# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

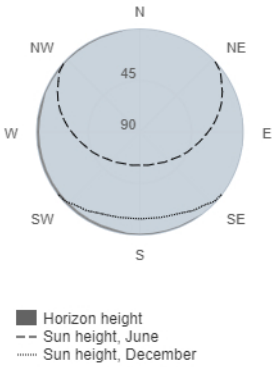
**Provided inputs:**

| | |
|---|---|
| Latitude/Longitude: | 52.408, 16.930 |
| Horizon: | Calculated |
| Database used: | PVGIS-CMSAF |
| PV technology: | Crystalline silicon |
| PV installed: | 2.72 kWp |
| System loss: | 14 % |

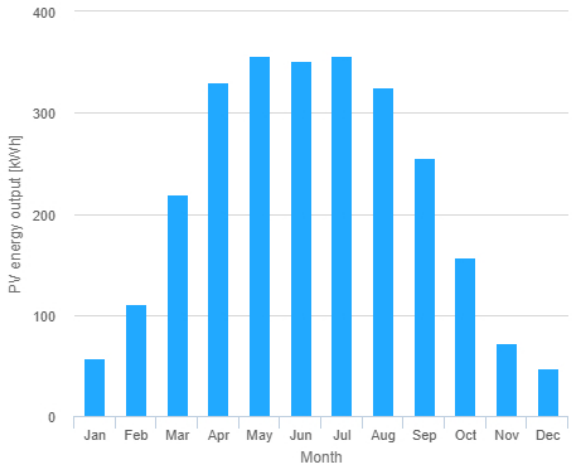
**Simulation outputs**

| | |
|---|---|
| Slope angle: | 35 ° |
| Azimuth angle: | -45 ° |
| Yearly PV energy production: | 2630 kWh |
| Yearly in-plane irradiation: | 1240 kWh/m² |
| Year to year variability: | 120.00 % |
| Changes in output due to: | |
| Angle of incidence: | -3.1 % |
| Spectral effects: | 1.7 % |
| Temperature and low irradiance: | -8.1 % |
| Total loss: | -22.1 % |

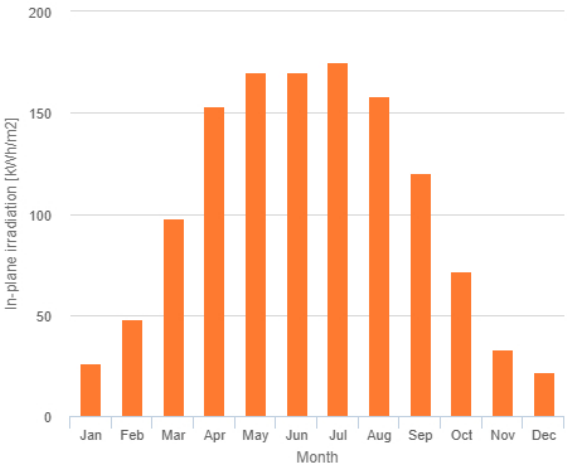
**Outline of horizon at chosen location:**




**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 | 57.9 | 25.9 | 7.93 |
| February | 111 | 48 | 31.3 |
| March | 219 | 97.8 | 35.1 |
| April | 330 | 153 | 42.9 |
| May | 356 | 170 | 48.9 |
| June | 351 | 170 | 31.5 |
| July | 356 | 175 | 41.1 |
| August | 325 | 158 | 28.9 |
| September | 255 | 120 | 28.6 |
| October | 157 | 71.6 | 32.5 |
| November | 72.1 | 33 | 22 |
| December | 46.8 | 21.7 | 10.1 |

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].



Joint Research Centre



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