

## Performance of Grid-connected PV

### PVGIS estimates of solar electricity generation

Location: 39°38'22" North, 2°54'1" East, Elevation: 102 m a.s.l.,  
 Solar radiation database used: PVGIS-classic

Nominal power of the PV system: 1000.0 kW (crystalline silicon)  
 Estimated losses due to temperature: 10.6% (using local ambient temperature)  
 Estimated loss due to angular reflectance effects: 2.6%  
 Other losses (cables, inverter etc.): 25.0%  
 Combined PV system losses: 34.7%

<b>Fixed system: inclination=35 deg., orientation=0 deg. (Optimum at given orientation)</b>				
Month	Ed	Em	Hd	Hm
Jan	2360.00	73200	3.42	106
Feb	2670.00	74800	3.92	110
Mar	3310.00	103000	4.97	154
Apr	3600.00	108000	5.50	165
May	3860.00	120000	6.00	186
Jun	3950.00	118000	6.23	187
Jul	3990.00	124000	6.36	197
Aug	3840.00	119000	6.14	190
Sep	3530.00	106000	5.55	166
Oct	3090.00	95800	4.77	148
Nov	2360.00	70700	3.51	105
Dec	2160.00	66800	3.13	97.1
Year	3230.00	98200	4.96	151
Total for year		1180000		1810

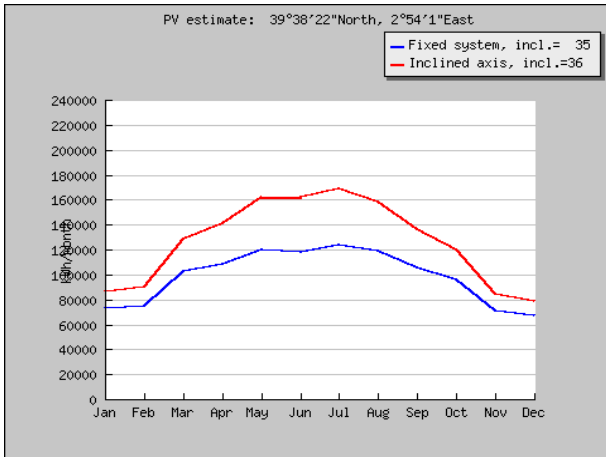
<b>Inclined axis tracking system optimal inclination=36°</b>				
Month	Ed	Em	Hd	Hm
Jan	2800.00	86800	4.05	126
Feb	3230.00	90500	4.75	133
Mar	4160.00	129000	6.22	193
Apr	4720.00	141000	7.15	214
May	5240.00	162000	8.04	249
Jun	5400.00	162000	8.39	252
Jul	5450.00	169000	8.56	266
Aug	5100.00	158000	8.08	250
Sep	4540.00	136000	7.10	213
Oct	3860.00	120000	5.95	185
Nov	2810.00	84300	4.18	125
Dec	2530.00	78400	3.66	114
Year	4160.00	126000	6.35	193
Total for year		1520000		2320

Ed: Average daily electricity production from the given system (kWh)

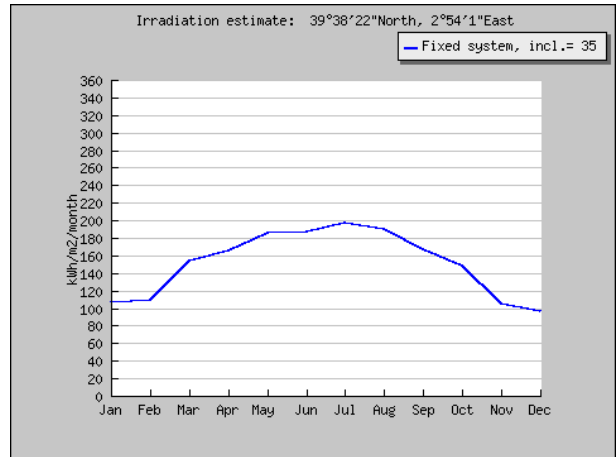
Em: Average monthly electricity production from the given system (kWh)

Hd: Average daily sum of global irradiation per square meter received by the modules of the given system (kWh/m<sup>2</sup>)

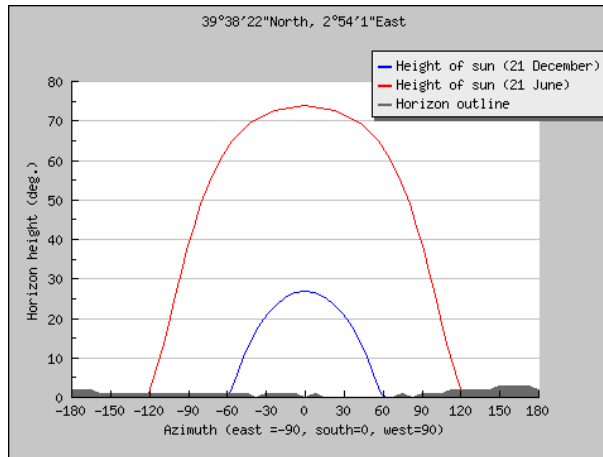
Hm: Average sum of global irradiation per square meter received by the modules of the given system (kWh/m<sup>2</sup>)



Monthly energy output from fixed-angle PV system



Monthly in-plane irradiation for fixed angle



Outline of horizon with sun path for winter and summer solstice

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