

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: 8.84 kWp
System loss: 14 %

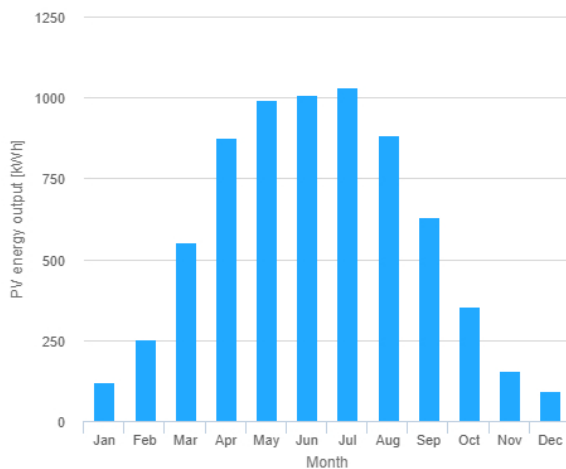
Simulation outputs

Slope angle: 35 °
Azimuth angle: 90 °
Yearly PV energy production: 6960 kWh
Yearly in-plane irradiation: 1030 kWh/m²
Year to year variability: 302.00 %
Changes in output due to:
Angle of incidence: -3.9 %
Spectral effects: 1.6 %
Temperature and low irradiance: -8.7 %
Total loss: -23.3 %

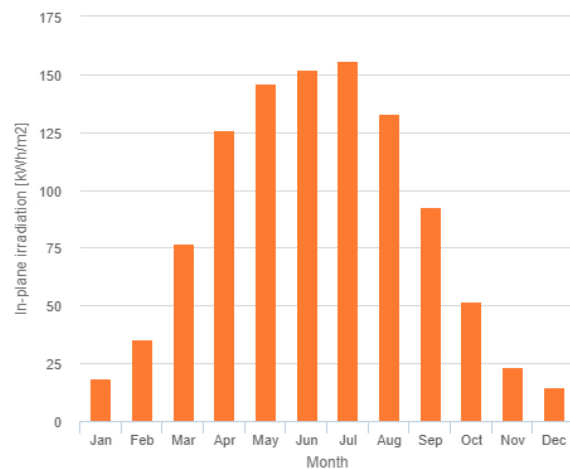
Outline of horizon at chosen location:



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 | 122 | 18.4 | 13 |
| February | 253 | 35.2 | 54.9 |
| March | 552 | 76.9 | 74.4 |
| April | 878 | 126 | 125 |
| May | 993 | 146 | 114 |
| June | 1010 | 152 | 69.3 |
| July | 1030 | 156 | 95.3 |
| August | 885 | 133 | 72.8 |
| September | 632 | 92.7 | 69.5 |
| October | 354 | 51.6 | 58.5 |
| November | 155 | 23.4 | 37.2 |
| December | 91.7 | 14.7 | 14.6 |

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].