Version 7.3.1

PVsyst - Simulation report

Grid-Connected System

Project: โครงการติดตั้ง499.50 Kwp

Variant: New simulation variant

No 3D scene defined, no shadings

System power: 500 kWp

Ban Thung Sala - Thailand

Author

PVsyst V7.3.1
VC0, Simulation date:
14/11/23 14:25
with v7.3.1

Project summary

Geographical Site
Ban Thung Sala
Thailand

Situation

Latitude	7.36 °N
Longitude	99.74 °E
Altitude	41 m
Time zone	UTC+7

Project settings

Albedo	0.20

Meteo data
Ban Thung Sala
Meteonorm 8.1 (1991-2009), Sat=100% - Synthetic

System summary

Grid-Connected System
Simulation for year no 10

No 3D scene defined, no shadings

PV Field Orientation
Fixed plane
Tilt/Azimuth 15 / 0 °

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	900 units
Pnom total	500 kWp

Inverters

Nb. of units	4 units
Pnom total	400 kWac
Pnom ratio	1.249

Results summary

Produced Energy	719584 kWh/year	Specific production	1441 kWh/kWp/year	Perf. Ratio PR	80.82 %

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General parameters

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

PV Field Orientation

Orientation	Sheds configuration	Models used
Fixed plane		Transposition Perez
Tilt/Azimuth 15 / 0 °		Diffuse Perez, Meteonorm
		Circumsolar separate

Horizon
Free Horizon

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

PV Array Characteristics

PV module

Manufacturer	Longi Solar
Model	LR5-72HIBD-555M G2 Bifacial
(Original PVsyst database)	
Unit Nom. Power	555 Wp
Number of PV modules	900 units
Nominal (STC)	500 kWp
Modules	50 Strings x 18 In series
At operating cond. (50°C)	
Pmpp	457 kWp
U mpp	683 V
I mpp	670 A

Inverter

Manufacturer	Huawei Technologies
Model	SUN2000-100KTL-INM0-480Vac
(Original PVsyst database)	
Unit Nom. Power	100 kWac
Number of inverters	4 units
Total power	400 kWac
Operating voltage	200-1000 V
Max. power (=>40°C)	110 kWac
Pnom ratio (DC:AC)	1.25
Power sharing within this inverter	

Total PV power

Nominal (STC)	500 kWp
Total	900 modules
Module area	2325 m²
Cell area	2158 m²

Total inverter power

Total power	400 kWac
Number of inverters	4 units
Pnom ratio	1.25

Array losses

Array Soiling Losses
Loss Fraction 1.0 %

Thermal Loss factor
Module temperature according to irradiance
Uc (const) 50.0 W/m²K
Uv (wind) 0.0 W/m²K/m/s

DC wiring losses
Global array res. 17 mΩ
Loss Fraction 1.5 % at STC

LID - Light Induced Degradation
Loss Fraction 1.0 %

Module Quality Loss
Loss Fraction -0.5 %

Module mismatch losses
Loss Fraction 1.5 % at MPP

Strings Mismatch loss
Loss Fraction 0.1 %

Module average degradation
Year no 10
Loss factor 0.4 %/year
Mismatch due to degradation
Imp RMS dispersion 0.4 %/year
Vmp RMS dispersion 0.4 %/year

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

0°	25°	45°	60°	65°	70°	75°	80°	90°
1.000	1.000	0.995	0.962	0.936	0.903	0.851	0.754	0.000

Array losses

Spectral correction

FirstSolar model

Precipitable water estimated from relative humidity

Coefficient Set	C0	C1	C2	C3	C4	C5
Monocrystalline Si	0.85914	-0.02088	-0.0058853	0.12029	0.026814	-0.001781

System losses

Unavailability of the system

Time fraction 0.5 %
1.8 days,
3 periods

Auxiliaries loss

AC wiring losses

Inv. output line up to MV transfo

Inverter voltage 480 Vac tri
Loss Fraction 0.00 % at STC

Inverter: SUN2000-100KTL-INM0-480Vac

Wire section (4 Inv.) Copper 4 x 3 x 50 mm²
Average wires length 0 m

AC losses in transformers

MV transfo

Medium voltage 0 kV

Transformer parameters

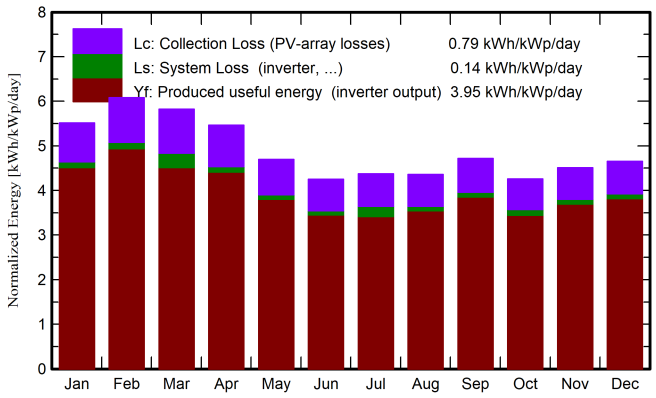
Nominal power at STC 488 kVA
Iron Loss (24/24 Connexion) 0.40 kVA
Iron loss fraction 0.08 % at STC
Copper loss 5.96 kVA
Copper loss fraction 1.22 % at STC
Coils equivalent resistance 3 x 5.76 mΩ

Main results

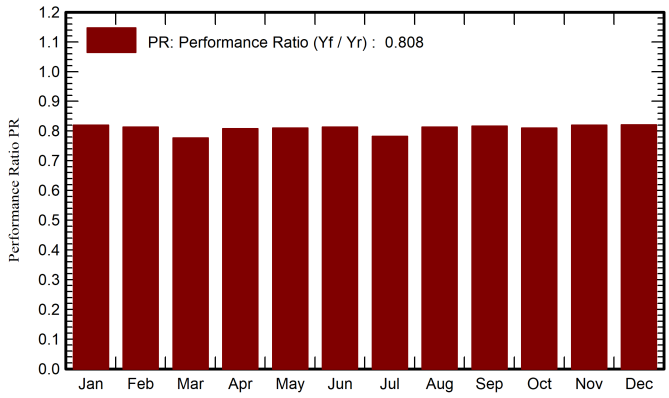
System Production

Produced Energy	719584 kWh/year	Specific production	1441 kWh/kWp/year
		Performance Ratio PR	80.82 %

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	153.9	66.98	27.34	170.9	166.3	71957	69961	0.820
February	159.1	66.19	28.28	170.2	165.8	71138	69140	0.813
March	178.5	78.74	28.90	180.4	175.4	74944	69962	0.776
April	170.0	75.38	28.58	163.9	159.0	68073	66167	0.808
May	157.6	86.11	28.48	145.6	140.5	60539	58904	0.810
June	139.7	82.71	27.68	127.5	122.8	53211	51779	0.813
July	147.3	83.88	27.81	135.5	130.8	56554	52974	0.783
August	142.9	85.13	27.77	135.2	130.7	56479	54946	0.814
September	143.2	82.10	27.09	141.7	137.1	59380	57770	0.816
October	127.9	75.55	27.15	132.0	128.0	55382	53423	0.810
November	125.7	67.37	26.79	135.3	131.6	57003	55394	0.820
December	130.5	65.64	27.09	144.3	140.3	60864	59164	0.821
Year	1776.3	915.78	27.74	1782.6	1728.3	745524	719584	0.808

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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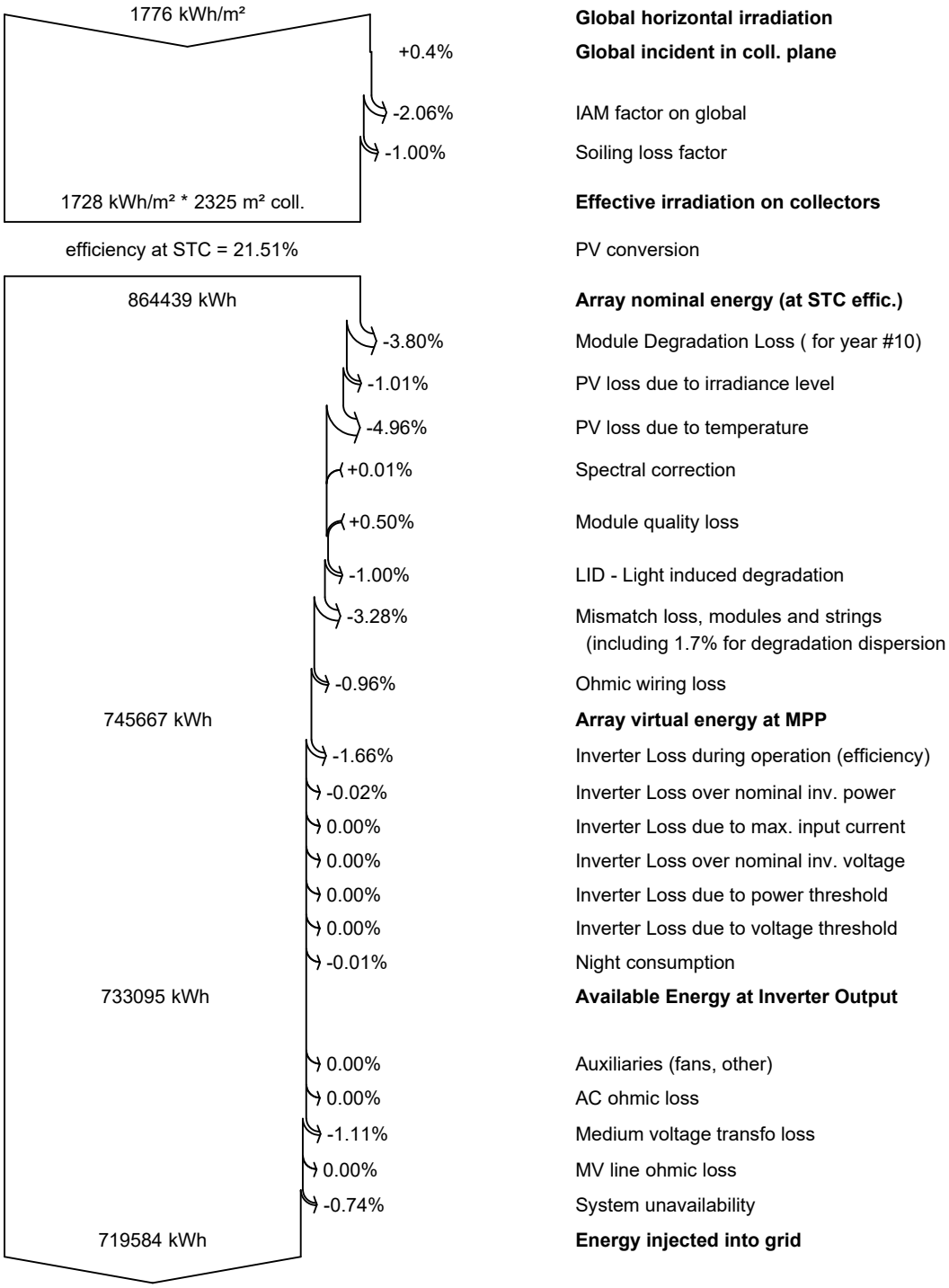
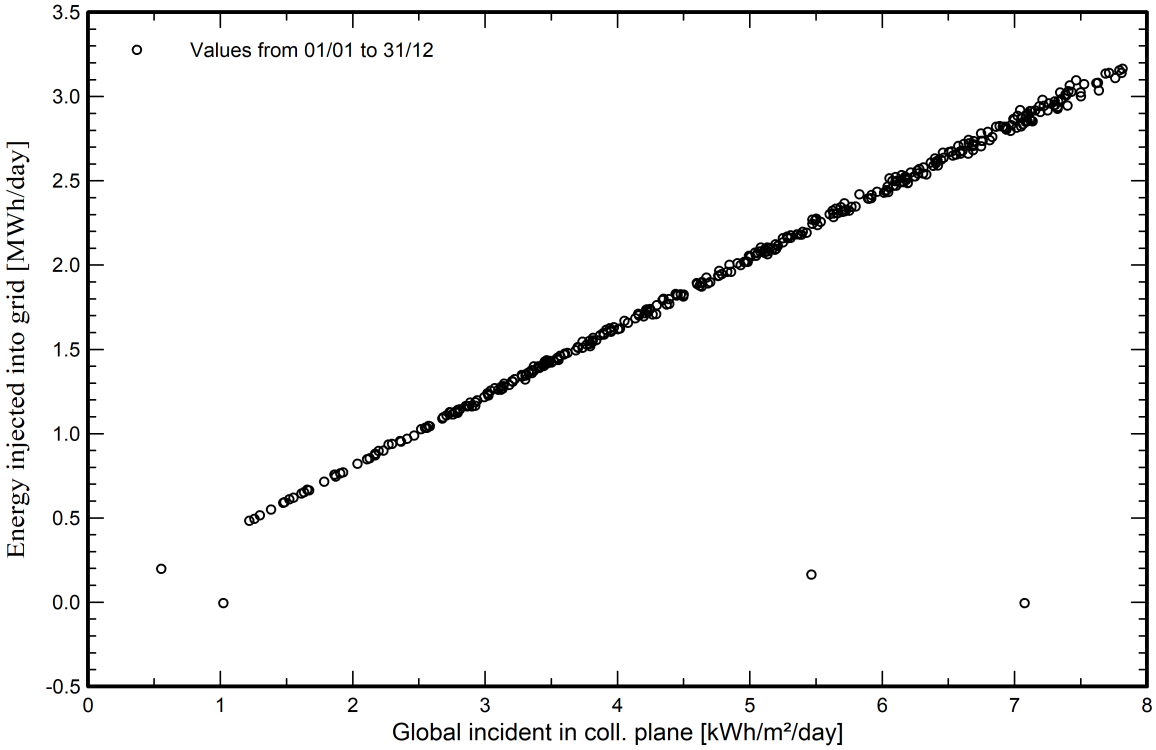
Loss diagram

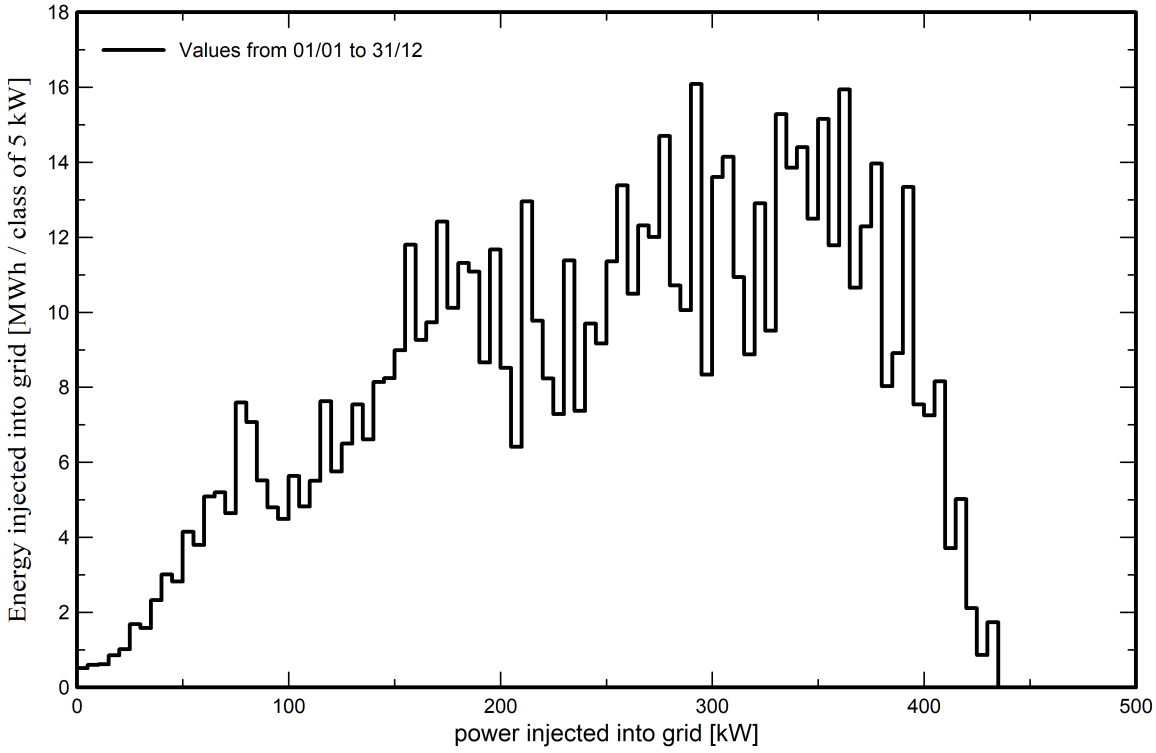


Predef. graphs

Daily Input/Output diagram



System Output Power Distribution



Single-line diagram

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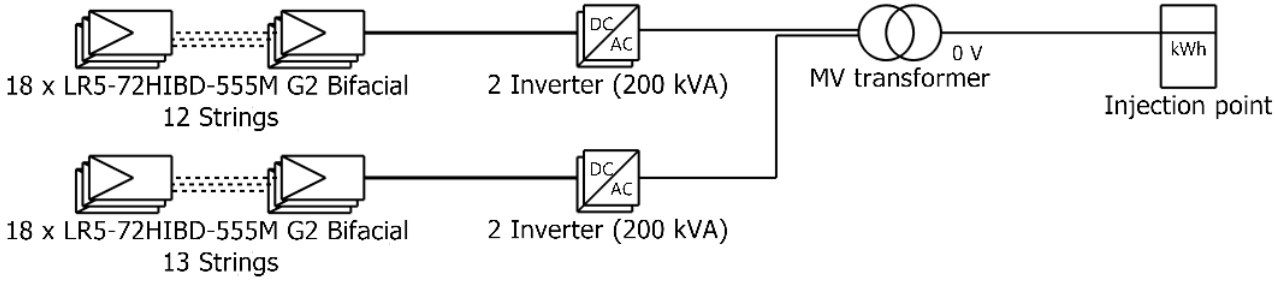

PV module	LR5-72HIBD-555M G2 Bifacial
Inverter	SUN2000-100KTL-INM0-480Vac
String	18 x LR5-72HIBD-555M G2 Bifacial

	499	
	VC0 : New simulation variant	14/11/23