

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

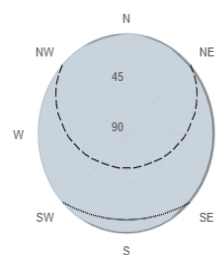
Provided inputs:

Latitude/Longitude: 54.040,21.772
Horizon: Calculated
Database used: PVGIS-SARAH3
PV technology: Cryst Sil Original
PV installed: 148 kWp
System loss: 14 %

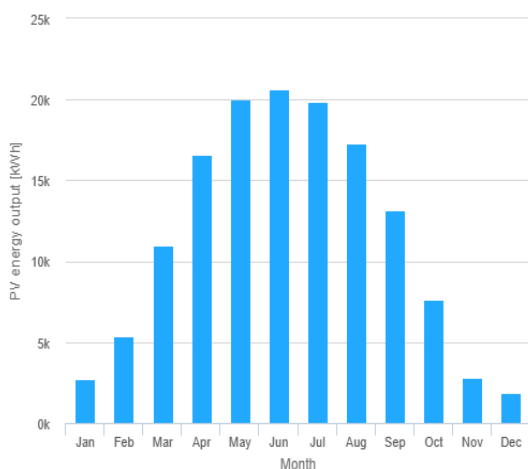
Simulation outputs

Slope angle: 15 °
Azimuth angle: 9 °
Yearly PV energy production: 139009.64 kWh
Yearly in-plane irradiation: 1175.52 kWh/m²
Year-to-year variability: 5659.61 kWh
Changes in output due to:
Angle of incidence: -3.56 %
Spectral effects: 1.64 %
Temperature and low irradiance: -5.22 %
Total loss: -20.1 %

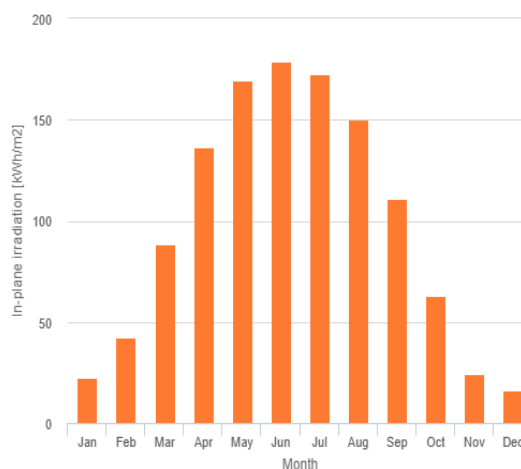
Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	2715.1	22.7	674.1
February	5338.6	42.6	1053.4
March	11018.888.3	2197.1	
April	16606.2136.6	2022.6	
May	20003.8169.7	2184.2	
June	20651.4178.7	2186.5	
July	19869.5172.4	1911.5	
August	17319.6149.9	1893.3	
September	13188.7110.8	1852.0	
October	7612.5	63.1	1623.4
November	2810.7	24.2	476.9
December	1874.9	16.4	431.8

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].