

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: 5.1 kWp
System loss: 14 %

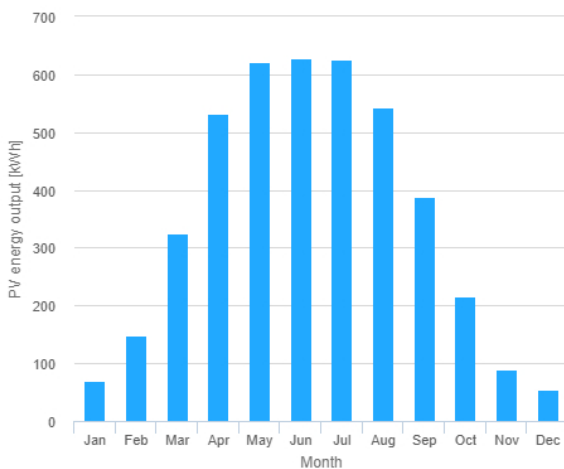
Simulation outputs

Slope angle: 35 °
Azimuth angle: -90 °
Yearly PV energy production: 4240 kWh
Yearly in-plane irradiation: 1070 kWh/m²
Year to year variability: 151.00 %
Changes in output due to:
Angle of incidence: -3.6 %
Spectral effects: 1.6 %
Temperature and low irradiance: -8 %
Total loss: -22.5 %

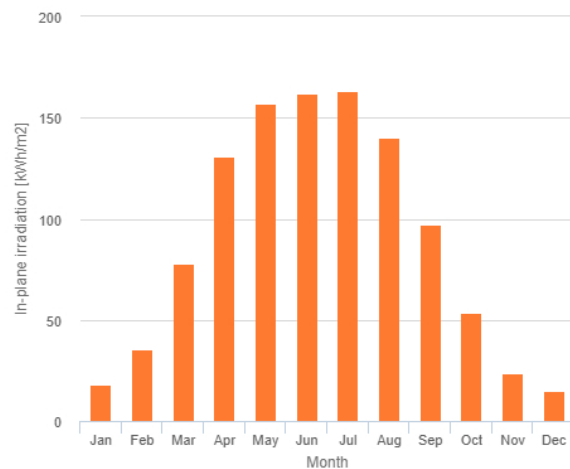
Outline of horizon at chosen location:



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	70.1	18.2	7
February	148	35.5	33.3
March	324	77.7	38.6
April	533	131	58.3
May	621	157	81.3
June	629	162	55.7
July	626	163	73.7
August	542	140	39.4
September	388	97.4	35.1
October	216	53.6	36.5
November	90.2	23.5	20.6
December	54.1	14.8	9.09

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].