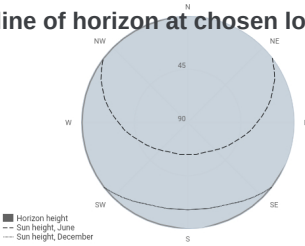
Performance of off-grid PV system

PVGIS-5 estimates of solar electricity generation

Provided inputs

Latitude/Longitude:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">40.883,8
Horizon:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">Calculated
Database used:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">PVGIS-S
PV installed:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">3600 Wp
Battery capacity:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">16920 Wh
Cutoff limit:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">40 %
Consumption per day:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">5600 Wh

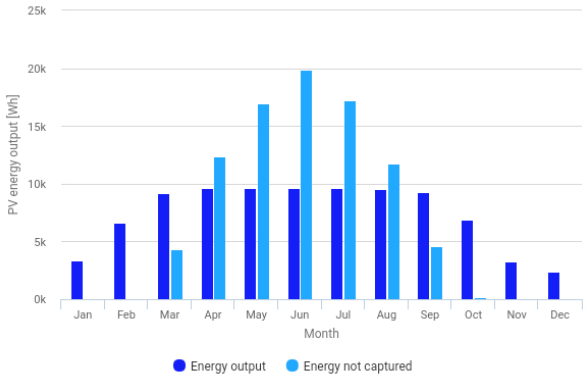
Outline of horizon at chosen location:



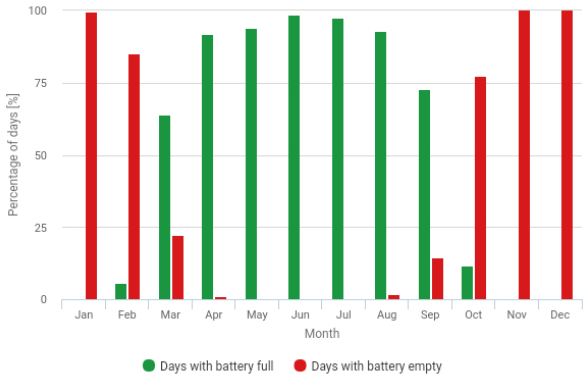
Simulation outputs

Slope angle:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">fünfze
Azimuth angle:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">180</f
Yearly PV energy production:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">6602
Yearly in-plane irradiation:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">1918
Year-to-year variability:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">52.67<
Yearly total energy content of supplied electricity:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">41.57<
Yearly number of days when battery became full:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">13918
Yearly number of days when battery became empty:	<font style="vertical-align: inherit;"><font style="vertical-align: inherit;">5256.6

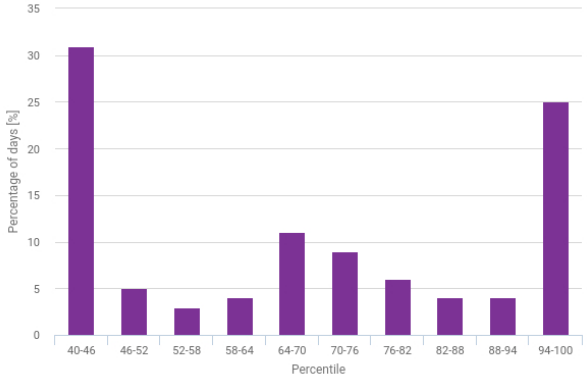
Power production estimate for off-grid PV:



Battery performance for off-grid PV system:



Probability of battery charge state at the end of the day:



Monthly average performance

Month	E_d	E_l	f_f	f_e
January	3320.4	0.0	0.0	99.8
February	6608.2	119.8	5.6	85.0
March	9209.7	4300.6	63.9	22.4
April	9602.6	12395.5	91.9	1.0
May	9596.4	16973.7	94.0	0.4
June	9605.9	19868.8	98.8	0.0
July	9595.9	17247.7	97.4	0.2
August	9552.2	11736.5	92.9	1.6
September	9263.9	4619.6	72.7	14.4
October	6905.3	171.1	11.5	77.2
November	3264.8	0.0	0.0	100.0
December	2361.6	0.0	0.0	100.0

E_d: Average energy production per day [Wh/day].
E_l: Average energy not captured per day [Wh/day].
f_f: Percentage of days when battery became full [%].
f_e: Percentage of days when battery became empty [%].

Cs	Cb
40-46	31.0
46-52	5.0
52-58	3.0
58-64	4.0
64-70	11.0
70-76	9.0
76-82	6.0
82-88	4.0
88-94	4.0
94-100	25.0

Cs: Charge state at the end of each day [%].
Cb: Percentage of days with this charge state [%].

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