

# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

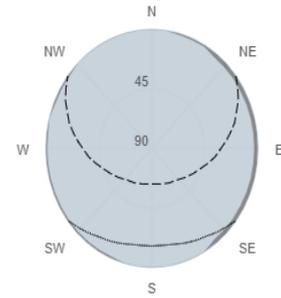
## Provided inputs:

Latitude/Longitude: 50.127,14.503  
 Horizon: Calculated  
 Database used: PVGIS-SARAH2  
 PV technology: Crystalline silicon  
 PV installed: 50 kWp  
 System loss: 14 %

## Simulation outputs

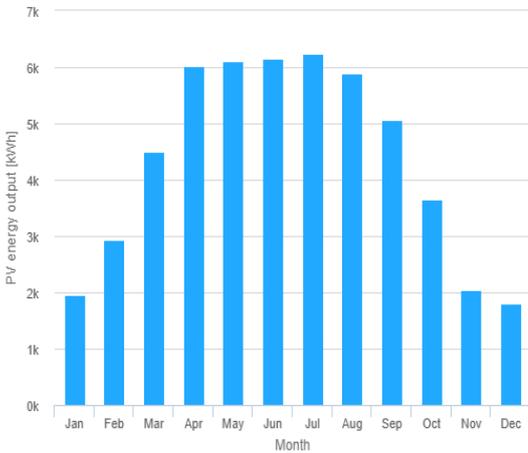
Slope angle: 38 (opt) °  
 Azimuth angle: 0 °  
 Yearly PV energy production: 52351.81 kWh  
 Yearly in-plane irradiation: 1361.5 kWh/m<sup>2</sup>  
 Year-to-year variability: 2770.05 kWh  
 Changes in output due to:  
 Angle of incidence: -2.96 %  
 Spectral effects: 1.69 %  
 Temperature and low irradiance: -9.39 %  
 Total loss: -23.1 %

## Outline of horizon at chosen location:

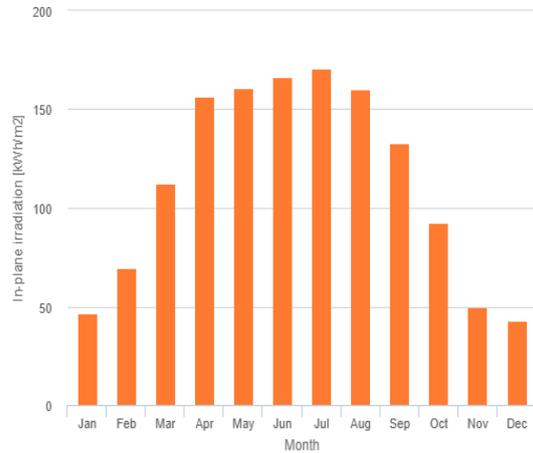


■ Horizon height  
 - - Sun height, June  
 - - Sun height, December

## Monthly energy output from fix-angle PV system:



## Monthly in-plane irradiation for fixed-angle:



## Monthly PV energy and solar irradiation

Month	E <sub>m</sub>	H(i) <sub>m</sub>	SD <sub>m</sub>
January	1965.6	46.3	396.0
February	2924.1	69.7	676.1
March	4508.7	112.6	746.9
April	6021.1	156.5	941.5
May	6116.4	161.0	815.0
June	6157.8	166.3	568.7
July	6229.7	170.7	593.7
August	5892.4	160.4	520.1
September	5063.1	133.1	622.0
October	3641.9	92.3	753.4
November	2033.3	49.7	409.6
December	1797.8	42.9	342.3

E<sub>m</sub>: Average monthly electricity production from the defined system [kWh].

H(i)<sub>m</sub>: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m<sup>2</sup>].

SD<sub>m</sub>: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].