Version 7.4.6

PVsyst - Simulation report

Grid-Connected System

Project: Saha Farm

Variant: 09

No 3D scene defined, no shadings

System power: 500 kWp

Bueng Kum - Thailand

Author

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Project summary

Geographical Site
Bueng Kum
Thailand

Situation

Latitude	13.80 °N
Longitude	100.65 °E
Altitude	0 m
Time zone	UTC+7

Project settings
Albedo 0.20

Weather data
Bueng Kum
Meteonorm 8.1 (1996-2015) - Synthetic

System summary

Grid-Connected System

No 3D scene defined, no shadings

PV Field Orientation
Fixed planes 2 orientations
Tilts/azimuths 20 / 80 °
20 / -100 °

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	720 units
Pnom total	500 kWp

Inverters

Nb. of units	8 units
Pnom total	400 kWac
Pnom ratio	1.251

Results summary

Produced Energy	607798 kWh/year	Specific production	1215 kWh/kWp/year	Perf. Ratio PR	74.99 %

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General parameters

Grid-Connected System — **No 3D scene defined, no shadings**

PV Field Orientation

Orientation		Sheds configuration	Models used	
Fixed planes	2 orientations	No 3D scene defined	Transposition	Perez
Tilts/azimuths	20 / 80 ° 20 / -100 °		Diffuse	Perez, Meteonorm
			Circumsolar	separate

Horizon
Free Horizon

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

PV Array Characteristics

PV module

Manufacturer	Generic
Model	CS7N-695TB-AG 1500V
(Original PVsyst database)	
Unit Nom. Power	695 Wp
Number of PV modules	720 units
Nominal (STC)	500 kWp
Modules	45 string x 16 In series
At operating cond. (50°C)	
Pmpp	464 kWp
U mpp	585 V
I mpp	793 A

Inverter

Manufacturer	Generic
Model	SUN2000-50KTL-ZHM3-400V
(Original PVsyst database)	
Unit Nom. Power	50.0 kWac
Number of inverters	8 units
Total power	400 kWac
Operating voltage	200-1000 V
Max. power (=>35°C)	55.0 kWac
Pnom ratio (DC:AC)	1.25
Power sharing within this inverter	

Total PV power

Nominal (STC)	500 kWp
Total	720 modules
Module area	2237 m²

Total inverter power

Total power	400 kWac
Max. power	440 kWac
Number of inverters	8 units
Pnom ratio	1.25

Array losses

Array Soiling Losses
Loss Fraction 7.2 %

Thermal Loss factor
Module temperature according to irradiance
Uc (const) 20.0 W/m²K
Uv (wind) 0.0 W/m²K/m/s

DC wiring losses
Global array res. 12 mΩ
Loss Fraction 1.5 % at STC

LID - Light Induced Degradation
Loss Fraction 3.0 %

Module Quality Loss
Loss Fraction 2.0 %

Module mismatch losses
Loss Fraction 2.0 % at MPP

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

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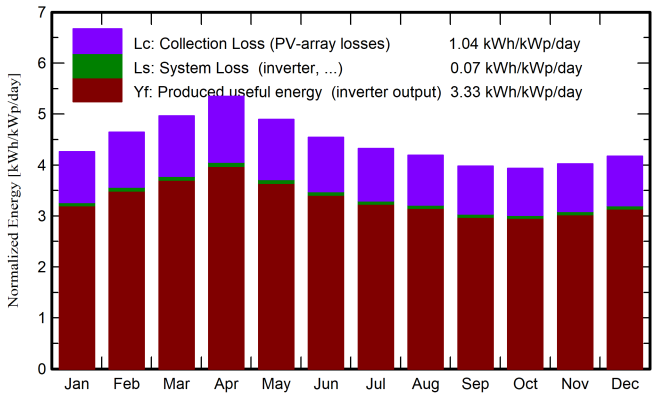
Main results

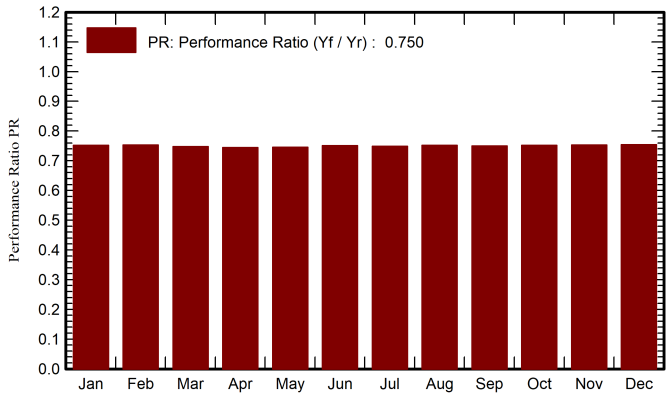
System Production

Produced Energy	607798 kWh/year	Specific production	1215 kWh/kWp/year
		Perf. Ratio PR	74.99 %

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	135.7	64.54	27.24	132.2	119.1	50753	49754	0.752
February	134.1	78.53	28.58	130.0	117.6	49984	49005	0.753
March	159.1	88.32	29.83	153.9	139.5	58709	57531	0.747
April	166.0	85.14	30.36	160.3	145.6	60948	59706	0.744
May	156.9	84.08	30.28	151.7	137.5	57739	56569	0.745
June	141.1	81.38	29.25	136.3	123.5	52262	51207	0.751
July	139.3	77.17	29.35	134.0	121.5	51230	50178	0.749
August	135.1	86.88	29.17	130.0	117.8	49939	48930	0.752
September	123.8	67.45	28.27	119.3	108.1	45690	44755	0.750
October	126.7	75.68	28.69	122.0	110.4	46842	45898	0.752
November	125.1	68.09	28.00	120.7	109.0	46430	45507	0.754
December	133.5	64.10	27.44	129.3	116.5	49736	48759	0.754
Year	1676.2	921.37	28.87	1619.7	1466.2	620261	607798	0.750

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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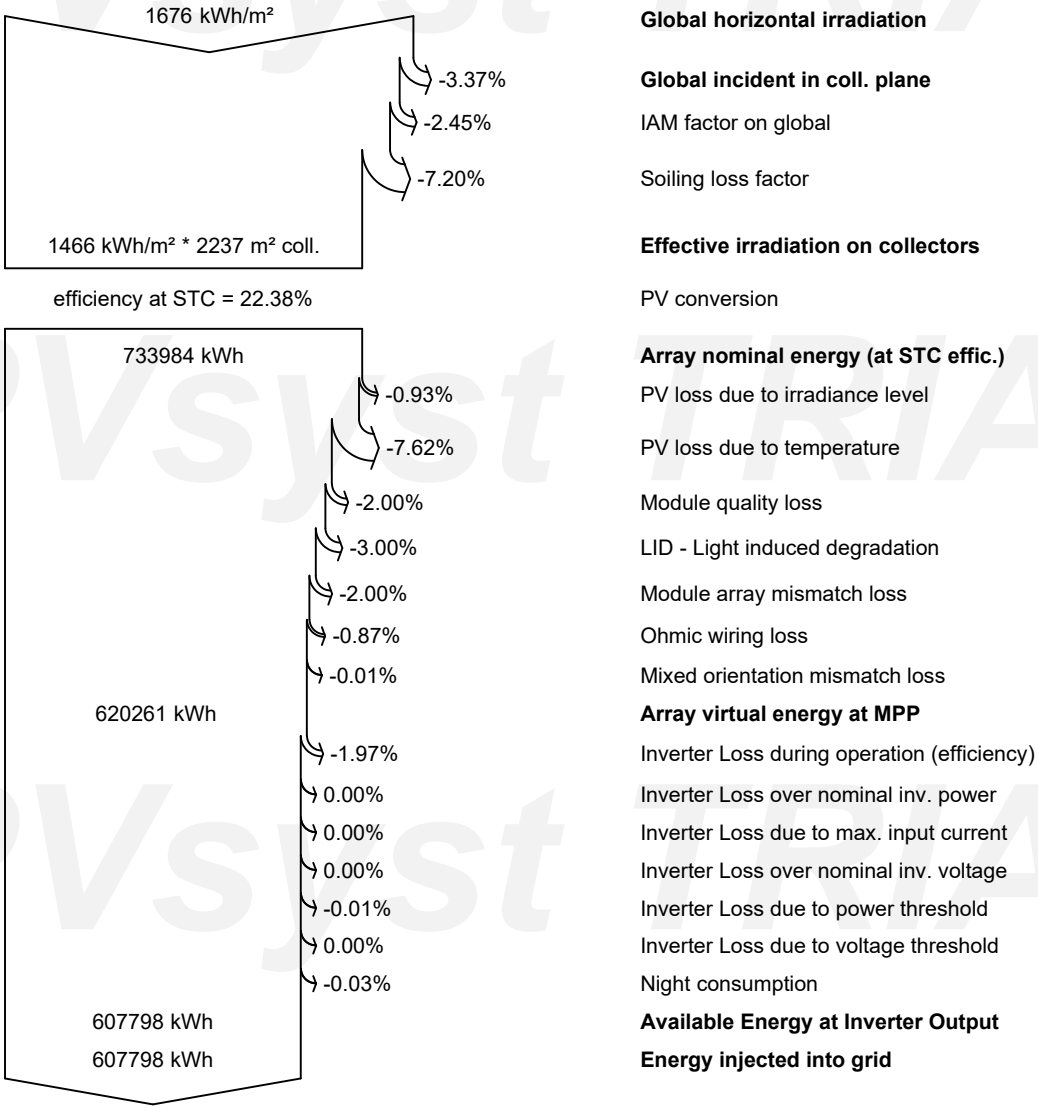
Loss diagram



Global horizontal irradiation
Global incident in coll. plane
IAM factor on global
Soiling loss factor
Effective irradiation on collectors
PV conversion
Array nominal energy (at STC effic.)
PV loss due to irradiance level
PV loss due to temperature
Module quality loss
LID - Light induced degradation
Module array mismatch loss
Ohmic wiring loss
Mixed orientation mismatch loss
Array virtual energy at MPP
Inverter Loss during operation (efficiency)
Inverter Loss over nominal inv. power
Inverter Loss due to max. input current
Inverter Loss over nominal inv. voltage
Inverter Loss due to power threshold
Inverter Loss due to voltage threshold
Night consumption
Available Energy at Inverter Output
Energy injected into grid

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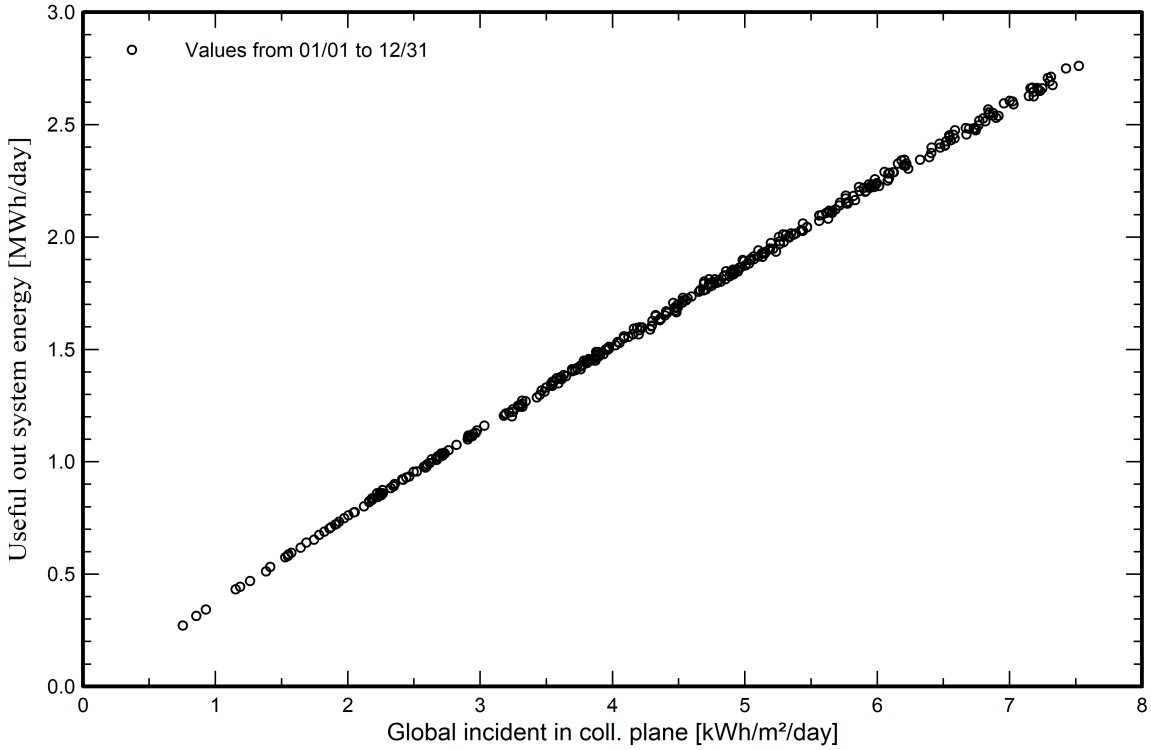
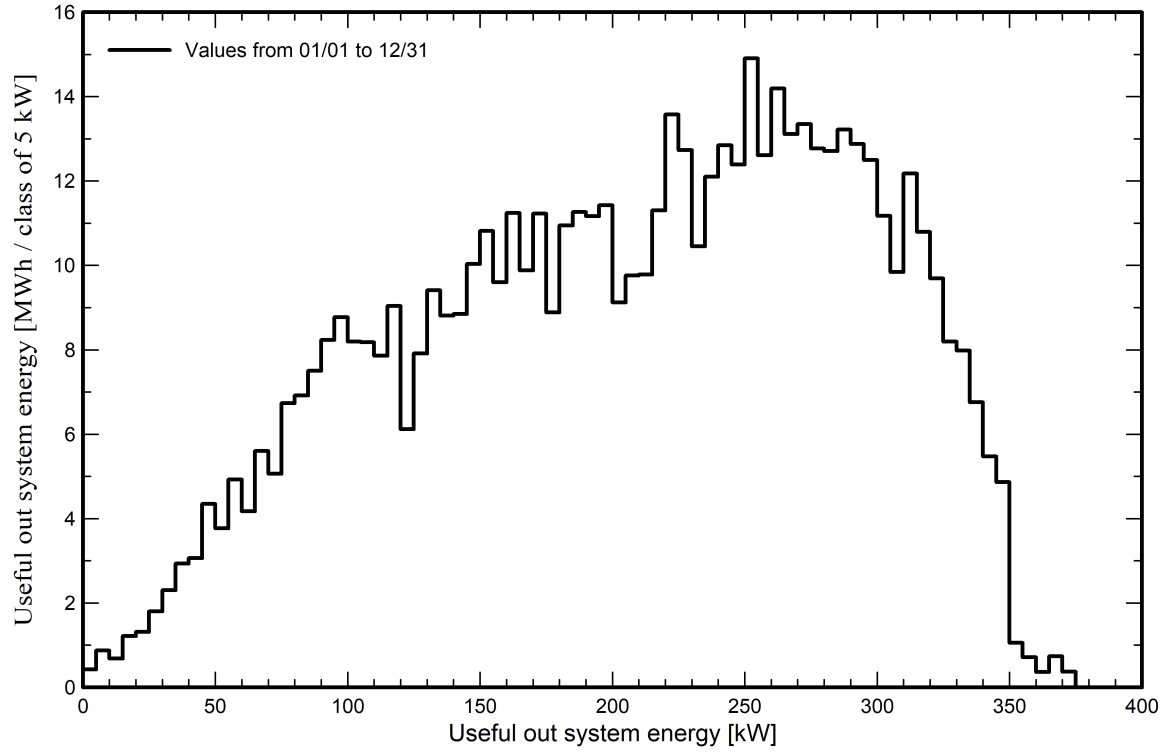
Predef. graphs

Daily Input/Output diagram



System Output Power Distribution



e-line diagram not avai