

Performance of off-grid PV system

PVGIS-5 estimates of solar electricity generation

Provided inputs

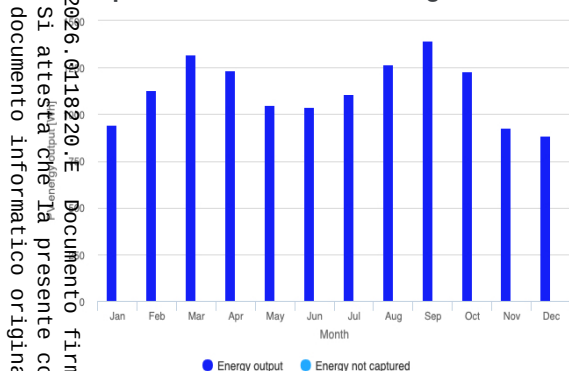
Latitude/Longitude: 44.799,10.329
Horizon: Calculated
Database used: PVGIS-SARAH3
Installed: 500 Wp
Battery capacity: 2400 Wh
Cutoff limit: 10 %
Consumption per day: 3000 Wh

Slope angle: 90 °
Azimuth angle: 0 °

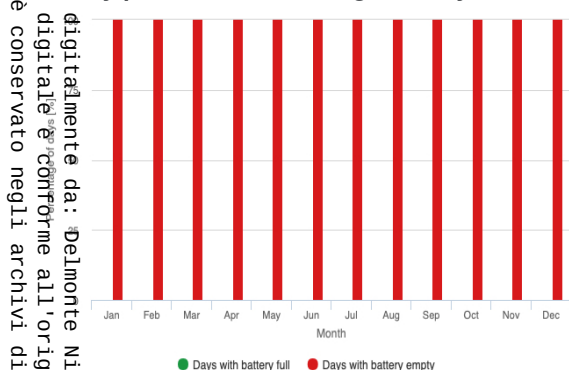
Simulation outputs

Percentage days with full battery: 0.01 %
Percentage days with empty battery: 99.99 %
Average energy not captured: 424.26 Wh
Average energy missing: 1873.11 Wh

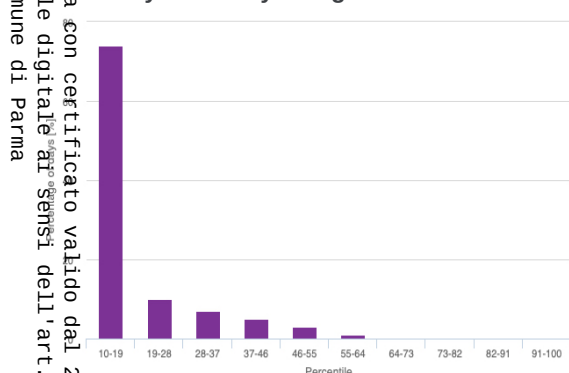
Power production estimate for off-grid PV:



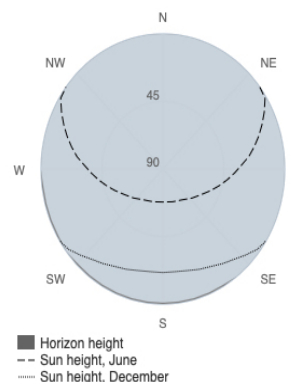
Battery performance for off-grid PV system:



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



Outline of horizon at chosen location:



Monthly average performance

Month	E_d	E_l	f_f	f_e
January	941.6	0.7	0.2	99.8
February	1129.1	0.0	0.0	100.0
March	1320.8	0.0	0.0	100.0
April	1234.5	0.0	0.0	100.0
May	1051.8	0.0	0.0	100.0
June	1037.7	0.0	0.0	100.0
July	1105.8	0.0	0.0	100.0
August	1268.3	0.0	0.0	100.0
September	1394.4	0.0	0.0	100.0
October	1228.9	0.0	0.0	100.0
November	926.5	0.0	0.0	100.0
December	887.0	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
10-19	74.0
19-28	10.0
28-37	7.0
37-46	5.0
46-55	3.0
55-64	1.0
64-73	0.0
73-82	0.0
82-91	0.0
91-100	0.0

Cs: Charge state at the end of each day [%].

Cb: Percentage of days with this charge state [%].

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