Version 7.2.18

PVsyst - Simulation report

Grid-Connected System

Project: Fuji Seal

Variant: 20220524 Fuji Seal Project 978.25 kWp

Tables on a building

System power: 980 kWp

Fuji Seal - Vietnam

Author

Groupe Casino IGC S (France)

Project summary

Geographical Site
Fuji Seal
Vietnam

Situation

Latitude	11.11 °N
Longitude	106.70 °E
Altitude	43 m
Time zone	UTC+7

Project settings

Albedo	0.20

Meteo data
Fuji Seal
Solargis - Synthetic

System summary

Grid-Connected System

Tables on a building

PV Field Orientation

Fixed planes	2 orientations
Tilts/azimuths	8 / 0 °
	8 / 180 °

Near Shadings
Linear shadings

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	1799 units
Pnom total	980 kWp

Inverters

Nb. of units	8 units
Pnom total	800 kWac
Pnom ratio	1.226

Results summary

Produced Energy	1415 MWh/year	Specific production	1443 kWh/kWp/year	Perf. Ratio PR	80.21 %

Table of contents

PVsyst V7.2.18
VC1, Simulation date:
21/12/22 09:51
with v7.2.18

General parameters

Grid-Connected System

Tables on a building

PV Field Orientation

Orientation		Sheds configuration	Models used	
Fixed planes	2 orientations		Transposition	Perez
Tilts/azimuths	8 / 0 °		Diffuse	Perez, Meteonorm
	8 / 180 °		Circumsolar	separate

Horizon	Near Shadings	User's needs
Free Horizon	Linear shadings	Unlimited load (grid)

PV Array Characteristics

PV module

Manufacturer	JA Solar
Model	JAM72S30-545/MR
(Custom parameters definition)	
Unit Nom. Power	545 Wp
Number of PV modules	1799 units
Nominal (STC)	980 kWp

Inverter

Manufacturer	Huawei Technologies
Model	SUN2000-100KTL-M1-400Vac
(Custom parameters definition)	
Unit Nom. Power	100 kWac
Number of inverters	8 units
Total power	800 kWac

Array #1 - 16 PV 0 deg

Orientation	#1		
Tilt/Azimuth	8/0 °		
Number of PV modules	240 units	Number of inverters	12 * MPPT 10% 1.2 unit
Nominal (STC)	131 kWp	Total power	120 kWac
Modules	15 Strings x 16 In series		
At operating cond. (50°C)		Operating voltage	200-1000 V
Pmpp	120 kWp	Max. power (=>30°C)	110 kWac
U mpp	601 V	Pnom ratio (DC:AC)	1.09
I mpp	199 A		

Array #2 - 18 PV 0 deg

Orientation	#1		
Tilt/Azimuth	8/0 °		
Number of PV modules	144 units	Number of inverters	6 * MPPT 10% 0.6 unit
Nominal (STC)	78.5 kWp	Total power	60.0 kWac
Modules	8 Strings x 18 In series		
At operating cond. (50°C)		Operating voltage	200-1000 V
Pmpp	71.7 kWp	Max. power (=>30°C)	110 kWac
U mpp	677 V	Pnom ratio (DC:AC)	1.31
I mpp	106 A		

Array #3 - 15 PV 180 deg

Orientation	#2		
Tilt/Azimuth	8/180 °		
Number of PV modules	390 units	Number of inverters	16 * MPPT 10% 1.6 units
Nominal (STC)	213 kWp	Total power	160 kWac
Modules	26 Strings x 15 In series		
At operating cond. (50°C)		Operating voltage	200-1000 V
Pmpp	194 kWp	Max. power (=>30°C)	110 kWac
U mpp	564 V	Pnom ratio (DC:AC)	1.33
I mpp	345 A		

PVsyst V7.2.18
VC1, Simulation date:
21/12/22 09:51
with v7.2.18

PV Array Characteristics

Array #4 - 17 PV 180 deg

Orientation	#2		
Tilt/Azimuth	8/180 °		
Number of PV modules	17 units	Number of inverters	1 * MPPT 10% 0.1 unit
Nominal (STC)	9.27 kWp	Total power	10.0 kWac
Modules	1 String x 17 In series		
At operating cond. (50°C)		Operating voltage	200-1000 V
Pmpp	8.47 kWp	Max. power (=>30°C)	110 kWac
U mpp	639 V	Pnom ratio (DC:AC)	0.93
I mpp	13 A		

Array #5 - 18 PV 180 deg

Orientation	#2		
Tilt/Azimuth	8/180 °		
Number of PV modules	1008 units	Number of inverters	45 * MPPT 10% 4.5 units
Nominal (STC)	549 kWp	Total power	450 kWac
Modules	56 Strings x 18 In series		
At operating cond. (50°C)		Operating voltage	200-1000 V
Pmpp	502 kWp	Max. power (=>30°C)	110 kWac
U mpp	677 V	Pnom ratio (DC:AC)	1.22
I mpp	742 A		

Total PV power

Nominal (STC)	980 kWp	Total power	800 kWac
Total	1799 modules	Number of inverters	8 units
Module area	4649 m²	Pnom ratio	1.23
Cell area	4280 m²		

Array losses

Array Soiling Losses
Loss Fraction 2.0 %

Thermal Loss factor
Module temperature according to irradiance
Uc (const) 24.0 W/m²K
Uv (wind) 0.0 W/m²K/m/s

LID - Light Induced Degradation
Loss Fraction 2.0 %

Module Quality Loss
Loss Fraction -0.4 %

Module mismatch losses
Loss Fraction 1.0 % at MPP

Strings Mismatch loss
Loss Fraction 1.0 %

IAM loss factor
Incidence effect (IAM): User defined profile

0°	30°	50°	60°	70°	75°	80°	85°	90°
1.000	1.000	1.000	0.983	0.942	0.898	0.843	0.729	0.000

DC wiring losses

Global wiring resistance 7.4 mΩ
Loss Fraction 1.5 % at STC

Array #1 - 16 PV 0 deg
Global array res. 50 mΩ
Loss Fraction 1.5 % at STC

Array #2 - 18 PV 0 deg
Global array res. 105 mΩ
Loss Fraction 1.5 % at STC

Array #3 - 15 PV 180 deg
Global array res. 27 mΩ
Loss Fraction 1.5 % at STC

Array #4 - 17 PV 180 deg
Global array res. 795 mΩ
Loss Fraction 1.5 % at STC

PVsyst V7.2.18
VC1, Simulation date:
21/12/22 09:51
with v7.2.18

DC wiring losses

Array #5 - 18 PV 180 deg

Global array res.	15 mΩ
Loss Fraction	1.5 % at STC

AC wiring losses

Inv. output line up to injection point

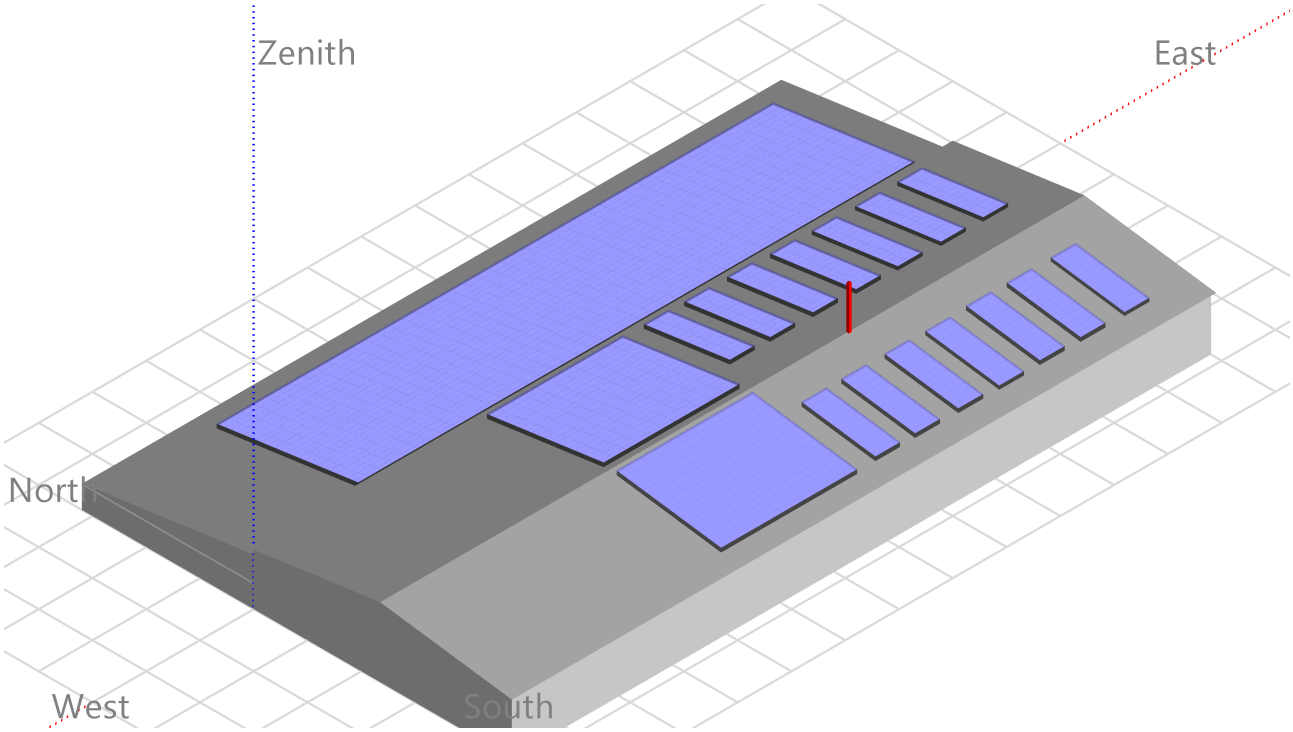
Inverter voltage	400 Vac tri
Loss Fraction	1.50 % at STC

Global System

Wire section	Copper 3 x 1000 mm²
Wires length	133 m

Near shadings parameter

Perspective of the PV-field and surrounding shading scene

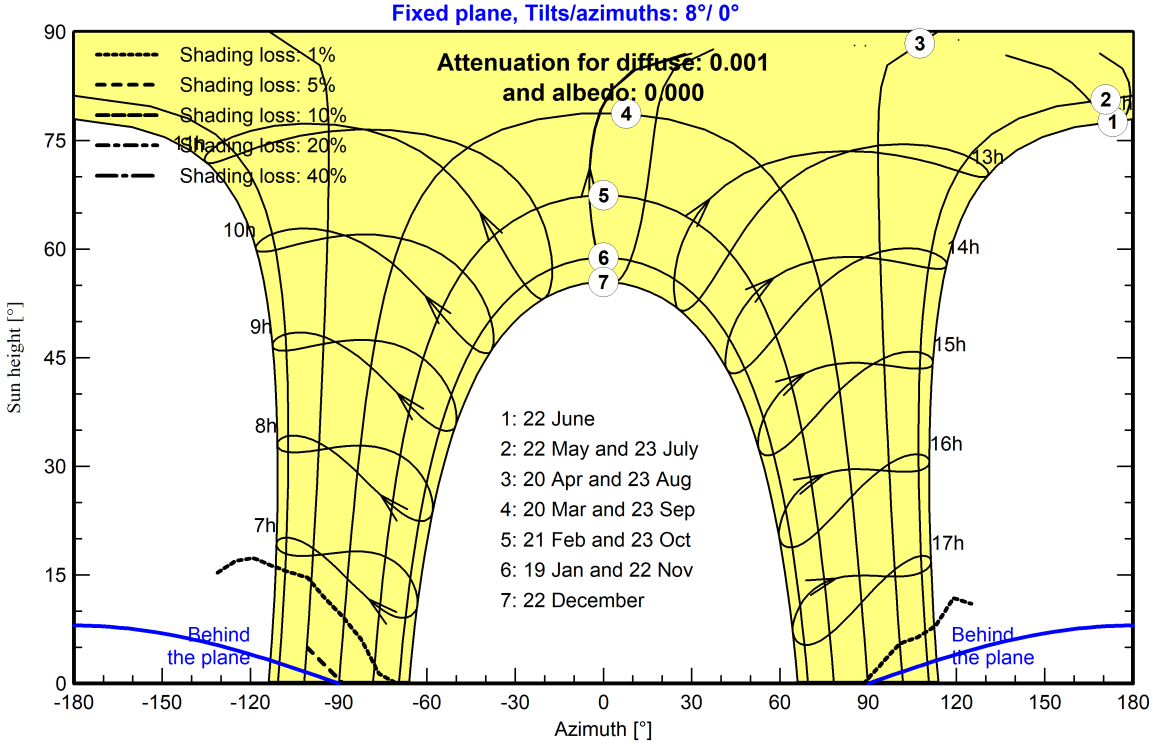


PVsyst V7.2.18
VC1, Simulation date:
21/12/22 09:51
with v7.2.18

Iso-shadings diagram

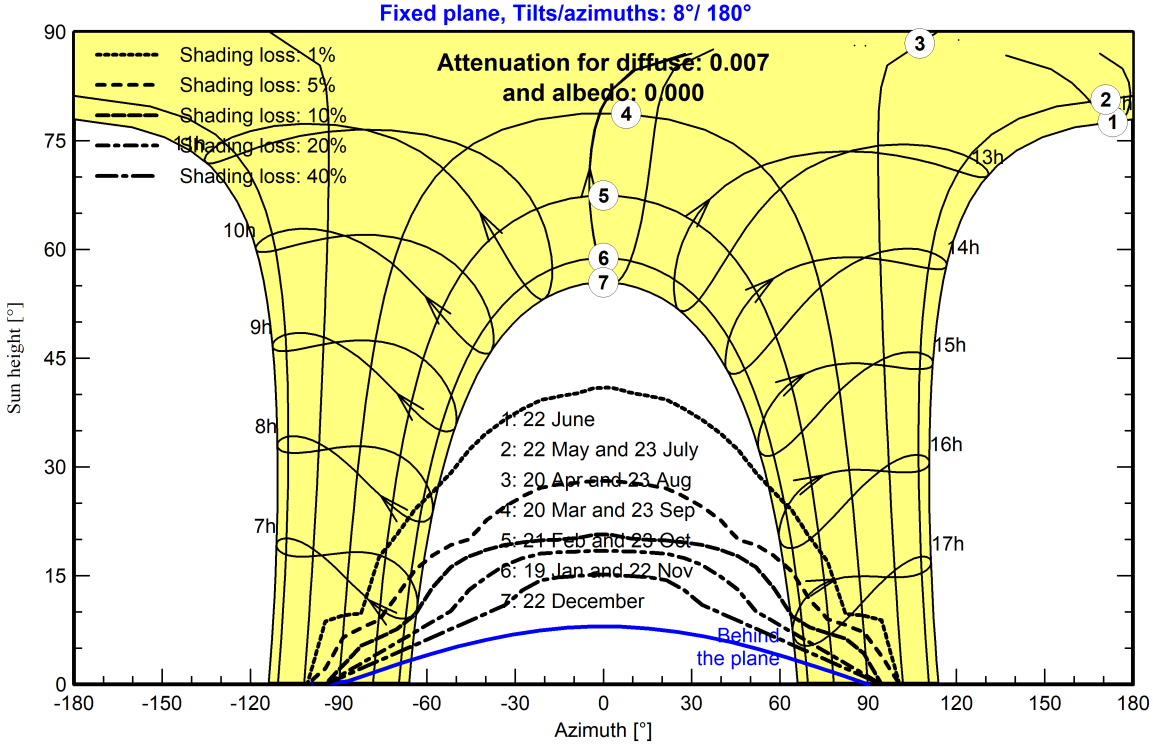
Orientation #1

Fixed plane, Tilts/azimuths: 8°/ 0°



Orientation #2

Fixed plane, Tilts/azimuths: 8°/ 180°

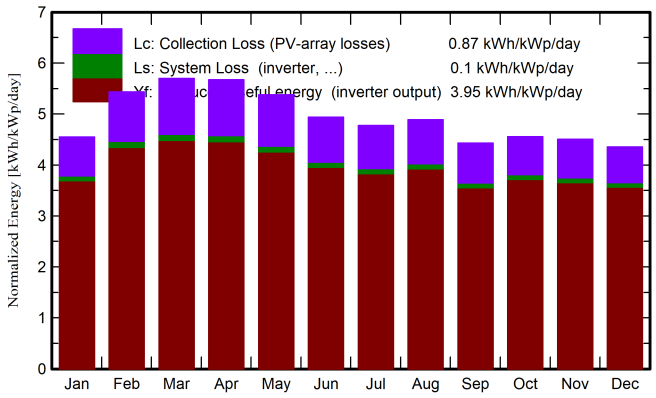


Main results

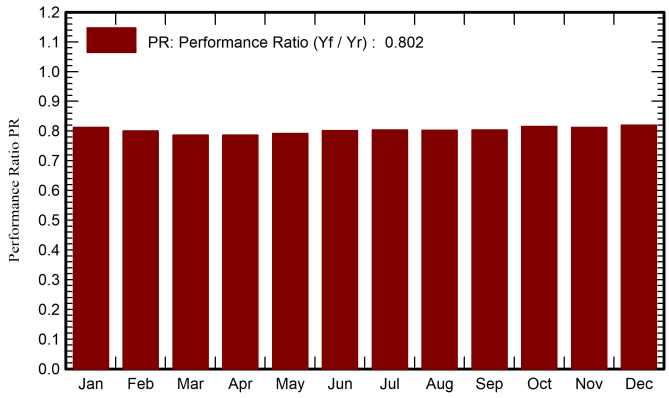
System Production

Produced Energy	1415 MWh/year	Specific production	1443 kWh/kWp/year
		Performance Ratio PR	80.21 %

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	147.8	72.10	27.10	141.1	136.0	115.2	112.3	0.812
February	157.6	69.00	28.00	152.2	147.3	122.6	119.4	0.800
March	179.8	87.30	29.10	176.7	171.1	140.0	136.3	0.787
April	170.3	86.30	29.70	170.3	164.8	134.8	131.3	0.786
May	164.9	82.20	28.90	166.8	161.5	132.9	129.5	0.792
June	146.0	77.10	27.80	148.2	143.4	119.4	116.4	0.801
July	146.3	80.40	27.30	148.0	143.1	119.6	116.6	0.804
August	151.1	81.90	27.30	151.6	146.7	122.4	119.3	0.803
September	134.7	76.70	27.20	133.0	128.6	107.4	104.7	0.803
October	145.2	76.30	27.10	141.3	136.6	115.9	113.0	0.816
November	141.3	66.30	27.20	135.1	130.1	110.3	107.6	0.812
December	142.0	69.20	26.79	135.0	130.0	111.2	108.5	0.820
Year	1827.0	924.80	27.79	1799.1	1739.1	1451.7	1414.9	0.802

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

PVsyst V7.2.18
VC1, Simulation date:
21/12/22 09:51
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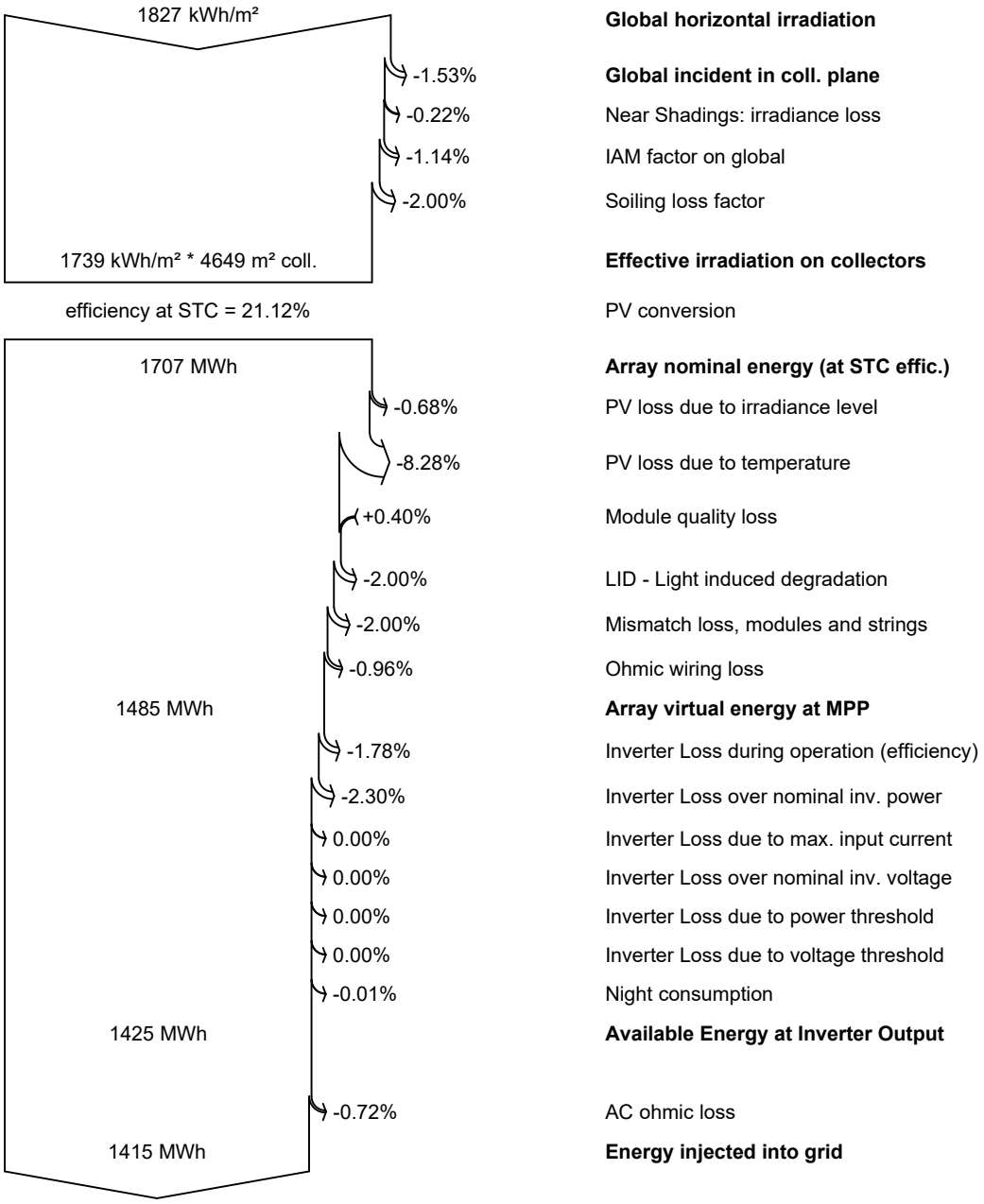
Loss diagram



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VC1, Simulation date:
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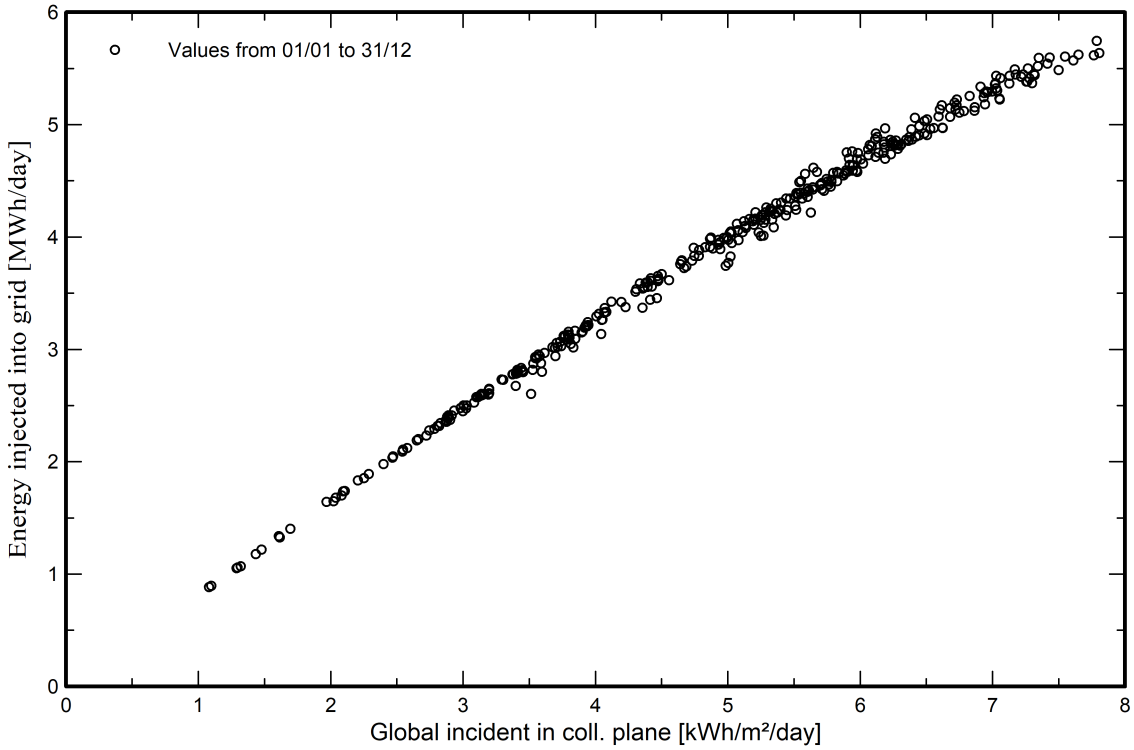
Special graphs

Daily Input/Output diagram



System Output Power Distribution