



Version 7.4.5

PVsyst - Simulation report

Grid-Connected System

Project: Projekt Mikita Rymasheuski Lublin

Variant: 3

Building system

System power: 6.30 kWp

Lublin - Poland

Author

Wydzial Inżynierii Srodowiska (Poland)



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Project summary			
Geographical Site	Situation		Project settings
Lublin	Latitude	51.25 °N	Albedo
Poland	Longitude	22.57 °E	0.20
	Altitude	188 m	
	Time zone	UTC+1	
Meteo data			
Lublin			
Meteonorm 8.1 (1996-2015), Sat=100% - Synthetic			

System summary			
Grid-Connected System	Building system		
PV Field Orientation	Near Shadings		User's needs
Fixed planes 2 orientations	Linear shadings : Fast (table)		Unlimited load (grid)
Tilts/azimuths 35 / 10 °			
35 / -63 °			
System information			
PV Array	Inverters		
Nb. of modules 14 units	Nb. of units 2 units		
Pnom total 6.30 kWp	Pnom total 6.00 kWac		
	Pnom ratio 1.050		

Results summary				
Produced Energy 6447.54 kWh/year	Specific production 1023 kWh/kWp/year	Perf. Ratio PR		85.46 %

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General parameters	
Grid-Connected System	Building system
PV Field Orientation	
Orientation	
Fixed planes	2 orientations
Tilts/azimuths	35 / 10 ° 35 / -63 °
Horizon	
Free Horizon	
	Sheds configuration
	Near Shadings
	Linear shadings : Fast (table)
	Models used
	Transposition Perez
	Diffuse Perez, Meteonorm
	Circumsolar separate
	User's needs
	Unlimited load (grid)

PV Array Characteristics			
PV module	Inverter		
Manufacturer	Generic		Generic
Model	PEM.BB-450	Model	Sirio EASY 3000
(Custom parameters definition)		(Original PVsyst database)	
Unit Nom. Power	450 Wp	Unit Nom. Power	3.00 kWac
Number of PV modules	14 units	Number of inverters	2 units
Nominal (STC)	6.30 kWp	Total power	6.0 kWac
Array #1 - PV Array			
Orientation	#1		
Tilt/Azimuth	35/10 °		
Number of PV modules	7 units	Number of inverters	1 unit
Nominal (STC)	3150 Wp	Total power	3.0 kWac
Modules	1 strings x 7 In series		
At operating cond. (50°C)		Operating voltage	100-450 V
Pmpp	2834 Wp	Pnom ratio (DC:AC)	1.05
U mpp	217 V		
I mpp	13 A		
Array #2 - Sub-array #2			
Orientation	#2		
Tilt/Azimuth	35/-63 °		
Number of PV modules	7 units	Number of inverters	1 unit
Nominal (STC)	3150 Wp	Total power	3.0 kWac
Modules	1 strings x 7 In series		
At operating cond. (50°C)		Operating voltage	100-450 V
Pmpp	2834 Wp	Pnom ratio (DC:AC)	1.05
U mpp	217 V		
I mpp	13 A		
Total PV power		Total inverter power	
Nominal (STC)	6 kWp	Total power	6 kWac
Total	14 modules	Number of inverters	2 units
Module area	30.6 m²	Pnom ratio	1.05
Cell area	27.8 m²		

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Array losses			
Thermal Loss factor		DC wiring losses	Module Quality Loss
Module temperature according to irradiance		Global array res. 279 mΩ	Loss Fraction -0.3 %
Uc (const) 20.0 W/m²K		Global wiring resistance 139 mΩ	
Uv (wind) 0.0 W/m²K/m/s		Loss Fraction 1.5 % at STC	
Module mismatch losses		IAM loss factor	
Loss Fraction 2.0 % at MPP		ASHRAE Param.: IAM = 1 - bo (1/cos i -1) bo Param. 0.05	



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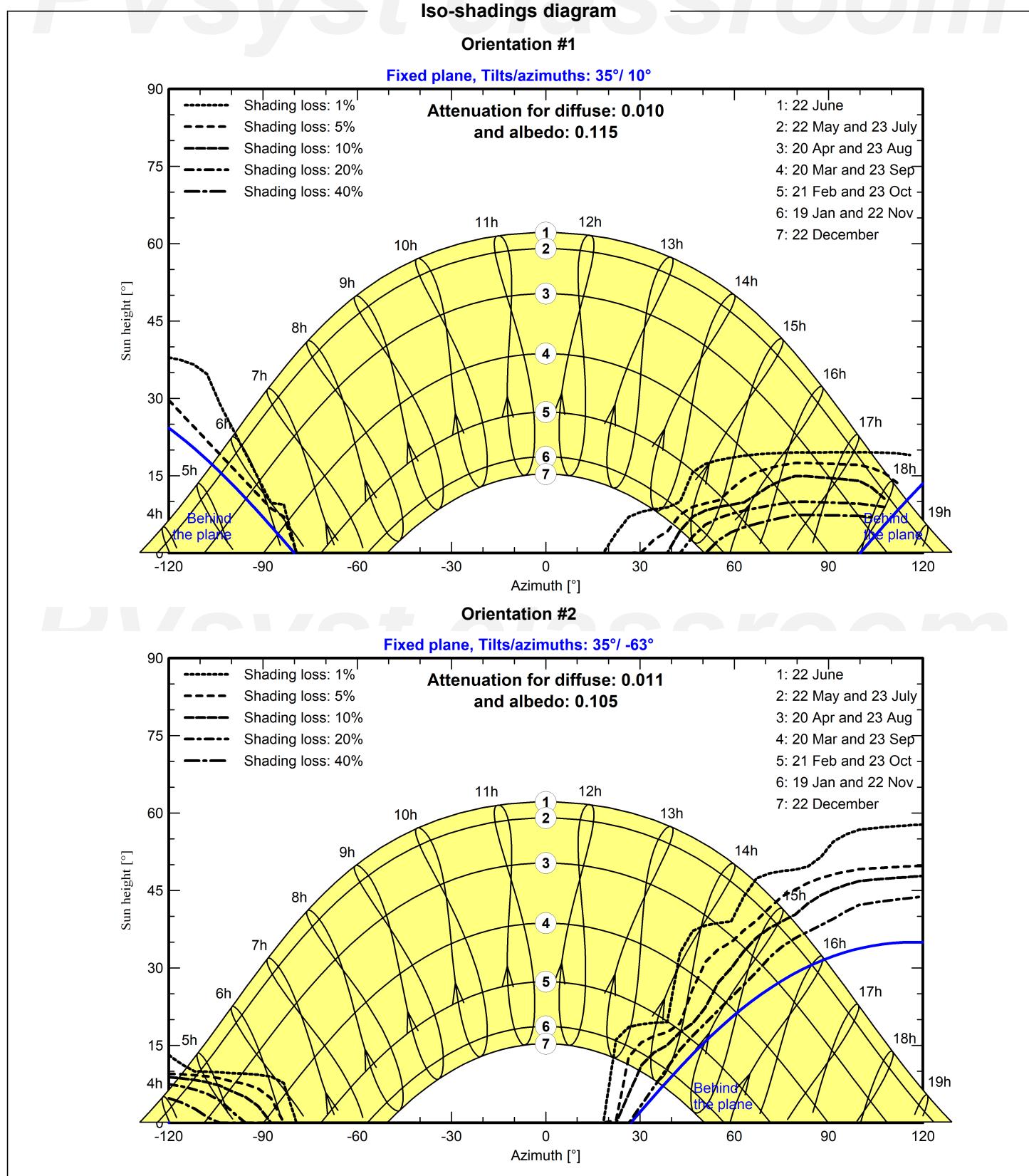
Near shadings parameter

Perspective of the PV-field and surrounding shading scene



PVsyst classroom

PVsyst classroom





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Main results

System Production

Produced Energy 6447.54 kWh/year

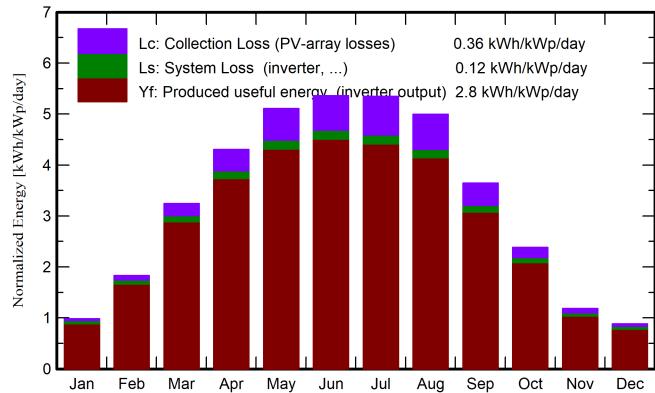
Specific production

1023 kWh/kWp/year

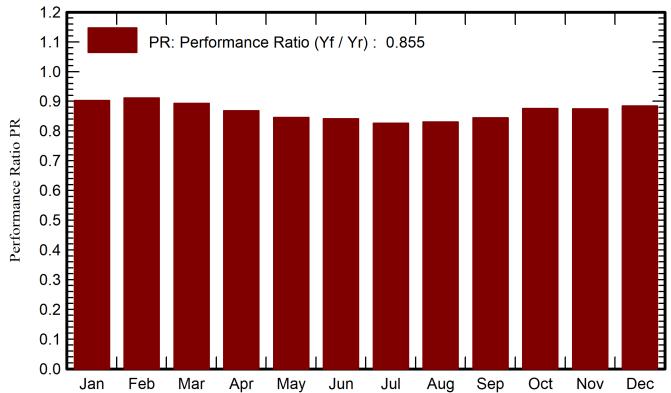
Perf. Ratio PR

85.46 %

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	22.3	16.67	-2.68	30.5	29.1	185.5	173.5	0.902
February	38.3	24.15	-1.55	51.2	49.1	308.7	293.9	0.911
March	81.8	40.82	2.66	100.5	96.6	588.6	565.0	0.892
April	118.8	60.78	8.91	129.2	124.9	735.1	707.0	0.868
May	157.7	72.73	14.00	158.3	152.8	877.5	843.3	0.846
June	165.5	90.71	16.97	160.8	155.3	885.5	852.3	0.841
July	167.3	79.10	19.42	165.8	160.2	897.4	862.8	0.826
August	145.0	68.22	18.90	154.8	149.8	842.0	810.4	0.831
September	94.3	43.37	13.42	109.4	105.6	607.4	582.4	0.845
October	57.2	34.48	8.46	74.0	70.8	426.9	408.2	0.876
November	24.4	15.63	4.00	35.6	34.0	208.7	195.8	0.874
December	16.3	9.87	-0.45	27.4	26.2	164.1	152.8	0.884
Year	1089.0	556.53	8.56	1197.5	1154.4	6727.4	6447.5	0.855

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

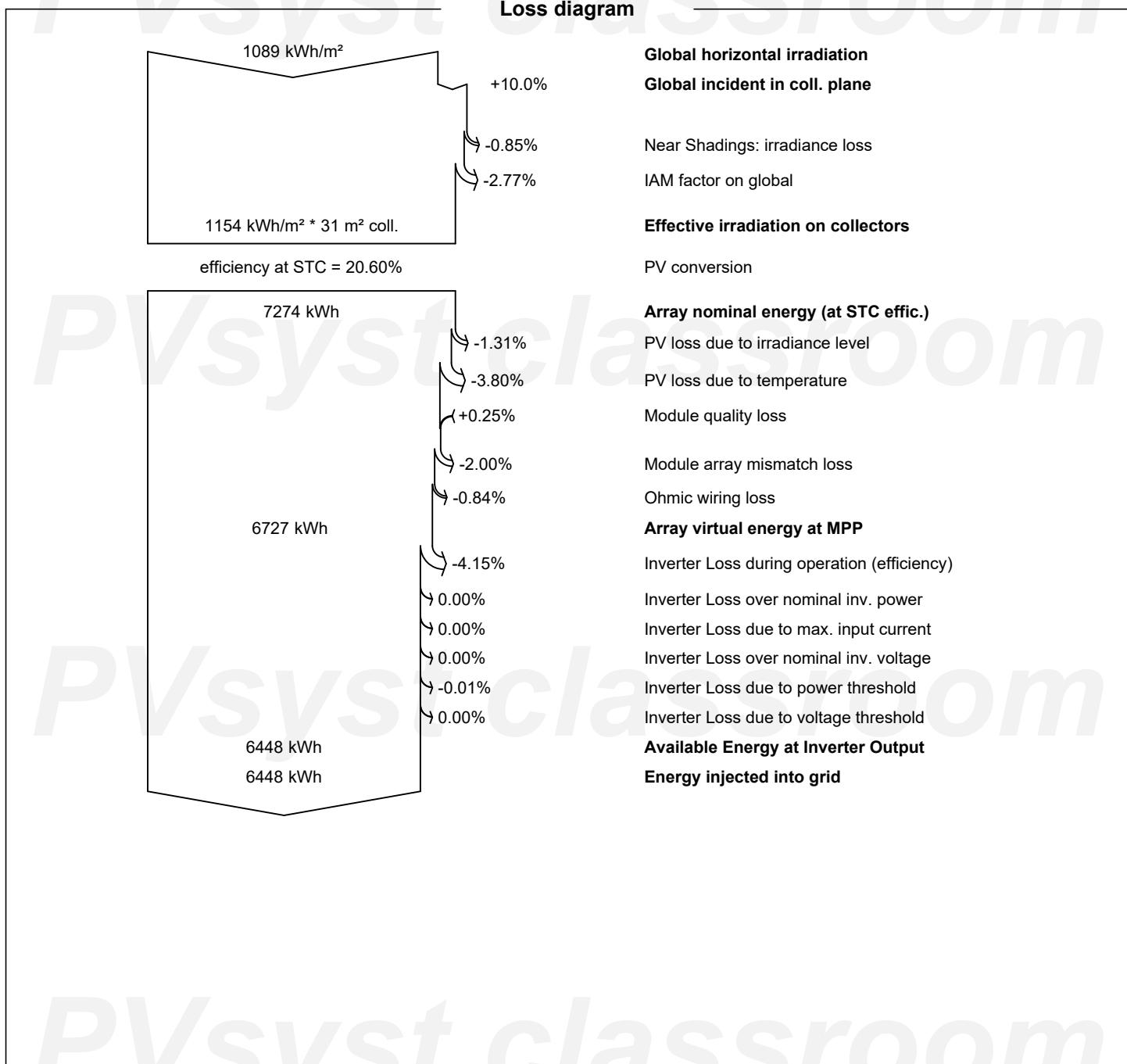
EArray Effective energy at the output of the array
 E_Grid Energy injected into grid
 PR Performance Ratio

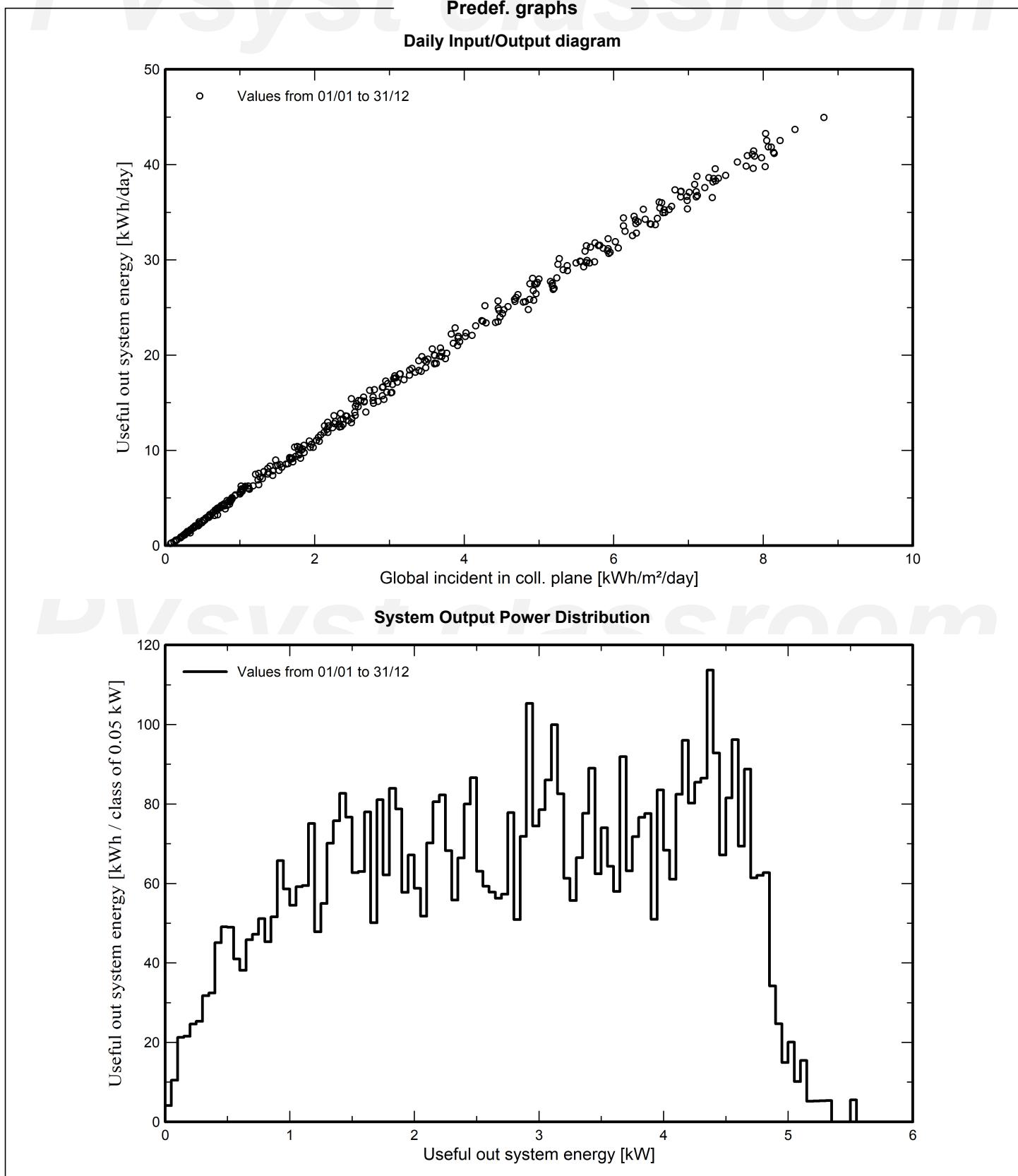


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C

D

E

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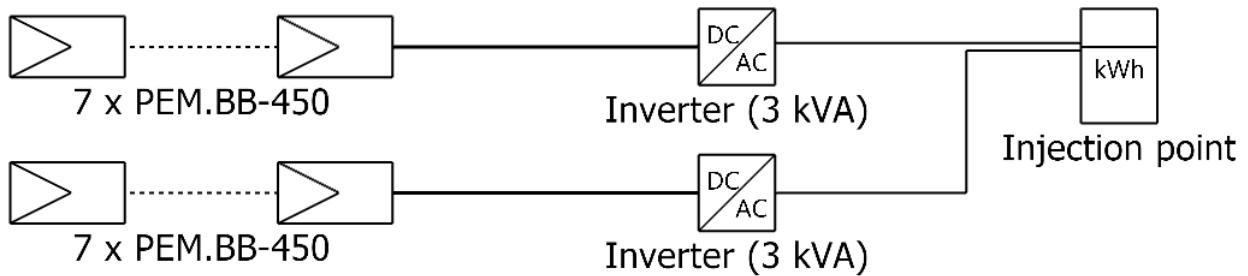
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Single-line diagram



PV module	PEM.BB-450
Inverter	Sirio EASY 3000
String	7 x PEM.BB-450

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