Version 7.4.8

PVsyst - Simulation report

Grid-Connected System

Project: Central Smith Argentina 4.57 MW

Variant: Nueva variante de simulación

Sheds on ground

System power: 4573 kWp

Villa Gesell - Argentina

Author

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Project summary

Geographical Site
Villa Gesell
Argentina

Situation

Latitude	-37.25 °S
Longitude	-57.00 °W
Altitude	11 m
Time zone	UTC-3

Project settings
Albedo 0.20

Weather data
Villa Gesell
Meteonorm 8.1 (2001-2010), Sat=100% - Sintético

System summary

Grid-Connected System

Sheds on ground

PV Field Orientation
Fixed plane
Tilt/Azimuth 30 / -16 °

Near Shadings
Linear shadings : Fast (table)

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	7436 units
Pnom total	4573 kWp

Inverters

Nb. of units	13 units
Pnom total	3900 kWac
Pnom ratio	1.173

Results summary

Produced Energy	7527628 kWh/year	Specific production	1646 kWh/kWp/year	Perf. Ratio PR	85.31 %

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General parameters

Grid-Connected System

Sheds on ground

PV Field Orientation

Orientation	
Fixed plane	
Tilt/Azimuth	30 / -16 °

Sheds configuration	
Nb. of sheds	143 units
Sizes	
Sheds spacing	9.50 m
Collector width	4.78 m
Ground Cov. Ratio (GCR)	50.4 %
Top inactive band	0.02 m
Bottom inactive band	0.02 m
Shading limit angle	
Limit profile angle	24.2 °

Models used	
Transposition	Perez
Diffuse	Perez, Meteonorm
Circumsolar	separate

Horizon
Free Horizon

Near Shadings
Linear shadings : Fast (table)

User's needs
Unlimited load (grid)

PV Array Characteristics

PV module

Manufacturer	Generic
Model	LR7-72HGD-615M
(Custom parameters definition)	
Unit Nom. Power	615 Wp
Number of PV modules	7436 units
Nominal (STC)	4573 kWp
Modules	286 string x 26 In series
At operating cond. (50°C)	
Pmpp	4253 kWp
U mpp	1058 V
I mpp	4020 A

Inverter

Manufacturer	Generic
Model	SUN2000-330KTL-H1
(Original PVsyst database)	
Unit Nom. Power	300 kWac
Number of inverters	13 units
Total power	3900 kWac
Operating voltage	550-1500 V
Max. power (=>30°C)	330 kWac
Pnom ratio (DC:AC)	1.17
Power sharing within this inverter	

Total PV power

Nominal (STC)	4573 kWp
Total	7436 modules
Module area	20086 m²
Cell area	18685 m²

Total inverter power

Total power	3900 kWac
Max. power	4290 kWac
Number of inverters	13 units
Pnom ratio	1.17

Array losses

Array Soiling Losses
Loss Fraction 3.0 %

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.	4.3 mΩ
Loss Fraction	1.5 % at STC

Serie Diode Loss

Voltage drop	0.7 V
Loss Fraction	0.1 % at STC

LID - Light Induced Degradation
Loss Fraction 2.0 %

Module Quality Loss
Loss Fraction -0.8 %

Module mismatch losses
Loss Fraction 2.0 % at MPP

Strings Mismatch loss
Loss Fraction 0.1 %

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

0°	40°	50°	60°	70°	75°	80°	85°	90°
1.000	1.000	1.000	1.000	0.990	0.970	0.910	0.810	0.000

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AC wiring losses

Inv. output line up to MV transfo

Inverter voltage	800 Vac tri
Loss Fraction	0.15 % at STC

Global System

Wire section	Alu 3 x 3000 mm²
Wires length	20 m

MV line up to Injection

MV Voltage	11.5 kV
Wires	Copper 3 x 95 mm²
Length	250 m
Loss Fraction	0.17 % at STC

AC losses in transformers

MV transfo

Medium voltage	11.5 kV

Transformer parameters

Nominal power at STC	4.53 MVA
Iron Loss (24/24 Connexion)	4.42 kVA
Iron loss fraction	0.10 % at STC
Copper loss	46.39 kVA
Copper loss fraction	1.02 % at STC
Coils equivalent resistance	3 x 1.45 mΩ

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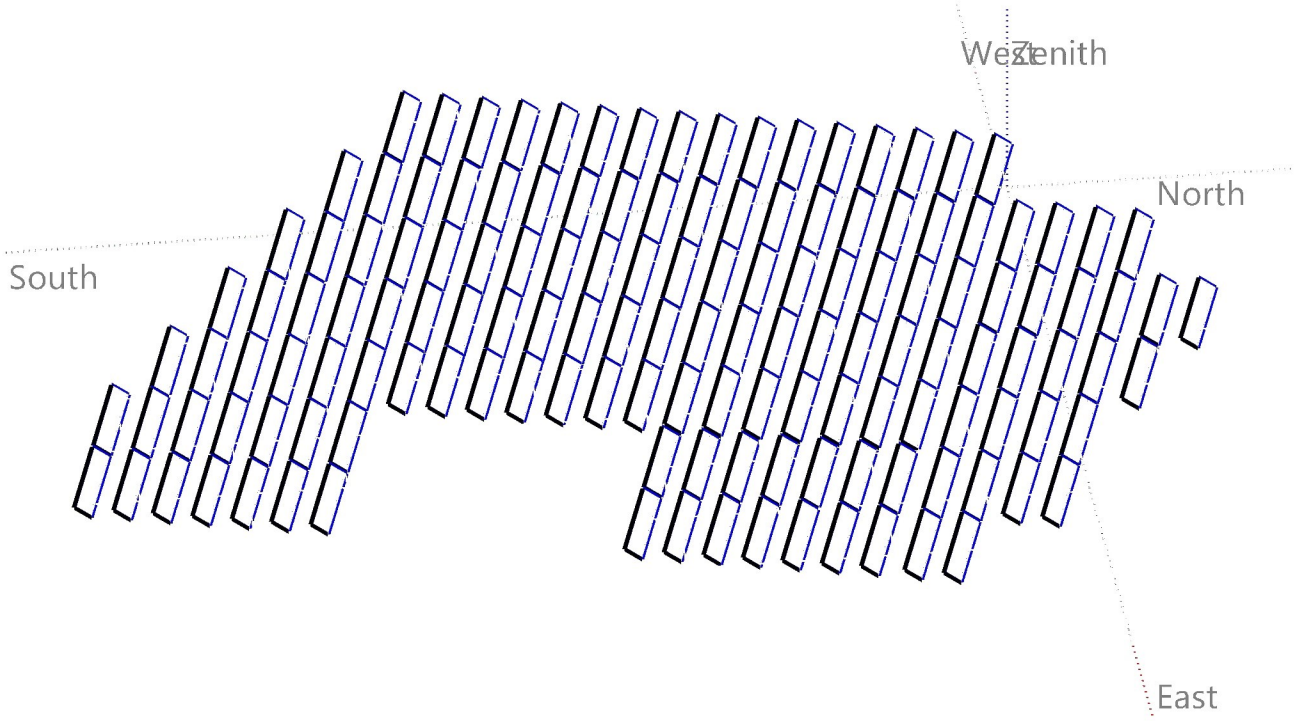
Near shadings parameter

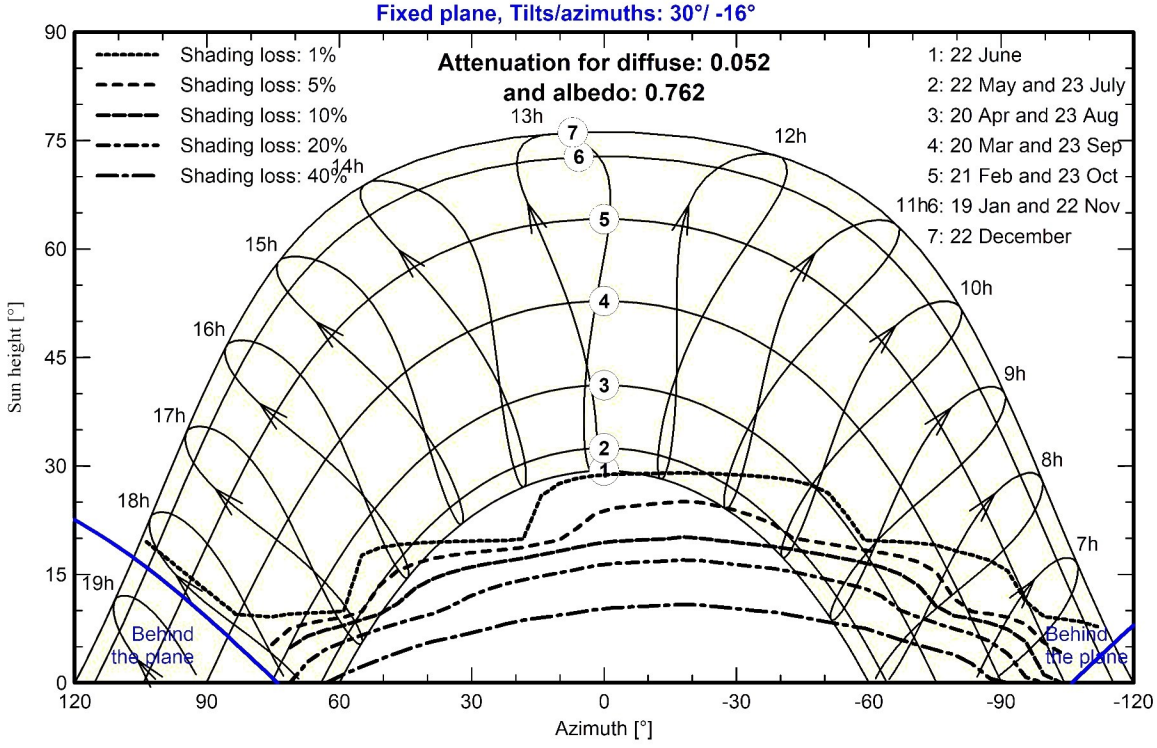
Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram

Orientation #1

Fixed plane, Tilts/azimuths: 30° / -16°

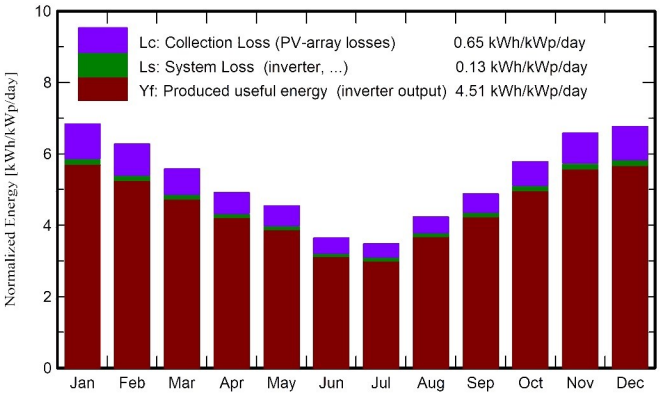


Main results

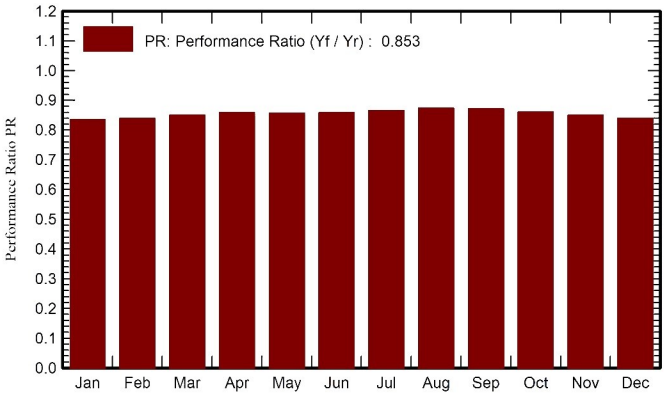
System Production

Produced Energy	7527628 kWh/year	Specific production	1646 kWh/kWp/year
		Perf. Ratio PR	85.31 %

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	222.4	89.39	21.71	212.1	200.0	832683	810365	0.836
February	168.5	72.95	20.92	175.6	165.9	692518	674119	0.839
March	149.4	66.15	18.41	172.9	163.4	690773	672135	0.850
April	110.9	40.08	14.53	147.4	139.3	594764	578469	0.858
May	89.3	28.33	11.34	140.8	130.7	566839	551737	0.857
June	66.2	23.37	7.96	109.2	100.4	441605	428674	0.858
July	69.8	27.27	7.23	107.8	100.0	440502	426943	0.866
August	94.4	43.13	8.86	131.1	122.8	538801	523833	0.873
September	122.3	53.98	10.47	146.3	138.2	599639	582925	0.871
October	167.4	74.54	13.82	179.2	169.3	725589	705814	0.861
November	199.3	76.81	16.58	197.3	186.4	787830	766730	0.850
December	225.4	84.62	19.98	209.7	198.1	828293	805886	0.840
Year	1685.2	680.61	14.28	1929.4	1814.5	7739836	7527628	0.853

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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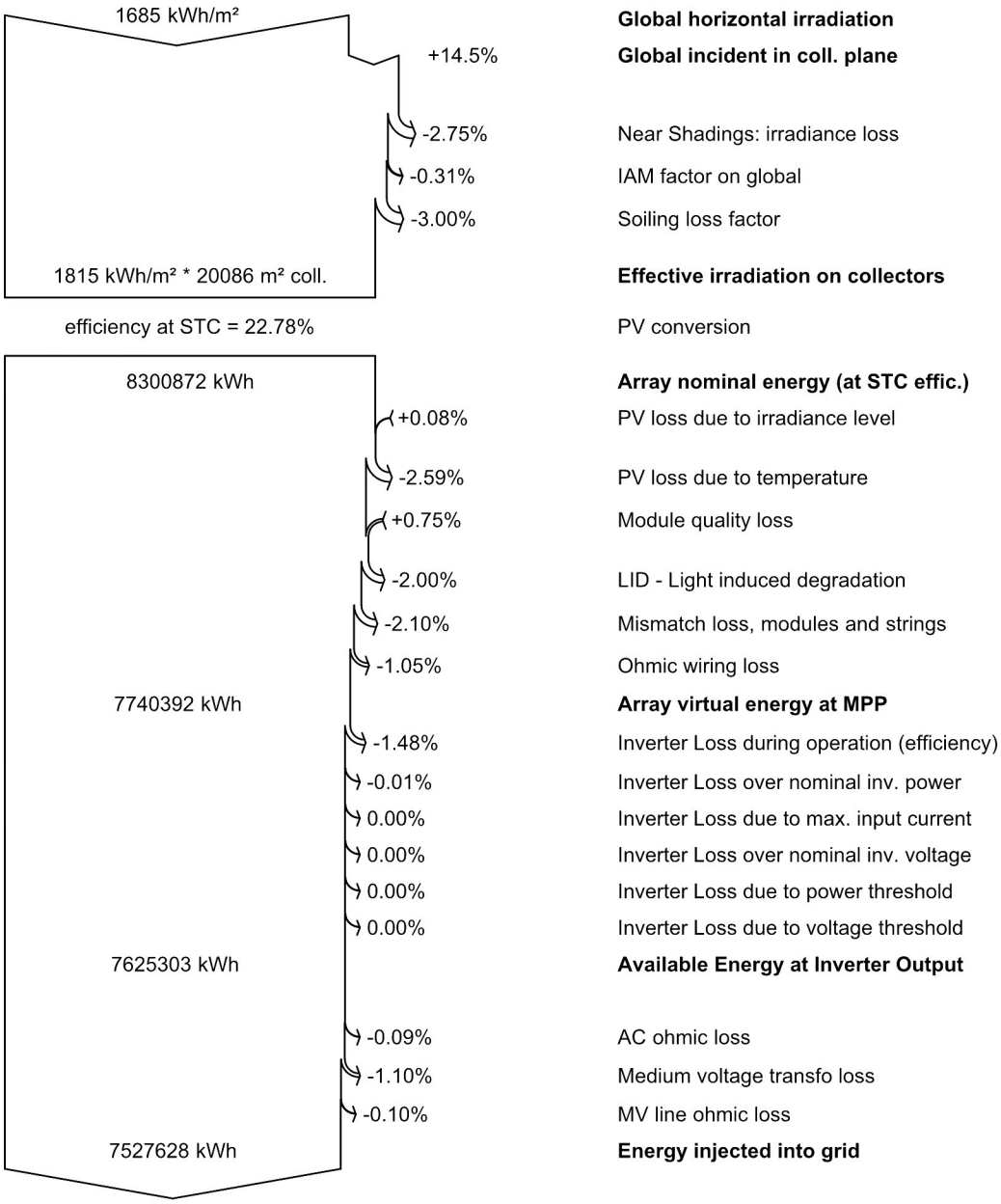
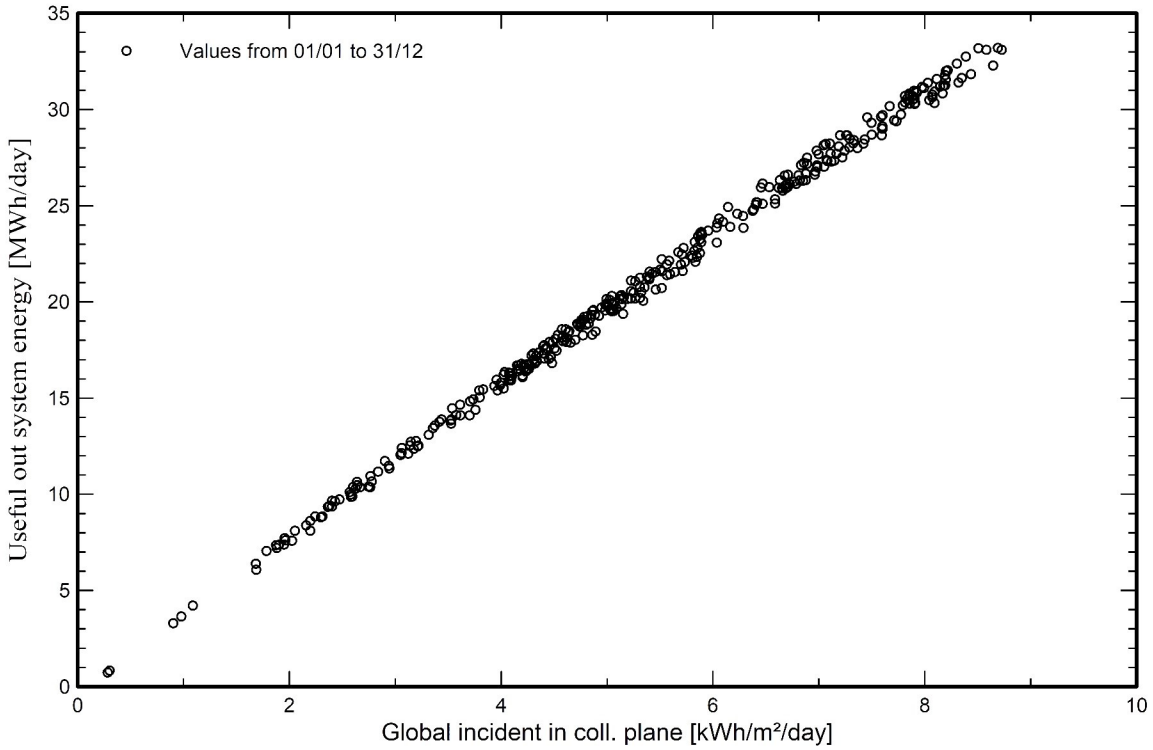
Loss diagram

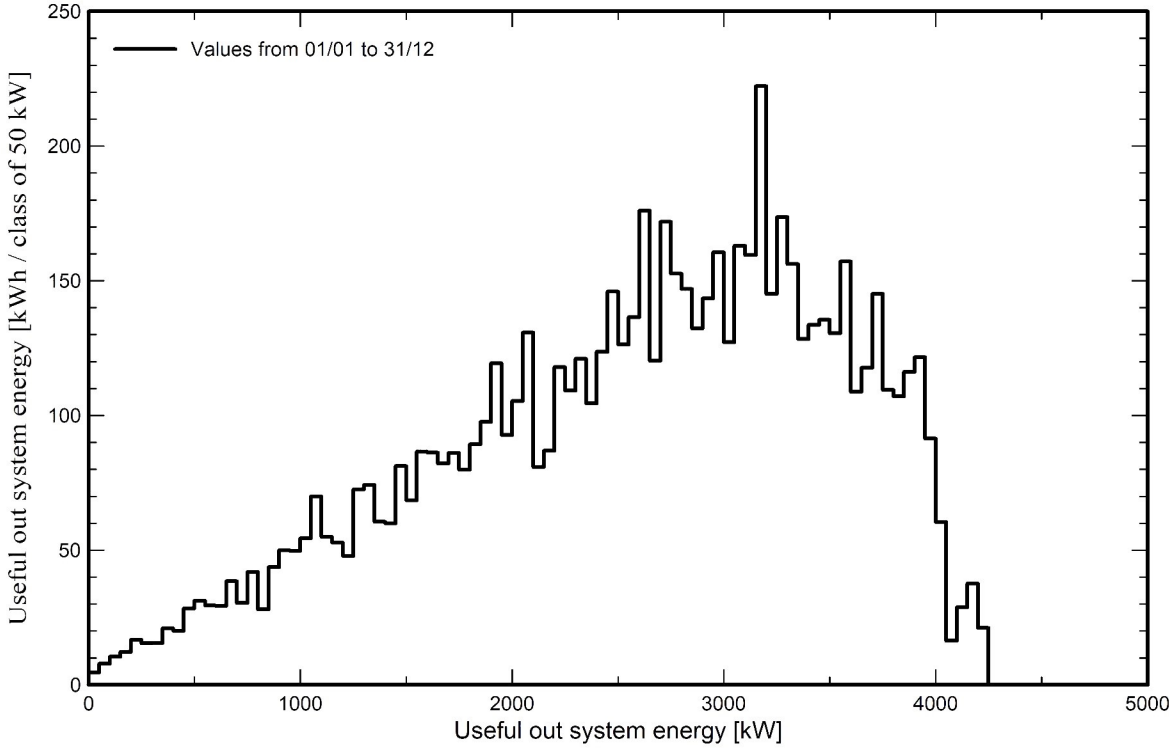


Predef. graphs

Diagrama entrada/salida diaria



Distribución de potencia de salida del sistema



Single-line diagram

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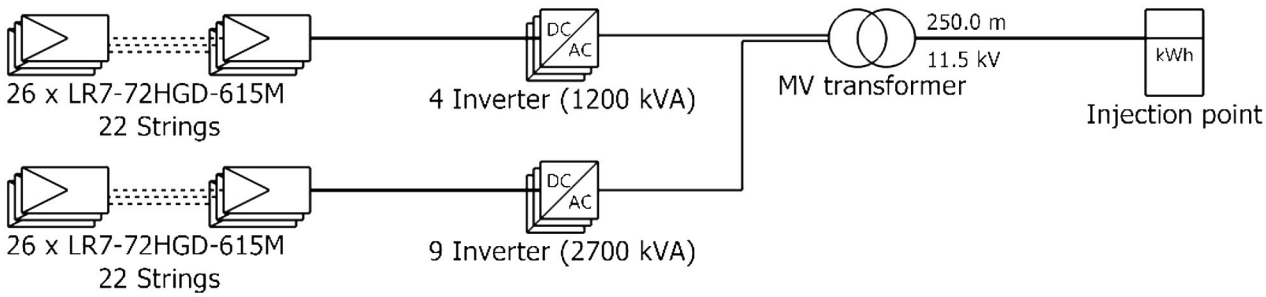

PV module	LR7-72HGD-615M
Inverter	SUN2000-330KTL-H1
String	26 x LR7-72HGD-615M

HAIN

Central Smith Argentina 4

VC0 : Nueva variante de simulación

25/10/24