQ01)	07:27
	20:54	20:30	19:43	18:50	08:00 (TRQ01)	16:42
6	05:43	06:11	06:43	07:15	07:36 (TRQ01)	07:28
	20:54	20:29	19:41	18:49	07:58 (TRQ01)	16:42
7	05:44	06:12	06:44	07:17	07:37 (TRQ01)	07:29
	20:53	20:27	19:39	18:47	07:56 (TRQ01)	16:41
8	05:45	06:13	06:45	07:18	07:38 (TRQ01)	07:29
	20:53	20:26	19:38	18:45	07:54 (TRQ01)	16:41
9	05:45	06:14	06:46	07:19	07:40 (TRQ01)	07:30
	20:53	20:25	19:36	18:44	07:50 (TRQ01)	16:41
10	05:46	06:15	06:48	07:20	06:57	07:31
	20:52	20:23	19:34	18:42	16:58	16:41
11	05:47	06:16	06:49	07:21	06:59	07:32
	20:52	20:22	19:32	18:40	16:57	16:41
12	05:47	06:17	06:50	07:22	07:00	07:33
	20:51	20:21	19:31	18:39	16:56	16:42
13	05:48	06:18	06:51	07:23	07:01	07:34
	20:51	20:19	19:29	18:37	16:55	16:42
14	05:49	06:19	06:52	07:24	07:02	07:35
	20:50	20:18	19:27	18:35	16:54	16:42
15	05:50	06:20	06:53	07:26	07:04	07:35
	20:49	20:16	19:25	18:34	16:53	16:42
16	05:51	06:21	06:54	07:27	07:05	07:36
	20:49	20:15	19:24	18:32	16:52	16:42
17	05:51	06:22	06:55	07:28	07:06	07:37
	20:48	20:13	19:22	18:30	16:51	16:43
18	05:52	06:23	06:56	07:29	07:07	07:37
	20:48	20:12	19:20	18:29	16:50	16:43
19	05:53	06:24	06:57	07:30	08:08 (TRQ03)	07:38
	20:47	20:10	19:18	18:27	08:12 (TRQ03)	16:43
20	05:54	06:25	06:58	07:31	08:05 (TRQ03)	07:39
	20:46	20:09	19:17	18:26	08:16 (TRQ03)	16:44
21	05:55	06:26	06:59	07:33	08:03 (TRQ03)	07:39
	20:45	20:07	19:15	18:24	08:18 (TRQ03)	16:44
22	05:56	06:27	07:00	07:34	08:01 (TRQ03)	07:40
	20:44	20:06	19:13	18:23	08:19 (TRQ03)	16:45
23	05:57	06:29	07:01	07:35	08:00 (TRQ03)	07:40
	20:44	20:04	19:11	18:21	08:19 (TRQ03)	16:45
24	05:58	06:30	07:02	07:36	08:00 (TRQ03)	07:41
	20:43	20:03	19:09	18:20	08:20 (TRQ03)	16:46
25	05:59	06:31	07:03	06:37	06:59 (TRQ03)	07:41
	20:42	20:01	19:08	17:18	07:20 (TRQ03)	16:46
26	06:00	06:32	07:04	06:39	07:00 (TRQ03)	07:42
	20:41	20:00	19:06	17:17	07:20 (TRQ03)	16:47
27	06:01	06:33	07:06	06:40	07:02 (TRQ03)	07:42
	20:40	19:58	19:04	17:15	07:21 (TRQ03)	16:47
28	06:01	06:34	07:07	06:41	07:03 (TRQ03)	07:42
	20:39	19:56	19:02	17:14	07:20 (TRQ03)	16:48
29	06:02	06:35	07:08	06:42	07:04 (TRQ03)	07:43
	20:38	19:55	19:01	17:13	07:20 (TRQ03)	16:49
30	06:03	06:36	07:09	06:44	07:05 (TRQ03)	07:43
	20:37	19:53	18:59	17:11	07:19 (TRQ03)	16:50
31	06:04	06:37		06:45	07:07 (TRQ03)	07:43
	20:36	19:51		17:10	07:19 (TRQ03)	16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case			325	417	19	
Sun reduction			0,62	0,55	0,46	
Oper. time red.			0,95	0,95	0,95	
Wind dir. red.			0,56	0,54	0,51	
Total reduction			0,33	0,28	0,22	
Total, real			108	117	4	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real**Shadow receptor:** DO - 218  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:29	06:51	07:23 (TRQ03)	06:58	07:34 (TRQ01)
	16:52	17:27	18:03	07:33 (TRQ03)	19:39	20:12
2	07:43	07:28	06:49		06:57	07:35 (TRQ01)
	16:52	17:28	18:04		19:40	20:14
3	07:43	07:26	06:48		06:55	07:37 (TRQ01)
	16:53	17:30	18:05		19:41	20:15
4	07:43	07:25	06:46		06:53	07:39 (TRQ01)
	16:54	17:31	18:06		19:42	20:16
5	07:43	07:24	06:45		06:51	07:43 (TRQ01)
	16:55	17:32	18:08		19:43	20:17
6	07:43	07:23	06:43		06:50	06:04
	16:56	17:34	18:09		19:44	20:18
7	07:43	07:22	06:41		06:48	06:03
	16:57	17:35	18:10		19:46	20:19
8	07:43	07:21	06:40		06:46	06:02
	16:58	17:36	18:11		19:47	20:20
9	07:43	07:20	06:38		06:45	06:00
	16:59	17:37	18:12		19:48	20:21
10	07:43	07:18	06:36		06:43	05:59
	17:00	17:39	18:14		19:49	20:22
11	07:42	07:17	06:35		06:41	05:58
	17:01	17:40	18:15		19:50	20:23
12	07:42	07:16	06:33		06:40	05:57
	17:02	17:41	18:16		19:51	20:24
13	07:42	07:15	06:31		06:38	05:56
	17:03	17:43	18:17		19:52	20:26
14	07:41	07:13	06:29		06:36	05:55
	17:05	17:44	18:18		19:53	20:27
15	07:41	07:12	07:32 (TRQ03)	06:28	06:49 (TRQ01)	06:35
	17:06	17:45	2 07:34 (TRQ03)	18:19	7 06:56 (TRQ01)	19:55
16	07:41	07:10	07:30 (TRQ03)	06:26	06:45 (TRQ01)	06:33
	17:07	17:46	6 07:36 (TRQ03)	18:21	15 07:00 (TRQ01)	19:56
17	07:40	07:09	07:29 (TRQ03)	06:24	06:43 (TRQ01)	06:32
	17:08	17:48	9 07:38 (TRQ03)	18:22	19 07:02 (TRQ01)	19:57
18	07:40	07:08	07:27 (TRQ03)	06:23	06:41 (TRQ01)	06:30
	17:09	17:49	12 07:39 (TRQ03)	18:23	22 07:03 (TRQ01)	19:58
19	07:39	07:06	07:26 (TRQ03)	06:21	06:40 (TRQ01)	06:28
	17:10	17:50	14 07:40 (TRQ03)	18:24	25 07:05 (TRQ01)	19:59
20	07:38	07:05	07:24 (TRQ03)	06:19	06:38 (TRQ01)	06:27
	17:12	17:52	16 07:40 (TRQ03)	18:25	27 07:05 (TRQ01)	20:00
21	07:38	07:03	07:23 (TRQ03)	06:17	06:36 (TRQ01)	06:25
	17:13	17:53	18 07:41 (TRQ03)	18:26	30 07:06 (TRQ01)	20:01
22	07:37	07:02	07:21 (TRQ03)	06:16	06:35 (TRQ01)	06:24
	17:14	17:54	19 07:40 (TRQ03)	18:27	32 07:07 (TRQ01)	20:02
23	07:36	07:00	07:20 (TRQ03)	06:14	06:34 (TRQ01)	06:22
	17:15	17:55	21 07:41 (TRQ03)	18:29	33 07:07 (TRQ01)	20:03
24	07:36	06:59	07:18 (TRQ03)	06:12	06:33 (TRQ01)	06:21
	17:17	17:57	22 07:40 (TRQ03)	18:30	33 07:06 (TRQ01)	20:05
25	07:35	06:57	07:19 (TRQ03)	06:10	06:32 (TRQ01)	06:19
	17:18	17:58	21 07:40 (TRQ03)	18:31	34 07:06 (TRQ01)	20:06
26	07:34	06:56	07:19 (TRQ03)	06:09	06:33 (TRQ01)	06:18
	17:19	17:59	20 07:39 (TRQ03)	18:32	33 07:06 (TRQ01)	20:07
27	07:33	06:54	07:21 (TRQ03)	06:07	06:32 (TRQ01)	06:16
	17:20	18:00	17 07:38 (TRQ03)	18:33	33 07:05 (TRQ01)	20:08
28	07:32	06:53	07:21 (TRQ03)	06:05	06:32 (TRQ01)	06:15
	17:22	18:02	15 07:36 (TRQ03)	18:34	33 07:05 (TRQ01)	20:09
29	07:31			07:03	07:32 (TRQ01)	06:13
	17:23			19:35	31 08:03 (TRQ01)	20:10
30	07:31			07:02	07:33 (TRQ01)	06:12
	17:24			19:36	30 08:03 (TRQ01)	20:11
31	07:30			07:00	07:33 (TRQ01)	06:11
	17:26			19:38	29 08:02 (TRQ01)	20:13
Potential sun hours	294	295	369		400	452
Total, worst case				476		88
Sun reduction				0,46		0,49
Oper. time red.				0,95		0,95
Wind dir. red.				0,51		0,60
Total reduction				0,22		0,28
Total, real				48		25

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** DO - 218  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:55	06:05 20:35	06:38 19:50	07:10 18:57	06:46 17:09	07:22 16:43
2	05:41 20:54	06:07 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	05:42 20:54	06:08 20:32	06:40 19:46	07:12 18:54	06:49 17:06	07:25 16:42
4	05:42 20:54	06:09 20:31	06:41 19:45	07:13 18:52	06:50 17:05	07:26 16:42
5	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	06:51 17:04	07:27 16:42
6	05:43 20:54	06:11 20:29	06:43 19:41	07:15 18:49	06:52 17:02	07:28 16:42
7	05:44 20:53	06:12 20:27	06:44 19:39	07:17 18:47	06:54 17:01	07:29 16:41
8	05:45 20:53	06:13 20:26	06:45 19:38	07:18 18:45	06:55 17:00	07:29 16:41
9	05:45 20:53	06:14 20:25	06:46 19:36	07:19 18:44	06:56 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:48 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	05:47 20:52	06:16 20:22	06:49 19:32	07:21 18:40	06:59 16:57	07:32 16:41
12	05:47 20:51	06:17 20:21	06:50 19:31	07:22 18:39	07:00 16:56	07:33 16:42
13	05:48 20:51	06:18 20:19	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:35 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	07:26 18:34	07:04 16:53	07:35 16:42
16	05:51 20:49	06:21 20:15	06:54 19:24	07:27 18:32	07:05 16:52	07:36 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:43
18	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:50	07:38 16:43
20	05:54 20:46	06:25 20:09	06:58 19:17	07:31 18:26	07:10 16:49	07:39 16:44
21	05:55 20:45	06:26 20:07	06:59 19:15	07:33 18:24	07:11 16:48	07:39 16:44
22	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:45
23	05:57 20:44	06:29 20:04	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	05:58 20:43	06:30 20:03	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	05:59 20:42	06:31 20:01	07:03 19:08	07:37 18:18	07:16 16:46	07:41 16:46
26	06:00 20:41	06:32 20:00	07:04 19:06	07:39 18:17	07:17 16:45	07:42 16:47
27	06:01 20:40	06:33 19:58	07:06 19:04	07:40 18:15	07:18 16:44	07:42 16:47
28	06:01 20:39	06:34 19:56	07:07 19:02	07:41 18:14	07:19 16:44	07:42 16:48
29	06:02 20:38	06:35 19:55	07:08 19:01	07:42 18:13	07:20 16:44	07:42 16:49
30	06:03 20:37	06:36 19:53	07:09 18:59	07:43 18:11	07:21 16:43	07:43 16:50
31	06:04 20:36	06:37 19:51		07:44 18:10		07:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case			561		227	
Sun reduction			0,62		0,55	
Oper. time red.			0,95		0,95	
Wind dir. red.			0,60		0,51	
Total reduction			0,35		0,27	
Total, real			198		60	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar****Calculation:** Shadow\_real**Shadow receptor:** DP - 219**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	
1	07:43 16:52	07:29 17:27	06:51 18:03	06:58 19:39	07:44 (TRQ01) 08:08 (TRQ01)	06:11 20:12	05:40 20:43
2	07:43 16:52	07:28 17:28	06:49 18:04	06:57 19:40	07:46 (TRQ01) 08:05 (TRQ01)	06:09 20:14	05:40 20:44
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	07:49 (TRQ01) 08:02 (TRQ01)	06:08 20:15	05:39 20:45
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:51 19:43	06:07 20:16	05:39 20:46
5	07:43 16:55	07:24 17:32	06:44 18:08	06:51 19:43	06:51 19:43	06:05 20:17	05:39 20:46
6	07:43 16:56	07:23 17:34	06:43 18:09	06:50 19:44	06:04 20:18	06:04 20:18	05:38 20:47
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:46	06:03 20:19	06:03 20:19	05:38 20:48
8	07:43 16:58	07:21 17:36	06:40 18:11	06:46 19:47	06:02 20:20	06:02 20:20	05:38 20:48
9	07:43 16:59	07:20 17:37	07:40 (TRQ03) 07:41 (TRQ03)	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49
10	07:43 17:00	07:18 17:39	07:38 (TRQ03) 07:44 (TRQ03)	06:36 18:14	06:43 19:49	05:59 20:22	05:37 20:50
11	07:42 17:01	07:17 17:40	07:37 (TRQ03) 07:47 (TRQ03)	06:34 18:15	06:58 (TRQ01) 07:09 (TRQ01)	06:41 19:50	05:37 20:50
12	07:42 17:02	07:16 17:41	07:36 (TRQ03) 07:48 (TRQ03)	06:33 18:16	06:54 (TRQ01) 07:12 (TRQ01)	06:40 19:51	05:37 20:51
13	07:42 17:03	07:15 17:43	07:34 (TRQ03) 07:49 (TRQ03)	06:31 18:17	06:51 (TRQ01) 07:14 (TRQ01)	06:38 19:52	05:37 20:51
14	07:41 17:05	07:13 17:44	07:33 (TRQ03) 07:50 (TRQ03)	06:29 18:18	06:48 (TRQ01) 07:15 (TRQ01)	06:36 19:53	05:37 20:52
15	07:41 17:06	07:12 17:45	07:32 (TRQ03) 07:51 (TRQ03)	06:28 18:19	06:47 (TRQ01) 07:17 (TRQ01)	06:35 19:54	05:37 20:52
16	07:41 17:07	07:10 17:46	07:30 (TRQ03) 07:51 (TRQ03)	06:26 18:21	06:46 (TRQ01) 07:18 (TRQ01)	06:33 19:56	05:37 20:52
17	07:40 17:08	07:09 17:48	07:29 (TRQ03) 07:51 (TRQ03)	06:24 18:22	06:44 (TRQ01) 07:18 (TRQ01)	06:32 19:57	05:37 20:53
18	07:40 17:09	07:08 17:49	07:27 (TRQ03) 07:51 (TRQ03)	06:23 18:23	06:43 (TRQ01) 07:18 (TRQ01)	06:30 19:58	05:37 20:53
19	07:39 17:10	07:06 17:50	07:27 (TRQ03) 07:51 (TRQ03)	06:21 18:24	06:43 (TRQ01) 07:19 (TRQ01)	06:28 19:59	05:37 20:53
20	07:38 17:12	07:05 17:52	07:27 (TRQ03) 07:50 (TRQ03)	06:19 18:25	06:42 (TRQ01) 07:19 (TRQ01)	06:27 20:00	05:37 20:54
21	07:38 17:13	07:03 17:53	07:27 (TRQ03) 07:50 (TRQ03)	06:17 18:26	06:41 (TRQ01) 07:19 (TRQ01)	06:25 20:01	05:37 20:54
22	07:37 17:14	07:02 17:54	07:28 (TRQ03) 07:49 (TRQ03)	06:16 18:27	06:40 (TRQ01) 07:18 (TRQ01)	06:24 20:02	05:37 20:54
23	07:36 17:15	07:00 17:55	07:29 (TRQ03) 07:48 (TRQ03)	06:14 18:29	06:41 (TRQ01) 07:19 (TRQ01)	06:22 20:03	05:37 20:54
24	07:36 17:17	06:59 17:57	07:30 (TRQ03) 07:46 (TRQ03)	06:12 18:30	06:40 (TRQ01) 07:18 (TRQ01)	06:21 20:05	05:38 20:55
25	07:35 17:18	06:57 17:58	07:33 (TRQ03) 07:44 (TRQ03)	06:10 18:31	06:40 (TRQ01) 07:17 (TRQ01)	06:19 20:06	05:38 20:55
26	07:34 17:19	06:56 17:59	06:09 18:32	06:41 (TRQ01) 07:17 (TRQ01)	06:18 20:07	06:18 20:07	05:38 20:55
27	07:33 17:20	06:54 18:00	06:07 18:33	06:41 (TRQ01) 07:16 (TRQ01)	06:16 20:08	06:16 20:08	05:39 20:55
28	07:32 17:22	06:53 18:02	06:05 18:34	06:41 (TRQ01) 07:15 (TRQ01)	06:15 20:09	06:15 20:09	05:39 20:55
29	07:31 17:23	06:52	07:03 19:35	07:41 (TRQ01) 08:13 (TRQ01)	06:13 20:10	06:13 20:10	05:40 20:55
30	07:31 17:24	06:51	07:02 19:36	07:42 (TRQ01) 08:12 (TRQ01)	06:12 20:11	06:12 20:11	05:40 20:55
31	07:30 17:26	06:50	07:00 19:38	07:43 (TRQ01) 08:10 (TRQ01)	06:11 20:12	06:11 20:12	05:40 20:55
Potential sun hours	294	295	369	400	452	457	
Total, worst case		284	666		56		
Sun reduction		0,46	0,46		0,49		
Oper. time red.		0,95	0,95		0,95		
Wind dir. red.		0,51	0,58		0,58		
Total reduction		0,22	0,25		0,27		
Total, real		64	169		15		

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DP - 219  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December		
1	05:40	06:05	06:38	07:10	07:31 (TRQ01)	06:46	07:08 (TRQ03)	07:22
	20:55	20:35	19:50	18:57	21 07:52 (TRQ01)	17:09	6 07:14 (TRQ03)	16:43
2	05:41	06:06	06:39	07:11	07:35 (TRQ01)	06:47		07:23
	20:54	20:33	19:48	18:55	14 07:49 (TRQ01)	17:07		16:42
3	05:41	06:08	06:40	07:12		06:49		07:25
	20:54	20:32	19:46	18:54		17:06		16:42
4	05:42	06:09	06:41	07:13		06:50		07:26
	20:54	20:31	19:45	18:52		17:05		16:42
5	05:43	06:10	06:42	07:14		06:51		07:27
	20:54	20:30	19:43	18:50		17:04		16:42
6	05:43	06:11	06:43	07:15		06:52		07:28
	20:54	20:29	19:41	18:49		17:02		16:42
7	05:44	06:12	06:44	07:17		06:54		07:29
	20:53	20:27	19:39	18:47		17:01		16:41
8	05:45	06:13	06:45	07:18		06:55		07:29
	20:53	20:26	19:38	18:45		17:00		16:41
9	05:45	06:14	06:46	07:19		06:56		07:30
	20:53	20:25	19:36	12 07:55 (TRQ01)	18:43	16:59		16:41
10	05:46	06:15	06:48	07:39 (TRQ01)	07:20	06:57		07:31
	20:52	20:23	19:34	19 07:58 (TRQ01)	18:42	16:58		16:41
11	05:47	06:16	06:49	07:37 (TRQ01)	07:21	06:59		07:32
	20:52	20:22	19:32	23 08:00 (TRQ01)	18:40	16:57		16:41
12	05:47	06:17	06:50	07:35 (TRQ01)	07:22	07:00		07:33
	20:51	20:21	19:31	26 08:01 (TRQ01)	18:39	16:56		16:41
13	05:48	06:18	06:51	07:33 (TRQ01)	07:23	07:01		07:34
	20:51	20:19	19:29	29 08:02 (TRQ01)	18:37	16:55		16:42
14	05:49	06:19	06:52	07:31 (TRQ01)	07:24	07:02		07:35
	20:50	20:18	19:27	32 08:03 (TRQ01)	18:35	16:54		16:42
15	05:50	06:20	06:53	07:31 (TRQ01)	07:26	07:03		07:35
	20:49	20:16	19:25	34 08:05 (TRQ01)	18:34	16:53		16:42
16	05:51	06:21	06:54	07:30 (TRQ01)	07:27	08:07 (TRQ03)	07:05	07:36
	20:49	20:15	19:24	35 08:05 (TRQ01)	18:32	7 08:14 (TRQ03)	16:52	16:42
17	05:51	06:22	06:55	07:29 (TRQ01)	07:28	08:03 (TRQ03)	07:06	07:37
	20:48	20:13	19:22	36 08:05 (TRQ01)	18:30	13 08:16 (TRQ03)	16:51	16:43
18	05:52	06:23	06:56	07:28 (TRQ01)	07:29	08:01 (TRQ03)	07:07	07:37
	20:47	20:12	19:20	37 08:05 (TRQ01)	18:29	17 08:18 (TRQ03)	16:50	16:43
19	05:53	06:24	06:57	07:27 (TRQ01)	07:30	07:59 (TRQ03)	07:08	07:38
	20:47	20:10	19:18	38 08:05 (TRQ01)	18:27	20 08:19 (TRQ03)	16:50	16:43
20	05:54	06:25	06:58	07:27 (TRQ01)	07:31	07:59 (TRQ03)	07:10	07:39
	20:46	20:09	19:17	38 08:05 (TRQ01)	18:26	21 08:20 (TRQ03)	16:49	16:44
21	05:55	06:26	06:59	07:26 (TRQ01)	07:33	07:58 (TRQ03)	07:11	07:39
	20:45	20:07	19:15	39 08:05 (TRQ01)	18:24	23 08:21 (TRQ03)	16:48	16:44
22	05:56	06:27	07:00	07:26 (TRQ01)	07:34	07:57 (TRQ03)	07:12	07:40
	20:44	20:06	19:13	38 08:04 (TRQ01)	18:23	24 08:21 (TRQ03)	16:47	16:45
23	05:57	06:29	07:01	07:26 (TRQ01)	07:35	07:56 (TRQ03)	07:13	07:40
	20:44	20:04	19:11	37 08:03 (TRQ01)	18:21	25 08:21 (TRQ03)	16:47	16:45
24	05:58	06:30	07:02	07:26 (TRQ01)	07:36	07:58 (TRQ03)	07:14	07:41
	20:43	20:03	19:09	37 08:03 (TRQ01)	18:20	23 08:21 (TRQ03)	16:46	16:46
25	05:59	06:31	07:03	07:26 (TRQ01)	06:37	06:59 (TRQ03)	07:16	07:41
	20:42	20:01	19:08	36 08:02 (TRQ01)	17:18	22 07:21 (TRQ03)	16:45	16:46
26	06:00	06:32	07:04	07:26 (TRQ01)	06:39	07:00 (TRQ03)	07:17	07:42
	20:41	19:59	19:06	35 08:01 (TRQ01)	17:17	20 07:20 (TRQ03)	16:45	16:47
27	06:01	06:33	07:06	07:27 (TRQ01)	06:40	07:02 (TRQ03)	07:18	07:42
	20:40	19:58	19:04	32 07:59 (TRQ01)	17:15	18 07:20 (TRQ03)	16:44	16:47
28	06:01	06:34	07:07	07:27 (TRQ01)	06:41	07:03 (TRQ03)	07:19	07:42
	20:39	19:56	19:02	31 07:58 (TRQ01)	17:14	16 07:19 (TRQ03)	16:44	16:48
29	06:02	06:35	07:08	07:28 (TRQ01)	06:42	07:04 (TRQ03)	07:20	07:42
	20:38	19:55	19:01	28 07:56 (TRQ01)	17:13	14 07:18 (TRQ03)	16:44	16:49
30	06:03	06:36	07:09	07:29 (TRQ01)	06:44	07:05 (TRQ03)	07:21	07:43
	20:37	19:53	18:59	25 07:54 (TRQ01)	17:11	12 07:17 (TRQ03)	16:43	16:50
31	06:04	06:37			06:45	07:07 (TRQ03)		07:43
	20:36	19:51			17:10	9 07:16 (TRQ03)		16:50
Potential sun hours	463	430	376	344	295			284
Total, worst case			697		319	6		
Sun reduction			0,62		0,55	0,46		
Oper. time red.			0,95		0,95	0,95		
Wind dir. red.			0,58		0,52	0,51		
Total reduction			0,34		0,27	0,22		
Total, real			240		86	1		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** DQ - 220  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	
1	07:43 16:52	07:29 17:27	06:51 18:03	07:13 (TRQ03) 07:36 (TRQ03)	06:58 19:39	07:19 (TRQ01) 20:12	05:40 20:43
2	07:43 16:52	07:28 17:28	06:49 18:04	07:14 (TRQ03) 07:36 (TRQ03)	06:57 19:40	07:18 (TRQ01) 07:55 (TRQ01)	06:09 20:14
3	07:43 16:53	07:26 17:30	06:48 18:05	07:14 (TRQ03) 07:35 (TRQ03)	06:55 19:41	07:18 (TRQ01) 07:55 (TRQ01)	06:08 20:15
4	07:43 16:54	07:25 17:31	06:46 18:06	07:15 (TRQ03) 07:33 (TRQ03)	06:53 19:42	07:17 (TRQ01) 07:55 (TRQ01)	06:07 20:16
5	07:43 16:55	07:24 17:32	06:44 18:08	07:17 (TRQ03) 07:31 (TRQ03)	06:51 19:43	07:17 (TRQ01) 07:54 (TRQ01)	06:05 20:17
6	07:43 16:56	07:23 17:34	06:43 18:09	07:20 (TRQ03) 07:28 (TRQ03)	06:50 19:44	07:17 (TRQ01) 07:55 (TRQ01)	06:04 20:18
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:46	07:17 (TRQ01) 07:54 (TRQ01)	06:03 20:19	05:38 20:48
8	07:43 16:58	07:21 17:36	06:40 18:11	06:46 19:47	07:17 (TRQ01) 07:53 (TRQ01)	06:02 20:20	05:38 20:48
9	07:43 16:59	07:20 17:37	06:38 18:12	06:45 19:48	07:17 (TRQ01) 07:53 (TRQ01)	06:00 20:21	05:37 20:49
10	07:43 17:00	07:18 17:39	06:36 18:14	06:43 19:49	07:17 (TRQ01) 07:51 (TRQ01)	05:59 20:22	05:37 20:50
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	07:17 (TRQ01) 07:50 (TRQ01)	05:58 20:23	05:37 20:50
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	07:19 (TRQ01) 07:49 (TRQ01)	05:57 20:24	05:37 20:51
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	07:19 (TRQ01) 07:47 (TRQ01)	05:56 20:26	05:37 20:51
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	07:20 (TRQ01) 07:45 (TRQ01)	05:55 20:27	05:37 20:52
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	07:22 (TRQ01) 07:44 (TRQ01)	05:54 20:28	05:37 20:52
16	07:41 17:07	07:10 17:46	06:26 18:21	06:33 19:56	07:24 (TRQ01) 07:41 (TRQ01)	05:53 20:29	05:37 20:52
17	07:40 17:08	07:09 17:48	06:24 18:22	06:32 19:57	07:27 (TRQ01) 07:38 (TRQ01)	05:52 20:30	05:37 20:53
18	07:40 17:09	07:08 17:49	06:23 18:23	06:30 19:58	05:51 20:31	05:37 20:53	
19	07:39 17:10	07:06 17:50	06:21 07:26 (TRQ03)	06:28 19:59	05:50 20:32	05:37 20:53	
20	07:38 17:12	07:05 17:52	5 07:31 (TRQ03) 07:24 (TRQ03)	06:27 20:00	05:49 20:33	05:37 20:54	
21	07:38 17:13	07:03 17:53	9 07:33 (TRQ03) 07:23 (TRQ03)	06:25 20:01	05:48 20:34	05:37 20:54	
22	07:37 17:14	07:02 17:54	12 07:35 (TRQ03) 07:21 (TRQ03)	06:24 20:02	05:47 20:35	05:37 20:54	
23	07:36 17:15	07:00 17:55	15 07:36 (TRQ03) 07:20 (TRQ03)	06:22 20:03	05:46 20:36	05:37 20:54	
24	07:36 17:17	06:59 17:57	17 07:37 (TRQ03) 07:18 (TRQ03)	06:21 20:05	05:45 20:36	05:38 20:55	
25	07:35 17:18	06:57 17:58	19 07:37 (TRQ03) 07:17 (TRQ03)	06:19 20:06	05:45 20:37	05:38 20:55	
26	07:34 17:19	06:56 17:59	21 07:38 (TRQ03) 07:15 (TRQ03)	06:18 20:07	05:44 20:38	05:38 20:55	
27	07:33 17:20	06:54 18:00	22 07:37 (TRQ03) 07:14 (TRQ03)	06:16 20:08	05:43 20:39	05:39 20:55	
28	07:32 17:22	06:53 18:02	24 07:38 (TRQ03) 07:13 (TRQ03)	06:15 20:09	05:43 20:40	05:39 20:55	
29	07:31 17:23	06:52 18:03	07:37 (TRQ03) 07:03	06:14 20:10	05:42 20:41	05:40 20:55	
30	07:31 17:24	06:51 18:04	07:36 (TRQ03) 07:02	06:13 20:11	05:41 20:42	05:40 20:55	
31	07:30 17:26	06:50 18:05	07:35 (TRQ03) 07:01	06:12 20:12	05:41 20:43	05:40 20:55	
Potential sun hours	294	295	369	400	452	457	
Total, worst case		168	309		532		
Sun reduction		0,46	0,46		0,49		
Oper. time red.		0,95	0,95		0,95		
Wind dir. red.		0,52	0,58		0,62		
Total reduction		0,23	0,25		0,29		
Total, real		38	78		154		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

Tarquinia1

Licensed user:

**MONTANA SPA**  
 VIA ANGELO CARLO FUMAGALLI 6  
 IT-20143 MILANO  
 0254118173  
 Andrea / fronteddu@montanambiente.com  
 Calculated:  
 06/08/2022 14:40/3.5.584

**SHADOW - Calendar**

Calculation: Shadow\_real Shadow receptor: DQ - 220  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40   20:55	06:05   20:35	06:38   19:50	07:16 (TRQ01)   18:57	07:10   17:09	06:46   16:43
2	05:41   20:54	06:07   20:33	06:39   19:48	07:15 (TRQ01)   18:55	07:11   17:07	06:47   16:42
3	05:42   20:54	06:08   20:32	06:40   19:46	07:14 (TRQ01)   18:54	07:12   17:06	06:49   16:42
4	05:42   20:54	06:09   20:31	06:41   19:45	07:14 (TRQ01)   18:52	07:13   17:05	06:50   16:42
5	05:43   20:54	06:10   20:30	06:42   19:43	07:13 (TRQ01)   18:50	07:14   17:04	06:51   16:42
6	05:43   20:54	06:11   20:29	06:43   19:41	07:12 (TRQ01)   18:49	07:15   17:02	06:52   16:42
7	05:44   20:53	06:12   20:27	06:44   19:39	07:12 (TRQ01)   18:47	07:17   17:01	06:54   16:41
8	05:45   20:53	06:13   20:26	06:45   19:38	07:11 (TRQ01)   18:45	07:18   17:00	06:55   16:41
9	05:45   20:53	06:14   20:25	06:46   19:36	07:11 (TRQ01)   18:43	07:19   16:59	06:56   16:41
10	05:46   20:52	06:15   20:23	06:48   19:34	07:11 (TRQ01)   18:42	07:20   16:58	06:57   16:41
11	05:47   20:52	06:16   20:22	06:49   19:32	07:11 (TRQ01)   18:40	07:21   16:57	06:59   16:41
12	05:47   20:51	06:17   20:21	06:50   19:31	07:11 (TRQ01)   18:39	07:22   16:56	07:00   16:42
13	05:48   20:51	06:18   20:19	06:51   19:29	07:12 (TRQ01)   18:37	07:23   16:55	07:01   16:42
14	05:49   20:50	06:19   20:18	06:52   19:27	07:12 (TRQ01)   18:35	07:24   16:54	07:02   16:42
15	05:50   20:49	06:20   20:16	06:53   19:25	07:14 (TRQ01)   18:34	07:26   16:53	07:03   16:42
16	05:51   20:49	06:21   20:15	06:54   19:24	07:15 (TRQ01)   18:32	07:27   16:52	07:05   16:42
17	05:51   20:48	06:22   20:13	06:55   19:22	07:16 (TRQ01)   18:30	07:28   16:51	07:06   16:43
18	05:52   20:47	06:23   20:12	06:56   19:20	07:18 (TRQ01)   18:29	07:29   16:50	07:07   16:43
19	05:53   20:47	06:24   20:10	06:57   19:18	07:21 (TRQ01)   18:27	07:30   16:50	07:08   16:43
20	05:54   20:46	06:25   20:09	06:58   19:17	07:22 (TRQ01)   18:26	07:31   16:49	07:10   16:44
21	05:55   20:45	06:26   20:07	06:59   19:15	07:23 (TRQ01)   18:24	07:33   16:48	07:11   16:44
22	05:56   20:44	06:27   20:06	07:00   19:13	07:24 (TRQ01)   18:23	07:34   16:47	07:12   16:45
23	05:57   20:44	06:29   20:04	07:01   19:11	07:25 (TRQ01)   18:21	07:35   16:46	07:13   16:45
24	05:58   20:43	06:30   20:03	07:02   19:09	07:26 (TRQ01)   18:20	07:36   16:46	07:14   16:46
25	05:59   20:42	06:31   20:01	07:03   19:08	07:27 (TRQ01)   18:19	07:37   16:46	07:16   16:46
26	06:00   20:41	06:32   19:59	07:04   19:06	07:29 (TRQ01)   18:17	07:39   16:45	07:17   16:47
27	06:01   20:40	06:33   19:58	07:06   19:04	07:25 (TRQ01)   18:15	07:40   16:44	07:18   16:47
28	06:01   20:39	06:34   19:56	07:07   19:02	07:23 (TRQ01)   18:14	07:41   16:44	07:19   16:48
29	06:02   20:38	06:35   19:55	07:08   19:01	07:21 (TRQ01)   18:13	07:42   16:44	07:20   16:49
30	06:03   20:37	06:36   19:53	07:09   18:59	07:19 (TRQ01)   18:11	07:43   16:43	07:21   16:50
31	06:04   20:36	06:37   19:51	07:10   18:58	07:18 (TRQ01)   18:10	07:44   16:43	07:22   16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		134	610		277	
Sun reduction		0,70	0,62		0,55	
Oper. time red.		0,95	0,95		0,95	
Wind dir. red.		0,62	0,62		0,52	
Total reduction		0,41	0,37		0,27	
Total, real		55	223		74	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** DR - 221  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June				
1	07:43	07:29	06:51	07:15 (TRQ03)	06:58	07:27 (TRQ01)	06:11	05:40		
	16:52	17:27	18:03	18	07:33 (TRQ03)	19:39	30	07:57 (TRQ01)	20:12	20:43
2	07:43	07:28	06:49	07:16 (TRQ03)	06:57	07:27 (TRQ01)	06:09	05:40		
	16:52	17:28	18:04	16	07:32 (TRQ03)	19:40	28	07:55 (TRQ01)	20:14	20:44
3	07:43	07:26	06:48	07:18 (TRQ03)	06:55	07:28 (TRQ01)	06:08	05:39		
	16:53	17:30	18:05	12	07:30 (TRQ03)	19:41	27	07:55 (TRQ01)	20:15	20:45
4	07:43	07:25	06:46	07:20 (TRQ03)	06:53	07:29 (TRQ01)	06:07	05:39		
	16:54	17:31	18:06	6	07:26 (TRQ03)	19:42	24	07:53 (TRQ01)	20:16	20:46
5	07:43	07:24	06:45	07:30 (TRQ03)	06:51	07:30 (TRQ01)	06:05	05:39		
	16:55	17:32	18:08		19:43	21	07:51 (TRQ01)	20:17	20:46	
6	07:43	07:23	06:43	07:32 (TRQ03)	06:50	07:32 (TRQ01)	06:04	05:38		
	16:56	17:34	18:09		19:44	17	07:49 (TRQ01)	20:18	20:47	
7	07:43	07:22	06:41	07:35 (TRQ03)	06:48	07:35 (TRQ01)	06:03	05:38		
	16:57	17:35	18:10		19:46	10	07:45 (TRQ01)	20:19	20:48	
8	07:43	07:21	06:40	07:38 (TRQ03)	06:46	07:38 (TRQ01)	06:02	05:38		
	16:58	17:36	18:11		19:47		20:20	20:48		
9	07:43	07:20	06:38	07:41 (TRQ03)	06:45	07:41 (TRQ01)	06:00	05:37		
	16:59	17:37	18:12		19:48		20:21	20:49		
10	07:43	07:18	06:36	07:44 (TRQ03)	06:43	07:44 (TRQ01)	05:59	05:37		
	17:00	17:39	18:14		19:49		20:22	20:50		
11	07:42	07:17	06:35	07:47 (TRQ03)	06:41	07:47 (TRQ01)	05:58	05:37		
	17:01	17:40	18:15		19:50		20:23	20:50		
12	07:42	07:16	06:33	07:50 (TRQ03)	06:40	07:50 (TRQ01)	05:57	05:37		
	17:02	17:41	18:16		19:51		20:24	20:51		
13	07:42	07:15	06:31	07:53 (TRQ03)	06:38	07:53 (TRQ01)	05:56	05:37		
	17:03	17:43	18:17		19:52		20:26	20:51		
14	07:41	07:13	06:29	07:56 (TRQ03)	06:36	07:56 (TRQ01)	05:55	05:37		
	17:05	17:44	18:18		19:53		20:27	20:52		
15	07:41	07:12	06:28	07:59 (TRQ03)	06:35	07:59 (TRQ01)	05:54	05:37		
	17:06	17:45	18:19		19:55		20:28	20:52		
16	07:41	07:10	06:26	08:02 (TRQ03)	06:33	08:02 (TRQ01)	05:53	05:37		
	17:07	17:46	18:21		19:56		20:29	20:52		
17	07:40	07:09	06:24	08:05 (TRQ03)	06:32	08:05 (TRQ01)	05:52	05:37		
	17:08	17:48	18:22		19:57		20:30	20:53		
18	07:40	07:08	06:23	08:08 (TRQ03)	06:30	08:08 (TRQ01)	05:51	05:37		
	17:09	17:49	18:23	5	06:48 (TRQ01)	19:58	20:31	20:53		
19	07:39	07:06	06:21	08:11 (TRQ03)	06:28	08:11 (TRQ01)	05:50	05:37		
	17:10	17:50	18:24	14	06:54 (TRQ01)	19:59	20:32	20:54		
20	07:38	07:05	06:19	08:14 (TRQ03)	06:27	08:14 (TRQ01)	05:49	05:37		
	17:12	17:52	18:25	17	06:55 (TRQ01)	20:00	20:33	20:54		
21	07:38	07:03	06:17	08:17 (TRQ03)	06:25	08:17 (TRQ01)	05:48	05:37		
	17:13	17:53	18:26	21	06:57 (TRQ01)	20:01	20:34	20:54		
22	07:37	07:02	06:16	08:20 (TRQ03)	06:24	08:20 (TRQ01)	05:47	05:37		
	17:14	17:54	18:27	23	06:58 (TRQ01)	20:02	20:35	20:54		
23	07:36	07:00	06:14	08:23 (TRQ03)	06:22	08:23 (TRQ01)	05:46	05:37		
	17:15	17:55	18:29	26	06:59 (TRQ01)	20:03	20:36	20:54		
24	07:36	06:59	06:12	08:26 (TRQ03)	06:21	08:26 (TRQ01)	05:45	05:38		
	17:17	17:57	18:30	28	06:59 (TRQ01)	20:05	20:37	20:55		
25	07:35	06:57	06:10	08:29 (TRQ03)	06:19	08:29 (TRQ01)	05:45	05:38		
	17:18	17:58	18:31	30	06:59 (TRQ01)	20:06	20:37	20:55		
26	07:34	06:56	06:09	08:32 (TRQ03)	06:18	08:32 (TRQ01)	05:44	05:38		
	17:19	17:59	18:32	31	07:00 (TRQ01)	20:07	20:38	20:55		
27	07:33	06:54	06:07	08:35 (TRQ03)	06:16	08:35 (TRQ01)	05:43	05:39		
	17:21	18:00	18:33	32	07:00 (TRQ01)	20:08	20:39	20:55		
28	07:32	06:53	06:05	08:38 (TRQ03)	06:15	08:38 (TRQ01)	05:43	05:39		
	17:22	18:02	18:34	32	06:59 (TRQ01)	20:09	20:40	20:55		
29	07:31		07:03	08:41 (TRQ03)	06:13	08:41 (TRQ01)	05:42	05:40		
	17:23		19:35	33	07:59 (TRQ01)	20:10	20:41	20:55		
30	07:31		07:02	08:44 (TRQ03)	06:12	08:44 (TRQ01)	05:41	05:40		
	17:24		19:37	32	07:59 (TRQ01)	20:11	20:42	20:55		
31	07:30		07:00	08:47 (TRQ03)	06:11	08:47 (TRQ01)	05:41			
	17:26		19:38	31	07:58 (TRQ01)		20:43			
Potential sun hours	294	295	369		400		452	457		
Total, worst case			159		407		157			
Sun reduction			0,46		0,46		0,49			
Oper. time red.			0,95		0,95		0,95			
Wind dir. red.			0,51		0,59		0,60			
Total reduction			0,22		0,26		0,28			
Total, real			36		105		44			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** DR - 221  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December		
1	05:40	06:05	06:38	07:10	06:46	07:22		
	20:55	20:35	19:50	18:57	17:09	16:43		
2	05:41	06:07	06:39	07:11	06:47	07:23		
	20:54	20:33	19:48	18:55	17:07	16:42		
3	05:42	06:08	06:40	07:12	06:49	07:25		
	20:54	20:32	19:46	18:54	17:06	16:42		
4	05:42	06:09	06:41	07:13	06:50	07:26		
	20:54	20:31	19:45	18:52	17:05	16:42		
5	05:43	06:10	06:42	07:31 (TRQ01)	07:14	06:51	07:27	
	20:54	20:30	19:43	10 07:41 (TRQ01)	18:50	17:04	16:42	
6	05:43	06:11	06:43	07:27 (TRQ01)	07:15	06:52	07:28	
	20:54	20:29	19:41	17 07:44 (TRQ01)	18:49	17:02	16:42	
7	05:44	06:12	06:44	07:25 (TRQ01)	07:17	06:54	07:29	
	20:53	20:27	19:39	21 07:46 (TRQ01)	18:47	17:01	16:41	
8	05:45	06:13	06:45	07:23 (TRQ01)	07:18	06:55	07:29	
	20:53	20:26	19:38	24 07:47 (TRQ01)	18:45	17:00	16:41	
9	05:45	06:14	06:46	07:22 (TRQ01)	07:19	06:56	07:30	
	20:53	20:25	19:36	26 07:48 (TRQ01)	18:44	16:59	16:41	
10	05:46	06:15	06:48	07:20 (TRQ01)	07:20	9 07:54 (TRQ03)	06:57	07:31
	20:52	20:23	19:34	28 07:48 (TRQ01)	18:42	08:03 (TRQ03)	16:58	16:41
11	05:47	06:16	06:49	07:19 (TRQ01)	07:21	07:51 (TRQ03)	06:59	07:32
	20:52	20:22	19:32	30 07:49 (TRQ01)	18:40	14 08:05 (TRQ03)	16:57	16:41
12	05:47	06:17	06:50	07:18 (TRQ01)	07:22	07:49 (TRQ03)	07:00	07:33
	20:51	20:21	19:31	31 07:49 (TRQ01)	18:39	17 08:06 (TRQ03)	16:56	16:42
13	05:48	06:18	06:51	07:17 (TRQ01)	07:23	07:48 (TRQ03)	07:01	07:34
	20:51	20:19	19:29	32 07:49 (TRQ01)	18:37	19 08:07 (TRQ03)	16:55	16:42
14	05:49	06:19	06:52	07:17 (TRQ01)	07:24	07:47 (TRQ03)	07:02	07:35
	20:50	20:18	19:27	32 07:49 (TRQ01)	18:35	20 08:07 (TRQ03)	16:54	16:42
15	05:50	06:20	06:53	07:17 (TRQ01)	07:26	07:47 (TRQ03)	07:04	07:35
	20:49	20:16	19:25	32 07:49 (TRQ01)	18:34	21 08:08 (TRQ03)	16:53	16:42
16	05:51	06:21	06:54	07:17 (TRQ01)	07:27	07:48 (TRQ03)	07:05	07:36
	20:49	20:15	19:24	32 07:49 (TRQ01)	18:32	20 08:08 (TRQ03)	16:52	16:42
17	05:51	06:22	06:55	07:17 (TRQ01)	07:28	07:49 (TRQ03)	07:06	07:37
	20:48	20:13	19:22	31 07:48 (TRQ01)	18:30	19 08:08 (TRQ03)	16:51	16:43
18	05:52	06:23	06:56	07:17 (TRQ01)	07:29	07:50 (TRQ03)	07:07	07:37
	20:47	20:12	19:20	31 07:48 (TRQ01)	18:29	17 08:07 (TRQ03)	16:50	16:43
19	05:53	06:24	06:57	07:18 (TRQ01)	07:30	07:51 (TRQ03)	07:08	07:38
	20:47	20:10	19:18	29 07:47 (TRQ01)	18:27	15 08:06 (TRQ03)	16:50	16:43
20	05:54	06:25	06:58	07:19 (TRQ01)	07:31	07:53 (TRQ03)	07:10	07:39
	20:46	20:09	19:17	27 07:46 (TRQ01)	18:26	13 08:06 (TRQ03)	16:49	16:44
21	05:55	06:26	06:59	07:20 (TRQ01)	07:33	07:54 (TRQ03)	07:11	07:39
	20:45	20:07	19:15	24 07:44 (TRQ01)	18:24	11 08:05 (TRQ03)	16:48	16:44
22	05:56	06:27	07:00	07:21 (TRQ01)	07:34	07:55 (TRQ03)	07:12	07:40
	20:44	20:06	19:13	22 07:43 (TRQ01)	18:23	8 08:03 (TRQ03)	16:47	16:45
23	05:57	06:29	07:01	07:22 (TRQ01)	07:35	07:56 (TRQ03)	07:13	07:40
	20:44	20:04	19:11	18 07:40 (TRQ01)	18:21	5 08:01 (TRQ03)	16:47	16:45
24	05:58	06:30	07:02	07:23 (TRQ01)	07:36		07:14	07:41
	20:43	20:03	19:09	15 07:38 (TRQ01)	18:20		16:46	16:46
25	05:59	06:31	07:03	07:25 (TRQ01)	06:37		07:16	07:41
	20:42	20:01	19:08	9 07:34 (TRQ01)	17:18		16:46	16:46
26	06:00	06:32	07:04		06:39		07:17	07:42
	20:41	20:00	19:06		17:17		16:45	16:47
27	06:01	06:33	07:06		06:40		07:18	07:42
	20:40	19:58	19:04		17:15		16:44	16:47
28	06:02	06:34	07:07		06:41		07:19	07:42
	20:39	19:56	19:02		17:14		16:44	16:48
29	06:02	06:35	07:08		06:42		07:20	07:43
	20:38	19:55	19:01		17:13		16:44	16:49
30	06:03	06:36	07:09		06:44		07:21	07:43
	20:37	19:53	18:59		17:11		16:43	16:50
31	06:04	06:37			06:45			07:43
	20:36	19:51			17:10			16:50
Potential sun hours	463	430	376	344	295	284		
Total, worst case			521		208			
Sun reduction			0,62		0,55			
Oper. time red.			0,95		0,95			
Wind dir. red.			0,60		0,51			
Total reduction			0,36		0,27			
Total, real			186		55			

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DS - 222  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:52	07:29 17:27	06:51 18:03	07:19 (TRQ03) 18:03	06:58 19:39	07:27 (TRQ01) 20:12
2	07:43 16:52	07:28 17:28	06:49 18:04	07:21 (TRQ03) 19:40	06:57 19:40	07:27 (TRQ01) 20:14
3	07:43 16:53	07:26 17:30	06:48 18:05	07:24 (TRQ03) 19:41	06:55 19:41	07:29 (TRQ01) 20:15
4	07:43 16:54	07:25 17:31	06:46 18:06	07:30 (TRQ03) 19:41	06:53 19:42	07:29 (TRQ01) 20:16
5	07:43 16:55	07:24 17:32	06:45 18:08		06:51 19:43	07:29 (TRQ01) 20:17
6	07:43 16:56	07:23 17:34	06:43 18:09		06:50 19:44	07:31 (TRQ01) 20:18
7	07:43 16:57	07:22 17:35	06:41 18:10		06:48 19:46	07:33 (TRQ01) 20:19
8	07:43 16:58	07:21 17:36	06:40 18:11		06:46 19:47	07:35 (TRQ01) 20:20
9	07:43 16:59	07:20 17:37	06:38 18:12		06:45 19:48	07:48 (TRQ01) 20:21
10	07:43 17:00	07:18 17:39	06:36 18:14		06:43 19:49	06:00 20:22
11	07:42 17:01	07:17 17:40	06:35 18:15		06:41 19:50	05:58 20:23
12	07:42 17:02	07:16 17:41	06:33 18:16		06:40 19:51	05:57 20:24
13	07:42 17:03	07:15 17:43	06:31 18:17		06:38 19:52	05:56 20:26
14	07:41 17:05	07:13 17:44	06:29 18:18		06:36 19:53	05:55 20:27
15	07:41 17:06	07:12 17:45	06:28 18:19		06:35 19:55	05:54 20:28
16	07:41 17:07	07:10 17:46	07:30 (TRQ03) 07:31 (TRQ03)	06:26 18:21	06:33 19:56	05:53 20:29
17	07:40 17:08	07:09 17:48	07:29 (TRQ03) 07:35 (TRQ03)	06:24 18:22	06:32 19:57	05:52 20:30
18	07:40 17:09	07:08 17:49	07:27 (TRQ03) 07:36 (TRQ03)	06:23 18:23	06:43 (TRQ01) 19:58	05:51 20:31
19	07:39 17:10	07:06 17:50	07:26 (TRQ03) 07:38 (TRQ03)	06:21 18:24	06:40 (TRQ01) 19:59	05:50 20:32
20	07:38 17:12	07:05 17:52	07:24 (TRQ03) 07:38 (TRQ03)	06:19 18:25	06:38 (TRQ01) 20:00	05:49 20:33
21	07:38 17:13	07:03 17:53	07:23 (TRQ03) 07:40 (TRQ03)	06:17 18:26	06:36 (TRQ01) 20:01	05:48 20:34
22	07:37 17:14	07:02 17:54	07:21 (TRQ03) 07:39 (TRQ03)	06:16 18:27	06:35 (TRQ01) 20:02	05:47 20:35
23	07:36 17:15	07:00 17:55	07:20 (TRQ03) 07:40 (TRQ03)	06:14 18:29	06:33 (TRQ01) 20:03	05:46 20:36
24	07:36 17:17	06:59 17:57	07:18 (TRQ03) 07:40 (TRQ03)	06:12 18:30	06:31 (TRQ01) 20:05	05:45 20:37
25	07:35 17:18	06:57 17:58	07:17 (TRQ03) 07:40 (TRQ03)	06:10 18:31	06:30 (TRQ01) 20:06	05:45 20:37
26	07:34 17:19	06:56 17:59	07:17 (TRQ03) 07:39 (TRQ03)	06:09 18:32	06:30 (TRQ01) 20:07	05:44 20:38
27	07:33 17:20	06:54 18:00	07:18 (TRQ03) 07:39 (TRQ03)	06:07 18:33	06:29 (TRQ01) 20:08	05:43 20:39
28	07:32 17:22	06:53 18:02	07:18 (TRQ03) 07:37 (TRQ03)	06:05 18:34	06:28 (TRQ01) 20:09	05:43 20:40
29	07:31 17:23		07:03 19:35	07:03 19:35	06:13 20:10	05:42 20:41
30	07:31 17:24		07:02 19:36	07:28 (TRQ01) 19:36	06:12 20:11	05:41 20:42
31	07:30 17:26		07:00 19:38	07:28 (TRQ01) 08:01 (TRQ01)	06:11 20:11	05:41 20:43
Potential sun hours	294	295	369		400	452
Total, worst case		204	431			204
Sun reduction		0,46	0,46			0,49
Oper. time red.		0,95	0,95			0,95
Wind dir. red.		0,51	0,60			0,60
Total reduction		0,22	0,26			0,28
Total, real		46	111			58

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DS - 222  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:55	06:05 20:35	06:38 19:50	07:10 18:57	06:46 17:09	07:22 16:43
2	05:41 20:54	06:07 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	05:42 20:54	06:08 20:32	06:40 19:46	07:12 18:54	06:49 17:06	07:25 16:42
4	05:42 20:54	06:09 20:31	06:41 19:45	07:13 18:52	06:50 17:05	07:26 16:42
5	05:43 20:54	06:10 20:30	06:42 19:43	13 07:45 (TRQ01) 19 07:48 (TRQ01)	07:14 18:50	06:51 17:04
6	05:43 20:54	06:11 20:29	06:43 19:41	23 07:26 (TRQ01) 23 07:49 (TRQ01)	07:15 18:49	06:52 17:02
7	05:44 20:53	06:12 20:27	06:44 19:39	25 07:25 (TRQ01) 25 07:50 (TRQ01)	07:17 18:47	06:54 17:01
8	05:45 20:53	06:13 20:26	06:45 19:38	28 07:23 (TRQ01) 28 07:51 (TRQ01)	07:18 18:45	06:55 17:00
9	05:45 20:53	06:14 20:25	06:46 19:36	30 07:22 (TRQ01) 30 07:52 (TRQ01)	07:19 18:44	06:56 16:59
10	05:46 20:52	06:15 20:23	06:48 19:34	31 07:21 (TRQ01) 31 07:52 (TRQ01)	07:20 18:42	06:57 16:58
11	05:47 20:52	06:16 20:22	06:49 19:32	32 07:20 (TRQ01) 32 07:52 (TRQ01)	07:21 18:40	06:59 16:57
12	05:47 20:51	06:17 20:21	06:50 19:31	34 07:19 (TRQ01) 34 07:53 (TRQ01)	07:22 18:39	07:00 16:56
13	05:48 20:51	06:18 20:19	06:51 19:29	35 07:18 (TRQ01) 35 07:53 (TRQ01)	07:23 18:37	07:01 16:55
14	05:49 20:50	06:19 20:18	06:52 19:27	34 07:18 (TRQ01) 34 07:52 (TRQ01)	07:24 18:35	07:02 16:54
15	05:50 20:49	06:20 20:16	06:53 19:25	35 07:18 (TRQ01) 35 07:53 (TRQ01)	07:26 18:34	07:04 16:53
16	05:51 20:49	06:21 20:15	06:54 19:24	34 07:18 (TRQ01) 34 07:52 (TRQ01)	07:27 18:32	07:05 16:52
17	05:51 20:48	06:22 20:13	06:55 19:22	34 07:18 (TRQ01) 34 07:52 (TRQ01)	07:28 18:30	07:06 16:51
18	05:52 20:47	06:23 20:12	06:56 19:20	33 07:18 (TRQ01) 33 07:51 (TRQ01)	07:29 18:29	07:07 16:50
19	05:53 20:47	06:24 20:10	06:57 19:18	32 07:18 (TRQ01) 32 07:50 (TRQ01)	07:30 18:27	07:08 16:50
20	05:54 20:46	06:25 20:09	06:58 19:17	30 07:19 (TRQ01) 30 07:49 (TRQ01)	07:31 18:26	07:10 16:49
21	05:55 20:45	06:26 20:07	06:59 19:15	27 07:20 (TRQ01) 27 07:47 (TRQ01)	07:33 18:24	07:11 16:48
22	05:56 20:44	06:27 20:06	07:00 19:13	25 07:21 (TRQ01) 25 07:46 (TRQ01)	07:34 18:23	07:12 16:47
23	05:57 20:44	06:29 20:04	07:01 19:11	22 07:22 (TRQ01) 22 07:44 (TRQ01)	07:35 18:21	07:13 16:47
24	05:58 20:43	06:30 20:03	07:02 19:09	18 07:23 (TRQ01) 18 07:41 (TRQ01)	07:36 18:20	07:14 16:46
25	05:59 20:42	06:31 20:01	07:03 19:08	13 07:25 (TRQ01) 13 07:38 (TRQ01)	06:37 17:18	07:16 16:46
26	06:00 20:41	06:32 20:00	07:04 19:06	06:39 17:17	07:17 16:45	07:42 16:47
27	06:01 20:40	06:33 19:58	07:06 19:04	06:40 17:15	07:18 16:44	07:42 16:47
28	06:01 20:39	06:34 19:56	07:07 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	06:02 20:38	06:35 19:55	07:08 19:01	06:42 17:13	07:20 16:44	07:42 16:49
30	06:03 20:37	06:36 19:53	07:09 18:59	06:44 17:11	07:21 16:43	07:43 16:50
31	06:04 20:36	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case			607		240	
Sun reduction			0,62		0,55	
Oper. time red.			0,95		0,95	
Wind dir. red.			0,60		0,51	
Total reduction			0,36		0,27	
Total, real			217		64	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_realShadow receptor: DT - 223  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June					
1	07:43 16:52	07:29 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43					
2	07:43 16:52	07:28 17:28	06:49 18:04	06:57 19:40	06:09 20:14	05:40 20:44					
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:15	05:39 20:45					
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:46					
5	07:43 16:55	07:24 17:32	06:45 18:08	06:51 19:43	06:05 20:17	05:39 20:46					
6	07:43 16:56	07:23 17:34	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47					
7	07:43 16:57	07:22 17:35	06:41 18:10	07:00 (TRQ01) 07:11 (TRQ01)	06:48 19:46	06:03 20:19	05:38 20:48				
8	07:43 16:58	07:21 17:36	06:40 18:11	06:59 (TRQ01) 07:14 (TRQ01)	06:46 19:47	06:02 20:20	05:38 20:48				
9	07:43 16:59	07:20 17:37	06:38 18:12	06:57 (TRQ01) 07:16 (TRQ01)	06:45 19:48	06:00 20:21	05:37 20:49				
10	07:43 17:00	07:18 17:39	07:38 (TRQ03) 07:39 (TRQ03)	06:36 18:14	06:55 (TRQ01) 07:17 (TRQ01)	06:43 19:49	05:59 20:22	05:37 20:50			
11	07:42 17:01	07:17 17:40	07:37 (TRQ03) 07:42 (TRQ03)	06:35 18:15	06:54 (TRQ01) 07:18 (TRQ01)	06:41 19:50	05:58 20:23	05:37 20:50			
12	07:42 17:02	07:16 17:41	07:36 (TRQ03) 07:44 (TRQ03)	06:33 18:16	06:52 (TRQ01) 07:18 (TRQ01)	06:40 19:51	05:57 20:24	05:37 20:51			
13	07:42 17:03	07:15 17:43	07:34 (TRQ03) 07:44 (TRQ03)	06:31 18:17	06:50 (TRQ01) 07:19 (TRQ01)	06:38 19:52	05:56 20:26	05:37 20:51			
14	07:41 17:05	07:13 17:44	07:33 (TRQ03) 07:45 (TRQ03)	06:29 18:18	06:48 (TRQ01) 07:18 (TRQ01)	06:36 19:53	05:55 20:27	05:37 20:52			
15	07:41 17:06	07:12 17:45	07:32 (TRQ03) 07:46 (TRQ03)	06:28 18:19	06:48 (TRQ01) 07:19 (TRQ01)	06:35 19:55	05:54 20:28	05:37 20:52			
16	07:41 17:07	07:10 17:46	07:30 (TRQ03) 07:46 (TRQ03)	06:26 18:21	06:48 (TRQ01) 07:19 (TRQ01)	06:33 19:56	05:53 20:29	05:37 20:52			
17	07:40 17:08	07:09 17:48	07:29 (TRQ03) 07:47 (TRQ03)	06:24 18:22	06:47 (TRQ01) 07:18 (TRQ01)	06:32 19:57	05:52 20:30	05:37 20:53			
18	07:40 17:09	07:08 17:49	07:27 (TRQ03) 07:46 (TRQ03)	06:23 18:23	06:47 (TRQ01) 07:17 (TRQ01)	06:30 19:58	05:51 20:31	05:37 20:53			
19	07:39 17:10	07:06 17:50	07:26 (TRQ03) 07:46 (TRQ03)	06:21 18:24	06:48 (TRQ01) 07:17 (TRQ01)	06:28 19:59	05:50 20:32	05:37 20:54			
20	07:38 17:12	07:05 17:52	07:25 (TRQ03) 07:45 (TRQ03)	06:19 18:25	06:48 (TRQ01) 07:16 (TRQ01)	06:27 20:00	05:49 20:33	05:37 20:54			
21	07:38 17:13	07:03 17:53	07:26 (TRQ03) 07:45 (TRQ03)	06:17 18:26	06:48 (TRQ01) 07:15 (TRQ01)	06:25 20:01	05:48 20:34	05:37 20:54			
22	07:37 17:14	07:02 17:54	07:27 (TRQ03) 07:43 (TRQ03)	06:16 18:27	06:49 (TRQ01) 07:14 (TRQ01)	06:24 20:02	05:47 20:35	05:37 20:54			
23	07:36 17:15	07:00 17:55	07:29 (TRQ03) 07:42 (TRQ03)	06:14 18:29	06:50 (TRQ01) 07:12 (TRQ01)	06:22 20:03	05:46 20:36	05:37 20:54			
24	07:36 17:17	06:59 17:57	07:31 (TRQ03) 07:39 (TRQ03)	06:12 18:30	06:51 (TRQ01) 07:10 (TRQ01)	06:21 20:05	05:45 20:37	05:38 20:55			
25	07:35 17:18	06:57 17:58	06:10 18:31	06:10 18:31	06:53 (TRQ01) 07:06 (TRQ01)	06:19 20:06	05:45 20:37	05:38 20:55			
26	07:34 17:19	06:56 17:59	06:09 18:32	06:09 18:32	06:18 20:07	06:18 20:38	05:44 20:38	05:38 20:55			
27	07:33 17:21	06:54 18:00	06:07 18:33	06:07 18:33	06:16 20:08	06:16 20:39	05:43 20:39	05:39 20:55			
28	07:32 17:22	06:53 18:02	06:05 18:34	06:05 18:34	06:15 20:09	06:15 20:40	05:43 20:40	05:39 20:55			
29	07:31 17:23		07:03 19:35	07:03 19:35	06:13 20:10	06:13 20:41	05:42 20:41	05:40 20:55			
30	07:31 17:24		07:02 19:37	07:02 19:37	06:12 20:11	06:12 20:42	05:41 20:42	05:40 20:55			
31	07:30 17:26		07:00 19:38	07:00 19:38		05:41 20:43					
Potential sun hours	294	295	369	400	452	457					
Total, worst case		199	462								
Sun reduction		0,46	0,46								
Oper. time red.		0,95	0,95								
Wind dir. red.		0,51	0,57								
Total reduction		0,22	0,25								
Total, real		45	114								

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** DT - 223  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40	06:05	06:38	07:10	07:30 (TRQ01)	06:46
	20:55	20:35	19:50	18:57	27 07:57 (TRQ01)	17:09
2	05:41	06:07	06:39	07:11	07:32 (TRQ01)	06:47
	20:54	20:33	19:48	18:55	25 07:57 (TRQ01)	17:07
3	05:42	06:08	06:40	07:12	07:33 (TRQ01)	06:49
	20:54	20:32	19:46	18:54	23 07:56 (TRQ01)	17:06
4	05:42	06:09	06:41	07:13	07:34 (TRQ01)	06:50
	20:54	20:31	19:45	18:52	20 07:54 (TRQ01)	17:05
5	05:43	06:10	06:42	07:14	07:35 (TRQ01)	06:51
	20:54	20:30	19:43	18:50	17 07:52 (TRQ01)	17:04
6	05:43	06:11	06:43	07:15	07:36 (TRQ01)	06:52
	20:54	20:29	19:41	18:49	13 07:49 (TRQ01)	17:02
7	05:44	06:12	06:44	07:17	07:37 (TRQ01)	06:54
	20:53	20:27	19:39	18:47	8 07:45 (TRQ01)	17:01
8	05:45	06:13	06:45	07:18		06:55
	20:53	20:26	19:38	18:45		17:00
9	05:45	06:14	06:46	07:19		06:56
	20:53	20:25	19:36	18:44		16:59
10	05:46	06:15	06:48	07:20		06:57
	20:52	20:23	19:34	18:42		16:58
11	05:47	06:16	06:49	07:21		06:59
	20:52	20:22	19:32	18:40		16:57
12	05:47	06:17	06:50	07:22		07:00
	20:51	20:21	19:31	18:39		16:56
13	05:48	06:18	06:51	07:23		07:01
	20:51	20:19	19:29	18:37		16:55
14	05:49	06:19	06:52	07:24		07:02
	20:50	20:18	19:27	18:35		16:54
15	05:50	06:20	06:53	07:26		07:04
	20:49	20:16	19:25	18:34		16:53
16	05:51	06:21	06:54	07:27		07:05
	20:49	20:15	19:24	18:32		16:52
17	05:51	06:22	06:55	07:28		07:06
	20:48	20:13	19:22	18:30		16:51
18	05:52	06:23	06:56	07:29	08:01 (TRQ03)	07:07
	20:48	20:12	19:20	18:29	11 08:12 (TRQ03)	16:50
19	05:53	06:24	06:57	07:30	07:59 (TRQ03)	07:08
	20:47	20:10	19:18	18:27	14 08:13 (TRQ03)	16:50
20	05:54	06:25	06:58	07:31	07:58 (TRQ03)	07:10
	20:46	20:09	19:17	18:26	17 08:15 (TRQ03)	16:49
21	05:55	06:26	06:59	07:33	07:57 (TRQ03)	07:11
	20:45	20:07	19:15	18:24	19 08:16 (TRQ03)	16:48
22	05:56	06:27	07:00	07:34	07:56 (TRQ03)	07:12
	20:44	20:06	19:13	18:23	20 08:16 (TRQ03)	16:47
23	05:57	06:29	07:01	07:35	07:56 (TRQ03)	07:13
	20:44	20:04	19:11	18:21	20 08:16 (TRQ03)	16:47
24	05:58	06:30	07:02	07:36	07:58 (TRQ03)	07:14
	20:43	20:03	19:09	18:20	19 08:17 (TRQ03)	16:46
25	05:59	06:31	07:03	06:37	06:59 (TRQ03)	07:16
	20:42	20:01	19:08	17:18	17 07:16 (TRQ03)	16:46
26	06:00	06:32	07:04	06:39	07:00 (TRQ03)	07:17
	20:41	20:00	19:06	17:17	16 07:16 (TRQ03)	16:45
27	06:01	06:33	07:06	06:40	07:02 (TRQ03)	07:18
	20:40	19:58	19:04	17:15	14 07:16 (TRQ03)	16:44
28	06:01	06:34	07:07	06:41	07:03 (TRQ03)	07:19
	20:39	19:56	19:02	17:14	12 07:15 (TRQ03)	16:44
29	06:02	06:35	07:08	06:42	07:04 (TRQ03)	07:20
	20:38	19:55	19:01	17:13	10 07:14 (TRQ03)	16:44
30	06:03	06:36	07:09	06:44	07:05 (TRQ03)	07:21
	20:37	19:53	18:59	17:11	7 07:12 (TRQ03)	16:43
31	06:04	06:37		06:45	07:07 (TRQ03)	07:43
	20:36	19:51		17:10	4 07:11 (TRQ03)	16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case			341		333	
Sun reduction			0,62		0,55	
Oper. time red.			0,95		0,95	
Wind dir. red.			0,57		0,54	
Total reduction			0,34		0,28	
Total, real			115		93	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** DU - 225  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:29	06:51	06:58	06:11	05:40
	16:52	17:27	18:03	19:39	20:12	20:43
2	07:43	07:28	06:49	06:57	06:09	05:40
	16:52	17:28	18:04	19:40	20:14	20:44
3	07:43	07:26	06:48	07:11 (TRQ01)	06:55	06:08
	16:53	17:30	18:05	07:17 (TRQ01)	19:41	20:15
4	07:43	07:25	06:46	07:05 (TRQ01)	06:53	06:07
	16:54	17:31	18:06	07:21 (TRQ01)	19:42	20:16
5	07:43	07:24	07:45 (TRQ03)	07:04 (TRQ01)	06:51	06:05
	16:55	17:32	1 07:46 (TRQ03)	07:24 (TRQ01)	19:43	20:17
6	07:43	07:23	07:43 (TRQ03)	07:02 (TRQ01)	06:50	06:04
	16:56	17:34	5 07:48 (TRQ03)	07:25 (TRQ01)	19:44	20:18
7	07:43	07:22	07:42 (TRQ03)	07:00 (TRQ01)	06:48	06:03
	16:57	17:35	8 07:50 (TRQ03)	07:26 (TRQ01)	19:46	20:19
8	07:43	07:21	07:41 (TRQ03)	06:40	06:59 (TRQ01)	06:46
	16:58	17:36	11 07:52 (TRQ03)	18:11	29 07:28 (TRQ01)	19:47
9	07:43	07:20	07:40 (TRQ03)	06:38	06:57 (TRQ01)	06:45
	16:59	17:37	13 07:53 (TRQ03)	18:12	31 07:28 (TRQ01)	19:48
10	07:43	07:18	07:38 (TRQ03)	06:36	06:56 (TRQ01)	06:43
	17:00	17:39	15 07:53 (TRQ03)	18:14	32 07:28 (TRQ01)	19:49
11	07:42	07:17	07:37 (TRQ03)	06:35	06:55 (TRQ01)	06:41
	17:01	17:40	17 07:54 (TRQ03)	18:15	34 07:29 (TRQ01)	19:50
12	07:42	07:16	07:36 (TRQ03)	06:33	06:55 (TRQ01)	06:40
	17:02	17:41	19 07:55 (TRQ03)	18:16	34 07:29 (TRQ01)	19:51
13	07:42	07:15	07:34 (TRQ03)	06:31	06:54 (TRQ01)	06:38
	17:03	17:43	20 07:54 (TRQ03)	18:17	35 07:29 (TRQ01)	19:52
14	07:41	07:13	07:33 (TRQ03)	06:29	06:53 (TRQ01)	06:36
	17:05	17:44	22 07:55 (TRQ03)	18:18	35 07:28 (TRQ01)	19:53
15	07:41	07:12	07:32 (TRQ03)	06:28	06:54 (TRQ01)	06:35
	17:06	17:45	23 07:55 (TRQ03)	18:19	35 07:29 (TRQ01)	19:55
16	07:41	07:10	07:32 (TRQ03)	06:26	06:53 (TRQ01)	06:33
	17:07	17:46	22 07:54 (TRQ03)	18:21	35 07:28 (TRQ01)	19:56
17	07:40	07:09	07:33 (TRQ03)	06:24	06:53 (TRQ01)	06:32
	17:08	17:48	21 07:54 (TRQ03)	18:22	34 07:27 (TRQ01)	19:57
18	07:40	07:08	07:33 (TRQ03)	06:23	06:53 (TRQ01)	06:30
	17:09	17:49	19 07:52 (TRQ03)	18:23	33 07:26 (TRQ01)	19:58
19	07:39	07:06	07:35 (TRQ03)	06:21	06:54 (TRQ01)	06:28
	17:10	17:50	17 07:52 (TRQ03)	18:24	32 07:26 (TRQ01)	19:59
20	07:38	07:05	07:36 (TRQ03)	06:19	06:54 (TRQ01)	06:27
	17:12	17:52	13 07:49 (TRQ03)	18:25	30 07:24 (TRQ01)	20:00
21	07:38	07:03	07:39 (TRQ03)	06:17	06:55 (TRQ01)	06:25
	17:13	17:53	8 07:47 (TRQ03)	18:26	27 07:22 (TRQ01)	20:01
22	07:37	07:02	06:16	06:56 (TRQ01)	06:24	05:47
	17:14	17:54	18:27	24 07:20 (TRQ01)	20:02	20:35
23	07:36	07:00	06:14	06:58 (TRQ01)	06:22	05:46
	17:15	17:55	18:29	21 07:19 (TRQ01)	20:03	20:36
24	07:36	06:59	06:12	07:00 (TRQ01)	06:21	05:45
	17:17	17:57	18:30	16 07:16 (TRQ01)	20:05	20:37
25	07:35	06:57	06:10	07:03 (TRQ01)	06:19	05:45
	17:18	17:58	18:31	8 07:11 (TRQ01)	20:06	20:37
26	07:34	06:56	06:09	06:18	05:44	05:38
	17:19	17:59	18:32	20:07	20:38	20:55
27	07:33	06:54	06:07	06:16	05:43	05:39
	17:20	18:00	18:33	20:08	20:39	20:55
28	07:32	06:53	06:05	06:15	05:43	05:39
	17:22	18:02	18:34	20:09	20:40	20:55
29	07:31		07:03	06:13	05:42	05:40
	17:23		19:35	20:10	20:41	20:55
30	07:31		07:02	06:12	05:41	05:40
	17:24		19:36	20:11	20:42	20:55
31	07:30		07:00		05:41	
	17:26		19:38		20:43	
Potential sun hours	294	295	369	400	452	457
Total, worst case		254		616		
Sun reduction		0,46		0,46		
Oper. time red.		0,95		0,95		
Wind dir. red.		0,51		0,56		
Total reduction		0,22		0,24		
Total, real		57		150		

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DU - 225  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:55	06:05 20:35	06:38 19:50	07:10 18:57	07:33 (TRQ01) 08:08 (TRQ01)	06:46 17:09
2	05:41 20:54	06:07 20:33	06:39 19:48	07:11 18:55	07:34 (TRQ01) 08:08 (TRQ01)	15 17:07
3	05:41 20:54	06:08 20:32	06:40 19:46	07:12 18:54	07:34 (TRQ01) 08:07 (TRQ01)	11 17:06
4	05:42 20:54	06:09 20:31	06:41 19:45	07:13 18:52	07:34 (TRQ01) 08:06 (TRQ01)	8 17:05
5	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	07:35 (TRQ01) 08:05 (TRQ01)	5 17:04
6	05:43 20:54	06:11 20:29	06:43 19:41	07:15 18:49	07:36 (TRQ01) 08:04 (TRQ01)	07:28 17:02
7	05:44 20:53	06:12 20:27	06:44 19:39	07:17 18:47	07:37 (TRQ01) 08:02 (TRQ01)	07:29 17:01
8	05:45 20:53	06:13 20:26	06:45 19:38	07:18 18:45	07:38 (TRQ01) 08:00 (TRQ01)	07:29 17:00
9	05:45 20:53	06:14 20:25	06:46 19:36	07:19 18:43	07:39 (TRQ01) 07:57 (TRQ01)	07:30 16:59
10	05:46 20:52	06:15 20:23	06:48 19:34	07:20 18:42	07:42 (TRQ01) 07:55 (TRQ01)	07:31 16:58
11	05:47 20:52	06:16 20:22	06:49 19:32	07:21 18:40	07:59 16:57	07:32 16:41
12	05:47 20:51	06:17 20:21	06:50 19:31	07:22 18:39	07:00 16:56	07:33 16:42
13	05:48 20:51	06:18 20:19	06:51 19:29	07:23 18:37	07:23 16:55	07:34 16:42
14	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:35 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	07:26 18:34	07:04 16:53	07:35 16:42
16	05:51 20:49	06:21 20:15	06:54 19:24	07:27 18:32	07:05 16:52	07:36 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:43
18	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:50	07:38 16:43
20	05:54 20:46	06:25 20:09	06:58 19:17	07:31 18:26	07:10 16:49	07:39 16:44
21	05:55 20:45	06:26 20:07	06:59 19:15	07:33 18:24	08:08 (TRQ03) 08:19 (TRQ03)	07:11 16:48
22	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	08:06 (TRQ03) 08:21 (TRQ03)	07:12 16:47
23	05:57 20:44	06:29 20:04	07:01 19:11	07:35 18:21	08:04 (TRQ03) 08:22 (TRQ03)	07:13 16:47
24	05:58 20:43	06:30 20:03	07:02 19:09	07:36 18:20	08:04 (TRQ03) 08:23 (TRQ03)	07:14 16:46
25	05:59 20:42	06:31 20:01	07:03 19:08	07:37 18:19	07:02 (TRQ03) 07:24 (TRQ03)	07:16 16:46
26	06:00 20:41	06:32 20:00	07:04 19:06	07:38 18:17	07:02 (TRQ03) 07:24 (TRQ03)	07:17 16:45
27	06:01 20:40	06:33 19:58	07:06 19:04	07:39 18:15	07:02 (TRQ03) 07:25 (TRQ03)	07:18 16:44
28	06:01 20:39	06:34 19:56	07:07 19:02	07:34 18:14	07:03 (TRQ03) 07:25 (TRQ03)	07:19 16:44
29	06:02 20:38	06:35 19:55	07:08 19:01	07:34 18:13	07:04 (TRQ03) 07:24 (TRQ03)	07:20 16:44
30	06:03 20:37	06:36 19:53	07:09 18:59	07:33 18:11	07:05 (TRQ03) 07:24 (TRQ03)	07:21 16:43
31	06:04 20:36	06:37 19:51	07:10 18:57	06:45 17:10	07:07 (TRQ03) 07:24 (TRQ03)	07:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case			353	478	52	
Sun reduction			0,62	0,55	0,46	
Oper. time red.			0,95	0,95	0,95	
Wind dir. red.			0,56	0,54	0,51	
Total reduction			0,33	0,28	0,22	
Total, real			117	134	12	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** DV - 226  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51	07:29 17:27	07:49 (TRQ03) 08:14 (TRQ03)	06:51 18:03	07:21 (TRQ01) 08:01 (TRQ01)	06:58 19:39
2	07:43 16:52	07:28 17:28	07:49 (TRQ03) 08:14 (TRQ03)	06:49 18:04	07:21 (TRQ01) 08:02 (TRQ01)	06:57 19:40
3	07:43 16:53	07:26 17:30	07:50 (TRQ03) 08:14 (TRQ03)	06:48 18:05	07:21 (TRQ01) 08:01 (TRQ01)	06:55 19:41
4	07:43 16:54	07:25 17:31	07:51 (TRQ03) 08:14 (TRQ03)	06:46 18:06	07:21 (TRQ01) 08:00 (TRQ01)	06:53 19:42
5	07:43 16:55	07:24 17:32	07:51 (TRQ03) 08:14 (TRQ03)	06:44 18:08	07:22 (TRQ01) 08:00 (TRQ01)	06:51 19:43
6	07:43 16:56	07:23 17:33	07:51 (TRQ03) 08:12 (TRQ03)	06:43 18:09	07:22 (TRQ01) 07:58 (TRQ01)	06:50 19:44
7	07:43 16:57	07:22 17:35	07:53 (TRQ03) 08:12 (TRQ03)	06:41 18:10	07:23 (TRQ01) 07:57 (TRQ01)	06:48 19:46
8	07:43 16:58	07:21 17:36	07:54 (TRQ03) 08:11 (TRQ03)	06:40 18:11	07:24 (TRQ01) 07:56 (TRQ01)	06:46 19:47
9	07:43 16:59	07:20 17:37	07:56 (TRQ03) 08:09 (TRQ03)	06:38 18:12	07:25 (TRQ01) 07:54 (TRQ01)	06:45 19:48
10	07:43 17:00	07:18 17:39	07:59 (TRQ03) 08:06 (TRQ03)	06:36 18:14	07:26 (TRQ01) 07:52 (TRQ01)	06:43 19:49
11	07:42 17:01	07:17 17:40	06:34 18:15	07:28 (TRQ01) 07:50 (TRQ01)	06:41 19:50	05:58 20:23
12	07:42 17:02	07:16 17:41	06:33 18:16	07:31 (TRQ01) 07:47 (TRQ01)	06:40 19:51	05:57 20:24
13	07:42 17:03	07:14 17:43	06:31 18:17	07:36 (TRQ01) 07:40 (TRQ01)	06:38 19:52	05:56 20:26
14	07:41 17:05	07:13 17:44	07:42 (TRQ01) 07:44 (TRQ01)	06:29 18:18	06:36 19:53	05:55 20:27
15	07:41 17:06	07:12 17:45	07:36 (TRQ01) 07:51 (TRQ01)	06:28 18:19	06:35 19:54	05:54 20:28
16	07:41 17:07	07:10 17:46	07:32 (TRQ01) 07:53 (TRQ01)	06:26 18:21	06:33 19:56	05:53 20:29
17	07:40 17:08	07:09 17:48	07:31 (TRQ01) 07:55 (TRQ01)	06:24 18:22	06:32 19:57	05:52 20:30
18	07:40 17:09	07:08 17:49	07:28 (TRQ01) 07:57 (TRQ01)	06:23 18:23	06:30 19:58	05:51 20:31
19	07:39 17:10	07:06 17:50	07:27 (TRQ01) 07:58 (TRQ01)	06:21 18:24	06:28 19:59	05:50 20:32
20	07:38 17:12	08:00 (TRQ03) 08:03 (TRQ03)	07:05 17:52	07:26 (TRQ01) 07:59 (TRQ01)	06:19 18:25	06:27 20:00
21	07:38 17:13	07:59 (TRQ03) 08:05 (TRQ03)	07:03 17:53	07:25 (TRQ01) 08:00 (TRQ01)	06:17 18:26	06:25 20:01
22	07:37 17:14	07:58 (TRQ03) 08:07 (TRQ03)	07:02 17:54	07:24 (TRQ01) 08:01 (TRQ01)	06:16 18:27	06:24 20:02
23	07:36 17:15	07:58 (TRQ03) 08:09 (TRQ03)	07:00 17:55	07:23 (TRQ01) 08:02 (TRQ01)	06:14 18:29	06:22 20:03
24	07:36 17:17	07:57 (TRQ03) 08:10 (TRQ03)	06:59 17:57	07:22 (TRQ01) 08:02 (TRQ01)	06:12 18:30	06:21 20:05
25	07:35 17:18	07:56 (TRQ03) 08:11 (TRQ03)	06:57 17:58	07:22 (TRQ01) 08:02 (TRQ01)	06:10 18:31	06:19 20:06
26	07:34 17:19	07:55 (TRQ03) 08:11 (TRQ03)	06:56 17:59	07:22 (TRQ01) 08:02 (TRQ01)	06:09 18:32	06:18 20:07
27	07:33 17:20	07:54 (TRQ03) 08:12 (TRQ03)	06:54 18:00	07:22 (TRQ01) 08:03 (TRQ01)	06:07 18:33	06:16 20:08
28	07:32 17:22	07:53 (TRQ03) 08:13 (TRQ03)	06:53 18:02	07:21 (TRQ01) 08:02 (TRQ01)	06:05 18:34	06:15 20:09
29	07:31 17:23	07:52 (TRQ03) 08:13 (TRQ03)	06:52 18:03	07:03 19:35	06:13 20:10	05:42 20:41
30	07:31 17:24	07:51 (TRQ03) 08:14 (TRQ03)	06:51 18:04	07:02 19:36	06:12 20:11	05:41 20:42
31	07:30 17:26	07:50 (TRQ03) 08:14 (TRQ03)	06:50 18:05	07:00 19:38	06:11 20:12	05:40 20:43
Potential sun hours	294	295	369	400	452	457
Total, worst case	179	665	397			
Sun reduction	0,42	0,46	0,46			
Oper. time red.	0,95	0,95	0,95			
Wind dir. red.	0,51	0,51	0,51			
Total reduction	0,20	0,22	0,22			
Total, real	36	149	89			

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** DV - 226  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October		November		December
1	05:40	06:05	06:38	07:10		08:11 (TRQ01)	06:46	07:28 (TRQ03)
	20:55	20:35	19:50	18:57	13	08:24 (TRQ01)	17:09	8 07:36 (TRQ03)
2	05:41	06:06	06:39	07:11		08:08 (TRQ01)	06:47	07:25 (TRQ03)
	20:54	20:33	19:48	18:55	20	08:28 (TRQ01)	17:07	13 07:38 (TRQ03)
3	05:41	06:08	06:40	07:12		08:05 (TRQ01)	06:49	07:24 (TRQ03)
	20:54	20:32	19:46	18:54	25	08:30 (TRQ01)	17:06	17 07:41 (TRQ03)
4	05:42	06:09	06:41	07:13		08:03 (TRQ01)	06:50	07:22 (TRQ03)
	20:54	20:31	19:45	18:52	28	08:31 (TRQ01)	17:05	20 07:42 (TRQ03)
5	05:43	06:10	06:42	07:14		08:01 (TRQ01)	06:51	07:21 (TRQ03)
	20:54	20:30	19:43	18:50	31	08:32 (TRQ01)	17:04	21 07:42 (TRQ03)
6	05:43	06:11	06:43	07:15		08:00 (TRQ01)	06:52	07:21 (TRQ03)
	20:54	20:29	19:41	18:49	33	08:33 (TRQ01)	17:02	23 07:44 (TRQ03)
7	05:44	06:12	06:44	07:17		07:58 (TRQ01)	06:54	07:20 (TRQ03)
	20:53	20:27	19:39	18:47	36	08:34 (TRQ01)	17:01	24 07:44 (TRQ03)
8	05:45	06:13	06:45	07:18		07:57 (TRQ01)	06:55	07:20 (TRQ03)
	20:53	20:26	19:38	18:45	37	08:34 (TRQ01)	17:00	24 07:44 (TRQ03)
9	05:45	06:14	06:46	07:19		07:56 (TRQ01)	06:56	07:20 (TRQ03)
	20:53	20:25	19:36	18:43	38	08:34 (TRQ01)	16:59	25 07:45 (TRQ03)
10	05:46	06:15	06:48	07:20		07:56 (TRQ01)	06:57	07:20 (TRQ03)
	20:52	20:23	19:34	18:42	39	08:35 (TRQ01)	16:58	25 07:45 (TRQ03)
11	05:47	06:16	06:49	07:21		07:55 (TRQ01)	06:59	07:21 (TRQ03)
	20:52	20:22	19:32	18:40	40	08:35 (TRQ01)	16:57	24 07:45 (TRQ03)
12	05:47	06:17	06:50	07:22		07:55 (TRQ01)	07:00	07:23 (TRQ03)
	20:51	20:21	19:31	18:38	40	08:35 (TRQ01)	16:56	23 07:46 (TRQ03)
13	05:48	06:18	06:51	07:23		07:54 (TRQ01)	07:01	07:24 (TRQ03)
	20:51	20:19	19:29	18:37	41	08:35 (TRQ01)	16:55	21 07:45 (TRQ03)
14	05:49	06:19	06:52	07:24		07:54 (TRQ01)	07:02	07:25 (TRQ03)
	20:50	20:18	19:27	18:35	41	08:35 (TRQ01)	16:54	20 07:45 (TRQ03)
15	05:50	06:20	06:53	07:26		07:54 (TRQ01)	07:03	07:27 (TRQ03)
	20:49	20:16	19:25	18:34	41	08:35 (TRQ01)	16:53	18 07:45 (TRQ03)
16	05:51	06:21	06:54	07:27		07:54 (TRQ01)	07:05	07:28 (TRQ03)
	20:49	20:15	19:24	18:32	40	08:34 (TRQ01)	16:52	16 07:44 (TRQ03)
17	05:51	06:22	06:55	07:28		07:54 (TRQ01)	07:06	07:29 (TRQ03)
	20:48	20:13	19:22	18:30	40	08:34 (TRQ01)	16:51	15 07:44 (TRQ03)
18	05:52	06:23	06:56	07:29		07:54 (TRQ01)	07:07	07:31 (TRQ03)
	20:47	20:12	19:20	18:29	39	08:33 (TRQ01)	16:50	13 07:44 (TRQ03)
19	05:53	06:24	06:57	07:30		07:54 (TRQ01)	07:08	07:32 (TRQ03)
	20:47	20:10	19:18	18:27	38	08:32 (TRQ01)	16:50	11 07:43 (TRQ03)
20	05:54	06:25	06:58	07:31		07:56 (TRQ01)	07:10	07:33 (TRQ03)
	20:46	20:09	19:17	18:26	36	08:32 (TRQ01)	16:49	9 07:42 (TRQ03)
21	05:55	06:26	06:59	07:33		07:56 (TRQ01)	07:11	07:35 (TRQ03)
	20:45	20:07	19:15	18:24	35	08:31 (TRQ01)	16:48	6 07:41 (TRQ03)
22	05:56	06:27	07:00	07:34		07:57 (TRQ01)	07:12	07:36 (TRQ03)
	20:44	20:06	19:13	18:23	32	08:29 (TRQ01)	16:47	3 07:39 (TRQ03)
23	05:57	06:29	07:01	07:35		07:57 (TRQ01)	07:13	07:40
	20:44	20:04	19:11	18:21	31	08:28 (TRQ01)	16:47	16:45
24	05:58	06:30	07:02	07:36		07:59 (TRQ01)	07:14	07:41
	20:43	20:03	19:09	18:20	28	08:27 (TRQ01)	16:46	16:46
25	05:59	06:31	07:03	06:37		07:01 (TRQ01)	07:16	07:41
	20:42	20:01	19:08	17:18	24	07:25 (TRQ01)	16:45	16:46
26	06:00	06:32	07:04	06:39		07:03 (TRQ01)	07:17	07:42
	20:41	19:59	19:06	17:17	19	07:22 (TRQ01)	16:45	16:47
27	06:01	06:33	07:06	06:40		07:06 (TRQ01)	07:18	07:42
	20:40	19:58	19:04	17:15	13	07:19 (TRQ01)	16:44	16:47
28	06:01	06:34	07:07	06:41			07:19	07:42
	20:39	19:56	19:02	17:14			16:44	16:48
29	06:02	06:35	07:08	06:42			07:20	07:42
	20:38	19:55	19:01	17:13			16:44	16:49
30	06:03	06:36	07:09	06:44			07:21	07:43
	20:37	19:53	18:59	17:11			16:43	16:50
31	06:04	06:37		06:45				07:43
	20:36	19:51		17:10				16:50
Potential sun hours	463	430	376	344		295		284
Total, worst case					878		379	
Sun reduction					0,55		0,46	
Oper. time red.					0,95		0,95	
Wind dir. red.					0,51		0,51	
Total reduction					0,27		0,22	
Total, real					234		83	

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** DW - 227  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:29	07:49 (TRQ03)	06:51	07:14 (TRQ01)	06:58
	16:52	17:27	7 07:56 (TRQ03)	18:03	28 07:42 (TRQ01)	19:39
2	07:43	07:28	07:48 (TRQ03)	06:49	07:15 (TRQ01)	06:57
	16:52	17:28	10 07:58 (TRQ03)	18:04	27 07:42 (TRQ01)	19:40
3	07:43	07:27	07:47 (TRQ03)	06:48	07:15 (TRQ01)	06:55
	16:53	17:30	11 07:58 (TRQ03)	18:05	26 07:41 (TRQ01)	19:41
4	07:43	07:25	07:46 (TRQ03)	06:46	07:15 (TRQ01)	06:53
	16:54	17:31	13 07:59 (TRQ03)	18:06	25 07:40 (TRQ01)	19:42
5	07:43	07:24	07:45 (TRQ03)	06:45	07:17 (TRQ01)	06:51
	16:55	17:32	15 08:00 (TRQ03)	18:08	22 07:39 (TRQ01)	19:43
6	07:43	07:23	07:43 (TRQ03)	06:43	07:18 (TRQ01)	06:50
	16:56	17:34	16 07:59 (TRQ03)	18:09	19 07:37 (TRQ01)	19:44
7	07:43	07:22	07:42 (TRQ03)	06:41	07:19 (TRQ01)	06:48
	16:57	17:35	17 07:59 (TRQ03)	18:10	16 07:35 (TRQ01)	19:46
8	07:43	07:21	07:41 (TRQ03)	06:40	07:23 (TRQ01)	06:46
	16:58	17:36	18 07:59 (TRQ03)	18:11	9 07:32 (TRQ01)	19:47
9	07:43	07:20	07:41 (TRQ03)	06:38		06:45
	16:59	17:37	18 07:59 (TRQ03)	18:12		19:48
10	07:43	07:18	07:41 (TRQ03)	06:36		06:43
	17:00	17:39	17 07:58 (TRQ03)	18:14		19:49
11	07:42	07:17	07:42 (TRQ03)	06:35		06:41
	17:01	17:40	15 07:57 (TRQ03)	18:15		19:50
12	07:42	07:16	07:44 (TRQ03)	06:33		06:40
	17:02	17:41	12 07:56 (TRQ03)	18:16		19:51
13	07:42	07:15	07:46 (TRQ03)	06:31		06:38
	17:03	17:43	7 07:53 (TRQ03)	18:17		19:52
14	07:41	07:13		06:29		06:36
	17:05	17:44		18:18		19:53
15	07:41	07:12		06:28		06:35
	17:06	17:45		18:19		19:55
16	07:41	07:10		06:26		06:33
	17:07	17:46		18:21		19:56
17	07:40	07:09		06:24		06:32
	17:08	17:48		18:22		19:57
18	07:40	07:08	07:27 (TRQ01)	06:23		06:30
	17:09	17:49	7 07:34 (TRQ01)	18:23		19:58
19	07:39	07:06	07:26 (TRQ01)	06:21		06:28
	17:10	17:50	12 07:38 (TRQ01)	18:24		19:59
20	07:38	07:05	07:24 (TRQ01)	06:19		06:27
	17:12	17:52	15 07:39 (TRQ01)	18:25		20:00
21	07:38	07:03	07:23 (TRQ01)	06:17		06:25
	17:13	17:53	18 07:41 (TRQ01)	18:26		20:01
22	07:37	07:02	07:21 (TRQ01)	06:16		06:24
	17:14	17:54	20 07:41 (TRQ01)	18:27		20:02
23	07:36	07:00	07:20 (TRQ01)	06:14		06:22
	17:15	17:55	23 07:43 (TRQ01)	18:29		20:04
24	07:36	06:59	07:18 (TRQ01)	06:12		06:21
	17:17	17:57	25 07:43 (TRQ01)	18:30		20:05
25	07:35	06:57	07:17 (TRQ01)	06:10		06:19
	17:18	17:58	27 07:44 (TRQ01)	18:31		20:06
26	07:34	06:56	07:15 (TRQ01)	06:09		06:18
	17:19	17:59	28 07:43 (TRQ01)	18:32		20:07
27	07:33	06:54	07:15 (TRQ01)	06:07		06:16
	17:20	18:00	29 07:44 (TRQ01)	18:33		20:08
28	07:32	06:53	07:15 (TRQ01)	06:05		06:15
	17:22	18:02	28 07:43 (TRQ01)	18:34		20:09
29	07:31			07:03		06:13
	17:23			19:35		20:10
30	07:31	07:51 (TRQ03)		07:02		06:12
	17:24	3 07:54 (TRQ03)		19:37		20:11
31	07:30	07:50 (TRQ03)		07:00		
	17:26	5 07:55 (TRQ03)		19:38		
Potential sun hours	294	295	369	400	452	457
Total, worst case	8	408				
Sun reduction	0,42	0,46				
Oper. time red.	0,95	0,95				
Wind dir. red.	0,51	0,51				
Total reduction	0,20	0,22				
Total, real	2	91	38			

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** DW - 227  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40	06:05	06:38	07:10	06:46	07:10 (TRQ03) 07:22
	20:55	20:35	19:50	18:57	17:09	18 07:28 (TRQ03) 16:43
2	05:41	06:07	06:39	07:11	06:47	07:09 (TRQ03) 07:23
	20:55	20:33	19:48	18:55	17:07	19 07:28 (TRQ03) 16:42
3	05:42	06:08	06:40	07:12	06:49	07:11 (TRQ03) 07:25
	20:54	20:32	19:46	18:54	17:06	18 07:29 (TRQ03) 16:42
4	05:42	06:09	06:41	07:13	06:50	07:12 (TRQ03) 07:26
	20:54	20:31	19:45	18:52	17:05	17 07:29 (TRQ03) 16:42
5	05:43	06:10	06:42	07:14	06:51	07:13 (TRQ03) 07:27
	20:54	20:30	19:43	18:50	17:04	16 07:29 (TRQ03) 16:42
6	05:43	06:11	06:43	07:15	07:57 (TRQ01) 06:52	07:15 (TRQ03) 07:28
	20:54	20:29	19:41	18:49	13 08:10 (TRQ01) 17:02	14 07:29 (TRQ03) 16:42
7	05:44	06:12	06:44	07:17	07:54 (TRQ01) 06:54	07:16 (TRQ03) 07:29
	20:53	20:27	19:39	18:47	18 08:12 (TRQ01) 17:01	13 07:29 (TRQ03) 16:41
8	05:45	06:13	06:45	07:18	07:52 (TRQ01) 06:55	07:17 (TRQ03) 07:30
	20:53	20:26	19:38	18:45	21 08:13 (TRQ01) 17:00	11 07:28 (TRQ03) 16:41
9	05:45	06:14	06:47	07:19	07:51 (TRQ01) 06:56	07:19 (TRQ03) 07:30
	20:53	20:25	19:36	18:44	23 08:14 (TRQ01) 16:59	9 07:28 (TRQ03) 16:41
10	05:46	06:15	06:48	07:20	07:50 (TRQ01) 06:57	07:20 (TRQ03) 07:31
	20:52	20:23	19:34	18:42	26 08:16 (TRQ01) 16:58	7 07:27 (TRQ03) 16:41
11	05:47	06:16	06:49	07:21	07:49 (TRQ01) 06:59	07:22 (TRQ03) 07:32
	20:52	20:22	19:32	18:40	27 08:16 (TRQ01) 16:57	5 07:27 (TRQ03) 16:41
12	05:47	06:17	06:50	07:22	07:48 (TRQ01) 07:00	07:23 (TRQ03) 07:33
	20:51	20:21	19:31	18:39	28 08:16 (TRQ01) 16:56	2 07:25 (TRQ03) 16:42
13	05:48	06:18	06:51	07:23	07:47 (TRQ01) 07:01	07:24 (TRQ03) 07:34
	20:51	20:19	19:29	18:37	29 08:16 (TRQ01) 16:55	16:42
14	05:49	06:19	06:52	07:24	07:47 (TRQ01) 07:02	07:35
	20:50	20:18	19:27	18:35	29 08:16 (TRQ01) 16:54	16:42
15	05:50	06:20	06:53	07:26	07:47 (TRQ01) 07:04	07:35
	20:50	20:16	19:25	18:34	29 08:16 (TRQ01) 16:53	16:42
16	05:51	06:21	06:54	07:27	07:48 (TRQ01) 07:05	07:36
	20:49	20:15	19:24	18:32	28 08:16 (TRQ01) 16:52	16:42
17	05:51	06:22	06:55	07:28	07:49 (TRQ01) 07:06	07:37
	20:48	20:13	19:22	18:30	26 08:15 (TRQ01) 16:51	16:43
18	05:52	06:23	06:56	07:29	07:50 (TRQ01) 07:07	07:37
	20:48	20:12	19:20	18:29	24 08:14 (TRQ01) 16:50	16:43
19	05:53	06:24	06:57	07:30	07:51 (TRQ01) 07:08	07:38
	20:47	20:10	19:18	18:27	22 08:13 (TRQ01) 16:50	16:43
20	05:54	06:25	06:58	07:31	07:53 (TRQ01) 07:10	07:39
	20:46	20:09	19:17	18:26	20 08:13 (TRQ01) 16:49	16:44
21	05:55	06:26	06:59	07:33	07:54 (TRQ01) 07:11	07:39
	20:45	20:07	19:15	18:24	17 08:11 (TRQ01) 16:48	16:44
22	05:56	06:27	07:00	07:34	07:55 (TRQ01) 07:12	07:40
	20:44	20:06	19:13	18:23	14 08:09 (TRQ01) 16:47	16:45
23	05:57	06:29	07:01	07:35	07:56 (TRQ01) 07:13	07:40
	20:44	20:04	19:11	18:21	11 08:07 (TRQ01) 16:47	16:45
24	05:58	06:30	07:02	07:36	07:58 (TRQ01) 07:14	07:41
	20:43	20:03	19:09	18:20	5 08:03 (TRQ01) 16:46	16:46
25	05:59	06:31	07:03	06:37	07:16	07:41
	20:42	20:01	19:08	17:18	16:46	16:46
26	06:00	06:32	07:05	06:39	07:17	07:42
	20:41	20:00	19:06	17:17	16:45	16:47
27	06:01	06:33	07:06	06:40	07:18	07:42
	20:40	19:58	19:04	17:15	16:44	16:47
28	06:01	06:34	07:07	06:41	07:19	07:42
	20:39	19:56	19:02	17:14	16:44	16:48
29	06:02	06:35	07:08	06:42	07:15 (TRQ03) 07:20	07:43
	20:38	19:55	19:01	17:13	8 07:23 (TRQ03) 16:44	16:49
30	06:03	06:36	07:09	06:44	07:13 (TRQ03) 07:21	07:43
	20:37	19:53	18:59	17:11	13 07:26 (TRQ03) 16:43	16:50
31	06:04	06:37	07:10	06:45	07:12 (TRQ03) 07:22	07:43
	20:36	19:51	17:10	15 07:27 (TRQ03) 07:27	16:50	16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case				446		149
Sun reduction				0,55		0,46
Oper. time red.				0,95		0,95
Wind dir. red.				0,51		0,51
Total reduction				0,27		0,22
Total, real				119		33

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: Shadow\_realShadow receptor: DX - 228
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Table with 12 columns: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec. Values: 3,98, 4,87, 5,46, 6,60, 8,30, 9,30, 10,54, 9,73, 7,82, 6,08, 4,48, 3,95

Operational time

Table with 13 columns: N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum. Values: 488, 1.218, 2.039, 904, 404, 473, 641, 645, 678, 389, 220, 210, 8.309

Main shadow calculation table with columns for months (January to December) and rows for sun hours, reduction, and real total. Includes TRQ01 entries for specific days.

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** DY - 229  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43   16:51	07:29   17:27	06:51   18:03	06:58   19:39	06:11   20:12	05:40   20:43	05:40   20:55	06:05   20:34	06:38   19:50	07:10   18:57	06:46   17:09	07:22   16:43
2	07:43   16:52	07:28   17:28	06:49   18:04	06:56   19:40	06:09   20:14	05:40   20:44	05:41   20:54	06:06   20:33	06:39   19:48	07:11   18:55	06:47   17:07	07:23   16:42
3	07:43   16:53	07:26   17:30	06:48   18:05	06:55   19:41	06:08   20:15	05:39   20:45	05:41   20:54	06:07   20:32	06:40   19:46	07:12   18:54	06:48   17:06	07:25   16:42
4	07:43   16:54	07:25   17:31	06:46   18:06	06:53   19:42	06:07   20:16	05:39   20:46	05:42   20:54	06:08   20:31	06:41   19:44	07:13   18:52	06:50   17:05	07:26   16:42
5	07:43   16:55	07:24   17:32	06:44   18:08	06:51   19:43	06:05   20:17	05:38   20:46	05:43   20:54	06:10   20:30	06:42   19:43	07:14   18:50	06:51   17:04	07:27   16:42
6	07:43   16:56	07:23   17:33	06:43   18:09	06:50   19:44	06:04   20:18	05:38   20:47	05:43   20:54	06:11   20:29	06:43   19:41	07:15   18:49	06:52   17:02	07:28   16:42
7	07:43   16:57	07:22   17:35	06:41   18:10	06:48   19:45	06:03   20:19	05:38   20:48	05:44   20:53	06:12   20:27	06:44   19:39	07:16   18:47	06:53   17:01	07:29   16:41
8	07:43   16:58	07:21   17:36	06:39   18:11	06:46   19:47	06:01   20:20	05:37   20:48	05:44   20:53	06:13   20:26	06:45   19:38	07:18   18:45	06:55   17:00	07:29   16:41
9	07:43   16:59	07:20   17:37	06:38   18:12	06:45   19:48	06:00   20:21	05:37   20:49	05:45   20:53	06:14   20:25	06:46   19:36	07:19   18:43	06:56   16:59	07:30   16:41
10	07:43   17:00	07:18   17:39	06:36   18:13	06:43   19:49	05:59   20:22	05:37   20:50	05:46   20:52	06:15   20:23	06:47   19:34	07:20   18:42	06:57   16:58	07:31   16:41
11	07:42   17:01	07:17   17:40	06:34   18:15	06:41   19:50	05:58   20:23	05:37   20:50	05:47   20:52	06:16   20:22	06:49   19:32	07:21   18:40	06:58   16:57	07:32   16:41
12	07:42   17:02	07:16   17:41	06:33   18:16	06:40   19:51	05:57   20:24	05:37   20:51	05:47   20:51	06:17   20:21	06:50   19:31	07:22   18:38	07:00   16:56	07:33   16:41
13	07:42   17:03	07:14   17:43	06:31   18:17	06:38   19:52	05:56   20:26	05:37   20:51	05:48   20:51	06:18   20:19	06:51   19:29	07:23   18:37	07:01   16:55	07:34   16:42
14	07:41   17:04	07:13   17:44	06:29   18:18	06:36   19:53	05:55   20:27	05:37   20:52	05:49   20:50	06:19   20:18	06:52   19:27	07:24   18:35	07:02   16:54	07:35   16:42
15	07:41   17:06	07:12   17:45	06:28   18:19	06:35   19:54	05:54   20:28	05:36   20:52	05:50   20:49	06:20   20:16	06:53   19:25	07:26   18:34	07:03   16:53	07:35   16:42
16	07:41   17:07	07:10   17:46	06:26   18:21	06:33   19:56	05:53   20:29	05:36   20:52	05:50   20:49	06:21   20:15	06:54   19:24	07:27   18:32	07:05   16:52	07:36   16:42
17	07:40   17:08	07:09   17:48	06:24   18:22	06:31   19:57	05:52   20:30	05:37   20:53	05:51   20:48	06:22   20:13	06:55   19:22	07:28   18:30	07:06   16:51	07:37   16:42
18	07:40   17:09	07:08   17:49	06:22   18:23	06:30   19:58	05:51   20:31	05:37   20:53	05:52   20:47	06:23   20:12	06:56   19:20	07:29   18:29	07:07   16:50	07:37   16:43
19	07:39   17:10	07:06   17:50	06:21   18:24	06:28   19:59	05:50   20:32	05:37   20:53	05:53   20:47	06:24   20:10	06:57   19:18	07:30   18:27	07:08   16:49	07:38   16:43
20	07:38   17:12	07:05   17:51	06:19   18:25	06:27   20:00	05:49   20:33	05:37   20:54	05:54   20:46	06:25   20:09	06:58   19:16	07:31   18:26	07:10   16:49	07:39   16:44
21	07:38   17:13	07:03   17:53	06:17   18:26	06:25   20:01	05:48   20:34	05:37   20:54	05:55   20:45	06:26   20:07	06:59   19:15	07:33   18:24	07:11   16:48	07:39   16:44
22	07:37   17:14	07:02   17:54	06:16   18:27	06:24   20:02	05:47   20:35	05:37   20:54	05:56   20:44	06:27   20:06	07:00   19:13	07:34   18:23	07:12   16:47	07:40   16:44
23	07:36   17:15	07:00   17:55	06:14   18:29	06:22   20:03	05:46   20:36	05:37   20:54	05:57   20:44	06:28   20:04	07:01   19:11	07:35   18:21	07:13   16:47	07:40   16:45
24	07:36   17:17	06:59   17:57	06:12   18:30	06:21   20:05	05:45   20:36	05:38   20:55	05:58   20:43	06:30   20:03	07:02   19:09	07:36   18:20	07:14   16:46	07:41   16:46
25	07:35   17:18	06:57   17:58	06:10   18:31	06:19   20:06	05:45   20:37	05:38   20:55	05:59   20:42	06:31   20:01	07:03   19:08	06:37   17:18	07:16   16:45	07:41   16:46
26	07:34   17:19	06:56   17:59	06:09   18:32	06:18   20:07	05:44   20:38	05:38   20:55	05:59   20:41	06:32   19:59	07:04   19:06	06:39   17:17	07:17   16:45	07:42   16:47
27	07:33   17:20	06:54   18:00	06:07   18:33	06:16   20:08	05:43   20:39	05:39   20:55	06:00   20:40	06:33   19:58	07:06   19:04	06:40   17:15	07:18   16:44	07:42   16:47
28	07:32   17:22	06:53   18:01	06:05   18:34	06:15   20:09	05:43   20:40	05:39   20:55	06:01   20:39	06:34   19:56	07:07   19:02	06:41   17:14	07:19   16:44	07:42   16:48
29	07:31   17:23		07:03   19:35	06:13   20:10	05:42   20:41	05:39   20:55	06:02   20:38	06:35   19:55	07:08   19:01	06:42   17:13	07:20   16:43	07:42   16:49
30	07:31   17:24		07:02   19:36	06:12   20:11	05:41   20:42	05:40   20:55	06:03   20:37	06:36   19:53	07:09   18:59	06:44   17:11	07:21   16:43	07:43   16:50
31	07:30   17:26		07:00   19:38		05:41   20:43		06:04   20:36	06:37   19:51		06:45   17:10		07:43   16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_real  
**Shadow receptor:** DZ - 1  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:28	15:29 (TRQ04)	06:51	14:57 (TRQ04)	06:58
	16:51	17:27	54 16:23 (TRQ04)	18:03	117 16:54 (TRQ04)	19:39
2	07:43	07:27	15:27 (TRQ04)	06:49	14:57 (TRQ04)	06:56
	16:52	17:28	58 16:25 (TRQ04)	18:04	118 16:55 (TRQ04)	19:40
3	07:43	07:26	15:25 (TRQ04)	06:48	14:56 (TRQ04)	06:55
	16:53	17:29	63 16:28 (TRQ04)	18:05	119 16:55 (TRQ04)	19:41
4	07:43	07:25	15:23 (TRQ04)	06:46	14:56 (TRQ04)	06:53
	16:54	17:31	67 16:30 (TRQ04)	18:06	119 16:55 (TRQ04)	19:42
5	07:43	07:24	15:21 (TRQ04)	06:44	14:56 (TRQ04)	06:51
	16:55	17:32	70 16:31 (TRQ04)	18:07	119 16:55 (TRQ04)	19:43
6	07:43	07:23	15:19 (TRQ04)	06:43	14:56 (TRQ04)	06:50
	16:56	17:33	74 16:33 (TRQ04)	18:09	119 16:55 (TRQ04)	19:44
7	07:43	07:22	15:18 (TRQ04)	06:41	14:55 (TRQ04)	06:48
	16:57	17:35	77 16:35 (TRQ04)	18:10	120 16:55 (TRQ04)	19:45
8	07:43	07:21	15:17 (TRQ04)	06:39	14:56 (TRQ04)	06:46
	16:58	17:36	80 16:37 (TRQ04)	18:11	119 16:55 (TRQ04)	19:46
9	07:43	07:19	15:15 (TRQ04)	06:38	14:55 (TRQ04)	06:45
	16:59	17:37	84 16:39 (TRQ04)	18:12	120 16:55 (TRQ04)	19:48
10	07:42	07:18	15:13 (TRQ04)	06:36	14:55 (TRQ04)	06:43
	17:00	17:39	86 16:39 (TRQ04)	18:13	119 16:54 (TRQ04)	19:49
11	07:42	07:17	15:12 (TRQ04)	06:34	14:55 (TRQ04)	06:41
	17:01	17:40	89 16:41 (TRQ04)	18:15	119 16:54 (TRQ04)	19:50
12	07:42	07:16	15:11 (TRQ04)	06:33	14:56 (TRQ04)	06:40
	17:02	17:41	92 16:43 (TRQ04)	18:16	118 16:54 (TRQ04)	19:51
13	07:42	07:14	15:10 (TRQ04)	06:31	14:56 (TRQ04)	06:38
	17:03	17:43	93 16:43 (TRQ04)	18:17	118 16:54 (TRQ04)	19:52
14	07:41	07:13	15:09 (TRQ04)	06:29	14:55 (TRQ04)	06:36
	17:05	17:44	96 16:45 (TRQ04)	18:18	118 16:53 (TRQ04)	19:53
15	07:41	07:12	15:08 (TRQ04)	06:28	14:56 (TRQ04)	06:35
	17:06	17:45	98 16:46 (TRQ04)	18:19	118 16:54 (TRQ04)	19:54
16	07:40	07:10	15:07 (TRQ04)	06:26	14:57 (TRQ04)	06:33
	17:07	17:46	100 16:47 (TRQ04)	18:20	116 16:53 (TRQ04)	19:55
17	07:40	07:09	15:06 (TRQ04)	06:24	14:57 (TRQ04)	06:31
	17:08	17:48	102 16:48 (TRQ04)	18:22	115 16:52 (TRQ04)	19:57
18	07:39	07:07	15:05 (TRQ04)	06:22	14:57 (TRQ04)	06:30
	17:09	17:49	103 16:48 (TRQ04)	18:23	114 16:51 (TRQ04)	19:58
19	07:39	07:06	15:04 (TRQ04)	06:21	14:58 (TRQ04)	06:28
	17:10	17:50	106 16:50 (TRQ04)	18:24	114 16:52 (TRQ04)	19:59
20	07:38	07:05	15:03 (TRQ04)	06:19	14:58 (TRQ04)	06:27
	17:12	17:51	107 16:50 (TRQ04)	18:25	113 16:51 (TRQ04)	20:00
21	07:38	07:03	15:02 (TRQ04)	06:17	14:59 (TRQ04)	06:25
	17:13	17:53	109 16:51 (TRQ04)	18:26	111 16:50 (TRQ04)	20:01
22	07:37	07:02	15:01 (TRQ04)	06:15	14:59 (TRQ04)	06:24
	17:14	17:54	110 16:51 (TRQ04)	18:27	110 16:49 (TRQ04)	20:02
23	07:36	07:00	15:01 (TRQ04)	06:14	15:01 (TRQ04)	06:22
	17:15	17:55	111 16:52 (TRQ04)	18:28	108 16:49 (TRQ04)	20:03
24	07:35	06:59	15:00 (TRQ04)	06:12	15:01 (TRQ04)	06:21
	17:17	17:56	112 16:52 (TRQ04)	18:30	107 16:48 (TRQ04)	20:04
25	07:35	06:57	15:00 (TRQ04)	06:10	15:02 (TRQ04)	06:19
	17:18	17:58	114 16:54 (TRQ04)	18:31	105 16:47 (TRQ04)	20:06
26	07:34	06:56	14:59 (TRQ04)	06:09	15:02 (TRQ04)	06:18
	17:19	17:59	115 16:54 (TRQ04)	18:32	104 16:46 (TRQ04)	20:07
27	07:33	15:46 (TRQ04)	06:54	06:07	15:04 (TRQ04)	06:16
	17:20	16:04 (TRQ04)	18:00	115 16:53 (TRQ04)	18:33	101 16:45 (TRQ04)
28	07:32	15:41 (TRQ04)	06:52	06:05	15:05 (TRQ04)	06:15
	17:22	16:10 (TRQ04)	18:01	116 16:54 (TRQ04)	18:34	99 16:44 (TRQ04)
29	07:31	15:37 (TRQ04)		07:03	16:06 (TRQ04)	06:13
	17:23	16:14 (TRQ04)		19:35	97 17:43 (TRQ04)	20:10
30	07:30	15:34 (TRQ04)		07:02	16:06 (TRQ04)	06:12
	17:24	16:17 (TRQ04)		19:36	95 17:41 (TRQ04)	20:11
31	07:29	15:31 (TRQ04)		07:00	16:08 (TRQ04)	
	17:26	16:20 (TRQ04)		19:37	93 17:41 (TRQ04)	
Potential sun hours	294	295	369	400	452	457
Total, worst case	176	2601	3482	1070		
Sun reduction	0,42	0,46	0,46	0,49		
Oper. time red.	0,95	0,95	0,95	0,95		
Wind dir. red.	0,74	0,74	0,74	0,74		
Total reduction	0,29	0,32	0,32	0,35		
Total, real	52	843	1120	371		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: DZ - 1  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December	
1	05:40 20:54	06:05 20:34	06:38 19:49	16:24 (TRQ04) 17:23 (TRQ04)	07:10 18:57	15:34 (TRQ04) 17:09	14:43 (TRQ04) 16:09 (TRQ04)
2	05:41 20:54	06:06 20:33	06:39 19:48	16:22 (TRQ04) 17:24 (TRQ04)	07:11 18:55	15:34 (TRQ04) 17:07	14:44 (TRQ04) 16:07 (TRQ04)
3	05:41 20:54	06:07 20:32	06:40 19:46	16:19 (TRQ04) 17:25 (TRQ04)	07:12 18:54	15:33 (TRQ04) 17:06	14:47 (TRQ04) 16:06 (TRQ04)
4	05:42 20:54	06:08 20:31	06:41 19:44	16:17 (TRQ04) 17:26 (TRQ04)	07:13 18:52	15:33 (TRQ04) 17:05	14:48 (TRQ04) 16:05 (TRQ04)
5	05:43 20:54	06:10 20:30	06:42 19:43	16:14 (TRQ04) 17:27 (TRQ04)	07:14 18:50	15:33 (TRQ04) 17:04	14:49 (TRQ04) 16:03 (TRQ04)
6	05:43 20:53	06:11 20:28	06:43 19:41	16:12 (TRQ04) 17:28 (TRQ04)	07:15 18:48	15:32 (TRQ04) 17:02	14:52 (TRQ04) 16:02 (TRQ04)
7	05:44 20:53	06:12 20:27	06:44 19:39	16:10 (TRQ04) 17:29 (TRQ04)	07:16 18:47	15:31 (TRQ04) 17:01	14:53 (TRQ04) 16:00 (TRQ04)
8	05:44 20:53	06:13 20:26	06:45 19:38	16:08 (TRQ04) 17:30 (TRQ04)	07:18 18:45	15:31 (TRQ04) 17:00	14:55 (TRQ04) 15:57 (TRQ04)
9	05:45 20:52	06:14 20:25	06:46 19:36	16:06 (TRQ04) 17:31 (TRQ04)	07:19 18:43	15:31 (TRQ04) 16:59	14:58 (TRQ04) 15:56 (TRQ04)
10	05:46 20:52	06:15 20:23	06:47 19:34	16:04 (TRQ04) 17:32 (TRQ04)	07:20 18:42	15:30 (TRQ04) 16:58	15:00 (TRQ04) 15:54 (TRQ04)
11	05:47 20:51	06:16 20:22	06:48 19:32	16:02 (TRQ04) 17:32 (TRQ04)	07:21 18:40	15:31 (TRQ04) 16:57	15:02 (TRQ04) 15:51 (TRQ04)
12	05:47 20:51	06:17 20:20	06:50 19:31	16:00 (TRQ04) 17:32 (TRQ04)	07:22 18:38	15:31 (TRQ04) 16:56	15:06 (TRQ04) 15:49 (TRQ04)
13	05:48 20:50	06:18 20:19	06:51 19:29	15:58 (TRQ04) 17:33 (TRQ04)	07:23 18:37	15:30 (TRQ04) 16:55	15:09 (TRQ04) 15:45 (TRQ04)
14	05:49 20:50	06:19 20:18	06:52 19:27	15:56 (TRQ04) 17:33 (TRQ04)	07:24 18:35	15:30 (TRQ04) 16:54	15:13 (TRQ04) 15:41 (TRQ04)
15	05:50 20:49	06:20 20:16	06:53 19:25	15:54 (TRQ04) 17:33 (TRQ04)	07:25 18:34	15:30 (TRQ04) 16:53	15:20 (TRQ04) 15:36 (TRQ04)
16	05:50 20:49	06:21 20:15	06:54 19:23	15:53 (TRQ04) 17:33 (TRQ04)	07:27 18:32	15:31 (TRQ04) 16:52	16:42 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	15:51 (TRQ04) 17:34 (TRQ04)	07:28 18:30	15:31 (TRQ04) 16:51	16:42 16:42
18	05:52 20:47	06:23 20:12	06:56 19:20	15:49 (TRQ04) 17:34 (TRQ04)	07:29 18:29	15:31 (TRQ04) 16:50	16:42 16:43
19	05:53 20:47	06:24 20:10	06:57 19:18	15:49 (TRQ04) 17:35 (TRQ04)	07:30 18:27	15:32 (TRQ04) 16:49	16:42 16:43
20	05:54 20:46	06:25 20:09	06:58 19:16	15:47 (TRQ04) 17:35 (TRQ04)	07:31 18:26	15:33 (TRQ04) 16:49	16:42 16:44
21	05:55 20:45	06:26 20:07	06:59 19:15	15:46 (TRQ04) 17:35 (TRQ04)	07:33 18:24	15:33 (TRQ04) 16:48	16:42 16:44
22	05:56 20:44	06:27 20:06	07:00 19:13	15:44 (TRQ04) 17:35 (TRQ04)	07:34 18:23	15:34 (TRQ04) 16:47	16:42 16:44
23	05:57 20:43	06:28 20:04	07:01 19:11	15:43 (TRQ04) 17:35 (TRQ04)	07:35 18:21	15:34 (TRQ04) 16:47	16:42 16:45
24	05:58 20:42	06:29 20:03	07:02 19:09	15:42 (TRQ04) 17:35 (TRQ04)	07:36 18:20	15:35 (TRQ04) 16:46	16:42 16:46
25	05:59 20:42	06:31 20:01	07:03 19:08	15:41 (TRQ04) 17:35 (TRQ04)	06:37 17:18	14:36 (TRQ04) 16:17 (TRQ04)	16:46 16:45
26	05:59 20:41	06:32 19:59	07:04 19:06	15:39 (TRQ04) 17:35 (TRQ04)	06:39 17:17	14:37 (TRQ04) 16:16 (TRQ04)	16:45 16:45
27	06:00 20:40	06:33 19:58	07:05 19:04	15:38 (TRQ04) 17:34 (TRQ04)	06:40 17:15	14:37 (TRQ04) 16:15 (TRQ04)	16:42 16:44
28	06:01 20:39	06:34 19:56	07:07 19:02	15:37 (TRQ04) 17:34 (TRQ04)	06:41 17:14	14:39 (TRQ04) 16:14 (TRQ04)	16:42 16:44
29	06:02 20:38	06:35 19:54	07:08 19:01	15:36 (TRQ04) 17:34 (TRQ04)	06:42 17:13	14:40 (TRQ04) 16:13 (TRQ04)	16:42 16:43
30	06:03 20:37	06:36 19:53	07:09 18:59	15:35 (TRQ04) 17:33 (TRQ04)	06:43 17:11	14:40 (TRQ04) 16:11 (TRQ04)	16:42 16:43
31	06:04 20:35	06:37 19:51	07:10 18:59	15:34 (TRQ04) 17:32 (TRQ04)	06:44 17:10	14:41 (TRQ04) 16:10 (TRQ04)	16:42 16:43
Potential sun hours	463	430	376	344	295	284	
Total, worst case		248	2877	3430	882		
Sun reduction		0,70	0,62	0,55	0,46		
Oper. time red.		0,95	0,95	0,95	0,95		
Wind dir. red.		0,74	0,74	0,74	0,74		
Total reduction		0,49	0,44	0,38	0,32		
Total, real		122	1261	1319	282		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** EA - 3  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51	16:02 (TRQ04) 17:27	07:28 17:27	15:57 (TRQ04) 18:03	06:51 19:39	06:58 20:12
2	07:43 16:52	16:01 (TRQ04) 17:28	07:27 17:28	15:58 (TRQ04) 18:04	06:49 19:40	06:09 20:13
3	07:43 16:53	16:01 (TRQ04) 17:29	07:26 17:29	15:58 (TRQ04) 18:05	06:48 19:41	06:08 20:14
4	07:43 16:54	16:01 (TRQ04) 17:31	07:25 17:31	15:59 (TRQ04) 18:06	06:46 19:42	06:06 20:16
5	07:43 16:55	16:00 (TRQ04) 17:32	07:24 17:32	15:58 (TRQ04) 18:07	06:44 19:43	06:05 20:17
6	07:43 16:56	16:00 (TRQ04) 17:33	07:23 17:33	15:59 (TRQ04) 18:09	06:43 19:44	06:04 20:18
7	07:43 16:57	16:00 (TRQ04) 17:35	07:22 17:35	16:00 (TRQ04) 18:10	06:41 19:45	06:03 20:19
8	07:43 16:58	16:29 (TRQ04) 17:36	07:21 17:36	16:01 (TRQ04) 18:11	06:39 19:46	06:01 20:20
9	07:43 16:59	16:30 (TRQ04) 17:37	07:19 17:37	16:02 (TRQ04) 18:12	06:38 19:48	06:00 20:21
10	07:42 17:00	16:31 (TRQ04) 17:38	07:18 17:38	16:02 (TRQ04) 18:13	06:36 19:49	05:59 20:22
11	07:42 17:01	16:32 (TRQ04) 17:40	07:17 17:40	16:04 (TRQ04) 18:15	06:34 19:50	05:58 20:23
12	07:42 17:02	16:33 (TRQ04) 17:41	07:16 17:41	16:05 (TRQ04) 18:16	06:33 19:51	05:57 20:24
13	07:42 17:03	16:34 (TRQ04) 17:42	07:14 17:42	16:06 (TRQ04) 18:17	06:31 19:52	05:56 20:25
14	07:41 17:04	16:36 (TRQ04) 17:43	07:13 17:43	16:08 (TRQ04) 18:18	06:29 19:53	05:55 20:26
15	07:41 17:06	16:36 (TRQ04) 17:44	07:12 17:44	16:40 (TRQ04) 18:18	06:28 19:53	05:54 20:26
16	07:40 17:07	16:38 (TRQ04) 17:45	07:10 17:45	16:09 (TRQ04) 18:19	06:28 19:54	05:54 20:27
17	07:40 17:08	16:38 (TRQ04) 17:46	07:09 17:46	16:38 (TRQ04) 18:19	06:26 19:54	05:53 20:27
18	07:39 17:09	16:38 (TRQ04) 17:46	07:09 17:46	16:12 (TRQ04) 18:20	06:33 19:55	05:53 20:28
19	07:39 17:10	16:38 (TRQ04) 17:46	07:09 17:46	16:15 (TRQ04) 18:20	06:31 19:55	05:52 20:28
20	07:38 17:12	16:40 (TRQ04) 17:48	07:07 17:48	16:33 (TRQ04) 18:22	06:29 19:57	05:51 20:29
21	07:38 17:13	16:40 (TRQ04) 17:48	07:07 17:48	16:19 (TRQ04) 18:22	06:30 19:57	05:51 20:29
22	07:37 17:14	16:40 (TRQ04) 17:49	07:07 17:49	16:28 (TRQ04) 18:23	06:30 19:58	05:51 20:30
23	07:36 17:15	16:41 (TRQ04) 17:50	07:06 17:50	18:23	06:28	05:50
24	07:35 17:17	16:41 (TRQ04) 17:50	07:05 17:50	18:24	06:28	05:50
25	07:35 17:18	16:41 (TRQ04) 17:50	07:05 17:50	18:24	06:28	05:50
26	07:34 17:19	16:41 (TRQ04) 17:50	07:05 17:50	18:24	06:28	05:50
27	07:33 17:20	16:41 (TRQ04) 17:50	07:05 17:50	18:24	06:28	05:50
28	07:32 17:22	16:41 (TRQ04) 17:50	07:05 17:50	18:24	06:28	05:50
29	07:31 17:23	16:41 (TRQ04) 17:50	07:05 17:50	18:24	06:28	05:50
30	07:30 17:24	16:41 (TRQ04) 17:50	07:05 17:50	18:24	06:28	05:50
31	07:29 17:26	16:41 (TRQ04) 17:50	07:05 17:50	18:24	06:28	05:50
Potential sun hours	294	295	369	400	452	457
Total, worst case	1211	693				
Sun reduction	0,42	0,46				
Oper. time red.	0,95	0,95				
Wind dir. red.	0,75	0,75				
Total reduction	0,30	0,33				
Total, real	362	228				

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

**SHADOW - Calendar**

**Calculation:** Shadow\_real **Shadow receptor:** EA - 3  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40   20:54	06:05   20:34	06:38   19:49	07:10   18:57	06:46   17:09	15:32 (TRQ04)   16:43
2	05:41   20:54	06:06   20:33	06:39   19:48	07:11   18:55	06:47   17:07	15:31 (TRQ04)   16:42
3	05:41   20:54	06:07   20:32	06:40   19:46	07:12   18:54	06:48   17:06	15:31 (TRQ04)   16:42
4	05:42   20:54	06:08   20:31	06:41   19:44	07:13   18:52	06:50   17:05	15:30 (TRQ04)   16:42
5	05:43   20:54	06:09   20:30	06:42   19:43	07:14   18:50	06:51   17:04	15:29 (TRQ04)   16:42
6	05:43   20:53	06:11   20:28	06:43   19:41	07:15   18:48	06:52   17:02	15:29 (TRQ04)   16:42
7	05:44   20:53	06:12   20:27	06:44   19:39	07:16   18:47	06:53   17:01	15:28 (TRQ04)   16:41
8	05:44   20:53	06:13   20:26	06:45   19:37	07:18   18:45	06:55   17:00	15:28 (TRQ04)   16:41
9	05:45   20:52	06:14   20:25	06:46   19:36	07:19   18:43	06:56   16:59	15:28 (TRQ04)   16:41
10	05:46   20:52	06:15   20:23	06:47   19:34	07:20   18:42	06:57   16:58	15:28 (TRQ04)   16:41
11	05:47   20:51	06:16   20:22	06:48   19:32	07:21   18:40	06:58   16:57	15:28 (TRQ04)   16:41
12	05:47   20:51	06:17   20:20	06:50   19:31	07:22   18:38	07:00   16:56	15:29 (TRQ04)   16:41
13	05:48   20:50	06:18   20:19	06:51   19:29	07:23   18:37	07:01   16:55	15:28 (TRQ04)   16:42
14	05:49   20:50	06:19   20:18	06:52   19:27	07:24   18:35	07:02   16:54	15:28 (TRQ04)   16:42
15	05:50   20:49	06:20   20:16	06:53   19:25	07:25   18:33	07:03   16:53	15:29 (TRQ04)   16:42
16	05:50   20:49	06:21   20:15	06:54   19:23	07:27   18:32	07:05   16:52	15:29 (TRQ04)   16:42
17	05:51   20:48	06:22   20:13	06:55   19:22	07:28   18:30	07:06   16:51	15:29 (TRQ04)   16:42
18	05:52   20:47	06:23   20:12	06:56   19:20	07:29   18:29	07:07   16:50	15:31 (TRQ04)   16:43
19	05:53   20:47	06:24   20:10	06:57   19:18	07:30   18:27	07:08   16:49	15:31 (TRQ04)   16:43
20	05:54   20:46	06:25   20:09	06:58   19:16	07:31   18:26	07:09   16:49	15:31 (TRQ04)   16:44
21	05:55   20:45	06:26   20:07	06:59   19:15	07:32   18:24	07:11   16:48	15:31 (TRQ04)   16:44
22	05:56   20:44	06:27   20:06	07:00   19:13	07:34   18:23	07:12   16:47	15:33 (TRQ04)   16:44
23	05:57   20:43	06:28   20:04	07:01   19:11	07:35   18:21	07:13   16:47	15:33 (TRQ04)   16:45
24	05:58   20:42	06:29   20:03	07:02   19:09	07:36   18:20	07:14   16:46	15:34 (TRQ04)   16:46
25	05:58   20:42	06:31   20:01	07:03   19:08	07:37   17:18	07:15   16:45	15:44 (TRQ04)   16:46
26	05:59   20:41	06:32   19:59	07:04   19:06	07:38   17:17	07:17   16:45	16:04 (TRQ04)   16:47
27	06:00   20:40	06:33   19:58	07:05   19:04	07:40   17:15	07:18   16:44	15:38 (TRQ04)   16:47
28	06:01   20:39	06:34   19:56	07:07   19:02	07:41   17:14	07:19   16:44	16:08 (TRQ04)   16:48
29	06:02   20:38	06:35   19:54	07:08   19:01	07:42   17:13	07:20   16:43	15:35 (TRQ04)   16:49
30	06:03   20:37	06:36   19:53	07:09   18:59	07:43   17:11	07:21   16:43	16:11 (TRQ04)   16:50
31	06:04   20:35	06:37   19:51	07:10   18:57	07:44   17:10	07:22   16:43	15:34 (TRQ04)   16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case				234	1377	515
Sun reduction				0,55	0,46	0,43
Oper. time red.				0,95	0,95	0,95
Wind dir. red.				0,75	0,75	0,75
Total reduction				0,39	0,32	0,31
Total, real				91	447	158

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** EB - 4  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	
1	07:43 16:51	07:28 17:27	06:51 18:03	17:13 (TRQ04) 18:03 28 17:41 (TRQ04)	06:58 19:39	06:10 20:12	05:40 20:43
2	07:43 16:52	07:27 17:28	06:49 18:04	17:13 (TRQ04) 18:04 29 17:42 (TRQ04)	06:56 19:40	06:09 20:13	05:40 20:44
3	07:43 16:53	07:26 17:29	06:48 18:05	17:12 (TRQ04) 18:05 31 17:43 (TRQ04)	06:55 19:41	06:08 20:14	05:39 20:45
4	07:43 16:54	07:25 17:31	06:46 18:06	17:12 (TRQ04) 18:06 32 17:44 (TRQ04)	06:53 19:42	06:06 20:16	05:39 20:45
5	07:43 16:55	07:24 17:32	06:44 18:07	17:12 (TRQ04) 18:07 33 17:45 (TRQ04)	06:51 19:43	06:05 20:17	05:38 20:46
6	07:43 16:56	07:23 17:33	06:43 18:09	17:12 (TRQ04) 18:09 32 17:44 (TRQ04)	06:50 19:44	06:04 20:18	05:38 20:47
7	07:43 16:57	07:22 17:35	06:41 18:10	17:12 (TRQ04) 18:10 31 17:43 (TRQ04)	06:48 19:45	06:03 20:19	05:38 20:48
8	07:43 16:58	07:21 17:36	06:39 18:11	17:13 (TRQ04) 18:11 30 17:43 (TRQ04)	06:46 19:46	06:01 20:20	05:37 20:48
9	07:43 16:59	07:19 17:37	06:38 18:12	17:13 (TRQ04) 18:12 29 17:42 (TRQ04)	06:44 19:48	06:00 20:21	05:37 20:49
10	07:42 17:00	07:18 17:39	06:36 18:13	17:14 (TRQ04) 18:13 26 17:40 (TRQ04)	06:43 19:49	05:59 20:22	05:37 20:49
11	07:42 17:01	07:17 17:40	06:34 18:15	17:14 (TRQ04) 18:15 24 17:38 (TRQ04)	06:41 19:50	05:58 20:23	05:37 20:50
12	07:42 17:02	07:16 17:41	06:33 18:16	17:16 (TRQ04) 18:16 21 17:37 (TRQ04)	06:39 19:51	05:57 20:24	05:37 20:50
13	07:42 17:03	07:14 17:42	06:31 18:17	17:18 (TRQ04) 18:17 16 17:34 (TRQ04)	06:38 19:52	05:56 20:25	05:37 20:51
14	07:41 17:04	07:13 17:44	06:29 18:18	17:21 (TRQ04) 18:18 9 17:30 (TRQ04)	06:36 19:53	05:55 20:26	05:37 20:51
15	07:41 17:06	07:12 17:45	06:28 18:19		06:35 19:54	05:54 20:27	05:36 20:52
16	07:40 17:07	07:10 17:46	06:26 18:20		06:33 19:55	05:52 20:28	05:36 20:52
17	07:40 17:08	07:09 17:48	06:24 18:22		06:31 19:57	05:51 20:29	05:36 20:53
18	07:39 17:09	07:07 17:49	06:22 18:23		06:30 19:58	05:51 20:30	05:37 20:53
19	07:39 17:10	07:06 17:50	06:21 18:24		06:28 19:59	05:50 20:31	05:37 20:53
20	07:38 17:12	07:05 17:51	06:19 18:25		06:27 20:00	05:49 20:32	05:37 20:54
21	07:38 17:13	07:03 17:53	06:17 18:26		06:25 20:01	05:48 20:33	05:37 20:54
22	07:37 17:14	07:02 17:54	17:24 (TRQ04) 06:15 7 17:31 (TRQ04)	06:15 18:27	06:24 20:02	05:47 20:34	05:37 20:54
23	07:36 17:15	07:00 17:55	17:22 (TRQ04) 06:14 11 17:33 (TRQ04)	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54
24	07:35 17:17	06:59 17:56	17:19 (TRQ04) 06:12 15 17:34 (TRQ04)	06:12 18:30	06:21 20:04	05:45 20:36	05:38 20:54
25	07:35 17:18	06:57 17:58	17:18 (TRQ04) 06:10 18 17:36 (TRQ04)	06:10 18:31	06:19 20:06	05:45 20:37	05:38 20:54
26	07:34 17:19	06:56 17:59	17:16 (TRQ04) 06:08 21 17:37 (TRQ04)	06:08 18:32	06:18 20:07	05:44 20:38	05:38 20:55
27	07:33 17:20	06:54 18:00	17:14 (TRQ04) 06:07 24 17:38 (TRQ04)	06:07 18:33	06:16 20:08	05:43 20:39	05:39 20:55
28	07:32 17:22	06:52 18:01	17:14 (TRQ04) 06:05 26 17:40 (TRQ04)	06:05 18:34	06:15 20:09	05:42 20:40	05:39 20:55
29	07:31 17:23		07:03 19:35		06:13 20:10	05:42 20:41	05:39 20:55
30	07:30 17:24		07:02 19:36		06:12 20:11	05:41 20:42	05:40 20:54
31	07:29 17:26		07:00 19:37			05:41 20:42	
Potential sun hours	294	295	369	400	452	457	
Total, worst case		122					371
Sun reduction		0,46					0,46
Oper. time red.		0,95					0,95
Wind dir. red.		0,66					0,66
Total reduction		0,29					0,29
Total, real		36					107

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** EB - 4  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December	
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	17:56 (TRQ04) 18:15 (TRQ04)	06:46 17:08	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	17:54 (TRQ04) 18:16 (TRQ04)	06:47 17:07	07:23 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	17:52 (TRQ04) 18:17 (TRQ04)	06:48 17:06	07:24 16:42
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	17:51 (TRQ04) 18:19 (TRQ04)	06:50 17:05	07:25 16:42
5	05:43 20:54	06:09 20:30	06:42 19:43	07:14 18:50	17:50 (TRQ04) 18:19 (TRQ04)	06:51 17:03	07:26 16:42
6	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	17:49 (TRQ04) 18:19 (TRQ04)	06:52 17:02	07:27 16:41
7	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	17:48 (TRQ04) 18:19 (TRQ04)	06:53 17:01	07:28 16:41
8	05:44 20:53	06:13 20:26	06:45 19:37	07:17 18:45	17:47 (TRQ04) 18:19 (TRQ04)	06:55 17:00	07:29 16:41
9	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	17:47 (TRQ04) 18:19 (TRQ04)	06:56 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	17:46 (TRQ04) 18:18 (TRQ04)	06:57 16:58	07:31 16:41
11	05:47 20:51	06:16 20:22	06:48 19:32	07:21 18:40	17:47 (TRQ04) 18:17 (TRQ04)	06:58 16:57	07:32 16:41
12	05:47 20:51	06:17 20:20	06:49 19:30	07:22 18:38	17:47 (TRQ04) 18:15 (TRQ04)	07:00 16:56	07:33 16:41
13	05:48 20:50	06:18 20:19	06:51 19:29	07:23 18:37	17:47 (TRQ04) 18:13 (TRQ04)	07:01 16:55	07:34 16:42
14	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	17:47 (TRQ04) 18:11 (TRQ04)	07:02 16:54	07:34 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	07:25 18:33	17:47 (TRQ04) 18:10 (TRQ04)	07:03 16:53	07:35 16:42
16	05:50 20:49	06:21 20:15	06:54 19:23	07:27 18:32	17:49 (TRQ04) 18:09 (TRQ04)	07:05 16:52	07:36 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	17:50 (TRQ04) 18:07 (TRQ04)	07:06 16:51	07:37 16:42
18	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	17:51 (TRQ04) 18:05 (TRQ04)	07:07 16:50	07:37 16:43
19	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	17:53 (TRQ04) 18:03 (TRQ04)	07:08 16:49	07:38 16:43
20	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	17:57 (TRQ04) 18:01 (TRQ04)	07:09 16:49	07:38 16:44
21	05:55 20:45	06:26 20:07	06:59 19:15	07:32 18:24		07:11 16:48	07:39 16:44
22	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23		07:12 16:47	07:40 16:44
23	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21		07:13 16:47	07:40 16:45
24	05:58 20:42	06:29 20:03	07:02 19:09	07:36 18:20		07:14 16:46	07:41 16:45
25	05:58 20:42	06:31 20:01	07:03 19:08	06:37 17:18		07:15 16:45	07:41 16:46
26	05:59 20:41	06:32 19:59	07:04 19:06	06:38 17:17		07:17 16:45	07:41 16:47
27	06:00 20:40	06:33 19:58	07:05 19:04	06:40 17:15		07:18 16:44	07:42 16:47
28	06:01 20:39	06:34 19:56	07:06 19:02	06:41 17:14		07:19 16:44	07:42 16:48
29	06:02 20:38	06:35 19:54	07:08 19:01	18:04 (TRQ04) 18:08 (TRQ04)	06:42 17:12	07:20 16:43	07:42 16:49
30	06:03 20:36	06:36 19:53	07:09 18:59	17:59 (TRQ04) 18:13 (TRQ04)	06:43 17:11	07:21 16:43	07:42 16:50
31	06:04 20:35	06:37 19:51		06:45 17:10			07:43 16:50
Potential sun hours	463	430	376	344	295	284	
Total, worst case			18	476			
Sun reduction			0,62	0,55			
Oper. time red.			0,95	0,95			
Wind dir. red.			0,66	0,66			
Total reduction			0,39	0,35			
Total, real			7	164			

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

Tarquinia1

Licensed user:

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0254118173
Andrea / fronteddu@montanambiente.com
Calculated:
06/08/2022 14:40/3.5.584

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: EC - 190
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Table with 12 columns (Jan-Dec) and 2 rows of sunshine probability values.

Operational time

Table with 13 columns (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum) and 2 rows of operational time values.

Main shadow calculation table with columns for months (January to June) and rows for each day (1-31) showing sun rise/set times, operational times, and reduction percentages.

Table layout: For each day in each month the following matrix apply

Matrix table with columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time).

## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** EC - 190  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40 20:54	06:31 (TRQ02) 08:17 (TRQ05)	06:05 20:34	06:28 (TRQ02) 08:15 (TRQ05)	06:38 19:49	07:10 18:57
2	05:41 20:54	06:30 (TRQ02) 08:17 (TRQ05)	06:06 20:33	06:29 (TRQ02) 08:15 (TRQ05)	06:39 19:48	07:11 18:55
3	05:41 20:54	06:31 (TRQ02) 08:17 (TRQ05)	06:07 20:32	06:30 (TRQ02) 08:14 (TRQ05)	06:40 19:46	07:12 18:54
4	05:42 20:54	06:30 (TRQ02) 08:17 (TRQ05)	06:08 20:31	06:31 (TRQ02) 08:13 (TRQ05)	06:41 19:44	07:13 18:52
5	05:43 20:54	06:30 (TRQ02) 08:17 (TRQ05)	06:10 20:30	06:32 (TRQ02) 08:13 (TRQ05)	06:42 19:43	07:14 18:50
6	05:43 20:53	06:29 (TRQ02) 08:17 (TRQ05)	06:11 20:28	06:33 (TRQ02) 08:12 (TRQ05)	06:43 19:41	07:15 18:48
7	05:44 20:53	06:29 (TRQ02) 08:18 (TRQ05)	06:12 20:27	06:34 (TRQ02) 08:11 (TRQ05)	06:44 19:39	07:16 18:47
8	05:44 20:53	06:29 (TRQ02) 08:18 (TRQ05)	06:13 20:26	06:35 (TRQ02) 08:10 (TRQ05)	06:45 19:38	07:18 18:45
9	05:45 20:52	06:28 (TRQ02) 08:18 (TRQ05)	06:14 20:25	06:36 (TRQ02) 08:09 (TRQ05)	06:46 19:36	07:19 18:43
10	05:46 20:52	06:28 (TRQ02) 08:18 (TRQ05)	06:15 20:23	06:39 (TRQ02) 08:07 (TRQ05)	06:47 19:34	07:20 18:42
11	05:47 20:52	06:28 (TRQ02) 08:19 (TRQ05)	06:16 20:22	06:58 (TRQ05) 08:06 (TRQ05)	06:48 19:32	07:21 18:40
12	05:47 20:51	06:28 (TRQ02) 08:19 (TRQ05)	06:17 20:20	06:59 (TRQ05) 08:04 (TRQ05)	06:50 19:31	07:22 18:38
13	05:48 20:50	06:27 (TRQ02) 08:18 (TRQ05)	06:18 20:19	07:00 (TRQ05) 08:03 (TRQ05)	06:51 19:29	07:23 18:37
14	05:49 20:50	06:27 (TRQ02) 08:19 (TRQ05)	06:19 20:18	07:02 (TRQ05) 08:01 (TRQ05)	06:52 19:27	07:24 18:35
15	05:50 20:49	06:27 (TRQ02) 08:19 (TRQ05)	06:20 20:16	07:03 (TRQ05) 07:59 (TRQ05)	06:53 19:25	07:26 18:34
16	05:50 20:49	06:27 (TRQ02) 08:19 (TRQ05)	06:21 20:15	07:05 (TRQ05) 07:57 (TRQ05)	06:54 19:23	07:27 18:32
17	05:51 20:48	06:26 (TRQ02) 08:18 (TRQ05)	06:22 20:13	07:07 (TRQ05) 07:54 (TRQ05)	06:55 19:22	07:28 18:30
18	05:52 20:47	06:26 (TRQ02) 08:19 (TRQ05)	06:23 20:12	07:10 (TRQ05) 07:51 (TRQ05)	06:56 19:20	07:29 18:29
19	05:53 20:47	06:26 (TRQ02) 08:19 (TRQ05)	06:24 20:10	07:13 (TRQ05) 07:48 (TRQ05)	06:57 19:18	07:30 18:27
20	05:54 20:46	06:26 (TRQ02) 08:19 (TRQ05)	06:25 20:09	07:16 (TRQ05) 07:44 (TRQ05)	06:58 19:16	07:31 18:26
21	05:55 20:45	06:27 (TRQ02) 08:19 (TRQ05)	06:26 20:07	07:22 (TRQ05) 07:37 (TRQ05)	06:59 19:15	07:33 18:24
22	05:56 20:44	06:27 (TRQ02) 08:19 (TRQ05)	06:27 20:06	07:00 19:13	07:00 19:13	07:34 18:23
23	05:57 20:43	06:27 (TRQ02) 08:19 (TRQ05)	06:28 20:04	07:01 19:11	07:01 19:11	07:35 18:21
24	05:58 20:42	06:27 (TRQ02) 08:19 (TRQ05)	06:30 20:03	07:02 19:09	07:02 19:09	07:36 18:20
25	05:59 20:42	06:26 (TRQ02) 08:18 (TRQ05)	06:31 20:01	07:03 19:08	07:03 19:08	06:37 17:18
26	05:59 20:41	06:26 (TRQ02) 08:18 (TRQ05)	06:32 19:59	07:04 19:06	07:04 19:06	06:39 17:17
27	06:00 20:40	06:26 (TRQ02) 08:17 (TRQ05)	06:33 19:58	07:05 19:04	07:05 19:04	06:40 17:15
28	06:01 20:39	06:26 (TRQ02) 08:17 (TRQ05)	06:34 19:56	07:07 19:02	07:07 19:02	06:41 17:14
29	06:02 20:38	06:27 (TRQ02) 08:17 (TRQ05)	06:35 19:54	07:08 19:01	07:08 19:01	06:42 17:13
30	06:03 20:37	06:27 (TRQ02) 08:16 (TRQ05)	06:36 19:53	07:09 18:59	07:09 18:59	06:43 17:11
31	06:04 20:35	06:27 (TRQ02) 08:16 (TRQ05)	06:37 19:51	07:09 19:51	07:09 19:51	06:45 17:10
Potential sun hours	463	430	376	344	295	284
Total, worst case	3421	1504	28	625		
Sun reduction	0,71	0,70	0,62	0,55		
Oper. time red.	0,95	0,95	0,95	0,95		
Wind dir. red.	0,68	0,68	0,52	0,52		
Total reduction	0,45	0,45	0,31	0,27		
Total, real	1550	674	9	168		

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

Tarquinia1

Licensed user:

MONTANA SPA
VIA ANGELO CARLO FUMAGALLI 6
IT-20143 MILANO
0254118173

Andrea / fronteddu@montanambiente.com

Calculated:

06/08/2022 14:40/3.5.584

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: ED - 2
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Table with 12 columns (Jan-Dec) and 1 row of values: 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

Table with 13 columns (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum) and 1 row of values: 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Main shadow calculation table with columns for months (January to June) and rows for time intervals (07:43 to 17:26) and summary statistics (Potential sun hours, Total, worst case, Sun reduction, etc.).

Table layout: For each day in each month the following matrix apply

Matrix with 2 columns: Day in month (Sun rise/set, Minutes with flicker) and (First/Last time with flicker, WTG causing flicker first/last time).



SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: ED - 2
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (July to December) and rows for each day of the month, showing sunrise and sunset times (hh:mm) and TRQ values. Includes summary rows for 'Potential sun hours' and 'Total reduction'.

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time).



## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** EE - 129  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:43   16:52	07:28   17:27	06:51   18:03	06:58   19:39	06:11   20:12	06:39 (TRQ04)   20:43	05:40   20:54	05:40   20:34	06:06   20:34	06:38   19:50	07:10   18:57	06:46   17:09	07:22   16:43	
2	07:43   16:52	07:27   17:28	06:49   18:04	06:56   19:40	06:09   20:13	06:40 (TRQ04)   20:44	05:40   20:54	05:41   20:33	06:07   20:33	06:39   19:48	07:11   18:55	06:47   17:07	07:23   16:42	
3	07:43   16:53	07:26   17:30	06:48   18:05	06:55   19:41	06:08   20:15	06:41 (TRQ04)   20:45	05:39   20:54	05:42   20:32	06:08   20:32	06:40   19:46	07:12   18:54	06:48   17:06	07:24   16:42	
4	07:43   16:54	07:25   17:31	06:46   18:06	06:53   19:42	06:07   20:16	06:42 (TRQ04)   20:46	05:39   20:54	05:42   20:31	06:09   20:31	06:41   19:44	07:13   18:52	06:50   17:05	07:25   16:42	
5	07:43   16:55	07:24   17:32	06:44   18:08	06:51   19:43	06:05   20:17	06:43 (TRQ04)   20:46	05:39   20:54	05:43   20:30	06:10   20:30	6 06:59 (TRQ04)	06:42   18:50	07:14   17:04	06:51   16:42	
6	07:43   16:56	07:23   17:34	06:43   18:09	06:50   19:44	06:04   20:18	06:44 (TRQ04)   20:47	05:38   20:53	05:43   20:28	06:11   20:28	12 07:05 (TRQ04)	06:43   19:41	07:15   18:49	06:52   17:02	07:27   16:42
7	07:43   16:57	07:22   17:35	06:41   18:10	06:48   19:45	06:03   20:19	07:00 (TRQ04)   20:48	05:38   20:53	06:12   20:27	06:54 (TRQ04)	06:44   19:39	07:16   18:47	06:53   17:01	07:28   16:42	
8	07:43   16:58	07:21   17:36	06:39   18:11	06:46   19:47	06:02   20:20	06:57 (TRQ04)   20:49	05:38   20:53	06:13   20:26	06:52 (TRQ04)	06:45   19:38	07:18   18:45	06:55   17:00	07:29   16:41	
9	07:43   16:59	07:20   17:37	06:38   18:12	06:45   19:48	06:00   20:21	05:37   20:49	05:45   20:52	06:14   20:25	06:51 (TRQ04)	06:46   19:36	07:19   18:43	06:56   17:00	07:30   16:41	
10	07:43   17:00	07:18   17:39	06:36   18:14	06:43   19:49	05:59   20:22	05:37   20:49	05:46   20:52	06:15   20:23	06:50 (TRQ04)	06:48   19:34	07:20   18:42	06:57   17:01	07:31   16:41	
11	07:43   17:01	07:17   17:40	06:34   18:15	06:41   19:50	05:58   20:23	05:37   20:50	05:47   20:52	06:16   20:22	06:49 (TRQ04)	06:49   19:32	07:21   18:40	06:58   17:00	07:32   16:41	
12	07:43   17:02	07:16   17:41	06:33   18:16	06:40   19:51	05:57   20:24	05:37   20:51	05:47   20:51	06:17   20:21	06:48 (TRQ04)	06:50   19:31	07:22   18:38	06:59   17:00	07:33   16:41	
13	07:43   17:03	07:14   17:43	06:31   18:17	06:38   19:52	05:56   20:25	05:37   20:51	05:48   20:51	06:18   20:19	06:47 (TRQ04)	06:51   19:29	07:23   18:37	07:01   17:00	07:34   16:41	
14	07:43   17:05	07:13   17:44	06:29   18:18	06:36   19:53	05:55   20:26	05:37   20:51	05:49   20:50	06:19   20:18	06:46 (TRQ04)	06:52   19:27	07:24   18:35	07:02   17:00	07:34   16:41	
15	07:43   17:06	07:12   17:45	06:28   18:19	06:35   19:54	05:54   20:28	05:37   20:52	05:50   20:49	06:20   20:16	06:46 (TRQ04)	06:53   19:25	07:26   18:34	07:03   17:00	07:35   16:41	
16	07:43   17:07	07:10   17:46	06:26   18:21	06:33   19:56	05:53   20:29	05:37   20:52	05:51   20:49	06:21   20:15	06:46 (TRQ04)	06:54   19:24	07:27   18:32	07:05   17:00	07:36   16:41	
17	07:43   17:08	07:09   17:48	06:24   18:22	06:32   19:57	05:52   20:30	05:37   20:53	05:51   20:48	06:22   20:13	06:46 (TRQ04)	06:55   19:22	07:28   18:30	07:06   17:00	07:37   16:41	
18	07:43   17:09	07:08   17:49	06:22   18:23	06:30   19:58	05:51   20:31	05:37   20:53	05:52   20:47	06:23   20:12	06:46 (TRQ04)	06:56   19:20	07:29   18:29	07:07   17:00	07:37   16:41	
19	07:43   17:10	07:06   17:50	06:21   18:24	06:28   19:59	05:50   20:32	05:37   20:53	05:53   20:47	06:24   20:10	06:46 (TRQ04)	06:57   19:18	07:30   18:27	07:08   17:00	07:38   16:41	
20	07:43   17:12	07:05   17:52	06:19   18:25	06:27   20:00	05:49   20:33	05:37   20:54	05:54   20:46	06:25   20:09	06:46 (TRQ04)	06:58   19:16	07:31   18:26	07:10   17:00	07:39   16:41	
21	07:43   17:13	07:03   17:53	06:17   18:26	06:25   20:01	05:48   20:34	05:37   20:54	05:55   20:45	06:26   20:07	06:48 (TRQ04)	06:59   19:15	07:32   18:24	07:11   17:00	07:40   16:41	
22	07:43   17:14	07:02   17:54	06:16   18:27	06:24   20:02	05:47   20:35	05:37   20:54	05:56   20:44	06:27   20:06	06:49 (TRQ04)	07:00   19:13	07:33   18:23	07:12   17:00	07:41   16:41	
23	07:43   17:15	07:00   17:55	06:14   18:29	06:22   20:03	05:46   20:36	05:38   20:54	05:57   20:43	06:28   20:04	06:50 (TRQ04)	07:01   19:11	07:34   18:21	07:13   17:00	07:42   16:41	
24	07:43   17:16	06:59   17:56	06:12   18:30	06:21   20:05	05:45   20:37	05:38   20:54	05:58   20:43	06:30   20:03	06:51 (TRQ04)	07:02   19:09	07:36   18:20	07:14   17:00	07:43   16:41	
25	07:43   17:17	06:57   17:58	06:10   18:31	06:19   20:06	05:44   20:38	05:38   20:55	05:59   20:42	06:31   20:01	06:52 (TRQ04)	07:03   19:08	07:37   18:18	07:16   17:00	07:44   16:41	
26	07:43   17:18	06:56   17:59	06:09   18:32	06:18   20:07	05:43   20:39	05:38   20:55	06:00   20:41	06:32   19:59	06:53 (TRQ04)	07:04   19:06	07:38   18:17	07:17   17:00	07:45   16:41	
27	07:43   17:19	06:54   18:00	06:07   18:33	06:16   20:08	05:43   20:40	05:39   20:56	06:01   20:40	06:33   19:58	07:03 (TRQ04)	07:06   19:04	07:39   18:15	07:18   17:00	07:46   16:41	
28	07:43   17:22	06:52   18:01	06:05   18:34	06:15   20:09	05:43   20:41	05:39   20:57	06:02   20:39	06:34   19:56	07:07 (TRQ04)	07:07   19:02	07:40   18:14	07:19   17:00	07:47   16:41	
29	07:43   17:23	07:03   18:03	06:13   19:35	06:13   20:10	05:42   20:41	05:40   20:55	06:02   20:38	06:35   19:55	07:08 (TRQ04)	07:08   19:01	07:41   18:13	07:20   17:00	07:48   16:41	
30	07:43   17:24	07:02   18:04	06:12   20:11	06:12   20:11	05:41   20:42	05:40   20:55	06:03   20:37	06:36   19:53	07:09 (TRQ04)	07:09   18:59	07:42   18:11	07:21   17:00	07:49   16:41	
31	07:43   17:26	07:00   18:06	06:10   19:38	06:10   20:11	05:41   20:42	05:41   20:55	06:04   20:36	06:37   19:51	07:10 (TRQ04)	07:10   18:58	07:43   18:10	07:22   17:00	07:50   16:41	
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284		
Total, worst case				333	139			477						
Sun reduction				0,49	0,57			0,70						
Oper. time red.				0,95	0,95			0,95						
Wind dir. red.				0,66	0,66			0,66						
Total reduction				0,31	0,35			0,44						
Total, real				103	49			208						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)
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SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: EF - 135
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with 13 columns for months (January to December) and 31 rows for days. Columns contain time intervals (Sun rise, Sun set, Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, Total, real). Rows contain specific time values for each day.

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time).



Project:

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Licensed user:

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Andrea / fronteddu@montanambiente.com

Calculated:

06/08/2022 14:40/3.5.584

## SHADOW - Calendar

**Calculation:** Shadow\_realShadow receptor: EG - 141  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43   16:51	07:28   17:27	06:51   18:03	06:58   19:39	06:10   20:12	05:40   20:43	19:58 (TRQ06)   05:40   20:54	20:02 (TRQ06)   06:05   06:38	07:10   18:57	06:46   17:08	07:22   16:43	
2	07:43   16:52	07:27   17:28	06:49   18:04	06:56   19:40	06:09   20:13	05:40   20:44	19:58 (TRQ06)   05:41   20:54	20:02 (TRQ06)   06:06   06:39	07:11   18:55	06:47   17:07	07:23   16:42	
3	07:43   16:53	07:26   17:29	06:48   18:05	06:55   19:41	06:08   20:14	05:39   20:45	19:58 (TRQ06)   05:41   20:54	20:03 (TRQ06)   06:07   06:40	07:12   18:54	06:48   17:06	07:24   16:42	
4	07:43   16:54	07:25   17:31	06:46   18:06	06:53   19:42	06:06   20:16	05:39   20:45	19:58 (TRQ06)   05:42   20:54	20:03 (TRQ06)   06:08   06:41	07:13   18:52	06:50   17:05	07:25   16:42	
5	07:43   16:55	07:24   17:32	06:44   18:07	06:51   19:43	06:05   20:17	05:38   20:46	19:58 (TRQ06)   05:42   20:54	20:03 (TRQ06)   06:09   06:42	07:14   18:50	06:51   17:03	07:26   16:42	
6	07:43   16:56	07:23   17:33	06:43   18:09	06:49   19:44	06:04   20:18	05:38   20:47	19:57 (TRQ06)   05:43   20:53	20:03 (TRQ06)   06:10   06:43	07:15   18:48	06:52   17:02	07:27   16:41	
7	07:43   16:57	07:22   17:35	06:41   18:10	06:48   19:45	06:03   20:19	05:38   20:47	19:57 (TRQ06)   05:44   20:53	20:04 (TRQ06)   06:11   06:44	07:16   18:47	06:53   17:01	07:28   16:41	
8	07:43   16:58	07:21   17:36	06:39   18:11	06:46   19:46	06:01   20:20	05:37   20:48	19:57 (TRQ06)   05:44   20:53	20:05 (TRQ06)   06:13   06:45	07:17   18:45	06:55   17:00	07:29   16:41	
9	07:43   16:59	07:19   17:37	06:38   18:12	06:44   19:48	06:00   20:21	05:37   20:49	19:58 (TRQ06)   05:45   20:52	20:05 (TRQ06)   06:14   06:46	07:19   18:43	06:56   16:59	07:30   16:41	
10	07:42   17:00	07:18   17:39	06:36   18:13	06:43   19:49	05:59   20:22	05:37   20:49	19:58 (TRQ06)   05:46   20:52	20:06 (TRQ06)   06:15   06:47	07:20   18:42	06:57   16:58	07:31   16:41	
11	07:42   17:01	07:17   17:40	06:34   18:15	06:41   19:50	05:58   20:23	05:37   20:50	19:57 (TRQ06)   05:46   20:51	20:06 (TRQ06)   06:16   06:48	07:21   18:40	06:58   16:57	07:32   16:41	
12	07:42   17:02	07:16   17:41	06:33   18:16	06:39   19:51	05:57   20:24	05:37   20:50	19:57 (TRQ06)   05:47   20:51	20:06 (TRQ06)   06:17   06:49	07:22   18:38	06:59   16:56	07:33   16:41	
13	07:42   17:03	07:14   17:42	06:31   18:17	06:38   19:52	05:56   20:25	05:37   20:51	19:57 (TRQ06)   05:48   20:50	20:07 (TRQ06)   06:18   06:50	07:23   18:37	07:01   16:55	07:34   16:41	
14	07:41   17:04	07:13   17:44	06:29   18:18	06:36   19:53	05:55   20:26	05:36   20:51	19:58 (TRQ06)   05:49   20:50	20:08 (TRQ06)   06:19   06:52	07:24   18:35	07:02   16:54	07:34   16:42	
15	07:41   17:06	07:12   17:45	06:27   18:19	06:35   19:54	05:53   20:27	05:36   20:52	19:58 (TRQ06)   05:50   20:49	20:10 (TRQ06)   06:20   06:53	07:25   18:33	07:03   16:53	07:35   16:42	
16	07:40   17:07	07:10   17:46	06:26   18:20	06:33   19:55	05:52   20:28	05:36   20:52	19:58 (TRQ06)   05:50   20:49	20:11 (TRQ06)   06:21   06:54	07:27   18:32	07:04   16:52	07:36   16:42	
17	07:40   17:08	07:09   17:48	06:24   18:21	06:31   19:57	05:51   20:29	05:36   20:53	19:58 (TRQ06)   05:51   20:48	20:11 (TRQ06)   06:22   06:55	07:28   18:30	07:06   16:51	07:37   16:42	
18	07:39   17:09	07:07   17:49	06:22   18:23	06:30   19:58	05:50   20:30	05:37   20:53	19:58 (TRQ06)   05:52   20:47	20:13 (TRQ06)   06:23   06:56	07:29   18:29	07:07   16:50	07:37   16:43	
19	07:39   17:10	07:06   18:24	06:21   19:59	06:28   20:31	05:50   20:31	05:37   20:53	19:59 (TRQ06)   05:53   20:46	20:12 (TRQ06)   06:24   06:57	07:30   18:27	07:08   16:49	07:38   16:43	
20	07:38   17:12	07:05   18:25	06:19   20:01	06:27   20:32	05:49   20:33	05:37   20:53	19:59 (TRQ06)   05:54   20:46	20:16 (TRQ06)   06:25   06:58	07:31   18:26	07:09   16:49	07:38   16:43	
21	07:37   17:13	07:03   18:26	06:17   20:01	06:25   20:33	05:48   20:34	05:37   20:54	19:59 (TRQ06)   05:55   20:45	20:17 (TRQ06)   06:26   06:59	07:32   18:24	07:11   16:48	07:39   16:44	
22	07:37   17:14	07:02   18:27	06:15   20:02	06:24   20:34	05:47   20:35	05:37   20:54	19:59 (TRQ06)   05:56   20:44	20:18 (TRQ06)   06:27   06:59	07:34   18:23	07:12   16:47	07:40   16:44	
23	07:36   17:15	07:00   18:28	06:14   20:03	06:22   20:35	05:46   20:36	05:37   20:54	19:59 (TRQ06)   05:57   20:43	20:19 (TRQ06)   06:28   06:59	07:35   18:21	07:13   16:47	07:40   16:45	
24	07:35   17:17	06:59   18:29	06:12   20:04	06:20   20:36	05:45   20:37	05:36   20:54	20:00 (TRQ06)   05:57   20:42	20:20 (TRQ06)   06:29   06:59	07:36   18:20	07:14   16:46	07:40   16:45	
25	07:35   17:18	06:57   18:31	06:10   20:05	06:19   20:37	05:45   20:38	05:36   20:54	20:00 (TRQ06)   05:58   20:41	20:21 (TRQ06)   06:30   06:59	07:37   18:18	07:15   16:45	07:41   16:46	
26	07:34   17:19	06:55   18:32	06:08   20:07	06:18   20:38	05:44   20:39	05:36   20:54	20:00 (TRQ06)   05:59   20:41	20:22 (TRQ06)   06:32   06:59	07:38   18:17	07:17   16:45	07:41   16:47	
27	07:33   17:20	06:54   18:33	06:07   20:08	06:16   20:39	05:43   20:40	05:37   20:54	20:01 (TRQ06)   06:00   20:40	20:23 (TRQ06)   06:33   06:59	07:39   18:15	07:18   16:44	07:42   16:47	
28	07:32   17:22	06:52   18:34	06:05   20:09	06:15   20:40	05:42   20:41	05:37   20:54	20:01 (TRQ06)   06:01   20:39	20:24 (TRQ06)   06:34   06:59	07:40   18:14	07:19   16:44	07:42   16:48	
29	07:31   17:23	18:01   07:03	06:13   20:10	06:13   20:41	05:42   20:42	05:37   20:54	20:01 (TRQ06)   06:02   20:37	20:25 (TRQ06)   06:35   06:59	07:41   18:12	07:20   16:43	07:42   16:49	
30	07:30   17:24	07:01   19:36	06:12   20:11	06:12   20:42	05:41   20:43	05:40   20:54	20:01 (TRQ06)   06:03   20:36	20:26 (TRQ06)   06:36   06:59	07:42   18:11	07:21   16:43	07:42   16:49	
31	07:29   17:25	07:00   19:37	06:10   20:12	06:11   20:42	05:40   20:43	05:40   20:54	20:02 (TRQ06)   06:04   20:35	20:27 (TRQ06)   06:37   06:59	07:43   18:10	07:22   16:43	07:43   16:50	
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case					96	788	363					
Sun reduction					0,57	0,61	0,71					
Oper. time red.					0,95	0,95	0,95					
Wind dir. red.					0,51	0,51	0,51					
Total reduction					0,27	0,29	0,34					
Total, real					26	232	123					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Shadow\_realShadow receptor: EH - 181  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June			
1	07:43	07:28	06:51	06:58	06:10	05:40		19:56 (TRQ02)	
	16:51	17:27	18:03	19:39	20:12	20:43	22	20:18 (TRQ02)	
2	07:43	07:27	06:49	06:56	06:09	05:40		19:56 (TRQ02)	
	16:52	17:28	18:04	19:40	20:13	20:44	23	20:19 (TRQ02)	
3	07:43	07:26	06:48	06:55	06:08	05:39		19:55 (TRQ02)	
	16:53	17:29	18:05	19:41	20:14	20:45	24	20:19 (TRQ02)	
4	07:43	07:25	06:46	06:53	06:06	05:39		19:56 (TRQ02)	
	16:54	17:31	18:06	19:42	20:16	20:45	24	20:20 (TRQ02)	
5	07:43	07:24	06:44	06:51	06:05	05:38		19:56 (TRQ02)	
	16:55	17:32	18:07	19:43	20:17	20:46	25	20:21 (TRQ02)	
6	07:43	07:23	06:43	06:49	06:04	05:38		19:55 (TRQ02)	
	16:56	17:33	18:09	19:44	20:18	20:47	26	20:21 (TRQ02)	
7	07:43	07:22	06:41	06:48	06:03	05:38		19:56 (TRQ02)	
	16:57	17:35	18:10	19:45	20:19	20:47	26	20:22 (TRQ02)	
8	07:43	07:21	06:39	06:46	19:23 (TRQ05)	06:01		19:56 (TRQ02)	
	16:58	17:36	18:11	19:46	19:24 (TRQ05)	06:01		20:22 (TRQ02)	
9	07:43	07:19	06:38	06:44	19:21 (TRQ05)	06:00		19:56 (TRQ02)	
	16:59	17:37	18:12	19:48	19:25 (TRQ05)	06:00		20:23 (TRQ02)	
10	07:42	07:18	06:36	06:43	19:20 (TRQ05)	05:59		19:57 (TRQ02)	
	17:00	17:39	18:13	19:49	19:27 (TRQ05)	06:00		20:24 (TRQ02)	
11	07:42	07:17	06:34	17:49 (TRQ06)	06:41	19:19 (TRQ05)	05:58	19:56 (TRQ02)	
	17:01	17:40	18:15	4 17:53 (TRQ06)	19:50	19:28 (TRQ05)	06:01	20:23 (TRQ02)	
12	07:42	07:16	06:33	17:46 (TRQ06)	06:39	19:18 (TRQ05)	05:57	19:56 (TRQ02)	
	17:02	17:41	18:16	9 17:55 (TRQ06)	19:51	19:28 (TRQ05)	06:00	20:24 (TRQ02)	
13	07:42	07:14	06:31	17:43 (TRQ06)	06:38	19:18 (TRQ05)	05:56	19:56 (TRQ02)	
	17:03	17:42	18:17	12 17:55 (TRQ06)	19:52	19:30 (TRQ05)	06:00	20:25 (TRQ02)	
14	07:41	07:13	06:29	17:41 (TRQ06)	06:36	19:18 (TRQ05)	05:54	19:57 (TRQ02)	
	17:04	17:44	18:18	15 17:56 (TRQ06)	19:53	19:31 (TRQ05)	06:00	20:25 (TRQ02)	
15	07:41	07:12	06:27	17:39 (TRQ06)	06:35	19:18 (TRQ05)	05:53	19:57 (TRQ02)	
	17:06	17:45	18:19	18 17:57 (TRQ06)	19:54	19:32 (TRQ05)	06:00	20:25 (TRQ02)	
16	07:40	07:10	06:26	17:39 (TRQ06)	06:33	19:18 (TRQ05)	05:52	19:57 (TRQ02)	
	17:07	17:46	18:20	20 17:59 (TRQ06)	19:55	19:33 (TRQ05)	06:00	20:26 (TRQ02)	
17	07:40	07:09	06:24	17:37 (TRQ06)	06:31	19:18 (TRQ05)	05:51	19:57 (TRQ02)	
	17:08	17:48	18:21	23 18:00 (TRQ06)	19:57	19:34 (TRQ05)	06:00	20:26 (TRQ02)	
18	07:39	07:07	06:22	17:36 (TRQ06)	06:30	19:19 (TRQ05)	05:50	19:57 (TRQ02)	
	17:09	17:49	18:23	25 18:01 (TRQ06)	19:58	19:35 (TRQ05)	06:00	20:26 (TRQ02)	
19	07:39	07:06	06:21	17:36 (TRQ06)	06:28	19:20 (TRQ05)	05:50	19:58 (TRQ02)	
	17:10	17:50	18:24	27 18:03 (TRQ06)	19:59	19:33 (TRQ05)	06:00	20:28 (TRQ02)	
20	07:38	07:05	06:19	17:36 (TRQ06)	06:27	19:22 (TRQ05)	05:49	19:58 (TRQ02)	
	17:12	17:51	18:25	28 18:04 (TRQ06)	20:00	19:32 (TRQ05)	06:00	20:28 (TRQ02)	
21	07:38	07:03	06:17	17:35 (TRQ06)	06:25		05:48	19:58 (TRQ02)	
	17:13	17:53	18:26	30 18:05 (TRQ06)	20:01		05:46	20:28 (TRQ02)	
22	07:37	07:02	06:15	17:35 (TRQ06)	06:24		05:47	19:58 (TRQ02)	
	17:14	17:54	18:27	31 18:06 (TRQ06)	20:02		05:46	20:28 (TRQ02)	
23	07:36	07:00	06:14	17:35 (TRQ06)	06:22		05:46	19:58 (TRQ02)	
	17:15	17:55	18:28	32 18:07 (TRQ06)	20:03		05:45	20:28 (TRQ02)	
24	07:35	06:59	06:12	17:35 (TRQ06)	06:20		05:45	19:59 (TRQ02)	
	17:16	17:56	18:29	31 18:06 (TRQ06)	20:04		05:44	20:28 (TRQ02)	
25	07:35	06:57	06:10	17:35 (TRQ06)	06:19		05:44	19:59 (TRQ02)	
	17:18	17:58	18:31	30 18:05 (TRQ06)	20:05		05:44	20:28 (TRQ02)	
26	07:34	06:55	06:08	17:36 (TRQ06)	06:18		05:44	19:59 (TRQ02)	
	17:19	17:59	18:32	27 18:03 (TRQ06)	20:07		05:43	20:28 (TRQ02)	
27	07:33	06:54	06:07	17:37 (TRQ06)	06:16		05:43	20:00 (TRQ02)	
	17:20	18:00	18:33	26 18:03 (TRQ06)	20:08		05:42	20:29 (TRQ02)	
28	07:32	06:52	06:05	17:38 (TRQ06)	06:15		05:42	20:00 (TRQ02)	
	17:22	18:01	18:34	23 18:01 (TRQ06)	20:09		05:42	20:28 (TRQ02)	
29	07:31		07:03	18:39 (TRQ06)	06:13		05:42	20:00 (TRQ02)	
	17:23		19:35	19 18:58 (TRQ06)	20:10		05:41	20:29 (TRQ02)	
30	07:30		07:01	18:41 (TRQ06)	06:12		05:41	20:00 (TRQ02)	
	17:24		19:36	14 18:55 (TRQ06)	20:11		05:40	20:28 (TRQ02)	
31	07:29		07:00	18:46 (TRQ06)			05:41	20:00 (TRQ02)	
	17:25		19:37	5 18:51 (TRQ06)			05:40	20:28 (TRQ02)	
Potential sun hours	294	295	369	400	452	457			
Total, worst case				449	140	168		828	
Sun reduction				0,46	0,49	0,57		0,61	
Oper. time red.				0,95	0,95	0,95		0,95	
Wind dir. red.				0,63	0,56	0,51		0,51	
Total reduction				0,28	0,27	0,28		0,30	
Total, real				125	37	46		246	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** EH - 181  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July		August		September		October		November		December
1	05:40	20:01 (TRQ02)	06:05		06:38	19:18 (TRQ05)	07:10	18:24 (TRQ06)	06:46	07:22	
	28	20:29 (TRQ02)	20:34		19:49	9 19:27 (TRQ05)	18:57	10 18:34 (TRQ06)	17:08	16:43	
2	05:41	20:01 (TRQ02)	06:06		06:39	19:18 (TRQ05)	07:11	18:26 (TRQ06)	06:47	07:23	
	27	20:28 (TRQ02)	20:33		19:48	7 19:25 (TRQ05)	18:55	6 18:32 (TRQ06)	17:07	16:42	
3	05:41	20:01 (TRQ02)	06:07		06:40	19:19 (TRQ05)	07:12		06:48	07:24	
	27	20:28 (TRQ02)	20:32		19:46	4 19:23 (TRQ05)	18:54		17:06	16:42	
4	05:42	20:01 (TRQ02)	06:08		06:41	19:20 (TRQ05)	07:13		06:50	07:25	
	27	20:28 (TRQ02)	20:31		19:44	2 19:22 (TRQ05)	18:52		17:05	16:42	
5	05:42	20:02 (TRQ02)	06:09		06:42		07:14		06:51	07:26	
	26	20:28 (TRQ02)	20:30		19:43		18:50		17:03	16:42	
6	05:43	20:01 (TRQ02)	06:10		06:43		07:15		06:52	07:27	
	26	20:27 (TRQ02)	20:28		19:41		18:48		17:02	16:41	
7	05:44	20:02 (TRQ02)	06:11		06:44		07:16		06:53	07:28	
	25	20:27 (TRQ02)	20:27		19:39		18:47		17:01	16:41	
8	05:44	20:03 (TRQ02)	06:13		06:45		07:17		06:55	07:29	
	24	20:27 (TRQ02)	20:26		19:37		18:45		17:00	16:41	
9	05:45	20:02 (TRQ02)	06:14		06:46		07:19		06:56	07:30	
	24	20:26 (TRQ02)	20:24		19:36		18:43		16:59	16:41	
10	05:46	20:03 (TRQ02)	06:15		06:47		07:20		06:57	07:31	
	23	20:26 (TRQ02)	20:23		19:34		18:42		16:58	16:41	
11	05:46	20:04 (TRQ02)	06:16		06:48		07:21		06:58	07:32	
	22	20:26 (TRQ02)	20:22		19:32		18:40		16:57	16:41	
12	05:47	20:03 (TRQ02)	06:17		06:49	18:39 (TRQ06)	07:22		07:00	07:33	
	22	20:25 (TRQ02)	20:20		19:30	2 18:41 (TRQ06)	18:38		16:56	16:41	
13	05:48	20:04 (TRQ02)	06:18		06:50	18:33 (TRQ06)	07:23		07:01	07:34	
	21	20:25 (TRQ02)	20:19		19:29	13 18:46 (TRQ06)	18:37		16:55	16:41	
14	05:49	20:05 (TRQ02)	06:19		06:52	18:30 (TRQ06)	07:24		07:02	07:34	
	19	20:24 (TRQ02)	20:18		19:27	18 18:48 (TRQ06)	18:35		16:54	16:42	
15	05:50	20:06 (TRQ02)	06:20		06:53	18:27 (TRQ06)	07:25		07:03	07:35	
	18	20:24 (TRQ02)	20:16		19:25	23 18:50 (TRQ06)	18:33		16:53	16:42	
16	05:50	20:06 (TRQ02)	06:21		06:54	18:26 (TRQ06)	07:27		07:04	07:36	
	18	20:24 (TRQ02)	20:15		19:23	25 18:51 (TRQ06)	18:32		16:52	16:42	
17	05:51	20:06 (TRQ02)	06:22		06:55	18:24 (TRQ06)	07:28		07:06	07:37	
	16	20:22 (TRQ02)	20:13		19:22	27 18:51 (TRQ06)	18:30		16:51	16:42	
18	05:52	20:07 (TRQ02)	06:23		06:56	18:23 (TRQ06)	07:29		07:07	07:37	
	15	20:22 (TRQ02)	20:12		19:20	29 18:52 (TRQ06)	18:29		16:50	16:43	
19	05:53	20:08 (TRQ02)	06:24		06:57	18:22 (TRQ06)	07:30		07:08	07:38	
	13	20:21 (TRQ02)	20:10		19:18	30 18:52 (TRQ06)	18:27		16:49	16:43	
20	05:54	20:09 (TRQ02)	06:25		06:58	18:21 (TRQ06)	07:31		07:09	07:38	
	12	20:21 (TRQ02)	20:09		19:16	31 18:52 (TRQ06)	18:26		16:49	16:43	
21	05:55	20:10 (TRQ02)	06:26		06:59	18:20 (TRQ06)	07:32		07:11	07:39	
	10	20:20 (TRQ02)	20:07		19:15	31 18:51 (TRQ06)	18:24		16:48	16:44	
22	05:56	20:12 (TRQ02)	06:27		07:00	18:20 (TRQ06)	07:34		07:12	07:40	
	8	20:20 (TRQ02)	20:06		19:13	30 18:50 (TRQ06)	18:22		16:47	16:44	
23	05:57	20:13 (TRQ02)	06:28	19:26 (TRQ05)	07:01	18:20 (TRQ06)	07:35		07:13	07:40	
	5	20:18 (TRQ02)	20:04	10 19:36 (TRQ05)	19:11	29 18:49 (TRQ06)	18:21		16:47	16:45	
24	05:57	20:15 (TRQ02)	06:29	19:24 (TRQ05)	07:02	18:20 (TRQ06)	07:36		07:14	07:40	
	2	20:17 (TRQ02)	20:02	13 19:37 (TRQ05)	19:09	27 18:47 (TRQ06)	18:20		16:46	16:45	
25	05:58		06:30	19:22 (TRQ05)	07:03	18:20 (TRQ06)	06:37		07:15	07:41	
	20:41		20:01	16 19:38 (TRQ05)	19:07	25 18:45 (TRQ06)	17:18		16:45	16:46	
26	05:59		06:32	19:21 (TRQ05)	07:04	18:20 (TRQ06)	06:38		07:17	07:41	
	20:41		19:59	15 19:36 (TRQ05)	19:06	23 18:43 (TRQ06)	17:17		16:45	16:47	
27	06:00		06:33	19:20 (TRQ05)	07:05	18:20 (TRQ06)	06:40		07:18	07:42	
	20:40		19:58	15 19:35 (TRQ05)	19:04	21 18:41 (TRQ06)	17:15		16:44	16:47	
28	06:01		06:34	19:19 (TRQ05)	07:06	18:20 (TRQ06)	06:41		07:19	07:42	
	20:39		19:56	14 19:33 (TRQ05)	19:02	19 18:39 (TRQ06)	17:14		16:44	16:48	
29	06:02		06:35	19:19 (TRQ05)	07:08	18:21 (TRQ06)	06:42		07:20	07:42	
	20:38		19:54	13 19:32 (TRQ05)	19:00	16 18:37 (TRQ06)	17:12		16:43	16:49	
30	06:03		06:36	19:18 (TRQ05)	07:09	18:22 (TRQ06)	06:43		07:21	07:42	
	20:36		19:53	12 19:30 (TRQ05)	18:59	14 18:36 (TRQ06)	17:11		16:43	16:49	
31	06:04		06:37	19:18 (TRQ05)			06:45			07:43	
	20:35		19:51	10 19:28 (TRQ05)			17:10			16:50	
Potential sun hours	463		430		376		344		295	284	
Total, worst case		458		118		455		16			
Sun reduction		0,71		0,70		0,62		0,55			
Oper. time red.		0,95		0,95		0,95		0,95			
Wind dir. red.		0,51		0,56		0,63		0,63			
Total reduction		0,34		0,38		0,38		0,33			
Total, real		157		45		171		5			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

## SHADOW - Calendar

**Calculation:** Shadow\_realShadow receptor: EI - 188  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June		
1	07:43	07:28	15:48 (TRQ05) 06:51	16:03 (TRQ05) 06:58	08:20 (TRQ02) 06:10	06:56 (TRQ07) 05:40	07:49 (TRQ02)	
	16:51	17:27	63 16:51 (TRQ05) 18:03	35 16:38 (TRQ05) 19:39	126 10:26 (TRQ02) 20:12	171 10:29 (TRQ02) 20:43	145 10:14 (TRQ02)	
2	07:43	07:27	15:48 (TRQ05) 06:49	16:06 (TRQ05) 06:56	08:18 (TRQ02) 06:09	07:00 (TRQ07) 05:40	07:50 (TRQ02)	
	16:52	17:28	63 16:51 (TRQ05) 18:04	30 16:36 (TRQ05) 19:40	129 10:27 (TRQ02) 20:13	164 10:29 (TRQ02) 20:44	144 10:14 (TRQ02)	
3	07:43	07:26	15:48 (TRQ05) 06:48	16:09 (TRQ05) 06:55	08:16 (TRQ02) 06:08	07:50 (TRQ07) 05:39	07:49 (TRQ02)	
	16:53	17:29	64 16:52 (TRQ05) 18:05	23 16:32 (TRQ05) 19:41	131 10:27 (TRQ02) 20:14	158 10:28 (TRQ02) 20:45	144 10:13 (TRQ02)	
4	07:43	07:25	15:48 (TRQ05) 06:46	16:14 (TRQ05) 06:53	08:15 (TRQ02) 06:06	07:49 (TRQ07) 05:39	07:50 (TRQ02)	
	16:54	17:31	65 16:53 (TRQ05) 18:06	13 16:27 (TRQ05) 19:42	134 10:29 (TRQ02) 20:16	158 10:27 (TRQ02) 20:46	143 10:13 (TRQ02)	
5	07:43	07:24	15:47 (TRQ05) 06:44	06:51	08:13 (TRQ02) 06:05	07:49 (TRQ07) 05:38	07:51 (TRQ02)	
	16:55	17:32	65 16:52 (TRQ05) 18:07	19:43	136 10:29 (TRQ02) 20:17	158 10:27 (TRQ02) 20:46	143 10:14 (TRQ02)	
6	07:43	07:23	15:47 (TRQ05) 06:43	06:50	08:11 (TRQ02) 06:04	07:49 (TRQ07) 05:38	07:50 (TRQ02)	
	16:56	17:33	66 16:53 (TRQ05) 18:09	19:44	139 10:30 (TRQ02) 20:18	157 10:26 (TRQ02) 20:47	143 10:13 (TRQ02)	
7	07:43	07:22	15:47 (TRQ05) 06:41	06:48	08:11 (TRQ02) 06:03	07:49 (TRQ07) 05:38	07:51 (TRQ02)	
	16:57	17:35	66 16:53 (TRQ05) 18:10	19:45	141 19:24 (TRQ03) 20:19	157 10:26 (TRQ02) 20:48	142 10:13 (TRQ02)	
8	07:43	07:21	15:47 (TRQ05) 06:39	06:46	08:09 (TRQ02) 06:01	07:49 (TRQ07) 05:37	07:51 (TRQ02)	
	16:58	17:36	67 16:54 (TRQ05) 18:11	19:46	148 19:24 (TRQ03) 20:20	156 10:25 (TRQ02) 20:48	142 10:13 (TRQ02)	
9	07:43	07:19	15:48 (TRQ05) 06:38	06:44	08:07 (TRQ02) 06:00	07:47 (TRQ07) 05:37	07:52 (TRQ02)	
	16:59	17:37	66 16:54 (TRQ05) 18:12	19:48	153 19:25 (TRQ03) 20:21	157 10:24 (TRQ02) 20:49	141 10:13 (TRQ02)	
10	07:42	07:18	15:47 (TRQ05) 06:36	06:43	08:07 (TRQ02) 05:59	07:47 (TRQ07) 05:37	07:52 (TRQ02)	
	17:00	17:39	66 16:53 (TRQ05) 18:13	19:49	157 19:27 (TRQ03) 20:22	156 10:23 (TRQ02) 20:49	141 10:13 (TRQ02)	
11	07:42	07:17	15:48 (TRQ05) 06:34	06:41	07:00 (TRQ07) 05:58	07:47 (TRQ07) 05:37	07:51 (TRQ02)	
	17:01	17:40	66 16:54 (TRQ05) 18:15	19:50	175 19:28 (TRQ03) 20:23	156 10:23 (TRQ02) 20:50	141 10:12 (TRQ02)	
12	07:42	07:16	15:48 (TRQ05) 06:33	06:39	06:58 (TRQ07) 05:57	07:47 (TRQ07) 05:37	07:52 (TRQ02)	
	17:02	17:41	66 16:54 (TRQ05) 18:16	19:51	182 19:28 (TRQ03) 20:24	155 10:22 (TRQ02) 20:50	140 10:12 (TRQ02)	
13	07:42	07:14	15:48 (TRQ05) 06:31	06:38	06:57 (TRQ07) 05:56	07:47 (TRQ07) 05:37	07:52 (TRQ02)	
	17:03	17:42	65 16:53 (TRQ05) 18:17	19:52	188 19:30 (TRQ03) 20:25	155 10:22 (TRQ02) 20:51	141 10:13 (TRQ02)	
14	07:41	07:13	15:48 (TRQ05) 06:29	06:36	06:55 (TRQ07) 05:55	07:47 (TRQ07) 05:36	07:52 (TRQ02)	
	17:04	17:44	65 16:53 (TRQ05) 18:18	19:53	193 19:31 (TRQ03) 20:26	154 10:21 (TRQ02) 20:51	141 10:13 (TRQ02)	
15	07:41	07:12	15:48 (TRQ05) 06:28	06:35	06:54 (TRQ07) 05:53	07:47 (TRQ07) 05:36	07:53 (TRQ02)	
	17:06	17:45	65 16:53 (TRQ05) 18:19	19:54	198 19:32 (TRQ03) 20:27	154 10:21 (TRQ02) 20:52	140 10:13 (TRQ02)	
16	07:40	07:10	15:49 (TRQ05) 06:26	06:33	06:52 (TRQ07) 05:52	07:47 (TRQ07) 05:36	07:53 (TRQ02)	
	17:07	17:46	64 16:53 (TRQ05) 18:20	32 08:11 (TRQ02) 06:33	203 19:33 (TRQ03) 20:28	153 10:20 (TRQ02) 20:52	140 10:13 (TRQ02)	
17	07:40	07:09	15:50 (TRQ05) 06:24	06:31	08:04 (TRQ02) 06:31	06:50 (TRQ07) 05:51	07:47 (TRQ07) 05:36	07:53 (TRQ02)
	17:08	17:48	63 16:53 (TRQ05) 18:22	45 08:49 (TRQ02) 06:30	207 19:34 (TRQ03) 20:29	152 10:19 (TRQ02) 20:53	140 10:13 (TRQ02)	
18	07:39	07:07	15:50 (TRQ05) 06:22	06:30	07:58 (TRQ02) 06:30	06:50 (TRQ07) 05:50	07:47 (TRQ07) 05:37	07:53 (TRQ02)
	17:09	17:49	62 16:52 (TRQ05) 18:23	56 08:54 (TRQ02) 06:29	209 19:35 (TRQ03) 20:31	152 10:19 (TRQ02) 20:53	140 10:13 (TRQ02)	
19	07:39	07:06	15:51 (TRQ05) 06:21	06:28	07:54 (TRQ02) 06:28	06:49 (TRQ07) 05:50	07:48 (TRQ07) 05:37	07:54 (TRQ02)
	17:10	17:50	60 16:51 (TRQ05) 18:24	65 08:59 (TRQ02) 06:27	208 19:34 (TRQ03) 20:32	151 10:19 (TRQ02) 20:53	140 10:14 (TRQ02)	
20	07:38	07:05	15:51 (TRQ05) 06:19	06:27	07:50 (TRQ02) 06:27	06:49 (TRQ07) 05:49	07:48 (TRQ07) 05:37	07:54 (TRQ02)
	17:12	17:51	59 16:50 (TRQ05) 18:25	72 09:02 (TRQ02) 06:26	208 19:33 (TRQ03) 20:32	151 10:19 (TRQ02) 20:54	140 10:14 (TRQ02)	
21	07:38	07:03	15:52 (TRQ05) 06:17	06:25	07:46 (TRQ02) 06:25	06:49 (TRQ07) 05:48	07:48 (TRQ07) 05:37	07:54 (TRQ02)
	17:13	17:53	58 16:50 (TRQ05) 18:26	79 09:05 (TRQ02) 06:24	206 19:31 (TRQ03) 20:33	150 10:18 (TRQ02) 20:54	140 10:14 (TRQ02)	
22	07:37	07:02	15:53 (TRQ05) 06:15	06:24	07:42 (TRQ02) 06:24	06:49 (TRQ07) 05:47	07:48 (TRQ07) 05:37	07:54 (TRQ02)
	17:14	17:54	56 16:49 (TRQ05) 18:27	86 09:08 (TRQ02) 06:22	203 19:30 (TRQ03) 20:34	149 10:17 (TRQ02) 20:54	140 10:14 (TRQ02)	
23	07:36	07:00	15:54 (TRQ05) 06:14	06:22	07:40 (TRQ02) 06:22	06:49 (TRQ07) 05:46	07:47 (TRQ07) 05:37	07:54 (TRQ02)
	17:15	17:55	54 16:48 (TRQ05) 18:28	91 09:11 (TRQ02) 06:21	197 19:27 (TRQ03) 20:35	150 10:17 (TRQ02) 20:54	140 10:14 (TRQ02)	
24	07:35	06:59	15:55 (TRQ05) 06:12	06:21	07:37 (TRQ02) 06:21	06:49 (TRQ07) 05:45	07:48 (TRQ07) 05:38	07:55 (TRQ02)
	17:17	17:56	51 16:46 (TRQ05) 18:30	96 09:13 (TRQ02) 06:20	187 10:32 (TRQ02) 20:36	149 10:17 (TRQ02) 20:54	140 10:15 (TRQ02)	
25	07:35	06:57	15:57 (TRQ05) 06:10	06:19	07:34 (TRQ02) 06:19	06:49 (TRQ07) 05:45	07:48 (TRQ07) 05:38	07:55 (TRQ02)
	17:18	17:58	49 16:46 (TRQ05) 18:31	101 09:15 (TRQ02) 06:18	186 10:31 (TRQ02) 20:37	148 10:16 (TRQ02) 20:54	140 10:15 (TRQ02)	
26	07:34	06:56	15:58 (TRQ05) 06:08	06:18	07:32 (TRQ02) 06:18	06:50 (TRQ07) 05:44	07:48 (TRQ07) 05:38	07:55 (TRQ02)
	17:19	17:59	46 16:44 (TRQ05) 18:32	105 09:17 (TRQ02) 06:16	185 10:31 (TRQ02) 20:38	147 10:15 (TRQ02) 20:55	140 10:15 (TRQ02)	
27	07:33	06:54	15:59 (TRQ05) 06:07	06:16	07:30 (TRQ02) 06:16	06:51 (TRQ07) 05:43	07:49 (TRQ07) 05:39	07:56 (TRQ02)
	17:20	18:00	43 16:42 (TRQ05) 18:33	109 09:19 (TRQ02) 06:15	184 10:30 (TRQ02) 20:39	147 10:16 (TRQ02) 20:55	140 10:16 (TRQ02)	
28	07:32	06:52	16:02 (TRQ05) 06:05	06:15	07:28 (TRQ02) 06:15	06:51 (TRQ07) 05:42	07:48 (TRQ07) 05:39	07:55 (TRQ02)
	17:22	18:01	39 16:41 (TRQ05) 18:34	113 09:21 (TRQ02) 06:13	182 10:30 (TRQ02) 20:39	147 10:15 (TRQ02) 20:55	141 10:16 (TRQ02)	
29	07:31	06:50	16:03 (TRQ05) 06:03	06:13	08:25 (TRQ02) 06:13	06:53 (TRQ07) 05:42	07:49 (TRQ07) 05:39	07:56 (TRQ02)
	17:23	18:05	117 19:35	117 10:22 (TRQ02) 20:10	179 10:30 (TRQ02) 20:41	146 10:15 (TRQ02) 20:55	141 10:17 (TRQ02)	
30	07:30	06:49	15:49 (TRQ05) 19:36	120 10:23 (TRQ02) 20:11	176 10:30 (TRQ02) 20:42	145 10:14 (TRQ02) 20:55	141 10:17 (TRQ02)	
	17:24	18:05	120 19:36	120 10:23 (TRQ02) 20:11	176 10:30 (TRQ02) 20:42	145 10:14 (TRQ02) 20:55	141 10:17 (TRQ02)	
31	07:29	06:48	15:48 (TRQ05) 19:37	123 10:25 (TRQ02) 20:12	176 10:30 (TRQ02) 20:42	145 10:14 (TRQ02) 20:55	141 10:17 (TRQ02)	
	17:26	18:05	123 19:37	123 10:25 (TRQ02) 20:12	176 10:30 (TRQ02) 20:42	145 10:14 (TRQ02) 20:55	141 10:17 (TRQ02)	
Potential sun hours	294	295	369	400	452	457	4234	
Total, worst case	987	1682	1511	5250	4748	4234	4234	
Sun reduction	0,42	0,46	0,46	0,49	0,57	0,61	0,61	
Oper. time red.	0,95	0,95	0,95	0,95	0,95	0,95	0,95	
Wind dir. red.	0,75	0,75	0,59	0,58	0,58	0,58	0,58	
Total reduction	0,30	0,33	0,26	0,28	0,32	0,34	0,34	
Total, real	296	555	391	1452	1496	1431	1431	

**Table layout: For each day in each month the following matrix apply**

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)

SHADOW - Calendar

Calculation: Shadow\_realShadow receptor: EI - 188
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Table with 12 columns (Jan-Dec) and 1 row of values: 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

Table with 13 columns (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum) and 1 row of values: 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Main shadow calculation table with columns for months (July-December) and rows for each day (1-31) showing sun rise/set times, shadow reduction, and operational time.

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)

SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: EJ - 187
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

Table with 13 columns: N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum. Values range from 1.218 to 8.309.

Main shadow calculation table with columns for months (January to June) and rows for each day of the month, including sun rise/set times and reduction percentages.

Table layout: For each day in each month the following matrix apply

Matrix table with 4 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time).



## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: EJ - 187  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

July		August		September		October		November		December		
1	05:40	08:05 (TRQ02)	06:05	08:04 (TRQ02)	06:38	06:59 (TRQ07)	07:10	08:46 (TRQ02)	06:46	15:13 (TRQ05)	07:22	15:34 (TRQ05)
2	05:41	08:05 (TRQ02)	06:06	08:04 (TRQ02)	06:39	07:00 (TRQ07)	07:11	08:52 (TRQ02)	06:47	15:13 (TRQ05)	07:23	15:35 (TRQ05)
3	05:41	08:05 (TRQ02)	06:07	08:04 (TRQ02)	06:40	07:05 (TRQ07)	07:12	09:02 (TRQ02)	06:48	15:13 (TRQ05)	07:24	15:37 (TRQ05)
4	05:42	08:05 (TRQ02)	06:08	08:04 (TRQ02)	06:41	08:06 (TRQ02)	07:13	09:14 (TRQ02)	06:48	15:13 (TRQ05)	07:24	15:37 (TRQ05)
5	05:43	08:05 (TRQ02)	06:09	08:04 (TRQ02)	06:42	08:06 (TRQ02)	07:14	17:05	06:51	15:13 (TRQ05)	07:26	15:40 (TRQ05)
6	05:43	08:05 (TRQ02)	06:10	08:04 (TRQ02)	06:43	08:07 (TRQ02)	07:15	17:03	06:52	15:13 (TRQ05)	07:27	15:41 (TRQ05)
7	05:44	08:05 (TRQ02)	06:12	08:04 (TRQ02)	06:44	08:08 (TRQ02)	07:16	17:02	06:53	15:13 (TRQ05)	07:28	15:43 (TRQ05)
8	05:44	08:06 (TRQ02)	06:13	08:03 (TRQ02)	06:45	08:10 (TRQ02)	07:18	17:01	06:55	15:13 (TRQ05)	07:29	15:45 (TRQ05)
9	05:45	08:05 (TRQ02)	06:14	08:03 (TRQ02)	06:46	08:08 (TRQ02)	07:19	17:00	06:56	15:14 (TRQ05)	07:30	15:47 (TRQ05)
10	05:46	08:05 (TRQ02)	06:15	08:03 (TRQ02)	06:47	08:09 (TRQ02)	07:20	16:59	06:57	15:14 (TRQ05)	07:31	15:50 (TRQ05)
11	05:47	08:06 (TRQ02)	06:16	08:03 (TRQ02)	06:48	08:10 (TRQ02)	07:21	16:58	06:58	15:14 (TRQ05)	07:32	15:53 (TRQ05)
12	05:47	08:05 (TRQ02)	06:17	07:10 (TRQ07)	06:49	08:10 (TRQ02)	07:22	16:42 (TRQ05)	07:00	15:15 (TRQ05)	07:33	15:57 (TRQ05)
13	05:48	08:05 (TRQ02)	06:18	07:06 (TRQ07)	06:51	08:11 (TRQ02)	07:23	17:00 (TRQ05)	07:01	15:16 (TRQ05)	07:34	16:01 (TRQ05)
14	05:49	08:05 (TRQ02)	06:19	07:03 (TRQ07)	06:52	08:12 (TRQ02)	07:24	16:37 (TRQ05)	07:02	15:16 (TRQ05)	07:34	16:01 (TRQ05)
15	05:50	08:06 (TRQ02)	06:20	07:02 (TRQ07)	06:53	08:13 (TRQ02)	07:25	17:03 (TRQ05)	07:03	15:16 (TRQ05)	07:35	16:01 (TRQ05)
16	05:50	08:06 (TRQ02)	06:21	07:00 (TRQ07)	06:54	08:14 (TRQ02)	07:27	17:02 (TRQ05)	07:05	15:17 (TRQ05)	07:36	16:02 (TRQ05)
17	05:51	08:05 (TRQ02)	06:22	06:59 (TRQ07)	06:55	08:15 (TRQ02)	07:28	16:29 (TRQ05)	07:05	15:18 (TRQ05)	07:37	16:02 (TRQ05)
18	05:52	08:05 (TRQ02)	06:23	06:57 (TRQ07)	06:56	08:16 (TRQ02)	07:29	17:10 (TRQ05)	07:06	15:18 (TRQ05)	07:37	16:03 (TRQ05)
19	05:53	08:05 (TRQ02)	06:24	06:57 (TRQ07)	06:57	08:17 (TRQ02)	07:30	16:27 (TRQ05)	07:06	15:19 (TRQ05)	07:37	16:03 (TRQ05)
20	05:54	08:05 (TRQ02)	06:25	06:56 (TRQ07)	06:58	08:18 (TRQ02)	07:31	17:11 (TRQ05)	07:07	15:19 (TRQ05)	07:38	16:04 (TRQ05)
21	05:55	08:05 (TRQ02)	06:26	06:55 (TRQ07)	06:59	08:20 (TRQ02)	07:32	16:25 (TRQ05)	07:07	15:20 (TRQ05)	07:38	16:04 (TRQ05)
22	05:56	08:05 (TRQ02)	06:27	06:55 (TRQ07)	07:00	08:22 (TRQ02)	07:34	17:12 (TRQ05)	07:08	15:20 (TRQ05)	07:38	16:04 (TRQ05)
23	05:57	08:05 (TRQ02)	06:28	06:55 (TRQ07)	07:01	08:24 (TRQ02)	07:35	16:22 (TRQ05)	07:09	15:21 (TRQ05)	07:39	16:05 (TRQ05)
24	05:58	08:04 (TRQ02)	06:29	06:54 (TRQ07)	07:02	08:26 (TRQ02)	07:36	17:14 (TRQ05)	07:10	15:21 (TRQ05)	07:39	16:05 (TRQ05)
25	05:58	08:04 (TRQ02)	06:31	06:54 (TRQ07)	07:03	08:28 (TRQ02)	07:37	16:18 (TRQ05)	07:11	15:22 (TRQ05)	07:40	16:06 (TRQ05)
26	05:59	08:04 (TRQ02)	06:32	06:54 (TRQ07)	07:04	08:30 (TRQ02)	07:38	17:16 (TRQ05)	07:12	15:23 (TRQ05)	07:40	16:06 (TRQ05)
27	06:00	08:04 (TRQ02)	06:33	06:54 (TRQ07)	07:05	08:32 (TRQ02)	07:39	16:18 (TRQ05)	07:13	15:24 (TRQ05)	07:41	16:07 (TRQ05)
28	06:01	08:04 (TRQ02)	06:34	06:55 (TRQ07)	07:06	08:35 (TRQ02)	07:41	17:17 (TRQ05)	07:14	15:25 (TRQ05)	07:41	16:07 (TRQ05)
29	06:02	08:04 (TRQ02)	06:35	06:56 (TRQ07)	07:07	08:38 (TRQ02)	07:42	16:18 (TRQ05)	07:15	15:26 (TRQ05)	07:42	16:08 (TRQ05)
30	06:03	08:04 (TRQ02)	06:36	06:57 (TRQ07)	07:09	08:41 (TRQ02)	07:43	16:18 (TRQ05)	07:16	15:27 (TRQ05)	07:42	16:08 (TRQ05)
31	06:04	08:04 (TRQ02)	06:37	06:58 (TRQ07)	07:10	09:38 (TRQ02)	07:44	15:17 (TRQ05)	07:17	15:28 (TRQ05)	07:42	16:09 (TRQ05)
Potential sun hours	463	430	376	344	295	284	253					
Total, worst case	4170	5403	3608	1114	1718	253	0,43					
Sun reduction	0,71	0,70	0,62	0,55	0,46	0,39	0,31					
Oper. time red.	0,95	0,95	0,95	0,95	0,95	0,95	0,95					
Wind dir. red.	0,56	0,57	0,56	0,73	0,75	0,75	0,75					
Total reduction	0,38	0,38	0,34	0,39	0,33	0,31	0,31					
Total, real	1584	2068	1215	430	563	79						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Shadow\_realShadow receptor: EK - 186  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June							
1	07:43	14:59 (TRQ05)   07:28	15:08 (TRQ05)   06:51	06:58	08:05 (TRQ02)   06:10	08:04 (TRQ02)   05:40							
	16:51	68   16:07 (TRQ05)   17:27	72   16:20 (TRQ05)   18:03	19:39	112   09:57 (TRQ02)   20:12	87   09:31 (TRQ02)   20:43							
2	07:43	14:59 (TRQ05)   07:27	15:08 (TRQ05)   06:49	06:56	08:04 (TRQ02)   06:09	08:04 (TRQ02)   05:40							
	16:52	68   16:07 (TRQ05)   17:28	72   16:20 (TRQ05)   18:04	19:40	113   09:57 (TRQ02)   20:13	86   09:30 (TRQ02)   20:44							
3	07:43	14:59 (TRQ05)   07:26	15:09 (TRQ05)   06:48	08:02 (TRQ02)   06:55	08:04 (TRQ02)   06:08	08:05 (TRQ02)   05:39							
	16:53	69   16:08 (TRQ05)   17:29	71   16:20 (TRQ05)   18:05	17   08:19 (TRQ02)   19:41	113   09:57 (TRQ02)   20:14	84   09:29 (TRQ02)   20:45							
4	07:43	15:00 (TRQ05)   07:25	15:10 (TRQ05)   06:46	07:54 (TRQ02)   06:53	08:03 (TRQ02)   06:06	08:05 (TRQ02)   05:39							
	16:54	69   16:09 (TRQ05)   17:31	70   16:20 (TRQ05)   18:06	32   08:26 (TRQ02)   19:42	113   09:56 (TRQ02)   20:16	82   09:27 (TRQ02)   20:46							
5	07:43	15:00 (TRQ05)   07:24	15:10 (TRQ05)   06:44	07:50 (TRQ02)   06:51	08:03 (TRQ02)   06:05	08:06 (TRQ02)   05:38							
	16:55	69   16:09 (TRQ05)   17:32	68   16:18 (TRQ05)   18:07	41   08:31 (TRQ02)   19:43	113   19:21 (TRQ03)   20:17	80   09:26 (TRQ02)   20:46							
6	07:43	15:00 (TRQ05)   07:23	15:11 (TRQ05)   06:43	07:45 (TRQ02)   06:50	07:08 (TRQ02)   06:04	08:07 (TRQ02)   05:38							
	16:56	70   16:10 (TRQ05)   17:33	67   16:18 (TRQ05)   18:09	49   08:34 (TRQ02)   19:44	130   19:22 (TRQ03)   20:18	78   09:25 (TRQ02)   20:47							
7	07:43	15:01 (TRQ05)   07:22	15:12 (TRQ05)   06:41	07:42 (TRQ02)   06:48	07:07 (TRQ02)   06:03	08:08 (TRQ02)   05:38							
	16:57	70   16:11 (TRQ05)   17:35	66   16:18 (TRQ05)   18:10	55   08:37 (TRQ02)   19:45	138   19:24 (TRQ03)   20:19	76   09:24 (TRQ02)   20:48							
8	07:43	15:00 (TRQ05)   07:21	15:13 (TRQ05)   06:39	07:40 (TRQ02)   06:46	07:05 (TRQ02)   06:01	08:09 (TRQ02)   05:37							
	16:58	71   16:11 (TRQ05)   17:36	65   16:18 (TRQ05)   18:11	60   08:40 (TRQ02)   19:46	143   19:24 (TRQ03)   20:20	74   09:23 (TRQ02)   20:48							
9	07:43	15:01 (TRQ05)   07:19	15:14 (TRQ05)   06:38	07:37 (TRQ02)   06:44	07:03 (TRQ02)   06:00	08:09 (TRQ02)   05:37							
	16:59	71   16:12 (TRQ05)   17:37	63   16:17 (TRQ05)   18:12	65   08:42 (TRQ02)   19:48	148   19:25 (TRQ03)   20:21	72   09:21 (TRQ02)   20:49							
10	07:42	15:01 (TRQ05)   07:18	15:15 (TRQ05)   06:36	07:34 (TRQ02)   06:43	07:02 (TRQ02)   05:59	08:10 (TRQ02)   05:37							
	17:00	72   16:13 (TRQ05)   17:39	61   16:16 (TRQ05)   18:13	70   08:44 (TRQ02)   19:49	152   19:27 (TRQ03)   20:22	70   09:20 (TRQ02)   20:49							
11	07:42	15:01 (TRQ05)   07:17	15:16 (TRQ05)   06:34	07:31 (TRQ02)   06:41	07:00 (TRQ02)   05:58	08:11 (TRQ02)   05:37							
	17:01	72   16:13 (TRQ05)   17:40	59   16:15 (TRQ05)   18:15	74   08:45 (TRQ02)   19:50	157   19:28 (TRQ03)   20:23	67   09:18 (TRQ02)   20:50							
12	07:42	15:01 (TRQ05)   07:16	15:18 (TRQ05)   06:33	07:30 (TRQ02)   06:40	06:58 (TRQ02)   05:57	08:12 (TRQ02)   05:37							
	17:02	73   16:14 (TRQ05)   17:41	57   16:15 (TRQ05)   18:16	78   08:48 (TRQ02)   19:51	159   19:28 (TRQ03)   20:24	65   09:17 (TRQ02)   20:50							
13	07:42	15:02 (TRQ05)   07:14	15:18 (TRQ05)   06:31	07:28 (TRQ02)   06:38	06:58 (TRQ02)   05:56	08:13 (TRQ02)   05:37							
	17:03	73   16:15 (TRQ05)   17:42	55   16:13 (TRQ05)   18:17	81   08:49 (TRQ02)   19:52	160   19:30 (TRQ03)   20:25	63   09:16 (TRQ02)   20:51							
14	07:41	15:02 (TRQ05)   07:13	15:20 (TRQ05)   06:29	07:26 (TRQ02)   06:36	06:57 (TRQ02)   05:55	08:15 (TRQ02)   05:36							
	17:04	73   16:15 (TRQ05)   17:44	52   16:12 (TRQ05)   18:18	84   08:50 (TRQ02)   19:53	162   19:31 (TRQ03)   20:26	59   09:14 (TRQ02)   20:51							
15	07:41	15:02 (TRQ05)   07:12	15:22 (TRQ05)   06:28	07:25 (TRQ02)   06:35	06:58 (TRQ02)   05:53	08:16 (TRQ02)   05:36							
	17:06	74   16:16 (TRQ05)   17:45	49   16:11 (TRQ05)   18:19	87   08:52 (TRQ02)   19:54	162   19:32 (TRQ03)   20:27	57   09:13 (TRQ02)   20:52							
16	07:40	15:02 (TRQ05)   07:10	15:24 (TRQ05)   06:26	07:23 (TRQ02)   06:33	06:57 (TRQ02)   05:52	08:17 (TRQ02)   05:36							
	17:07	74   16:15 (TRQ05)   17:46	45   16:09 (TRQ05)   18:20	90   08:53 (TRQ02)   19:55	162   19:33 (TRQ03)   20:28	55   09:12 (TRQ02)   20:52							
17	07:40	15:03 (TRQ05)   07:09	15:26 (TRQ05)   06:24	07:21 (TRQ02)   06:31	06:57 (TRQ02)   05:51	08:18 (TRQ02)   05:36							
	17:08	74   16:17 (TRQ05)   17:48	42   16:08 (TRQ05)   18:22	92   08:53 (TRQ02)   19:57	158   19:31 (TRQ03)   20:29	52   09:10 (TRQ02)   20:53							
18	07:39	15:03 (TRQ05)   07:07	15:28 (TRQ05)   06:22	07:19 (TRQ02)   06:30	06:57 (TRQ02)   05:51	08:19 (TRQ02)   05:37							
	17:09	74   16:17 (TRQ05)   17:49	37   16:05 (TRQ05)   18:23	95   08:54 (TRQ02)   19:58	156   19:31 (TRQ03)   20:31	49   09:08 (TRQ02)   20:53							
19	07:39	15:03 (TRQ05)   07:06	15:31 (TRQ05)   06:21	07:18 (TRQ02)   06:28	06:57 (TRQ02)   05:50	08:21 (TRQ02)   05:37							
	17:10	74   16:17 (TRQ05)   17:50	32   16:03 (TRQ05)   18:24	97   08:55 (TRQ02)   19:59	150   19:29 (TRQ03)   20:32	47   09:08 (TRQ02)   20:53							
20	07:38	15:03 (TRQ05)   07:05	15:34 (TRQ05)   06:19	07:17 (TRQ02)   06:27	06:58 (TRQ02)   05:49	08:23 (TRQ02)   05:37							
	17:12	75   16:18 (TRQ05)   17:51	25   15:59 (TRQ05)   18:25	99   08:56 (TRQ02)   20:00	148   19:29 (TRQ03)   20:32	43   09:06 (TRQ02)   20:54							
21	07:38	15:03 (TRQ05)   07:03	15:40 (TRQ05)   06:17	07:15 (TRQ02)   06:25	06:59 (TRQ02)   05:48	08:24 (TRQ02)   05:37							
	17:13	75   16:18 (TRQ05)   17:53	15   15:55 (TRQ05)   18:26	101   08:56 (TRQ02)   20:01	139   19:26 (TRQ03)   20:33	40   09:04 (TRQ02)   20:54							
22	07:37	15:03 (TRQ05)   07:02	16:15	07:14 (TRQ02)   06:24	07:00 (TRQ02)   05:47	08:26 (TRQ02)   05:37							
	17:14	75   16:18 (TRQ05)   17:54	18:27	102   08:56 (TRQ02)   20:02	131   19:24 (TRQ03)   20:34	36   09:02 (TRQ02)   20:54							
23	07:36	15:03 (TRQ05)   07:00	16:14	07:13 (TRQ02)   06:22	07:01 (TRQ02)   05:46	08:27 (TRQ02)   05:37							
	17:15	75   16:18 (TRQ05)   17:55	18:28	104   08:57 (TRQ02)   20:03	118   19:19 (TRQ03)   20:35	33   09:00 (TRQ02)   20:54							
24	07:35	15:05 (TRQ05)   06:59	16:13	07:12 (TRQ02)   06:21	07:04 (TRQ02)   05:45	08:30 (TRQ02)   05:38							
	17:17	75   16:20 (TRQ05)   17:56	18:30	105   08:57 (TRQ02)   20:04	109   09:40 (TRQ02)   20:36	29   08:59 (TRQ02)   20:54							
25	07:35	15:05 (TRQ05)   06:57	16:10	07:11 (TRQ02)   06:19	08:01 (TRQ02)   05:45	08:32 (TRQ02)   05:38							
	17:18	75   16:20 (TRQ05)   17:58	18:31	106   08:57 (TRQ02)   20:06	97   09:38 (TRQ02)   20:37	24   08:56 (TRQ02)   20:55							
26	07:34	15:05 (TRQ05)   06:56	16:08	07:09 (TRQ02)   06:18	08:01 (TRQ02)   05:44	08:34 (TRQ02)   05:38							
	17:19	75   16:20 (TRQ05)   17:59	18:32	108   08:57 (TRQ02)   20:07	96   09:37 (TRQ02)   20:38	19   08:53 (TRQ02)   20:55							
27	07:33	15:05 (TRQ05)   06:54	16:07	07:09 (TRQ02)   06:16	08:02 (TRQ02)   05:43	08:39 (TRQ02)   05:39							
	17:20	75   16:20 (TRQ05)   18:00	18:33	109   08:58 (TRQ02)   20:08	94   09:36 (TRQ02)   20:39	10   08:49 (TRQ02)   20:55							
28	07:32	15:06 (TRQ05)   06:52	16:05	07:08 (TRQ02)   06:15	08:02 (TRQ02)   05:42	08:42 (TRQ02)   05:39							
	17:22	74   16:20 (TRQ05)   18:01	18:34	110   08:58 (TRQ02)   20:09	93   09:35 (TRQ02)   20:40	05:39							
29	07:31	15:06 (TRQ05)   07:00	16:04	07:03	08:07 (TRQ02)   06:13	08:44 (TRQ02)   05:42							
	17:23	74   16:20 (TRQ05)   18:02	19:35	110   09:57 (TRQ02)   20:10	91   09:34 (TRQ02)   20:41	20:55							
30	07:30	15:07 (TRQ05)   07:00	16:03	07:02	08:06 (TRQ02)   06:12	08:45 (TRQ02)   05:41							
	17:24	73   16:20 (TRQ05)   18:03	19:36	111   09:57 (TRQ02)   20:11	89   09:33 (TRQ02)   20:42	20:55							
31	07:29	15:07 (TRQ05)   07:00	16:02	07:00	08:06 (TRQ02)   06:11	08:46 (TRQ02)   05:41							
	17:26	73   16:20 (TRQ05)   18:04	19:37	112   09:58 (TRQ02)   20:12	88   09:33 (TRQ02)   20:42	20:55							
Potential sun hours	294	295	369	400	452	457							
Total, worst case	2252	1143	2444	3906	1537								
Sun reduction	0,42	0,46	0,46	0,49	0,57								
Oper. time red.	0,95	0,95	0,95	0,95	0,95								
Wind dir. red.	0,76	0,76	0,54	0,56	0,54								
Total reduction	0,31	0,34	0,24	0,27	0,30								
Total, real	696	389	588	1038	459								

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** EK - 186  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

		July	August		September		October		November		December	
1	05:40	06:05	08:22 (TRQ02)	06:38	06:59 (TRQ07)	07:10	08:08 (TRQ02)	06:46	14:44 (TRQ05)	07:22	14:44 (TRQ05)	
	20:54	20:34	66 09:28 (TRQ02)	19:49	19:27 (TRQ03)	18:57	79 09:27 (TRQ02)	17:08	62 15:46 (TRQ05)	16:43	72 15:56 (TRQ05)	
2	05:41	06:06	08:21 (TRQ02)	06:39	07:00 (TRQ07)	07:11	08:09 (TRQ02)	06:47	14:43 (TRQ05)	07:23	14:44 (TRQ05)	
	20:54	20:33	69 09:30 (TRQ02)	19:48	19:25 (TRQ03)	18:55	76 09:25 (TRQ02)	17:07	63 15:46 (TRQ05)	16:42	72 15:56 (TRQ05)	
3	05:41	06:07	08:20 (TRQ02)	06:40	07:01 (TRQ07)	07:12	08:11 (TRQ02)	06:48	14:43 (TRQ05)	07:24	14:45 (TRQ05)	
	20:54	20:32	71 09:31 (TRQ02)	19:46	19:23 (TRQ03)	18:54	71 09:22 (TRQ02)	17:06	65 15:48 (TRQ05)	16:42	71 15:56 (TRQ05)	
4	05:42	06:08	08:19 (TRQ02)	06:41	07:02 (TRQ07)	07:13	08:13 (TRQ02)	06:50	14:42 (TRQ05)	07:25	14:45 (TRQ05)	
	20:54	20:31	73 09:32 (TRQ02)	19:44	19:22 (TRQ03)	18:52	68 09:21 (TRQ02)	17:05	66 15:48 (TRQ05)	16:42	71 15:56 (TRQ05)	
5	05:43	06:09	08:18 (TRQ02)	06:42	07:03 (TRQ07)	07:14	08:15 (TRQ02)	06:51	14:41 (TRQ05)	07:26	14:46 (TRQ05)	
	20:54	20:30	75 09:33 (TRQ02)	19:43	19:20 (TRQ03)	18:50	63 09:18 (TRQ02)	17:03	67 15:48 (TRQ05)	16:42	70 15:56 (TRQ05)	
6	05:43	06:10	08:17 (TRQ02)	06:43	07:04 (TRQ07)	07:15	08:17 (TRQ02)	06:52	14:40 (TRQ05)	07:27	14:46 (TRQ05)	
	20:53	20:28	77 09:34 (TRQ02)	19:41	19:18 (TRQ03)	18:48	58 09:15 (TRQ02)	17:02	68 15:49 (TRQ05)	16:41	70 15:56 (TRQ05)	
7	05:44	06:12	08:17 (TRQ02)	06:44	07:58 (TRQ02)	07:16	08:20 (TRQ02)	06:53	14:40 (TRQ05)	07:28	14:47 (TRQ05)	
	20:53	20:27	78 09:35 (TRQ02)	19:39	19:16 (TRQ03)	18:47	52 09:12 (TRQ02)	17:01	70 15:50 (TRQ05)	16:41	70 15:57 (TRQ05)	
8	05:44	06:13	08:16 (TRQ02)	06:45	07:57 (TRQ02)	07:18	08:22 (TRQ02)	06:55	14:39 (TRQ05)	07:29	14:48 (TRQ05)	
	20:53	20:26	80 09:36 (TRQ02)	19:37	113 09:50 (TRQ02)	18:45	46 09:08 (TRQ02)	17:00	71 15:50 (TRQ05)	16:41	69 15:57 (TRQ05)	
9	05:45	06:14	08:15 (TRQ02)	06:46	07:57 (TRQ02)	07:19	08:26 (TRQ02)	06:56	14:39 (TRQ05)	07:30	14:48 (TRQ05)	
	20:52	20:25	82 09:37 (TRQ02)	19:36	113 09:50 (TRQ02)	18:43	37 09:03 (TRQ02)	16:59	72 15:51 (TRQ05)	16:41	69 15:57 (TRQ05)	
10	05:46	06:15	08:14 (TRQ02)	06:47	07:57 (TRQ02)	07:20	08:31 (TRQ02)	06:57	14:39 (TRQ05)	07:31	14:49 (TRQ05)	
	20:52	20:23	84 09:38 (TRQ02)	19:34	113 09:50 (TRQ02)	18:42	26 08:57 (TRQ02)	16:58	72 15:51 (TRQ05)	16:41	68 15:57 (TRQ05)	
11	05:47	06:16	08:13 (TRQ02)	06:48	07:57 (TRQ02)	07:21		06:58	14:38 (TRQ05)	07:32	14:49 (TRQ05)	
	20:51	20:22	86 09:39 (TRQ02)	19:32	112 09:49 (TRQ02)	18:40		16:57	73 15:51 (TRQ05)	16:41	68 15:57 (TRQ05)	
12	05:47	06:17	08:12 (TRQ02)	06:49	07:57 (TRQ02)	07:22		07:00	14:38 (TRQ05)	07:33	14:50 (TRQ05)	
	20:51	20:20	88 09:40 (TRQ02)	19:31	112 09:49 (TRQ02)	18:38		16:56	74 15:52 (TRQ05)	16:41	67 15:57 (TRQ05)	
13	05:48	06:18	08:11 (TRQ02)	06:51	07:57 (TRQ02)	07:23		07:01	14:38 (TRQ05)	07:34	14:50 (TRQ05)	
	20:50	20:19	90 09:41 (TRQ02)	19:29	111 09:48 (TRQ02)	18:37		16:55	74 15:52 (TRQ05)	16:42	68 15:58 (TRQ05)	
14	05:49	06:19	08:10 (TRQ02)	06:52	07:57 (TRQ02)	07:24		07:02	14:38 (TRQ05)	07:34	14:51 (TRQ05)	
	20:50	20:18	92 09:42 (TRQ02)	19:27	111 09:48 (TRQ02)	18:35		16:54	74 15:52 (TRQ05)	16:42	67 15:58 (TRQ05)	
15	05:50	06:20	08:10 (TRQ02)	06:53	07:57 (TRQ02)	07:25		07:03	14:38 (TRQ05)	07:35	14:52 (TRQ05)	
	20:49	20:16	93 09:43 (TRQ02)	19:25	110 09:47 (TRQ02)	18:33		16:53	75 15:53 (TRQ05)	16:42	67 15:59 (TRQ05)	
16	05:50	06:21	08:09 (TRQ02)	06:54	07:57 (TRQ02)	07:27		07:05	14:38 (TRQ05)	07:36	14:52 (TRQ05)	
	20:49	20:15	94 09:43 (TRQ02)	19:23	109 09:46 (TRQ02)	18:32		16:52	75 15:53 (TRQ05)	16:42	66 15:58 (TRQ05)	
17	05:51	08:46 (TRQ02)	06:22	08:08 (TRQ02)	06:55	07:28		07:06	14:38 (TRQ05)	07:37	14:53 (TRQ05)	
	20:48	14 09:00 (TRQ02)	20:13	96 09:44 (TRQ02)	19:22	108 09:46 (TRQ02)	18:30	16:51	75 15:53 (TRQ05)	16:42	66 15:59 (TRQ05)	
18	05:52	08:43 (TRQ02)	06:23	08:07 (TRQ02)	06:56	07:29		07:07	14:39 (TRQ05)	07:37	14:54 (TRQ05)	
	20:47	21 09:04 (TRQ02)	20:12	98 09:45 (TRQ02)	19:20	107 09:45 (TRQ02)	18:29	16:50	75 15:54 (TRQ05)	16:43	66 16:00 (TRQ05)	
19	05:53	08:40 (TRQ02)	06:24	07:09 (TRQ07)	06:57	07:30		07:08	14:38 (TRQ05)	07:38	14:54 (TRQ05)	
	20:47	27 09:07 (TRQ02)	20:10	110 09:45 (TRQ02)	19:18	106 09:44 (TRQ02)	18:27	16:49	75 15:53 (TRQ05)	16:43	66 16:00 (TRQ05)	
20	05:54	08:39 (TRQ02)	06:25	07:07 (TRQ07)	06:58	07:31		07:09	14:38 (TRQ05)	07:39	14:55 (TRQ05)	
	20:46	30 09:09 (TRQ02)	20:09	121 19:26 (TRQ03)	19:16	105 09:44 (TRQ02)	18:26	16:49	75 15:53 (TRQ05)	16:43	66 16:01 (TRQ05)	
21	05:55	08:37 (TRQ02)	06:26	07:05 (TRQ07)	06:59	07:32		07:11	14:38 (TRQ05)	07:39	14:55 (TRQ05)	
	20:45	35 09:12 (TRQ02)	20:07	134 19:30 (TRQ03)	19:15	103 09:43 (TRQ02)	18:24	16:48	75 15:53 (TRQ05)	16:44	66 16:01 (TRQ05)	
22	05:56	08:35 (TRQ02)	06:27	07:03 (TRQ07)	07:00	07:34		07:12	14:39 (TRQ05)	07:40	14:56 (TRQ05)	
	20:44	39 08:34 (TRQ02)	20:06	140 19:31 (TRQ03)	19:13	102 09:42 (TRQ02)	18:23	16:47	75 15:54 (TRQ05)	16:44	66 16:02 (TRQ05)	
23	05:57	08:34 (TRQ02)	06:28	07:02 (TRQ07)	07:01	07:35		07:13	14:40 (TRQ05)	07:40	14:56 (TRQ05)	
	20:43	42 09:16 (TRQ02)	20:04	148 19:33 (TRQ03)	19:11	99 09:40 (TRQ02)	18:21	16:47	74 15:54 (TRQ05)	16:45	66 16:02 (TRQ05)	
24	05:58	08:32 (TRQ02)	06:29	07:01 (TRQ07)	07:02	07:36		07:14	14:40 (TRQ05)	07:41	14:56 (TRQ05)	
	20:42	44 09:16 (TRQ02)	20:03	151 19:33 (TRQ03)	19:09	98 09:39 (TRQ02)	18:20	16:46	74 15:54 (TRQ05)	16:45	66 16:02 (TRQ05)	
25	05:58	08:30 (TRQ02)	06:31	07:00 (TRQ07)	07:03	07:37		07:15	14:40 (TRQ05)	07:41	14:57 (TRQ05)	
	20:42	48 09:18 (TRQ02)	20:01	156 19:34 (TRQ03)	19:08	96 09:38 (TRQ02)	17:18	16:45	74 15:54 (TRQ05)	16:46	66 16:03 (TRQ05)	
26	05:59	08:29 (TRQ02)	06:32	07:00 (TRQ07)	07:04	07:38		07:17	14:41 (TRQ05)	07:41	14:57 (TRQ05)	
	20:41	51 09:20 (TRQ02)	19:59	158 19:34 (TRQ03)	19:06	93 09:38 (TRQ02)	17:17	16:45	74 15:55 (TRQ05)	16:47	66 16:03 (TRQ05)	
27	06:00	08:28 (TRQ02)	06:33	06:59 (TRQ07)	07:05	07:39		07:18	14:41 (TRQ05)	07:42	14:57 (TRQ05)	
	20:40	53 09:21 (TRQ02)	19:58	160 19:34 (TRQ03)	19:04	90 09:34 (TRQ02)	17:15	16:44	74 15:55 (TRQ05)	16:47	66 16:03 (TRQ05)	
28	06:01	08:27 (TRQ02)	06:34	06:59 (TRQ07)	07:06	07:40		07:19	14:42 (TRQ05)	07:42	14:58 (TRQ05)	
	20:39	56 09:23 (TRQ02)	19:56	162 19:33 (TRQ03)	19:02	88 09:33 (TRQ02)	17:14	16:44	73 15:55 (TRQ05)	16:48	67 16:05 (TRQ05)	
29	06:02	08:26 (TRQ02)	06:35	06:58 (TRQ07)	07:07	07:41		07:20	14:42 (TRQ05)	07:42	14:58 (TRQ05)	
	20:38	58 09:24 (TRQ02)	19:54	161 19:32 (TRQ03)	19:01	85 09:31 (TRQ02)	17:12	16:43	73 15:55 (TRQ05)	16:49	67 16:05 (TRQ05)	
30	06:03	08:25 (TRQ02)	06:36	06:58 (TRQ07)	07:09	07:42		07:21	14:42 (TRQ05)	07:43	14:58 (TRQ05)	
	20:37	61 09:26 (TRQ02)	19:53	161 19:30 (TRQ03)	18:59	82 09:29 (TRQ02)	17:11	16:43	73 15:55 (TRQ05)	16:50	68 16:06 (TRQ05)	
31	06:04	08:24 (TRQ02)	06:37	06:58 (TRQ07)				07:21	14:42 (TRQ05)	07:43	14:59 (TRQ05)	
	20:35	63 09:27 (TRQ02)	19:51	159 19:28 (TRQ03)	376			17:10	59 15:45 (TRQ05)	16:50	67 16:06 (TRQ05)	
	Potential sun hours	463	430					344	295	284		
	Total, worst case	642	3413	3351	1054	2160	2100					
	Sun reduction	0,71	0,70	0,62	0,55	0,46	0,43					
	Oper. time red.	0,95	0,95	0,95	0,95	0,95	0,95					
	Wind dir. red.	0,54	0,55	0,55	0,64	0,76	0,76					
	Total reduction	0,37	0,38	0,33	0,34	0,34	0,32					
	Total, real	238	1280	1106	358	725	667					

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: EL - 50  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June
1	07:43 16:51	07:28 17:27	06:51 18:02	06:58 19:38	19:05 (TRQ07) 06:10	18:45 (TRQ07) 05:40
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	28 19:07 (TRQ07) 20:12	28 19:13 (TRQ07) 20:43
3	07:43 16:53	07:26 17:29	06:47 18:05	06:55 19:41	17 19:14 (TRQ07) 20:13	24 19:11 (TRQ07) 20:44
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	24 19:17 (TRQ07) 20:14	19 19:09 (TRQ07) 20:45
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	28 19:19 (TRQ07) 20:15	13 19:05 (TRQ07) 20:45
6	07:43 16:56	07:23 17:33	06:43 18:09	06:49 19:44	32 19:21 (TRQ07) 20:17	20:46 05:38
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	34 19:21 (TRQ07) 20:18	20:47 05:38
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	37 19:23 (TRQ07) 20:19	20:47 05:37
9	07:43 16:59	07:19 17:37	06:38 18:12	06:44 19:47	40 19:24 (TRQ07) 20:20	20:48 05:37
10	07:42 17:00	07:18 17:38	06:36 18:13	06:43 19:49	42 19:24 (TRQ07) 20:21	20:49 05:37
11	07:42 17:01	07:17 17:40	06:34 18:14	06:41 19:50	43 19:25 (TRQ07) 20:22	20:49 05:37
12	07:42 17:02	07:16 17:41	06:33 18:16	17:54 (TRQ02) 06:39	44 19:25 (TRQ07) 20:23	20:50 05:37
13	07:42 17:03	07:14 17:42	06:31 18:17	17:55 (TRQ02) 19:51	45 19:25 (TRQ07) 20:24	20:50 05:36
14	07:41 17:04	07:13 17:44	06:29 18:18	3 17:55 (TRQ02) 19:52	46 19:26 (TRQ07) 20:25	20:51 05:36
15	07:41 17:05	07:12 17:45	06:27 18:19	6 17:56 (TRQ02) 19:53	46 19:25 (TRQ07) 20:26	20:51 05:36
16	07:40 17:07	07:10 17:46	06:26 18:20	8 17:57 (TRQ02) 19:54	47 19:25 (TRQ07) 20:27	20:52 05:36
17	07:40 17:08	07:09 17:48	06:24 18:21	10 17:59 (TRQ02) 19:55	47 19:25 (TRQ07) 20:28	20:52 05:36
18	07:39 17:09	07:07 17:49	06:22 18:23	12 18:00 (TRQ02) 19:56	48 19:25 (TRQ07) 20:29	20:53 05:36
19	07:39 17:10	07:06 17:50	06:21 18:24	14 18:01 (TRQ02) 19:58	47 19:25 (TRQ07) 20:30	20:53 05:37
20	07:38 17:11	07:04 17:51	06:19 18:25	15 18:02 (TRQ02) 19:59	47 19:24 (TRQ07) 20:31	20:53 05:37
21	07:37 17:13	07:03 17:53	06:17 18:26	16 18:04 (TRQ02) 20:00	46 19:24 (TRQ07) 20:32	20:54 05:37
22	07:37 17:14	07:02 17:54	06:15 18:27	16 18:05 (TRQ02) 20:01	45 19:23 (TRQ07) 20:33	20:54 05:37
23	07:36 17:15	07:00 17:55	06:14 18:28	15 18:04 (TRQ02) 20:02	45 19:23 (TRQ07) 20:34	20:54 05:37
24	07:35 17:16	06:59 17:56	06:12 18:29	10 18:01 (TRQ02) 20:03	44 19:22 (TRQ07) 20:35	20:54 05:38
25	07:35 17:18	06:57 17:58	06:10 18:31	20:04 06:19	43 19:22 (TRQ07) 20:36	20:54 05:38
26	07:34 17:19	06:55 17:59	06:08 18:32	20:05 06:17	41 19:20 (TRQ07) 20:37	20:54 05:38
27	07:33 17:20	06:54 18:00	06:07 18:33	20:07 06:16	40 19:20 (TRQ07) 20:38	20:54 05:38
28	07:32 17:22	06:52 18:01	06:05 18:34	20:08 20:09	38 19:19 (TRQ07) 20:39	20:55 05:39
29	07:31 17:23	07:03 19:35	07:03 18:35	06:13 20:10	35 19:17 (TRQ07) 20:40	20:55 05:39
30	07:30 17:24	07:01 19:36	07:01 19:36	06:12 20:11	33 19:16 (TRQ07) 20:41	20:54 05:40
31	07:29 17:25	07:00 19:37	07:00 19:37	06:11 20:12	30 19:14 (TRQ07) 20:42	20:54 05:41
Potential sun hours	294	295	369	400	452	457
Total, worst case			126	1156		84
Sun reduction			0,46	0,49		0,57
Oper. time red.			0,95	0,95		0,95
Wind dir. red.			0,63	0,58		0,58
Total reduction			0,28	0,27		0,32
Total, real			35	317		27

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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**SHADOW - Calendar**

**Calculation:** Shadow\_real**Shadow receptor:** EL - 50  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December		
1	05:40	06:05	06:38	18:40 (TRQ07)	07:10	18:32 (TRQ02)	06:46	07:22
	20:54	20:34	19:49	19:24 (TRQ07)	18:57	18:34 (TRQ02)	17:08	16:43
2	05:41	06:06	06:39	18:40 (TRQ07)	07:11		06:47	07:23
	20:54	20:33	19:48	19:23 (TRQ07)	18:55		17:07	16:42
3	05:41	06:07	06:40	18:40 (TRQ07)	07:12		06:48	07:24
	20:54	20:32	19:46	19:22 (TRQ07)	18:53		17:06	16:42
4	05:42	06:08	06:41	18:41 (TRQ07)	07:13		06:49	07:25
	20:54	20:31	19:44	19:21 (TRQ07)	18:52		17:05	16:42
5	05:42	06:09	06:42	18:42 (TRQ07)	07:14		06:51	07:26
	20:54	20:30	19:43	19:19 (TRQ07)	18:50		17:03	16:42
6	05:43	06:10	06:43	18:43 (TRQ07)	07:15		06:52	07:27
	20:53	20:28	19:41	19:18 (TRQ07)	18:48		17:02	16:41
7	05:44	06:11	06:44	18:44 (TRQ07)	07:16		06:53	07:28
	20:53	20:27	19:39	19:16 (TRQ07)	18:47		17:01	16:41
8	05:44	06:12	19:06 (TRQ07)	06:45	18:45 (TRQ07)	07:17	06:54	07:29
	20:53	20:26	19:10 (TRQ07)	19:37	19:14 (TRQ07)	18:45	17:00	16:41
9	05:45	06:14	19:01 (TRQ07)	06:46	18:47 (TRQ07)	07:19	06:56	07:30
	20:52	20:24	19:16 (TRQ07)	19:36	19:11 (TRQ07)	18:43	16:59	16:41
10	05:46	06:15	18:58 (TRQ07)	06:47	18:50 (TRQ07)	07:20	06:57	07:31
	20:52	20:23	19:18 (TRQ07)	19:34	19:07 (TRQ07)	18:42	16:58	16:41
11	05:46	06:16	18:55 (TRQ07)	06:48	18:55 (TRQ07)	07:21	06:58	07:32
	20:51	20:22	19:20 (TRQ07)	19:32	19:01 (TRQ07)	18:40	16:57	16:41
12	05:47	06:17	18:54 (TRQ07)	06:49		07:22	06:59	07:33
	20:51	20:20	19:22 (TRQ07)	19:30		18:38	16:56	16:41
13	05:48	06:18	18:52 (TRQ07)	06:50		07:23	07:01	07:34
	20:50	20:19	19:23 (TRQ07)	19:29		18:37	16:55	16:41
14	05:49	06:19	18:50 (TRQ07)	06:51		07:24	07:02	07:34
	20:50	20:18	19:24 (TRQ07)	19:27		18:35	16:54	16:42
15	05:49	06:20	18:49 (TRQ07)	06:53		07:25	07:03	07:35
	20:49	20:16	19:25 (TRQ07)	19:25		18:33	16:53	16:42
16	05:50	06:21	18:48 (TRQ07)	06:54		07:27	07:04	07:36
	20:49	20:15	19:26 (TRQ07)	19:23		18:32	16:52	16:42
17	05:51	06:22	18:47 (TRQ07)	06:55		07:28	07:06	07:37
	20:48	20:13	19:27 (TRQ07)	19:22		18:30	16:51	16:42
18	05:52	06:23	18:46 (TRQ07)	06:56		07:29	07:07	07:37
	20:47	20:12	19:27 (TRQ07)	19:20		18:29	16:50	16:43
19	05:53	06:24	18:45 (TRQ07)	06:57		07:30	07:08	07:38
	20:46	20:10	19:27 (TRQ07)	19:18		18:27	16:49	16:43
20	05:54	06:25	18:44 (TRQ07)	06:58	18:38 (TRQ02)	07:31	07:09	07:38
	20:46	20:09	19:28 (TRQ07)	19:16	18:47 (TRQ02)	18:25	16:49	16:43
21	05:55	06:26	18:43 (TRQ07)	06:59	18:35 (TRQ02)	07:32	07:11	07:39
	20:45	20:07	19:28 (TRQ07)	19:15	18:49 (TRQ02)	18:24	16:48	16:44
22	05:56	06:27	18:42 (TRQ07)	07:00	18:34 (TRQ02)	07:34	07:12	07:40
	20:44	20:06	19:28 (TRQ07)	19:13	18:50 (TRQ02)	18:22	16:47	16:44
23	05:56	06:28	18:42 (TRQ07)	07:01	18:33 (TRQ02)	07:35	07:13	07:40
	20:43	20:04	19:28 (TRQ07)	19:11	18:49 (TRQ02)	18:21	16:46	16:45
24	05:57	06:29	18:41 (TRQ07)	07:02	18:32 (TRQ02)	07:36	07:14	07:40
	20:42	20:02	19:28 (TRQ07)	19:09	18:47 (TRQ02)	18:19	16:46	16:45
25	05:58	06:30	18:41 (TRQ07)	07:03	18:31 (TRQ02)	06:37	07:15	07:41
	20:41	20:01	19:28 (TRQ07)	19:07	18:45 (TRQ02)	17:18	16:45	16:46
26	05:59	06:31	18:40 (TRQ07)	07:04	18:30 (TRQ02)	06:38	07:17	07:41
	20:41	19:59	19:28 (TRQ07)	19:06	18:43 (TRQ02)	17:17	16:45	16:47
27	06:00	06:33	18:40 (TRQ07)	07:05	18:30 (TRQ02)	06:40	07:18	07:42
	20:40	19:58	19:27 (TRQ07)	19:04	18:41 (TRQ02)	17:15	16:44	16:47
28	06:01	06:34	18:40 (TRQ07)	07:06	18:30 (TRQ02)	06:41	07:19	07:42
	20:39	19:56	19:27 (TRQ07)	19:02	18:39 (TRQ02)	17:14	16:44	16:48
29	06:02	06:35	18:40 (TRQ07)	07:07	18:30 (TRQ02)	06:42	07:20	07:42
	20:37	19:54	19:26 (TRQ07)	19:00	18:37 (TRQ02)	17:12	16:43	16:49
30	06:03	06:36	18:40 (TRQ07)	07:09	18:31 (TRQ02)	06:43	07:21	07:42
	20:36	19:53	19:26 (TRQ07)	18:59	18:36 (TRQ02)	17:11	16:43	16:49
31	06:04	06:37	18:40 (TRQ07)			06:45		07:43
	20:35	19:51	19:25 (TRQ07)			17:10		16:50
Potential sun hours	463	430	376	344		295		284
Total, worst case			908	478				
Sun reduction			0,70	0,62			0,55	
Oper. time red.			0,95	0,95			0,95	
Wind dir. red.			0,58	0,60			0,63	
Total reduction			0,39	0,35			0,33	
Total, real			353	169				1

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

# SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: EM - 37  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:03	06:58 19:39	06:10 20:12	05:40 20:43	05:40 20:55	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:08	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:29	06:48 18:05	06:55 19:41	06:08 20:15	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:06 20:16	05:39 20:46	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	06:51 17:03	07:26 16:42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:41
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:01 20:20	05:37 20:48	05:44 20:53	06:13 20:26	06:45 19:37	07:18 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:44 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:25	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:43 17:00	07:18 17:39	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50	05:46 20:52	06:16 20:22	06:48 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:39 19:51	05:57 20:24	05:37 20:51	05:47 20:51	06:17 20:20	06:49 19:31	07:22 18:38	07:00 16:56	07:33 16:41
13	07:42 17:03	07:14 17:42	06:31 18:17	06:38 19:52	05:56 20:25	05:36 20:51	05:48 20:51	06:18 20:19	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:41
14	07:41 17:04	07:13 17:44	06:29 18:18	06:36 19:53	05:54 20:26	05:36 20:52	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:35 16:42
15	07:41 17:06	07:12 17:45	06:28 18:19	06:35 19:54	05:53 20:27	05:36 20:52	05:50 20:49	06:20 20:16	06:53 19:25	07:25 18:33	07:03 16:53	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55	05:52 20:29	05:36 20:52	05:50 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	05:51 20:30	05:36 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:42
18	07:39 17:09	07:07 17:49	06:22 18:23	06:30 19:58	05:50 20:31	05:36 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:49 20:32	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:49	07:38 16:43
20	07:38 17:12	07:05 17:51	06:19 18:25	06:27 20:00	05:49 20:33	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:10 16:49	07:39 16:43
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:34	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:33 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:24 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:44
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	07:36 17:16	06:59 17:56	06:12 18:30	06:20 20:04	05:45 20:36	05:38 20:54	05:57 20:43	06:29 20:03	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:45
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:44 20:37	05:38 20:55	05:58 20:42	06:30 20:01	07:03 19:08	07:37 17:18	07:15 16:45	07:41 16:46
26	07:34 17:19	06:56 17:59	06:08 18:32	06:18 20:07	05:44 20:38	05:38 20:55	05:59 20:41	06:32 19:59	07:04 19:06	07:38 17:17	07:17 16:45	07:41 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:39 20:55	06:00 20:40	06:33 19:58	07:05 19:04	07:39 17:15	07:18 16:44	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:42 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:06 19:02	07:40 17:14	07:19 16:44	07:42 16:48
29	07:31 17:23		06:03 19:35	06:13 20:10	05:42 20:41	05:39 20:55	06:02 20:38	06:35 19:54	07:08 19:01	07:41 17:12	07:20 16:43	07:42 16:49
30	07:30 17:24		06:02 19:36	06:12 20:11	05:41 20:42	05:40 20:55	06:03 20:37	06:36 19:53	07:09 18:59	07:42 17:11	07:21 16:43	07:43 16:49
31	07:29 17:25		07:00 19:37		05:41 20:42		06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: EN - 7  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:03	06:58 19:39	06:10 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:08	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:29	06:48 18:05	06:55 19:41	06:08 20:14	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:06 20:16	05:39 20:46	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	06:51 17:03	07:26 16:42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:49 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:41
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:48	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:01 20:20	05:37 20:48	05:44 20:53	06:12 20:26	06:45 19:37	07:17 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:44 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:25	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:43 17:00	07:18 17:38	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50	05:46 20:52	06:16 20:22	06:48 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:39 19:51	05:57 20:24	05:37 20:51	05:47 20:51	06:17 20:20	06:49 19:30	07:22 18:38	07:00 16:56	07:33 16:41
13	07:42 17:03	07:14 17:42	06:31 18:17	06:38 19:52	05:56 20:25	05:36 20:51	05:48 20:50	06:18 20:19	06:50 19:29	07:23 18:37	07:01 16:55	07:34 16:41
14	07:41 17:04	07:13 17:44	06:29 18:18	06:36 19:53	05:54 20:26	05:36 20:51	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
15	07:41 17:05	07:12 17:45	06:27 18:19	06:35 19:54	05:53 20:27	05:36 20:52	05:49 20:49	06:20 20:16	06:53 19:25	07:25 18:33	07:03 16:53	07:35 16:42
16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55	05:52 20:28	05:36 20:52	05:50 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	05:51 20:30	05:36 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:42
18	07:39 17:09	07:07 17:49	06:22 18:23	06:30 19:58	05:50 20:31	05:36 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:49 20:32	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:49	07:38 16:43
20	07:38 17:11	07:05 17:51	06:19 18:25	06:27 20:00	05:49 20:33	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:09 16:49	07:39 16:43
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:32 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:23 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:22	07:12 16:47	07:40 16:44
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54	05:56 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:46	07:40 16:45
24	07:35 17:16	06:59 17:56	06:12 18:30	06:20 20:04	05:45 20:36	05:37 20:54	05:57 20:42	06:29 20:03	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:45
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:44 20:37	05:38 20:55	05:58 20:42	06:30 20:01	07:03 19:07	07:37 17:18	06:37 16:45	07:41 16:46
26	07:34 17:19	06:56 17:59	06:08 18:32	06:17 20:07	05:44 20:38	05:38 20:55	05:59 20:41	06:31 19:59	07:04 19:06	07:38 17:17	06:38 16:45	07:41 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:38 20:55	06:00 20:40	06:33 19:58	07:05 19:04	07:39 17:15	06:40 16:44	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:42 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:06 19:02	07:40 17:14	06:41 16:44	07:42 16:48
29	07:31 17:23		07:03 19:35	06:13 20:10	05:42 20:41	05:39 20:55	06:02 20:38	06:35 19:54	07:08 19:00	07:41 17:12	06:42 16:43	07:42 16:49
30	07:30 17:24		07:01 19:36	06:12 20:11	05:41 20:42	05:40 20:55	06:03 20:37	06:36 19:53	07:09 18:59	07:42 17:11	06:43 16:43	07:43 16:49
31	07:29 17:25		07:00 19:37		05:41 20:42		06:04 20:35	06:37 19:51		07:43 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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**SHADOW - Calendar**

Calculation: Shadow\_real Shadow receptor: EO - 79  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:43   16:51	07:28   17:27	06:51   18:03	06:58   19:39	06:10   20:12	05:40   20:43	05:40   20:54	06:05   20:34	06:38   19:49	07:10   18:57	06:46   17:08	07:22   16:43	
2	07:43   16:52	07:27   17:28	06:49   18:04	06:56   19:40	06:09   20:13	05:40   20:44	05:41   20:54	06:06   20:33	06:39   19:48	07:11   18:55	06:47   17:07	07:23   16:42	
3	07:43   16:53	07:26   17:29	06:48   18:05	06:55   19:41	06:08   20:14	05:39   20:45	05:41   20:54	06:07   20:32	06:40   19:46	07:12   18:53	06:48   17:06	07:24   16:42	
4	07:43   16:54	07:25   17:31	06:46   18:06	06:53   19:42	06:06   20:16	05:39   20:45	05:42   20:54	06:08   20:31	06:41   19:44	07:13   18:52	06:50   17:05	07:25   16:42	
5	07:43   16:55	07:24   17:32	06:44   18:07	06:51   19:43	06:05   20:17	05:38   20:46	05:42   20:54	06:09   20:30	06:42   19:43	07:14   18:50	06:51   17:03	07:26   16:42	
6	07:43   16:56	07:23   17:33	06:43   18:09	06:49   19:44	06:04   20:18	05:38   20:47	05:43   20:53	06:10   20:28	06:43   19:41	07:15   18:48	06:52   17:02	07:27   16:41	
7	07:43   16:57	07:22   17:35	06:41   18:10	06:48   19:45	06:03   20:19	05:38   20:48	05:44   20:53	06:11   20:27	06:44   19:39	07:16   18:47	06:53   17:01	07:28   16:41	
8	07:43   16:58	07:21   17:36	06:39   18:11	06:46   19:46	06:01   20:20	05:37   20:48	05:44   20:53	06:12   20:26	06:45   19:37	07:17   18:45	06:55   17:00	07:29   16:41	
9	07:43   16:59	07:19   17:37	06:38   18:12	06:44   19:48	06:00   20:21	05:37   20:49	05:45   20:52	06:14   20:24	06:46   19:36	07:19   18:43	06:56   16:59	07:30   16:41	
10	07:42   17:00	07:18   17:38	06:36   18:13	06:43   19:49	05:59   20:22	05:37   20:49	05:46   20:52	06:15   20:23	06:47   19:34	07:20   18:42	06:57   16:58	07:31   16:41	
11	07:42   17:01	07:17   17:40	06:34   18:14	06:41   19:50	05:58   20:23	05:37   20:50	05:46   20:51	06:16   20:22	06:48   19:32	07:21   18:40	06:58   16:57	07:32   16:41	
12	07:42   17:02	07:16   17:41	06:33   18:16	06:39   19:51	05:57   20:24	05:37   20:50	05:47   20:51	06:17   20:20	06:49   19:30	07:22   18:38	07:00   16:56	07:33   16:41	
13	07:42   17:03	07:14   17:42	06:31   18:17	06:38   19:52	05:56   20:25	05:36   20:51	05:48   20:50	06:18   20:19	06:50   19:29	07:23   18:37	07:01   16:55	07:34   16:41	
14	07:41   17:04	07:13   17:44	06:29   18:18	06:36   19:53	05:54   20:26	05:36   20:51	05:49   20:50	06:19   20:18	06:52   19:27	07:24   18:35	07:02   16:54	07:34   16:42	
15	07:41   17:05	07:12   17:45	06:27   18:19	06:35   19:54	05:53   20:27	05:36   20:52	05:49   20:49	06:20   20:16	06:53   19:25	07:25   18:33	07:03   16:53	07:35   16:42	
16	07:40   17:07	07:10   17:46	06:26   18:20	06:33   19:55	05:52   20:28	05:36   20:52	05:50   20:49	06:21   20:15	06:54   19:23	07:27   18:32	07:05   16:42	07:36   14:40 (TRQ08)	
17	07:40   17:08	07:09   17:48	06:24   18:21	06:31   19:57	05:51   20:29	05:36   20:53	05:51   20:48	06:22   20:13	06:55   19:22	07:28   18:30	07:06   16:51	07:37   16:42	4 14:44 (TRQ08)
18	07:39   17:09	07:07   17:49	06:22   18:23	06:30   19:58	05:50   20:30	05:36   20:53	05:52   20:47	06:23   20:12	06:56   19:20	07:29   18:29	07:07   16:50	07:37   16:43	8 14:47 (TRQ08)
19	07:39   17:10	07:06   17:50	06:21   18:24	06:28   19:59	05:49   20:31	05:37   20:53	05:53   20:47	06:24   20:10	06:57   19:18	07:30   18:27	07:08   16:49	07:38   16:43	11 14:48 (TRQ08)
20	07:38   17:11	07:05   17:51	06:19   18:25	06:27   20:00	05:49   20:32	05:37   20:54	05:54   20:46	06:25   20:09	06:58   19:16	07:31   18:26	07:09   16:49	07:38   16:43	12 14:50 (TRQ08)
21	07:38   17:13	07:03   17:53	06:17   18:26	06:25   20:01	05:48   20:33	05:37   20:54	05:55   20:45	06:26   20:07	06:59   19:15	07:32   18:24	07:11   16:48	07:39   16:44	13 14:51 (TRQ08)
22	07:37   17:14	07:02   17:54	06:15   18:27	06:23   20:02	05:47   20:34	05:37   20:54	05:56   20:44	06:27   20:06	07:00   19:13	07:34   18:22	07:12   16:47	07:40   16:44	13 14:52 (TRQ08)
23	07:36   17:15	07:00   17:55	06:14   18:28	06:22   20:03	05:46   20:35	05:37   20:54	05:56   20:43	06:28   20:04	07:01   19:11	07:35   18:21	07:13   16:46	07:40   16:45	13 14:52 (TRQ08)
24	07:35   17:16	06:59   17:56	06:12   18:29	06:20   20:04	05:45   20:36	05:38   20:54	05:57   20:42	06:29   20:02	07:02   19:09	07:36   18:19	07:14   16:46	07:41   16:45	12 14:51 (TRQ08)
25	07:35   17:18	06:57   17:58	06:10   18:31	06:19   20:06	05:44   20:37	05:38   20:54	05:58   20:42	06:30   20:01	07:03   19:07	07:37   18:18	07:15   16:45	07:41   16:46	11 14:52 (TRQ08)
26	07:34   17:19	06:55   17:59	06:08   18:32	06:17   20:07	05:44   20:38	05:38   20:55	05:59   20:41	06:31   19:59	07:04   19:06	07:38   18:17	07:17   16:45	07:41   16:47	9 14:51 (TRQ08)
27	07:33   17:20	06:54   18:00	06:07   18:33	06:16   20:08	05:43   20:39	05:38   20:55	06:00   20:40	06:33   19:58	07:05   19:04	07:39   18:15	07:18   16:44	07:42   16:47	6 14:50 (TRQ08)
28	07:32   17:22	06:52   18:01	06:05   18:34	06:15   20:09	05:42   20:40	05:39   20:55	06:01   20:39	06:34   19:56	07:06   19:02	07:40   18:14	07:19   16:44	07:42   16:48	
29	07:31   17:23		07:03   19:35	06:13   20:10	05:42   20:41	05:39   20:55	06:02   20:38	06:02   19:54	07:08   19:00	07:41   18:12	07:20   16:43	07:42   16:49	
30	07:30   17:24		07:01   19:36	06:12   20:11	05:41   20:42	05:40   20:55	06:03   20:37	06:36   19:53	07:09   18:59	07:42   18:11	07:21   16:43	07:43   16:49	
31	07:29   17:25		07:00   19:37	06:11   20:12	05:41   20:42	05:40   20:55	06:04   20:35	06:37   19:51	07:09   18:59	07:43   18:11	07:21   16:43	07:43   16:50	
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284	
Total, worst case													123
Sun reduction													0,43
Oper. time red.													0,95
Wind dir. red.													0,78
Total reduction													0,32
Total, real													39

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: EP - 108
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (January to December) and rows for time intervals (e.g., 07:43, 16:51, etc.). Includes summary rows for 'Potential sun hours', 'Total, worst case', and various reduction factors (Sun, Oper. time, Wind dir., Total reduction, Total, real).

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise (hh:mm) / Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker / Last time (hh:mm) with flicker, and (WTG causing flicker first time) / (WTG causing flicker last time).

Project:

Tarquinia1

Licensed user:

**MONTANA SPA**  
 VIA ANGELO CARLO FUMAGALLI 6  
 IT-20143 MILANO  
 0254118173  
 Andrea / fronteddu@montanambiente.com  
 Calculated:  
 06/08/2022 14:40/3.5.584

### SHADOW - Calendar

Calculation: Shadow\_realShadow receptor: EQ - 155  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:28	06:51	06:58	06:10	05:40
	16:51	17:27	18:02	19:38	20:12	20:43
2	07:43	07:27	06:49	06:56	06:09	05:40
	16:52	17:28	18:04	19:40	20:13	20:44
3	07:43	07:26	06:47	06:55	06:08	05:39
	16:53	17:29	18:05	19:41	20:14	20:45
4	07:43	07:25	06:46	06:53	06:06	05:39
	16:54	17:31	18:06	19:42	20:15	20:45
5	07:43	07:24	06:44	06:51	06:05	05:38
	16:55	17:32	18:07	19:43	20:17	20:46
6	07:43	07:23	06:43	06:49	06:04	05:38
	16:56	17:33	18:09	19:44	20:18	20:47
7	07:43	07:22	06:41	06:48	06:03	05:38
	16:57	17:35	18:10	19:45	20:19	20:47
8	07:43	07:21	06:39	06:46	06:01	05:37
	16:58	17:36	18:11	19:46	20:20	20:48
9	07:43	07:19	06:38	17:49 (TRQ06) 06:44	06:00	05:37
	16:59	17:37	18:12	2 17:51 (TRQ06) 19:47	20:21	20:49
10	07:42	07:18	06:36	17:47 (TRQ06) 06:43	05:59	05:37
	17:00	17:38	18:13	5 17:52 (TRQ06) 19:49	20:22	20:49
11	07:42	07:17	06:34	17:46 (TRQ06) 06:41	05:58	05:37
	17:01	17:40	18:14	7 17:53 (TRQ06) 19:50	20:23	20:50
12	07:42	07:16	06:33	17:46 (TRQ06) 06:39	05:57	05:37
	17:02	17:41	18:16	9 17:55 (TRQ06) 19:51	20:24	20:50
13	07:41	07:14	06:31	17:45 (TRQ06) 06:38	05:56	05:36
	17:03	17:42	18:17	10 17:55 (TRQ06) 19:52	20:25	20:51
14	07:41	07:13	06:29	17:44 (TRQ06) 06:36	05:54	05:36
	17:04	17:44	18:18	12 17:56 (TRQ06) 19:53	20:26	20:51
15	07:41	07:12	06:27	17:44 (TRQ06) 06:34	05:53	05:36
	17:06	17:45	18:19	13 17:57 (TRQ06) 19:54	20:27	20:52
16	07:40	07:10	06:26	17:45 (TRQ06) 06:33	19:32 (TRQ02) 05:52	05:36
	17:07	17:46	18:20	14 17:59 (TRQ06) 19:55	1 19:33 (TRQ02) 20:28	20:52
17	07:40	07:09	06:24	17:46 (TRQ06) 06:31	19:30 (TRQ02) 05:51	05:36
	17:08	17:48	18:21	14 18:00 (TRQ06) 19:56	4 19:34 (TRQ02) 20:29	20:53
18	07:39	07:07	06:22	17:47 (TRQ06) 06:30	19:29 (TRQ02) 05:50	05:36
	17:09	17:49	18:23	12 17:59 (TRQ06) 19:58	6 19:35 (TRQ02) 20:30	20:53
19	07:39	07:06	06:21	17:49 (TRQ06) 06:28	19:28 (TRQ02) 05:49	05:37
	17:10	17:50	18:24	7 17:56 (TRQ06) 19:59	8 19:36 (TRQ02) 20:31	20:53
20	07:38	07:04	06:19	06:27	19:28 (TRQ02) 05:49	05:37
	17:11	17:51	18:25	20:00	9 19:37 (TRQ02) 20:32	20:53
21	07:37	07:03	06:17	06:25	19:27 (TRQ02) 05:48	05:37
	17:13	17:53	18:26	20:01	11 19:38 (TRQ02) 20:33	20:54
22	07:37	07:02	06:15	06:23	19:27 (TRQ02) 05:47	05:37
	17:14	17:54	18:27	20:02	13 19:40 (TRQ02) 20:34	20:54
23	07:36	07:00	06:14	06:22	19:27 (TRQ02) 05:46	05:37
	17:15	17:55	18:28	20:03	13 19:40 (TRQ02) 20:35	20:54
24	07:35	06:59	06:12	06:20	19:27 (TRQ02) 05:45	05:38
	17:16	17:56	18:29	20:04	15 19:42 (TRQ02) 20:36	20:54
25	07:35	06:57	06:10	06:19	19:27 (TRQ02) 05:44	05:38
	17:18	17:58	18:31	20:05	15 19:42 (TRQ02) 20:37	20:54
26	07:34	06:55	06:08	06:17	19:28 (TRQ02) 05:44	05:38
	17:19	17:59	18:32	20:07	16 19:44 (TRQ02) 20:38	20:54
27	07:33	06:54	06:07	06:16	19:30 (TRQ02) 05:43	05:39
	17:20	18:00	18:33	20:08	13 19:43 (TRQ02) 20:39	20:54
28	07:32	06:52	06:05	06:15	19:31 (TRQ02) 05:42	05:39
	17:22	18:01	18:34	20:09	9 19:40 (TRQ02) 20:40	20:55
29	07:31		07:03	06:13	05:42	05:39
	17:23		19:35	20:10	20:41	20:54
30	07:30		07:01	06:12	05:41	05:40
	17:24		19:36	20:11	20:41	20:54
31	07:29		07:00		05:41	
	17:25		19:37		20:42	
Potential sun hours	294	295	369	400	452	457
Total, worst case			105		133	
Sun reduction			0,46		0,49	
Oper. time red.			0,95		0,95	
Wind dir. red.			0,64		0,54	
Total reduction			0,28		0,25	
Total, real			29		34	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

**Calculation:** Shadow\_real**Shadow receptor:** EQ - 155  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	18:24 (TRQ06) 17:08	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	18:34 (TRQ06) 17:07	07:23 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:53	18:24 (TRQ06) 17:06	07:24 16:42
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	18:30 (TRQ06) 17:05	07:25 16:42
5	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	18:25 (TRQ06) 17:04	07:26 16:42
6	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	18:28 (TRQ06) 17:03	07:27 16:41
7	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	18:32 (TRQ06) 17:01	07:28 16:41
8	05:44 20:53	06:12 20:26	06:45 19:37	07:17 18:45	18:24 (TRQ06) 17:00	07:29 16:41
9	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	18:30 (TRQ06) 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	18:33 (TRQ06) 16:57	07:31 16:41
11	05:46 20:51	06:16 20:22	06:48 19:32	07:21 18:40	18:32 (TRQ06) 16:55	07:32 16:41
12	05:47 20:51	06:17 20:20	06:49 19:30	07:22 18:38	18:24 (TRQ06) 16:53	07:33 16:41
13	05:48 20:50	06:18 20:19	06:50 19:29	07:23 18:37	18:30 (TRQ06) 16:51	07:34 16:41
14	05:49 20:50	06:19 20:18	19:42 (TRQ02) 19:27	06:51 19:27	07:24 18:35	07:34 16:42
15	05:50 20:49	06:20 20:16	19:38 (TRQ02) 19:25	06:53 19:25	07:25 18:33	07:35 16:42
16	05:50 20:49	06:21 20:15	19:36 (TRQ02) 19:23	06:54 19:23	07:27 18:32	07:36 16:42
17	05:51 20:48	06:22 20:13	19:35 (TRQ02) 19:22	06:55 19:22	07:28 18:30	07:37 16:42
18	05:52 20:47	06:23 20:12	19:34 (TRQ02) 19:20	06:56 19:20	07:29 18:29	07:37 16:43
19	05:53 20:46	06:24 20:10	19:33 (TRQ02) 19:18	06:57 19:18	07:30 18:27	07:38 16:43
20	05:54 20:46	06:25 20:09	19:32 (TRQ02) 19:16	06:58 19:16	07:31 18:25	07:38 16:43
21	05:55 20:45	06:26 20:07	19:32 (TRQ02) 19:15	06:59 19:15	07:32 18:24	07:39 16:44
22	05:56 20:44	06:27 20:06	19:32 (TRQ02) 19:13	07:00 19:13	07:34 18:22	07:39 16:44
23	05:56 20:43	06:28 20:04	19:32 (TRQ02) 19:11	07:01 19:11	07:35 18:21	07:40 16:45
24	05:57 20:42	06:29 20:02	19:41 (TRQ02) 19:09	19:11 19:09	18:21 (TRQ06) 18:19	07:40 16:45
25	05:58 20:41	06:30 20:01	19:32 (TRQ02) 19:07	19:09 19:07	18:31 (TRQ06) 17:18	07:41 16:46
26	05:59 20:40	06:31 19:59	19:33 (TRQ02) 19:06	19:07 19:06	18:42 (TRQ06) 17:17	07:41 16:47
27	06:00 20:40	06:33 19:58	19:34 (TRQ02) 19:04	19:05 19:04	18:29 (TRQ06) 17:15	07:42 16:47
28	06:01 20:39	06:34 19:56	19:35 (TRQ02) 19:02	19:04 19:02	18:41 (TRQ06) 17:14	07:42 16:48
29	06:02 20:37	06:35 19:54	19:02 19:00	19:02 19:00	18:26 (TRQ06) 17:12	07:42 16:49
30	06:03 20:36	06:36 19:53	07:07 18:59	18:25 (TRQ06) 18:59	06:42 17:11	07:42 16:49
31	06:04 20:35	06:37 19:51	07:09 19:04	18:37 (TRQ06) 17:10	06:43 17:10	07:42 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		135	77			
Sun reduction		0,70	0,62		0,55	
Oper. time red.		0,95	0,95		0,95	
Wind dir. red.		0,54	0,64		0,64	
Total reduction		0,36	0,38		0,33	
Total, real		49	29		9	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_realShadow receptor: ER - 163  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43	07:28	06:51	06:58	07:17 (TRQ06)	06:11
	16:51	17:27	18:03	19:39	07:31 (TRQ06)	20:12
2	07:43	07:27	06:49	06:56	07:15 (TRQ06)	06:09
	16:52	17:28	18:04	19:40	07:33 (TRQ06)	20:13
3	07:43	07:26	06:48	06:55	07:14 (TRQ06)	06:08
	16:53	17:30	18:05	19:41	07:35 (TRQ06)	20:15
4	07:43	07:25	06:46	06:53	07:12 (TRQ06)	06:07
	16:54	17:31	18:06	19:42	07:35 (TRQ06)	20:16
5	07:43	07:24	06:44	06:51	07:10 (TRQ06)	06:05
	16:55	17:32	18:07	19:43	07:36 (TRQ06)	20:17
6	07:43	07:23	06:43	06:50	07:08 (TRQ06)	06:04
	16:56	17:33	18:09	19:44	07:36 (TRQ06)	20:18
7	07:43	07:22	06:41	06:48	07:07 (TRQ06)	06:03
	16:57	17:35	18:10	19:45	07:37 (TRQ06)	20:19
8	07:43	07:21	06:39	06:46	07:05 (TRQ06)	06:01
	16:58	17:36	18:11	19:47	07:36 (TRQ06)	20:20
9	07:43	07:19	06:38	06:45	07:04 (TRQ06)	06:00
	16:59	17:37	18:12	19:48	07:36 (TRQ06)	20:21
10	07:43	07:18	06:36	06:43	07:04 (TRQ06)	05:59
	17:00	17:39	18:13	19:49	07:36 (TRQ06)	20:22
11	07:42	07:17	06:34	06:41	07:04 (TRQ06)	05:58
	17:01	17:40	18:15	19:50	07:36 (TRQ06)	20:23
12	07:42	07:16	06:33	06:40	07:03 (TRQ06)	05:57
	17:02	17:41	18:16	19:51	07:35 (TRQ06)	20:24
13	07:42	07:14	06:31	06:38	07:04 (TRQ06)	05:56
	17:03	17:43	18:17	19:52	07:35 (TRQ06)	20:25
14	07:41	07:13	06:29	06:36	07:04 (TRQ06)	05:55
	17:05	17:44	18:18	19:53	07:34 (TRQ06)	20:26
15	07:41	07:12	06:28	06:35	07:05 (TRQ06)	05:54
	17:06	17:45	18:19	19:54	07:33 (TRQ06)	20:27
16	07:40	07:10	06:26	06:33	07:05 (TRQ06)	05:53
	17:07	17:46	18:20	19:56	07:32 (TRQ06)	20:28
17	07:40	07:09	06:24	06:31	07:06 (TRQ06)	05:52
	17:08	17:48	18:22	19:57	07:31 (TRQ06)	20:30
18	07:39	07:08	06:22	06:30	07:07 (TRQ06)	05:51
	17:09	17:49	18:23	19:58	07:29 (TRQ06)	20:31
19	07:39	07:06	06:21	06:28	07:08 (TRQ06)	05:50
	17:10	17:50	18:24	19:59	07:27 (TRQ06)	20:32
20	07:38	07:05	06:19	06:27	07:10 (TRQ06)	05:49
	17:12	17:51	18:25	20:00	07:25 (TRQ06)	20:33
21	07:38	07:03	06:17	06:25	07:13 (TRQ06)	05:48
	17:13	17:53	18:26	20:01	07:20 (TRQ06)	20:33
22	07:37	07:02	06:15	06:24		05:47
	17:14	17:54	18:27	20:02		20:34
23	07:36	07:00	06:14	06:22		05:46
	17:15	17:55	18:28	20:03		20:35
24	07:36	06:59	06:12	06:21		05:45
	17:17	17:56	18:30	20:04		20:36
25	07:35	06:57	06:10	06:19		05:45
	17:18	17:58	18:31	20:06		20:37
26	07:34	06:56	06:09	06:18		05:44
	17:19	17:59	18:32	20:07		20:38
27	07:33	06:54	06:07	06:16		05:43
	17:20	18:00	18:33	20:08		20:39
28	07:32	06:52	06:05	06:15		05:43
	17:22	18:01	18:34	20:09		20:40
29	07:31		07:03	06:13		05:42
	17:23		19:35	20:10		20:41
30	07:30		07:02	06:12		05:41
	17:24		19:36	20:11		20:42
31	07:29		07:00	07:19 (TRQ06)		05:41
	17:26		19:38	07:28 (TRQ06)		20:42
Potential sun hours	294	295	369	400	452	457
Total, worst case			9			523
Sun reduction			0,46			0,49
Oper. time red.			0,95			0,95
Wind dir. red.			0,63			0,63
Total reduction			0,28			0,30
Total, real			2			156

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Shadow\_real Shadow receptor: ER - 163  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	07:03 (TRQ06) 18:57	07:10 17:09	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:02 (TRQ06) 18:55	07:11 17:07	07:23 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	07:02 (TRQ06) 18:54	07:12 17:06	07:24 16:42
4	05:42 20:54	06:08 20:31	06:41 19:44	07:02 (TRQ06) 18:52	07:13 17:05	07:25 16:42
5	05:43 20:54	06:10 20:30	06:42 19:43	07:03 (TRQ06) 18:50	07:14 17:04	07:26 16:42
6	05:43 20:53	06:11 20:28	06:43 19:41	07:04 (TRQ06) 18:48	07:15 17:02	07:27 16:42
7	05:44 20:53	06:12 20:27	06:44 19:39	07:05 (TRQ06) 18:47	07:16 17:01	07:28 16:41
8	05:44 20:53	06:13 20:26	06:45 19:38	07:06 (TRQ06) 18:45	07:18 17:00	07:29 16:41
9	05:45 20:52	06:14 20:25	06:46 19:36	07:07 (TRQ06) 18:43	07:19 16:59	07:30 16:41
10	05:46 20:52	06:15 20:23	06:47 19:34	07:08 (TRQ06) 18:42	07:20 16:58	07:31 16:41
11	05:47 20:52	06:16 20:22	06:49 19:32	07:09 (TRQ06) 18:40	07:21 16:57	07:32 16:41
12	05:47 20:51	06:17 20:20	06:50 19:31	07:10 (TRQ06) 18:38	07:22 16:56	07:33 16:41
13	05:48 20:50	06:18 20:19	06:51 19:29	07:20 (TRQ06) 18:37	07:23 16:55	07:34 16:42
14	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:24 16:54	07:34 16:42
15	05:50 20:49	06:20 20:16	06:53 19:25	07:26 18:34	07:26 16:53	07:35 16:42
16	05:50 20:49	06:21 20:15	06:54 19:24	07:27 18:32	07:27 16:52	07:36 16:42
17	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:28 16:51	07:37 16:42
18	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:29 16:50	07:37 16:43
19	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:30 16:49	07:38 16:43
20	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:31 16:49	07:39 16:44
21	05:55 20:45	06:26 20:07	06:59 19:15	07:33 18:24	07:33 16:48	07:39 16:44
22	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:34 16:47	07:40 16:44
23	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:35 16:47	07:40 16:45
24	05:58 20:42	06:30 20:03	07:02 19:09	07:36 18:20	07:36 16:46	07:41 16:46
25	05:59 20:42	06:31 20:01	07:03 19:08	07:37 17:18	07:37 16:45	07:41 16:46
26	05:59 20:41	06:32 19:59	07:04 19:06	07:39 17:17	07:39 16:45	07:41 16:47
27	06:00 20:40	06:33 19:58	07:05 19:04	07:40 17:15	07:40 16:44	07:42 16:47
28	06:01 20:39	06:34 19:56	07:05 19:02	07:41 17:14	07:41 16:44	07:42 16:48
29	06:02 20:38	06:35 19:54	07:06 19:01	07:42 17:13	07:42 16:43	07:42 16:49
30	06:03 20:37	06:36 19:53	07:06 18:59	07:43 17:11	07:43 16:43	07:43 16:50
31	06:04 20:35	06:37 19:51	07:07 18:57	07:44 17:10	07:44 16:42	07:43 16:50
Potential sun hours	463	430	376	344	295	284
Total, worst case		243	299			
Sun reduction		0,70	0,62			
Oper. time red.		0,95	0,95			
Wind dir. red.		0,63	0,63			
Total reduction		0,42	0,38			
Total, real		102	112			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** ES - 12  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

January		February		March		April		May		June	
1	07:43	08:14 (TRQ07)	07:28	06:51	07:14 (TRQ08)	06:58	06:10	05:40			
	16:51	35 16:19 (TRQ03)	17:27	18:03	30 07:44 (TRQ08)	19:39	20:12	20:43			
2	07:43	08:15 (TRQ07)	07:27	06:49	07:14 (TRQ08)	06:56	06:09	05:40			
	16:52	34 16:19 (TRQ03)	17:28	18:04	30 07:44 (TRQ08)	19:40	20:13	20:44			
3	07:43	08:16 (TRQ07)	07:26	06:48	07:14 (TRQ08)	06:55	06:08	05:39			
	16:53	32 16:19 (TRQ03)	17:29	18:05	29 07:43 (TRQ08)	19:41	20:15	20:45			
4	07:43	08:17 (TRQ07)	07:25	06:46	07:14 (TRQ08)	06:53	06:06	05:39			
	16:54	30 16:19 (TRQ03)	17:31	18:06	28 07:42 (TRQ08)	19:42	20:16	20:46			
5	07:43	08:18 (TRQ07)	07:24	06:44	07:16 (TRQ08)	06:51	06:05	05:38			
	16:55	28 16:19 (TRQ03)	17:32	18:07	25 07:41 (TRQ08)	19:43	20:17	20:46			
6	07:43	08:19 (TRQ07)	07:23	06:43	07:16 (TRQ08)	06:50	06:04	05:38			
	16:56	26 16:19 (TRQ03)	17:33	18:09	24 07:40 (TRQ08)	19:44	20:18	20:47			
7	07:43	08:20 (TRQ07)	07:22	06:41	07:17 (TRQ08)	06:48	06:03	05:38			
	16:57	23 16:19 (TRQ03)	17:35	18:10	21 07:38 (TRQ08)	19:45	20:19	20:48			
8	07:43	08:21 (TRQ07)	07:21	06:39	07:19 (TRQ08)	06:46	06:01	05:37			
	16:58	17 16:17 (TRQ03)	17:36	18:11	17 07:36 (TRQ08)	19:46	20:20	20:48			
9	07:43	08:23 (TRQ07)	07:19	06:38	07:22 (TRQ08)	06:44	06:00	05:37			
	16:59	7 08:30 (TRQ07)	17:37	18:12	11 07:33 (TRQ08)	19:48	20:21	20:49			
10	07:43		07:18	06:36		06:43	05:59	05:37			
	17:00		17:39	18:13		19:49	20:22	20:49			
11	07:42		07:17	06:34		06:41	05:58	05:37			
	17:01		17:40	18:15		19:50	20:23	20:50			
12	07:42		07:16	06:33		06:39	05:57	05:37			
	17:02		17:41	18:16		19:51	20:24	20:51			
13	07:42		07:14	06:31		06:38	05:56	05:37			
	17:03		17:42	18:17		19:52	20:25	20:51			
14	07:41		07:13	06:29		06:36	05:55	05:36			
	17:04		17:44	18:18		19:53	20:26	20:51			
15	07:41		07:12	06:28		06:35	05:53	05:36			
	17:06		17:45	18:19		19:54	20:27	20:52			
16	07:40		07:10	06:26		06:33	05:52	05:36			
	17:07		17:46	18:20		19:55	20:29	20:52			
17	07:40		07:09	06:24		06:31	05:51	05:36			
	17:08		17:48	18:22		19:57	20:30	20:53			
18	07:39		07:07	06:22		06:30	05:50	05:36			
	17:09		17:49	7 07:34 (TRQ08)	18:23	19:58	20:31	20:53			
19	07:39		07:06	06:21		06:28	05:50	05:37			
	17:10		17:50	12 07:38 (TRQ08)	18:24	19:59	20:32	20:53			
20	07:38		07:05	06:19		06:27	05:49	05:37			
	17:12		17:51	15 07:39 (TRQ08)	18:25	20:00	20:33	20:54			
21	07:38		07:03	06:17		06:25	05:48	05:37			
	17:13		17:53	18 07:41 (TRQ08)	18:26	20:01	20:34	20:54			
22	07:37		07:02	06:15		06:24	05:47	05:37			
	17:14		17:54	21 07:42 (TRQ08)	18:27	20:02	20:34	20:54			
23	07:36		07:00	06:14		06:22	05:46	05:37			
	17:15		17:55	23 07:43 (TRQ08)	18:28	20:03	20:35	20:54			
24	07:36		06:59	06:12		06:21	05:45	05:38			
	17:17		17:56	26 07:44 (TRQ08)	18:30	20:04	20:36	20:54			
25	07:35		06:57	06:10		06:19	05:45	05:38			
	17:18		17:58	28 07:45 (TRQ08)	18:31	20:06	20:37	20:55			
26	07:34		06:56	06:08		06:18	05:44	05:38			
	17:19		17:59	29 07:44 (TRQ08)	18:32	20:07	20:38	20:55			
27	07:33		06:54	06:07		06:16	05:43	05:39			
	17:20		18:00	30 07:44 (TRQ08)	18:33	20:08	20:39	20:55			
28	07:32		06:52	06:05		06:15	05:42	05:39			
	17:22		18:01	31 07:45 (TRQ08)	18:34	20:09	20:40	20:55			
29	07:31			07:03		06:13	05:42	05:39			
	17:23			19:35		20:10	20:41	20:55			
30	07:30			07:02		06:12	05:41	05:40			
	17:24			19:36		20:11	20:42	20:55			
31	07:29			07:00			05:41				
	17:26			19:37			20:42				
Potential sun hours	294		295	369		400	452	457			
Total, worst case		232	240		215						
Sun reduction		0,42	0,46		0,46						
Oper. time red.		0,95	0,95		0,95						
Wind dir. red.		0,61	0,51		0,51						
Total reduction		0,24	0,23		0,22						
Total, real		56	54		48						

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

# SHADOW - Calendar

**Calculation:** Shadow\_real  
**Shadow receptor:** ES - 12  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:08	07:22 16:43
2	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42 08:07 (TRQ07)
4	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42 08:14 (TRQ07)
5	05:42 20:54	06:09 20:30	06:42 19:43	07:14 18:50	06:51 17:03	07:26 16:42 08:06 (TRQ07)
6	05:43 20:53	06:10 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:41 08:05 (TRQ07)
7	05:44 20:53	06:11 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41 08:05 (TRQ07)
8	05:44 20:53	06:13 20:26	06:45 19:38	07:18 18:45	06:55 17:00	07:29 16:41 08:05 (TRQ07)
9	05:45 20:52	06:14 20:25	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41 08:05 (TRQ07)
10	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41 08:05 (TRQ07)
11	05:46 20:52	06:16 20:22	06:48 19:32	07:21 18:40	06:58 16:57	07:32 16:41 08:04 (TRQ07)
12	05:47 20:51	06:17 20:20	06:49 19:31	07:22 18:38	07:00 16:56	07:33 16:41 08:05 (TRQ07)
13	05:48 20:51	06:18 20:19	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:41 08:05 (TRQ07)
14	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42 08:06 (TRQ07)
15	05:49 20:49	06:20 20:16	06:53 19:25	07:25 18:33	07:03 16:53	07:35 16:42 08:06 (TRQ07)
16	05:50 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	07:36 16:42 08:06 (TRQ07)
17	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:42 08:07 (TRQ07)
18	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43 08:07 (TRQ07)
19	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:49	07:38 16:43 08:07 (TRQ07)
20	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:10 16:49	07:39 16:43 08:08 (TRQ07)
21	05:55 20:45	06:26 20:07	06:59 19:15	07:33 18:24	07:11 16:48	07:39 16:44 08:08 (TRQ07)
22	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:44 08:09 (TRQ07)
23	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45 08:09 (TRQ07)
24	05:57 20:43	06:29 20:03	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:45 08:10 (TRQ07)
25	05:58 20:42	06:30 20:01	07:03 19:08	07:37 17:18	07:15 16:45	07:41 16:46 08:10 (TRQ07)
26	05:59 20:41	06:32 19:59	07:04 19:06	07:39 17:17	07:17 16:45	07:41 16:47 08:10 (TRQ07)
27	06:00 20:40	06:33 19:58	07:05 19:04	07:40 17:15	07:18 16:44	07:42 16:47 08:11 (TRQ07)
28	06:01 20:39	06:34 19:56	07:07 19:02	07:41 17:14	07:19 16:44	07:42 16:48 08:12 (TRQ07)
29	06:02 20:38	06:35 19:54	07:08 19:01	07:42 17:12	07:20 16:43	07:42 16:49 08:12 (TRQ07)
30	06:03 20:37	06:36 19:53	07:09 18:59	07:43 17:11	07:21 16:43	07:43 16:49 08:13 (TRQ07)
31	06:04 20:35	06:37 19:51	07:09 18:57	07:44 17:10	07:22 16:50	07:43 16:50 08:14 (TRQ07)
Potential sun hours	463	430	376	344	295	284
Total, worst case				464		1022
Sun reduction				0,55		0,43
Oper. time red.				0,95		0,95
Wind dir. red.				0,51		0,62
Total reduction				0,27		0,25
Total, real				125		259

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

**Calculation:** Shadow\_real **Shadow receptor:** ET - 204  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:43 16:51	07:28 17:27	06:51 18:03	06:58 19:39	06:11 20:12	05:40 20:43	05:40 20:54	06:05 20:34	06:38 19:49	07:10 18:57	06:46 17:09	07:22 16:43
2	07:43 16:52	07:27 17:28	06:49 18:04	06:56 19:40	06:09 20:13	05:40 20:44	05:41 20:54	06:06 20:33	06:39 19:48	07:11 18:55	06:47 17:07	07:23 16:42
3	07:43 16:53	07:26 17:30	06:48 18:05	06:55 19:41	06:08 20:14	05:39 20:45	05:41 20:54	06:07 20:32	06:40 19:46	07:12 18:54	06:48 17:06	07:24 16:42
4	07:43 16:54	07:25 17:31	06:46 18:06	06:53 19:42	06:07 20:16	05:39 20:45	05:42 20:54	06:08 20:31	06:41 19:44	07:13 18:52	06:50 17:05	07:25 16:42
5	07:43 16:55	07:24 17:32	06:44 18:07	06:51 19:43	06:05 20:17	05:38 20:46	05:43 20:54	06:10 20:30	06:42 19:43	07:14 18:50	06:51 17:04	07:26 16:42
6	07:43 16:56	07:23 17:33	06:43 18:09	06:50 19:44	06:04 20:18	05:38 20:47	05:43 20:53	06:11 20:28	06:43 19:41	07:15 18:48	06:52 17:02	07:27 16:42
7	07:43 16:57	07:22 17:35	06:41 18:10	06:48 19:45	06:03 20:19	05:38 20:47	05:44 20:53	06:12 20:27	06:44 19:39	07:16 18:47	06:53 17:01	07:28 16:41
8	07:43 16:58	07:21 17:36	06:39 18:11	06:46 19:46	06:01 20:20	05:38 20:48	05:44 20:53	06:13 20:26	06:45 19:37	07:17 18:45	06:55 17:00	07:29 16:41
9	07:43 16:59	07:19 17:37	06:38 18:12	06:45 19:48	06:00 20:21	05:37 20:49	05:45 20:52	06:14 20:24	06:46 19:36	07:19 18:43	06:56 16:59	07:30 16:41
10	07:42 17:00	07:18 17:39	06:36 18:13	06:43 19:49	05:59 20:22	05:37 20:49	05:46 20:52	06:15 20:23	06:47 19:34	07:20 18:42	06:57 16:58	07:31 16:41
11	07:42 17:01	07:17 17:40	06:34 18:15	06:41 19:50	05:58 20:23	05:37 20:50	05:47 20:51	06:16 20:22	06:48 19:32	07:21 18:40	06:58 16:57	07:32 16:41
12	07:42 17:02	07:16 17:41	06:33 18:16	06:40 19:51	05:57 20:24	05:37 20:50	05:47 20:51	06:17 20:20	06:50 19:30	07:22 18:38	07:00 16:56	07:33 16:41
13	07:42 17:03	07:14 17:43	06:31 18:17	06:38 19:52	05:56 20:25	05:37 20:51	05:48 20:50	06:18 20:19	06:51 19:29	07:23 18:37	07:01 16:55	07:34 16:42
14	07:41 17:05	07:13 17:44	06:29 18:18	06:36 19:53	05:55 20:26	05:37 20:51	05:49 20:50	06:19 20:18	06:52 19:27	07:24 18:35	07:02 16:54	07:34 16:42
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16	07:40 17:07	07:10 17:46	06:26 18:20	06:33 19:55	05:53 20:28	05:37 20:52	05:51 20:49	06:21 20:15	06:54 19:23	07:27 18:32	07:05 16:52	07:36 16:42
17	07:40 17:08	07:09 17:48	06:24 18:22	06:31 19:57	05:52 20:29	05:37 20:53	05:51 20:48	06:22 20:13	06:55 19:22	07:28 18:30	07:06 16:51	07:37 16:42
18	07:39 17:09	07:07 17:49	06:22 18:23	06:30 19:58	05:51 20:30	05:37 20:53	05:52 20:47	06:23 20:12	06:56 19:20	07:29 18:29	07:07 16:50	07:37 16:43
19	07:39 17:10	07:06 17:50	06:21 18:24	06:28 19:59	05:50 20:31	05:37 20:53	05:53 20:47	06:24 20:10	06:57 19:18	07:30 18:27	07:08 16:49	07:38 16:43
20	07:38 17:12	07:05 17:51	06:19 18:25	06:27 20:00	05:49 20:32	05:37 20:54	05:54 20:46	06:25 20:09	06:58 19:16	07:31 18:26	07:09 16:49	07:38 16:44
21	07:38 17:13	07:03 17:53	06:17 18:26	06:25 20:01	05:48 20:33	05:37 20:54	05:55 20:45	06:26 20:07	06:59 19:15	07:32 18:24	07:11 16:48	07:39 16:44
22	07:37 17:14	07:02 17:54	06:15 18:27	06:24 20:02	05:47 20:34	05:37 20:54	05:56 20:44	06:27 20:06	07:00 19:13	07:34 18:23	07:12 16:47	07:40 16:44
23	07:36 17:15	07:00 17:55	06:14 18:28	06:22 20:03	05:46 20:35	05:37 20:54	05:57 20:43	06:28 20:04	07:01 19:11	07:35 18:21	07:13 16:47	07:40 16:45
24	07:35 17:17	06:59 17:56	06:12 18:30	06:21 20:04	05:45 20:36	05:38 20:54	05:58 20:42	06:29 20:03	07:02 19:09	07:36 18:20	07:14 16:46	07:41 16:46
25	07:35 17:18	06:57 17:58	06:10 18:31	06:19 20:06	05:45 20:37	05:38 20:54	05:59 20:41	06:31 20:01	07:03 19:08	06:37 17:18	07:15 16:45	07:41 16:46
26	07:34 17:19	06:56 17:59	06:08 18:32	06:18 20:07	05:44 20:38	05:38 20:54	05:59 20:41	06:32 19:59	07:04 19:06	06:38 17:17	07:17 16:45	07:41 16:47
27	07:33 17:20	06:54 18:00	06:07 18:33	06:16 20:08	05:43 20:39	05:39 20:55	06:00 20:40	06:33 19:58	07:05 19:04	06:40 17:15	07:18 16:44	07:42 16:47
28	07:32 17:22	06:52 18:01	06:05 18:34	06:15 20:09	05:43 20:40	05:39 20:55	06:01 20:39	06:34 19:56	07:06 19:02	06:41 17:14	07:19 16:44	07:42 16:48
29	07:31 17:23		07:03 19:35	06:13 20:10	05:42 20:41	05:39 20:55	06:02 20:38	06:35 19:54	07:08 19:01	06:42 17:13	07:20 16:43	07:42 16:49
30	07:30 17:24		07:02 19:36	06:12 20:11	05:41 20:42	05:40 20:54	06:03 20:36	06:36 19:53	07:09 18:59	06:43 17:11	07:21 16:43	07:42 16:50
31	07:29 17:26		07:00 19:37		05:41 20:42		06:04 20:35	06:37 19:51		06:45 17:10		07:43 16:50
Potential sun hours	294	295	369	400	452	457	463	430	376	344	295	284
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

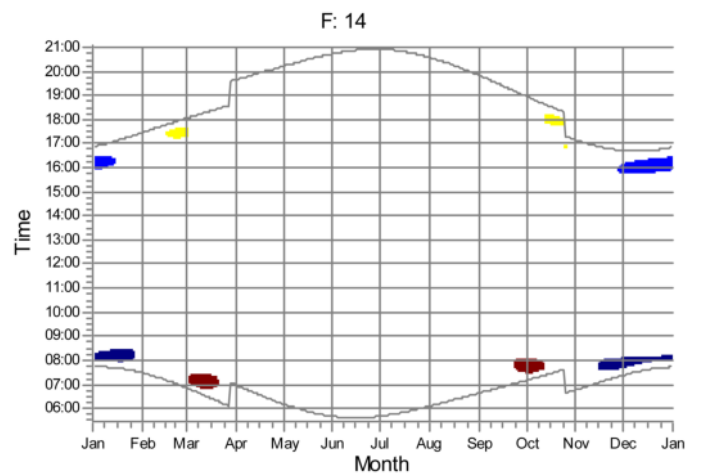
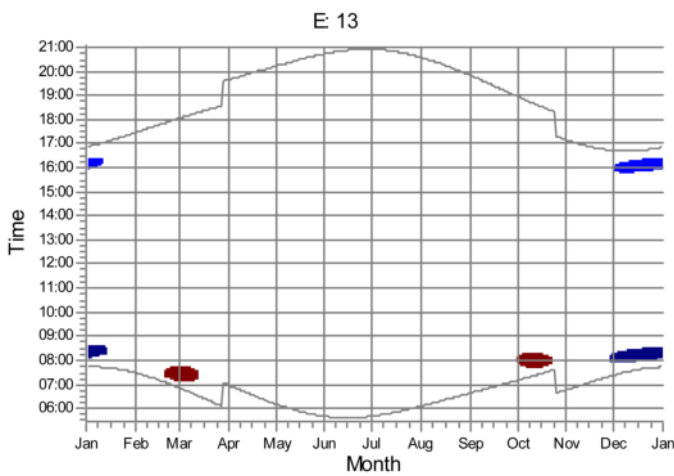
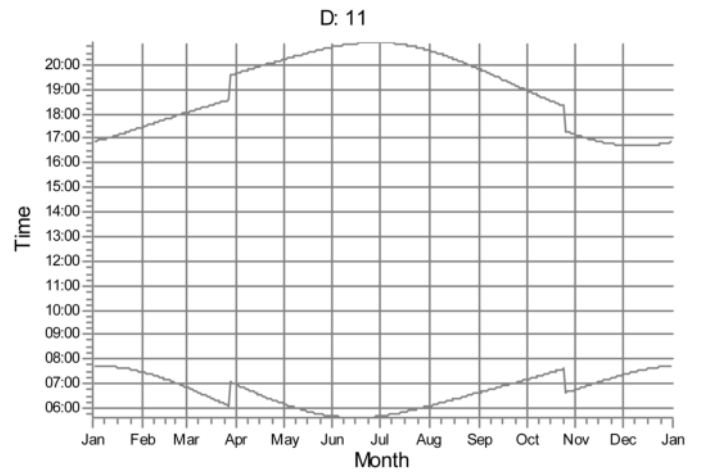
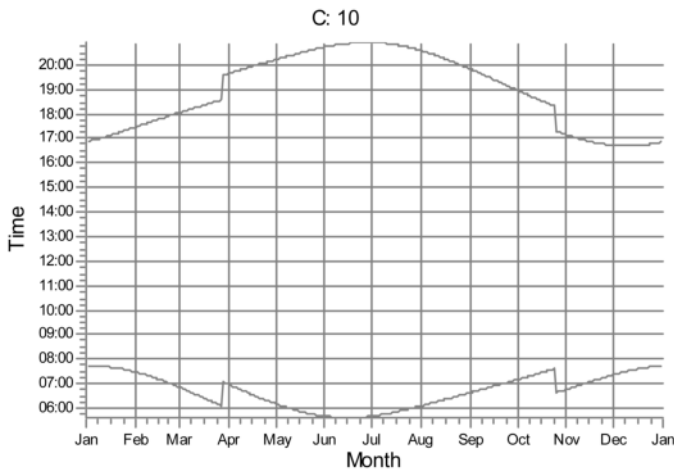
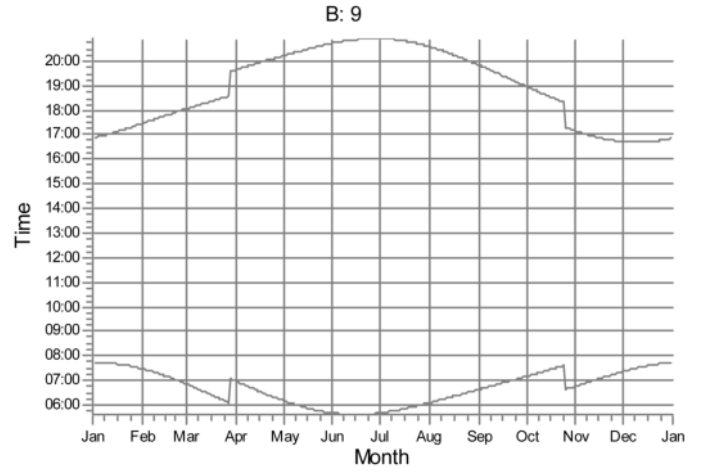
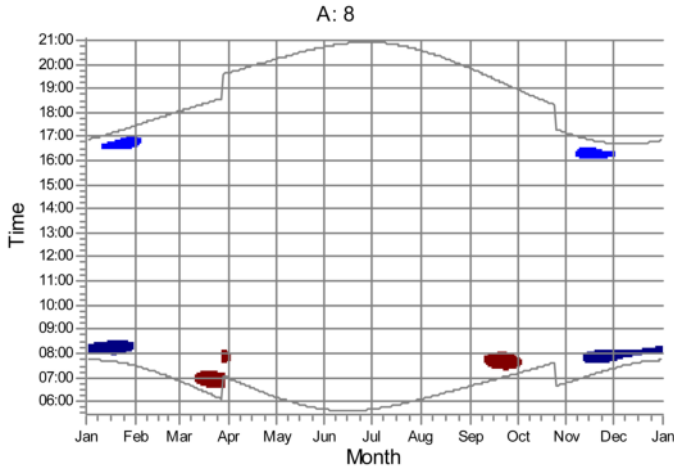
Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		





## SHADOW - Calendar, graphical

Calculation: Shadow\_real

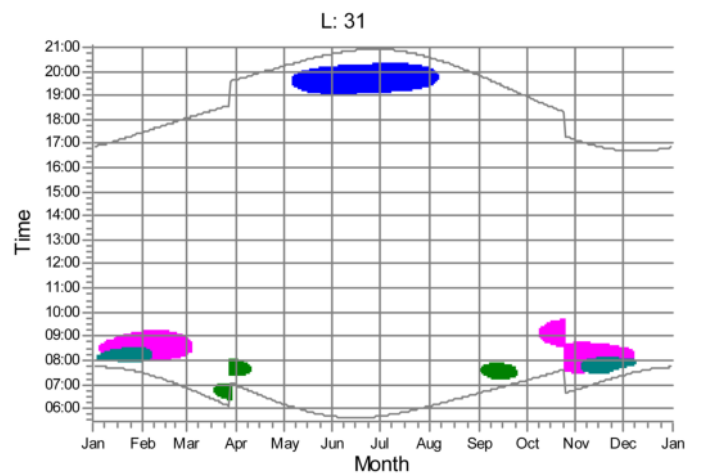
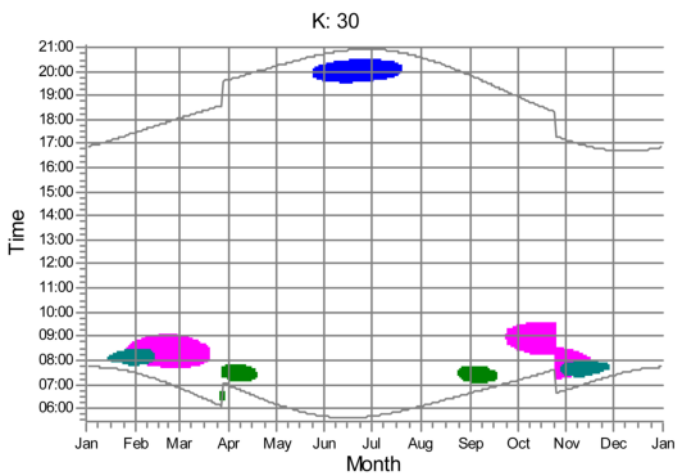
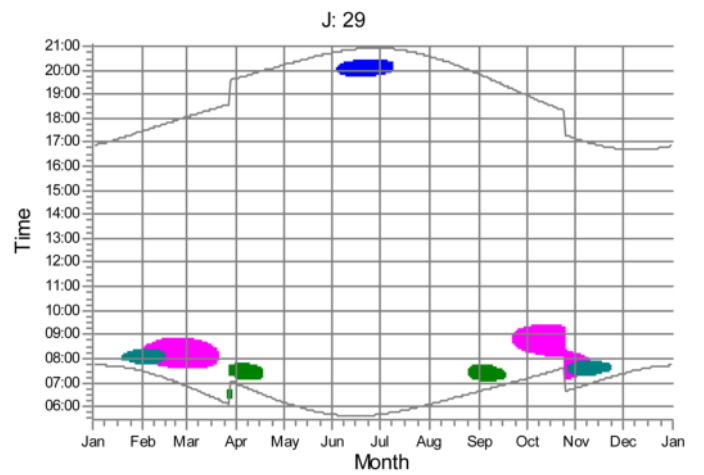
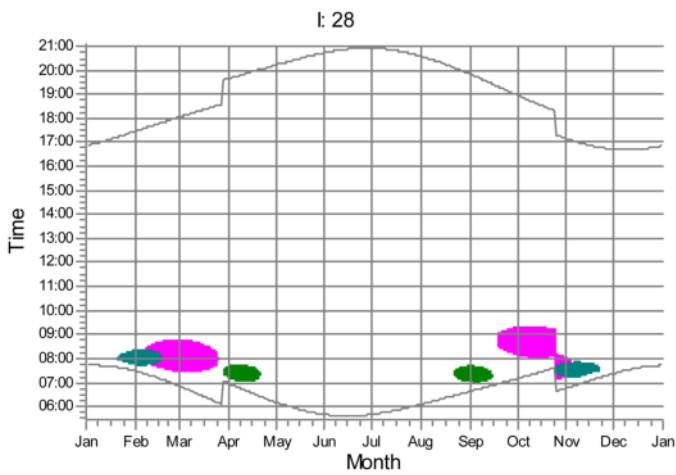
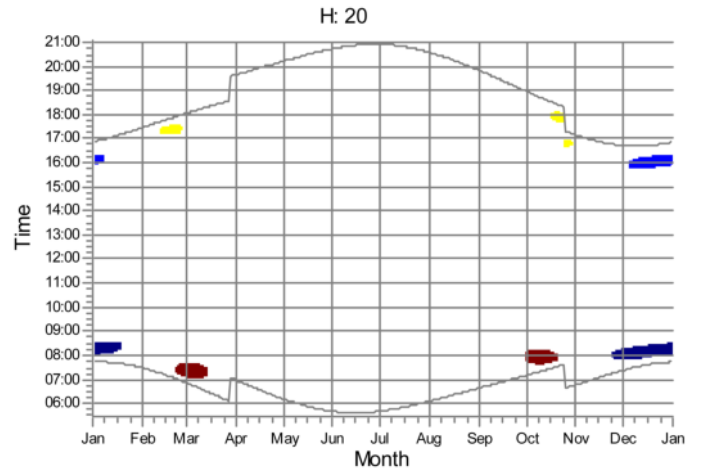
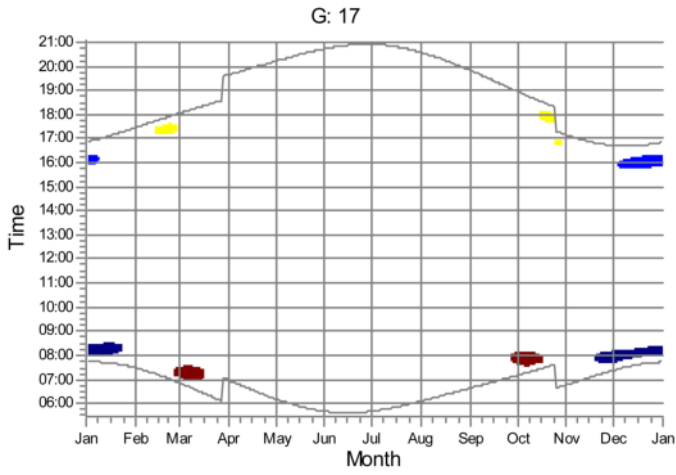


WTGs

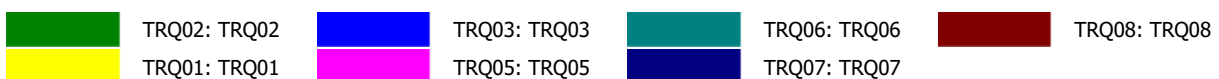
TRQ01: TRQ01
  TRQ03: TRQ03
  TRQ07: TRQ07
  TRQ08: TRQ08

## SHADOW - Calendar, graphical

Calculation: Shadow\_real

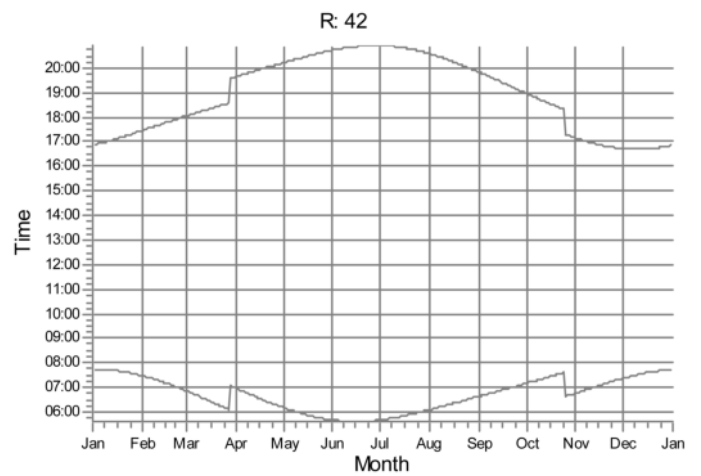
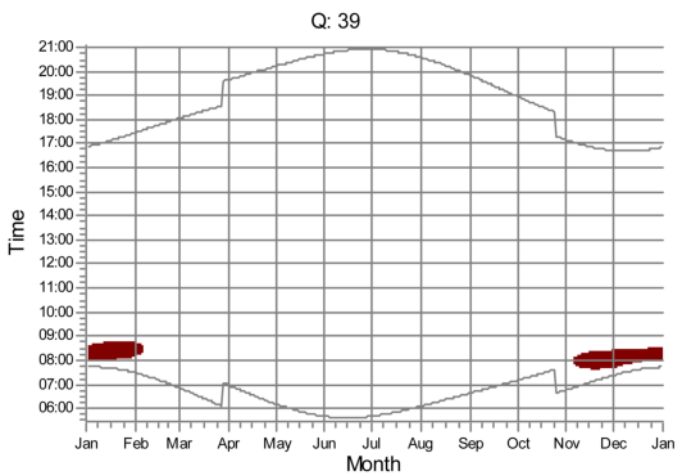
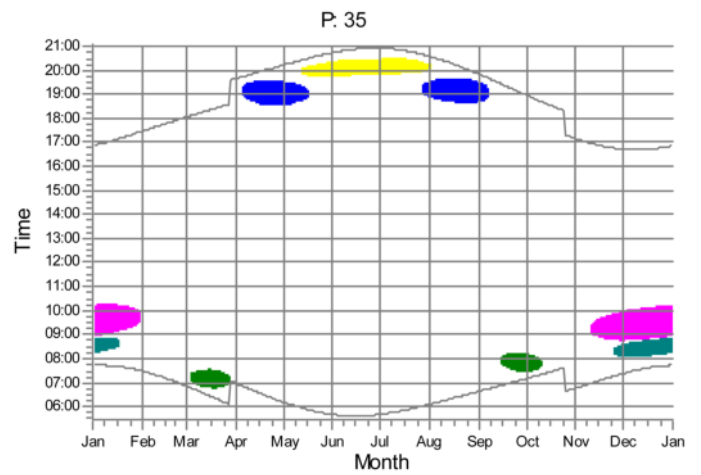
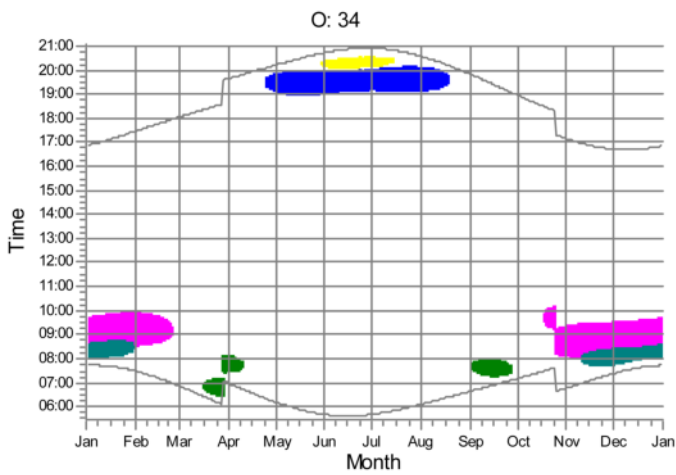
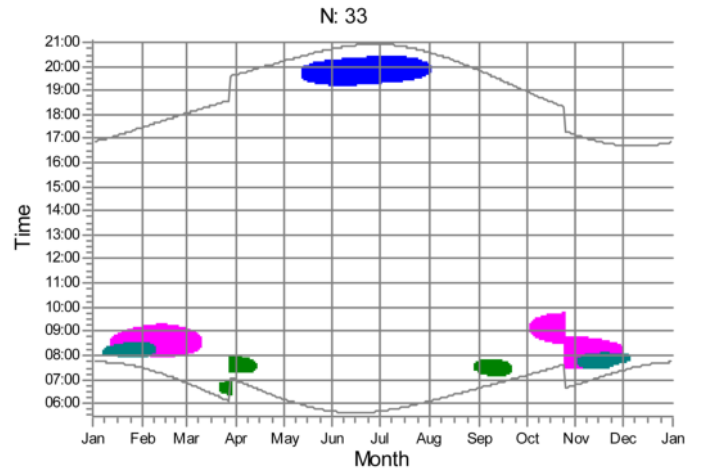
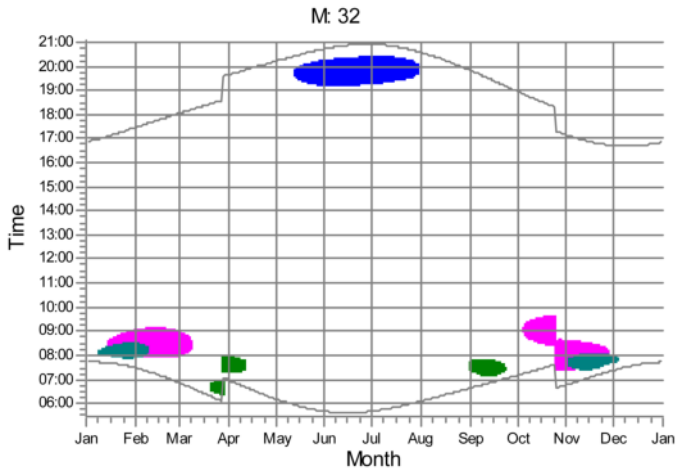


### WTGs



## SHADOW - Calendar, graphical

Calculation: Shadow\_real

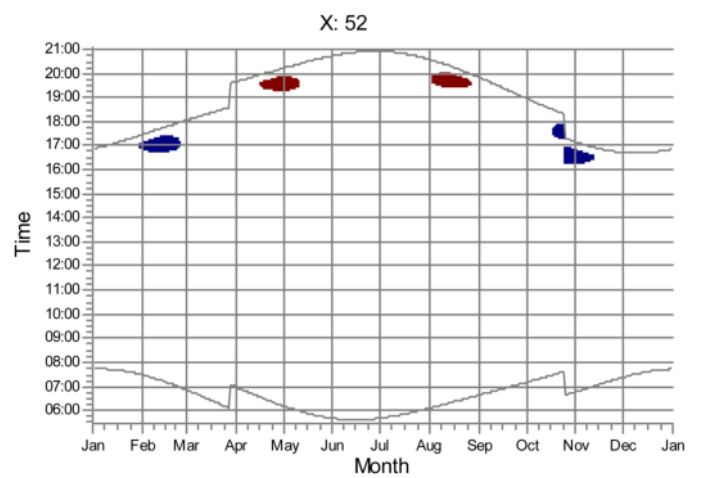
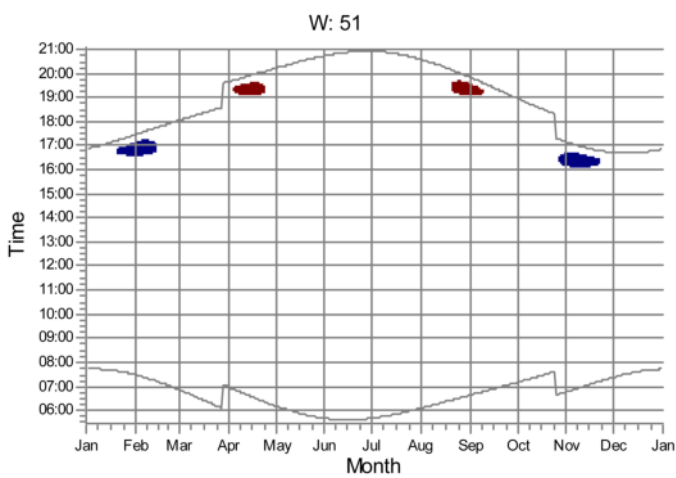
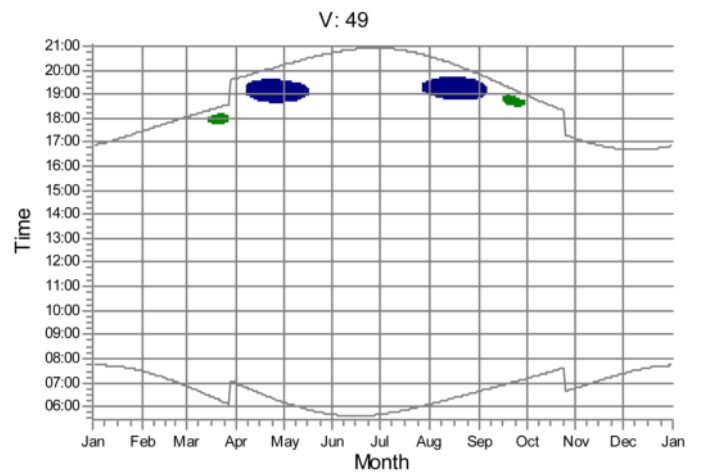
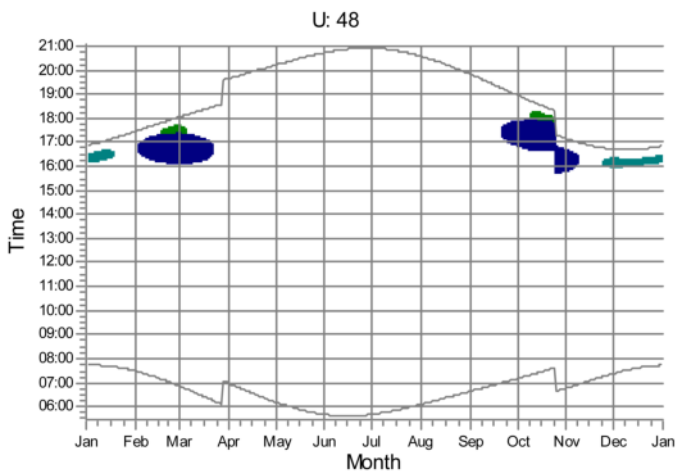
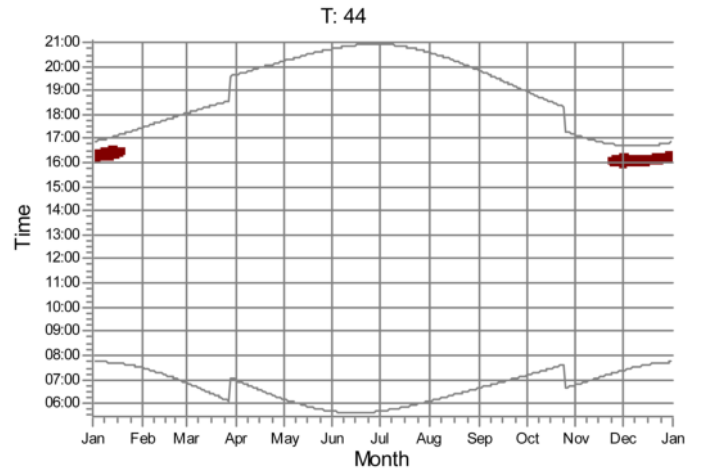
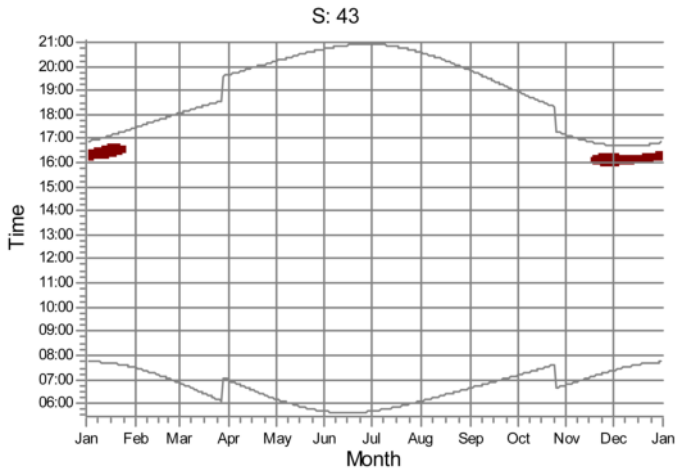


### WTGs



## SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs



Project:

**Tarquini**

Licensed user:

**MONTANA SPA**

VIA ANGELO CARLO FUMAGALLI 6

IT-20143 MILANO

0254118173

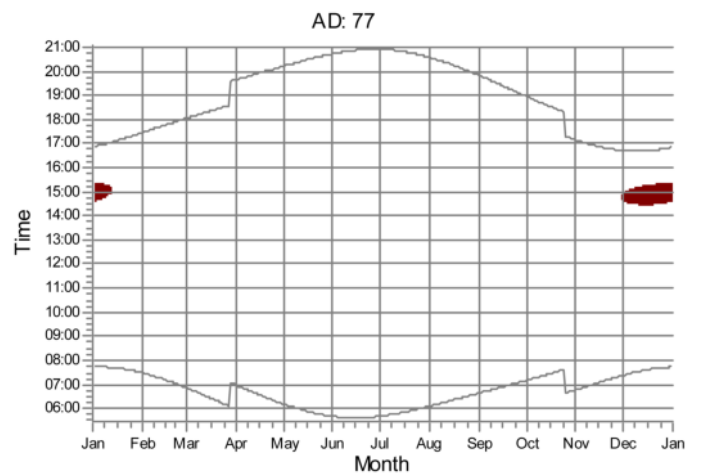
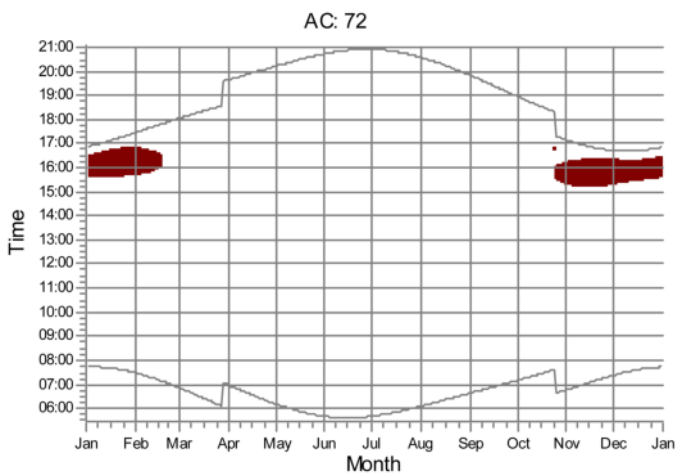
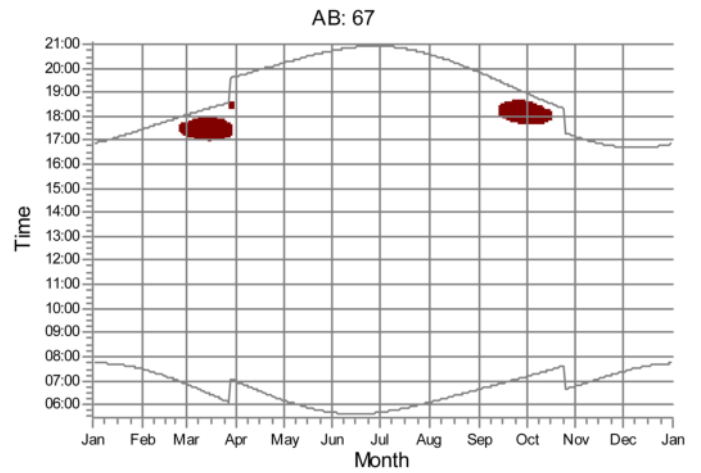
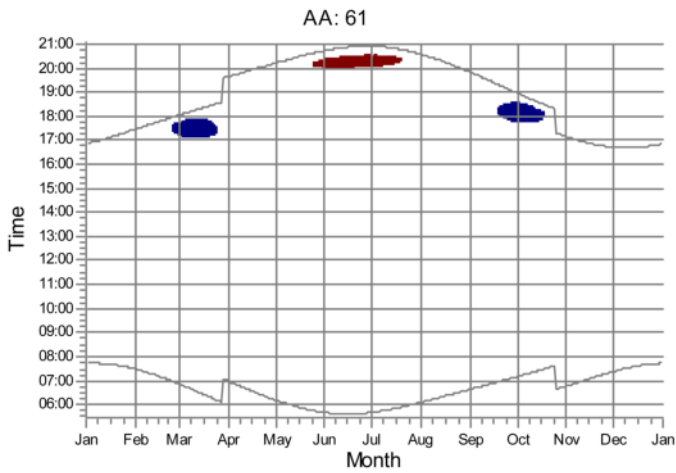
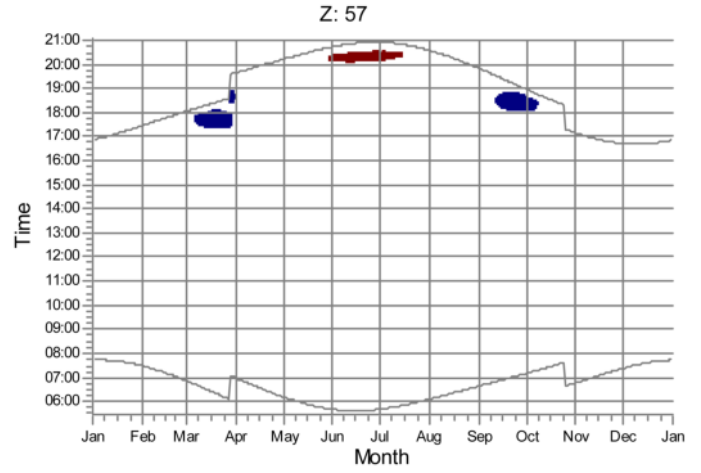
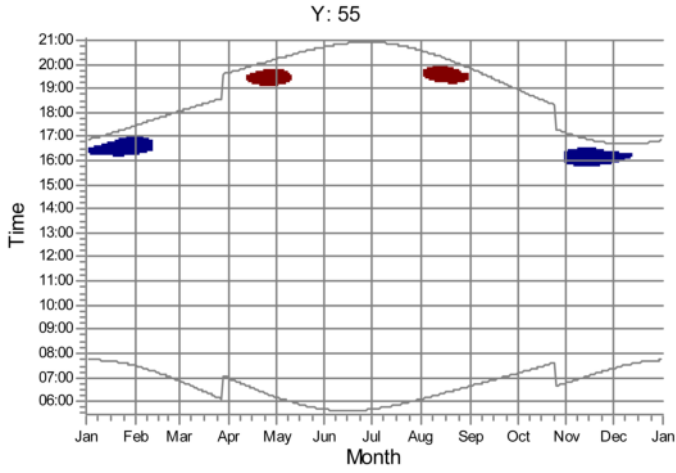
Andrea / fronteddu@montanambiente.com

Calculated:

06/08/2022 14:40/3.5.584

## SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs



TRQ07: TRQ07



TRQ08: TRQ08

Project:

**Tarquini**

Licensed user:

**MONTANA SPA**

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IT-20143 MILANO

0254118173

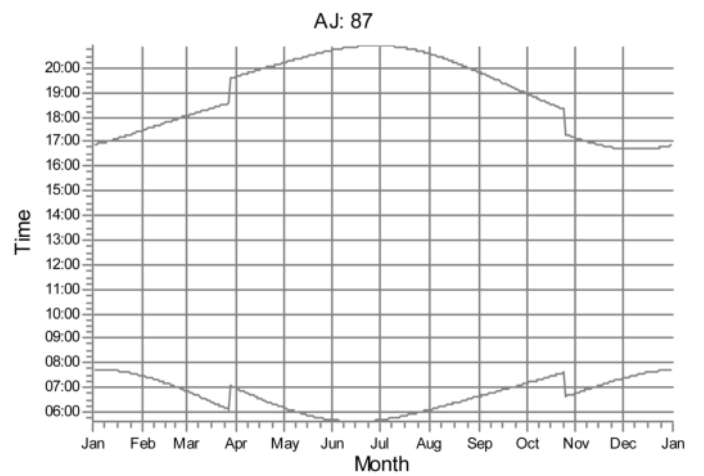
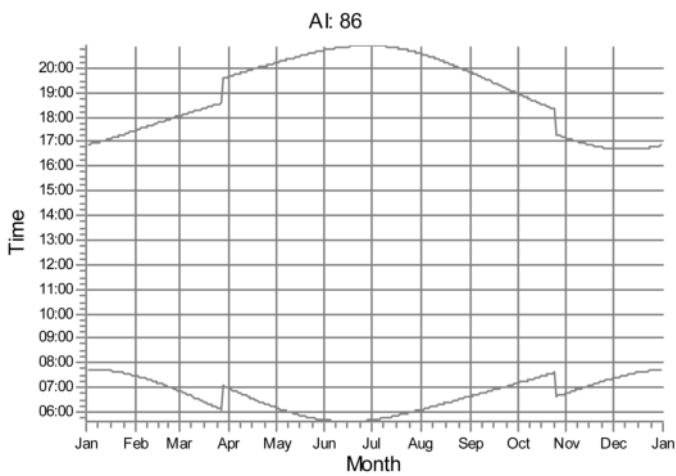
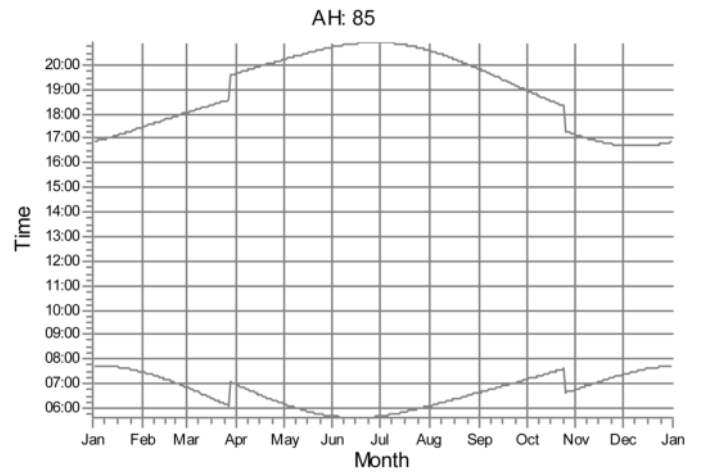
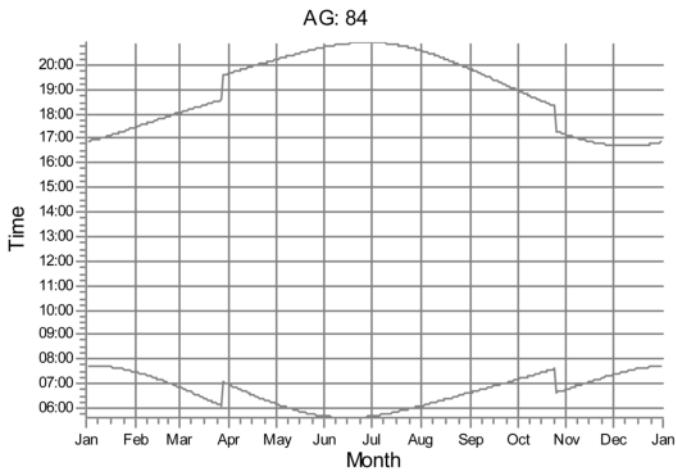
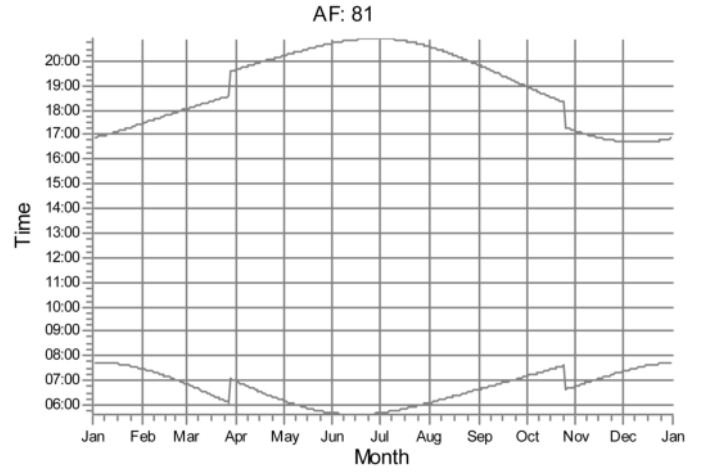
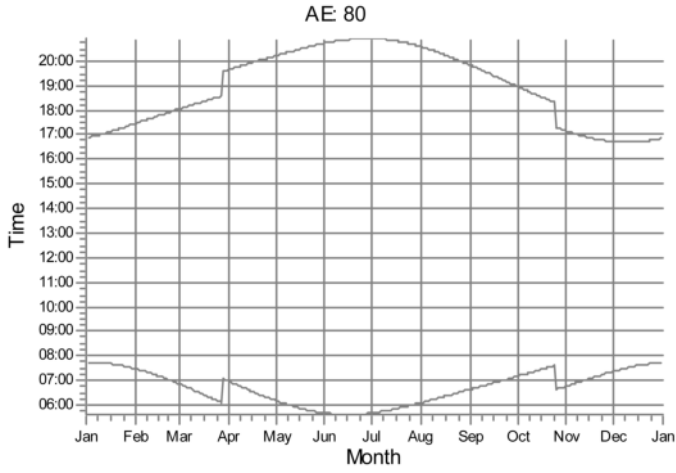
Andrea / fronteddu@montanambiente.com

Calculated:

06/08/2022 14:40/3.5.584

## SHADOW - Calendar, graphical

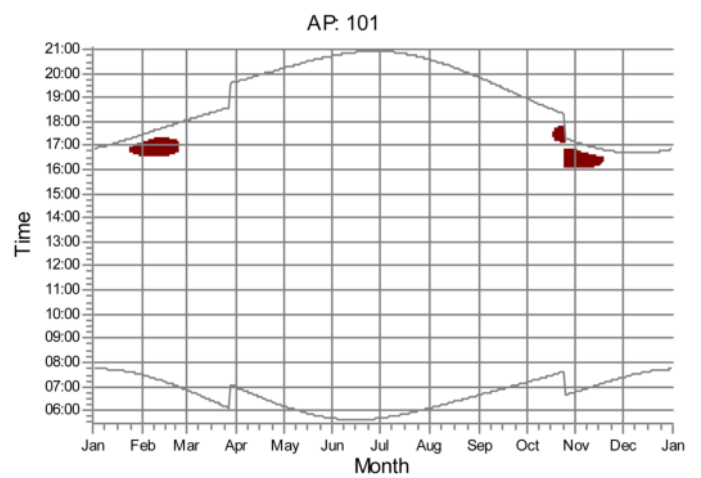
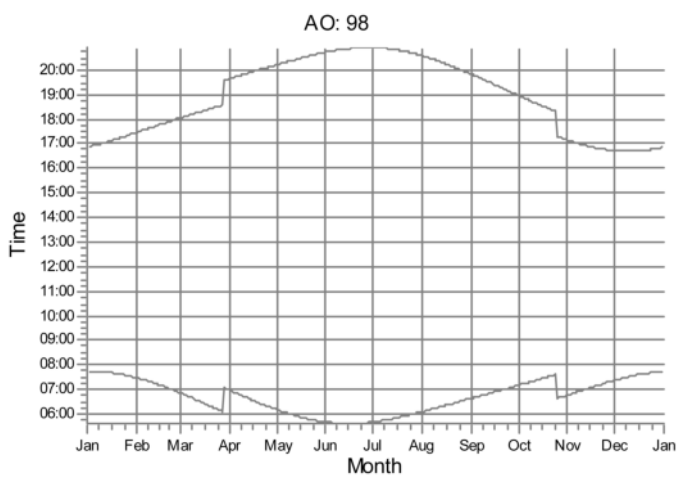
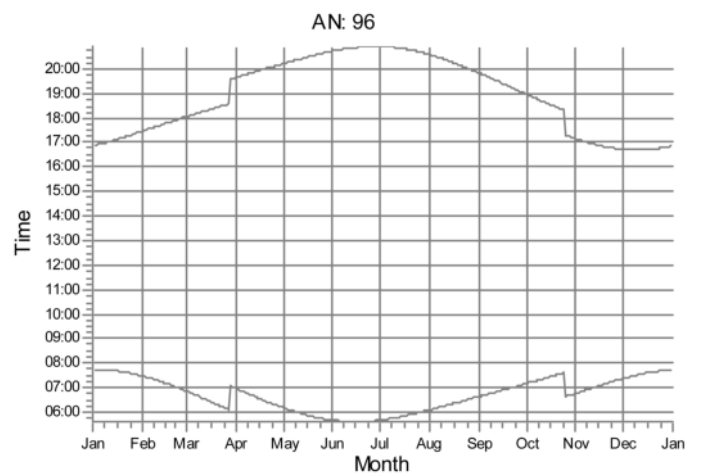
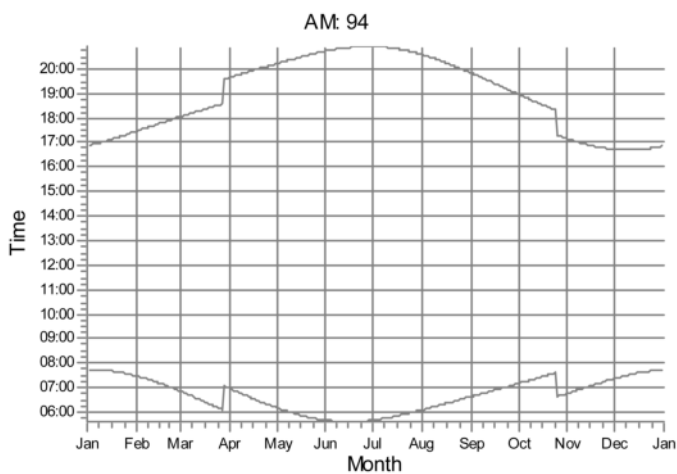
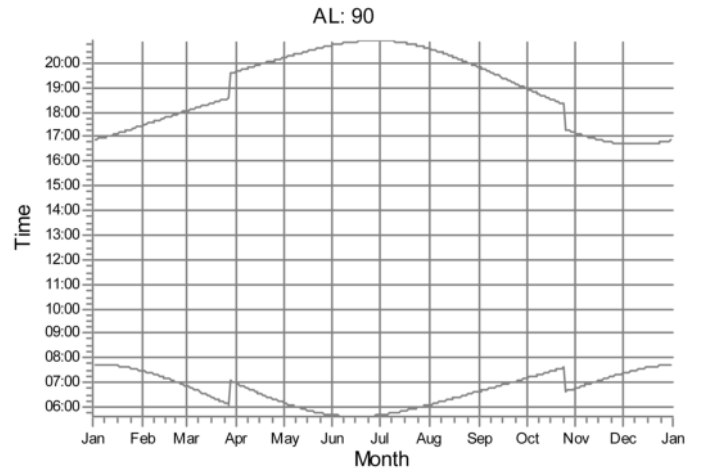
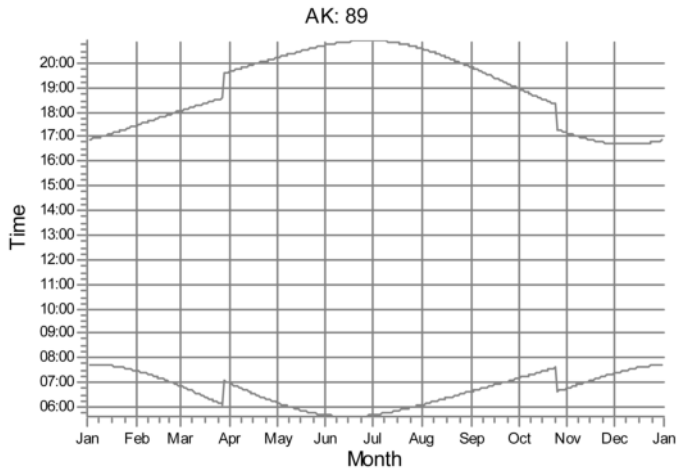
Calculation: Shadow\_real



WTGs

## SHADOW - Calendar, graphical

Calculation: Shadow\_real

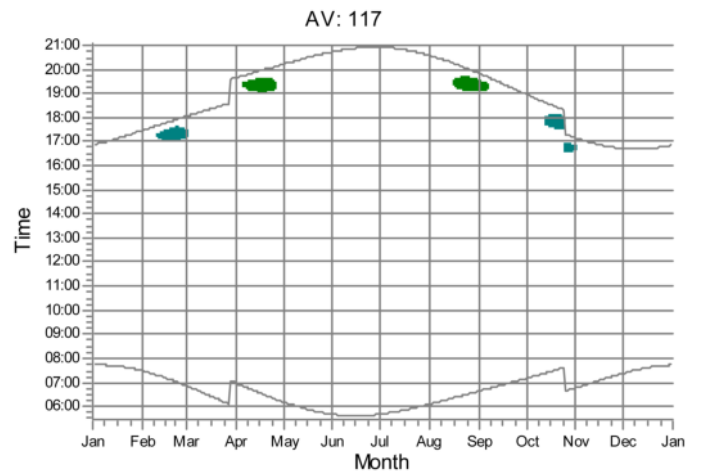
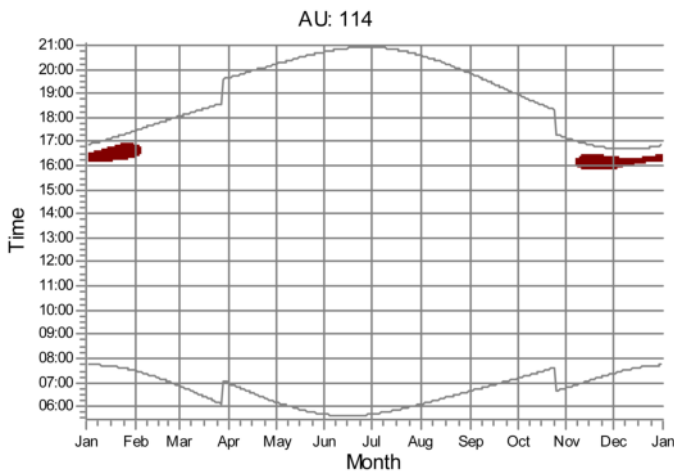
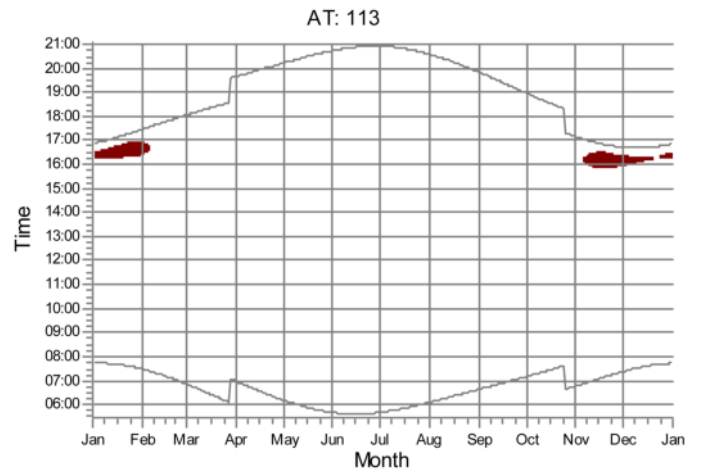
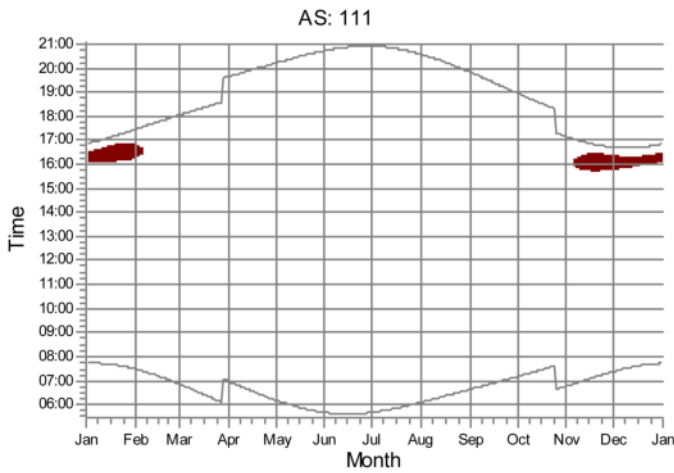
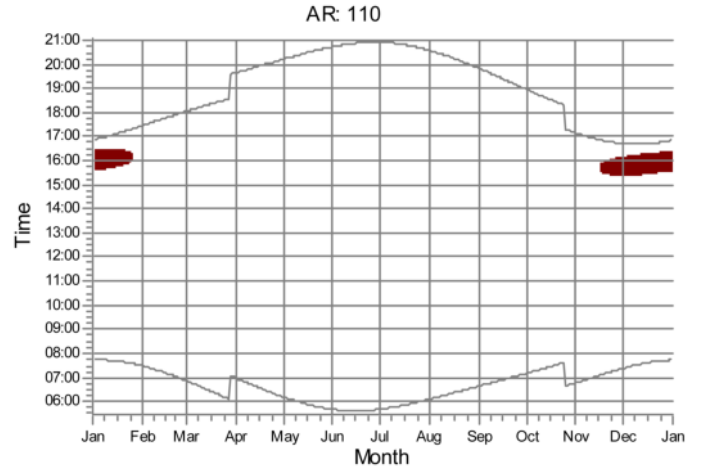
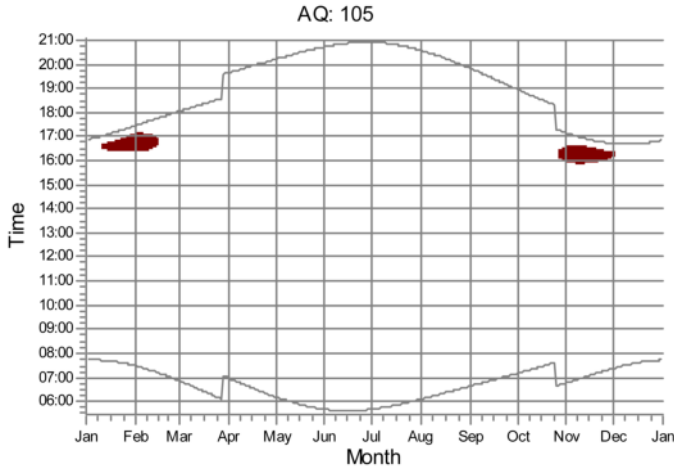


WTGs

TRQ08: TRQ08

### SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs



TRQ02: TRQ02



TRQ06: TRQ06

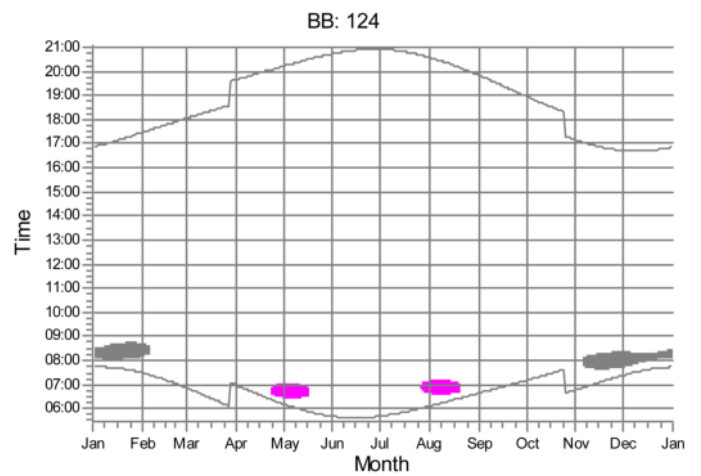
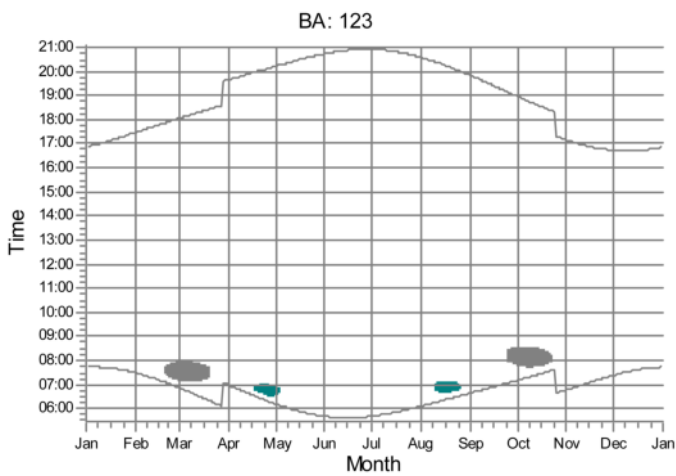
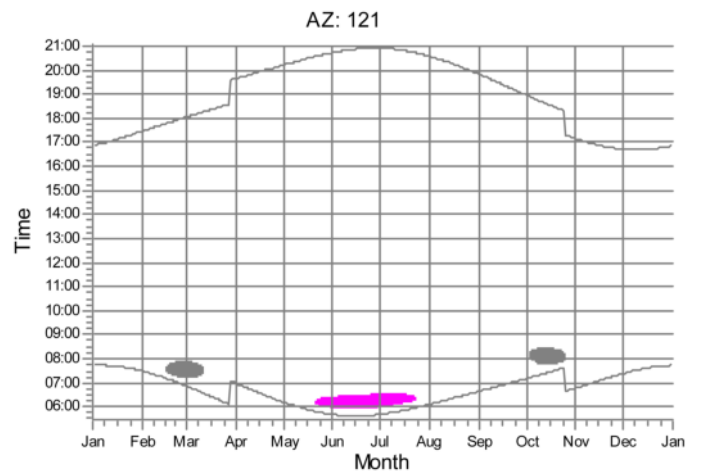
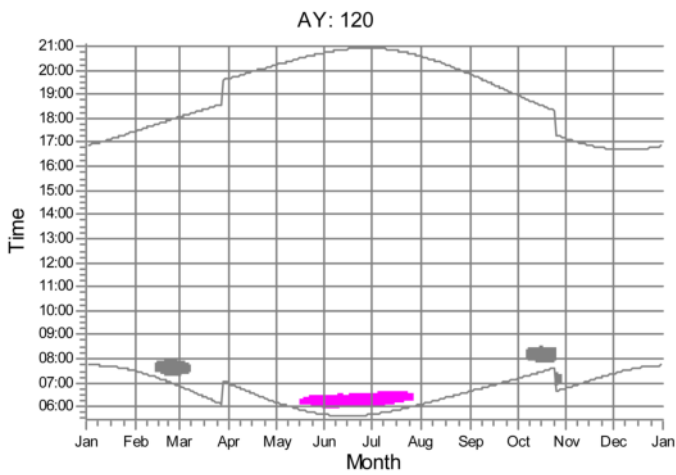
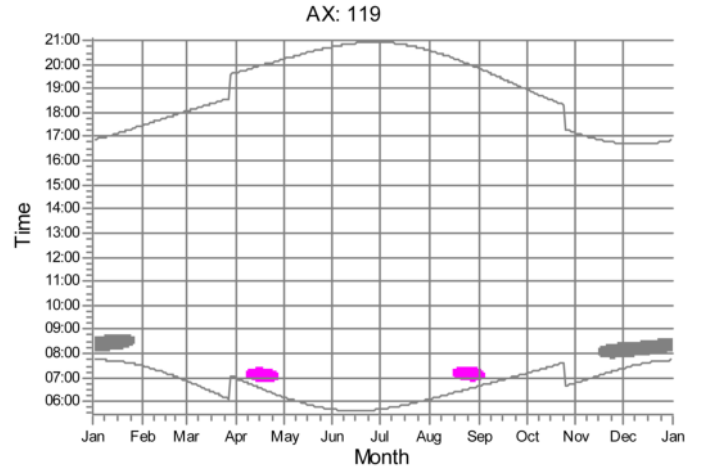
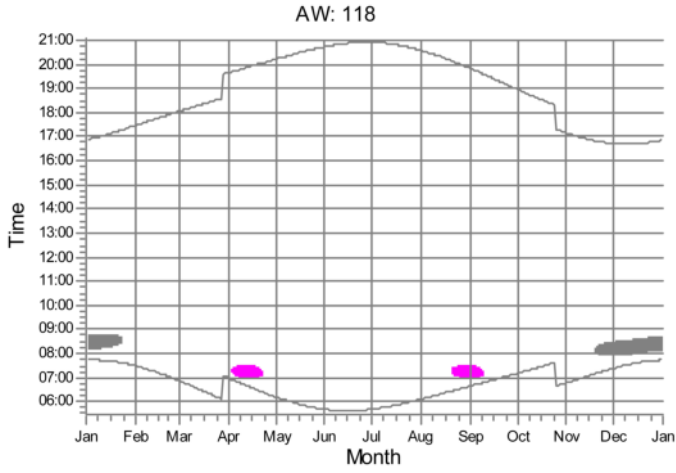


TRQ08: TRQ08

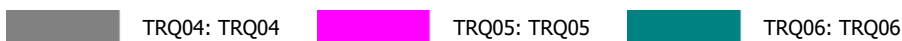


## SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs



Project:

Tarquini<sup>1</sup>

Licensed user:

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IT-20143 MILANO

0254118173

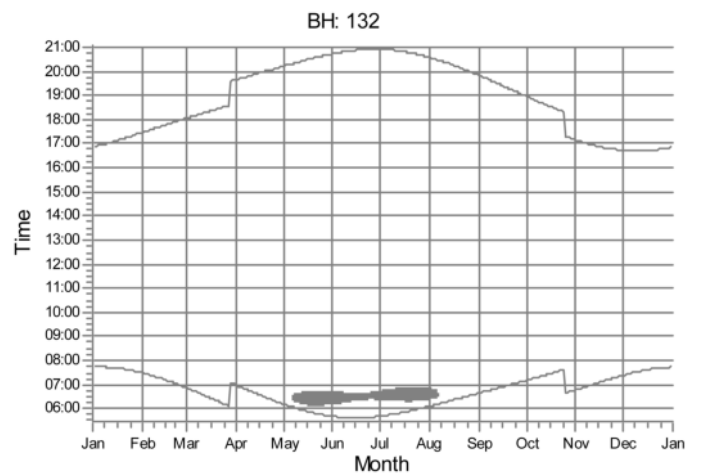
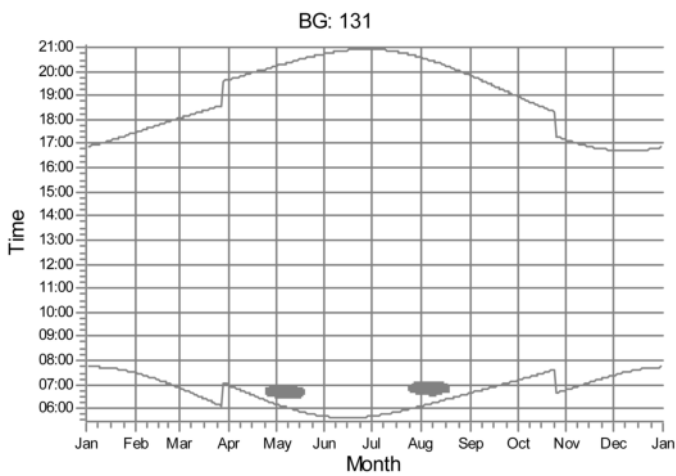
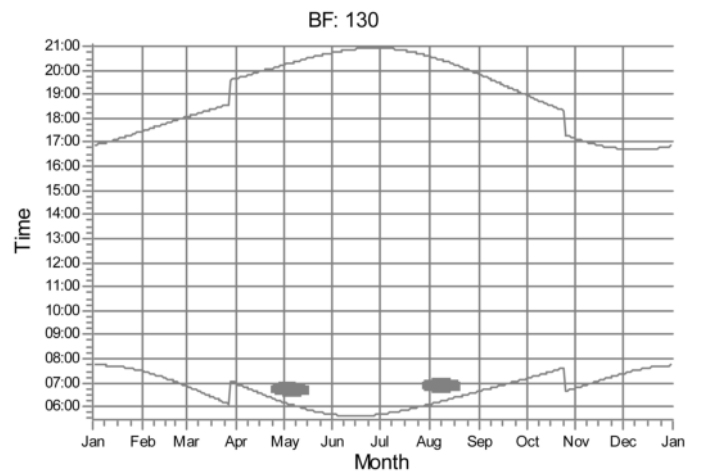
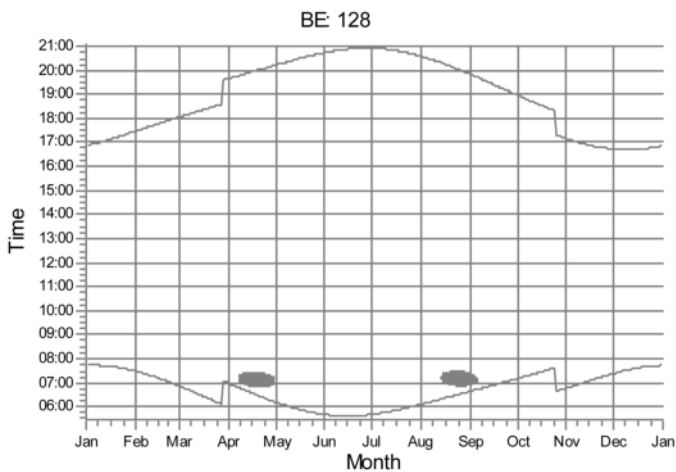
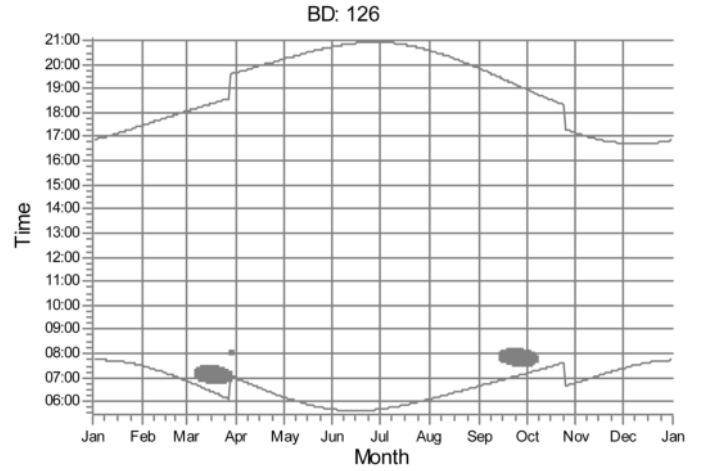
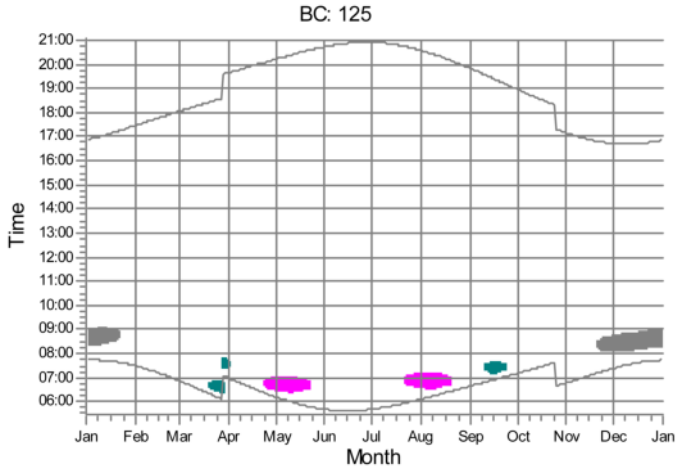
Andrea / fronteddu@montanambiente.com

Calculated:

06/08/2022 14:40/3.5.584

## SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs



Project:

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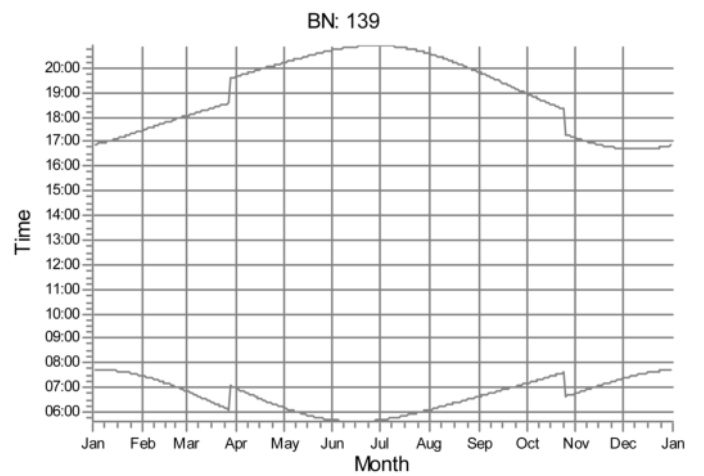
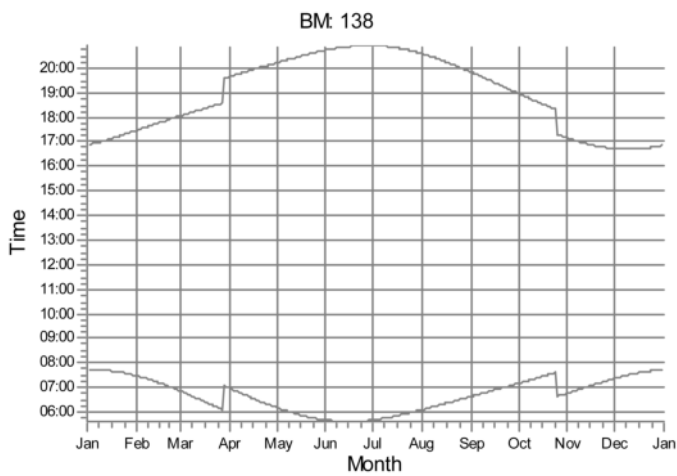
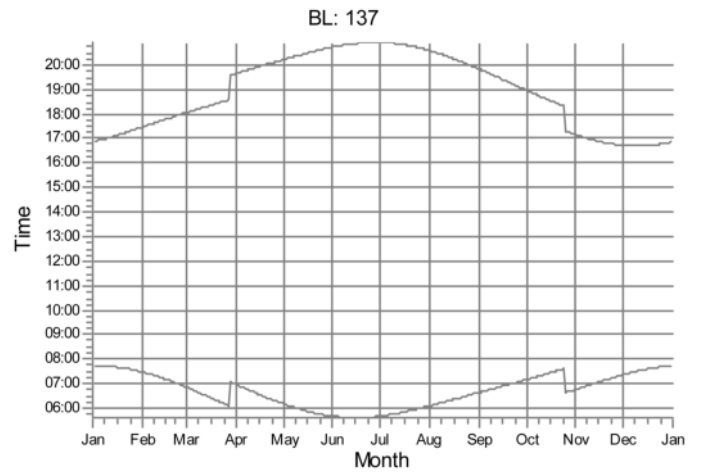
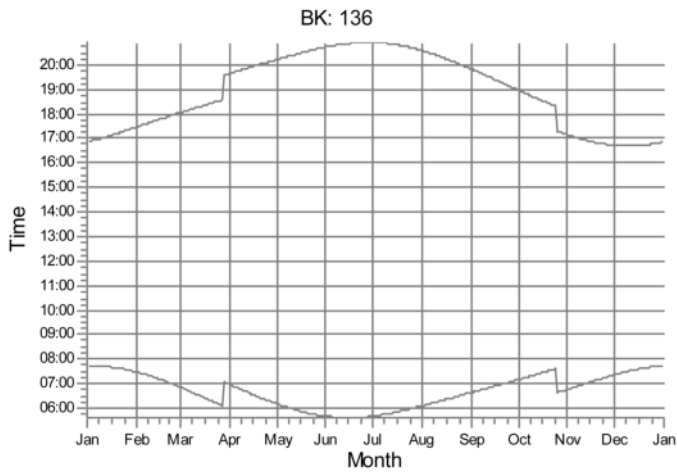
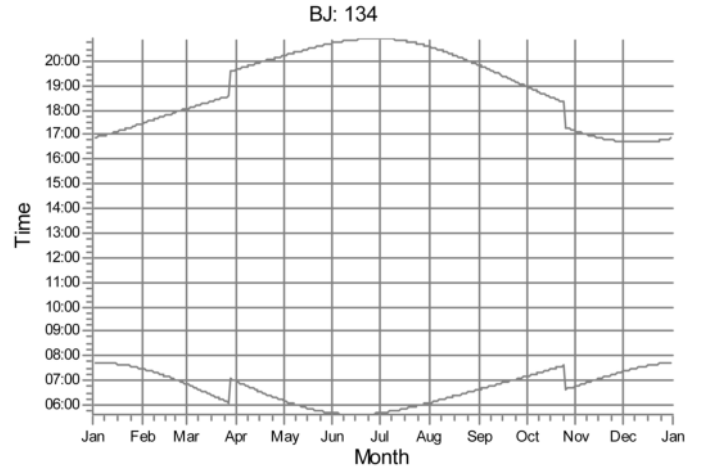
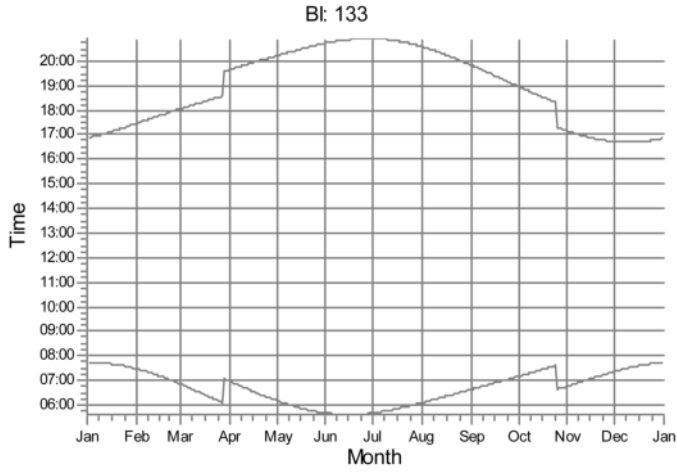
Andrea / fronteddu@montanambiente.com

Calculated:

06/08/2022 14:40/3.5.584

## SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs

Project:

Tarquini<sup>1</sup>

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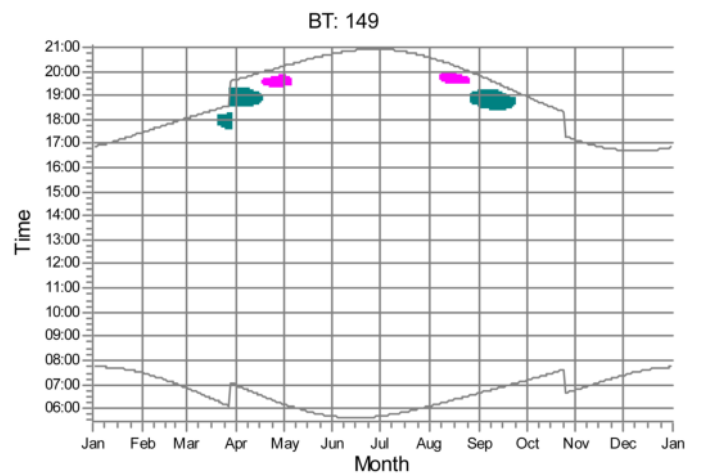
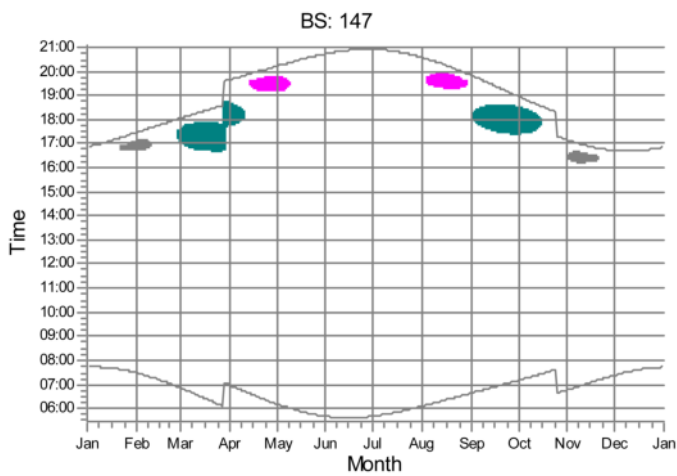
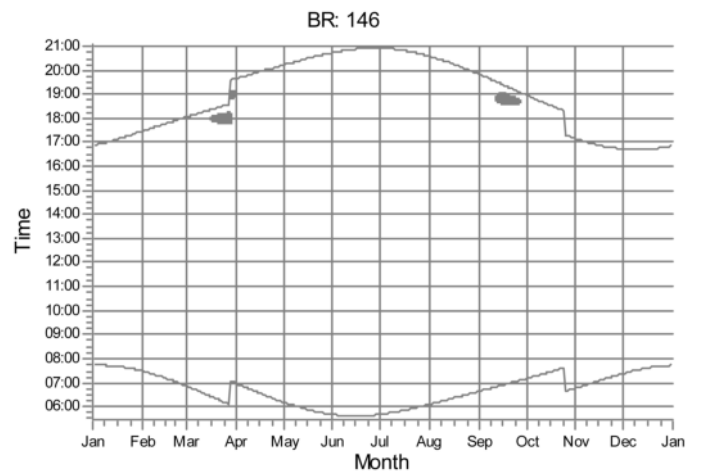
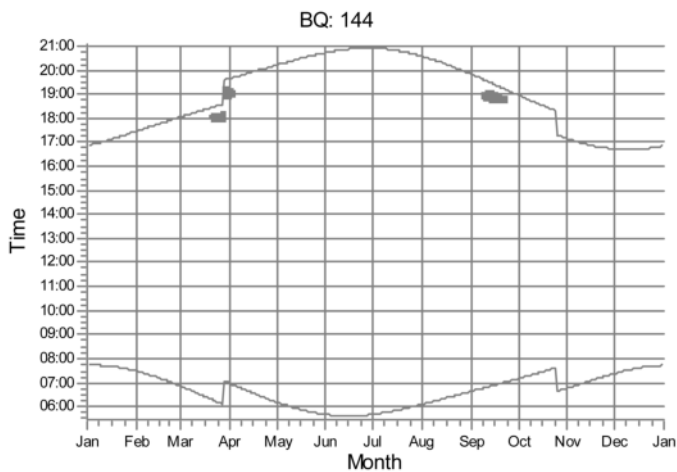
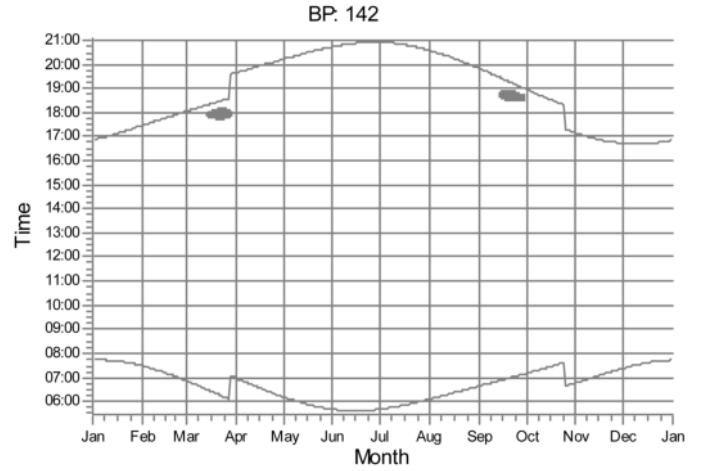
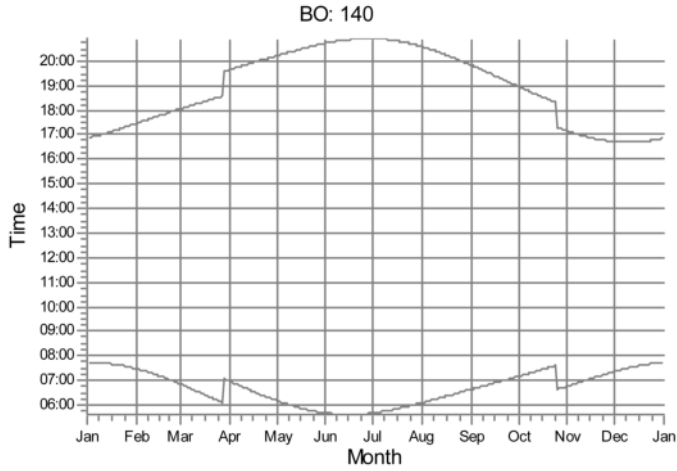
Andrea / fronteddu@montanambiente.com

Calculated:

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## SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs



Project:

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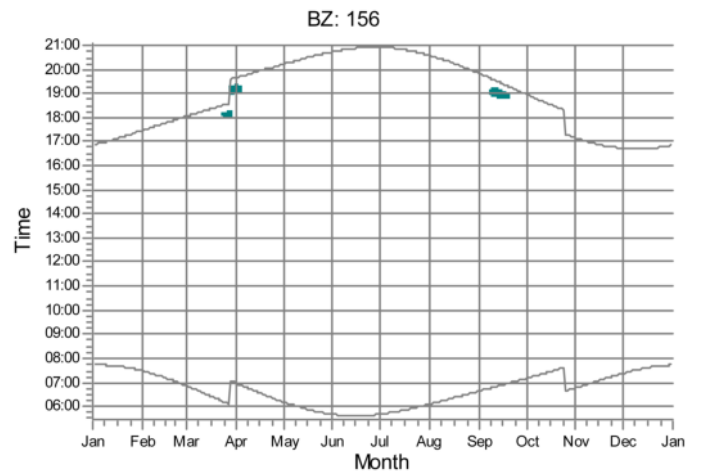
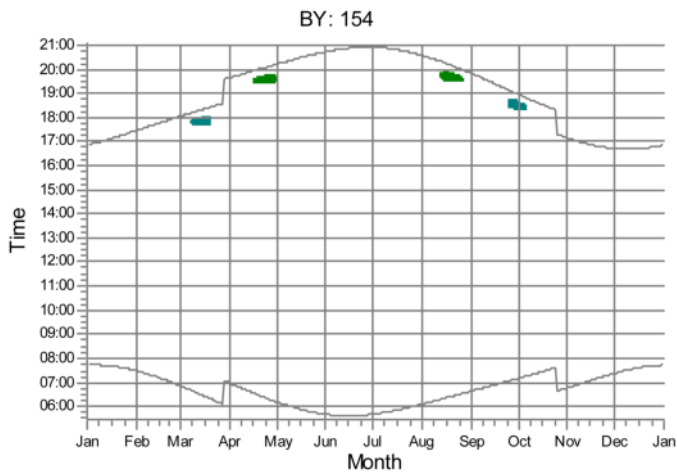
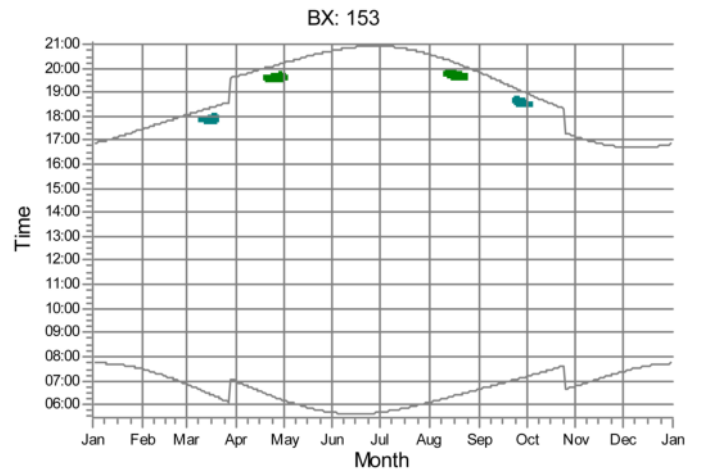
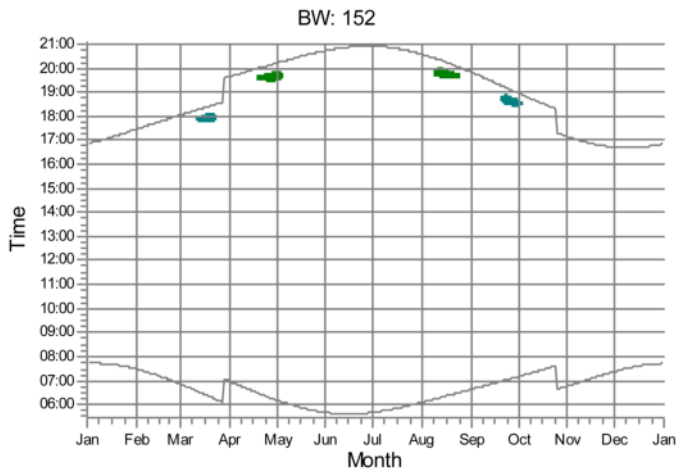
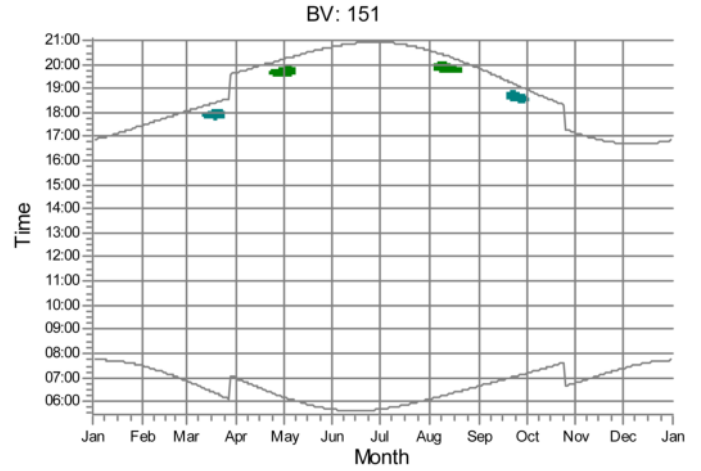
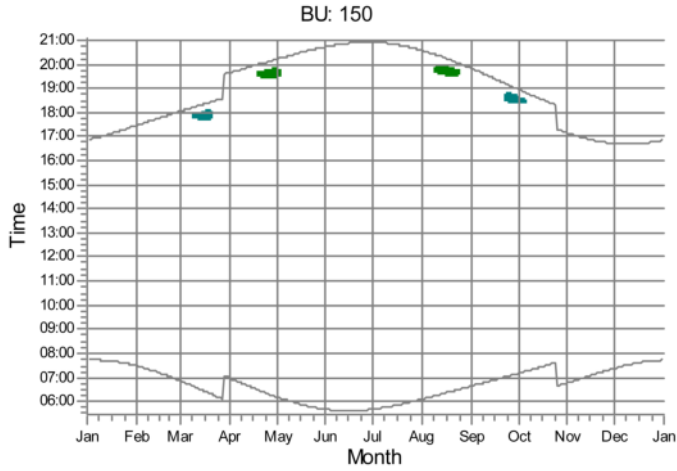
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Calculated:

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## SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs



TRQ02: TRQ02



TRQ06: TRQ06

Project:

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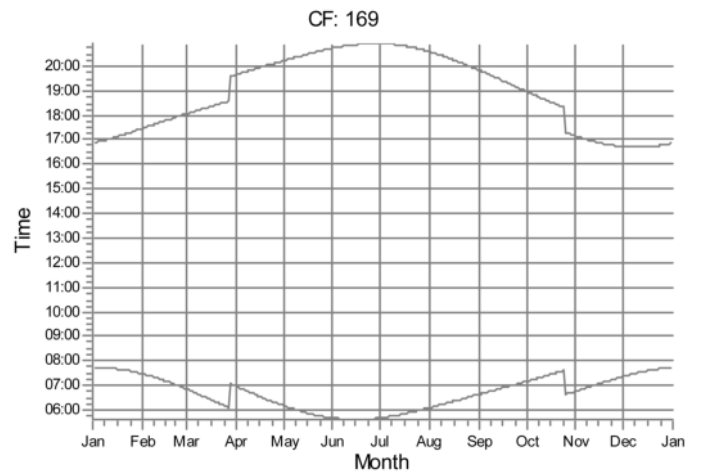
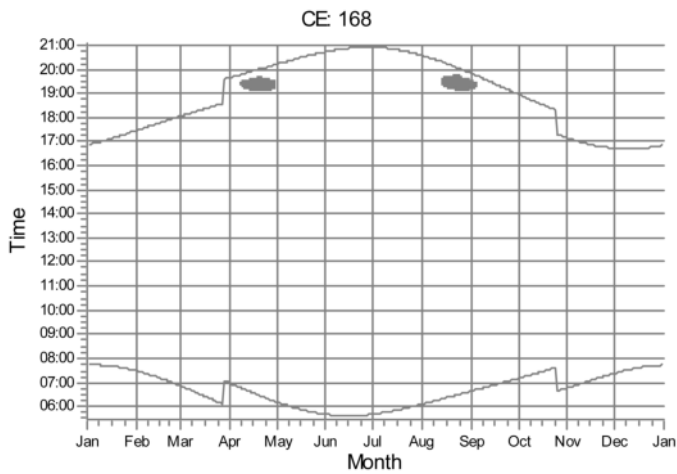
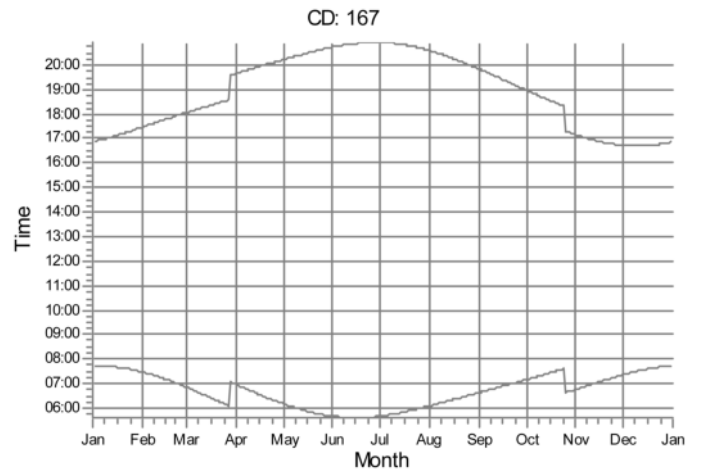
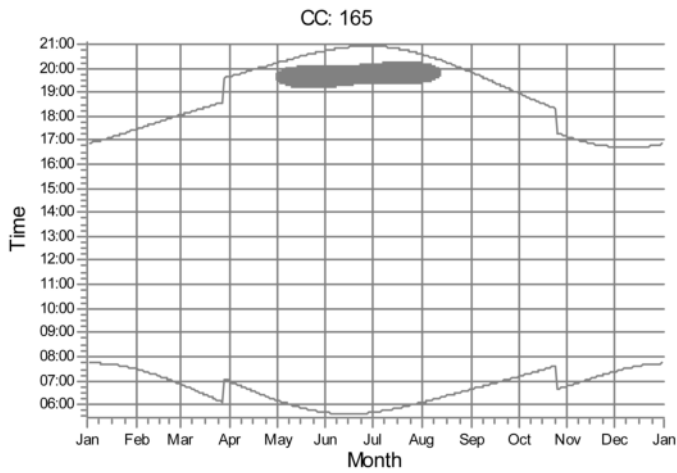
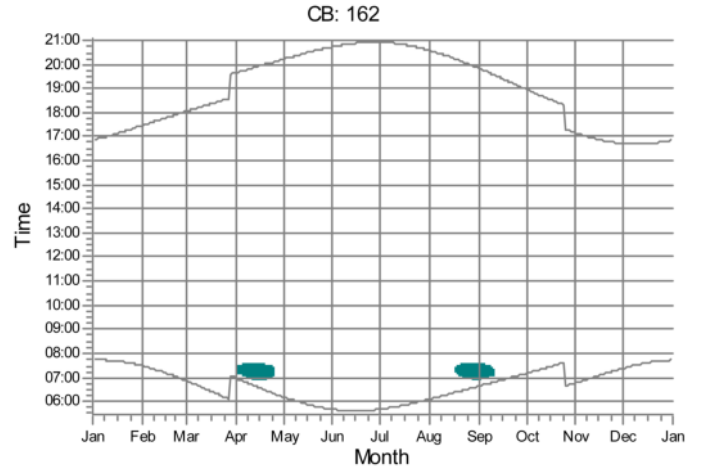
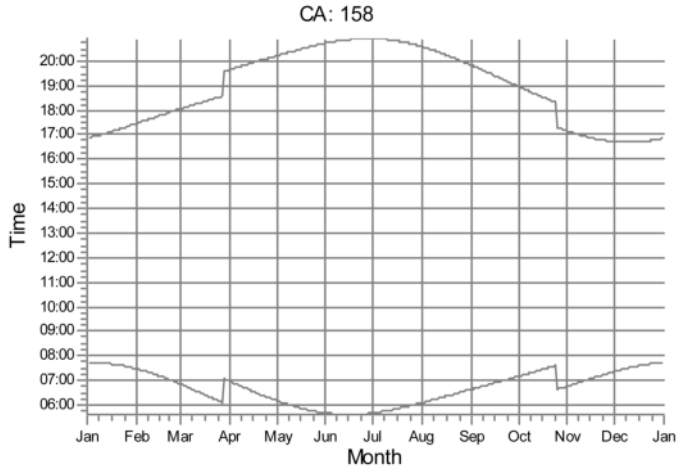
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## SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs



TRQ04: TRQ04



TRQ06: TRQ06

Project:

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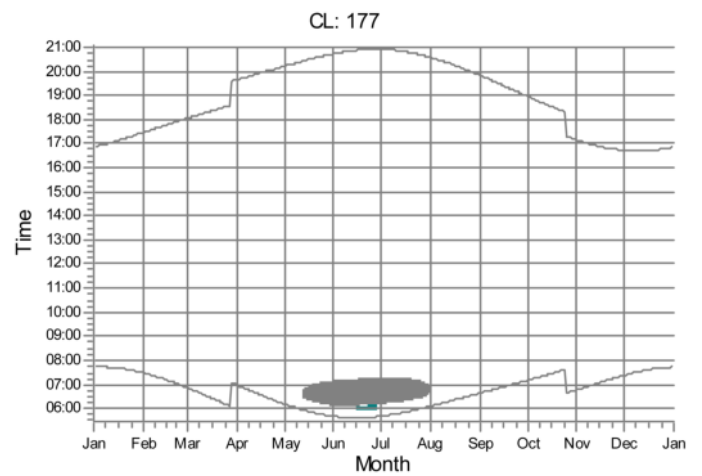
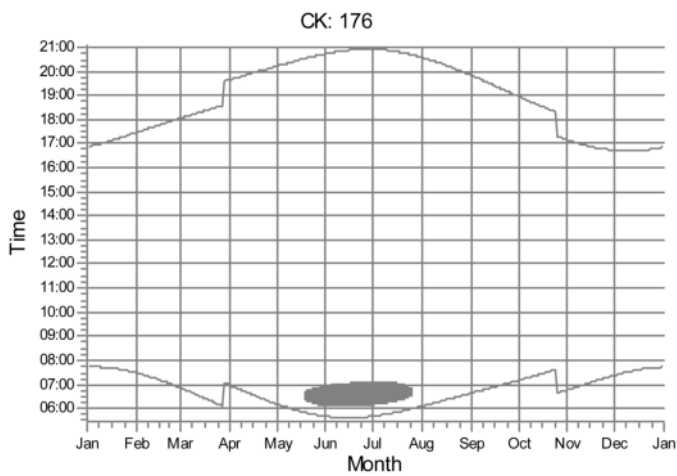
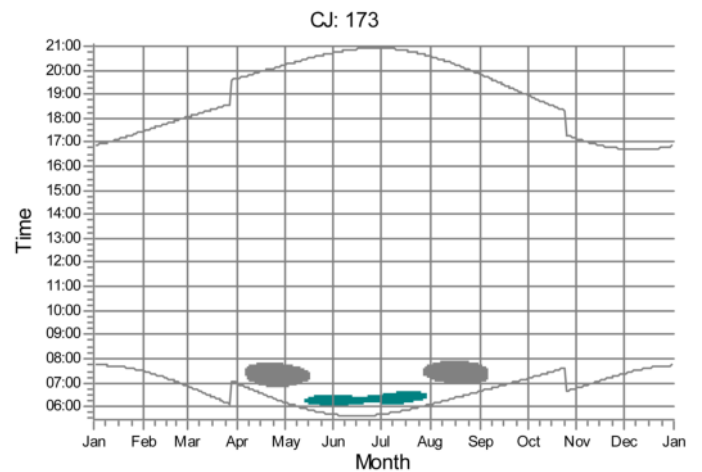
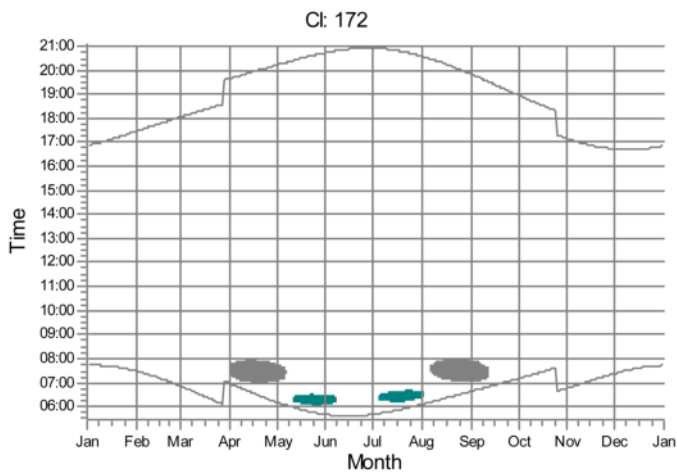
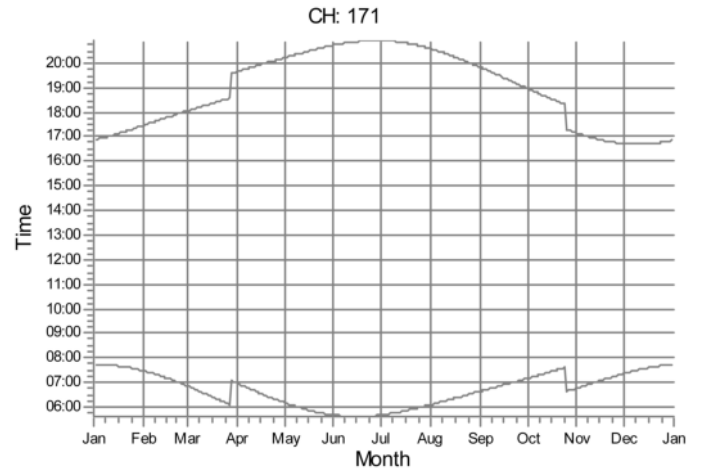
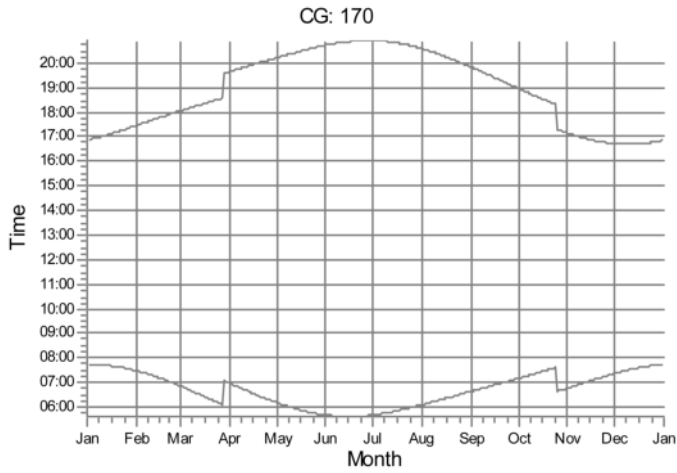
Andrea / fronteddu@montanambiente.com

Calculated:

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## SHADOW - Calendar, graphical

Calculation: Shadow\_real

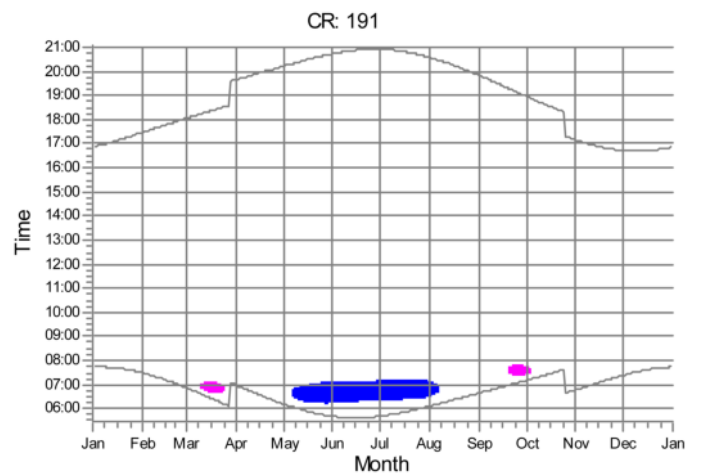
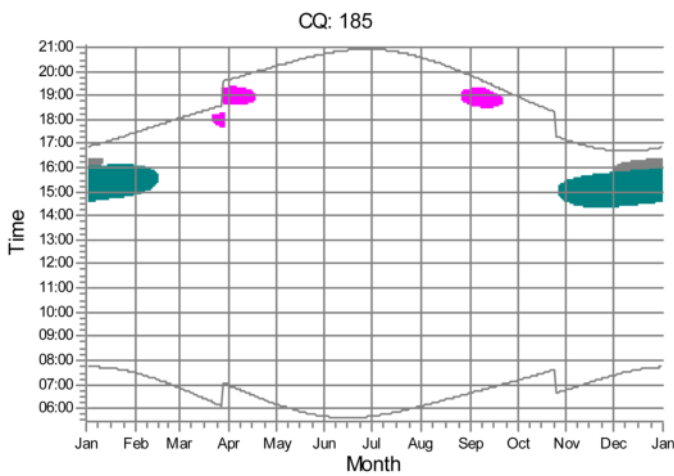
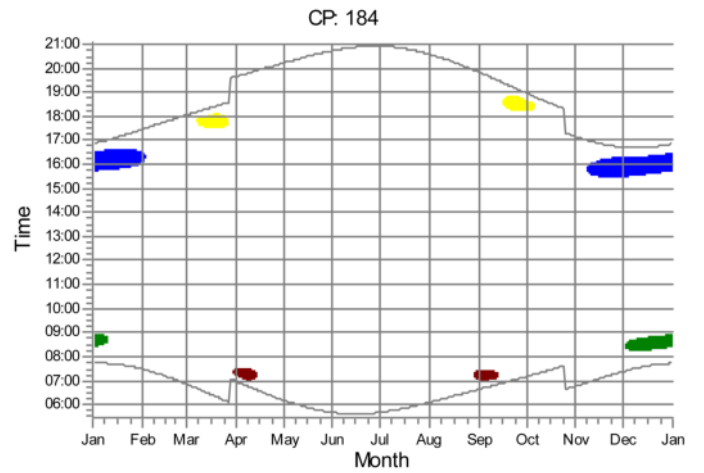
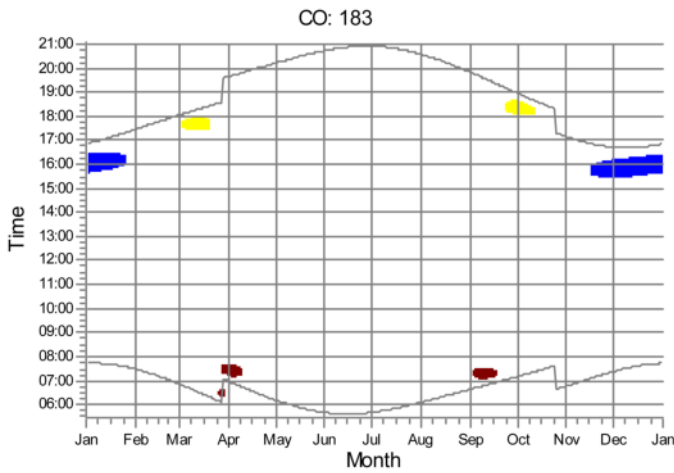
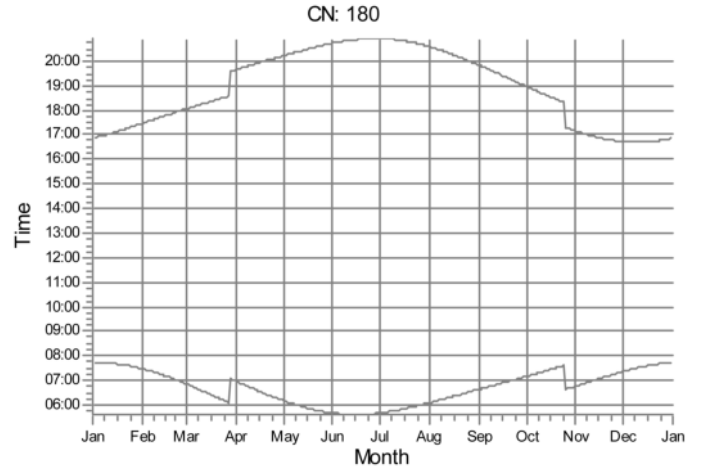
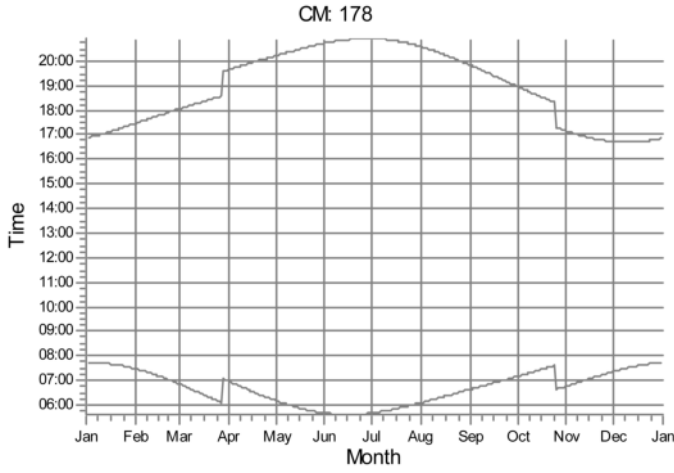


WTGs

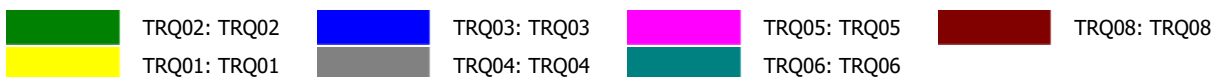
TRQ04: TRQ04
  TRQ06: TRQ06

## SHADOW - Calendar, graphical

Calculation: Shadow\_real



### WTGs





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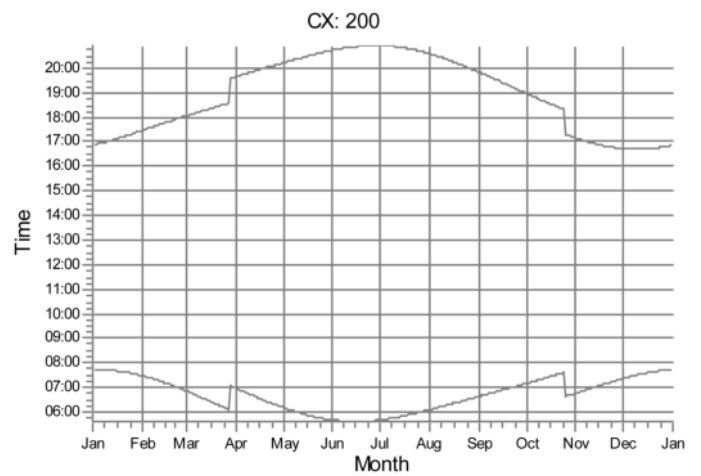
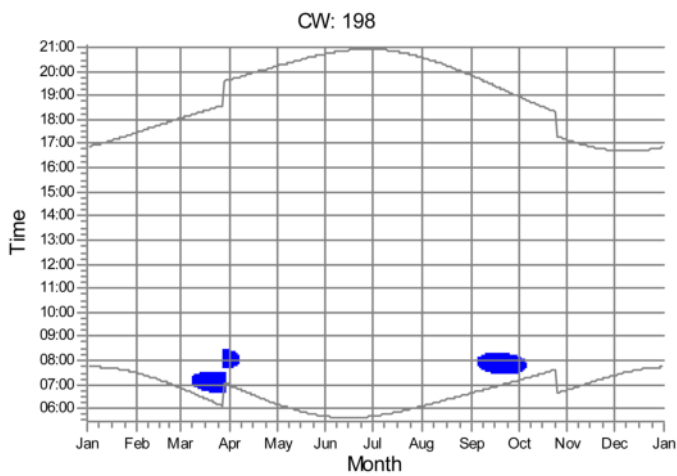
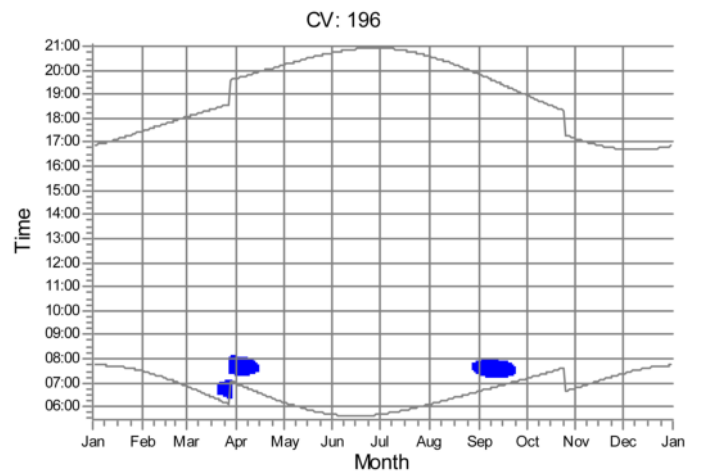
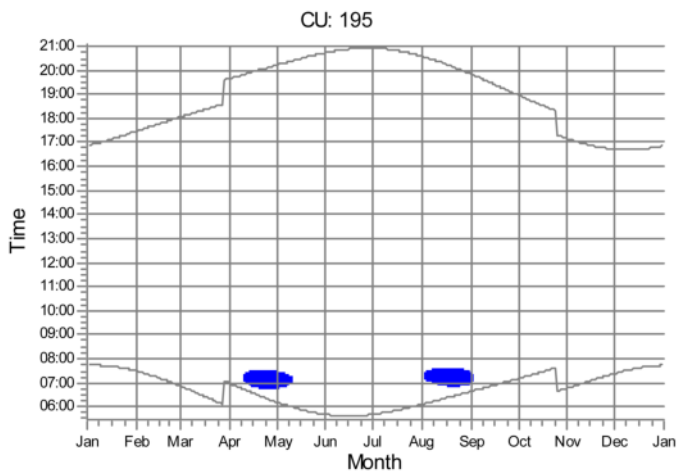
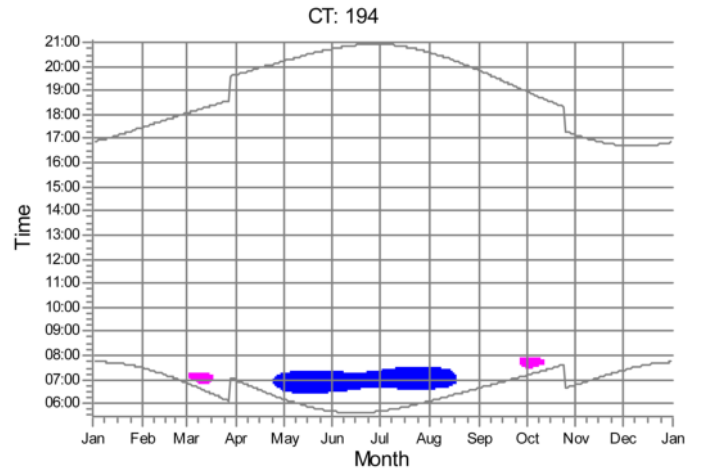
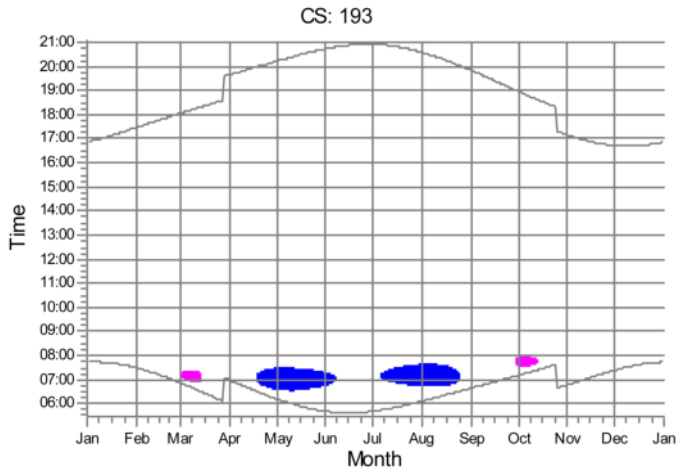
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## SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs



TRQ03: TRQ03



TRQ05: TRQ05

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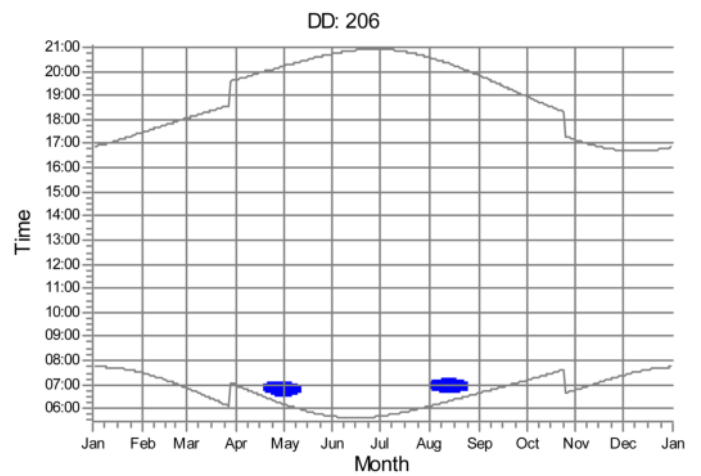
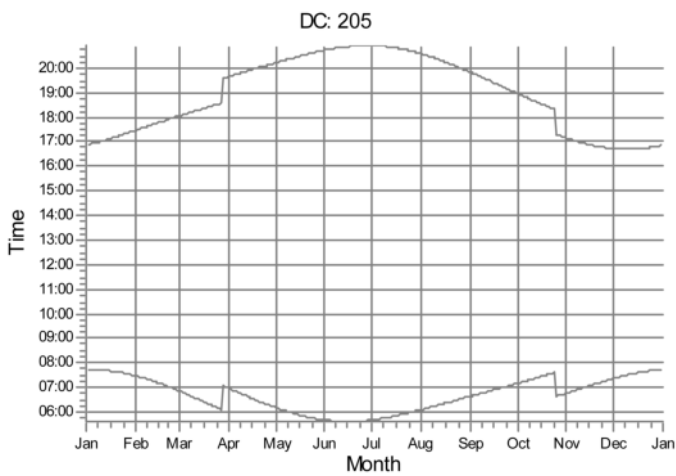
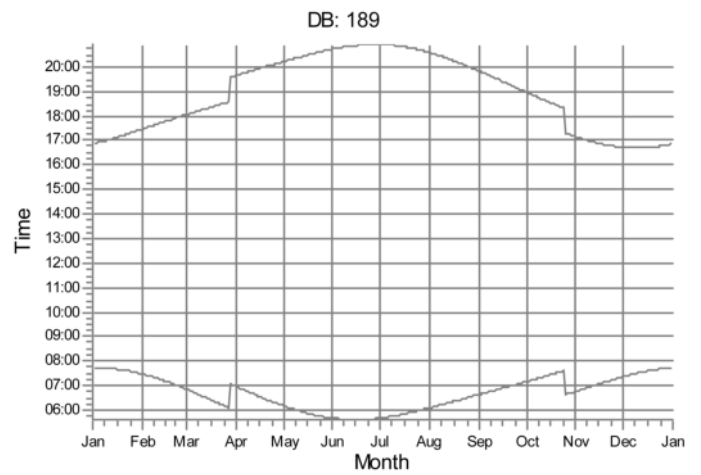
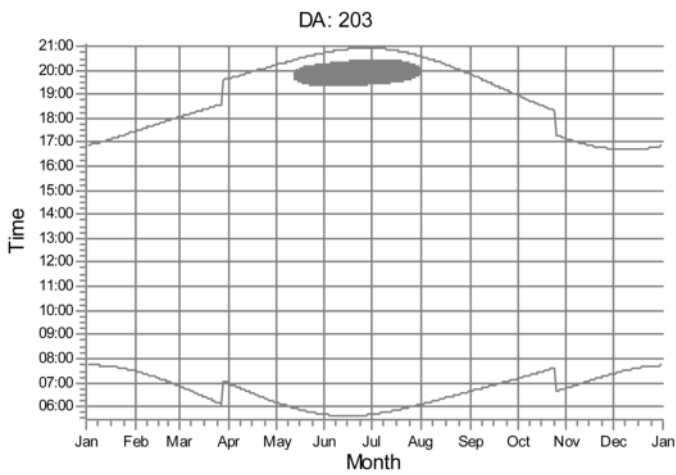
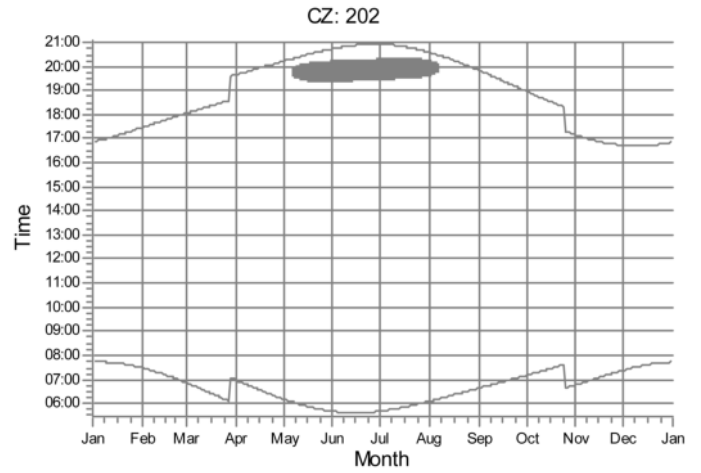
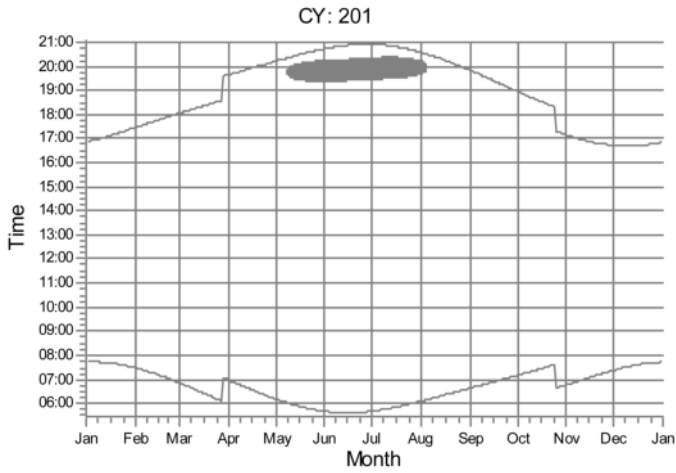
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Calculated:

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## SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs



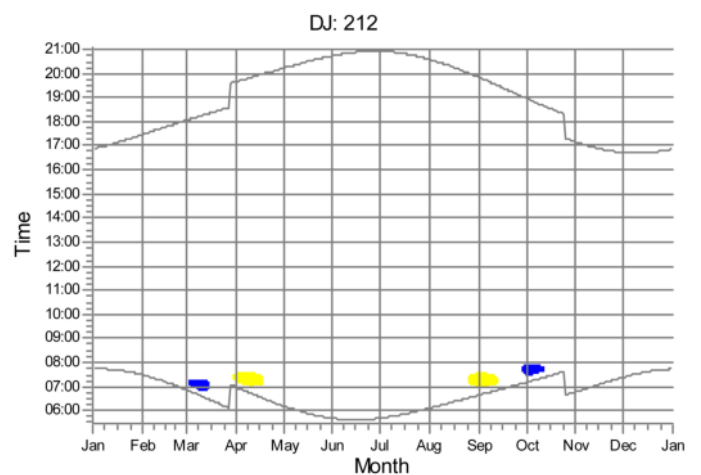
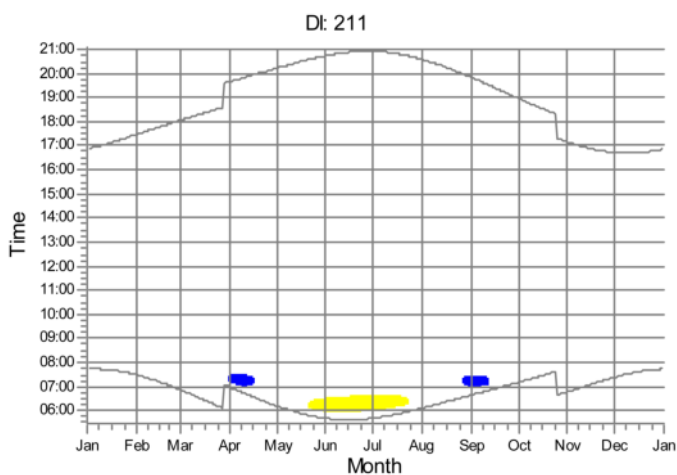
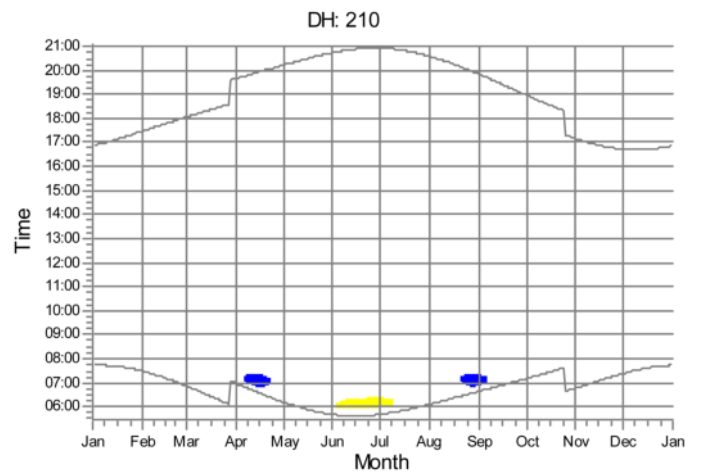
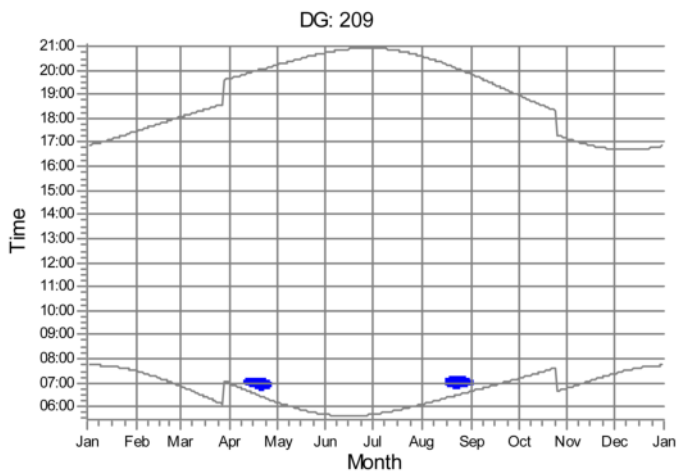
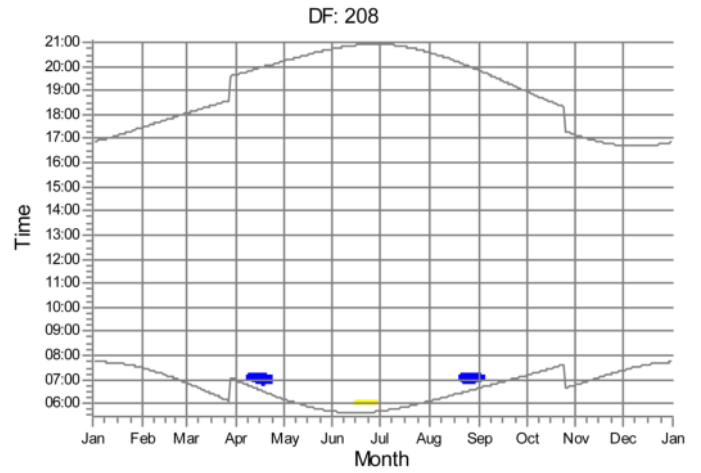
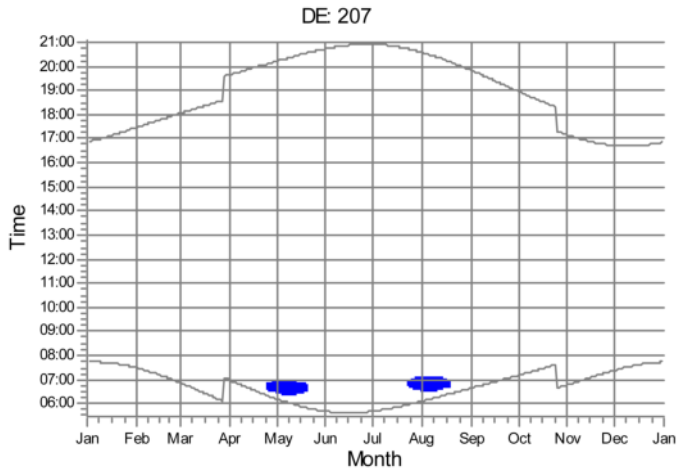
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TRQ04: TRQ04

### SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs



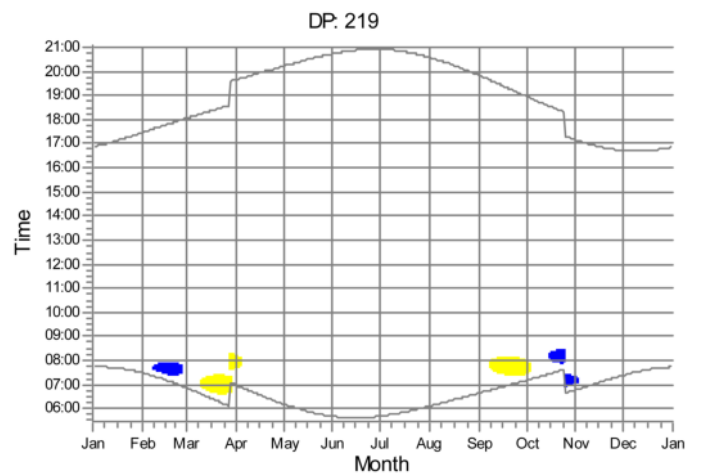
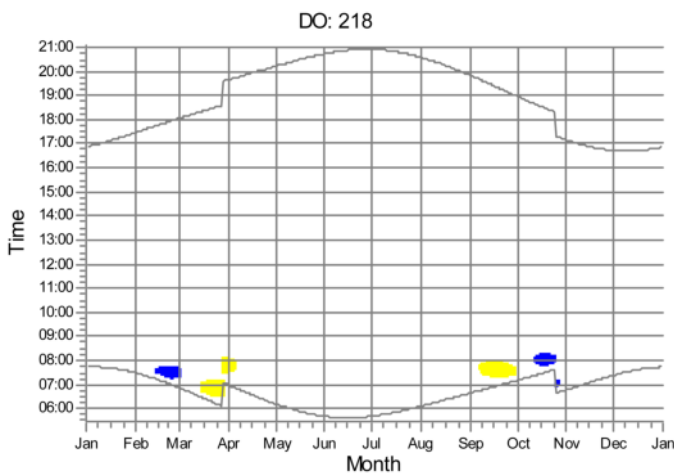
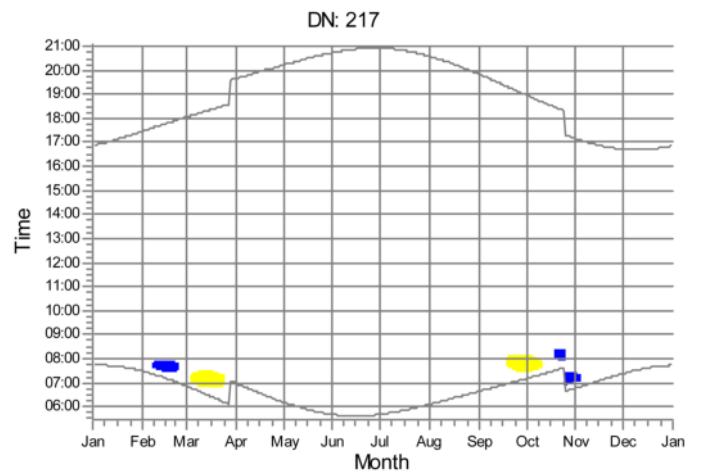
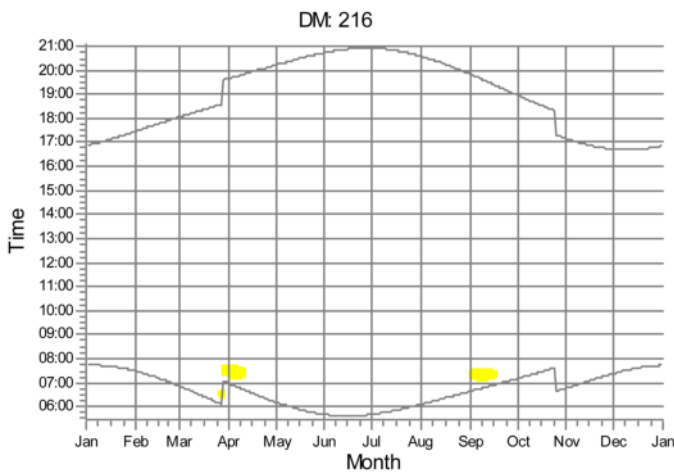
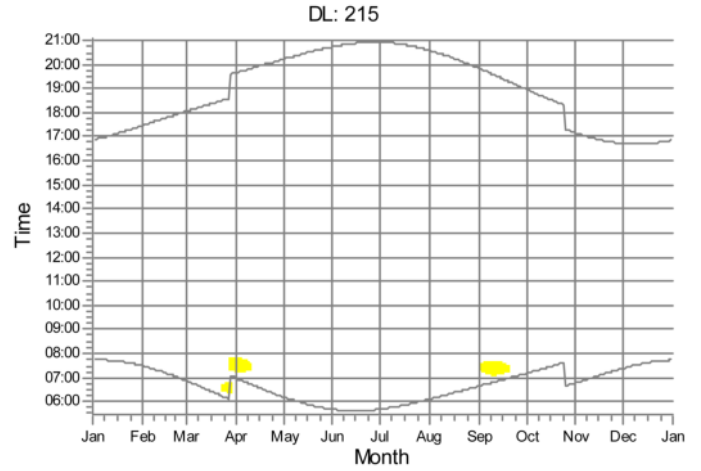
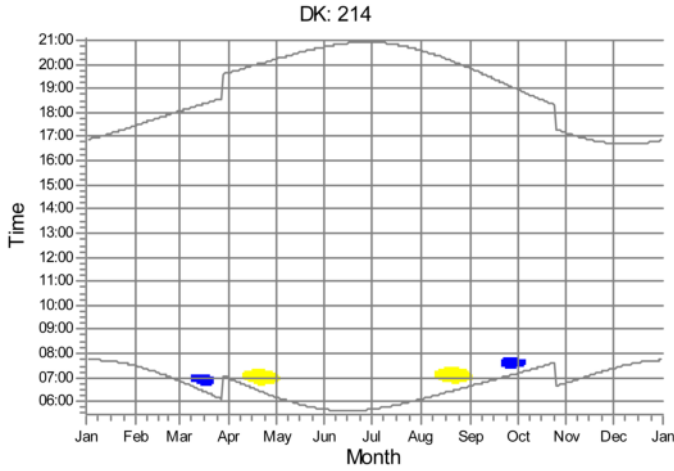
TRQ01: TRQ01



TRQ03: TRQ03

## SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs

TRQ01: TRQ01
  TRQ03: TRQ03

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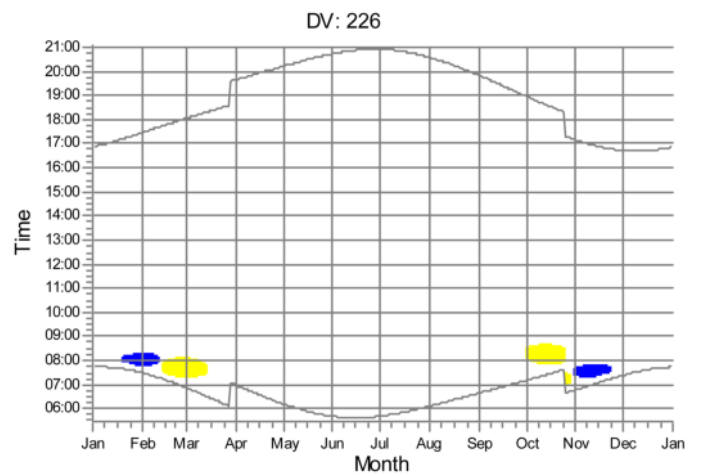
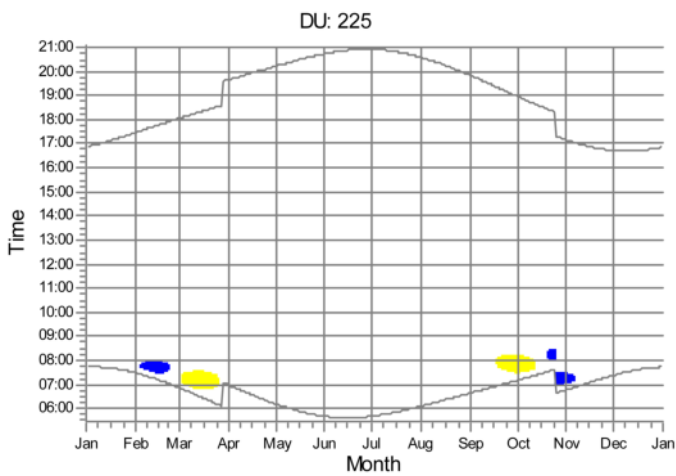
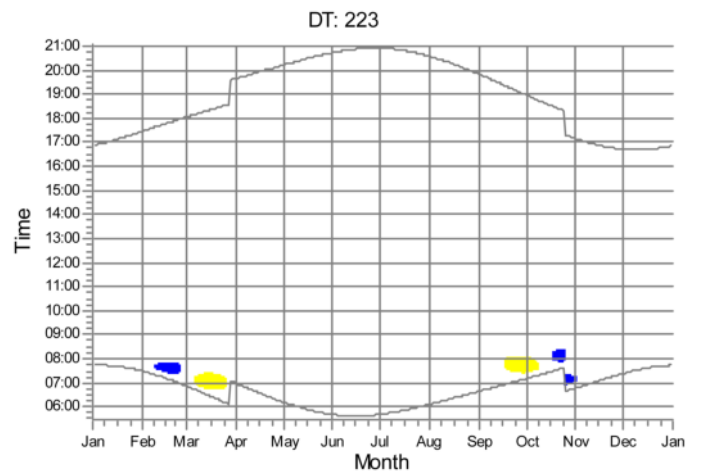
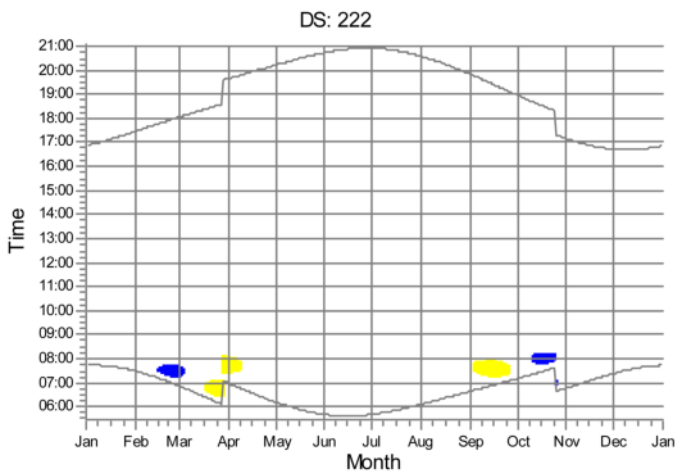
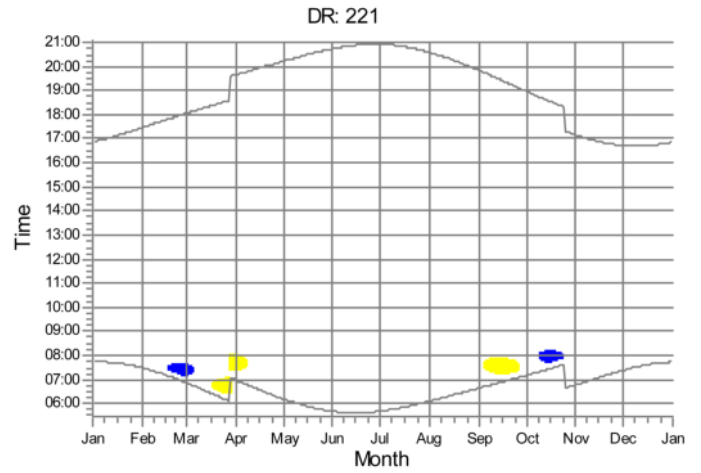
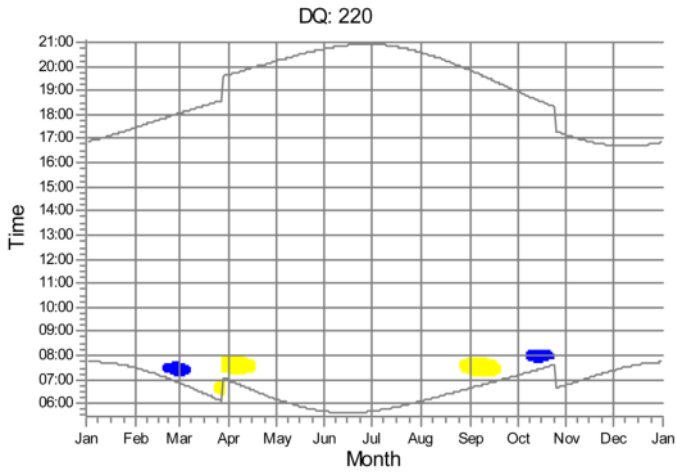
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## SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs



TRQ01: TRQ01



TRQ03: TRQ03

Project:

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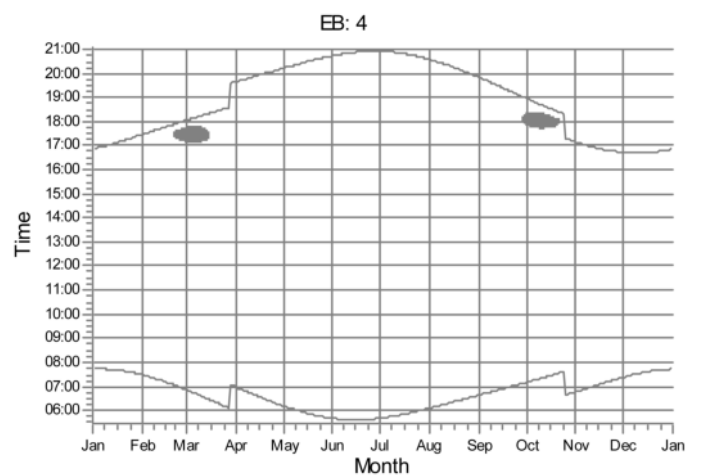
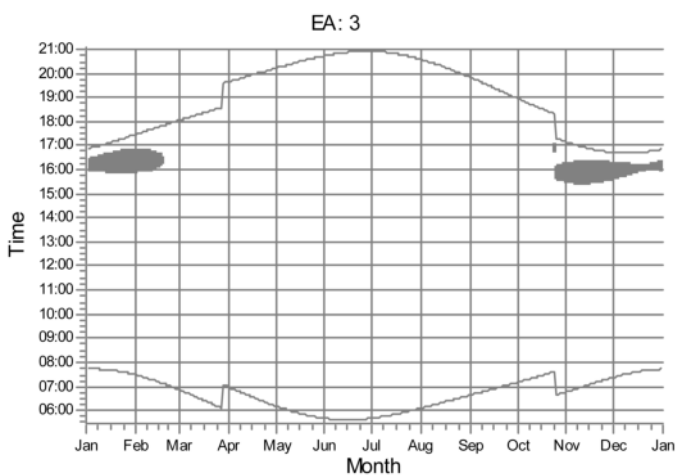
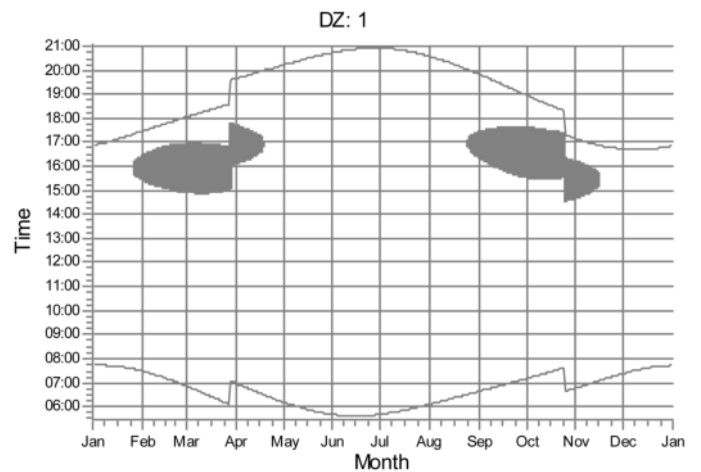
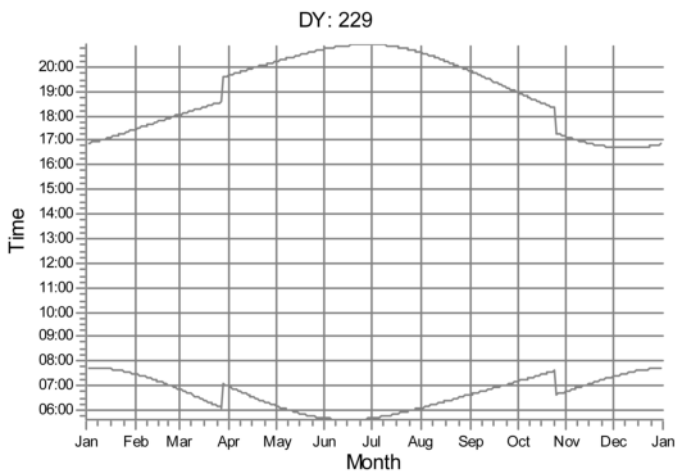
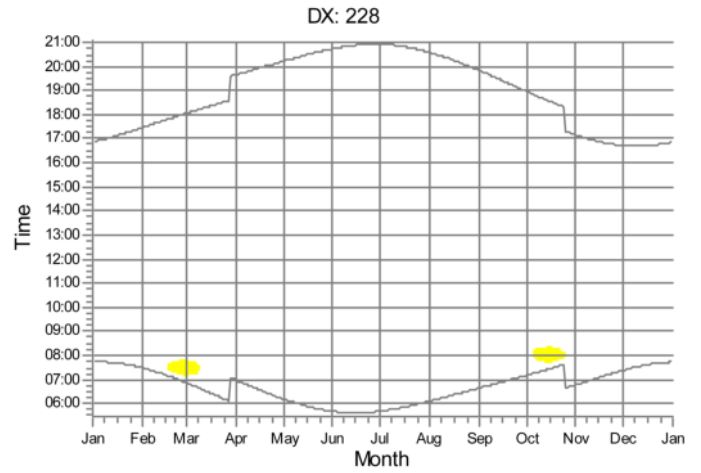
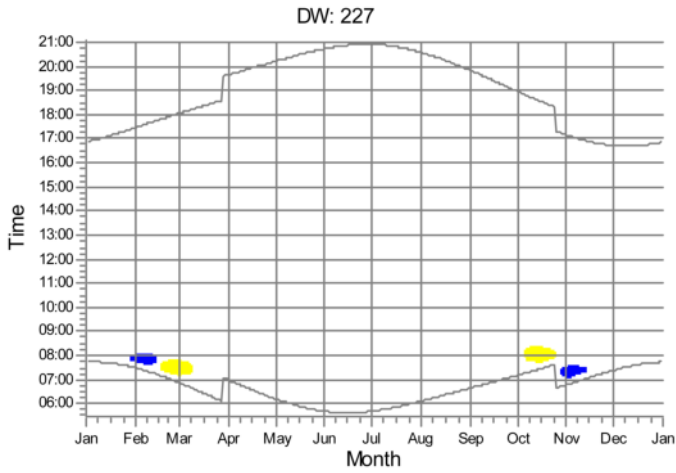
Andrea / fronteddu@montanambiente.com

Calculated:

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## SHADOW - Calendar, graphical

Calculation: Shadow\_real



WTGs



TRQ01: TRQ01



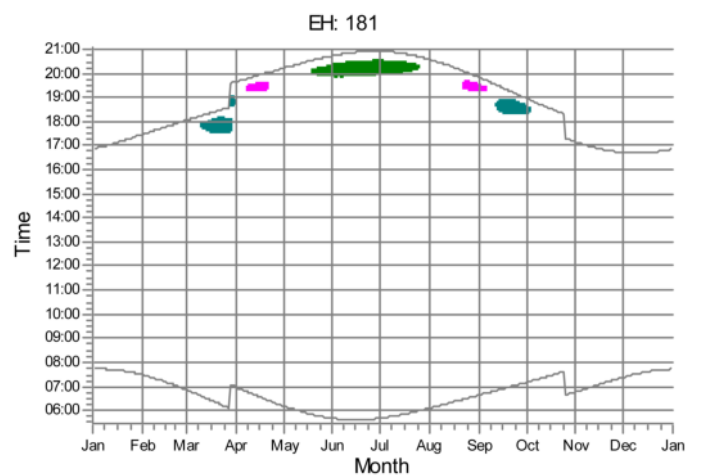
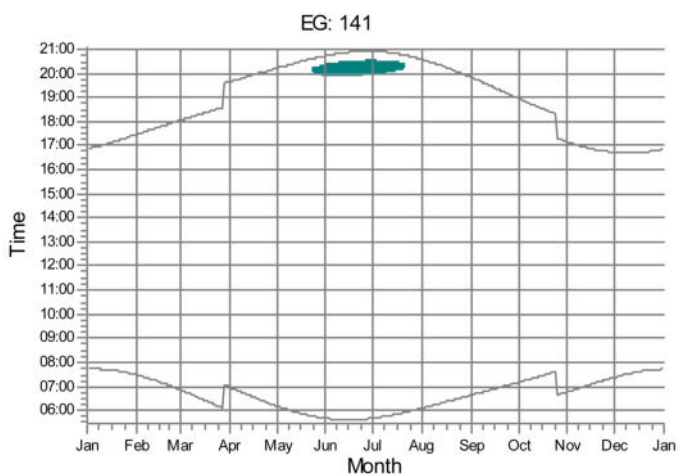
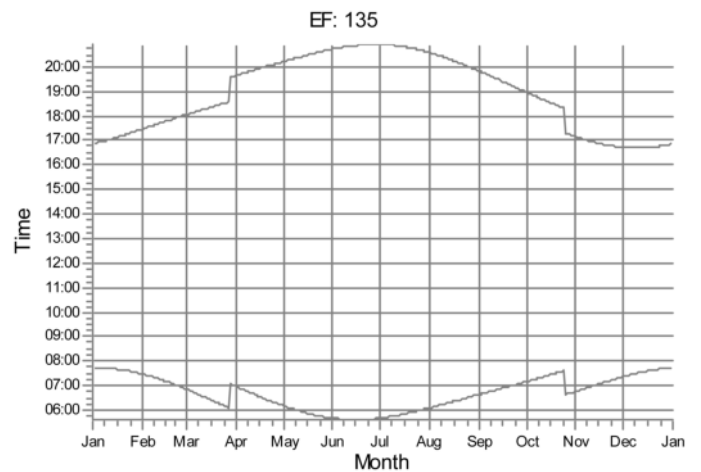
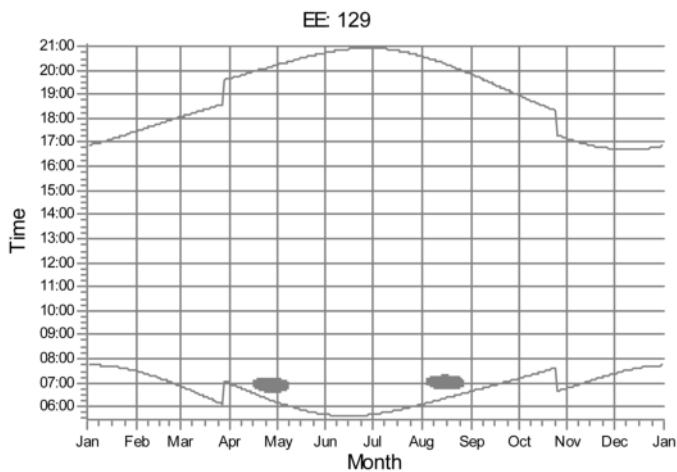
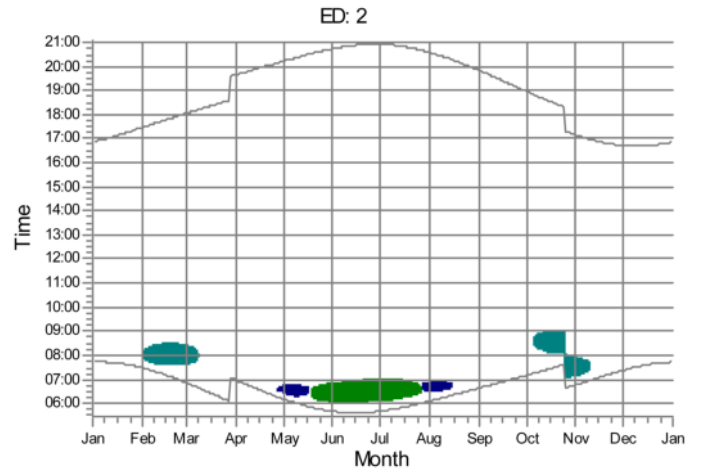
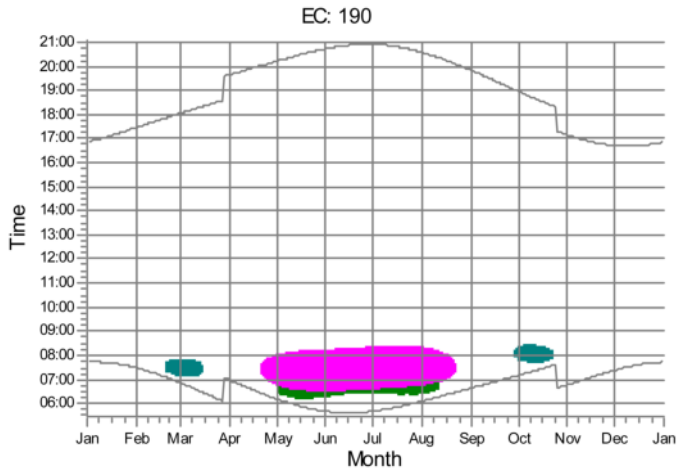
TRQ03: TRQ03



TRQ04: TRQ04

## SHADOW - Calendar, graphical

Calculation: Shadow\_real

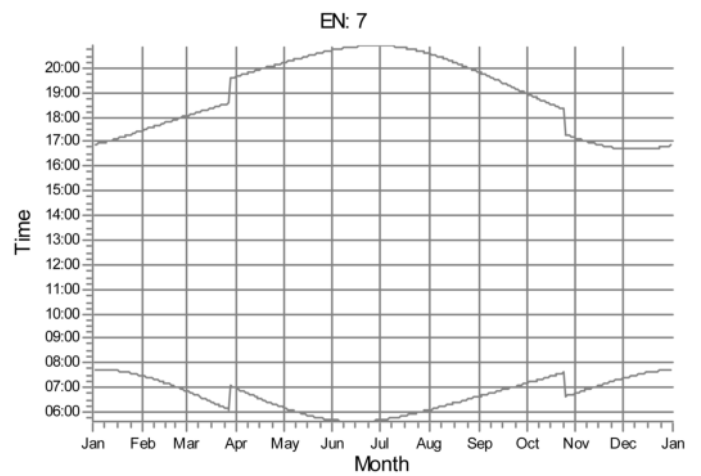
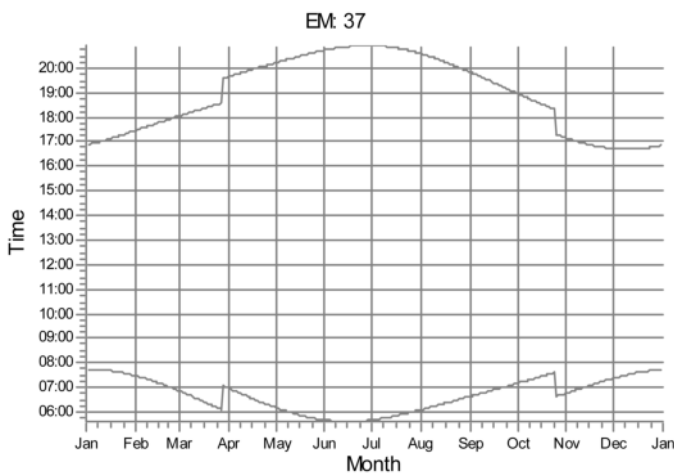
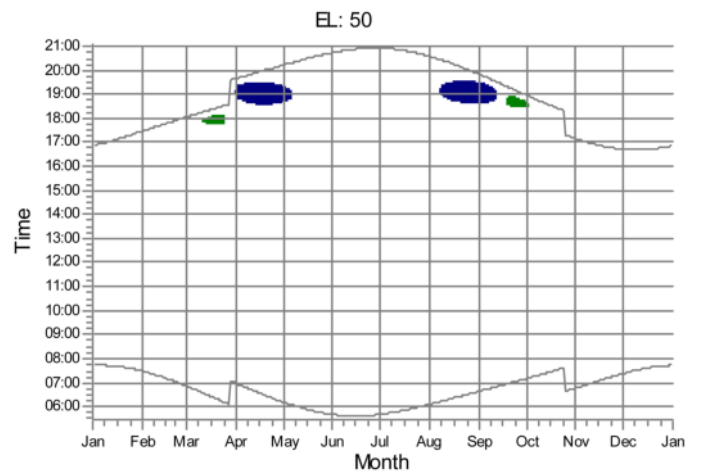
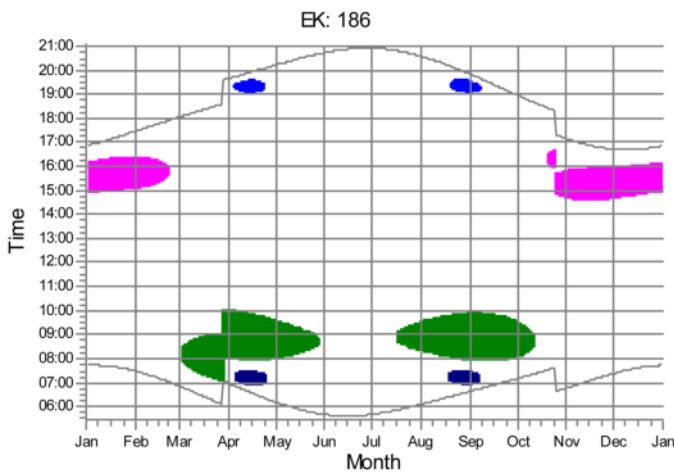
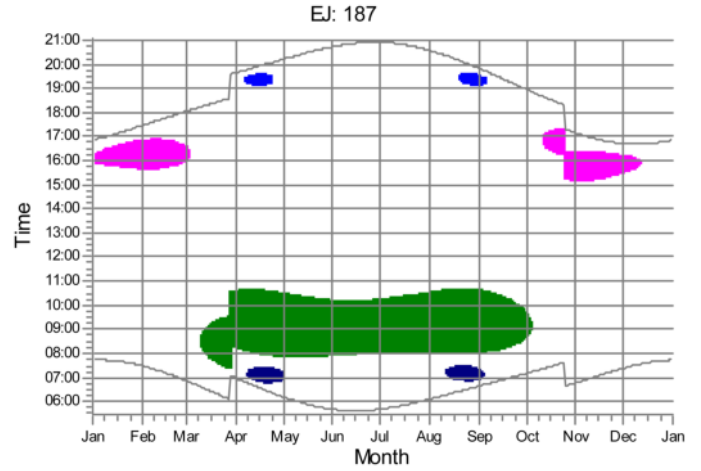
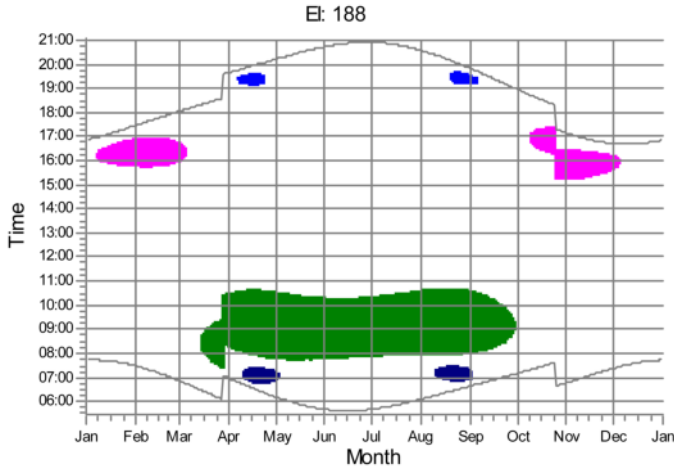


WTGs

- TRQ02: TRQ02
- TRQ05: TRQ05
- TRQ07: TRQ07
- TRQ04: TRQ04
- TRQ06: TRQ06

**SHADOW - Calendar, graphical**

Calculation: Shadow\_real



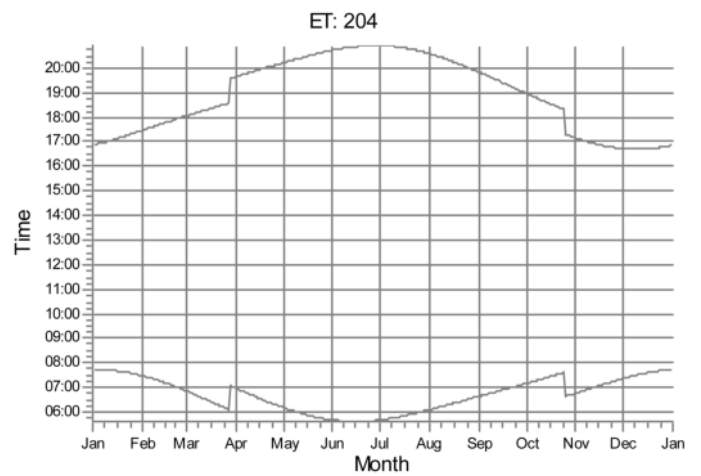
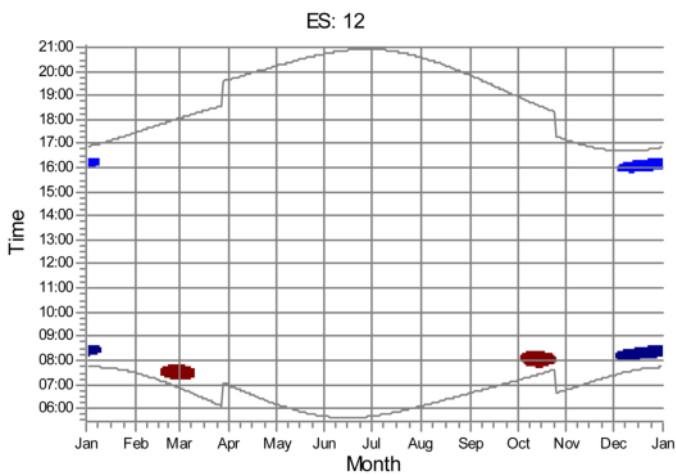
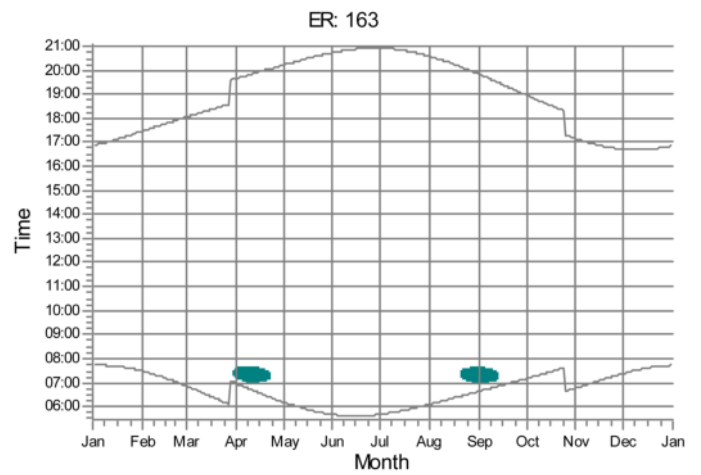
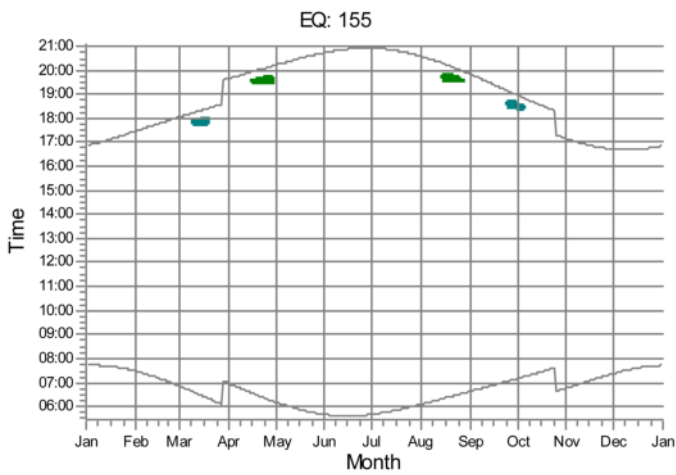
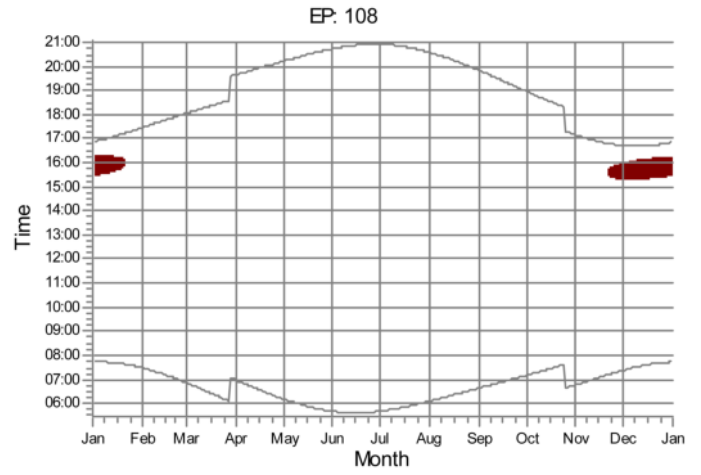
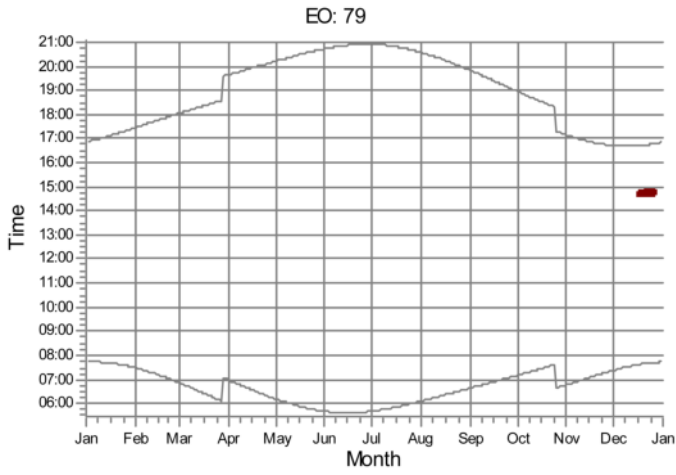
WTGs

- TRQ02: TRQ02
- TRQ03: TRQ03
- TRQ05: TRQ05
- TRQ07: TRQ07



## SHADOW - Calendar, graphical

Calculation: Shadow\_real



### WTGs



## SHADOW - Calendar per WTG

**Calculation:** Shadow\_real**WTG:** TRQ01 - TRQ01  
**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 16:51	07:29 17:27	06:51 07:14-08:01/47 18:03 17:25-17:31/6	06:58 07:17-08:08/51 19:39	06:11 06:52-07:04/12 20:12	05:40 06:02-06:26/24 20:43 19:48-20:18/30
2	07:43 16:52	07:27 17:28	06:49 07:15-08:02/47 18:04	06:56 07:15-08:05/50 19:40	06:09 06:57-06:59/2 20:13	05:40 06:02-06:27/25 20:44 19:48-20:19/31
3	07:43 16:53	07:26 17:30	06:48 07:11-08:01/50 18:05 17:38-17:43/5	06:55 07:14-08:02/48 19:41	06:08 20:15	05:39 06:02-06:28/26 20:45 19:48-20:19/31
4	07:43 16:54	07:25 17:31	06:46 07:05-08:00/55 18:06 17:35-17:44/9	06:53 07:12-07:57/45 19:42	06:07 20:16	05:39 06:01-06:27/26 20:46 19:48-20:20/32
5	07:43 16:55	07:24 17:32	06:44 07:04-08:00/56 18:08 17:34-17:46/12	06:51 07:10-07:55/45 19:43	06:05 20:17	05:38 06:01-06:28/27 20:46 19:49-20:21/32
6	07:43 16:56	07:23 17:33	06:43 07:02-07:58/56 18:09 17:32-17:47/15	06:50 07:09-07:55/46 19:44	06:04 20:18	05:38 06:01-06:29/28 20:47 19:49-20:21/32
7	07:43 16:57	07:22 17:35	06:41 07:00-07:57/57 18:10 17:31-17:48/17	06:48 07:07-07:54/47 19:45	06:03 20:19	05:38 06:00-06:28/28 20:48 19:49-20:22/33
8	07:43 16:58	07:21 17:36	06:39 06:59-07:56/57 18:11 17:30-17:50/20	06:46 07:05-07:53/48 19:47	06:01 20:20	05:38 06:00-06:29/29 20:48 19:50-20:22/32
9	07:43 16:59	07:20 17:37	06:38 06:57-07:54/57 18:12 17:30-17:51/21	06:45 07:05-07:53/48 19:48	06:00 20:21	05:37 06:00-06:29/29 20:49 19:50-20:23/33
10	07:43 17:00	07:18 17:39	06:36 06:55-07:52/57 18:13 17:29-17:52/23	06:43 07:05-07:51/46 19:49	05:59 20:22	05:37 06:00-06:30/30 20:50 19:51-20:24/33
11	07:42 17:01	07:17 17:40	06:34 06:54-07:50/56 18:15 17:28-17:53/25	06:41 07:00-07:50/50 19:50	05:58 20:23	05:37 06:00-06:30/30 20:50 19:50-20:24/34
12	07:42 17:02	07:16 17:41	06:33 07:31-07:47/16 17:29-17:55/26 18:16 06:52-07:29/37	06:40 06:59-07:49/50 19:51	05:57 20:24	05:37 06:00-06:31/31 20:51 19:51-20:24/33
13	07:42 17:03	07:14 17:17-17:19/2 17:43	06:31 07:36-07:40/4 17:29-17:55/26 18:17 06:50-07:29/39	06:38 06:57-07:47/50 19:52	05:56 19:57-20:01/4 20:25	05:37 05:59-06:30/31 20:51 19:51-20:25/34
14	07:41 17:05	07:13 07:42-07:44/2 17:44 17:16-17:21/5	06:29 06:48-07:28/40 18:18 17:29-17:56/27	06:36 06:55-07:45/50 19:53	05:55 19:54-20:02/8 20:27	05:37 05:59-06:30/31 20:52 19:51-20:25/34
15	07:41 17:06	07:12 07:36-07:51/15 17:45 17:16-17:23/7	06:28 06:47-07:29/42 18:19 17:30-17:58/28	06:35 06:54-07:44/50 19:54	05:54 19:53-20:03/10 20:28	05:37 05:59-06:30/31 20:52 19:52-20:26/34
16	07:41 17:07	07:10 07:32-07:53/21 17:46 17:15-17:23/8	06:26 06:45-07:28/43 18:21 17:30-17:59/29	06:33 07:24-07:41/17 19:56 06:52-07:23/31	05:53 19:51-20:04/13 20:29	05:37 05:59-06:31/32 20:52 19:52-20:26/34
17	07:40 17:08	07:09 07:31-07:55/24 17:48 17:15-17:25/10	06:24 06:43-07:27/44 18:22 17:31-18:00/29	06:31 07:27-07:38/11 19:57 06:51-07:20/29	05:52 19:50-20:05/15 20:30	05:37 06:00-06:32/32 20:53 19:52-20:26/34
18	07:40 17:09	07:08 07:27-07:57/30 17:49 17:14-17:26/12	06:22 06:41-07:26/45 18:23 17:32-18:01/29	06:30 06:49-07:15/26 19:58	05:51 19:49-20:05/16 20:31	05:37 06:00-06:32/32 20:53 19:53-20:27/34
19	07:39 17:10	07:06 07:26-07:58/32 17:50 17:14-17:28/14	06:21 06:40-07:26/46 18:24 17:34-18:03/29	06:28 06:48-07:15/27 19:59	05:50 19:49-20:07/18 20:32	05:37 06:00-06:32/32 20:53 19:53-20:28/35
20	07:38 17:12	07:05 07:24-07:59/35 17:52 17:14-17:29/15	06:19 06:38-07:24/46 18:25 17:34-18:02/28	06:27 06:46-07:15/29 20:00	05:49 19:49-20:08/19 20:33	05:37 06:00-06:32/32 20:54 19:53-20:28/35
21	07:38 17:13	07:03 07:23-08:00/37 17:53 17:15-17:30/15	06:17 06:36-07:22/46 18:26 17:34-18:01/27	06:25 06:45-07:14/29 20:01	05:48 19:48-20:09/21 20:34	05:37 06:00-06:32/32 20:54 19:53-20:28/35
22	07:37 17:14	07:02 07:21-08:01/40 17:54 17:15-17:31/16	06:16 06:35-07:20/45 18:27 17:35-17:59/24	06:24 06:45-07:14/29 20:02	05:47 06:08-06:16/8 20:35 19:48-20:09/21	05:37 06:00-06:32/32 20:54 19:53-20:28/35
23	07:36 17:15	07:00 07:20-08:02/42 17:55 17:16-17:33/17	06:14 06:33-07:19/46 18:29 17:36-17:59/23	06:22 06:46-07:15/29 20:03	05:46 06:08-06:19/11 20:36 19:47-20:10/23	05:37 06:01-06:33/32 20:54 19:54-20:29/35
24	07:36 17:17	06:59 07:18-08:02/44 17:57 17:17-17:34/17	06:12 06:31-07:18/47 18:30 17:37-17:57/20	06:21 06:46-07:13/27 20:05	05:45 06:07-06:20/13 20:36 19:48-20:12/24	05:38 06:01-06:33/32 20:55 19:54-20:28/34
25	07:35 17:18	06:57 07:17-08:02/45 17:58 17:19-17:36/17	06:10 06:29-07:17/48 18:31 17:39-17:54/15	06:19 06:46-07:13/27 20:06	05:45 06:06-06:21/15 20:37 19:47-20:12/25	05:38 06:01-06:33/32 20:55 19:54-20:28/34
26	07:34 17:19	06:56 07:15-08:02/47 17:59 17:20-17:37/17	06:09 06:28-07:17/49 18:32 17:41-17:50/9	06:18 06:46-07:12/26 20:07	05:44 06:06-06:23/17 20:38 19:47-20:13/26	05:38 06:02-06:34/32 20:55 19:54-20:28/34
27	07:33 17:20	06:54 07:15-08:03/48 18:00 17:20-17:36/16	06:07 06:26-07:16/50 18:33	06:16 06:47-07:11/24 20:08	05:43 06:05-06:23/18 20:39 19:47-20:14/27	05:39 06:02-06:33/31 20:55 19:55-20:29/34
28	07:32 17:22	06:53 07:14-08:02/48 18:01 17:22-17:35/13	06:05 06:24-07:15/51 18:34	06:15 06:47-07:09/22 20:09	05:43 06:04-06:24/20 20:40 19:47-20:14/27	05:39 06:02-06:33/31 20:55 19:54-20:28/34
29	07:31 17:23	 	07:03 07:22-08:13/51 19:35	06:13 06:49-07:08/19 20:10	05:42 06:04-06:25/21 20:41 19:48-20:16/28	05:39 06:03-06:34/31 20:55 19:55-20:29/34
30	07:30 17:24	 	07:02 07:21-08:12/51 19:36	06:12 06:51-07:07/16 20:11	05:41 06:03-06:25/22 20:42 19:47-20:16/29	05:40 06:03-06:34/31 20:55 19:55-20:28/33
31	07:30 17:26	 	07:00 07:19-08:10/51 19:38	 	05:41 06:03-06:26/23 20:43 19:48-20:17/29	 
Potential sun hours	294	295	369	400	452	457
Sum of minutes with flicker	0	711	2054	1142	565	1904

**Table layout: For each day in each month the following matrix apply**

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ01 - TRQ01  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40 06:04-06:34/30 20:55 19:55-20:29/34 20:34	06:05 20:34	06:38 06:59-07:49/50 19:50	07:10 08:11-08:24/13 18:07-18:34/27 18:57 07:30-08:08/38	06:46 17:09	07:22 16:43
2	05:41 06:04-06:34/30 20:54 19:55-20:28/33 20:33	06:06 20:33	06:39 07:03-07:49/46 19:48	07:11 07:32-08:28/56 18:55 18:07-18:32/25	06:47 17:07	07:23 16:42
3	05:41 06:05-06:35/30 20:54 19:55-20:28/33 20:32	06:07 20:32	06:40 07:02-07:50/48 19:46	07:12 07:33-08:30/57 18:54 18:07-18:31/24	06:48 17:06	07:24 16:42
4	05:42 06:05-06:34/29 20:54 19:55-20:28/33 20:31	06:09 20:31	06:41 07:02-07:50/48 19:44	07:13 07:34-08:31/57 18:52 18:07-18:29/22	06:50 17:05	07:26 16:42
5	05:43 06:06-06:35/29 20:54 19:55-20:28/33 20:30	06:10 20:30	06:42 07:03-07:50/47 19:43	07:14 07:35-08:32/57 18:50 18:07-18:27/20	06:51 17:04	07:27 16:42
6	05:43 06:07-06:35/28 20:54 19:55-20:27/32 20:28	06:11 20:28	06:43 07:04-07:50/46 19:41	07:15 07:36-08:33/57 18:49 18:07-18:25/18	06:52 17:02	07:28 16:42
7	05:44 06:07-06:34/27 20:53 19:55-20:27/32 20:27	06:12 20:27	06:44 07:05-07:50/45 19:39	07:16 07:37-08:34/57 18:47 18:07-18:24/17	06:53 17:01	07:28 16:41
8	05:44 06:08-06:35/27 20:53 19:56-20:27/31 20:26	06:13 20:26	06:45 07:06-07:51/45 19:38	07:18 07:38-08:34/56 18:45 18:08-18:22/14	06:55 17:00	07:29 16:41
9	05:45 06:08-06:34/26 20:52 19:55-20:26/31 20:25	06:14 20:25	06:46 07:07-07:55/48 19:36	07:19 07:39-08:34/55 18:43 18:09-18:20/11	06:56 16:59	07:30 16:41
10	05:46 06:09-06:34/25 20:52 19:55-20:26/31 20:23	06:15 20:23	06:47 07:08-07:58/50 19:34	07:20 07:42-08:35/53 18:42 18:10-18:18/8	06:57 16:58	07:31 16:41
11	05:47 06:10-06:34/24 20:52 19:56-20:26/30 20:22	06:16 07:03-07:10/7 20:22	06:49 07:09-08:00/51 19:32	07:21 07:49-08:35/46 18:40 18:13-18:17/4	06:58 16:57	07:32 16:41
12	05:47 06:11-06:35/24 20:51 19:55-20:25/30 20:21	06:17 07:00-07:13/13 20:21	06:50 07:10-08:01/51 19:31	07:22 07:48-08:35/47 18:38	07:00 16:56	07:33 16:41
13	05:48 06:11-06:34/23 20:51 19:56-20:25/29 20:19	06:18 06:58-07:15/17 20:19	06:51 07:11-08:02/51 19:29	07:23 07:47-08:35/48 18:37 17:57-18:06/9	07:01 16:55	07:34 16:42
14	05:49 06:12-06:33/21 20:50 19:56-20:24/28 20:18	06:19 06:56-07:16/20 20:18	06:52 07:12-08:03/51 19:27	07:24 07:47-08:35/48 18:35 17:54-18:08/14	07:02 16:54	07:35 16:42
15	05:50 06:13-06:33/20 20:49 19:56-20:24/28 20:16	06:20 06:55-07:17/22 20:16	06:53 07:14-08:05/51 19:25	07:26 07:47-08:35/48 18:34 17:52-18:09/17	07:03 16:53	07:35 16:42
16	05:51 06:14-06:33/19 20:49 19:57-20:24/27 20:15	06:21 06:54-07:18/24 20:15	06:54 07:15-08:05/50 19:24	07:27 07:48-08:34/46 18:32 17:52-18:09/17	07:05 16:52	07:36 16:42
17	05:51 06:15-06:33/18 20:48 19:56-20:22/26 20:13	06:22 06:53-07:19/26 20:13	06:55 07:16-08:05/49 19:22 18:31-18:37/6	07:28 07:49-08:34/45 18:30 17:50-18:07/17	07:06 16:51	07:37 16:42
18	05:52 06:15-06:31/16 20:47 19:56-20:22/26 20:12	06:23 06:52-07:19/27 20:12	06:56 07:17-08:05/48 19:20 18:26-18:41/15	07:29 07:50-08:33/43 18:29 17:48-18:05/17	07:07 16:50	07:37 16:43
19	05:53 06:16-06:30/14 20:47 19:57-20:21/24 20:10	06:24 06:51-07:19/28 20:10	06:57 07:18-08:05/47 19:18 18:25-18:44/19	07:30 07:51-08:32/41 18:27 17:46-18:03/17	07:08 16:50	07:38 16:43
20	05:54 06:17-06:29/12 20:46 19:57-20:21/24 20:09	06:25 06:51-07:19/28 20:09	06:58 07:19-08:05/46 19:16 18:23-18:45/22	07:31 07:53-08:32/39 18:26 17:46-18:02/16	07:10 16:49	07:39 16:44
21	05:55 06:18-06:27/9 20:45 19:58-20:20/22 20:07	06:26 06:50-07:19/29 20:07	06:59 07:20-08:06/46 19:15 18:21-18:45/24	07:33 07:54-08:31/37 18:24 17:45-18:01/16	07:11 16:48	07:39 16:44
22	05:56 06:20-06:24/4 20:44 19:58-20:20/22 20:06	06:27 06:50-07:19/29 20:06	07:00 07:21-08:07/46 19:13 18:20-18:46/26	07:34 07:55-08:29/34 18:23 17:45-17:59/14	07:12 16:47	07:40 16:44
23	05:57 19:59-20:19/20 20:43	06:28 06:50-07:19/29 20:04	07:01 07:22-08:08/46 19:11 18:19-18:46/27	07:35 07:56-08:28/32 18:21 17:44-17:57/13	07:13 16:47	07:40 16:45
24	05:58 19:59-20:17/18 20:43	06:30 06:51-07:18/27 20:03	07:02 07:23-08:09/46 19:09 18:18-18:46/28	07:36 07:58-08:27/29 18:20 17:44-17:56/12	07:14 16:46	07:41 16:46
25	05:59 19:59-20:16/17 20:42	06:31 06:52-07:18/26 20:01	07:03 07:24-08:09/45 19:08 18:16-18:45/29	07:37 07:59-08:26/24 17:18 16:44-16:54/10	07:16 16:45	07:41 16:46
26	05:59 20:00-20:16/16 20:41	06:32 07:29-07:40/11 19:59 06:53-07:22/29	07:04 07:25-08:09/44 19:06 18:14-18:43/29	07:39 07:03-07:22/19 17:17 16:44-16:53/9	07:17 16:45	07:42 16:47
27	06:00 20:01-20:15/14 20:40	06:33 06:54-07:43/49 19:58	07:06 07:26-08:09/43 19:04 18:12-18:41/29	07:40 07:06-07:19/13 17:15 16:45-16:51/6	07:18 16:44	07:42 16:47
28	06:01 20:02-20:14/12 20:39	06:34 06:55-07:45/50 19:56	07:07 07:27-08:09/42 19:02 18:11-18:39/28	07:41 16:46-16:50/4 17:14	07:19 16:44	07:42 16:48
29	06:02 20:04-20:13/9 20:38	06:35 06:56-07:46/50 19:55	07:08 07:28-08:09/41 19:01 18:09-18:37/28	07:42 16:47-16:48/1 17:13	07:20 16:43	07:42 16:49
30	06:03 20:06-20:12/6 20:37	06:36 06:57-07:47/50 19:53	07:09 07:29-08:09/40 18:59 18:08-18:36/28	07:43 17:11 17:11	07:21 16:43	07:43 16:50
31	06:04 20:09-20:11/2 20:36	06:37 06:58-07:48/50 19:51	 	06:45 17:10	 	07:43 16:50
Potential sun hours	463	430	376	344	295	284
Sum of minutes with flicker	1238	641	1745	1594	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Tarquini1

Licensed user:

MONTANA SPA
VIA ANGELO CARLO FUMAGALLI 6
IT-20143 MILANO
0254118173

Andrea / fronteddu@montanambiente.com

Calculated:

06/08/2022 14:40/3.5.584

SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ02 - TRQ02
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (January to June) and rows for each day of the month, containing time intervals and operational status.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



## SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ02 - TRQ02  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	July	August	September	October	November	December
1	05:40 07:56-10:17/141 06:10-06:57/47 20:54 20:01-20:29/28	06:05 07:58-10:33/155 20:34 06:28-07:00/32	06:38 07:59-10:34/155 07:06-07:42/36 19:49 19:09-19:27/18	07:10 18:32-18:34/2 07:32-08:07/35 18:57 08:08-09:33/85	06:46   07:22 17:08   16:43	
2	05:41 07:56-10:17/141 06:10-06:56/46 20:54 20:01-20:28/27	06:06 07:58-10:34/156 20:33 06:29-07:00/31	06:39 07:59-10:34/155 07:05-07:44/39 19:48 19:10-19:25/15	07:11 08:09-09:26/77 18:55 07:32-08:06/34	06:47   07:23 17:07   16:42	
3	05:41 07:57-10:18/141 06:11-06:57/46 20:54 20:01-20:28/27	06:07 07:59-10:34/156 20:32 06:30-06:59/29	06:40 07:59-10:33/154 07:05-07:46/41 19:46 19:11-19:23/12	07:12 08:11-09:22/71 18:54 07:33-08:06/33	06:48   07:24 17:06   16:42	08:23-08:30/7
4	05:42 07:56-10:18/142 06:11-06:56/45 20:54 20:01-20:28/27	06:08 07:58-10:35/157 20:31 06:31-06:58/27	06:41 07:58-10:32/154 07:04-07:49/45 19:44 19:12-19:22/10	07:13 08:13-09:21/68 18:52 07:34-08:04/30	06:50   07:25 17:05   16:42	08:21-08:33/12
5	05:43 07:57-10:19/142 06:12-06:56/44 20:54 20:02-20:28/26	06:09 07:58-10:35/157 19:50-19:56/6 20:30 06:32-06:57/25	06:42 07:58-10:31/153 07:04-07:51/47 19:43 19:13-19:20/7	07:14 08:15-09:18/63 18:50 07:35-08:03/28	06:51   07:26 17:03   16:42	08:20-08:34/14
6	05:43 07:56-10:19/143 06:11-06:56/45 20:53 20:01-20:27/26	06:10 07:58-10:36/158 19:47-19:58/11 20:28 06:33-06:56/23	06:43 07:58-10:31/153 07:04-07:52/48 19:41 19:17-19:18/1	07:15 08:17-09:15/58 18:48 07:36-08:01/25	06:52   07:27 17:02   16:41	08:20-08:36/16
7	05:44 07:57-10:20/143 06:12-06:56/44 20:53 20:02-20:27/25	06:12 07:58-10:36/158 19:46-20:00/14 20:27 06:34-06:55/21	06:44 07:58-10:30/152 19:39 07:05-07:53/48	07:16 08:20-09:12/52 18:47 07:37-07:58/21	06:53   07:28 17:01   16:41	08:19-08:37/18
8	05:44 07:57-10:20/143 06:13-06:56/43 20:53 20:03-20:27/24	06:13 07:58-10:36/158 19:44-20:01/17 20:26 06:35-06:53/18	06:45 07:57-10:28/151 19:37 07:06-07:54/48	07:17 08:22-09:08/46 18:45 07:39-07:55/16	06:55   07:29 17:00   16:41	08:19-08:38/19
9	05:45 07:57-10:20/143 06:13-06:56/43 20:52 20:02-20:26/24	06:14 07:58-10:37/159 19:43-20:01/18 20:25 06:36-06:51/15	06:46 07:57-10:27/150 19:36 07:07-07:55/48	07:19 08:26-09:03/37 18:43 07:44-07:51/7	06:56   07:30 16:59   16:41	08:19-08:39/20
10	05:46 07:57-10:21/144 06:14-06:56/42 20:52 20:03-20:26/23	06:15 07:58-10:37/159 19:43-20:00/17 20:23 06:39-06:47/8	06:47 07:57-10:26/149 19:34 07:08-07:55/47	07:20 08:31-08:57/26 18:42 17:58-18:08/10	06:57   07:31 16:58   16:41	08:19-08:40/21
11	05:47 07:58-10:22/144 06:15-06:57/42 20:51 20:04-20:26/22	06:16 07:59-10:37/158 20:22 19:42-19:58/16	06:48 07:57-10:25/148 19:32 07:09-07:56/47	07:21 17:56-18:11/15 18:40	06:58   07:32 16:57   16:41	08:18-08:40/22
12	05:47 07:57-10:22/145 06:14-06:58/44 20:51 20:03-20:25/22	06:17 07:59-10:38/159 20:20 19:40-19:57/17	06:49 07:57-10:23/146 19:30 07:10-07:56/46	07:22 17:54-18:12/18 18:38	07:00   07:33 16:56   16:41	08:19-08:41/22
13	05:48 07:57-10:22/145 06:15-06:58/43 20:50 20:04-20:25/21	06:18 07:59-10:38/159 20:19 19:39-19:56/17	06:51 07:57-10:22/145 19:29 07:11-07:56/45	07:23 17:52-18:13/21 18:37	07:01   07:34 16:55   16:41	08:19-08:42/23
14	05:49 07:57-10:23/146 06:16-06:58/42 20:50 20:05-20:24/19	06:19 19:38-19:54/16 20:18 07:59-10:38/159	06:52 07:57-10:20/143 19:27 07:12-07:55/43	07:24 17:51-18:11/20 18:35	07:02   07:34 16:54   16:42	08:19-08:43/24
15	05:50 07:58-10:24/146 06:17-06:59/42 20:49 20:06-20:24/18	06:20 19:37-19:53/16 20:16 07:59-10:38/159	06:53 07:57-10:19/142 19:25 07:13-07:55/42	07:25 17:50-18:10/20 18:33	07:03   07:35 16:53   16:42	08:20-08:44/24
16	05:50 07:58-10:25/147 06:18-07:00/42 20:49 20:06-20:24/18	06:21 19:35-19:51/16 20:15 07:59-10:38/159	06:54 07:14-10:17/183 19:23	07:27 17:49-18:08/19 18:32	07:05   07:36 16:52   16:42	08:19-08:44/25
17	05:51 07:57-10:25/148 06:18-06:59/41 20:48 20:06-20:22/16	06:22 19:34-19:50/16 19:24-19:29/5 20:13 07:59-10:38/159	06:55 07:15-10:15/180 19:22 18:44-18:50/6	07:28 17:50-18:07/17 18:30	07:06   07:37 16:51   16:42	08:20-08:45/25
18	05:52 07:57-10:25/148 06:19-07:00/41 20:47 20:07-20:22/15	06:23 19:20-19:49/29 20:12 07:59-10:38/159	06:56 07:16-10:13/177 19:20 18:40-18:52/12	07:29 17:50-18:05/15 18:29	07:07   07:38 16:50   16:43	08:21-08:46/25
19	05:53 07:58-10:26/148 06:20-07:00/40 20:47 20:08-20:21/13	06:24 19:17-19:47/30 20:10 08:00-10:38/158	06:57 07:18-10:11/173 19:18 18:38-18:54/16	07:30 17:49-18:03/14 18:27	07:08   07:39 16:49   16:43	08:21-08:46/25
20	05:54 07:58-10:27/149 06:22-07:01/39 20:46 20:09-20:21/12	06:25 19:16-19:46/30 20:09 08:00-10:38/158	06:58 07:37-18:53/16 19:16 07:19-10:10/171	07:31 17:49-18:01/12 18:26	07:09   07:39 16:49   16:43	08:21-08:47/26
21	05:55 07:58-10:27/149 06:23-07:01/38 20:45 20:10-20:20/10	06:26 19:14-19:44/30 20:07 08:00-10:38/158	06:59 18:35-18:51/16 19:15 07:20-10:08/168	07:32 17:51-18:01/10 18:24	07:11   07:39 16:48   16:44	08:21-08:47/26
22	05:56 07:58-10:28/150 06:25-07:02/37 20:44 20:12-20:20/8	06:27 19:13-19:43/30 20:06 08:00-10:38/158	07:00 18:34-18:50/16 19:13 07:21-10:05/164	07:34 17:51-17:59/8 18:23	07:12   07:40 16:47   16:44	08:22-08:48/26
23	05:57 07:58-10:29/151 06:26-07:02/36 20:43 20:13-20:18/5	06:28 19:12-19:41/29 07:21-07:27/6 20:04 08:00-10:37/157	07:01 18:33-18:49/16 19:11 07:22-10:03/161	07:35 17:52-17:57/5 18:21	07:13   07:40 16:47   16:45	08:22-08:48/26
24	05:58 07:57-10:28/151 06:27-07:02/35 20:42 20:15-20:17/2	06:29 19:11-19:40/29 07:17-07:31/14 20:03 08:01-10:37/156	07:02 18:32-18:47/15 19:09 07:23-10:00/157	07:36 17:54-17:55/1 18:20	07:14   07:41 16:46   16:45	08:23-08:49/26
25	05:58 07:57-10:29/152 20:42 06:26-07:01/35	06:31 19:10-19:38/28 07:14-07:33/19 20:01 08:01-10:37/156	07:03 18:31-18:45/14 19:08 07:25-09:57/152	06:37   17:18 17:18	07:15   07:41 16:45   16:46	08:24-08:49/25
26	05:59 07:58-10:30/152 20:41 06:26-07:01/35	06:32 19:10-19:36/26 07:12-07:35/23 19:59 08:01-10:37/156	07:04 18:30-18:43/13 19:06 07:28-09:54/146	06:38   17:17 17:17	07:17   07:41 16:45   16:47	08:24-08:49/25
27	06:00 07:58-10:30/152 20:40 06:26-07:01/35	06:33 19:09-19:35/26 07:11-07:37/26 19:58 08:02-10:37/155	07:05 18:30-18:41/11 19:04 07:33-09:51/138	06:40   17:15 17:15	07:18   07:42 16:44   16:47	08:24-08:49/25
28	06:01 07:58-10:31/153 20:39 06:26-07:01/35	06:34 08:01-10:36/155 07:09-07:38/29 19:56 19:09-19:33/24	07:06 18:30-18:39/9 19:02 07:32-09:47/135	06:41   17:14 17:14	07:19   07:42 16:44   16:48	08:26-08:50/24
29	06:02 07:58-10:32/154 20:38 06:27-07:01/34	06:35 08:01-10:36/155 07:08-07:39/31 19:54 19:09-19:32/23	07:08 18:30-18:37/7 19:01 07:32-09:43/131	06:42   17:12 17:12	07:20   07:42 16:43   16:49	08:26-08:50/24
30	06:03 07:58-10:32/154 20:37 06:27-07:01/34	06:36 08:00-10:35/155 07:07-07:40/33 19:53 19:09-19:30/21	07:09 18:31-18:36/5 18:59 07:32-09:38/126	06:43   17:11 17:11	07:21   07:43 16:43   16:50	08:27-08:50/23
31	06:04 07:58-10:33/155 20:35 06:27-07:01/34	06:37 08:00-10:35/155 07:06-07:41/35 19:51 19:09-19:28/19	06:45   17:10	06:45   17:10	07:22   07:43 16:50   16:50	08:27-08:50/23
	Potential sun hours 463 Sum of minutes with flicker 6269	430 5897	376 5517	344 1019	295 0	284 641

### Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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## SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ03 - TRQ03  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 15:43-16:25/42 16:51	07:28 07:49-08:14/25 16:40-16:55/15 17:27 16:10-16:24/14	06:51 07:13-07:36/23 18:03	06:58 07:17-07:22/5 19:39 07:23-08:20/57	06:11 06:30-07:24/54 20:12 18:38-19:47/69	05:40 06:18-07:15/57 20:43 19:04-20:13/69
2	07:43 15:43-16:25/42 16:52	07:27 07:48-08:14/26 16:42-16:53/11 17:28 16:17-16:18/1	06:49 07:14-07:36/22 18:04	06:56 07:15-08:18/63 19:40	06:09 06:29-07:24/55 20:13 18:39-19:48/69	05:40 06:18-07:15/57 20:44 19:05-20:14/69
3	07:43 15:44-16:26/42 16:53	07:26 07:47-08:14/27 17:30 16:46-16:50/4	06:48 07:14-07:35/21 18:05	06:55 07:14-08:16/62 19:41	06:08 06:28-07:25/57 20:15 18:40-19:49/69	05:39 06:18-07:14/56 20:45 19:05-20:15/70
4	07:43 15:45-16:27/42 16:54	07:25 07:46-08:14/28 17:31	06:46 07:15-07:33/18 18:06	06:53 07:12-08:14/62 19:42	06:07 06:27-07:24/57 20:16 18:39-19:49/70	05:39 06:19-07:15/56 20:46 19:05-20:16/71
5	07:43 15:45-16:28/43 16:55	07:24 07:45-08:14/29 17:32	06:44 07:17-07:31/14 18:08	06:51 19:20-19:21/1 19:43 07:10-08:11/61	06:05 06:25-07:24/59 20:17 18:40-19:50/70	05:38 06:19-07:15/56 20:46 19:06-20:17/71
6	07:43 15:46-16:29/43 16:56	07:23 07:43-08:12/29 17:33	06:43 07:20-07:28/8 18:09	06:50 19:16-19:22/6 19:00-19:15/15 19:44 07:09-08:07/58	06:04 06:25-07:25/60 20:18 18:41-19:51/70	05:38 06:20-07:15/55 20:47 19:06-20:17/71
7	07:43 15:47-16:30/43 16:57	07:22 07:42-08:12/30 17:35	06:41 07:00-07:13/13 18:10	06:48 18:56-19:24/28 19:45 07:07-07:57/50	06:03 06:25-07:25/60 20:19 18:43-19:52/69	05:38 06:19-07:14/55 20:48 19:06-20:18/72
8	07:43 15:46-16:29/43 16:58	07:21 07:41-08:11/30 17:35	06:39 06:59-07:14/15 18:11	06:46 18:53-19:24/31 19:47 07:05-07:56/51	06:01 06:25-07:25/60 20:20 18:44-19:52/68	05:38 06:20-07:14/54 20:48 19:07-20:19/72
9	07:43 15:47-16:30/43 16:59	07:20 07:40-08:09/29 17:37	06:38 06:57-07:13/16 18:12	06:45 18:50-19:25/35 19:48 07:04-07:54/50	06:00 06:26-07:25/59 20:21 18:44-19:52/68	05:37 06:20-07:14/54 20:49 19:07-20:19/72
10	07:43 15:48-16:31/43 17:00	07:18 07:38-07:58/20 17:39 07:59-08:06/7	06:36 06:55-07:16/21 18:13	06:43 18:49-19:27/38 19:49 07:02-07:53/51	05:59 06:25-07:24/59 20:22 18:45-19:53/68	05:37 06:21-07:14/53 20:49 19:07-20:20/73
11	07:42 15:49-16:32/43 17:01	07:17 07:37-07:57/20 17:40	06:34 06:54-07:20/26 18:15	06:41 18:47-19:28/41 07:26-07:51/25 19:50 07:00-07:24/24	05:58 06:25-07:23/58 20:23 18:47-19:53/66	05:37 06:21-07:14/53 20:50 19:07-20:20/73
12	07:42 15:49-16:32/43 17:02	07:16 07:36-07:56/20 17:41	06:33 06:52-07:22/30 18:16	06:40 18:45-19:28/43 07:28-07:50/22 19:51 06:59-07:23/24	05:57 06:24-07:23/59 20:24 18:48-19:53/65	05:37 06:20-07:13/53 20:51 19:07-20:20/73
13	07:42 15:50-16:32/42 17:03	07:14 07:34-07:54/20 17:43	06:31 06:50-07:23/33 18:17	06:38 18:44-19:30/46 07:30-07:47/17 19:52 06:57-07:23/26	05:56 06:23-07:23/60 20:25 18:50-19:54/64	05:37 06:21-07:13/52 20:51 19:07-20:21/74
14	07:41 15:50-16:32/42 17:05	07:13 07:33-07:55/22 17:44	06:29 06:48-07:25/37 18:18	06:36 18:42-19:31/49 07:33-07:42/9 19:53 06:55-07:24/29	05:55 06:22-07:23/61 20:26 18:53-19:56/63	05:37 06:21-07:13/52 20:52 19:07-20:21/74
15	07:41 15:52-16:33/41 17:06	07:12 07:32-07:55/23 17:45	06:28 06:47-07:26/39 18:19	06:35 18:42-19:32/50 19:54 06:54-07:25/31	05:54 06:21-07:22/61 20:28 18:56-19:57/61	05:37 06:21-07:13/52 20:52 19:07-20:22/75
16	07:40 15:52-16:41/49 17:07	07:10 07:30-07:54/24 17:46	06:26 06:45-07:27/42 18:20	06:33 18:41-19:33/52 19:56 06:52-07:26/34	05:53 06:20-07:22/62 20:29 19:00-19:58/58	05:37 06:21-07:13/52 20:52 19:08-20:22/74
17	07:40 15:53-16:42/49 17:08	07:09 07:29-07:54/25 17:48	06:24 06:43-07:27/44 18:22	06:31 18:39-19:34/55 19:57 06:51-07:27/36	05:52 06:20-07:21/61 20:30 19:00-19:59/59	05:37 06:23-07:14/51 20:53 19:08-20:22/74
18	07:39 15:53-16:43/50 17:09	07:08 07:27-07:52/25 17:49	06:22 06:44-07:27/43 18:23	06:30 18:39-19:35/56 19:58 06:49-07:27/38	05:51 06:20-07:22/62 20:31 19:00-20:01/61	05:37 06:23-07:14/51 20:53 19:09-20:24/75
19	07:39 15:54-16:44/50 17:10	07:06 07:26-07:52/26 17:50	06:21 06:44-07:28/44 18:24	06:28 18:38-19:34/56 19:59 06:48-07:27/39	05:50 06:19-07:21/62 20:32 19:01-20:03/62	05:37 06:23-07:14/51 20:53 19:09-20:24/75
20	07:38 08:00-08:03/3 17:12	07:05 07:24-07:50/26 17:51	06:19 06:45-07:28/43 18:25	06:27 18:38-19:33/55 20:00 06:46-07:28/42	05:49 06:19-07:20/61 20:33 19:01-20:04/63	05:37 06:23-07:14/51 20:54 19:09-20:24/75
21	07:38 07:59-08:05/6 17:13	07:03 07:23-07:50/27 17:53	06:17 06:40-07:28/48 18:26	06:25 18:37-19:31/54 20:01 06:44-07:27/43	05:48 06:18-07:20/62 20:34 19:01-20:05/64	05:37 06:23-07:14/51 20:54 19:09-20:24/75
22	07:37 07:58-08:07/9 17:14	07:02 07:21-07:49/28 17:54	06:16 06:36-07:27/51 18:27	06:24 18:38-19:30/52 20:02 06:43-07:28/45	05:47 06:18-07:19/61 20:35 19:01-20:05/64	05:37 06:23-07:14/51 20:54 19:09-20:24/75
23	07:36 07:58-08:09/11 17:15	07:00 07:20-07:48/28 17:55	06:14 06:34-07:28/54 18:28	06:22 18:37-19:29/52 20:03 06:41-07:27/46	05:46 06:18-07:19/61 20:35 19:01-20:06/65	05:37 06:24-07:15/51 20:54 19:10-20:25/75
24	07:36 07:57-08:10/13 16:34-16:52/18 17:17	06:59 07:18-07:46/28 17:57	06:12 06:32-07:27/55 18:30	06:21 06:40-07:27/47 20:05 18:37-19:30/53	05:45 06:18-07:18/60 20:36 19:02-20:07/65	05:38 06:24-07:15/51 20:54 19:10-20:25/75
25	07:35 07:56-08:11/15 16:34-16:53/19 17:18	06:57 07:17-07:44/27 17:58	06:10 06:30-07:27/57 18:31	06:19 06:39-07:28/49 20:06 18:36-19:29/53	05:45 06:18-07:17/59 20:37 19:02-20:08/66	05:38 06:24-07:15/51 20:55 19:10-20:24/74
26	07:34 07:55-08:11/16 16:34-16:54/20 17:19	06:56 07:15-07:39/24 17:59	06:09 06:28-07:26/58 18:32	06:18 06:37-07:27/50 20:07 18:37-19:37/60	05:44 06:18-07:17/59 20:38 19:01-20:08/67	05:38 06:25-07:16/51 20:55 19:10-20:24/74
27	07:33 07:54-08:12/18 16:35-16:55/20 17:20	06:54 07:14-07:39/25 18:00	06:07 06:27-07:26/59 18:33	06:16 06:36-07:27/51 20:08 18:37-19:40/63	05:43 06:18-07:16/58 20:39 19:02-20:09/67	05:39 06:24-07:16/52 20:55 19:10-20:25/75
28	07:32 07:53-08:13/20 16:35-16:57/22 17:22	06:52 07:13-07:37/24 18:01	06:05 06:26-07:25/59 18:34	06:15 06:34-07:25/51 20:09 18:37-19:42/65	05:43 06:17-07:16/59 20:40 19:02-20:10/68	05:39 06:24-07:16/52 20:55 19:10-20:24/74
29	07:31 07:52-08:13/21 16:36-16:57/21 17:23		06:03 07:25-08:23/58 19:35	06:13 06:33-07:25/52 20:10 18:38-19:44/66	05:42 06:18-07:16/58 20:41 19:03-20:11/68	05:39 06:25-07:17/52 20:55 19:11-20:25/74
30	07:30 07:51-08:14/23 16:37-16:56/19 17:24		06:02 07:25-08:23/58 19:36	06:12 06:32-07:25/53 20:11 18:38-19:46/68	05:41 06:18-07:15/57 20:42 19:03-20:11/68	05:40 06:25-07:17/52 20:55 19:11-20:25/74
31	07:29 07:50-08:14/24 16:38-16:56/18 17:26		06:00 07:24-08:21/57 19:38		05:41 06:18-07:16/58 20:43 19:04-20:12/68	
	Potential sun hours 294 Sum of minutes with flicker 1617	295 767	369 1194	400 2696	452 3881	457 3782

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Tarquinia1

Licensed user:

MONTANA SPA
VIA ANGELO CARLO FUMAGALLI 6
IT-20143 MILANO
0254118173
Andrea / fronteddu@montanambiente.com
Calculated:
06/08/2022 14:40/3.5.584

SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ03 - TRQ03
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (July to December) and rows for each day of the month, showing sunrise and sunset times for various directions (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW) and a final 'Sum' row.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



Project:

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Calculated:

06/08/2022 14:40/3.5.584

SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ04 - TRQ04
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (January to June) and rows for each day of the month, containing time intervals and operational status.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker





Project:

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Calculated:

06/08/2022 14:40/3.5.584

SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ04 - TRQ04
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (July to December) and rows for each day of the month, containing sunrise and sunset times and minutes with flicker.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



Project:

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Calculated:

06/08/2022 14:40/3.5.584

SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ05 - TRQ05
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (January to June) and rows for each day (1-31), showing sunrise, sunset, and shadow flicker times.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



Project:

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Calculated:
06/08/2022 14:40/3.5.584

SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ05 - TRQ05
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Table with 12 columns (Jan-Dec) and 1 row of values: 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

Table with 13 columns (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum) and 1 row of values: 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Main shadow calculation table with columns for months (July-December) and rows for each minute of the day (05:40-20:35). Includes summary rows for Potential sun hours and Sum of minutes with flicker.

Table layout: For each day in each month the following matrix apply

Matrix with 2 columns: Day in month, Sun rise (hh:mm) / Sun set (hh:mm); and 2 columns: First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



Project:

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Calculated:
06/08/2022 14:40/3.5.584

SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ06 - TRQ06
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Table with 12 columns (Jan-Dec) and 1 row of values: 3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

Table with 13 columns (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum) and 1 row of values: 488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Main data table with columns for months (January to June) and rows for each day (1-31) containing time intervals and potential sun hours.

Table layout: For each day in each month the following matrix apply

Matrix with 2 rows and 3 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm); First time (hh:mm) with flicker, Last time (hh:mm) with flicker, Minutes with flicker



Project:

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Calculated:

06/08/2022 14:40/3.5.584

SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ06 - TRQ06
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (July to December) and rows for each day of the month, showing sun rise/set times and minutes with flicker.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



## SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ07 - TRQ07  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	January	February	March	April	May	June	
1	07:43 08:06-08:32/26	07:28 16:19-17:02/43	06:51 16:09-17:41/92	06:58 19:05-19:07/2	06:10 18:44-19:30/46	06:30-06:41/11	05:40
	16:51 16:23-16:25/2	17:27	18:03	19:39	20:12 06:56-07:08/12		20:43
2	07:43 08:06-08:33/27	07:27 16:20-17:04/44	06:49 16:09-17:41/92	06:56 18:57-19:14/17	06:09 18:45-19:30/45	06:29-06:42/13	05:40
	16:52 16:22-16:25/3	17:28	18:04	19:40	20:13 07:00-07:05/5		20:44
3	07:43 08:06-08:33/27	07:26 16:21-17:05/44	06:48 16:10-17:43/93	06:55 18:53-19:17/24	06:08 18:45-19:29/44		05:39
	16:53 16:21-16:26/5	17:29	18:05	19:41	20:14 06:28-06:42/14		20:45
4	07:43 08:06-08:33/27	07:25 16:22-17:07/45	06:46 16:09-17:44/95	06:53 18:51-19:19/28	06:06 18:45-19:28/43		05:39
	16:54 16:21-16:27/6	17:31	18:06	19:42	20:16 06:26-06:42/16		20:45
5	07:43 08:06-08:33/27	07:24 16:22-17:08/46	06:44 16:10-17:46/96	06:51 18:49-19:21/32	06:05 06:25-06:42/17		05:38
	16:55 16:20-16:28/8	17:32	18:07	19:43	20:17 18:46-19:27/41		20:46
6	07:43 08:06-08:33/27	07:23 16:23-17:09/46	06:43 16:10-17:47/97	06:49 18:47-19:21/34	06:04 06:24-06:42/18		05:38
	16:56 16:20-16:30/10	17:33	18:09	19:44 07:08-07:19/11	20:18 18:47-19:26/39		20:47
7	07:43 08:06-08:33/27	07:22 16:25-17:11/46	06:41 16:10-17:48/98	06:48 18:46-19:23/37	06:03 06:23-06:43/20		05:38
	16:57 16:20-16:31/11	17:35	18:10	19:45 07:07-07:22/15	20:19 18:48-19:26/38		20:48
8	07:43 08:05-08:31/26	07:21 16:25-17:12/47	06:39 16:10-17:49/99	06:46 18:44-19:24/40	06:01 06:22-06:42/20		05:37
	16:58 16:19-16:31/12	17:36	18:11	19:46 07:05-07:23/18	20:20 18:48-19:24/36		20:48
9	07:43 08:05-08:31/26	07:19 16:23-17:13/50	06:38 16:12-17:51/99	06:44 18:42-19:24/42	06:00 06:21-06:41/20		05:37
	16:59 16:18-16:32/14	17:37	18:12	19:48 07:03-07:24/21	20:21 18:49-19:23/34		20:49
10	07:42 16:18-16:34/16	07:18 16:21-17:15/54	06:36 16:12-17:52/100	06:43 18:42-19:25/43	05:59 06:22-06:41/19		05:37
	17:00 08:05-08:31/26	17:39	18:13	19:49 07:02-07:25/23	20:22 18:51-19:22/31		20:49
11	07:42 16:17-16:34/17	07:17 16:20-17:17/57	06:34 16:13-17:53/100	06:41 18:41-19:26/45	05:58 06:22-06:40/18		05:37
	17:01 08:05-08:31/26	17:40	18:15	19:50 07:00-07:25/25	20:23 18:52-19:20/28		20:50
12	07:42 16:18-16:36/18	07:16 16:19-17:18/59	06:33 16:14-17:55/101	06:39 18:40-19:27/47	05:57 06:23-06:40/17		05:37
	17:02 08:04-08:30/26	17:41	18:16	19:51 06:58-07:25/27	20:24 18:54-19:19/25		20:50
13	07:42 16:18-16:37/19	07:14 16:18-17:19/61	06:31 16:15-17:55/100	06:38 18:40-19:29/49	05:56 06:24-06:39/15		05:36
	17:03 08:04-08:29/25	17:42	18:17	19:52 06:57-07:26/29	20:25 18:56-19:17/21		20:51
14	07:41 16:17-16:38/21	07:13 16:17-17:21/64	06:29 17:09-17:56/47	06:36 18:39-19:29/50	05:54 06:25-06:37/12		05:36
	17:04 08:03-08:28/25	17:44	18:18 16:16-17:08/52	19:53 06:55-07:26/31	20:26 18:58-19:15/17		20:51
15	07:41 16:17-16:40/23	07:12 16:15-17:21/66	06:27 17:09-17:57/48	06:35 18:38-19:30/52	05:53 06:27-06:36/9		05:36
	17:06 08:03-08:28/25	17:45	18:19 16:17-17:06/49	19:54 06:54-07:26/32	20:27 19:01-19:11/10		20:52
16	07:40 16:17-16:41/24	07:10 16:15-17:21/66	06:26 17:11-17:59/48	06:33 18:38-19:31/53	05:52		05:36
	17:07 08:02-08:27/25	17:46	18:20 16:19-17:05/46	19:55 06:52-07:25/33	20:28		20:52
17	07:40 16:17-16:42/25	07:09 16:14-17:21/67	06:24 17:11-18:00/49	06:31 18:37-19:31/54	05:51		05:36
	17:08 08:02-08:27/25	17:48	18:21 16:20-17:02/42	19:57 06:50-07:24/34	20:29		20:53
18	07:39 16:17-16:43/26	07:07 16:13-17:20/67	06:22 17:12-18:01/49	06:30 18:38-19:32/54	05:50		05:36
	17:09 08:01-08:27/26	17:49	18:23 16:22-17:00/38	19:58 06:50-07:24/34	20:30		20:53
19	07:39 16:16-16:44/28	07:06 16:13-17:19/66	06:21 17:12-18:02/50	06:28 18:37-19:32/55	05:49		05:37
	17:10 08:01-08:27/26	17:50	18:24 16:24-16:57/33	19:59 06:49-07:22/33	20:31		20:53
20	07:38 16:17-16:46/29	07:05 16:12-17:17/65	06:19 17:14-18:02/48	06:27 18:38-19:33/55	05:49		05:37
	17:11 08:02-08:27/25	17:51	18:25 16:27-16:55/28	20:00 06:49-07:22/33	20:32		20:54
21	07:38 16:16-16:47/31	07:03 16:12-17:18/66	06:17 17:16-18:01/45	06:25 18:38-19:32/54	05:48		05:37
	17:13 08:03-08:27/24	17:53	18:26 16:31-16:50/19	20:01 06:49-07:20/31	20:33		20:54
22	07:37 16:16-16:48/32	07:02 16:11-17:18/67	06:15 17:18-18:00/42	06:23 18:38-19:33/55	05:47		05:37
	17:14 08:03-08:27/24	17:54	18:27	20:02 06:49-07:20/31	20:34		20:54
23	07:36 16:16-16:50/34	07:00 16:11-17:18/67	06:14 17:21-17:59/38	06:22 18:38-19:32/54	05:46		05:37
	17:15 08:04-08:26/22	17:55	18:28	20:03 06:49-07:19/30	20:35		20:54
24	07:35 16:17-16:52/35	06:59 16:10-17:18/68	06:12 17:24-17:59/35	06:20 18:39-19:33/54	05:45		05:38
	17:16 08:05-08:27/22	17:56	18:29	20:04 06:49-07:19/30	20:36		20:54
25	07:35 16:17-16:53/36	06:57 17:27-17:35/8	06:10 17:24-17:58/34	06:19 18:39-19:32/53	05:44		05:38
	17:18 08:06-08:26/20	17:58 16:09-17:18/69	18:31	20:06 06:49-07:17/28	20:37		20:54
26	07:34 16:17-16:54/37	06:55 17:24-17:37/13	06:08 17:25-17:56/31	06:18 18:40-19:32/52	05:44		05:38
	17:19 08:07-08:26/19	17:59 16:10-17:18/68	18:32	20:07 06:50-07:17/27	20:38		20:55
27	07:33 16:17-16:55/38	06:54 17:20-17:38/18	06:07 17:26-17:54/28	06:16 18:41-19:32/51	05:43		05:39
	17:20 08:08-08:25/17	18:00 16:09-17:18/69	18:33	20:08 06:51-07:16/25	20:39		20:55
28	07:32 16:17-16:57/40	06:52 16:10-17:40/90	06:05 17:28-17:53/25	06:15 18:42-19:31/49	06:34-06:35/1	05:42	05:39
	17:22 08:10-08:23/13	18:01	18:34	20:09 06:51-07:14/23	20:40		20:55
29	07:31 16:18-16:58/40		07:03 18:29-18:51/22	06:13 18:43-19:31/48	06:33-06:38/5	05:42	05:39
	17:23 08:12-08:21/9		19:35	20:10 06:53-07:13/20	20:41		20:55
30	07:30 16:18-17:00/42		07:01 18:31-18:47/16	06:12 18:43-19:30/47	06:32-06:40/8	05:41	05:40
	17:24		19:36	20:11 06:54-07:11/17	20:42		20:54
31	07:29 16:19-17:01/42		07:00 18:36-18:43/7		05:41		
	17:25		19:37		20:42		
Potential sun hours	294	295	369	400	452	457	0
Sum of minutes with flicker	1414	1706	2231	2005	754		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ07 - TRQ07  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

	July	August	September	October	November	December
1	05:40	06:05 06:34-06:50/16	06:38 18:40-19:25/45	07:10 16:53-18:34/101	06:46 15:52-16:44/52	07:22 15:59-16:16/17
	20:54	20:34 19:04-19:30/26	19:49 06:59-07:24/25	18:57	17:08	16:43 07:47-08:13/26
2	05:41	06:06 06:33-06:51/18	06:39 18:40-19:23/43	07:11 16:52-18:32/100	06:47 15:53-16:43/50	07:23 16:01-16:17/16
	20:54	20:33 19:02-19:31/29	19:48 07:00-07:23/23	18:55	17:07	16:42 07:48-08:14/26
3	05:41	06:07 06:32-06:52/20	06:40 18:40-19:22/42	07:12 16:50-18:30/100	06:48 15:55-16:42/47	07:24 07:49-08:15/26
	20:54	20:32 19:01-19:33/32	19:46 07:01-07:22/21	18:54	17:06	16:42 16:02-16:17/15
4	05:42	06:08 06:32-06:52/20	06:41 18:41-19:21/40	07:13 16:50-18:28/98	06:50 15:54-16:40/46	07:25 07:50-08:16/26
	20:54	20:31 19:00-19:34/34	19:44 07:02-07:21/19	18:52	17:05	16:42 16:04-16:16/12
5	05:42	06:09 06:32-06:52/20	06:42 18:42-19:19/37	07:14 16:49-18:27/98	06:51 15:53-16:39/46	07:26 07:51-08:18/27
	20:54	20:30 18:59-19:35/36	19:43 07:03-07:18/15	18:50	17:03	16:42 16:05-16:16/11
6	05:43	06:10 06:33-06:52/19	06:43 18:43-19:18/35	07:15 16:47-18:25/98	06:52 15:53-16:38/45	07:27 07:52-08:19/27
	20:53	20:28 18:57-19:36/39	19:41 07:04-07:16/12	18:48	17:02	16:41 16:06-16:16/10
7	05:44	06:11 06:34-06:52/18	06:44 18:44-19:16/32	07:16 16:46-18:24/98	06:53 15:52-16:37/45	07:28 07:53-08:20/27
	20:53	20:27 18:56-19:36/40	19:39	18:47	17:01	16:41 16:07-16:16/9
8	05:44	06:12 18:56-19:37/41	06:45 18:45-19:14/29	07:17 16:45-18:22/97	06:55 15:51-16:35/44	07:29 07:54-08:21/27
	20:53	20:26 06:35-06:52/17	19:37	18:45	17:00	16:41 16:09-16:15/6
9	05:45	06:14 18:55-19:37/42	06:46 18:47-19:11/24	07:19 16:44-18:20/96	06:56 15:51-16:35/44	07:30 07:55-08:22/27
	20:52	20:24 06:36-06:51/15	19:36	18:43	16:59	16:41 16:10-16:15/5
10	05:46	06:15 18:54-19:38/44	06:47 18:50-19:07/17	07:20 16:44-18:18/94	06:57 15:50-16:33/43	07:31 07:56-08:23/27
	20:52	20:23 06:37-06:51/14	19:34	18:42	16:58	16:41 16:11-16:14/3
11	05:46	06:16 18:53-19:38/45 06:38-06:50/12	06:48 18:55-19:01/6	07:21 16:44-18:17/93	06:58 15:50-16:32/42	07:32 07:56-08:22/26
	20:51	20:22 07:07-07:15/8	19:32	18:40	16:57	16:41 16:13-16:15/2
12	05:47	06:17 18:52-19:39/47 06:39-06:49/10	06:49 18:29-18:33/4	07:22 16:43-18:15/92	07:00 15:50-16:31/41	07:33 07:57-08:23/26
	20:51	20:20 07:04-07:18/14	19:30	18:38	16:56	16:41
13	05:48	06:18 18:52-19:39/47 06:40-06:48/8	06:50 18:23-18:38/15	07:23 16:43-18:13/90	07:01 15:50-16:30/40	07:34 07:58-08:24/26
	20:50	20:19 07:02-07:20/18	19:29	18:37	16:55 07:44-07:53/9	16:41
14	05:49	06:19 18:50-19:39/49 06:41-06:46/5	06:52 18:20-18:41/21	07:24 17:52-18:11/19	07:02 15:49-16:29/40	07:34 07:59-08:25/26
	20:50	20:18 07:00-07:21/21	19:27	18:35 16:42-17:51/69	16:54 07:42-07:55/13	16:42
15	05:50	06:20 18:49-19:39/50	06:53 18:17-18:42/25	07:25 17:54-18:10/16	07:03 15:50-16:28/38	07:35 08:00-08:26/26
	20:49	20:16 06:59-07:22/23	19:25	18:33 16:42-17:50/68	16:53 07:41-07:58/17	16:42
16	05:50	06:21 18:48-19:39/51	06:54 18:15-18:43/28	07:27 17:56-18:08/12	07:05 15:50-16:27/37	07:36 08:00-08:26/26
	20:49	20:15 06:57-07:23/26	19:23	18:32 16:41-17:50/69	16:52 07:40-07:59/19	16:42
17	05:51	06:22 18:47-19:39/52	06:55 18:13-18:44/31	07:28 18:02-18:07/5	07:06 15:50-16:26/36	07:37 08:01-08:27/26
	20:48	20:13 06:56-07:23/27	19:22	18:30 16:42-17:50/68	16:51 07:39-07:59/20	16:42
18	05:52	06:23 18:46-19:39/53	06:56 18:12-18:45/33	07:29 16:42-17:50/68	07:07 15:51-16:26/35	07:37 08:02-08:28/26
	20:47	20:12 06:56-07:24/28	19:20	18:29	16:50 07:39-08:01/22	16:43
19	05:53	06:24 18:45-19:38/53	06:57 18:11-18:45/34	07:30 16:41-17:49/68	07:08 15:51-16:25/34	07:38 08:02-08:28/26
	20:47	20:10 06:55-07:25/30	19:18	18:27	16:49 07:39-08:01/22	16:43
20	05:54	06:25 18:44-19:38/54	06:58 18:09-18:46/37	07:31 16:41-17:48/67	07:09 15:51-16:23/32	07:38 08:03-08:29/26
	20:46	20:09 06:54-07:25/31	19:16	18:26	16:49 07:38-08:02/24	16:43
21	05:55	06:26 18:43-19:38/55	06:59 18:04-18:46/42	07:32 16:42-17:48/66	07:11 15:51-16:22/31	07:39 08:03-08:29/26
	20:45	20:07 06:54-07:25/31	19:15	18:24	16:48 07:38-08:02/24	16:44
22	05:56	06:27 18:42-19:37/55	07:00 18:01-18:46/45	07:34 16:43-17:48/65	07:12 15:53-16:22/29	07:40 08:04-08:30/26
	20:44	20:06 06:53-07:25/32	19:13 17:18-17:34/16	18:22	16:47 07:38-08:03/25	16:44
23	05:57	06:28 18:42-19:36/54	07:01 17:59-18:46/47	07:35 16:43-17:49/66	07:13 15:53-16:21/28	07:40 08:04-08:30/26
	20:43	20:04 06:53-07:26/33	19:11 17:13-17:38/25	18:21	16:47 07:38-08:04/26	16:45
24	05:57	06:29 18:41-19:36/55	07:02 17:57-18:46/49	07:36 16:43-17:49/66	07:14 15:54-16:20/26	07:41 08:04-08:31/27
	20:42	20:02 06:53-07:26/33	19:09 17:09-17:41/32	18:20	16:46 07:38-08:04/26	16:45
25	05:58	06:30 18:41-19:35/54	07:03 17:55-18:45/50	06:37 15:44-16:51/67	07:15 15:54-16:20/26	07:41 08:05-08:31/26
	20:41	20:01 06:53-07:27/34	19:07 17:06-17:43/37	17:18	16:45 07:40-08:05/25	16:46
26	05:59	06:32 18:40-19:34/54	07:04 17:54-18:43/49	06:38 15:45-16:51/66	07:17 15:56-16:20/24	07:41 08:05-08:31/26
	20:41	19:59 06:53-07:27/34	19:06 17:03-17:44/41	17:17	16:45 07:41-08:06/25	16:47
27	06:00	06:33 18:40-19:33/53	07:05 17:52-18:41/49	06:40 15:45-16:51/66	07:18 15:56-16:19/23	07:42 08:05-08:31/26
	20:40	19:58 06:54-07:27/33	19:04 17:01-17:46/45	17:15	16:44 07:42-08:07/25	16:47
28	06:01 06:39-06:45/6	06:34 18:40-19:32/52	07:06 17:51-18:39/48	06:41 15:47-16:50/63	07:19 15:57-16:18/21	07:42 08:06-08:32/26
	20:39	19:56 06:55-07:27/32	19:02 16:59-17:47/48	17:14	16:44 07:43-08:08/25	16:48
29	06:02 06:37-06:47/10	06:35 18:40-19:30/50	07:08 17:50-18:37/47	06:42 15:48-16:48/60	07:20 15:58-16:18/20	07:42 08:06-08:32/26
	20:38	19:10-19:23/13	19:54 06:56-07:26/30	19:00 16:57-17:48/51	17:12	16:43 07:44-08:09/25
30	06:03 06:35-06:49/14	06:36 18:40-19:29/49	07:09 17:49-18:36/47	06:43 15:48-16:47/59	07:21 15:59-16:17/18	07:42 08:06-08:32/26
	20:36	19:08-19:26/18	19:53 06:57-07:26/29	18:59 16:55-17:48/53	17:11	16:49
31	06:04 06:34-06:50/16	06:37 18:40-19:27/47			06:45 15:50-16:46/56	07:43 08:06-08:32/26
	20:35	19:05-19:28/23	19:51 06:58-07:25/27		17:10	16:50
Potential sun hours	463	430	376	344	295	284
Sum of minutes with flicker	100	2228	1514	2484	1481	919

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ08 - TRQ08  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,98	4,87	5,46	6,60	8,30	9,30	10,54	9,73	7,82	6,08	4,48	3,95

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
488	1.218	2.039	904	404	473	641	645	678	389	220	210	8.309

	January	February	March	April	May	June
1	07:43 15:31-16:24/53 08:06-08:31/25	07:28 15:46-17:02/76	06:51 07:10-07:44/34	06:58 07:17-07:35/18	06:10 19:12-19:49/37	05:40 20:04-20:18/14
	16:51 14:40-15:17/37	17:27 08:16-08:39/23	18:03 17:16-17:41/25	19:39 07:46-07:56/10	20:12	20:43
2	07:43 15:32-16:25/53 08:06-08:32/26	07:27 15:47-17:04/77	06:49 07:09-07:44/35	06:56 07:15-07:34/19	06:09 19:13-19:49/36	05:40 20:05-20:19/14
	16:52 14:41-15:17/36	17:28 08:18-08:37/19	18:04 17:13-17:41/28	19:40	20:13	20:44
3	07:43 15:33-16:26/53 08:06-08:32/26	07:26 15:47-17:05/78	06:48 07:07-07:43/36	06:55 07:14-07:34/20	06:08 19:14-19:48/34	05:39 20:04-20:19/15
	16:53 14:43-15:16/33	17:29 08:20-08:35/15	18:05 17:13-17:43/30	19:41	20:14	20:45
4	07:43 15:33-16:27/54 08:06-08:33/27	07:25 15:48-17:07/79	06:46 07:05-07:42/37	06:53 07:12-07:33/21	06:06 19:14-19:47/33	05:39 20:04-20:20/16
	16:54 14:44-15:16/32	17:31 08:24-08:32/8	18:06 17:11-17:44/33	19:42	20:16	20:45
5	07:43 15:34-16:28/54 08:06-08:34/28	07:24 15:48-17:08/80	06:44 07:04-07:41/37	06:51 07:10-07:32/22	06:05 19:15-19:46/31	05:38 20:04-20:21/17
	16:55 14:45-15:16/31	17:32	18:07 17:10-17:46/36	19:43 19:17-19:21/4	20:17	20:46
6	07:43 15:35-16:30/55 08:06-08:35/29	07:23 15:49-17:09/80	06:43 07:02-07:40/38	06:49 07:08-07:30/22	06:04 19:17-19:45/28	05:38 20:03-20:21/18
	16:56 14:47-15:15/28	17:33	18:09 17:09-17:47/38	19:44 19:14-19:22/8	20:18	20:47
7	07:43 15:36-16:31/55 08:06-08:36/30	07:22 15:50-17:11/81	06:41 07:00-07:38/38	06:48 07:07-07:29/22	06:03 19:19-19:44/25	05:38 20:03-20:22/19
	16:57 14:49-15:15/26	17:35	18:10 17:07-17:48/41	19:45 19:13-19:24/11	20:19	20:48
8	07:43 15:36-16:31/55 08:05-08:36/31	07:21 15:52-17:12/80	06:39 06:59-07:36/37	06:46 07:05-07:26/21	06:01 19:20-19:42/22	05:37 20:03-20:22/19
	16:58 14:50-15:13/23	17:36	18:11 17:06-17:49/43	19:46 19:12-19:24/12	20:20	20:48
9	07:43 15:37-16:32/55 08:05-08:37/32	07:19 15:52-17:13/81	06:38 06:57-07:34/37	06:44 07:04-07:24/20	06:00 19:23-19:39/16	05:37 20:04-20:23/19
	16:59 14:53-15:12/19	17:37	18:12 17:06-17:51/45	19:48 19:10-19:25/15	20:21	20:49
10	07:42 15:38-16:34/56 08:05-08:38/33	07:18 15:54-17:15/81	06:36 17:05-17:52/47	06:43 07:06-07:23/17	05:59	05:37 20:03-20:23/20
	17:00 14:56-15:11/15	17:39	18:13 06:55-07:32/37	19:49 19:10-19:27/17	20:22	20:49
11	07:42 15:39-16:34/55 08:05-08:39/34	07:17 15:55-17:17/82	06:34 17:05-17:53/48	06:41 07:06-07:21/15	05:58	05:37 20:03-20:24/21
	17:01 15:00-15:06/6	17:40	18:15 06:53-07:29/36	19:50 19:09-19:28/19	20:23	20:50
12	07:42 15:40-16:36/56	07:16 15:57-17:17/80	06:33 17:05-17:55/50	06:39 07:07-07:19/12	05:57	05:37 20:03-20:24/21
	17:02 08:05-08:39/34	17:41	18:16 06:52-07:26/34	19:51 19:08-19:28/20	20:24	20:50
13	07:42 15:41-16:37/56	07:14 16:38-17:17/39	06:31 17:04-17:55/51	06:38 07:11-07:16/5	05:56	05:36 20:03-20:25/22
	17:03 08:05-08:40/35	17:42 15:58-16:36/38	18:17 06:50-07:23/33	19:52 19:09-19:30/21	20:25	20:51
14	07:41 15:41-16:38/57	07:13 16:39-17:17/38	06:29 17:04-17:54/50	06:36 19:08-19:31/23	05:54	05:36 20:03-20:25/22
	17:04 08:05-08:40/35	17:44 16:00-16:34/34	18:18 06:48-07:21/33	19:53	20:26	20:51
15	07:41 15:41-16:40/59	07:12 16:38-17:16/38	06:27 17:03-17:53/50	06:35 19:08-19:31/23	05:53	05:36 20:04-20:26/22
	17:06 08:06-08:41/35	17:45 16:02-16:31/29	18:19 06:47-07:19/32	19:54	20:27	20:52
16	07:40 15:41-16:41/60	07:10 16:39-17:15/36	06:26 17:04-17:54/50	06:33 19:09-19:33/24	05:52	05:36 20:04-20:26/22
	17:07 08:06-08:41/35	17:46 16:05-16:29/24	18:20 06:45-07:18/33	19:55	20:28	20:52
17	07:40 15:42-16:42/60	07:09 16:41-17:15/34	06:24 17:04-17:53/49	06:31 19:09-19:34/25	05:51	05:36 20:04-20:26/22
	17:08 08:06-08:42/36	17:48 16:10-16:26/16	18:22 06:43-07:16/33	19:57	20:29	20:53
18	07:39 15:42-16:43/61	07:07 07:27-07:34/7	06:22 17:04-17:52/48	06:30 19:10-19:35/25	05:50	05:36 20:04-20:26/22
	17:09 08:06-08:42/36	17:49 16:41-17:13/32	18:23 06:41-07:14/33	19:58	20:30	20:53
19	07:39 15:41-16:44/63	07:06 07:26-07:38/12	06:21 17:04-17:51/47	06:28 19:10-19:36/26	05:49	05:37 20:05-20:28/23
	17:10 08:06-08:42/36	17:50 16:43-17:13/30	18:24 06:40-07:12/32	19:59	20:31	20:53
20	07:38 15:42-16:46/64	07:05 07:24-07:39/15	06:19 17:05-17:51/46	06:27 19:12-19:37/25	05:49	05:37 20:05-20:28/23
	17:11 08:07-08:43/36	17:51 16:43-17:11/28	18:25 06:39-07:12/33	20:00	20:32	20:54
21	07:38 15:42-16:47/65	07:03 07:23-07:41/18	06:17 17:05-17:49/44	06:25 19:13-19:38/25	05:48	05:37 20:05-20:28/23
	17:13 08:07-08:43/36	17:53 16:46-17:10/24	18:26 06:38-07:11/33	20:01	20:33	20:54
22	07:37 15:42-16:48/66	07:02 07:21-07:42/21	06:15 17:06-17:48/42	06:23 19:12-19:40/28	05:47	05:37 20:05-20:28/23
	17:14 08:07-08:43/36	17:54 16:47-17:07/20	18:27 06:38-07:11/33	20:02	20:34	20:54
23	07:36 15:42-16:49/67	07:00 07:20-07:43/23	06:14 17:07-17:47/40	06:22 19:11-19:40/29	05:46	05:37 20:05-20:28/23
	17:15 08:08-08:43/35	17:55 16:51-17:04/13	18:28 06:38-07:11/33	20:03	20:35	20:54
24	07:35 15:43-16:52/69	06:59 07:18-07:44/26	06:12 17:08-17:45/37	06:20 19:12-19:42/30	05:45	05:38 20:06-20:28/22
	17:16 08:09-08:43/34	17:56	18:30 06:38-07:10/32	20:04	20:36	20:54
25	07:35 15:43-16:53/70	06:57 07:17-07:45/28	06:10 17:09-17:43/34	06:19 19:11-19:42/31	05:44 20:11-20:12/1	05:38 20:06-20:28/22
	17:18 08:09-08:43/34	17:58	18:31 06:38-07:09/31	20:06	20:37	20:54
26	07:34 15:43-16:54/71	06:55 07:15-07:44/29	06:08 06:27-06:29/2 06:38-07:08/30	06:18 19:11-19:44/33	05:44 20:09-20:13/4	05:38 20:06-20:28/22
	17:19 08:10-08:43/33	17:59 17:24-17:37/13	18:32 17:11-17:41/30	20:07	20:38	20:55
27	07:33 15:44-16:55/71	06:54 07:13-07:44/31	06:07 06:26-06:32/6 06:39-07:08/29	06:16 19:11-19:44/33	05:43 20:08-20:14/6	05:39 20:07-20:29/22
	17:20 08:11-08:42/31	18:00 17:20-17:38/18	18:33 17:13-17:39/26	20:08	20:39	20:55
28	07:32 15:44-16:57/73	06:52 07:12-07:45/33	06:05 06:24-06:34/10 06:39-07:06/27	06:15 19:11-19:46/35	05:42 20:07-20:14/7	05:39 20:07-20:28/21
	17:22 08:11-08:42/31	18:01 17:18-17:40/22	18:34 17:16-17:36/20	20:09	20:40	20:55
29	07:31 15:44-16:58/74		07:03 07:22-07:34/12 07:40-08:04/24	06:13 19:12-19:47/35	05:42 20:07-20:16/9	05:39 20:07-20:29/22
	17:23 08:12-08:41/29		19:35 18:20-18:31/11	20:10	20:41	20:55
30	07:30 15:45-17:00/75		07:01 07:20-07:34/14	06:12 19:11-19:47/36	05:41 20:05-20:16/11	05:40 20:07-20:28/21
	17:24 08:13-08:41/28		19:36 07:41-08:02/21	20:11	20:42	20:55
31	07:29 15:45-17:01/76		07:00 07:19-07:35/16		05:41	
	17:25 08:15-08:40/25		19:37 07:44-08:00/16		20:42	
Potential sun hours	294	295	369	400	452	457
Sum of minutes with flicker	3188	1789	2206	857	312	612

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker





Project:

Tarquinia1

Licensed user:

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0254118173

Andrea / fronteddu@montanambiente.com

Calculated:

06/08/2022 14:40/3.5.584

SHADOW - Calendar per WTG

Calculation: Shadow\_realWTG: TRQ08 - TRQ08
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VIGNA DI VALLE]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,98 4,87 5,46 6,60 8,30 9,30 10,54 9,73 7,82 6,08 4,48 3,95

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
488 1.218 2.039 904 404 473 641 645 678 389 220 210 8.309

Table with columns for months (July to December) and rows for specific times (05:40 to 20:35). Includes 'Potential sun hours' and 'Sum of minutes with flicker' at the bottom.

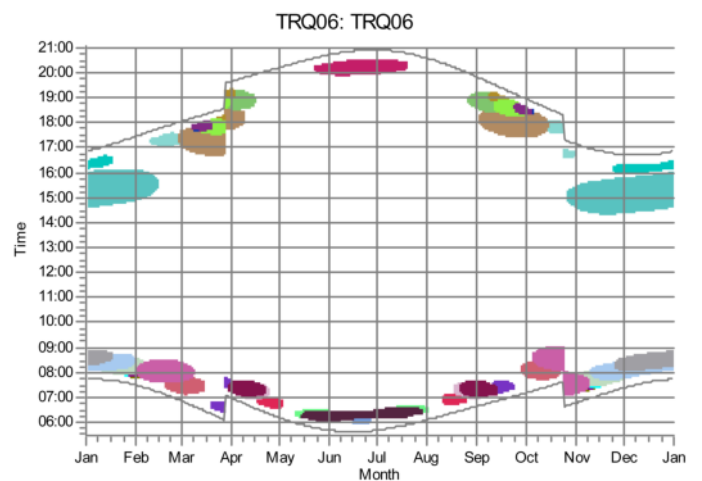
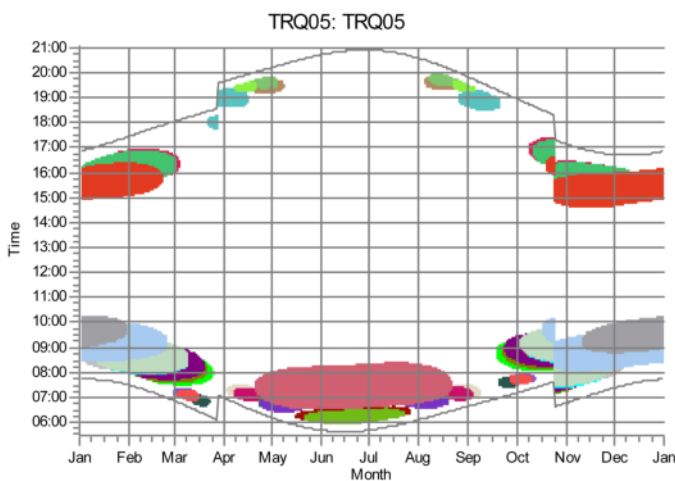
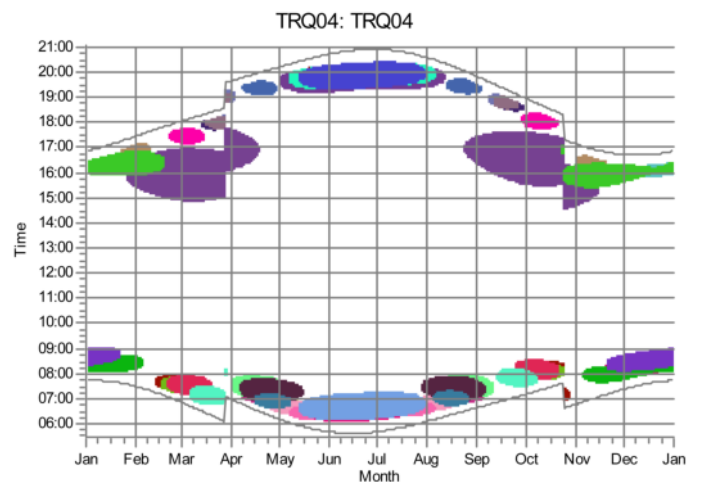
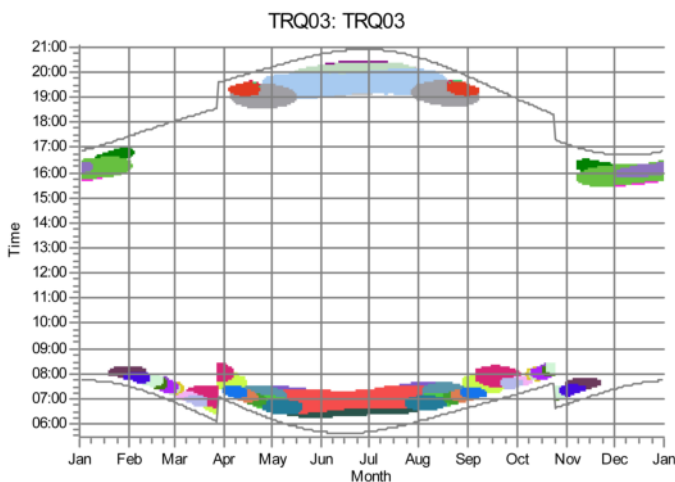
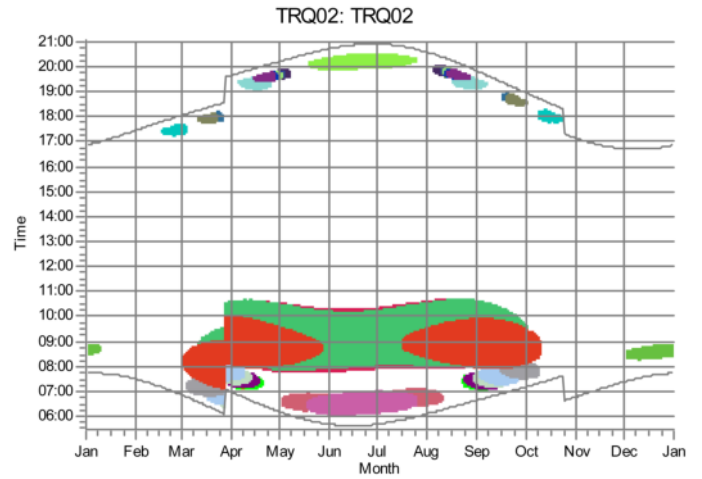
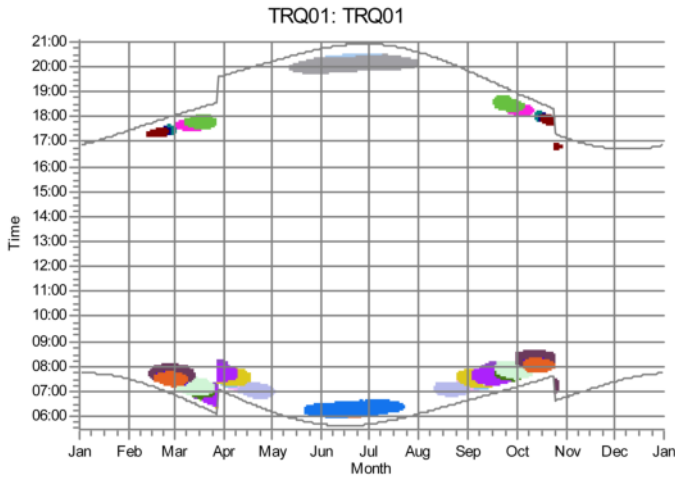
Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



## SHADOW - Calendar per WTG, graphical

Calculation: Shadow\_real



Shadow receptors

A: 8	M: 32	AY: 120	BH: 132	BK: 153	CL: 177	CW: 198	DI: 211	DR: 221	EB: 4	EL: 50
E: 13	N: 33	AZ: 121	BP: 142	BY: 154	CO: 183	CY: 201	DJ: 212	DS: 222	EC: 190	EQ: 155
F: 14	O: 34	BA: 123	BQ: 144	BZ: 156	CP: 184	CZ: 202	DK: 214	DT: 223	ED: 2	ER: 163
G: 17	P: 35	BB: 124	BR: 146	CB: 162	CQ: 185	DA: 203	DL: 215	DU: 225	EE: 129	ES: 12
H: 20	U: 48	BC: 125	BS: 147	CC: 165	CR: 191	DD: 206	DM: 216	DV: 226	EG: 141	
I: 28	V: 49	BD: 126	BT: 149	CE: 168	CS: 193	DE: 207	DN: 217	DW: 227	EH: 181	
J: 29	AW: 117	BE: 128	BU: 150	CI: 172	CT: 194	DF: 208	DO: 218	DX: 228	EI: 188	
K: 30	AX: 119	BF: 130	BV: 151	CJ: 173	CU: 195	DG: 209	DP: 219	DZ: 1	EJ: 187	
L: 31		BG: 131	BW: 152	CK: 176	CV: 196	DH: 210	DQ: 220	EA: 3	EK: 186	

Project:

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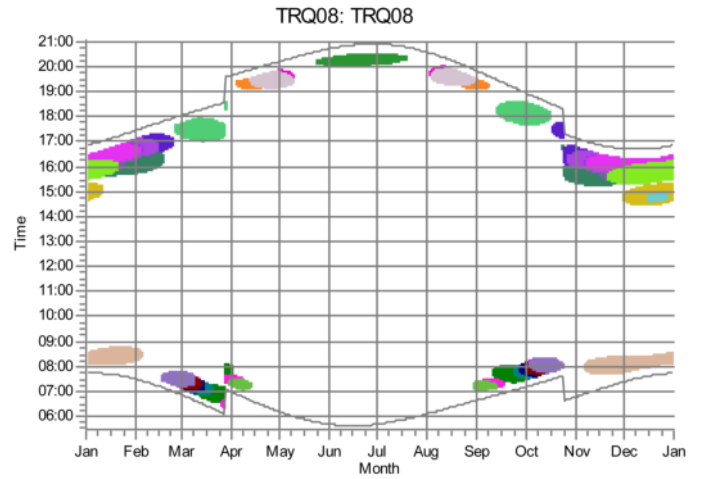
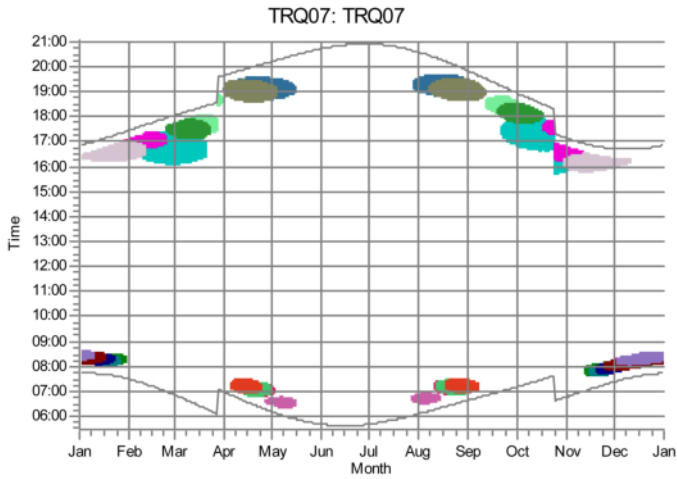
Andrea / fronteddu@montanambiente.com

Calculated:

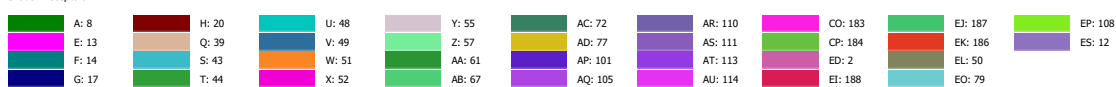
06/08/2022 14:40/3.5.584

## SHADOW - Calendar per WTG, graphical

Calculation: Shadow\_real

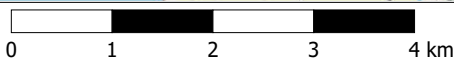
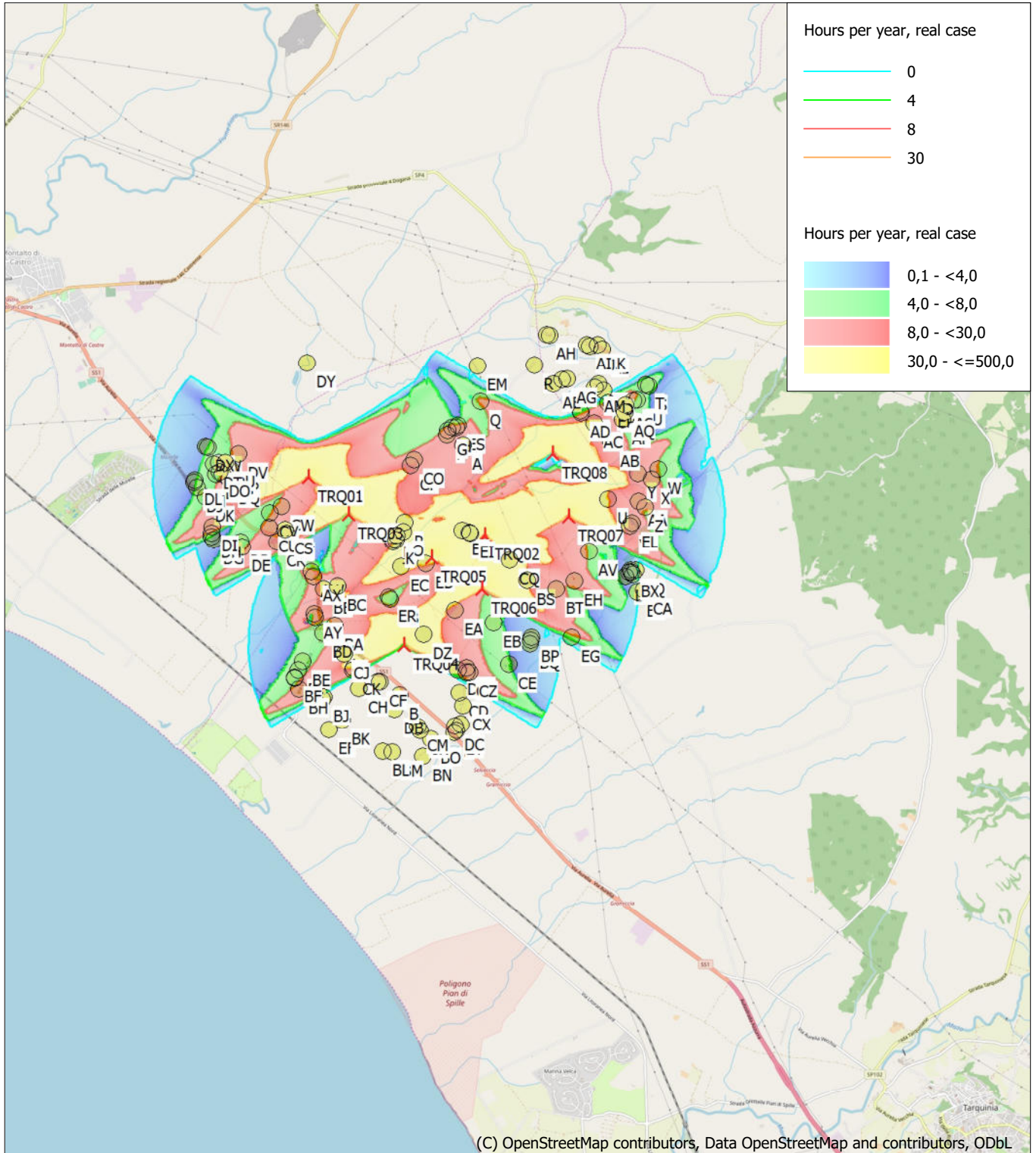


Shadow receptors



## SHADOW - Map

Calculation: Shadow\_real



Map: EMD OpenStreetMap , Print scale 1:75.000, Map center Geo WGS84 East: 11,682282° E North: 42,313669° N

New WTG

Shadow receptor

Flicker map level: Height Contours: CONTOURLINE\_ONLINEDATA\_0.wpo (1)

Time step: 2 minutes, Day step: 3 days, Map resolution: 10 m, Visibility resolution: 5 m, Eye height: 1,5 m