



COMUNE DI MATERA



REGIONE
BASILICATA

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COSTRUZIONE ED ESERCIZIO DI UN IMPIANTO DI PRODUZIONE DELL'ENERGIA ELETTRICA DA FONTE FOTOVOLTAICA AVENTE POTENZA IN IMMISSIONE PARI A 14,993 MW E POTENZA MODULI PARI A 15,014 MWP CON RELATIVO COLLEGAMENTO ALLA RETE ELETTRICA - IMPIANTO AEPV03B UBICATO IN AGRO DEL COMUNE DI MATERA IN LOCALITA' MASSERIA SANT'AGOSTINO DISTINTO AL N.C.T. AI FG. N. 39 - 40

IMPIANTO AGROVOLTAICO

ELABORATO:

PRODUZIONE DI ENERGIA

IDENTIFICAZIONE ELABORATO

Livello Prog.	Codice Rintracciabilità	Tipo Doc.	Sez. Elaborato	N° Foglio	Tot. Fogli	N° Elaborato	DATA	SCALA
PD	201900118	ET	13	1	8	RS_13.01	10/2021	-:-

REVISIONI

REV	DATA	DESCRIZIONE	ESEGUITO	VERIFICATO	APPROVATO
01	[...]	[...]	IVC	N/A	N/A

PROGETTAZIONE



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(TIMBRO E FIRMA)

SPAZIO RISERVATO AGLI ENTI

RICHIEDENTE

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(TIMBRO E FIRMA PER BENESTARE)

PVsyst - Simulation report

Grid-Connected System

Project: Matera 03B

Variant: Nuova variante di simulazione

Unlimited sheds

System power: 15.01 MWp

Iesce - Italia



Project: Matera 03B

Variant: Nuova variante di simulazione

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Project summary

Geographical Site		Situation		Project settings	
lesce		Latitude	40.71 °N	Albedo	0.20
Italia		Longitude	16.69 °E		
		Altitude	397 m		
		Time zone	UTC+1		
Meteo data					
lesce					
Meteonorm 8.0 (1986-2005), Sat=100% - Sintetico					

System summary

Grid-Connected System		Unlimited sheds		User's needs	
PV Field Orientation		Near Shadings		Unlimited load (grid)	
Sheds		Mutual shadings of sheds			
tilt	90 °				
azimuth	90 °				
System information					
PV Array					
Nb. of modules	22080 units	Inverters		Nb. of units 66 units	
Pnom total	15.01 MWp	Pnom total		11.55 MWac	
		Pnom ratio		1.300	

Results summary

Produced Energy	17655 MWh/year	Specific production	1176 kWh/kWp/year	Perf. Ratio PR	127.70 %
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General parameters

Grid-Connected System		Unlimited sheds			
PV Field Orientation		Sheds configuration		Models used	
Orientation		Nb. of sheds		Transposition	
Sheds		5 units		Perez	
tilt	90 °	Unlimited sheds		Diffuse	
azimuth	90 °	Sizes		Perez, Meteororm	
		Sheds spacing		Circumsolar	
		Collector width		separate	
		Ground Cov. Ratio (GCR)			
		Top inactive band			
		Bottom inactive band			
		Shading limit angle			
		Limit profile angle			
Horizon		Near Shadings		User's needs	
Free Horizon		Mutual shadings of sheds		Unlimited load (grid)	
Bifacial system					
Model	2D Calculation				
	unlimited sheds				
Bifacial model geometry				Bifacial model definitions	
Sheds spacing	10.00 m	Ground albedo		0.30	
Sheds width	3.14 m	Bifaciality factor		70 %	
Limit profile angle	17.4 °	Rear shading factor		5.0 %	
GCR	31.4 %	Rear mismatch loss		10.0 %	
Height above ground	1.50 m	Shed transparent fraction		0.0 %	

PV Array Characteristics

PV module		Inverter	
Manufacturer	Generic	Manufacturer	Generic
Model	SRP-680-BMA-BG	Model	SUN2000-185KTL-H1
(Custom parameters definition)		(Original PVsyst database)	
Unit Nom. Power	680 Wp	Unit Nom. Power	175 kWac
Number of PV modules	22080 units	Number of inverters	594 * MPPT 11% 66 units
Nominal (STC)	15.01 MWp	Total power	11550 kWac
Modules	736 Strings x 30 In series	Operating voltage	550-1500 V
At operating cond. (50°C)		Max. power (=>30°C)	185 kWac
Pmpp	13.72 MWp	Pnom ratio (DC:AC)	1.30
U mpp	1015 V		
I mpp	13511 A		
Total PV power		Total inverter power	
Nominal (STC)	15014 kWp	Total power	11550 kWac
Total	22080 modules	Nb. of inverters	66 units
Module area	57063 m²	Pnom ratio	1.30
Cell area	52780 m²		



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Array losses

Thermal Loss factor

Module temperature according to irradiance
Uc (const) 20.0 W/m²K
Uv (wind) 0.0 W/m²K/m/s

DC wiring losses

Global array res. 1.2 mΩ
Loss Fraction 1.5 % at STC

Module Quality Loss

Loss Fraction -0.8 %

Module mismatch losses

Loss Fraction 2.0 % at MPP

Strings Mismatch loss

Loss Fraction 0.1 %

IAM loss factor

Incidence effect (IAM): Fresnel AR coating, n(glass)=1.526, n(AR)=1.290

0°	30°	50°	60°	70°	75°	80°	85°	90°
1.000	0.999	0.987	0.962	0.892	0.816	0.681	0.440	0.000



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Main results

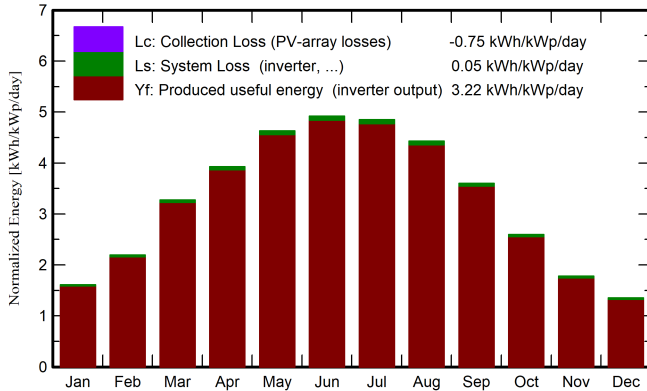
System Production

Produced Energy 17655 MWh/year

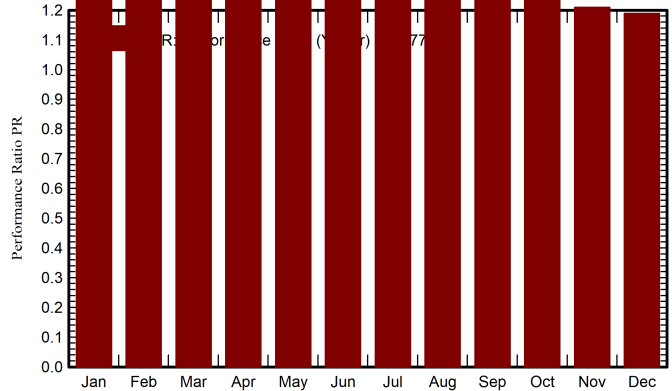
Specific production
Performance Ratio PR

1176 kWh/kWp/year
127.70 %

Normalized productions (per installed kWp)



Performance Ratio PR



Balances and main results

	GlobHor kWh/m ²	DiffHor kWh/m ²	T_Amb °C	GlobInc kWh/m ²	GlobEff kWh/m ²	EArray MWh	E_Grid MWh	PR ratio
January	53.5	27.71	5.92	37.7	33.6	751	740	1.309
February	70.5	33.39	6.33	47.7	42.0	922	909	1.270
March	122.0	53.22	9.26	76.7	69.6	1525	1504	1.306
April	146.6	68.01	12.32	91.1	82.7	1770	1745	1.276
May	189.5	66.95	17.03	106.5	98.3	2157	2125	1.328
June	195.7	88.68	21.84	116.3	107.0	2215	2182	1.249
July	203.8	78.70	25.10	114.9	105.7	2258	2224	1.289
August	183.8	65.72	24.89	106.9	99.0	2062	2030	1.265
September	133.9	54.59	19.60	82.4	74.9	1623	1599	1.292
October	96.7	43.99	15.88	62.5	55.8	1209	1191	1.268
November	57.6	25.24	11.47	43.4	38.4	801	789	1.210
December	45.4	25.94	7.41	34.7	29.9	629	619	1.189
Year	1499.1	632.15	14.81	920.8	837.0	17924	17655	1.277

Legends

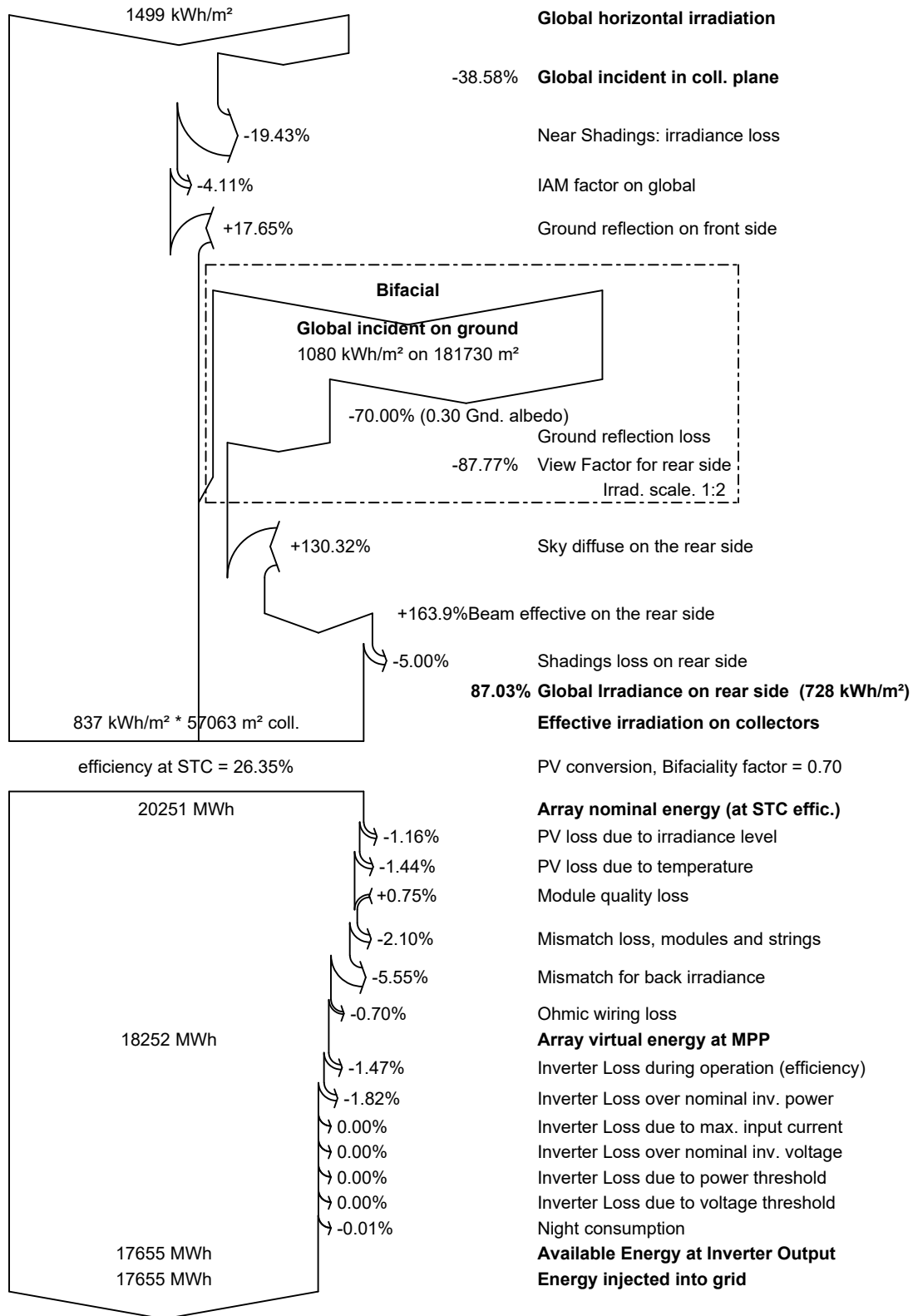
- GlobHor Global horizontal irradiation
- DiffHor Horizontal diffuse irradiation
- T_Amb Ambient Temperature
- GlobInc Global incident in coll. plane
- GlobEff Effective Global, corr. for IAM and shadings
- EArray Effective energy at the output of the array
- E_Grid Energy injected into grid
- PR Performance Ratio



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Loss diagram



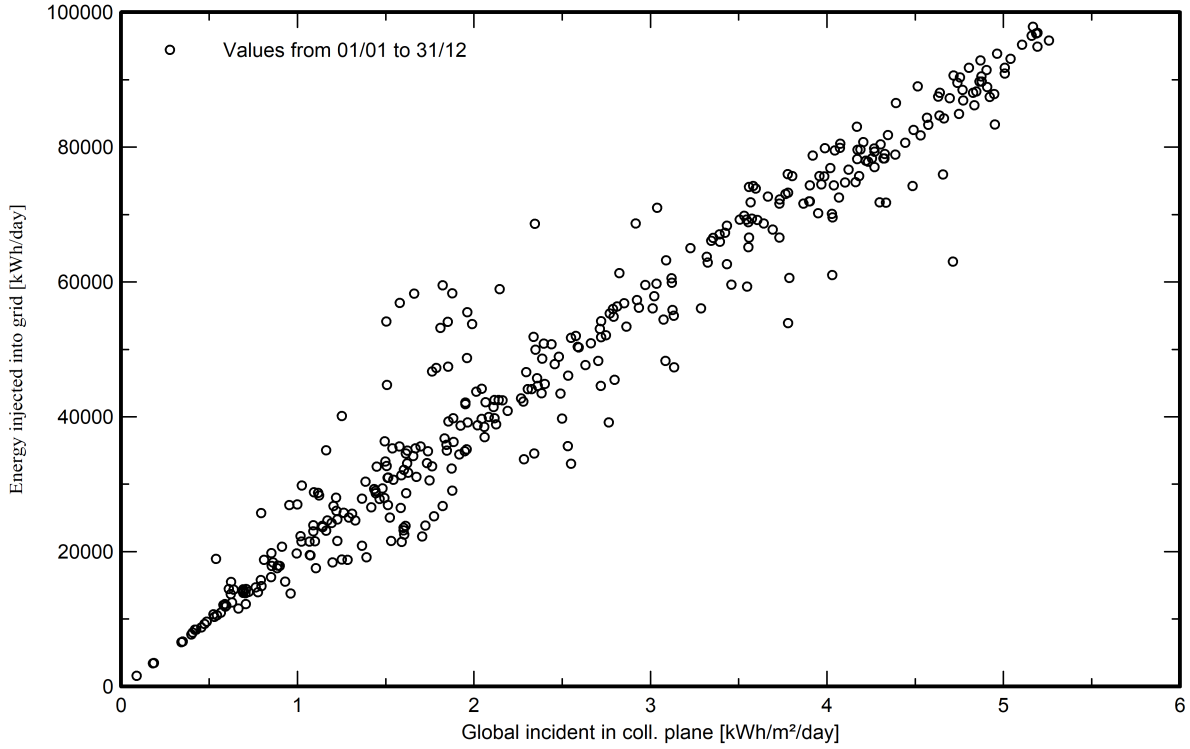


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Special graphs

Diagramma giornaliero entrata/uscita



Distribuzione potenza in uscita sistema

