

Progetto 1MWp Catania sistema con inseguitore
Esecuzione e proprietà ECONTEK

Grid-connected PV system: Simulation parameters

Project : **1MWp Catania**

Geographical site : **Caltagirone (CT)** **Country** **Italy**

Situation : Latitude 37.1°N Longitude 14.3°E
Time defined as : Legal time Time zone UT+1 Altitude 500 m
Albedo 0.20

Meteo data : Caltagirone (CT) , synthetic hourly data

Simulation variant : **Simulation variant**
Simulation date 14/03/07 09h06

Simulation parameters :

Tracking plane, tilted axis Axis tilt 0° Axis Azimuth 30°
Rotation limitations Minimum Phi -45° Maximum Phi 45°

Horizon Free horizon

Near shadings No Shadings

PV array characteristics :

PV module: Si-poly Module name **KC 200GT**
Manufacturer Kyocera

Number of PV modules : in serie 23 modules in parallel 217 strings
Total number of PV modules : Nb. modules 4991 unit nom. power 200 Wp
Array global power Nominal (STC) **998 kWp** At oper. cond. 890 kWp (50°C)
Array operating characteristics (50°C) U mpp 546 V I mpp 1631 A
Total area Module area **7041 m²**

PV array loss factors :

Heat Loss Factor k (const) 29.0 W/m²K k (wind) 0.0 W/m²K / m/s
=> Nominal Oper. Coll. Temp. (800 W/m², Tamb=20°C, wind 1 m/s) NOCT 45 °C
Wiring ohmic losses Global field res. 10.9 mOhm Loss fraction 3.0 % at STC
Serie diode loss Voltage drop 0.7 V Loss fraction 0.1 % at STC
Module quality losses Loss fraction 3.0 %
Module mismatch losses Loss fraction 2.0 % at mpp
Incidence effect: "Ashrae" parametrization IAM = 1-bo (1/cos i - 1) bo 0.05

System parameter: System type **Grid-connected**

Inverter Model **Sunny Central 250 KVA**
Manufacturer SMA
Inverter characteristics Operating voltage 450-820 V Unit nom. power 250 kW AC
Inverter pack Number of inverters 4 units Total power 1000 kW AC

User's needs : Unlimited load (grid)

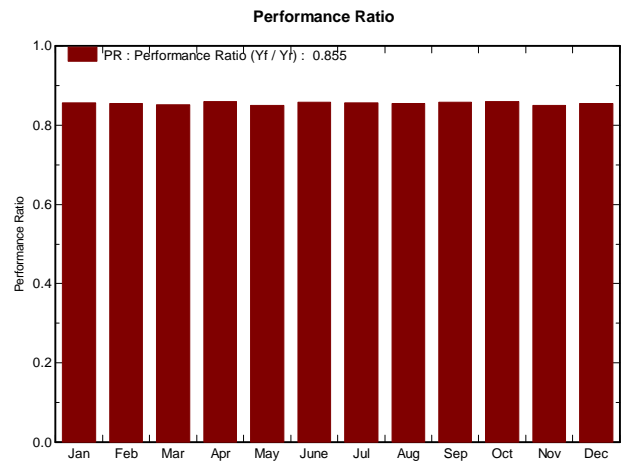
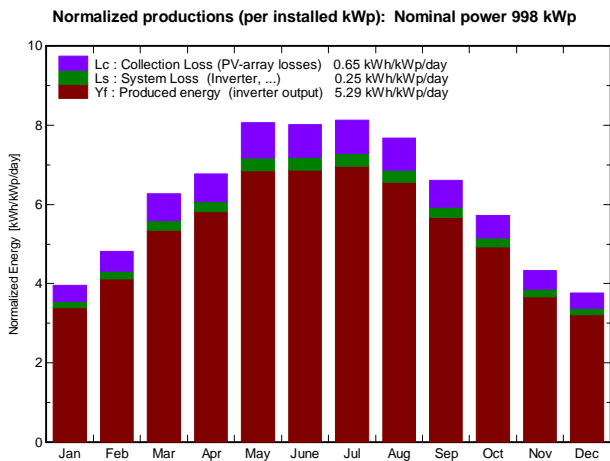
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Grid-connected PV system: Main results

Project : 1MWp Catania
Simulation variant : Simulation variant

Main system parameters	System type Grid-connected
PV field orientation Tracking, tilted axis, axis tilt:	30° axis azimuth 0°
PV modules Model	KC 200GT Pnom 200 Wp
PV array Nb of modules	4991 Pnom total 998 kWp
Inverter Model	Sunny Central 250 KVA Pnom 250 kWp ac
Inverter pack Nb of units	4 Pnom total 1000 kWp ac
User's needs Unlimited load (grid)	

Main simulation results			
System production	Produced energy 1927 MWh/year	Specific 1930 kWh/kWp/year	
	Performance ratio PR 85.5 %		



Simulation variant
Balances and main results

	GlobHor kWh/m ²	T Amb °C	GlobInc kWh/m ²	GlobEff kWh/m ²	EArray kWh	EOutInv kWh	EffArrR %	EffSysR %
January	71.6	-0.00	122.8	120.2	110004	104939	12.73	12.14
February	87.9	0.00	135.0	132.3	120641	115192	12.69	12.12
March	133.6	-0.00	194.5	191.1	173152	165268	12.64	12.07
April	159.9	0.00	203.0	198.8	182051	173988	12.74	12.17
May	196.2	-0.00	249.9	245.2	222031	211932	12.62	12.04
June	202.5	0.00	240.6	235.4	215381	205823	12.72	12.15
July	208.3	0.00	251.9	246.8	225358	215332	12.71	12.14
August	184.1	-0.00	237.6	233.3	212330	202791	12.69	12.12
September	142.5	-0.00	198.2	194.6	177712	169726	12.73	12.16
October	112.8	-0.00	177.4	174.2	159478	152304	12.77	12.19
November	75.9	0.00	129.8	127.3	115433	110051	12.63	12.04
December	66.3	-0.00	116.7	114.2	104382	99497	12.70	12.11
Yearly sum	1641.8	-0.00	2257.4	2213.4	2017953	1926843	12.70	12.12

Legends: GlobHor Horizontal global irradiation EArray Effective energy at the output of the array
 T Amb Ambient Temperature EOutInv Available Energy at Inverter Output
 GlobInc Global incident in coll. plane EffArrR Effic. Eout array / rough area
 GlobEff "Effective" Global, corr. for IAM and shadings EffSysR Effic. Eout system / rough area

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Grid-connected PV system: Loss diagram

Project : 1MWp Catania
Simulation variant : Simulation variant

Main system parameters	System type	Grid-connected		
PV field orientation	Tracking, tilted axis, axis tilt:	30°	axis azimuth	0°
PV modules	Model	KC 200GT	Pnom	200 Wp
PV array	Nb of modules	4991	Pnom total	998 kWp
Inverter	Model	Sunny Central 250 KVA	Pnom	250 kWp ac
Inverter pack	Nb of units	4	Pnom total	1000 kWp ac
User's needs	Unlimited load (grid)			

Loss diagram over the whole year

