

Progetto 1MWp Catania fisso
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 09h02

Simulation parameters :

Collector Plane orientation Tilt 30° Azimuth 0°

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. 11.0 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)

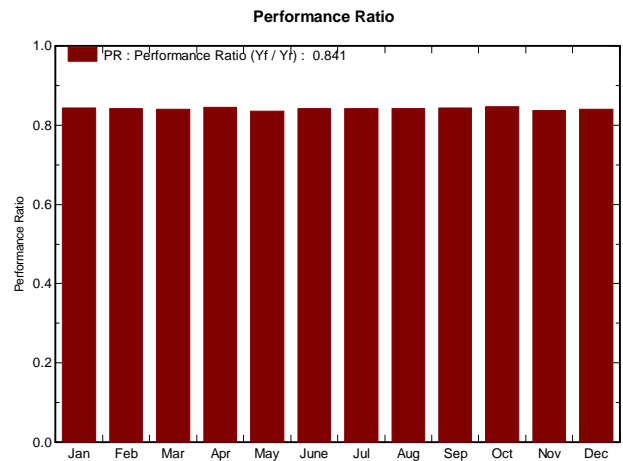
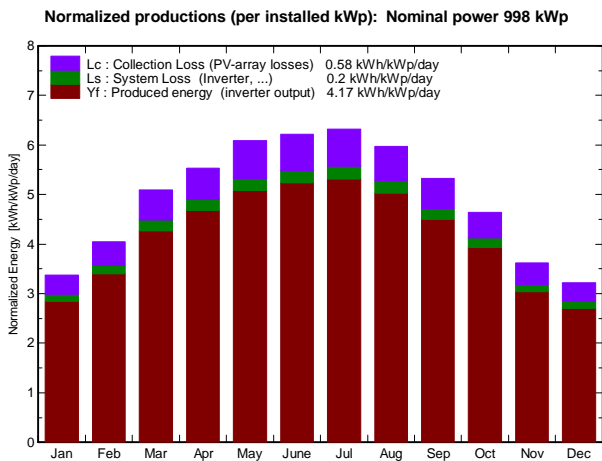
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Grid-connected PV system: Main results

Project : 1MWp Catania
Simulation variant : Simulation variant

Main system parameters	System type	Grid-connected		
PV field orientation	Tilt	30°	Azimut	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	1520 MWh/year	Specific	1523 kWh/kWp/year
	Performance ratio PR	84.1 %		



Simulation variant
Balances and main results

	GlobHor	T Amb	GlobInc	GlobEff	EArray	EOutInv	EffArrR	EffSysR
	kWh/m ²	°C	kWh/m ²	kWh/m ²	kWh	kWh	%	%
January	71.6	-0.00	104.6	101.5	92458	88034	12.56	11.95
February	87.9	0.00	113.3	109.9	99762	95093	12.51	11.92
March	133.6	-0.00	157.8	153.3	138663	132177	12.48	11.90
April	159.9	0.00	166.1	160.9	146781	140059	12.55	11.98
May	196.2	-0.00	188.7	182.8	164863	157152	12.41	11.83
June	202.5	0.00	186.6	180.6	164191	156634	12.49	11.92
July	208.3	0.00	195.8	189.6	172292	164376	12.50	11.93
August	184.1	-0.00	185.2	179.6	163070	155561	12.50	11.93
September	142.5	-0.00	159.8	155.1	141158	134602	12.55	11.96
October	112.8	-0.00	144.0	139.9	127624	121691	12.59	12.00
November	75.9	0.00	108.7	105.5	95418	90827	12.47	11.87
December	66.3	-0.00	99.9	96.8	88011	83725	12.52	11.91
Yearly sum	1641.8	-0.00	1810.4	1755.6	1594290	1519930	12.51	11.92

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

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Grid-connected PV system: Loss diagram

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Simulation variant : Simulation variant

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Loss diagram over the whole year

