Version 7.3.1

PVsyst - Simulation report

Grid-Connected System

Project: 8 MW solar Power Plant

Variant: New simulation variant_String Inverter

Unlimited sheds

System power: 8007 kWp

Author

PVsyst V7.3.1
VC0, Simulation date:
06/01/24 21:52
with v7.3.1

Project summary

Geographical Site
Bangladesh

Situation

	22.26 °N
Longitude	91.79 °E
Altitude	10 m
Time zone	UTC+6

Project settings
Albedo 0.20

Meteo data

Meteonorm 8.1 (1991-2012), Sat=100% - Synthetic

System summary

Grid-Connected System

Unlimited sheds

PV Field Orientation

Sheds	
Tilt	24 °
Azimuth	0 °

Near Shadings
Mutual shadings of sheds

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	11438 units
Pnom total	8007 kWp

Inverters

Nb. of units	124 units
Pnom total	6200 kWac
Pnom ratio	1.291

Results summary

Produced Energy	12701555 kWh/year	Specific production	1586 kWh/kWp/year	Perf. Ratio PR	92.51 %

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General parameters

Grid-Connected System — **Unlimited sheds**

PV Field Orientation

Orientation		**Sheds configuration**		**Models used**	
Sheds		Nb. of sheds	5 units	Transposition	Perez
Tilt	24 °	Unlimited sheds		Diffuse	Perez, Meteonorm
Azimuth	0 °	**Sizes**		Circumsolar	separate
		Sheds spacing	6.60 m		
		Collector width	3.00 m		
		Ground Cov. Ratio (GCR)	45.5 %		
		Top inactive band	0.02 m		
		Bottom inactive band	0.02 m		
		Shading limit angle			
		Limit profile angle	17.7 °		

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	6.60 m	Ground albedo	0.30
Sheds width	3.04 m	Bifaciality factor	90 %
Limit profile angle	17.9 °	Rear shading factor	5.0 %
GCR	46.1 %	Rear mismatch loss	10.0 %
Height above ground	1.50 m	Shed transparent fraction	0.0 %

PV Array Characteristics

PV module

Manufacturer	AKCOME
Model	SKA611HDGDC-700
(Original PVsyst database)	
Unit Nom. Power	700 Wp
Number of PV modules	11438 units
Nominal (STC)	8007 kWp
Modules	817 Strings x 14 In series
At operating cond. (50°C)	
Pmpp	7530 kWp
U mpp	557 V
I mpp	13509 A

Inverter

Manufacturer	Huawei Technologies
Model	SUN2000-50KTL-M3-400V
(Original PVsyst database)	
Unit Nom. Power	50.0 kWac
Number of inverters	124 units
Total power	6200 kWac
Operating voltage	200-1000 V
Max. power (=>35°C)	55.0 kWac
Pnom ratio (DC:AC)	1.29
Power sharing within this inverter	

Total PV power

Nominal (STC)	8007 kWp
Total	11438 modules
Module area	35530 m²

Total inverter power

Total power	6200 kWac
Number of inverters	124 units
Pnom ratio	1.29

Array losses

Array Soiling Losses
Loss Fraction 2.0 %

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

DC wiring losses
Global array res. 0.67 mΩ
Loss Fraction 1.5 % at STC

LID - Light Induced Degradation
Loss Fraction 1.0 %

Module Quality Loss
Loss Fraction -0.3 %

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

System losses

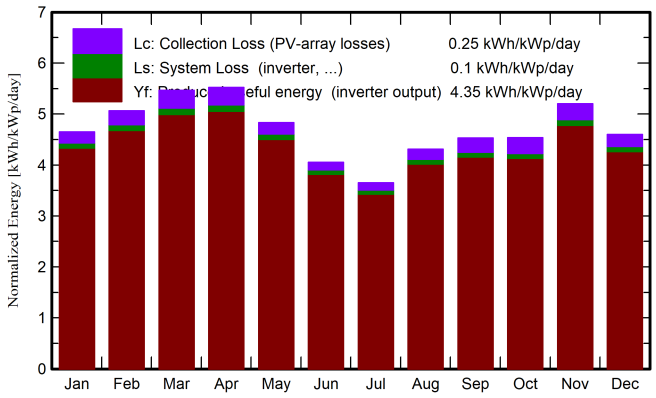
Auxiliaries loss

Main results

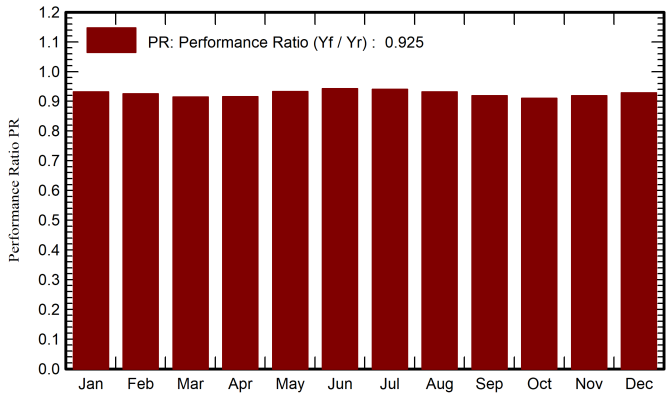
System Production

Produced Energy	12701555 kWh/year	Specific production	1586 kWh/kWp/year
		Performance Ratio PR	92.51 %

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 kWh	E_Grid kWh	PR ratio
January	115.9	60.48	21.05	144.2	137.4	1100599	1076128	0.932
February	122.4	64.37	23.98	141.8	135.2	1074901	1050213	0.925
March	157.4	80.13	26.90	169.4	161.4	1270515	1240479	0.914
April	166.8	85.63	28.45	165.7	157.2	1244480	1215065	0.916
May	161.3	94.92	29.26	149.7	141.0	1144294	1117719	0.933
June	133.4	90.56	28.31	121.7	114.1	939563	918136	0.942
July	122.4	88.57	28.26	113.2	105.9	872142	852515	0.941
August	139.1	92.70	28.49	133.7	125.8	1021380	998073	0.932
September	133.0	82.87	28.29	135.9	128.2	1022359	999155	0.918
October	127.2	71.65	28.25	140.7	133.5	1049846	1025616	0.910
November	125.2	56.01	25.48	156.1	149.1	1176245	1148749	0.919
December	111.8	56.37	22.45	142.6	135.8	1084039	1059707	0.928
Year	1615.9	924.26	26.61	1714.8	1624.7	13000363	12701555	0.925

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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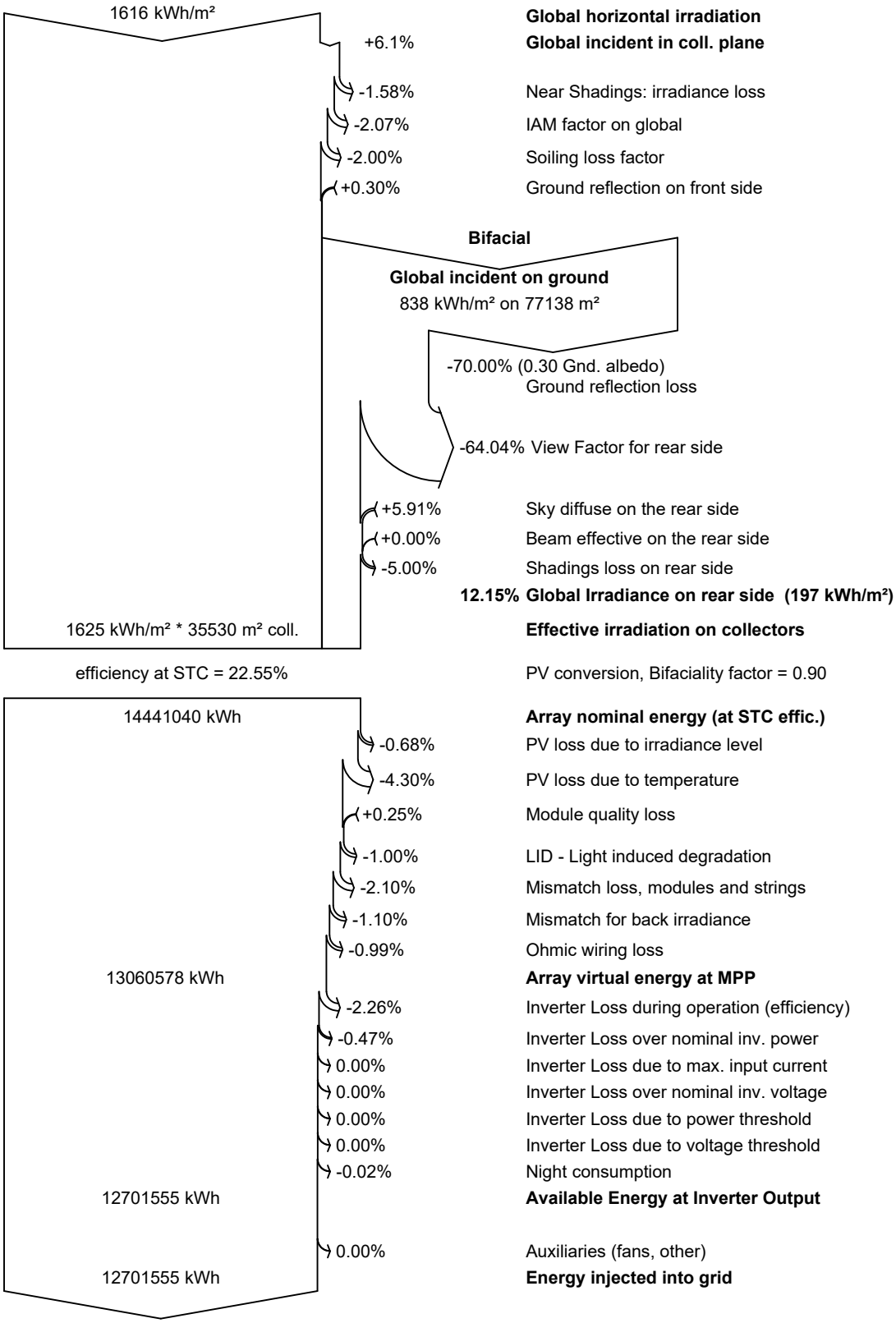
Loss diagram



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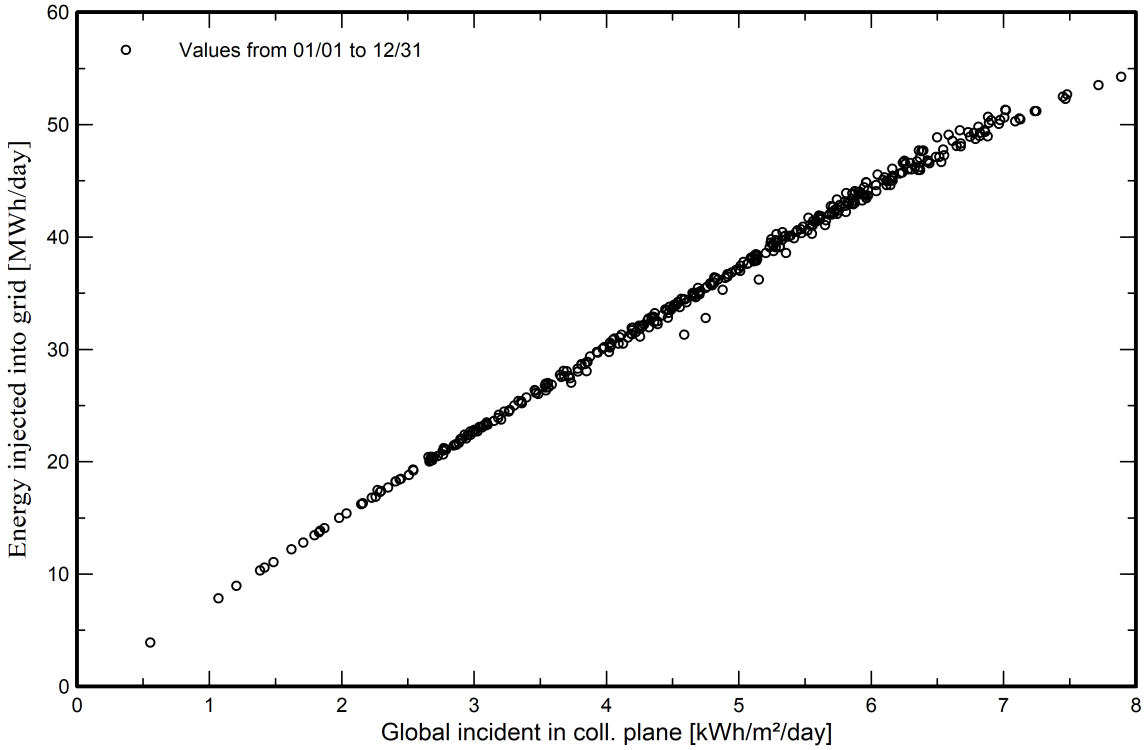
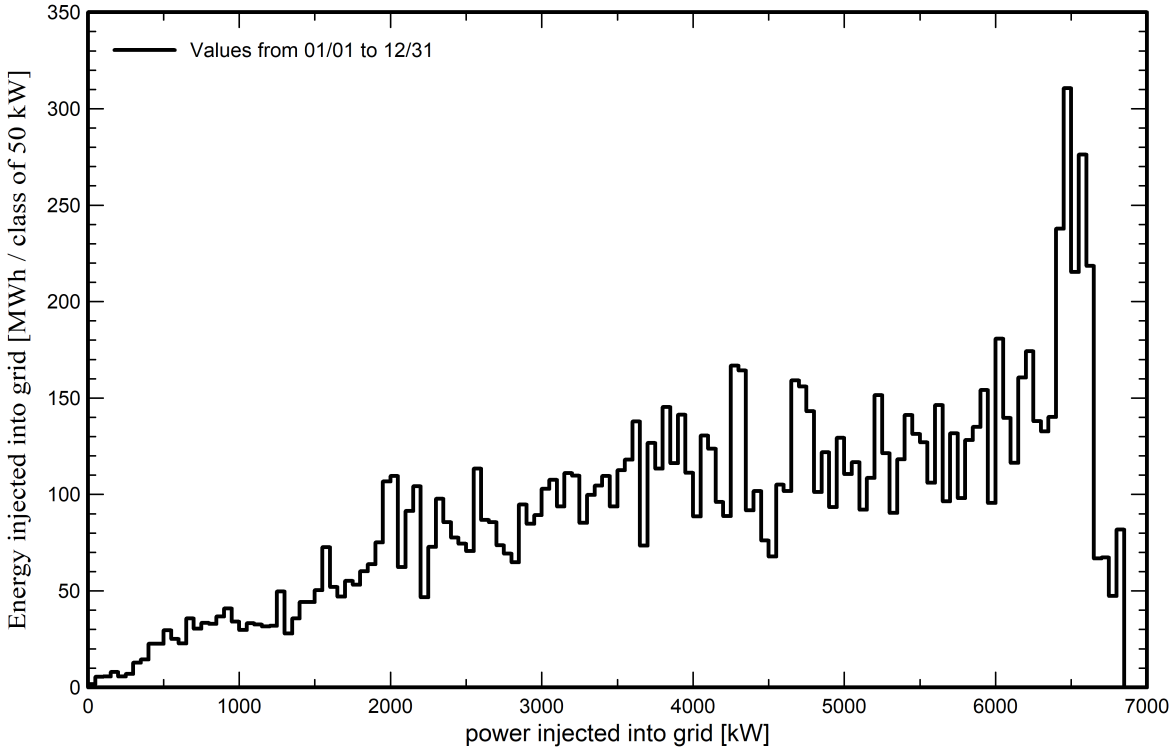
Predef. graphs

Daily Input/Output diagram



System Output Power Distribution



Single-line diagram

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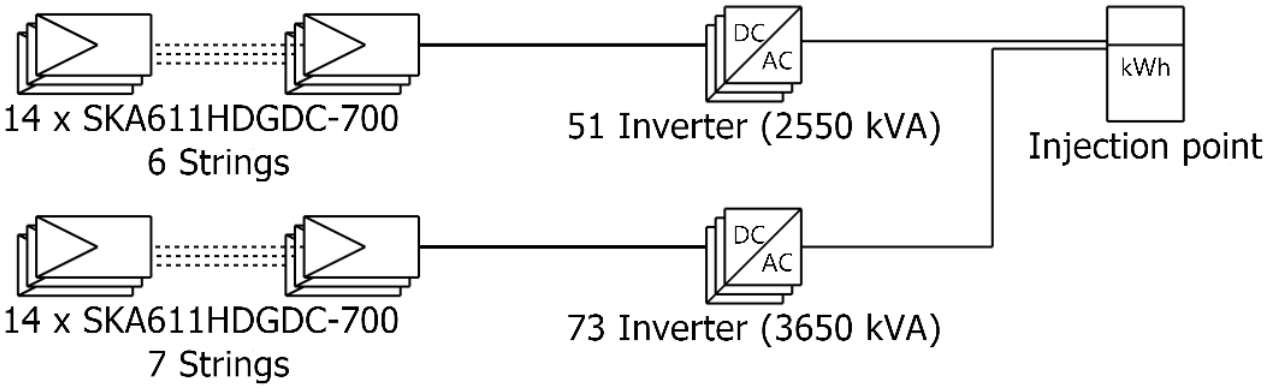

PV module	SKA611HDGDC-700
Inverter	SUN2000-50KTL-M3-400V
String	14 x SKA611HDGDC-700

	GEMCO	
	VC0 : New simulation variant_String Inverter	06/01/24