

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

Provided inputs:

Latitude/Longitude: 32.222,-7.940
Horizon: Calculated
Database used: PVGIS-SARAH2
PV technology: Crystalline silicon

PV installed: 1455 kWp System loss: 8 % Simulation outputs

Slope angle: 31 (opt) $^{\circ}$ Azimuth angle: 0 (opt) $^{\circ}$

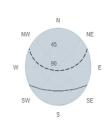
Yearly PV energy production: 2783343.22 kWh
Yearly in-plane irradiation: 2353.06 kWh/m²
Year-to-year variability: 65896.07 kWh

Changes in output due to:

Angle of incidence: -2.58 %
Spectral effects: 0.17 %
Temperature and low irradiance: -9.45 %
Total loss: -18.7 %

PV electricity cost [per kWh]: 0.439 per kWh

Outline of horizon at chosen location:

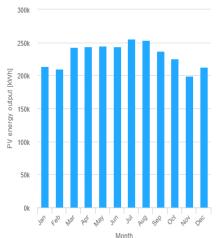


Horizon height

-- Sun height, June

Sun height, December

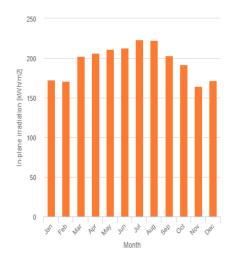
Monthly energy output from fix-angle PV system:



Monthly PV energy and solar irradiation

| - | | | |
|-----------|--------|-----------------|---------|
| Month | E_m | H(i)_m | SD_m |
| January | 213577 | . 8 72.4 | 18472.2 |
| February | 210095 | .071.1 | 21656.1 |
| March | 242849 | .2 02.1 | 13989.1 |
| April | 244046 | .2 06.7 | 10745.9 |
| May | 244874 | .2 11.1 | 14352.1 |
| June | 243525 | .2 12.6 | 8772.2 |
| July | 255104 | . 2 23.7 | 5358.4 |
| August | 253865 | .0 22.3 | 7584.3 |
| September | 236889 | . 2 03.3 | 9225.3 |
| October | 225636 | . 3 91.8 | 11361.7 |
| November | 199745 | .964.2 | 16115.9 |
| December | 213132 | . 5 71.8 | 13462.7 |
| | | | |

Monthly in-plane irradiation for fixed-angle:



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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