

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

Provided inputs: Latitude/Longitude: 41.281, 36.337

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

PV installed: 10 kWp System loss: 14 % Simulation outputs

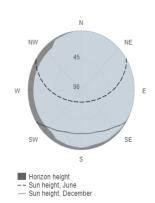
Slope angle: 35° Azimuth angle: 0°

Yearly PV energy production: 11733.73 kWh
Yearly in-plane irradiation: 1508.85 kWh/m²
Year-to-year variability: 558.99 kWh

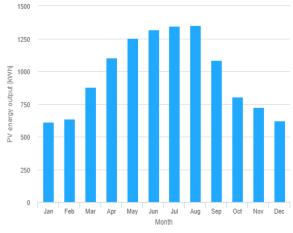
Changes in output due to:

Angle of incidence: -2.74 %
Spectral effects: 0.9 %
Temperature and low irradiance: -7.86 %
Total loss: -22.23 %

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	E_m	H(i)_m	SD_m
January	614.3	73.8	127.2
February	636.5	77.9	93.2
March	877.8	109.6	83.5
April	1101.8	140.9	159.7
May	1250.6	164.3	148.7
June	1317.6	175.8	148.6
July	1346.9	179.1	137.1
August	1350.8	178.9	120.8
September	1084.3	140.5	108.4
October	805.7	103.3	135.1
November	725.0	89.5	121.6
December	622.3	75 1	105.6

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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