

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

Provided inputs:

Latitude/Longitude: 52.408, 16.930
Horizon: Calculated
Database used: PVGIS-CMSAF
PV technology: Crystalline silicon
PV installed: 3.4 kWp
System loss: 14 %

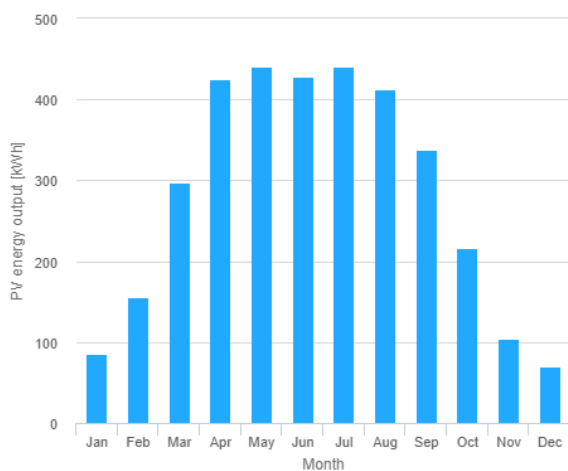
Simulation outputs

Slope angle: 35 °
Azimuth angle: 0 °
Yearly PV energy production: 3420 kWh
Yearly in-plane irradiation: 1290 kWh/m²
Year to year variability: 178.00 %
Changes in output due to:
Angle of incidence: -3.1 %
Spectral effects: 1.8 %
Temperature and low irradiance: -8.2 %
Total loss: -22.2 %

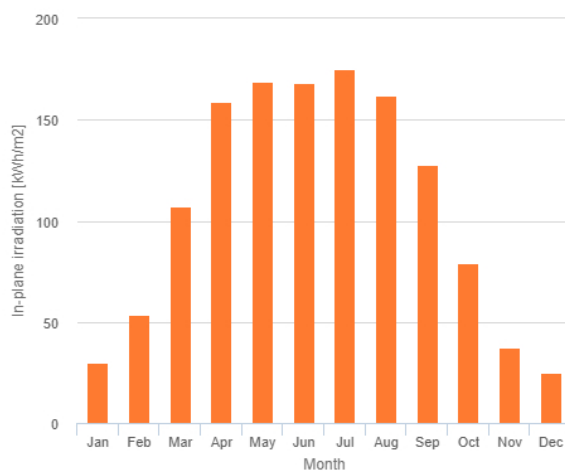
Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	Em	Hm	SDm
January	85	29.7	12.6
February	156	53.8	47.1
March	298	107	53.5
April	426	159	61.5
May	441	169	59.9
June	429	168	35.1
July	441	175	46.3
August	413	162	40.6
September	338	128	42.3
October	217	79.1	46.9
November	105	37.6	34.4
December	69.5	25	15.9

Em: Average monthly electricity production from the given system [kWh].

Hm: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m²].

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