REGIONE PUGLIA

PROVINCIA di FOGGIA

COMUNE di APRICENA

COMUNE di SAN SEVERO

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Opera

Progetto definitivo per la realizzazione di un impianto Agri-Fotovoltaico denominato "Apricena Agricolo" da realizzarsi su aree agricole ricadenti nella "Solar Belt" delle aree a destinazione industriale, artigianale e commerciale e cave nelle località "Podere Camilli - San Giovanni - Corrado", nel territorio comunale di Apricena (FG) per una potenza complessiva di 88,529 MWp ed immissione di 70,4 MW, nonchè delle opere connesse ed infrastrutture indispensabili alla costruzione ed all'esercizio dell'impianto nei comuni di Apricena (FG) e San Severo (FG).

AUTORITA' PROCEDENTE V.I.A. :	MINISTERO DELL'AMBIENTE E DELLA SICUREZZA ENERGETICA
AUTORITA' PROCEDENTE A.U. :	REGIONE PUGLIA

Oggetto

Nome Elaborato: 8526816_Calcoli Prel. Impianto

Descrizione Elaborato: Analisi Producibilità Impianto

Rev.	Data	Oggetto della revisione	Elaborazione	Verifica	Approvazione
00	Gennaio 2023	Progetto definitivo		Ing. A. Mezzina	AM ENERGY 2 S.R.L.

Scala:

Formato:

Codice Pratica **8526816**

Version 7.2.5

PVsyst - Simulation report

Grid-Connected System

Project: AM Energy 2

Variant: Tracker

Tracking system with backtracking

System power: 88.53 MWp

Apricena - Italy

Author

PVsyst V7.2.5
VC0, Simulation date:
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with v7.2.5

Project summary

Geographical Site
Apricena
Italy

Situation

Latitude	41.79 °N
Longitude	15.44 °E
Altitude	67 m
Time zone	UTC+1

Project settings

Albedo	0.20

Meteo data
Apricena
Meteonorm 8.0 (1986-2005), Sat=77% - Sintetico

System summary

Grid-Connected System

Tracking system with backtracking

PV Field Orientation
Tracking plane, horizontal N-S axis
Axis azimuth 0 °

Near Shadings
Linear shadings

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	156688 units
Pnom total	88.53 MWp

Inverters

Nb. of units	35 units
Pnom total	68.89 MWac
Pnom ratio	1.285

Results summary

Produced Energy	146629 MWh/year	Specific production	1656 kWh/kWp/year	Perf. Ratio PR	87.53 %

Table of contents

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General parameters

Grid-Connected System

Tracking system with backtracking

PV Field Orientation

Orientation	
Tracking plane, horizontal N-S axis	
Axis azimuth	0 °

Backtracking strategy	
Nb. of trackers	2993 units
Sizes	
Tracker Spacing	10.0 m
Collector width	4.66 m
Ground Cov. Ratio (GCR)	46.6 %
Phi min / max.	-/+ 55.0 °
Backtracking limit angle	
Phi limits	+/- 62.1 °

Models used	
Transposition	Perez
Diffuse	Perez, Meteonorm
Circumsolar	separate

Horizon
Free Horizon

Near Shadings
Linear shadings

User's needs
Unlimited load (grid)

Bifacial system
Model 2D Calculation
unlimited trackers

Bifacial model geometry	
Tracker Spacing	10.00 m
Tracker width	4.66 m
GCR	46.6 %
Axis height above ground	2.10 m

Bifacial model definitions	
Ground albedo	0.30
Bifaciality factor	80 %
Rear shading factor	5.0 %
Rear mismatch loss	10.0 %
Module transparency	0.0 %

PV Array Characteristics

PV module

Manufacturer	Jinkosolar
Model	JKM-565N-72HL4-BDV
(Custom parameters definition)	
Unit Nom. Power	565 Wp
Number of PV modules	98252 units
Nominal (STC)	55.51 MWp

Inverter

Manufacturer	Santerno
Model	Sunway SKID 4000- 620 EV
(Original PVsyst database)	
Unit Nom. Power	3866 kWac
Number of inverters	11 units
Total power	42526 kWac

Array #1 - M1.1

Number of PV modules	8988 units	Number of inverters	1 unit
Nominal (STC)	5078 kWp	Total power	3866 kWac
Modules	321 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	880-1300 V
Pmpp	4697 kWp	Pnom ratio (DC:AC)	1.31
U mpp	1085 V		
I mpp	4327 A		

Array #2 - M1.2

Number of PV modules	8652 units	Number of inverters	1 unit
Nominal (STC)	4888 kWp	Total power	3866 kWac
Modules	309 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	880-1300 V
Pmpp	4521 kWp	Pnom ratio (DC:AC)	1.26
U mpp	1085 V		
I mpp	4165 A		

PV Array Characteristics

Array #3 - M1.3

Number of PV modules	8624 units	Number of inverters	1 unit
Nominal (STC)	4873 kWp	Total power	3866 kWac
Modules	308 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	880-1300 V
Pmpp	4507 kWp	Pnom ratio (DC:AC)	1.26
U mpp	1085 V		
I mpp	4152 A		

Array #4 - M1.4

Number of PV modules	8512 units	Number of inverters	1 unit
Nominal (STC)	4809 kWp	Total power	3866 kWac
Modules	304 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	880-1300 V
Pmpp	4448 kWp	Pnom ratio (DC:AC)	1.24
U mpp	1085 V		
I mpp	4098 A		

Array #5 - M1.5

Number of PV modules	9072 units	Number of inverters	1 unit
Nominal (STC)	5126 kWp	Total power	3866 kWac
Modules	324 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	880-1300 V
Pmpp	4741 kWp	Pnom ratio (DC:AC)	1.33
U mpp	1085 V		
I mpp	4368 A		

Array #6 - M1.6

Number of PV modules	8932 units	Number of inverters	1 unit
Nominal (STC)	5047 kWp	Total power	3866 kWac
Modules	319 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	880-1300 V
Pmpp	4667 kWp	Pnom ratio (DC:AC)	1.31
U mpp	1085 V		
I mpp	4300 A		

Array #18 - S2.4

Number of PV modules	9016 units	Number of inverters	1 unit
Nominal (STC)	5094 kWp	Total power	3866 kWac
Modules	322 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	880-1300 V
Pmpp	4711 kWp	Pnom ratio (DC:AC)	1.32
U mpp	1085 V		
I mpp	4341 A		

Array #27 - S5.3

Number of PV modules	9268 units	Number of inverters	1 unit
Nominal (STC)	5236 kWp	Total power	3866 kWac
Modules	331 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	880-1300 V
Pmpp	4843 kWp	Pnom ratio (DC:AC)	1.35
U mpp	1085 V		
I mpp	4462 A		

PV Array Characteristics

Array #31 - S7.3

Number of PV modules	9128 units	Number of inverters	1 unit
Nominal (STC)	5157 kWp	Total power	3866 kWac
Modules	326 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	880-1300 V
Pmpp	4770 kWp	Pnom ratio (DC:AC)	1.33
U mpp	1085 V		
I mpp	4395 A		

Array #32 - S7.4

Number of PV modules	9128 units	Number of inverters	1 unit
Nominal (STC)	5157 kWp	Total power	3866 kWac
Modules	326 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	880-1300 V
Pmpp	4770 kWp	Pnom ratio (DC:AC)	1.33
U mpp	1085 V		
I mpp	4395 A		

Array #34 - S7.6

Number of PV modules	8932 units	Number of inverters	1 unit
Nominal (STC)	5047 kWp	Total power	3866 kWac
Modules	319 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	880-1300 V
Pmpp	4667 kWp	Pnom ratio (DC:AC)	1.31
U mpp	1085 V		
I mpp	4300 A		

PV module

Manufacturer	Jinkosolar
Model	JKM-565N-72HL4-BDV
(Custom parameters definition)	
Unit Nom. Power	565 Wp
Number of PV modules	26124 units
Nominal (STC)	14.76 MWp

Inverter

Manufacturer	Santerno
Model	Sunway TG 1800 1500V TE - 640 EV
(Original PVsyst database)	
Unit Nom. Power	1995 kWac
Number of inverters	6 units
Total power	11970 kWac

Array #7 - M1.7

Number of PV modules	4284 units	Number of inverters	1 unit
Nominal (STC)	2420 kWp	Total power	1995 kWac
Modules	153 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1300 V
Pmpp	2239 kWp	Pnom ratio (DC:AC)	1.21
U mpp	1085 V		
I mpp	2063 A		

Array #9 - M2.2

Number of PV modules	4452 units	Number of inverters	1 unit
Nominal (STC)	2515 kWp	Total power	1995 kWac
Modules	159 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1300 V
Pmpp	2326 kWp	Pnom ratio (DC:AC)	1.26
U mpp	1085 V		
I mpp	2143 A		

PV Array Characteristics

Array #12 - S1.1

Number of PV modules	4284 units	Number of inverters	1 unit
Nominal (STC)	2420 kWp	Total power	1995 kWac
Modules	153 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1300 V
Pmpp	2239 kWp	Pnom ratio (DC:AC)	1.21
U mpp	1085 V		
I mpp	2063 A		

Array #13 - S1.2

Number of PV modules	4284 units	Number of inverters	1 unit
Nominal (STC)	2420 kWp	Total power	1995 kWac
Modules	153 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1300 V
Pmpp	2239 kWp	Pnom ratio (DC:AC)	1.21
U mpp	1085 V		
I mpp	2063 A		

Array #14 - S1.3

Number of PV modules	4256 units	Number of inverters	1 unit
Nominal (STC)	2405 kWp	Total power	1995 kWac
Modules	152 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1300 V
Pmpp	2224 kWp	Pnom ratio (DC:AC)	1.21
U mpp	1085 V		
I mpp	2049 A		

Array #33 - S7.5

Number of PV modules	4564 units	Number of inverters	1 unit
Nominal (STC)	2579 kWp	Total power	1995 kWac
Modules	163 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1300 V
Pmpp	2385 kWp	Pnom ratio (DC:AC)	1.29
U mpp	1085 V		
I mpp	2197 A		

PV module

Manufacturer	Jinkosolar
Model	JKM-565N-72HL4-BDV
(Custom parameters definition)	
Unit Nom. Power	565 Wp
Number of PV modules	4508 units
Nominal (STC)	2547 kWp

Inverter

Manufacturer	Santerno
Model	Sunway TG 900 1500V TE - 640 EV
(Original PVsyst database)	
Unit Nom. Power	998 kWac
Number of inverters	2 units
Total power	1996 kWac

Array #8 - M2.1

Number of PV modules	2184 units	Number of inverters	1 unit
Nominal (STC)	1234 kWp	Total power	998 kWac
Modules	78 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1300 V
Pmpp	1141 kWp	Pnom ratio (DC:AC)	1.24
U mpp	1085 V		
I mpp	1051 A		

PV Array Characteristics

Array #21 - S3.3

Number of PV modules	2324 units	Number of inverters	1 unit
Nominal (STC)	1313 kWp	Total power	998 kWac
Modules	83 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1300 V
Pmpp	1214 kWp	Pnom ratio (DC:AC)	1.32
U mpp	1085 V		
I mpp	1119 A		

PV module

Manufacturer	Jinkosolar
Model	JKM-565N-72HL4-BDV
(Custom parameters definition)	
Unit Nom. Power	565 Wp
Number of PV modules	5320 units
Nominal (STC)	3006 kWp

Inverter

Manufacturer	Santerno
Model	SUNWAY TG 900 1500V TE - 600- cop 300
(Custom parameters definition)	
Unit Nom. Power	300 kWac
Number of inverters	8 units
Total power	2400 kWac

Array #10 - M2.3

Number of PV modules	672 units	Number of inverters	1 unit
Nominal (STC)	380 kWp	Total power	300 kWac
Modules	24 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	850-1200 V
Pmpp	351 kWp	Pnom ratio (DC:AC)	1.27
U mpp	1085 V		
I mpp	324 A		

Array #15 - S2.1

Number of PV modules	672 units	Number of inverters	1 unit
Nominal (STC)	380 kWp	Total power	300 kWac
Modules	24 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	850-1200 V
Pmpp	351 kWp	Pnom ratio (DC:AC)	1.27
U mpp	1085 V		
I mpp	324 A		

Array #19 - S3.1

Number of PV modules	672 units	Number of inverters	1 unit
Nominal (STC)	380 kWp	Total power	300 kWac
Modules	24 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	850-1200 V
Pmpp	351 kWp	Pnom ratio (DC:AC)	1.27
U mpp	1085 V		
I mpp	324 A		

Array #20 - S3.2

Number of PV modules	644 units	Number of inverters	1 unit
Nominal (STC)	364 kWp	Total power	300 kWac
Modules	23 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	850-1200 V
Pmpp	337 kWp	Pnom ratio (DC:AC)	1.21
U mpp	1085 V		
I mpp	310 A		

PV Array Characteristics

Array #25 - S5.1

Number of PV modules	672 units	Number of inverters	1 unit
Nominal (STC)	380 kWp	Total power	300 kWac
Modules	24 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	850-1200 V
Pmpp	351 kWp	Pnom ratio (DC:AC)	1.27
U mpp	1085 V		
I mpp	324 A		

Array #26 - S5.2

Number of PV modules	672 units	Number of inverters	1 unit
Nominal (STC)	380 kWp	Total power	300 kWac
Modules	24 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	850-1200 V
Pmpp	351 kWp	Pnom ratio (DC:AC)	1.27
U mpp	1085 V		
I mpp	324 A		

Array #29 - S7.1

Number of PV modules	672 units	Number of inverters	1 unit
Nominal (STC)	380 kWp	Total power	300 kWac
Modules	24 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	850-1200 V
Pmpp	351 kWp	Pnom ratio (DC:AC)	1.27
U mpp	1085 V		
I mpp	324 A		

Array #35 - S7.7

Number of PV modules	644 units	Number of inverters	1 unit
Nominal (STC)	364 kWp	Total power	300 kWac
Modules	23 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	850-1200 V
Pmpp	337 kWp	Pnom ratio (DC:AC)	1.21
U mpp	1085 V		
I mpp	310 A		

PV module

Manufacturer	Jinkosolar
Model	JKM-565N-72HL4-BDV
(Custom parameters definition)	
Unit Nom. Power	565 Wp
Number of PV modules	20244 units
Nominal (STC)	11.44 MWp

Inverter

Manufacturer	Santerno
Model	SUNWAY TG 1800 1500V TE - 640 (1500 kVA)
(Custom parameters definition)	
Unit Nom. Power	1500 kWac
Number of inverters	6 units
Total power	9000 kWac

Array #11 - M2.4

Number of PV modules	3332 units	Number of inverters	1 unit
Nominal (STC)	1883 kWp	Total power	1500 kWac
Modules	119 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1200 V
Pmpp	1741 kWp	Pnom ratio (DC:AC)	1.26
U mpp	1085 V		
I mpp	1604 A		

PV Array Characteristics

Array #16 - S2.2

Number of PV modules	3360 units	Number of inverters	1 unit
Nominal (STC)	1898 kWp	Total power	1500 kWac
Modules	120 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1200 V
Pmpp	1756 kWp	Pnom ratio (DC:AC)	1.27
U mpp	1085 V		
I mpp	1618 A		

Array #17 - S2.3

Number of PV modules	3388 units	Number of inverters	1 unit
Nominal (STC)	1914 kWp	Total power	1500 kWac
Modules	121 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1200 V
Pmpp	1770 kWp	Pnom ratio (DC:AC)	1.28
U mpp	1085 V		
I mpp	1631 A		

Array #23 - S4.2

Number of PV modules	3388 units	Number of inverters	1 unit
Nominal (STC)	1914 kWp	Total power	1500 kWac
Modules	121 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1200 V
Pmpp	1770 kWp	Pnom ratio (DC:AC)	1.28
U mpp	1085 V		
I mpp	1631 A		

Array #24 - S4.3

Number of PV modules	3416 units	Number of inverters	1 unit
Nominal (STC)	1930 kWp	Total power	1500 kWac
Modules	122 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1200 V
Pmpp	1785 kWp	Pnom ratio (DC:AC)	1.29
U mpp	1085 V		
I mpp	1645 A		

Array #30 - S7.2

Number of PV modules	3360 units	Number of inverters	1 unit
Nominal (STC)	1898 kWp	Total power	1500 kWac
Modules	120 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1200 V
Pmpp	1756 kWp	Pnom ratio (DC:AC)	1.27
U mpp	1085 V		
I mpp	1618 A		

PV module

Manufacturer	Jinkosolar
Model	JKM-565N-72HL4-BDV
(Custom parameters definition)	
Unit Nom. Power	565 Wp
Number of PV modules	2240 units
Nominal (STC)	1266 kWp

Inverter

Manufacturer	Santerno
Model	SUNWAY TG 900 1500V TE - 640
(Custom parameters definition)	
Unit Nom. Power	500 kWac
Number of inverters	2 units
Total power	1000 kWac

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PV Array Characteristics

Array #22 - S4.1

Number of PV modules	1120 units	Number of inverters	1 unit
Nominal (STC)	633 kWp	Total power	500 kWac
Modules	40 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1200 V
Pmpp	585 kWp	Pnom ratio (DC:AC)	1.27
U mpp	1085 V		
I mpp	539 A		

Array #28 - S6

Number of PV modules	1120 units	Number of inverters	1 unit
Nominal (STC)	633 kWp	Total power	500 kWac
Modules	40 Strings x 28 In series		
At operating cond. (50°C)		Operating voltage	910-1200 V
Pmpp	585 kWp	Pnom ratio (DC:AC)	1.27
U mpp	1085 V		
I mpp	539 A		

Total PV power		**Total inverter power**	
Nominal (STC)	88529 kWp	Total power	68892 kWac
Total	156688 modules	Nb. of inverters	35 units
Module area	404765 m²	Pnom ratio	1.29

Array losses

Array Soiling Losses
Loss Fraction 3.0 %

Thermal Loss factor
Module temperature according to irradiance
Uc (const) 29.0 W/m²K
Uv (wind) 0.0 W/m²K/m/s

Serie Diode Loss
Voltage drop 0.7 V
Loss Fraction 0.1 % at STC

LID - Light Induced Degradation
Loss Fraction 2.0 %

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

DC wiring losses

Global wiring resistance 0.12 mΩ
Loss Fraction 0.8 % at STC

Array #1 - M1.1
Global array res. 0.24 mΩ
Loss Fraction 0.1 % at STC

Array #2 - M1.2
Global array res. 4.2 mΩ
Loss Fraction 1.5 % at STC

Array #3 - M1.3
Global array res. 4.3 mΩ
Loss Fraction 1.5 % at STC

Array #4 - M1.4
Global array res. 4.3 mΩ
Loss Fraction 1.5 % at STC

Array #5 - M1.5
Global array res. 4.0 mΩ
Loss Fraction 1.5 % at STC

Array #6 - M1.6
Global array res. 4.1 mΩ
Loss Fraction 1.5 % at STC

Array #7 - M1.7
Global array res. 8.6 mΩ
Loss Fraction 1.5 % at STC

Array #8 - M2.1
Global array res. 17 mΩ
Loss Fraction 1.5 % at STC

Array #9 - M2.2
Global array res. 8.3 mΩ
Loss Fraction 1.5 % at STC

Array #10 - M2.3
Global array res. 55 mΩ
Loss Fraction 1.5 % at STC

Array #11 - M2.4
Global array res. 11 mΩ
Loss Fraction 1.5 % at STC

Array #12 - S1.1
Global array res. 8.6 mΩ
Loss Fraction 1.5 % at STC

Array #13 - S1.2
Global array res. 8.6 mΩ
Loss Fraction 1.5 % at STC

Array #14 - S1.3
Global array res. 8.6 mΩ
Loss Fraction 1.5 % at STC

Array #15 - S2.1
Global array res. 55 mΩ
Loss Fraction 1.5 % at STC

Array #16 - S2.2
Global array res. 11 mΩ
Loss Fraction 1.5 % at STC

Array #17 - S2.3
Global array res. 11 mΩ
Loss Fraction 1.5 % at STC

Array #18 - S2.4
Global array res. 4.1 mΩ
Loss Fraction 1.5 % at STC

Array #19 - S3.1
Global array res. 55 mΩ
Loss Fraction 1.5 % at STC

Array #20 - S3.2
Global array res. 57 mΩ
Loss Fraction 1.5 % at STC

Array #21 - S3.3
Global array res. 16 mΩ
Loss Fraction 1.5 % at STC

Array #22 - S4.1
Global array res. 33 mΩ
Loss Fraction 1.5 % at STC

DC wiring losses

Array #23 - S4.2		**Array #24 - S4.3**	
Global array res.	11 mΩ	Global array res.	11 mΩ
Loss Fraction	1.5 % at STC	Loss Fraction	1.5 % at STC
Array #25 - S5.1		**Array #26 - S5.2**	
Global array res.	55 mΩ	Global array res.	55 mΩ
Loss Fraction	1.5 % at STC	Loss Fraction	1.5 % at STC
Array #27 - S5.3		**Array #28 - S6**	
Global array res.	4.0 mΩ	Global array res.	33 mΩ
Loss Fraction	1.5 % at STC	Loss Fraction	1.5 % at STC
Array #29 - S7.1		**Array #30 - S7.2**	
Global array res.	55 mΩ	Global array res.	11 mΩ
Loss Fraction	1.5 % at STC	Loss Fraction	1.5 % at STC
Array #31 - S7.3		**Array #32 - S7.4**	
Global array res.	4.0 mΩ	Global array res.	4.0 mΩ
Loss Fraction	1.5 % at STC	Loss Fraction	1.5 % at STC
Array #33 - S7.5		**Array #34 - S7.6**	
Global array res.	8.0 mΩ	Global array res.	4.1 mΩ
Loss Fraction	1.5 % at STC	Loss Fraction	1.5 % at STC
Array #35 - S7.7			
Global array res.	57 mΩ		
Loss Fraction	1.5 % at STC		

System losses

Auxiliaries loss
constant (fans) 76.2 kW
282.9 kW from Power thresh.

AC wiring losses

Inv. output line up to MV transfo
Inverter voltage 620 Vac tri
Loss Fraction 0.02 % at STC

Inverter: Sunway SKID 4000- 620 EV
Wire section (10 Inv.) Copper 10 x 3 x 3000 mm²
Average wires length 5 m

Inverter: Sunway TG 900 1500V TE - 640 EV
Wire section (1 Inv.) Copper 1 x 3 x 700 mm²
Wires length 0 m

Inverter: SUNWAY TG 1800 1500V TE - 640 (1500 kVA)
Wire section (6 Inv.) Copper 6 x 3 x 1200 mm²
Average wires length 0 m

Inverter: Sunway TG 900 1500V TE - 640 EV
Wire section (1 Inv.) Copper 1 x 3 x 1000 mm²
Wires length 0 m

Inverter: Sunway SKID 4000- 620 EV
Wire section (1 Inv.) Copper 1 x 3 x 4000 mm²
Wires length 0 m

Inverter: Sunway TG 1800 1500V TE - 640 EV
Wire section (6 Inv.) Copper 6 x 3 x 1500 mm²
Average wires length 0 m

Inverter: SUNWAY TG 900 1500V TE - 600- cop 300
Wire section (6 Inv.) Copper 6 x 3 x 240 mm²
Average wires length 0 m

Inverter: SUNWAY TG 900 1500V TE - 600- cop 300
Wire section (2 Inv.) Copper 2 x 3 x 185 mm²
Average wires length 0 m

Inverter: SUNWAY TG 900 1500V TE - 640
Wire section (2 Inv.) Copper 2 x 3 x 400 mm²
Average wires length 0 m

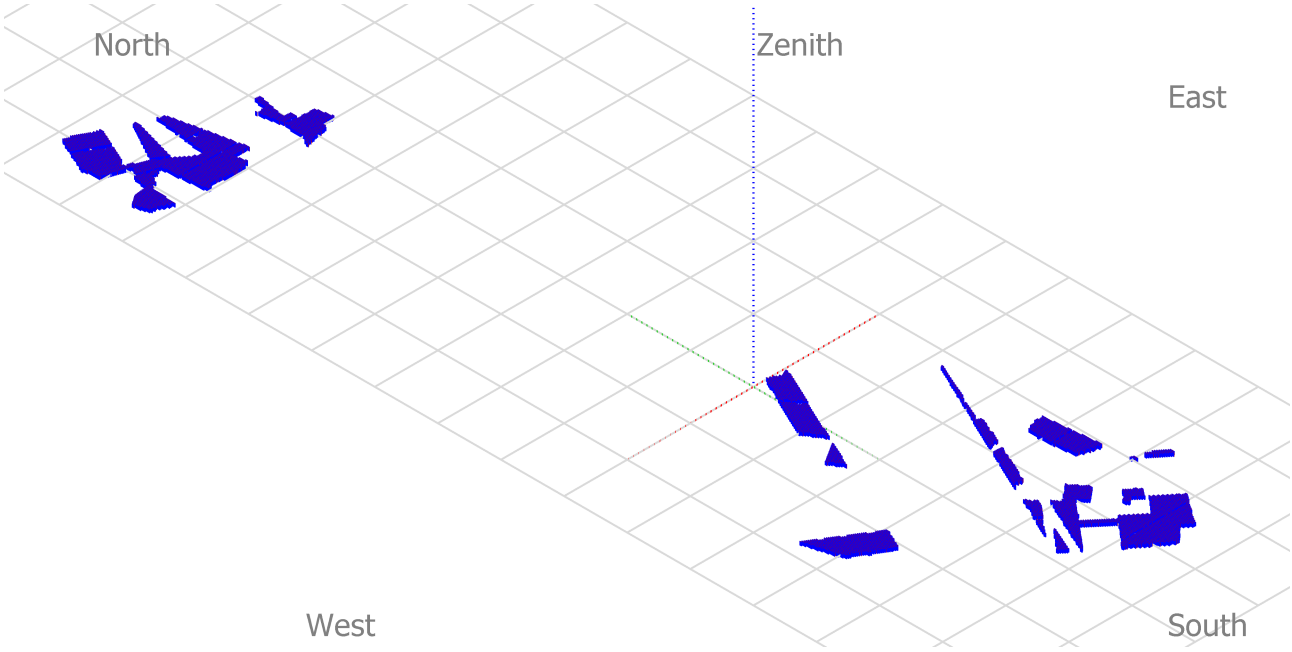
MV line up to Injection
MV Voltage 30 kV
Wires Copper 3 x 2000 mm²
Length 100 m
Loss Fraction 0.01 % at STC

AC losses in transformers

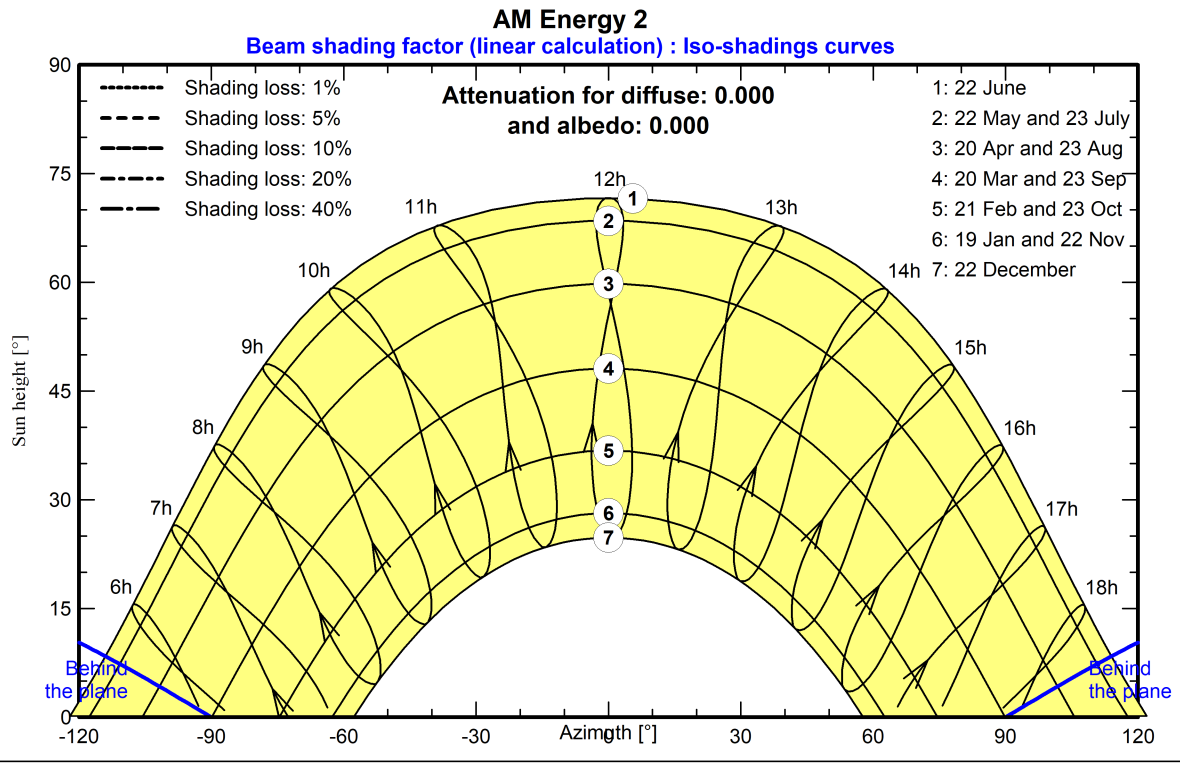
MV transfo
Grid voltage 30 kV
Operating losses at STC
Nominal power at STC 87138 kVA
Iron loss (24/24 Connexion) 87.14 kW
Loss Fraction 0.10 % at STC
Coils equivalent resistance 3 x 0.04 mΩ
Loss Fraction 1.00 % at STC

Near shadings parameter

Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram



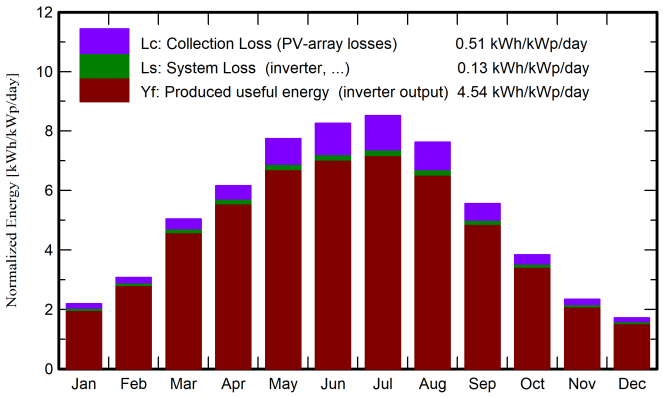
PVsyst V7.2.5
VC0, Simulation date:
03/02/23 12:42
with v7.2.5

Main results

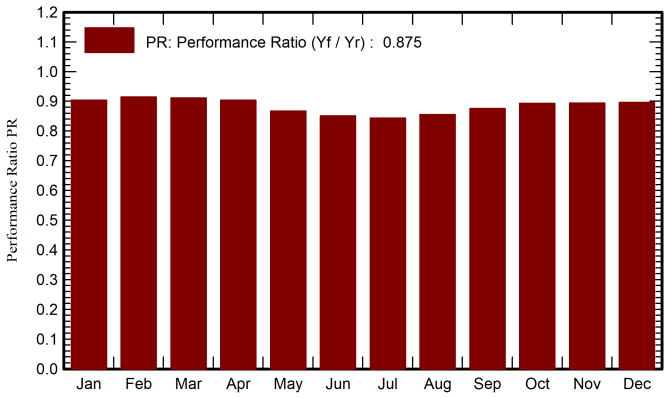
System Production

Produced Energy	146629 MWh/year	Specific production	1656 kWh/kWp/year
		Performance Ratio PR	87.53 %

Normalized productions (per installed kWp)



Performance Ratio PR



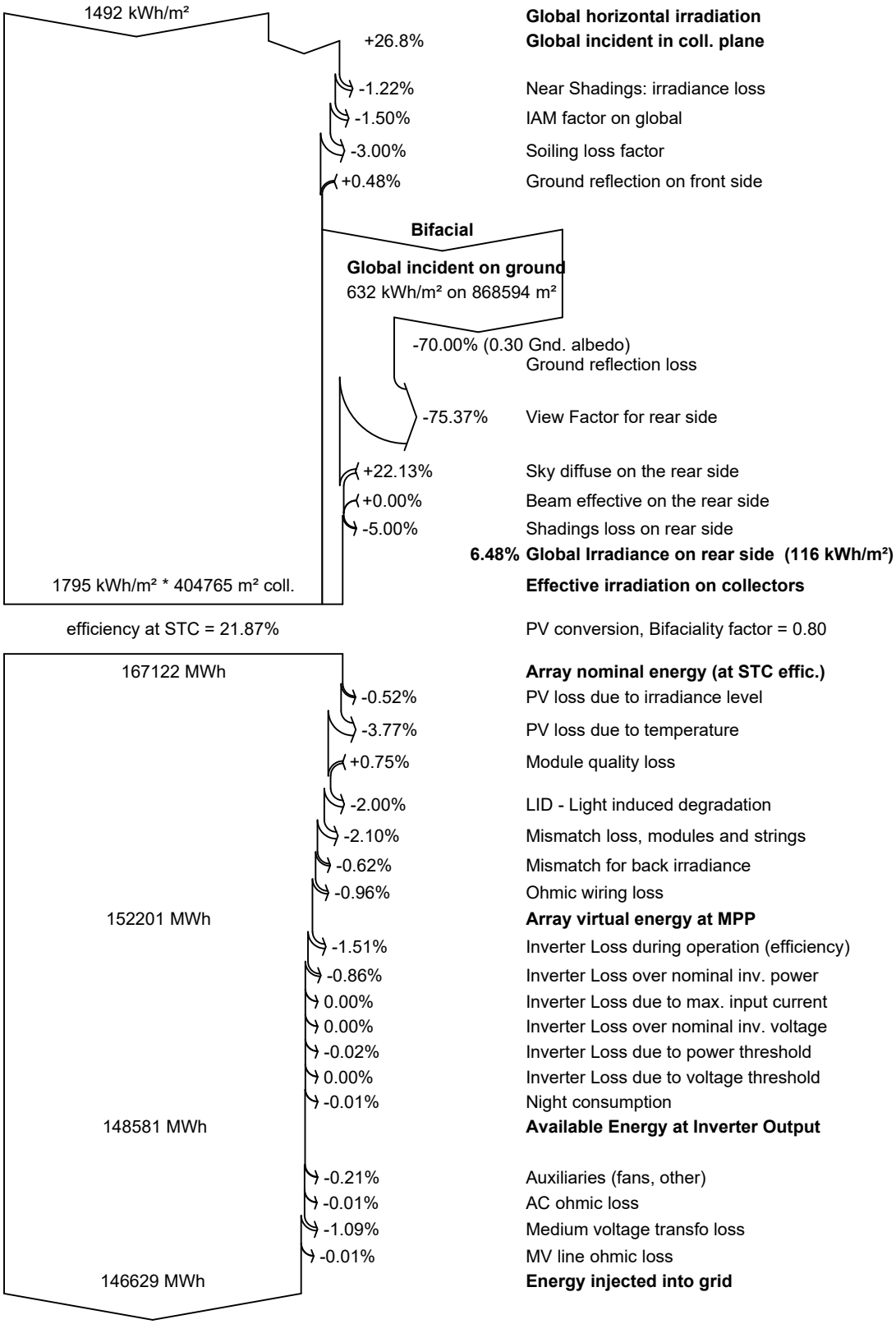
Balances and main results

	GlobHor kWh/m²	DiffHor kWh/m²	T_Amb °C	GlobInc kWh/m²	GlobEff kWh/m²	EArray MWh	E_Grid MWh	PR ratio
January	51.6	23.46	8.00	67.8	63.0	5622	5423	0.903
February	67.7	34.40	8.50	86.0	80.7	7189	6965	0.915
March	122.7	56.82	11.50	156.2	148.0	12966	12602	0.911
April	148.2	73.99	14.45	184.8	175.6	15194	14780	0.903
May	190.5	85.05	19.83	240.0	228.5	18937	18431	0.868
June	197.5	85.13	24.75	247.9	236.5	19176	18670	0.851
July	206.4	79.37	27.62	264.1	252.0	20261	19725	0.844
August	184.0	72.45	27.32	236.3	225.7	18407	17906	0.856
September	131.6	56.96	21.84	166.8	158.2	13311	12940	0.876
October	94.5	45.50	17.89	119.0	112.1	9697	9409	0.893
November	55.1	28.76	12.81	70.2	65.4	5762	5558	0.894
December	42.7	25.18	9.16	53.2	48.9	4393	4220	0.896
Year	1492.4	667.08	17.03	1892.3	1794.6	150914	146629	0.875

Legends

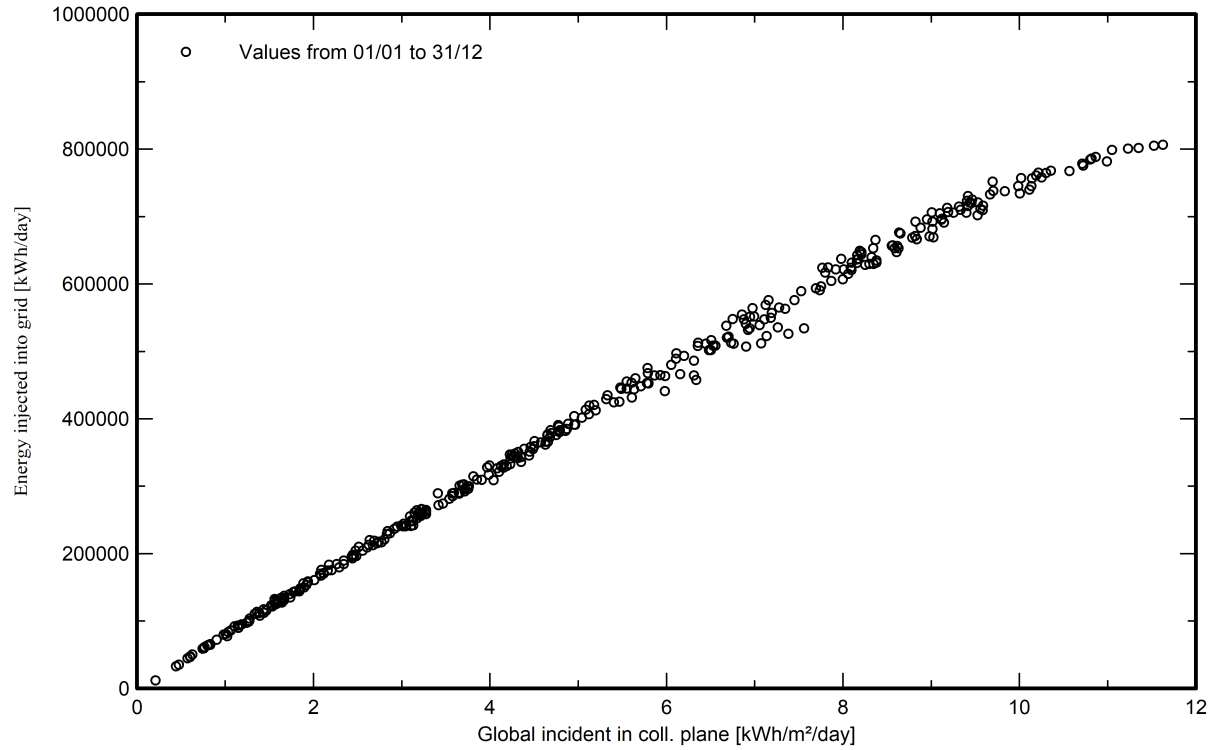
GlobHor	Global horizontal irradiation
DiffHor	Horizontal diffuse irradiation
T_Amb	Ambient Temperature
GlobInc	Global incident in coll. plane
GlobEff	Effective Global, corr. for IAM and shadings
EArray	Effective energy at the output of the array
E_Grid	Energy injected into grid
PR	Performance Ratio

Loss diagram



Special graphs

Diagramma giornaliero entrata/uscita



Distribuzione potenza in uscita sistema