

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: 8.16 kWp
System loss: 14 %

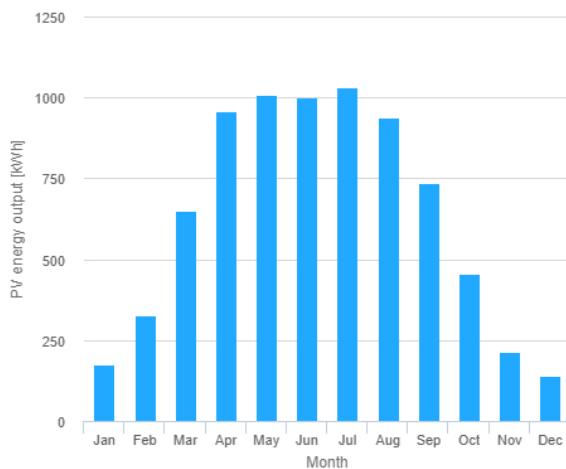
Simulation outputs

Slope angle: 35 °
Azimuth angle: 45 °
Yearly PV energy production: 7640 kWh
Yearly in-plane irradiation: 1210 kWh/m²
Year to year variability: 392.00 %
Changes in output due to:
Angle of incidence: -3.2 %
Spectral effects: 1.7 %
Temperature and low irradiance: -8.5 %
Total loss: -22.5 %

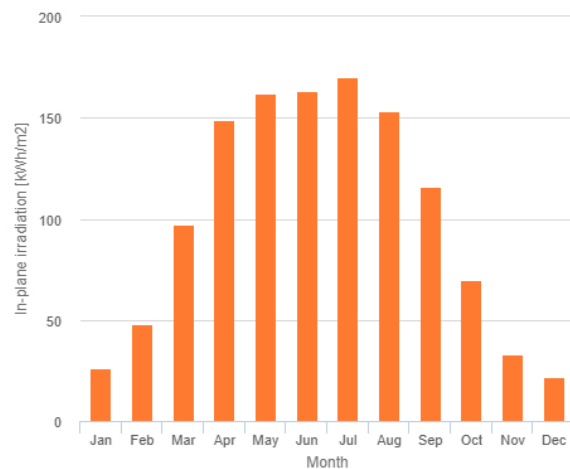
Outline of horizon at chosen location:



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 | 174 | 26.1 | 24.4 |
| February | 329 | 47.7 | 93.2 |
| March | 651 | 97.3 | 112 |
| April | 959 | 149 | 146 |
| May | 1010 | 162 | 130 |
| June | 1000 | 163 | 75.1 |
| July | 1030 | 170 | 101 |
| August | 939 | 153 | 89.1 |
| September | 737 | 116 | 92.1 |
| October | 456 | 69.9 | 92.9 |
| November | 215 | 32.9 | 67.3 |
| December | 139 | 21.6 | 29.2 |

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].