Version 7.3.4

PVsyst - Simulation report

Grid-Connected System

Project: Tongatapu FV 3

Variant: FV tongatapu V3 Lakepa sin bateria

No 3D scene defined, no shadings

System power: 6002 kWp

Lakepa - Tonga

Autor(a)

Universidad Europea (Spain)

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Project summary

Geographical Site
Lakepa
Tonga

Situation

Latitude	-21.15 °S
Longitude	-175.29 °W
Altitude	7 m
Time zone	UTC+12

Project settings
Albedo 0.20

Meteo data
Lakepa
Meteonorm 8.1 (2016-2021), Sat=100% - Sintético

System summary

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

PV Field Orientation
Fixed plane
Tilt/Azimuth 21 / 180 °

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

System information

PV Array		Inverters	
Nb. of modules	9234 units	Nb. of units	5 units
Pnom total	6002 kWp	Pnom total	5100 kWac
		Pnom ratio	1.177

Results summary

Produced Energy	9271598 kWh/year	Specific production	1545 kWh/kWp/year	Perf. Ratio PR	84.41 %

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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	No 3D scene defined	Transposition Perez
Tilt/Azimuth 21 / 180 °		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 (Original PVsyst database)	RSM-132-8-650-M
Unit Nom. Power	650 Wp
Number of PV modules	9234 units
Nominal (STC)	6002 kWp
Modules	486 Strings x 19 In series
At operating cond. (50°C)	
Pmpp	5492 kWp
U mpp	652 V
I mpp	8417 A

Inverter

Manufacturer	Generic
Model (Original PVsyst database)	Ingecon Sun 1110TL B400 IP54 H1000
Unit Nom. Power	1020 kWac
Number of inverters	5 units
Total power	5100 kWac
Operating voltage	573-820 V
Max. power (=>35°C)	1109 kWac
Pnom ratio (DC:AC)	1.18

Total PV power

Nominal (STC)	6002 kWp
Total	9234 modules
Module area	28684 m²

Total inverter power

Total power	5100 kWac
Max. power	5545 kWac
Number of inverters	5 units
Pnom ratio	1.18

Array losses

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. 1.3 mΩ
Loss Fraction 1.5 % at STC

Module Quality Loss
Loss Fraction -0.8 %

Module mismatch losses
Loss Fraction 2.0 % at MPP

Strings Mismatch loss
Loss Fraction 0.2 %

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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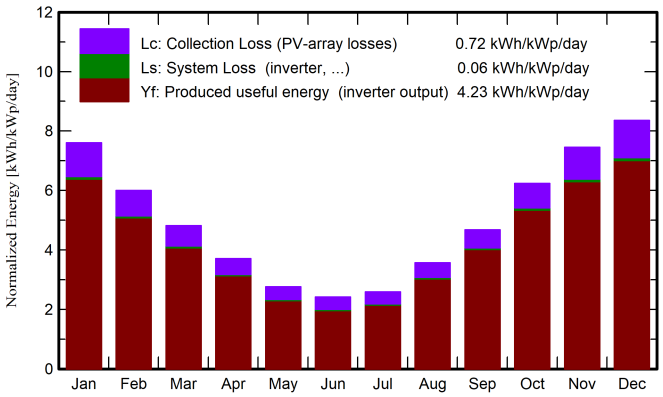
Main results

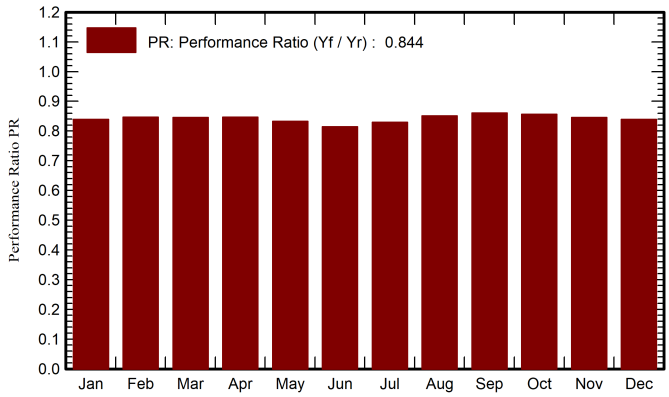
System Production

Produced Energy	9271598 kWh/year	Specific production	1545 kWh/kWp/year
		Perf. Ratio PR	84.41 %

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	236.9	73.97	26.47	235.9	231.5	1204741	1187951	0.839
February	178.8	79.11	26.84	168.2	163.9	866508	854599	0.847
March	174.0	66.98	26.57	149.5	144.1	769711	758580	0.846
April	141.8	60.23	25.10	111.1	105.4	573195	564523	0.846
May	122.0	50.23	24.13	85.6	79.3	435490	427923	0.833
June	114.5	39.72	22.56	72.5	65.2	361538	354646	0.815
July	120.5	49.43	21.75	80.4	73.3	407357	400043	0.829
August	148.8	56.29	21.82	110.5	103.8	573205	564463	0.851
September	168.7	64.60	21.91	140.2	134.4	734559	724220	0.861
October	212.8	67.60	23.43	193.5	188.7	1008594	994419	0.856
November	227.5	63.14	24.25	223.7	219.4	1151364	1135029	0.845
December	253.7	67.60	25.73	259.0	254.5	1323670	1305202	0.840
Year	2100.0	738.89	24.20	1830.0	1763.6	9409932	9271598	0.844

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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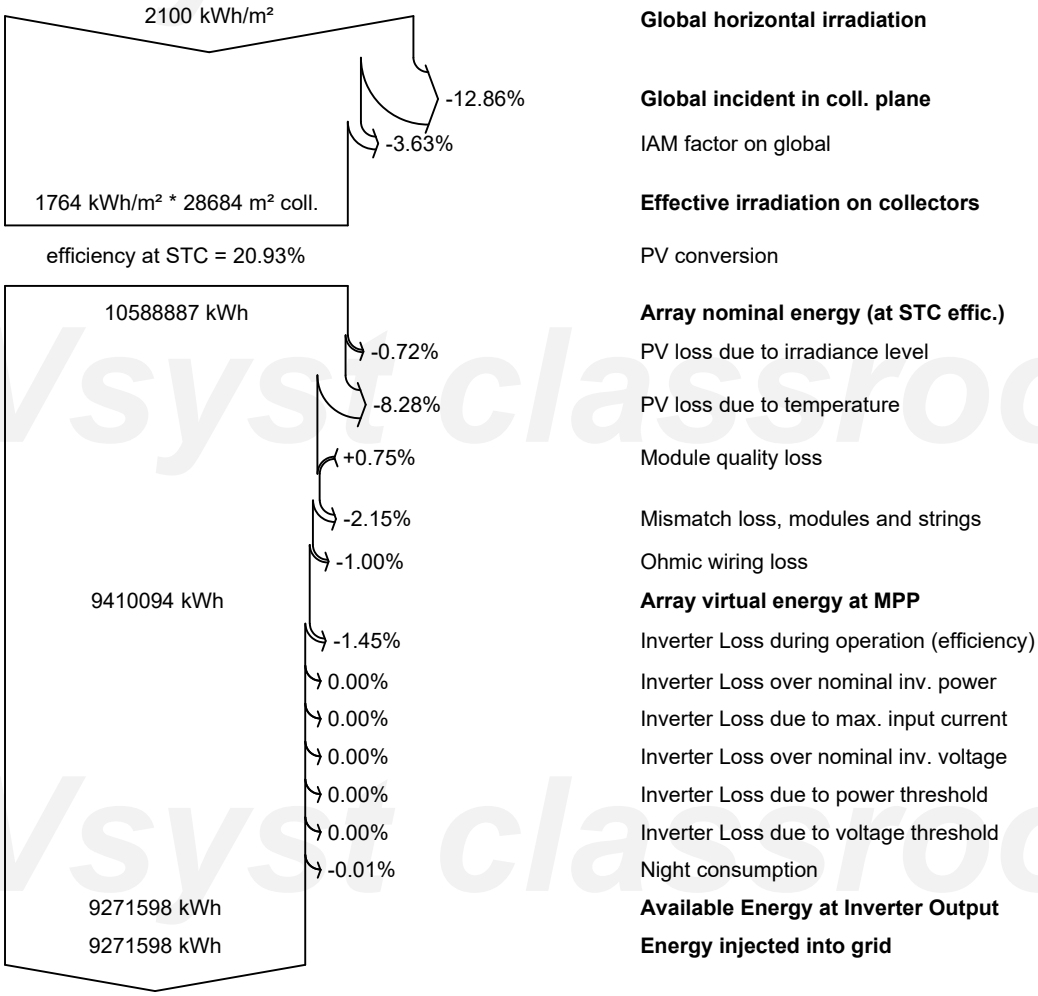
Loss diagram



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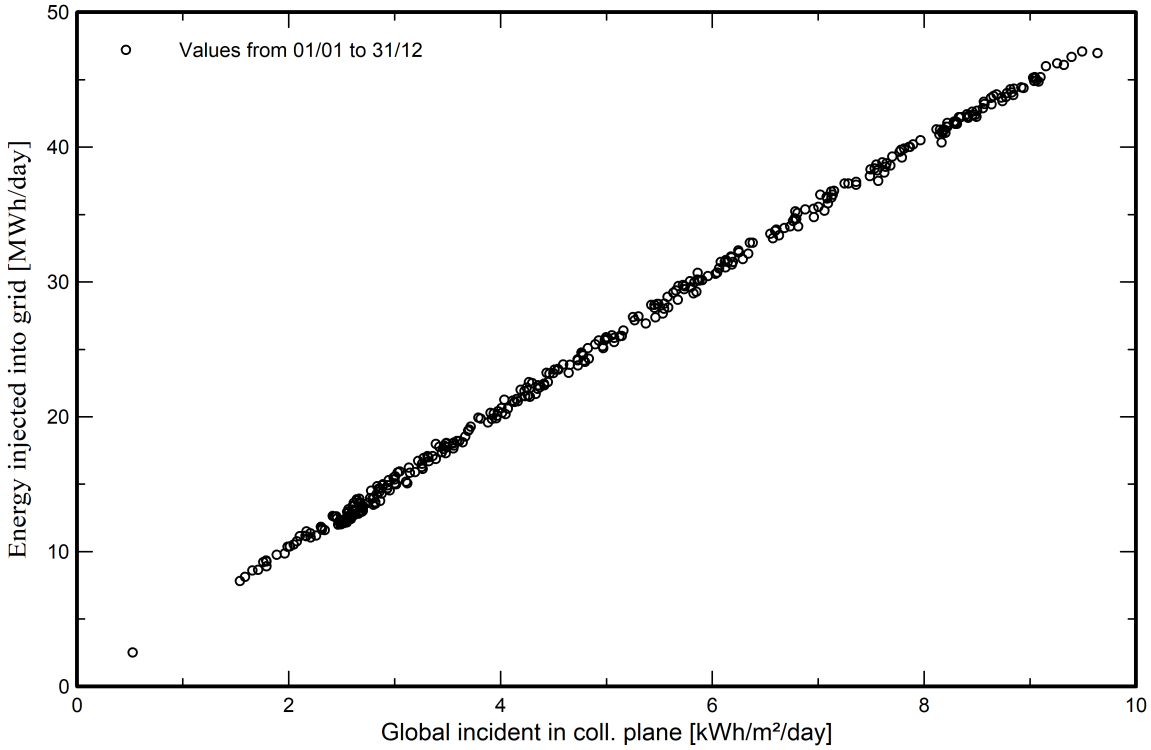
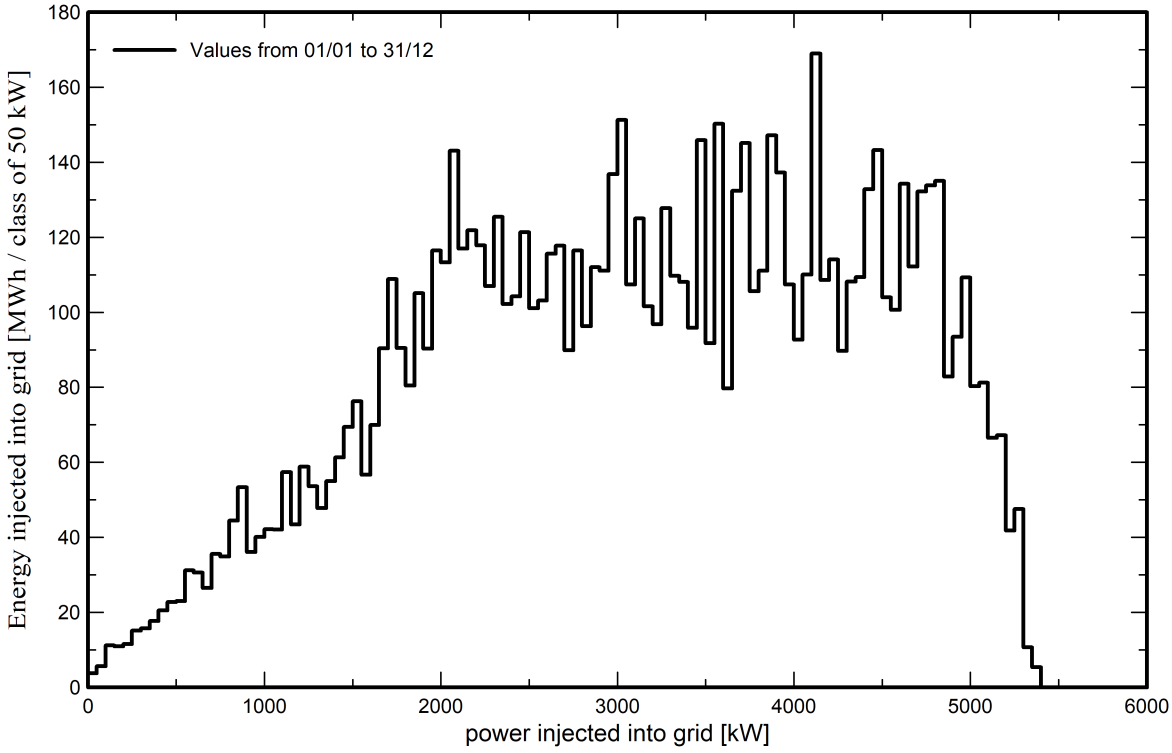
Predef. graphs

Diagrama entrada/salida diaria



Distribución de potencia de salida del sistema



Single-line diagram

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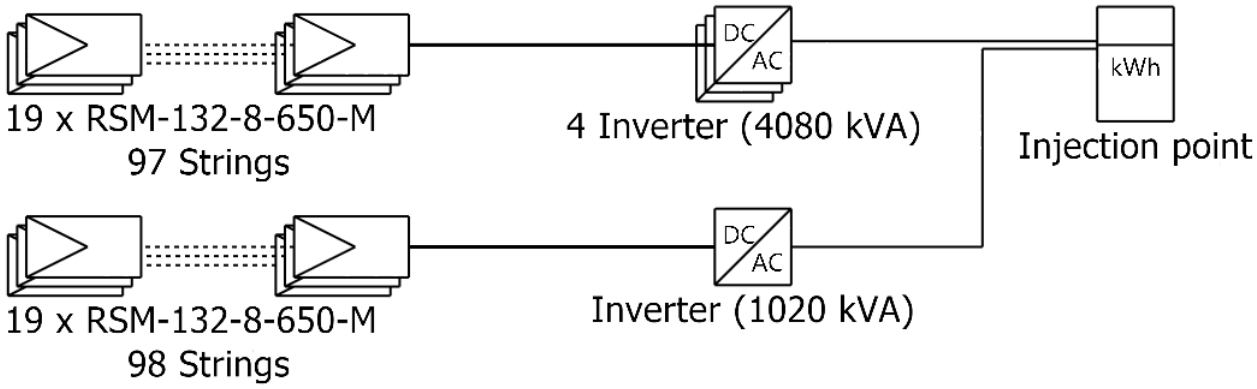

PV module	RSM-132-8-650-M
Inverter	Ingecon Sun 1110TL B400 IP54 H1000
String	19 x RSM-132-8-650-M

	Tongatapu FV 3	Universidad Europea (Spain)
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