

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

Provided inputs: Latitude/Longitude: 45.614,8.044

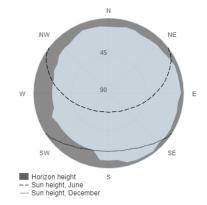
Horizon: Calculated
Database used: PVGIS-SARAH2
PV technology: Crystalline silicon

PV installed: 1 kWp System loss: 14 % Simulation outputs

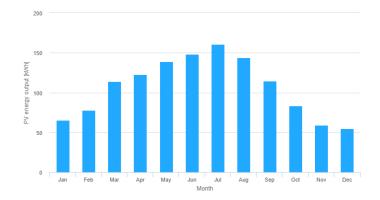
Slope angle: 23 °
Azimuth angle: -19 °
Yearly PV energy production: 1282.84 kWh
Yearly in-plane irradiation: 1635.08 kWh/m²
Year-to-year variability: 62.86 kWh
Changes in output due to:

Angle of incidence: -2.63 %
Spectral effects: 0.95 %
Temperature and low irradiance: -7.19 %
Total loss: -21.54 %

Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Εm	H(i) m	SD n
65.5	77.3	9.2
77.9	93.4	12.7
113.7	139.8	16.1
122.4	155.1	18.9
139.1	179.8	13.9
148.0	195.6	12.1
160.8	215.2	11.1
143.9	190.8	11.3
114.3	147.4	10.3
83.5	103.7	13.7
59.0	71.9	13.6
54.7	65.1	9.7
	77.9 113.7 122.4 139.1 148.0 160.8 143.9 114.3 83.5 59.0	65.5 77.3 77.9 93.4 113.7 139.8 122.4 155.1 139.1 179.8 148.0 195.6 160.8 215.2 143.9 190.8 114.3 147.4 83.5 103.7 59.0 71.9

E_m: Average monthly electricity production from the defined system [kWh].

 $H(i)_m$: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m²].

SD_m: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].

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