

Regione
Emilia Romagna



Provincia di
Ferrara



Comune di
Bondeno



IMPIANTO AGROVOLTAICO DI 60MW SITO NEL COMUNE DI BONDENO (FE) E RELATIVE OPERE CONNESSE

PROGETTISTA INCARICATO:
Ing. Riccardo Clementi
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Scala

n.d.

Titolo elaborato:

**SIMULAZIONI PVSYST DI
PRODUZIONE
ELETTRICA**

Formato

A4

TECNICI COINVOLTI

Ing. Riccardo Clementi
Arch. Emiliano Manzato
Dott. Agr. Stefano Pesavento
Dott. Geol. Loris Tietto

CODICE ELABORATO

PROGETTO	CLASSE	TIPO	PROG.
RVFVER32	VIA2	R	27

Rev.	Data	Descrizione	Redige	Verifica	Approva
00	02/23	Prima emissione	GR	GR	RC
01					
02					
03					
04					
05					
06					

GESTORE RETE ELETTRICA



SOCIETA' PROPONENTE:

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Via Mike Bongiorno, 13 - 20124 Milano
PEC: bondeno@pec-legal.it
REA: MI - 2677347
P.iva 05496160283

SOCIETA' di PROGETTAZIONE:

Renvalue SRL
Via Quattro Novembre, 2 Padova
PEC: cert@pec.renvalue.it

PVsyst - Simulation report

Grid-Connected System

Project: Bondeno agrivoltaico sotto-campo Nord

Variant: Nuova variante di simulazione

Tracking system with backtracking

System power: 36.50 MWp

Santa Bianca - Italia

Autore

STE Energy S.r.l. (Italy)



PVsyst V7.3.1

VCO, Simulation date:
20/03/23 17:13
with v7.2.8

Project summary

Geographical Site Santa Bianca Italia	Situation Latitude 44.86 °N Longitude 11.38 °E Altitude 13 m Time zone UTC+1	Project settings Albedo 0.20
Meteo data Santa Bianca PVGIS api TMY		

System summary

Grid-Connected System	Tracking system with backtracking		Near Shadings Linear shadings
PV Field Orientation Orientation Tracking plane, horizontal N-S axis Axis azimuth 16 °	Tracking algorithm Astronomic calculation Backtracking activated		
System information PV Array Nb. of modules 53284 units Pnom total 36.50 MWp	Inverters Nb. of units 8 units Pnom total 36.48 MWac Pnom ratio 1.001		
User's needs Unlimited load (grid)			

Results summary

Produced Energy 60807263 kWh/year	Specific production 1666 kWh/kWp/year	Perf. Ratio PR 91.70 %
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PVsyst V7.3.1

VCO, Simulation date:
20/03/23 17:13
with v7.2.8

STE Energy S.r.l. (Italy)

General parameters

Grid-Connected System

PV Field Orientation

Orientation

Tracking plane, horizontal N-S axis
Axis azimuth 16 °

Models used

Transposition Perez
Diffuse Imported
Circumsolar separate

Horizon

Free Horizon

Bifacial system

Model 2D Calculation
unlimited trackers

Bifacial model geometry

Tracker Spacing 6.00 m
Tracker width 2.38 m
GCR 39.7 %
Axis height above ground 3.00 m

Tracking system with backtracking

Tracking algorithm

Astronomic calculation
Backtracking activated

Near Shadings

Linear shadings

Backtracking array

Nb. of trackers 1922 units

Sizes

Tracker Spacing 6.00 m
Collector width 2.38 m
Ground Cov. Ratio (GCR) 39.7 %
Phi min / max. -/+ 45.0 °

Backtracking strategy

Phi limits for BT -/+ 66.4 °
Backtracking pitch 6.00 m
Backtracking width 2.38 m

User's needs

Unlimited load (grid)

Bifacial model definitions

Ground albedo 0.20
Bifaciality factor 85 %
Rear shading factor 5.0 %
Rear mismatch loss 10.0 %
Shed transparent fraction 0.0 %

PV Array Characteristics

PV module

Manufacturer Risen Energy Co., Ltd
Model RSM132-8-685BHDG

(Custom parameters definition)

Unit Nom. Power 685 Wp
Number of PV modules 53284 units
Nominal (STC) 36.50 MWp
Modules 1903 Strings x 28 In series

At operating cond. (50°C)

Pmpp 34.40 MWp
U mpp 1074 V
I mpp 32043 A

Total PV power

Nominal (STC) 36500 kWp
Total 53284 modules
Module area 165519 m²
Cell area 155088 m²

Inverter

Manufacturer Siemens
Model Sinacon PV4560

(Original PVsyst database)

Unit Nom. Power 4560 kWac
Number of inverters 8 units
Total power 36480 kWac
Operating voltage 919-1500 V
Pnom ratio (DC:AC) 1.00

Power sharing within this inverter

Total inverter power

Total power 36480 kWac
Number of inverters 8 units
Pnom ratio 1.00

**PVsyst V7.3.1**

VCO, Simulation date:
20/03/23 17:13
with v7.2.8

Array losses**Array Soiling Losses**

Loss Fraction 1.0 %

Thermal Loss factor

Module temperature according to irradiance

Uc (const) 29.0 W/m²KUv (wind) 0.0 W/m²K/m/s**DC wiring losses**

Global array res. 0.54 mΩ

Loss Fraction 1.5 % at STC

LID - Light Induced Degradation

Loss Fraction 2.0 %

Module Quality Loss

Loss Fraction -0.1 %

Module mismatch losses

Loss Fraction 2.0 % at MPP

Strings Mismatch loss

Loss Fraction 0.1 %

IAM loss factor

Incidence effect (IAM): User defined profile

0°	20°	40°	60°	70°	75°	80°	85°	90°
1.000	1.000	1.000	1.000	0.992	0.977	0.945	0.852	0.000

System losses**Auxiliaries loss**

Proportionnal to Power 4.0 W/kW

0.0 kW from Power thresh.

AC wiring losses**Inv. output line up to MV transfo**

Inverter voltage 630 Vac tri

Loss Fraction 1.50 % at STC

Inverter: Sinacon PV4560Wire section (8 Inv.) Alu 8 x 3 x 4000 mm²

Average wires length 168 m

MV line up to Injection

MV Voltage 20 kV

Average each inverter

Wires Alu 3 x 95 mm²

Length 161 m

Loss Fraction 0.08 % at STC

AC losses in transformers**MV transfo**

Medium voltage 20 kV

One transfo parameters

Nominal power at STC 5.99 MVA

Iron Loss (24/24 Connexion) 5.99 kVA

Iron loss fraction 0.10 % at STC

Copper loss 59.90 kVA

Copper loss fraction 1.00 % at STC

Coils equivalent resistance 3 x 0.66 mΩ

Operating losses at STC (full system)

Nb. identical MV transfos 6

Nominal power at STC 35.94 MVA

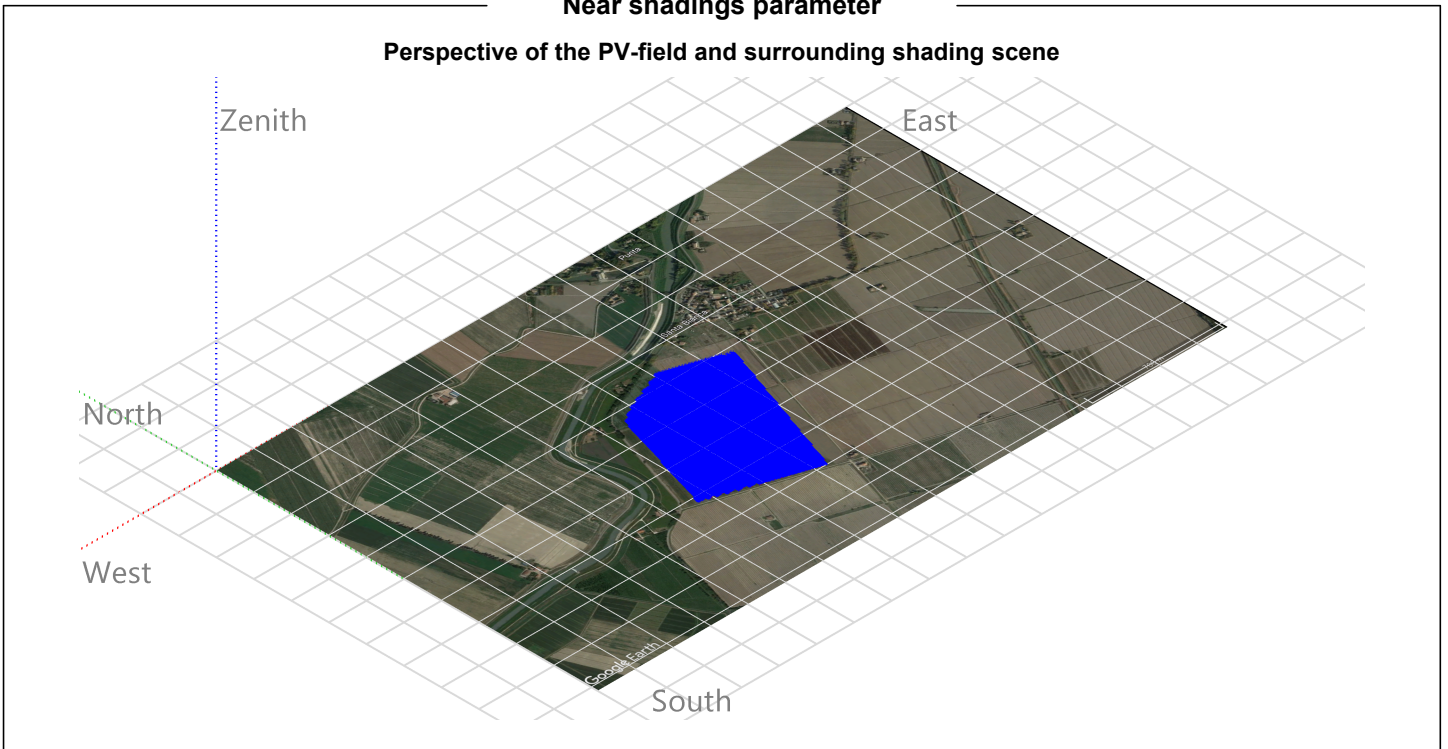
Iron loss (24/24 Connexion) 35.94 kVA

Copper loss 359.43 kVA



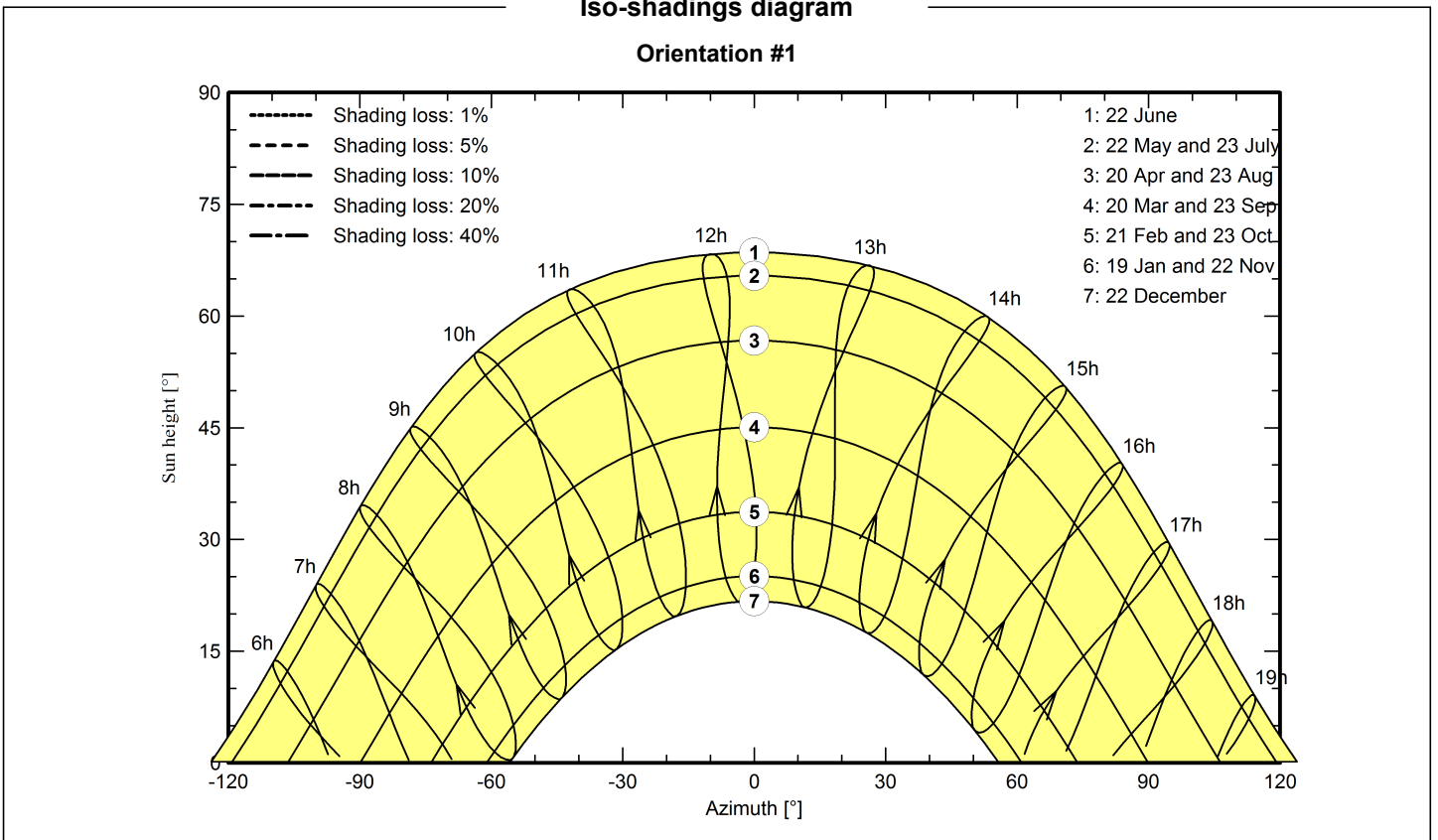
Near shadings parameter

Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram

Orientation #1





Main results

System Production

Produced Energy 60807263 kWh/year

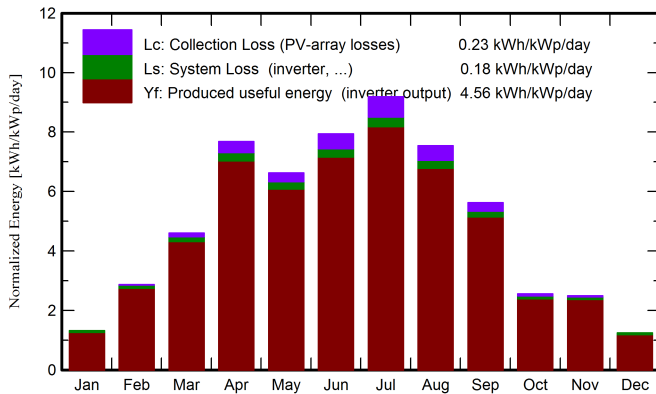
Specific production

1666 kWh/kWp/year

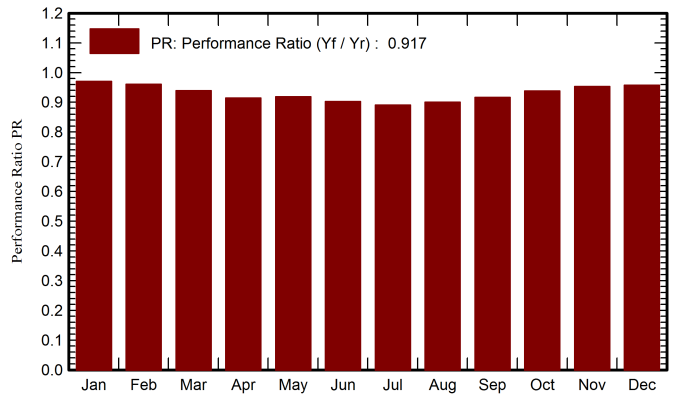
Performance Ratio PR

91.70 %

Normalized productions (per installed kWp)



Performance Ratio PR



Balances and main results

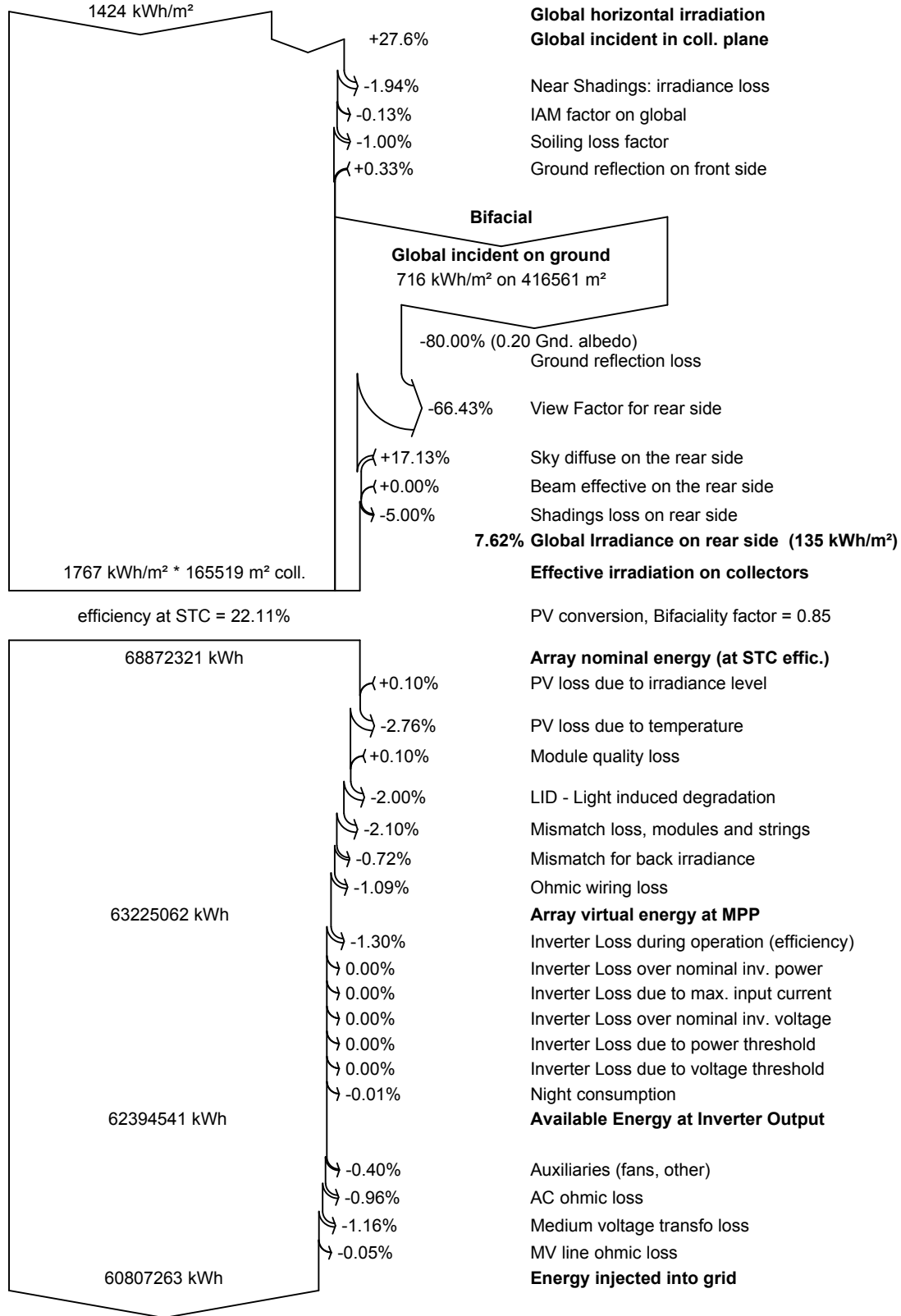
	GlobHor kWh/m ²	DiffHor kWh/m ²	T_Amb °C	GlobInc kWh/m ²	GlobEff kWh/m ²	EArray kWh	E_Grid kWh	PR ratio
January	34.0	24.64	1.22	40.3	38.5	1492948	1427353	0.971
February	61.1	28.79	3.23	80.3	77.8	2926394	2816572	0.961
March	111.2	48.75	10.00	142.6	138.5	5076951	4888261	0.939
April	174.3	62.13	14.87	230.6	224.8	8005570	7698805	0.915
May	170.0	73.23	16.33	205.5	199.9	7174286	6893052	0.919
June	191.3	78.41	22.25	238.0	231.9	8154158	7846107	0.903
July	221.8	72.97	25.07	284.7	278.0	9632020	9259271	0.891
August	181.0	67.51	23.17	233.6	227.7	7979473	7678049	0.900
September	129.6	53.56	19.56	168.7	164.1	5857664	5643471	0.916
October	64.9	38.12	16.16	79.1	76.4	2816129	2710457	0.938
November	54.9	26.69	7.13	74.7	72.3	2699210	2599768	0.953
December	30.0	18.76	3.95	38.5	37.0	1410259	1346097	0.957
Year	1424.2	593.57	13.64	1816.7	1767.2	63225062	60807263	0.917

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



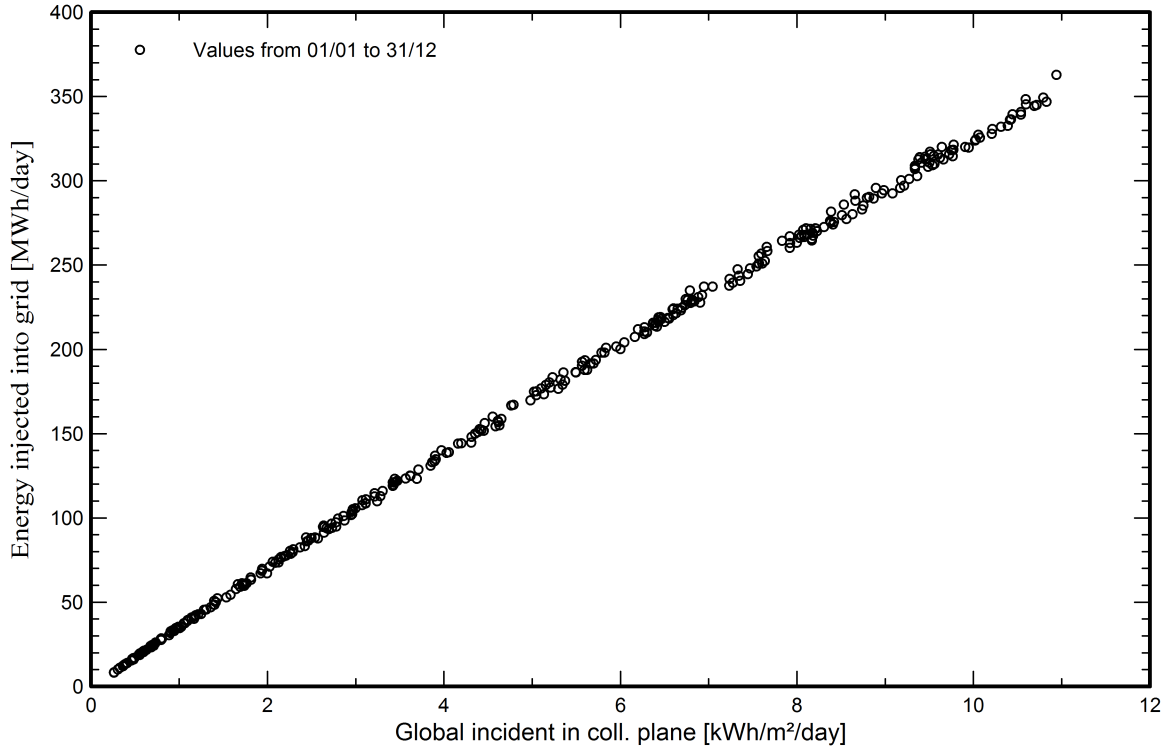
Loss diagram



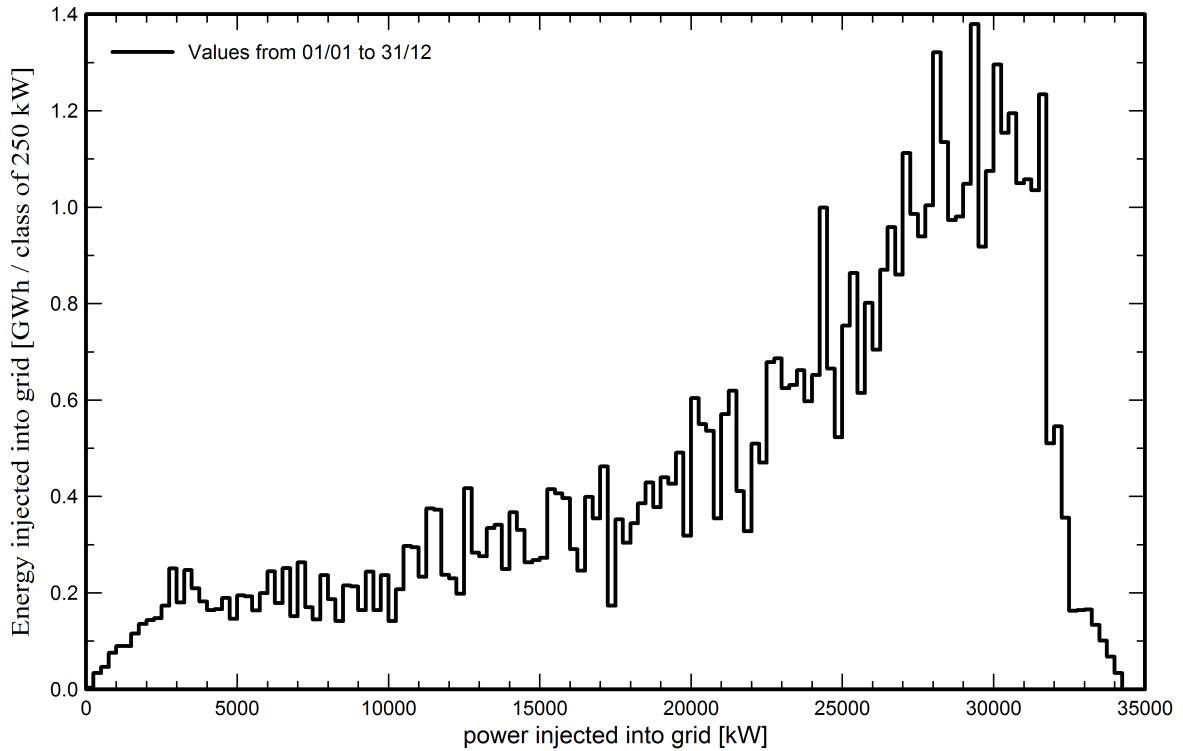


Predef. graphs

Diagramma giornaliero entrata/uscita



Distribuzione potenza in uscita sistema





Single-line diagram

PVsyst V7.3.1

VC0, Simulation date:

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11

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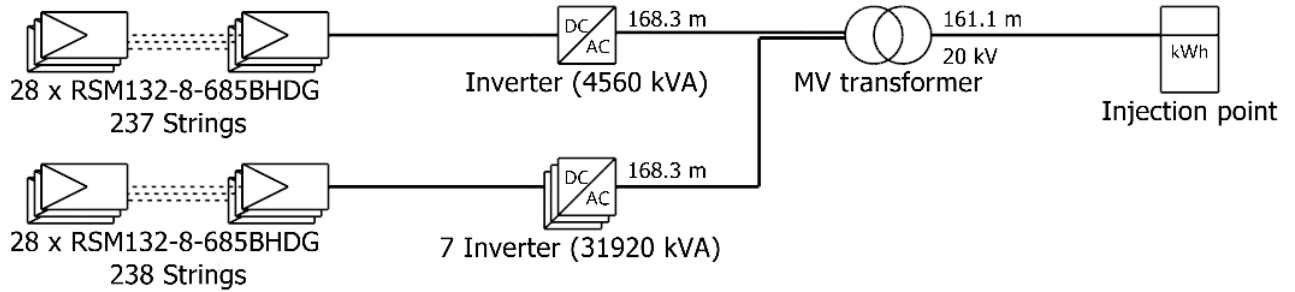
5

4

3

2

1



PV module	RSM132-8-685BHDG
Inverter	Sinacon PV4560
String	28 x RSM132-8-685BHDG

Bondeno agrivoltaico sotto-camp
o Nord STE Energy S.r.l. (Italy)

VC0 : Nuova variante di simulazione

13/04/23

A B C D E F G H I

PVsyst - Simulation report

Grid-Connected System

Project: Bondeno agrivoltaico sotto campo Sud 2

Variant: Nuova variante di simulazione

Tracking system with backtracking

System power: 9226 kWp

Ponte Trevisani - Italia

Autore

STE Energy S.r.l. (Italy)



Project: Bondeno agrivoltaico sotto campo Sud 2

Variant: Nuova variante di simulazione

STE Energy S.r.l. (Italy)

PVsyst V7.3.1

VCO, Simulation date:
21/03/23 12:11
with v7.2.8

Project summary

Geographical Site Ponte Trevisani Italia	Situation Latitude 44.84 °N Longitude 11.38 °E Altitude 11 m Time zone UTC+1	Project settings Albedo 0.20
Meteo data Ponte Trevisani PVGIS api TMY		

System summary

Grid-Connected System	Tracking system with backtracking		Near Shadings Linear shadings
PV Field Orientation Orientation Tracking plane, horizontal N-S axis Axis azimuth -5 °	Tracking algorithm Astronomic calculation Backtracking activated		
System information PV Array Nb. of modules 13468 units Pnom total 9226 kWp	Inverters Nb. of units 3 units Pnom total 13.68 MWac Pnom ratio 0.674		
User's needs Unlimited load (grid)			

Results summary

Produced Energy 15427128 kWh/year	Specific production 1672 kWh/kWp/year	Perf. Ratio PR 91.55 %
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PVsyst V7.3.1

VCO, Simulation date:
21/03/23 12:11
with v7.2.8

STE Energy S.r.l. (Italy)

General parameters

Grid-Connected System		Tracking system with backtracking	
PV Field Orientation			
Orientation		Tracking algorithm	Backtracking array
Tracking plane, horizontal N-S axis		Astronomic calculation	Nb. of trackers 481 units
Axis azimuth -5 °		Backtracking activated	Sizes
			Tracker Spacing 6.00 m
			Collector width 2.38 m
			Ground Cov. Ratio (GCR) 39.7 %
			Phi min / max. +/- 45.0 °
			Backtracking strategy
			Phi limits for BT +/- 66.4 °
			Backtracking pitch 6.00 m
			Backtracking width 2.38 m
Models used			
Transposition	Perez		
Diffuse	Imported		
Circumsolar	separate		
Horizon		Near Shadings	User's needs
Free Horizon		Linear shadings	Unlimited load (grid)
Bifacial system			
Model	2D Calculation unlimited trackers		
Bifacial model geometry		Bifacial model definitions	
Tracker Spacing	6.00 m	Ground albedo	0.20
Tracker width	2.38 m	Bifaciality factor	85 %
GCR	39.7 %	Rear shading factor	5.0 %
Axis height above ground	2.10 m	Rear mismatch loss	10.0 %
		Shed transparent fraction	0.0 %

PV Array Characteristics

PV module		Inverter	
Manufacturer	Risen Energy Co., Ltd	Manufacturer	Siemens
Model	RSM132-8-685BHDG	Model	Sinacon PV4560
(Custom parameters definition)		(Original PVsyst database)	
Unit Nom. Power	685 Wp	Unit Nom. Power	4560 kWac
Number of PV modules	13468 units	Number of inverters	3 units
Nominal (STC)	9226 kWp	Total power	13680 kWac
Modules	481 Strings x 28 In series	Operating voltage	919-1500 V
At operating cond. (50°C)		Pnom ratio (DC:AC)	0.67
Pmpp	8695 kWp	Power sharing within this inverter	
U mpp	1074 V		
I mpp	8099 A		
Total PV power		Total inverter power	
Nominal (STC)	9226 kWp	Total power	13680 kWac
Total	13468 modules	Number of inverters	3 units
Module area	41836 m²	Pnom ratio	0.67
Cell area	39200 m²		



PVsyst V7.3.1

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21/03/23 12:11
with v7.2.8

STE Energy S.r.l. (Italy)

Array losses

Array Soiling Losses

Loss Fraction 1.0 %

Thermal Loss factor

Module temperature according to irradiance

Uc (const) 29.0 W/m²KUv (wind) 0.0 W/m²K/m/s

DC wiring losses

Global array res. 2.1 mΩ

Loss Fraction 1.5 % at STC

LID - Light Induced Degradation

Loss Fraction 2.0 %

Module Quality Loss

Loss Fraction -0.1 %

Module mismatch losses

Loss Fraction 2.0 % at MPP

Strings Mismatch loss

Loss Fraction 0.1 %

IAM loss factor

Incidence effect (IAM): User defined profile

0°	20°	40°	60°	70°	75°	80°	85°	90°
1.000	1.000	1.000	1.000	0.992	0.977	0.945	0.852	0.000

AC wiring losses

Inv. output line up to MV transfo

Inverter voltage 630 Vac tri

Loss Fraction 1.50 % at STC

Inverter: Sinacon PV4560

Wire section (3 Inv.) Alu 3 x 3 x 2500 mm²

Average wires length 156 m

MV line up to Injection

MV Voltage 15 kV

Average each inverter

Wires Alu 3 x 50 mm²

Length 94 m

Loss Fraction 0.08 % at STC

AC losses in transformers

MV transfo

Medium voltage 15 kV

One transfo parameters

Nominal power at STC 3.03 MVA

Iron Loss (24/24 Connexion) 3.03 kVA

Iron loss fraction 0.10 % at STC

Copper loss 30.35 kVA

Copper loss fraction 1.00 % at STC

Coils equivalent resistance 3 x 1.31 mΩ

Operating losses at STC (full system)

Nb. identical MV transfos 3

Nominal power at STC 9.10 MVA

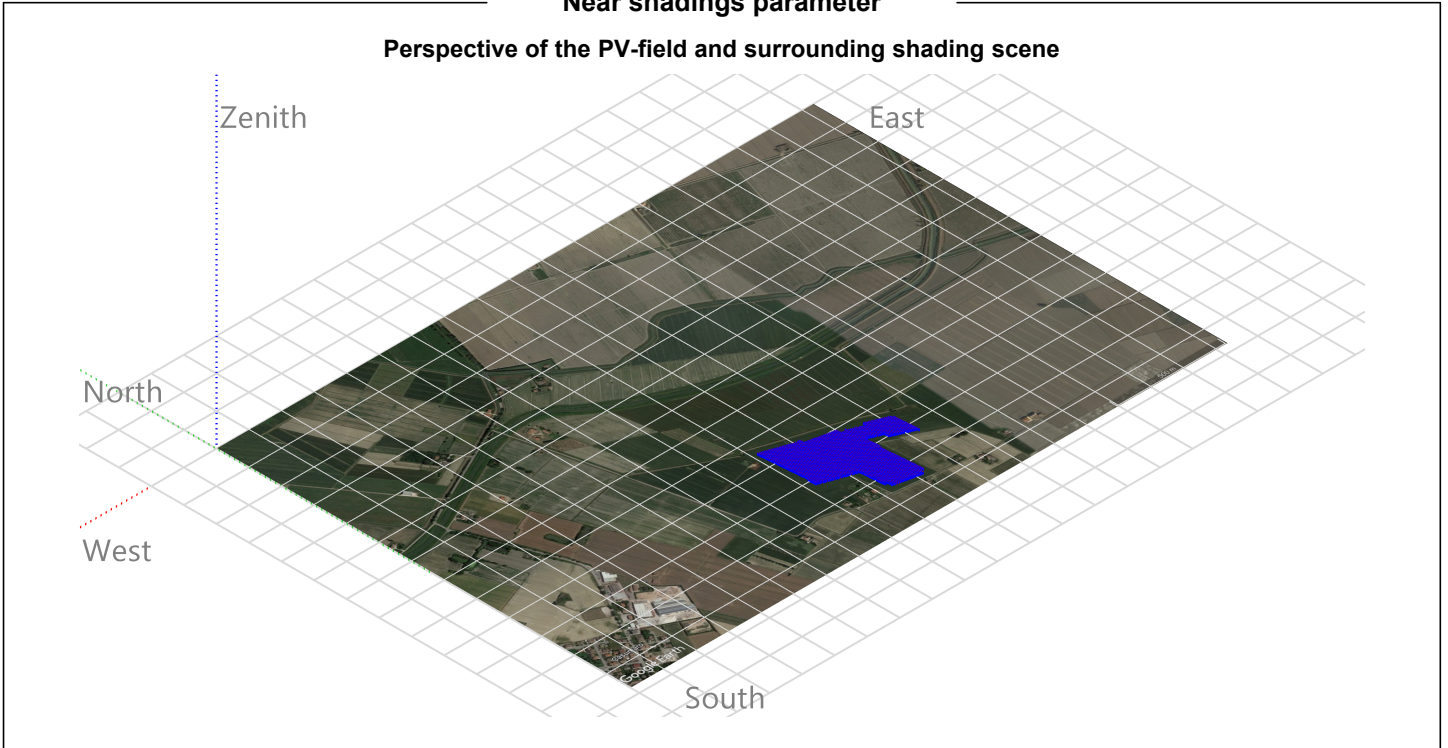
Iron loss (24/24 Connexion) 9.10 kVA

Copper loss 91.05 kVA



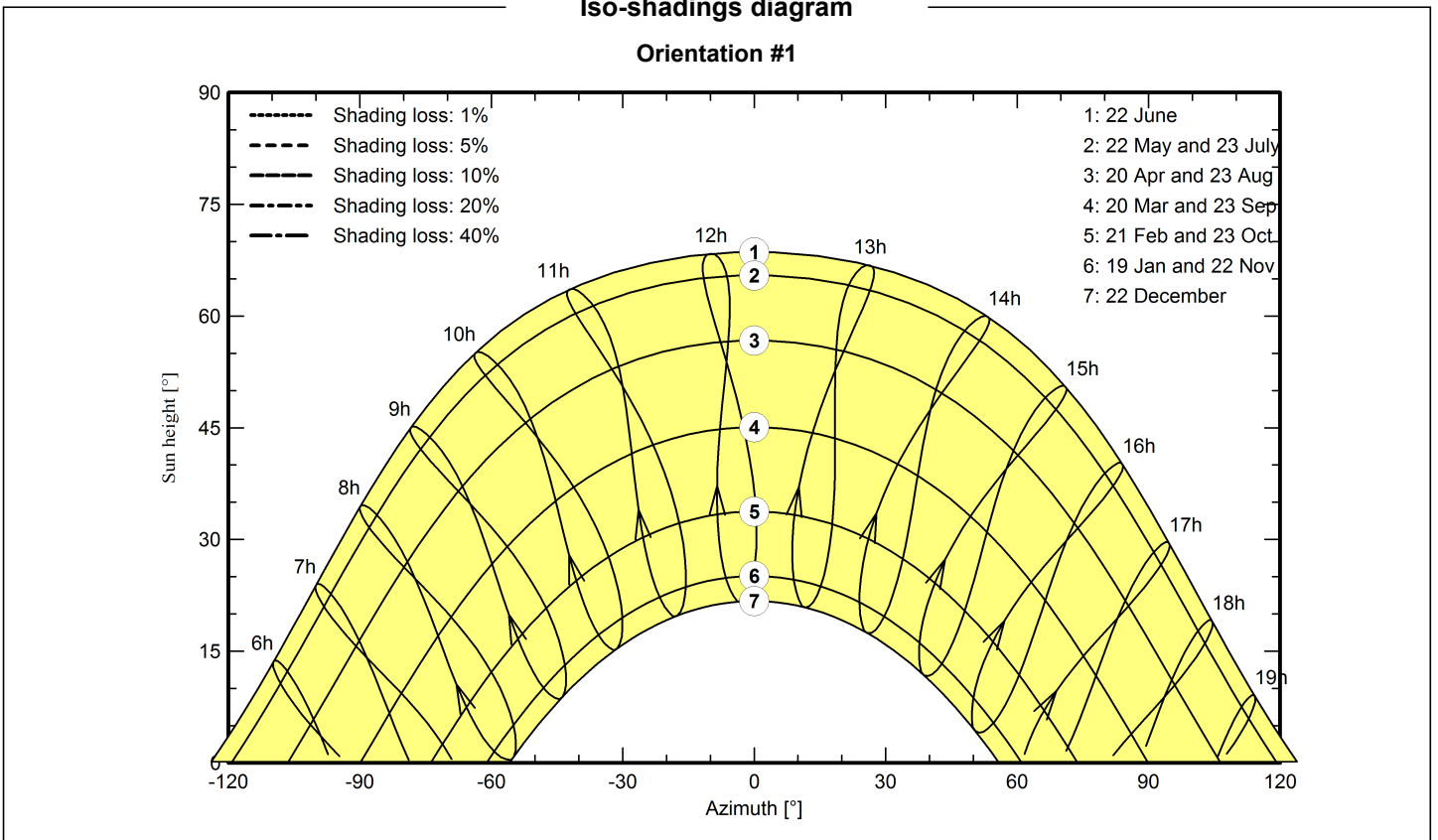
Near shadings parameter

Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram

Orientation #1





Main results

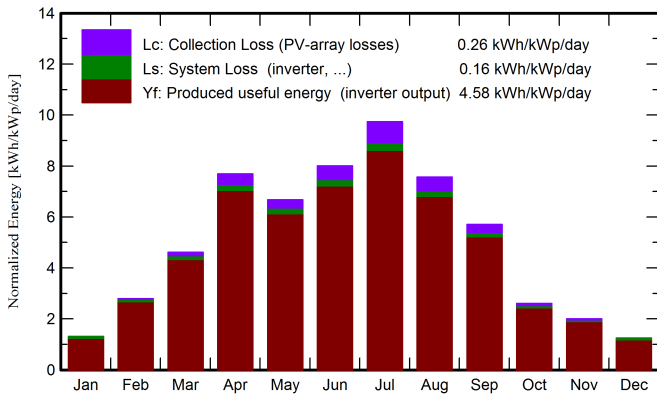
System Production

Produced Energy 15427128 kWh/year

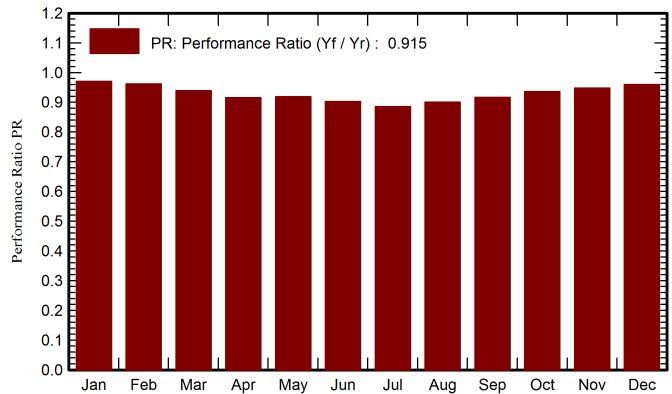
Specific production
Performance Ratio PR

1672 kWh/kWp/year
91.55 %

Normalized productions (per installed kWp)



Performance Ratio PR



Balances and main results

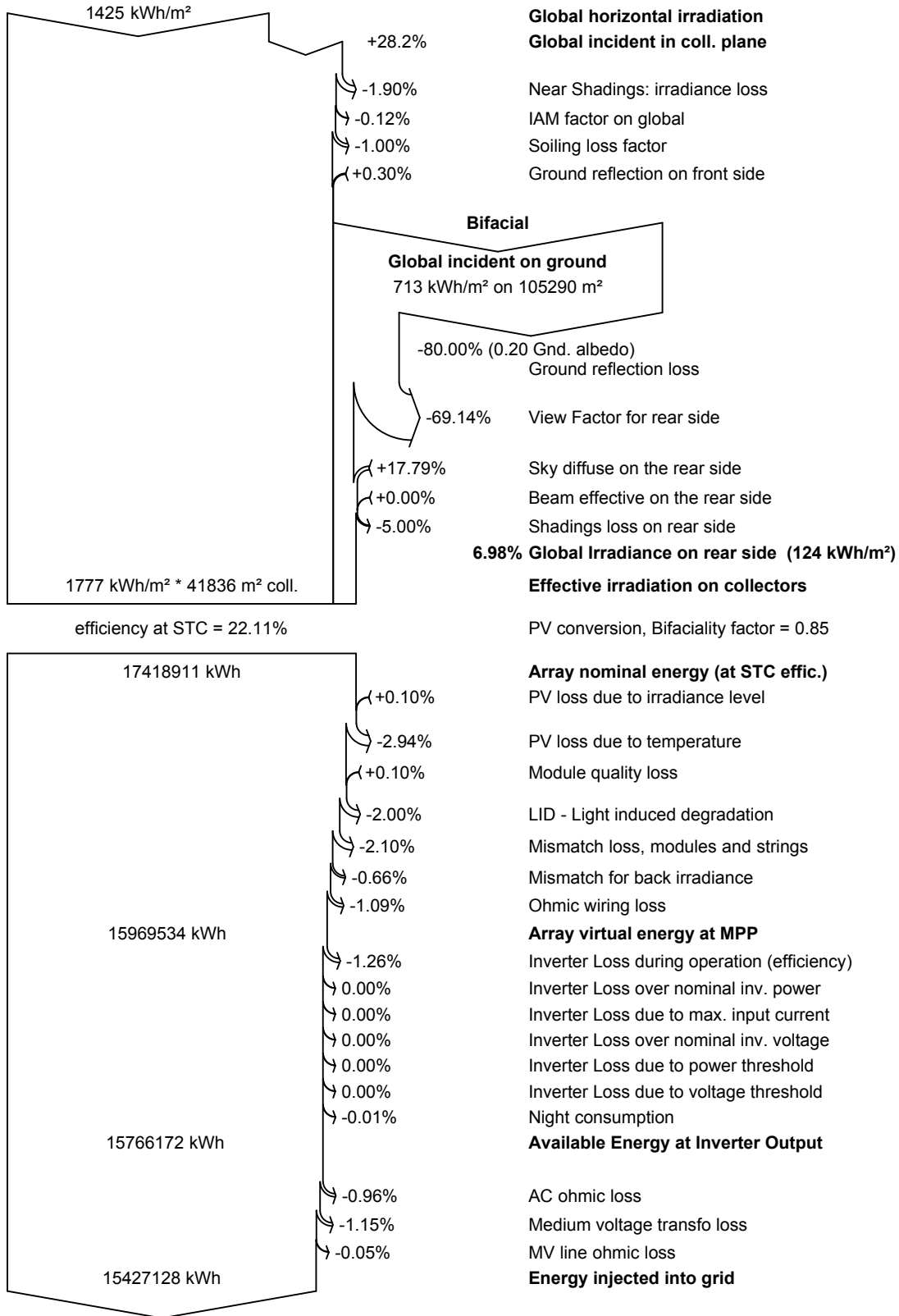
	GlobHor	DiffHor	T_Amb	GlobInc	GlobEff	EArray	E_Grid	PR
	kWh/m ²	kWh/m ²	°C	kWh/m ²	kWh/m ²	kWh	kWh	ratio
January	34.0	24.45	1.22	40.1	38.4	374995	359183	0.971
February	59.8	28.47	3.23	78.2	75.8	718329	693830	0.962
March	111.2	48.57	10.00	143.3	139.2	1283653	1241309	0.939
April	174.2	62.29	14.87	230.8	225.1	2017935	1950408	0.916
May	170.9	73.54	16.33	207.1	201.4	1818820	1756279	0.919
June	191.7	77.32	22.25	240.2	234.1	2069038	2000530	0.903
July	230.7	69.02	26.00	301.9	294.9	2551221	2464813	0.885
August	180.9	66.79	23.17	234.4	228.5	2014482	1947948	0.901
September	130.2	53.42	19.56	171.3	166.7	1496828	1448690	0.917
October	65.1	37.96	16.16	80.8	78.1	722661	697759	0.936
November	46.0	23.65	10.58	60.1	58.1	545095	525358	0.948
December	30.5	18.53	3.95	38.5	37.1	356478	341022	0.959
Year	1425.3	584.00	14.00	1826.6	1777.4	15969534	15427128	0.915

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



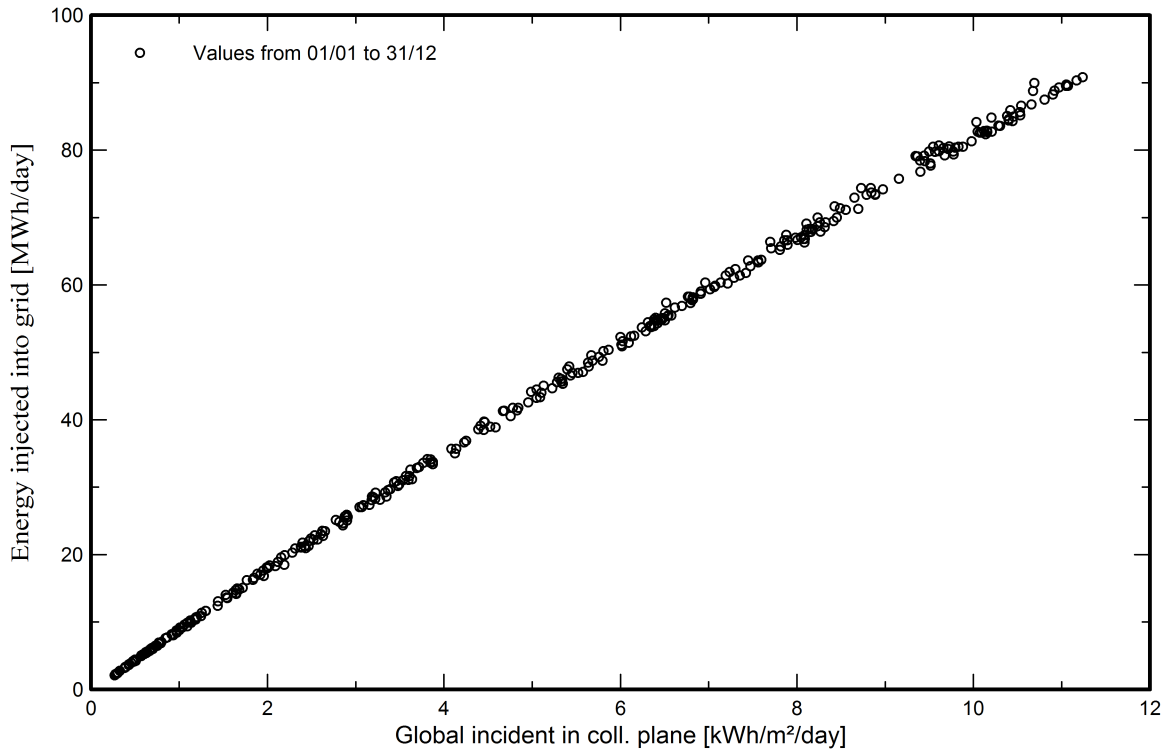
Loss diagram



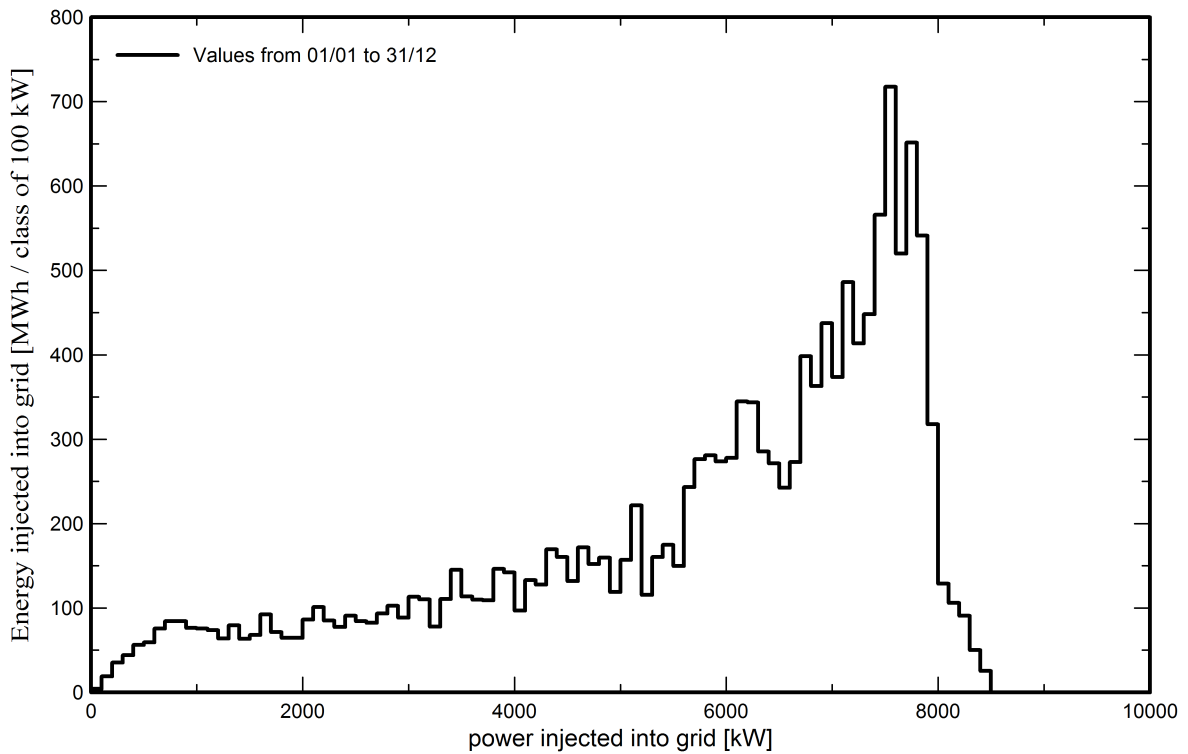


Predef. graphs

Diagramma giornaliero entrata/uscita



Distribuzione potenza in uscita sistema

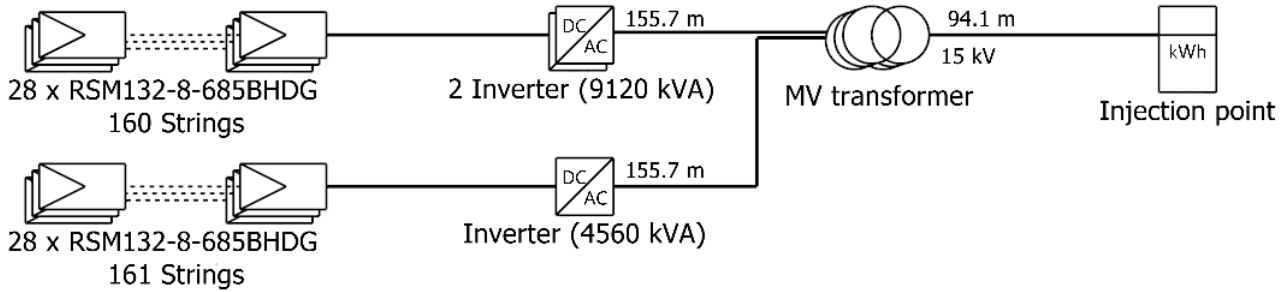




Single-line diagram

PVsyst V7.3.1

VC0, Simulation date:
21/03/23 12:11
with v7.2.8



PV module	RSM132-8-685BHDG
Inverter	Sinacon PV4560
String	28 x RSM132-8-685BHDG

Bondeno agrivoltaico sotto campo Sud 2

STE Energy S.r.l. (I

VC0 : Nuova variante di simulazione

13/04/23

PVsyst - Simulation report

Grid-Connected System

Project: Bondeno agrivoltaico Sotto campo Sud 1

Variant: Nuova variante di simulazione

Tracking system with backtracking

System power: 16.97 MWp

Ponte Trevisani - Italia

Autore

STE Energy S.r.l. (Italy)



Project: Bondeno agrivoltaico Sotto campo Sud 1

Variant: Nuova variante di simulazione

STE Energy S.r.l. (Italy)

PVsyst V7.3.1

VCO, Simulation date:
21/03/23 11:42
with v7.2.8

Project summary

Geographical Site Ponte Trevisani Italia	Situation Latitude 44.85 °N Longitude 11.38 °E Altitude 14 m Time zone UTC+1	Project settings Albedo 0.20
Meteo data Ponte Trevisani PVGIS api TMY		

System summary

Grid-Connected System	Tracking system with backtracking		Near Shadings Linear shadings
PV Field Orientation Orientation Tracking plane, horizontal N-S axis Axis azimuth -11 °	Tracking algorithm Astronomic calculation Backtracking activated		
System information PV Array Nb. of modules 24780 units Pnom total 16.97 MWp	Inverters Nb. of units 3 units Pnom total 13.68 MWac Pnom ratio 1.241		
User's needs Unlimited load (grid)			

Results summary

Produced Energy 27992829 kWh/year	Specific production 1649 kWh/kWp/year	Perf. Ratio PR 90.34 %
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PVsyst V7.3.1

VCO, Simulation date:
21/03/23 11:42
with v7.2.8

STE Energy S.r.l. (Italy)

General parameters

Grid-Connected System		Tracking system with backtracking	
PV Field Orientation		Tracking algorithm	
Orientation		Astronomic calculation	
Tracking plane, horizontal N-S axis		Backtracking activated	
Axis azimuth	-11 °		
Models used		Backtracking array	
Transposition	Perez	Nb. of trackers	885 units
Diffuse	Imported	Sizes	
Circumsolar	separate	Tracker Spacing	6.00 m
		Collector width	2.38 m
		Ground Cov. Ratio (GCR)	39.7 %
		Phi min / max.	-/+ 45.0 °
		Backtracking strategy	
		Phi limits for BT	-/+ 66.4 °
		Backtracking pitch	6.00 m
		Backtracking width	2.38 m
Horizon		Near Shadings	
Free Horizon		Linear shadings	
Bifacial system		User's needs	
Model	2D Calculation unlimited trackers	Unlimited load (grid)	
Bifacial model geometry		Bifacial model definitions	
Tracker Spacing	6.00 m	Ground albedo	0.20
Tracker width	2.38 m	Bifaciality factor	85 %
GCR	39.7 %	Rear shading factor	5.0 %
Axis height above ground	3.00 m	Rear mismatch loss	10.0 %
		Shed transparent fraction	0.0 %

PV Array Characteristics

PV module		Inverter	
Manufacturer	Risen Energy Co., Ltd	Manufacturer	Siemens
Model	RSM132-8-685BHDG	Model	Sinacon PV4560
(Custom parameters definition)		(Original PVsyst database)	
Unit Nom. Power	685 Wp	Unit Nom. Power	4560 kWac
Number of PV modules	24780 units	Number of inverters	3 units
Nominal (STC)	16.97 MWp	Total power	13680 kWac
Modules	885 Strings x 28 In series	Operating voltage	919-1500 V
At operating cond. (50°C)		Pnom ratio (DC:AC)	1.24
Pmpp	16.00 MWp	Power sharing within this inverter	
U mpp	1074 V		
I mpp	14902 A		
Total PV power		Total inverter power	
Nominal (STC)	16974 kWp	Total power	13680 kWac
Total	24780 modules	Number of inverters	3 units
Module area	76975 m²	Pnom ratio	1.24
Cell area	72125 m²		



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Array losses

Array Soiling Losses

Loss Fraction 1.0 %

Thermal Loss factor

Module temperature according to irradiance

Uc (const) 29.0 W/m²KUv (wind) 0.0 W/m²K/m/s

DC wiring losses

Global array res. 1.2 mΩ

Loss Fraction 1.5 % at STC

LID - Light Induced Degradation

Loss Fraction 2.0 %

Module Quality Loss

Loss Fraction -0.1 %

Module mismatch losses

Loss Fraction 2.0 % at MPP

Strings Mismatch loss

Loss Fraction 0.1 %

IAM loss factor

Incidence effect (IAM): User defined profile

0°	20°	40°	60°	70°	75°	80°	85°	90°
1.000	1.000	1.000	1.000	0.992	0.977	0.945	0.852	0.000

AC wiring losses

Inv. output line up to MV transfo

Inverter voltage 630 Vac tri

Loss Fraction 1.50 % at STC

Inverter: Sinacon PV4560

Wire section (3 Inv.) Alu 3 x 3 x 5000 mm²

Average wires length 170 m

MV line up to Injection

MV Voltage 15 kV

Average each inverter

Wires Alu 3 x 150 mm²

Length 154 m

Loss Fraction 0.08 % at STC

AC losses in transformers

MV transfo

Medium voltage 15 kV

One transfo parameters

Nominal power at STC 5.57 MVA

Iron Loss (24/24 Connexion) 5.57 kVA

Iron loss fraction 0.10 % at STC

Copper loss 55.65 kVA

Copper loss fraction 1.00 % at STC

Coils equivalent resistance 3 x 0.71 mΩ

Operating losses at STC (full system)

Nb. identical MV transfos 3

Nominal power at STC 16.70 MVA

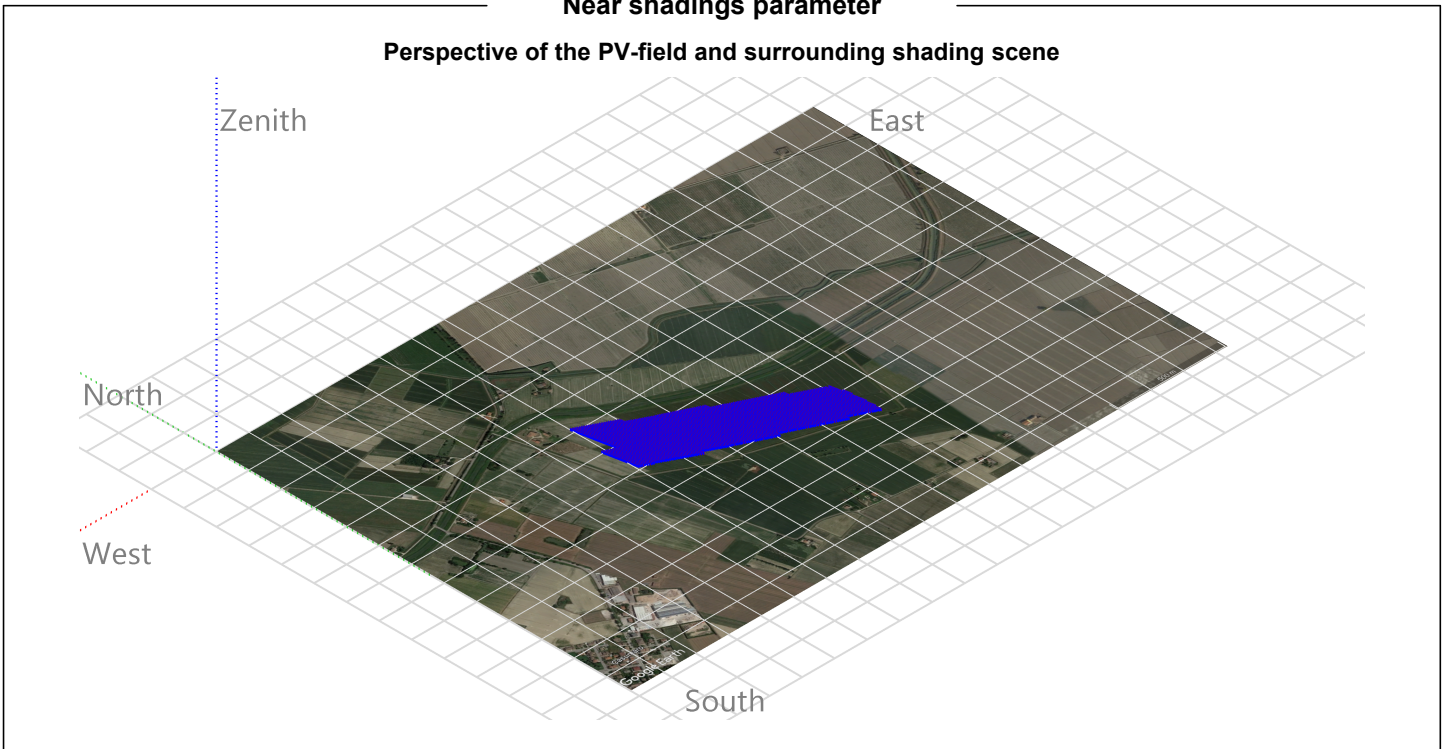
Iron loss (24/24 Connexion) 16.70 kVA

Copper loss 166.96 kVA



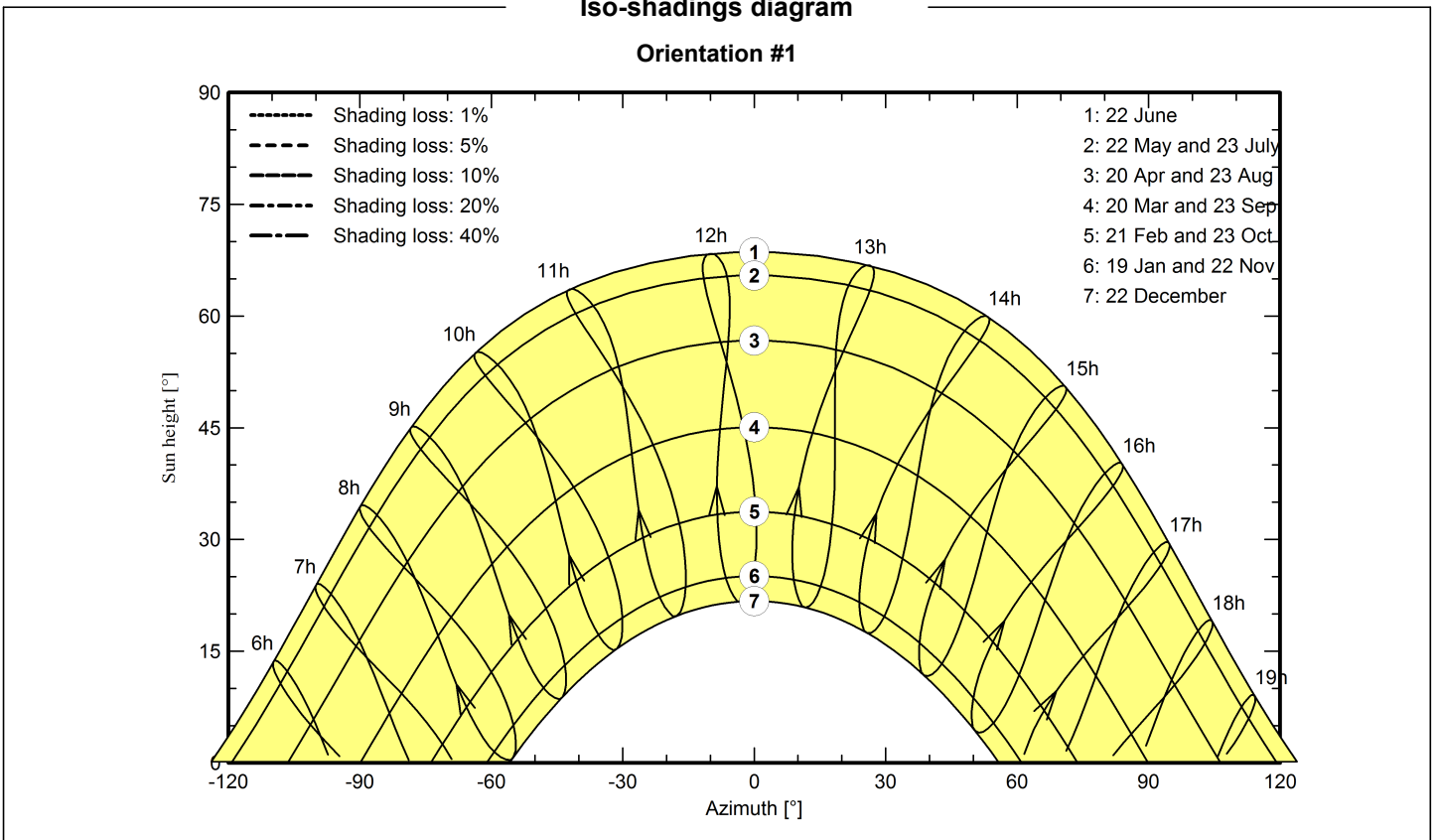
Near shadings parameter

Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram

Orientation #1





Main results

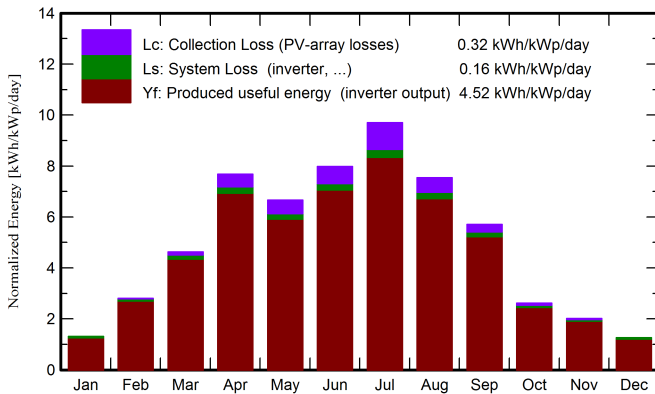
System Production

Produced Energy 27992829 kWh/year

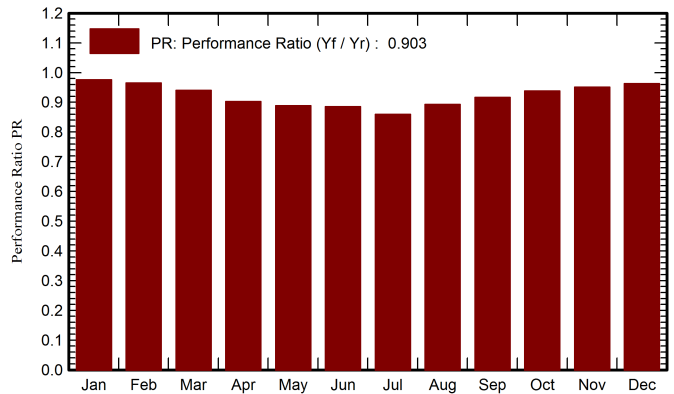
Specific production
Performance Ratio PR

1649 kWh/kWp/year
90.34 %

Normalized productions (per installed kWp)



Performance Ratio PR



Balances and main results

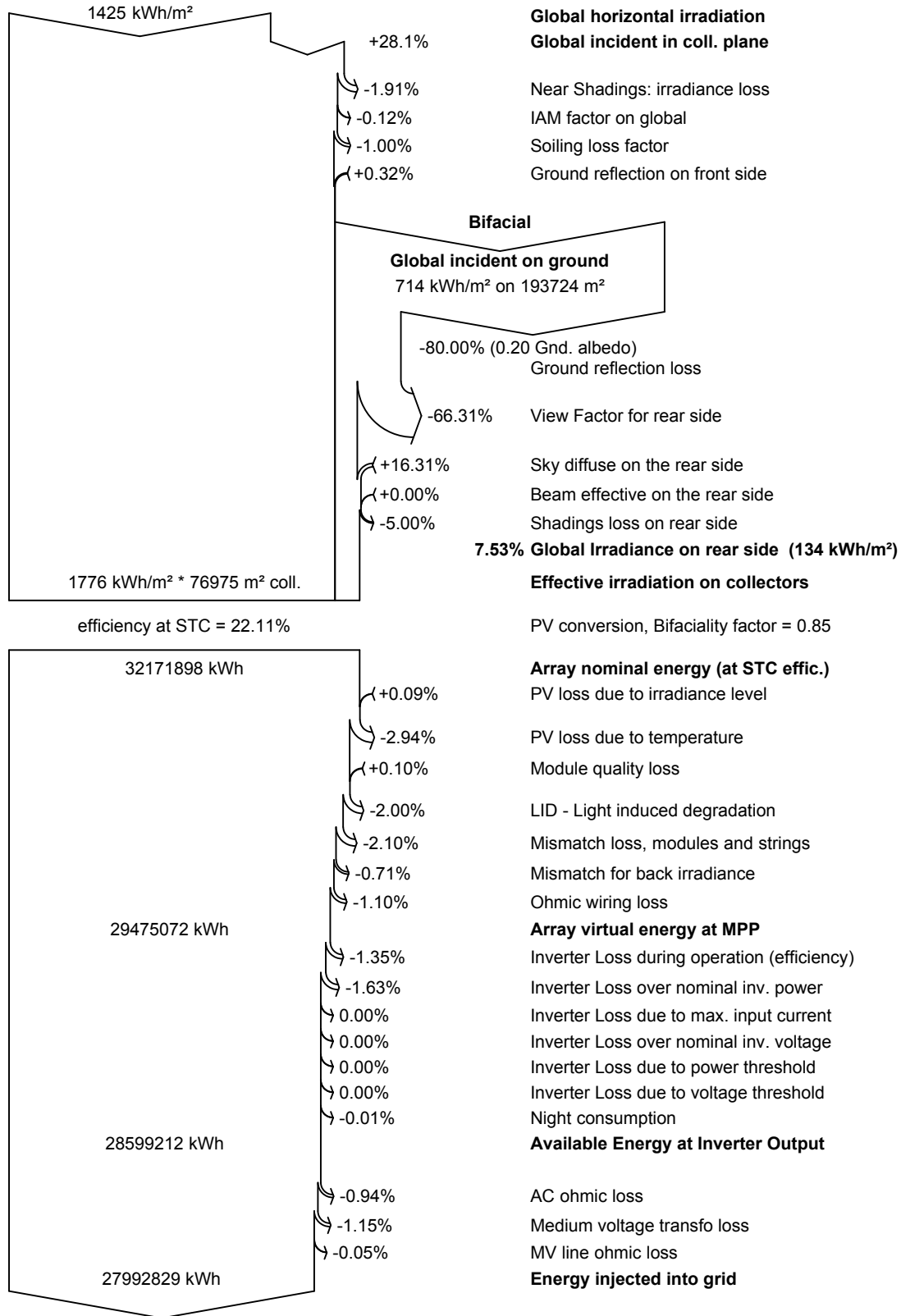
	GlobHor kWh/m ²	DiffHor kWh/m ²	T_Amb °C	GlobInc kWh/m ²	GlobEff kWh/m ²	EArray kWh	E_Grid kWh	PR ratio
January	34.0	24.45	1.22	40.2	38.5	693327	666227	0.976
February	59.8	28.47	3.23	78.5	76.1	1330305	1285274	0.965
March	111.2	48.57	10.00	143.7	139.6	2373438	2292844	0.940
April	174.2	62.29	14.87	230.5	224.8	3658841	3530982	0.902
May	170.9	73.54	16.33	206.6	201.0	3227213	3114055	0.888
June	191.7	77.32	22.25	239.5	233.4	3725184	3597724	0.885
July	230.7	69.02	26.00	300.9	294.1	4554011	4393266	0.860
August	180.9	66.79	23.17	233.8	227.9	3668738	3542335	0.893
September	130.2	53.42	19.56	171.3	166.7	2757894	2666020	0.917
October	65.1	37.96	16.16	81.3	78.5	1340377	1295148	0.938
November	46.0	23.65	10.58	60.3	58.4	1008784	973493	0.951
December	30.5	18.53	3.95	38.9	37.4	662394	635461	0.963
Year	1425.3	584.00	14.00	1825.4	1776.3	29000506	27992829	0.903

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



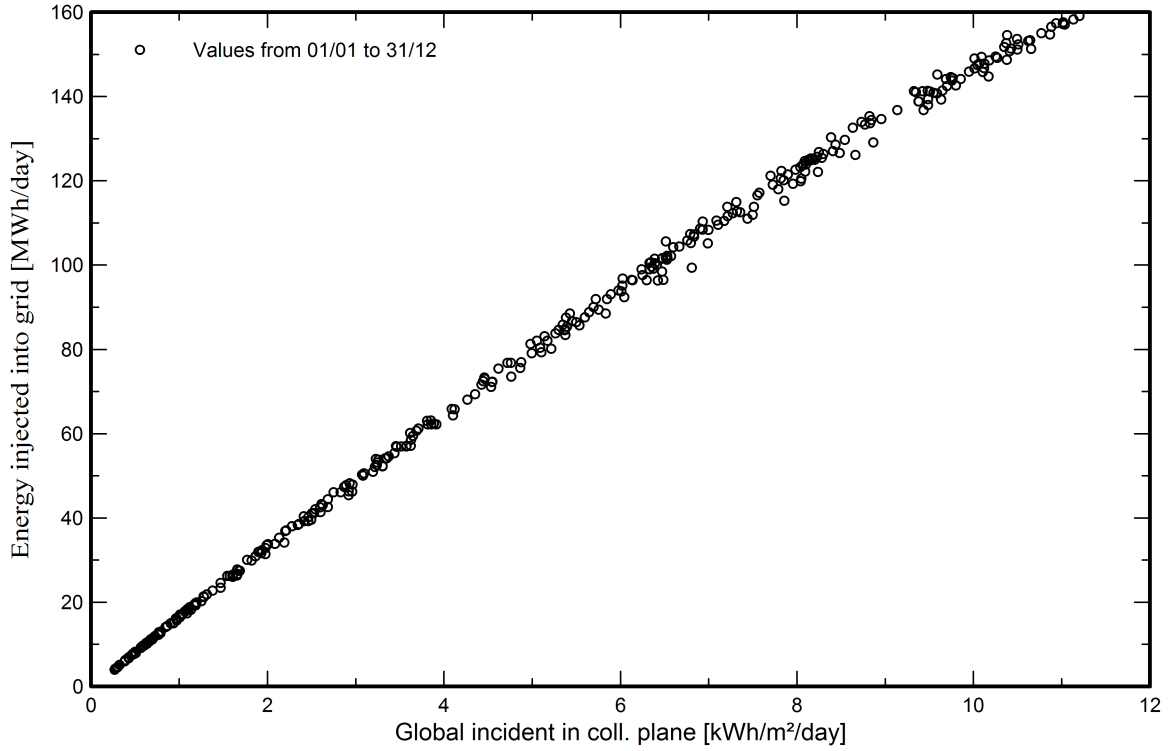
Loss diagram



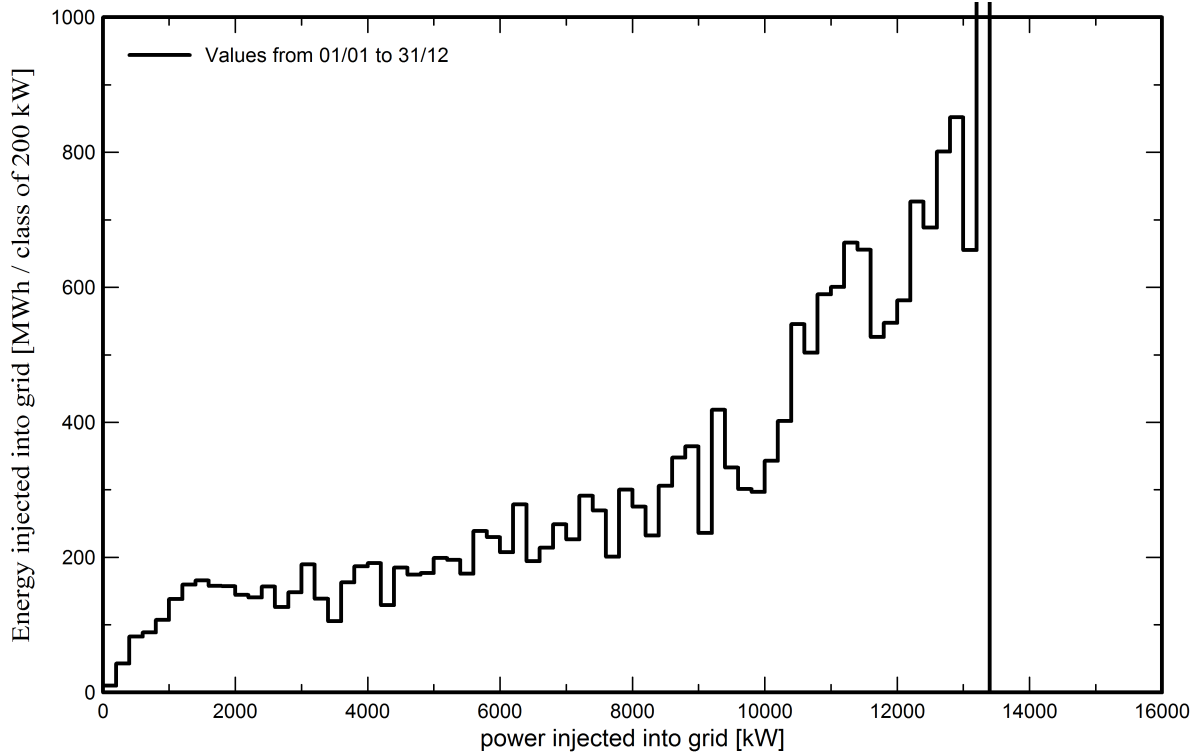


Predef. graphs

Diagramma giornaliero entrata/uscita



Distribuzione potenza in uscita sistema

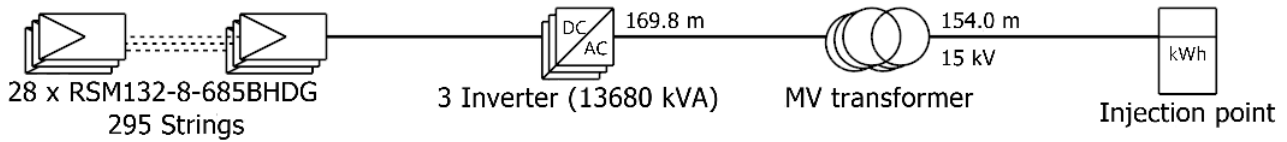




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Single-line diagram



PV module	RSM132-8-685BHDG
Inverter	Sinacon PV4560
String	28 x RSM132-8-685BHDG

Bondeno agrivoltaico Sotto cam
po Sud 1

STE Energy S.r.l. (I

VC0 : Nuova variante di simulazione

13/04/23