



IMPIANTO FOTOVOLTAICO EG FLORA SRL

E OPERE CONNESSE

POTENZA IMPIANTO 28,15MWp - COMUNE DI CODIGORO (FE)

Proponente

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Titolo Elaborato

STIMA PRODUCIBILITA'

LIVELLO PROGETTAZIONE	CODICE ELABORATO	FILENAME	RIFERIMENTO	DATA	SCALA
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Revisioni

REV.	DATA	DESCRIZIONE	ESEGUITO	VERIFICATO	APPROVATO
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COMUNE DI CODIGORO (FE)
REGIONE EMILIA ROMAGNA



STIMA PRODUCIBILITÀ

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1. STIMA PRODUCIBILITA'

Di seguito si riportano il dettaglio di calcolo relativo alla stima di producibilità degli impianti in esame.

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Grid-Connected System: Simulation parameters					
Project :		Guidi 2			
Geographical Site		Codigoro	Country	Italy	
Situation		Latitude	44.82° N	Longitude	12.11° E
Time defined as		Legal Time	Time zone UT	Altitude	-6 m
		Albedo	0.20		
Meteo data:		Codigoro	SolarGIS Monthly aver. , period not spec. - Synthetic		
Simulation variant :		Guidi 2_580			
		Simulation date	20/07/21 16h19		
Simulation parameters		System type	Trackers single array, with backtracking		
Tracking plane, tilted axis		Axis Tilt	0°	Axis azimuth	0°
Rotation Limitations		Minimum Phi	-80°	Maximum Phi	80°
		Tracking algorithm	Astronomic calculation		
Backtracking strategy		Nb. of trackers	185	Single array	
		Tracker Spacing	10.5 m	Collector width	4.97 m
Inactive band		Left	0.02 m	Right	0.02 m
Backtracking limit angle		Phi limits	+/- 81.4° Ground Cov. Ratio (GCR) 47.3%		
Models used		Transposition	Perez	Diffuse	Perez, Meteonorm
				Circumsolar	separate
Horizon		Free Horizon			
Near Shadings		According to module strings		Electrical effect	80 %
Bifacial system		Model	, unlimited trackers 2D Calculation		
		Tracker Spacing	10.50 m	Tracker width	5.01 m
		Backtracking limit angle	81.4°	GCR	47.7 %
		Ground albedo	0.20	Axis height above ground	2.50 m
		Module bifaciality factor	70 %	Rear shading factor	0.0 %
		Module transparency	10.0 %	Rear mismatch loss	3.5 %
User's needs :		Unlimited load (grid)			
Grid power limitation		Active Power	26.0 MW	Pnom ratio	1.083
Power factor		Cos(phi)	0.990 leading	Phi	8.1°
PV Array Characteristics					
PV module		Si-mono	Model	JKM580M-7RL4-TV	
Custom parameters definition		Manufacturer	Jinkosolar		
Number of PV modules		In series	26 modules	In parallel	1887 strings
Total number of PV modules		nb. modules	48542	Unit Nom. Power	580 Wp
Array global power		Nominal (STC)	28154 kWp	At operating cond.	25681 kWp (50°C)
Array operating characteristics (50°C)		U mpp	1039 V	I mpp	24711 A
Total area		Module area	132717 m²	Cell area	125023 m²
Inverter		Model	SUN2000-215KTL-H0		
Custom parameters definition		Manufacturer	Huawei Technologies		
Characteristics		Unit Nom. Power	200 kWac	Oper. Voltage	500-1500 V
		Max. power (=>33°C)	215 kWac		
Inverter pack		Total power	27000 kWac	Pnom ratio	1.04
		Nb. of inverters	135 units		
Total		Total power	27000 kWac	Pnom ratio	1.04

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Grid-Connected System: Simulation parameters

PV Array loss factors

Array Soiling Losses

Thermal Loss factor

Wiring Ohmic Loss

LID - Light Induced Degradation

Module Quality Loss

Module mismatch losses

Strings Mismatch loss

Uc (const)

Global array res.

31.0 W/m²K

0.35 m•

Loss Fraction

Uv (wind)

Loss Fraction

Loss Fraction

Loss Fraction

Loss Fraction

Loss Fraction

1.5 %

1.6 W/m²K / m/s

0.8 % at STC

1.5 %

-0.7 %

0.4 % at MPP

0.10 %

Incidence effect (IAM): User defined profile

0°	30°	50°	60°	70°	75°	80°	85°	90°
1.000	1.000	1.000	0.999	0.989	0.964	0.922	0.729	0.000

System loss factors

AC wire loss inverter to transfo

Inverter voltage

Wires: 3 x 20000 mm²

800 Vac tri

615 m

Loss Fraction

2.6 % at STC

MV transfo

Grid Voltage

30 kV

One MV transfo

Operating losses at STC

Iron loss (24/24 Connexion)

Copper (resistive) loss

55.53 kW

3 x 0.30 m•

Loss Fraction

Loss Fraction

0.2 % at STC

1.3 % at STC

MV line up to Injection

MV Voltage

Wires: 3 x 300 mm²

30 kV

10500 m

Loss Fraction

2.03 % at STC

Auxiliaries loss

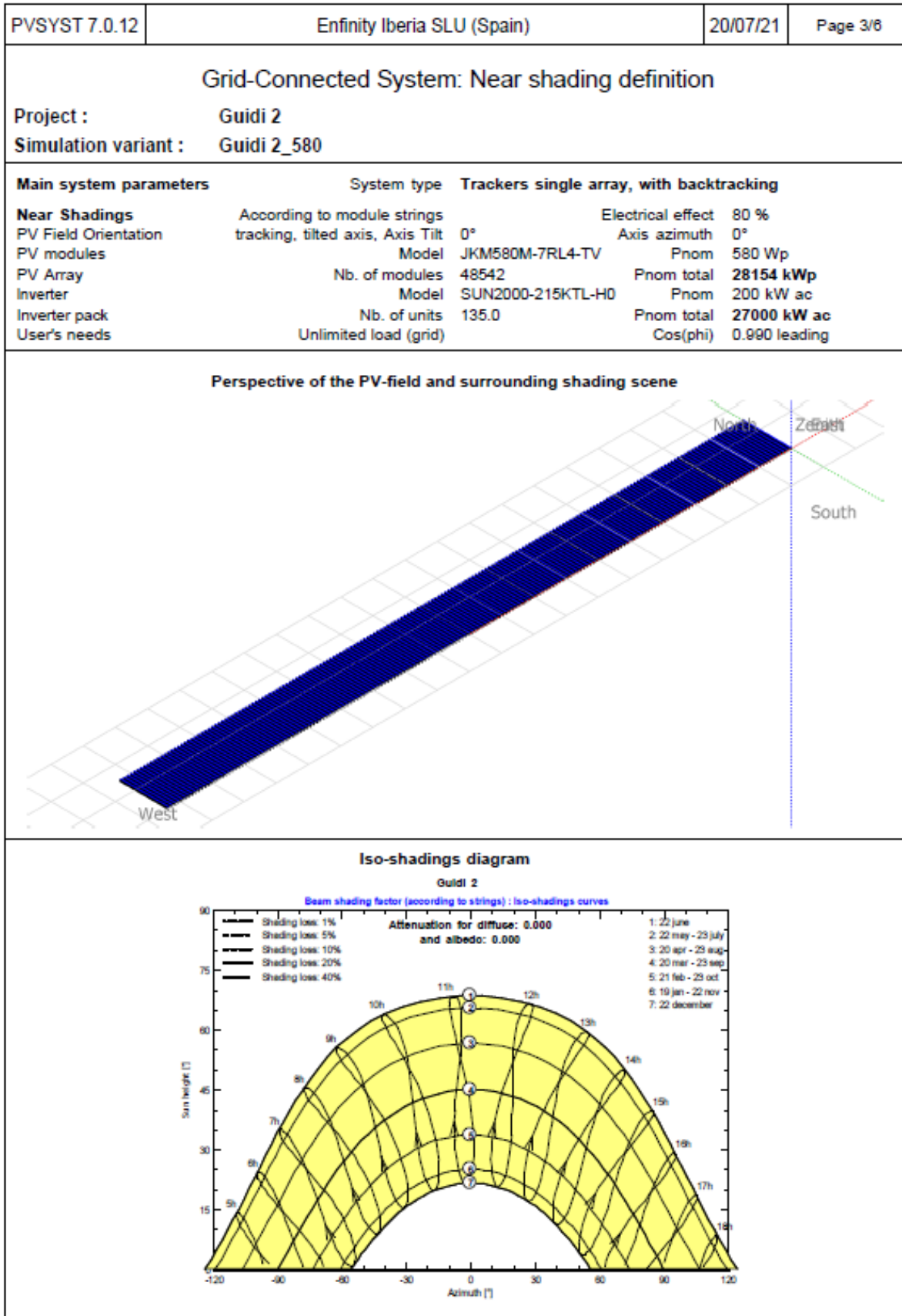
Proportionnal to Power

4.0 W/kW

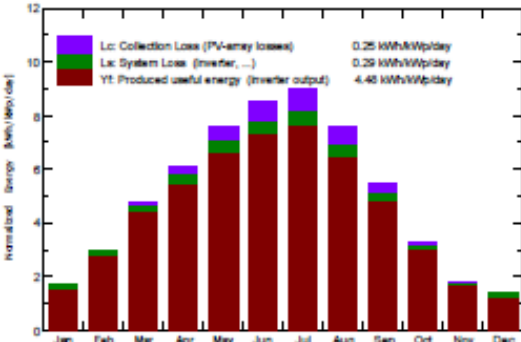
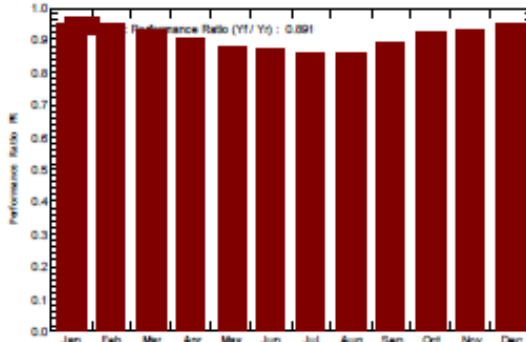
... from Power thresh.

0.0 kW

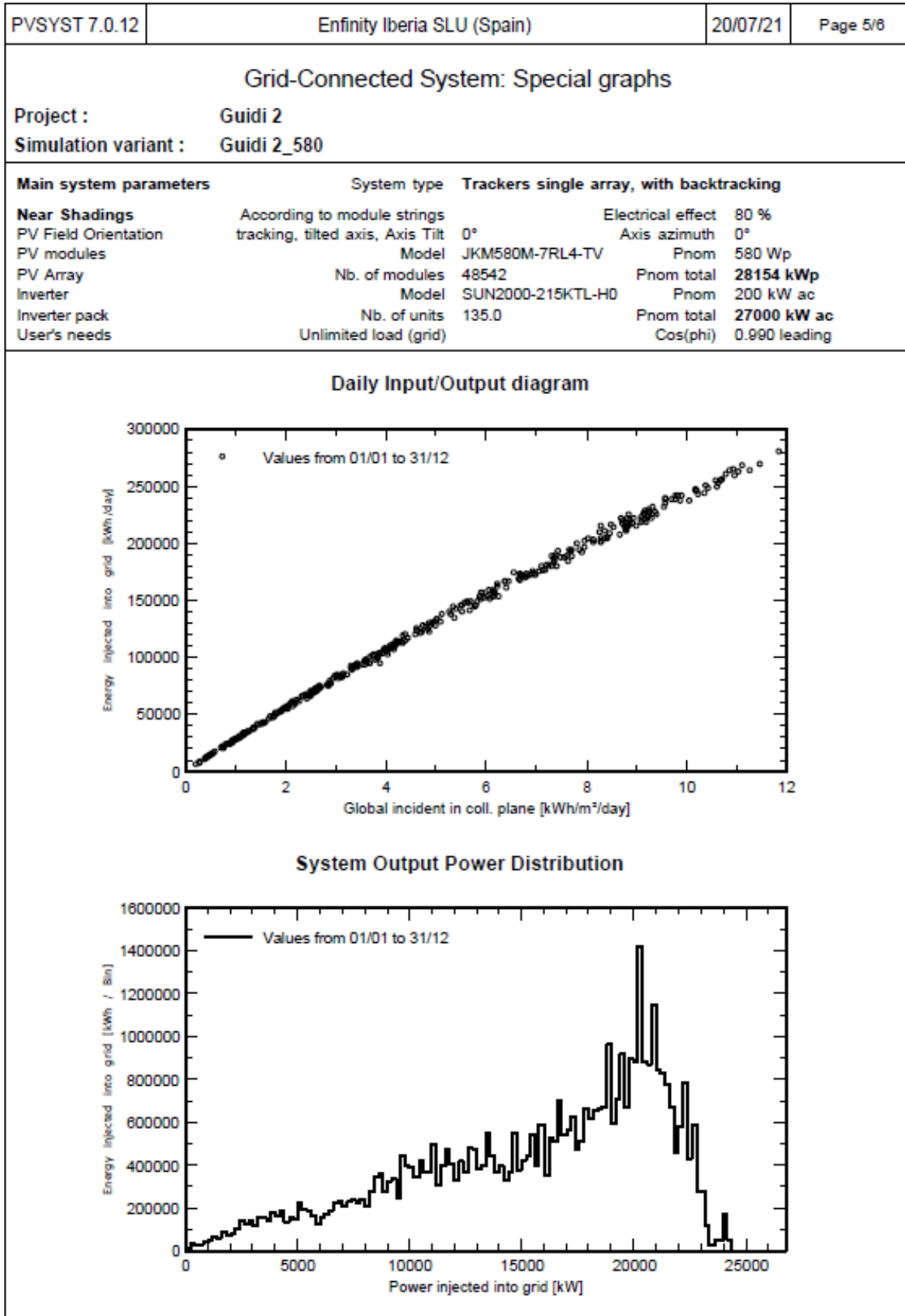
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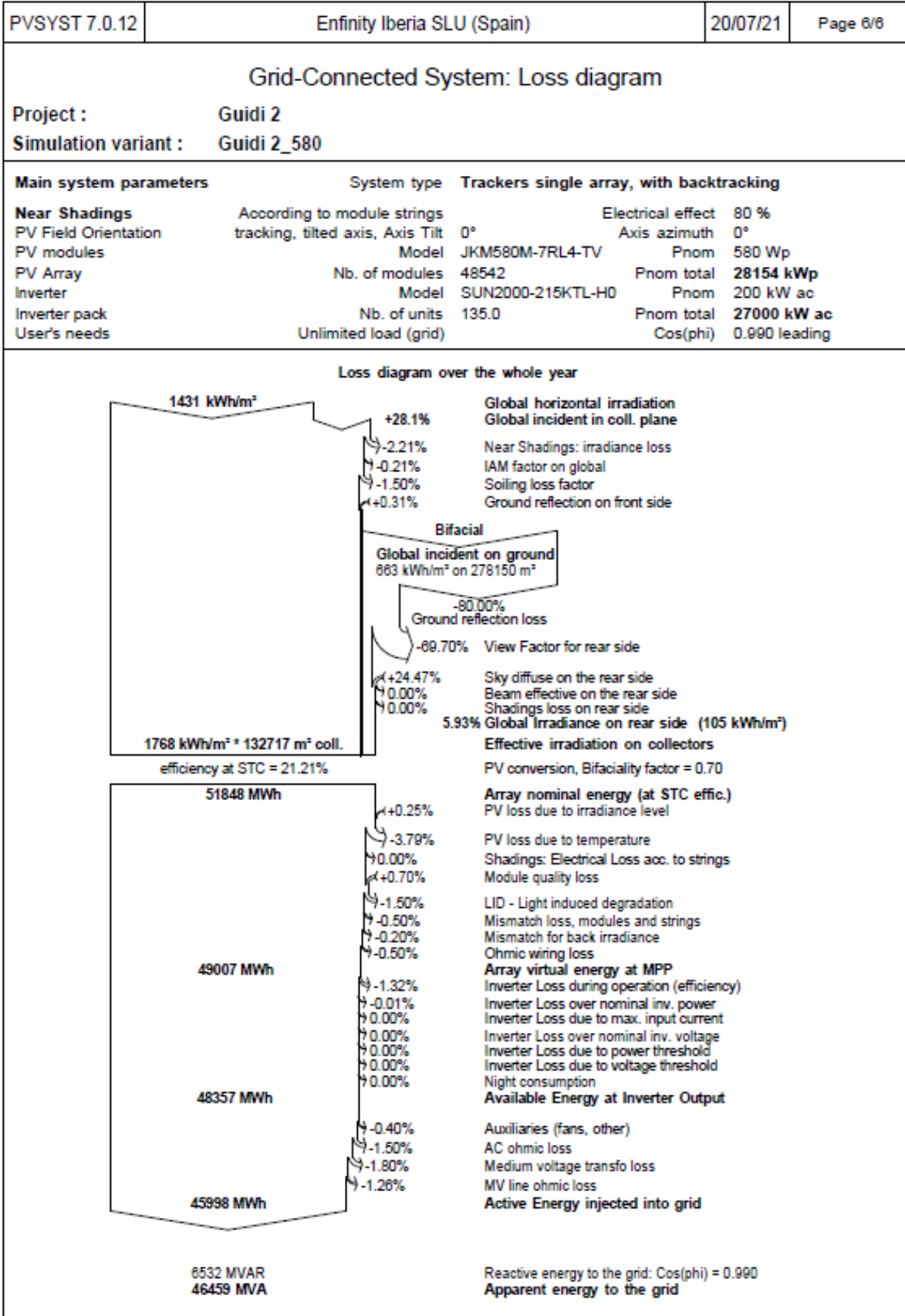
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PVSYST 7.0.12		Enfinity Iberia SLU (Spain)		20/07/21		Page 4/6		
Grid-Connected System: Main results								
Project :		Guidi 2						
Simulation variant :		Guidi 2_580						
Main system parameters		System type		Trackers single array, with backtracking				
Near Shadings		According to module strings		Electrical effect		80 %		
PV Field Orientation		tracking, tilted axis, Axis Tilt		Axis azimuth		0°		
PV modules		Model		JKM580M-7RL4-TV		Pnom 580 Wp		
PV Array		Nb. of modules		48542		Pnom total 28154 kWp		
Inverter		Model		SUN2000-215KTL-H0		Pnom 200 kW ac		
Inverter pack		Nb. of units		135.0		Pnom total 27000 kW ac		
User's needs		Unlimited load (grid)		Cos(phi)		0.990 leading		
Main simulation results								
System Production		Produced Energy		45998 MWh/year		Specific prod. 1634 kWh/kWp/year		
		Apparent energy		46459 MVAh		Perf. Ratio PR 89.10 %		
Normalized productions (per installed kWp): Nominal power 28164 kWp								
								
Guidi 2_580								
Balances and main results								
	GlobHor kWh/m²	DiffHor kWh/m²	T_Amb °C	GlobInc kWh/m²	GlobEff kWh/m²	EArray MWh	E_Grid MWh	PR ratio
January	42.0	23.00	4.80	53.2	50.8	1521	1427	0.953
February	64.0	31.00	6.10	82.5	79.3	2349	2216	0.953
March	115.0	50.00	10.20	147.9	142.5	4114	3873	0.930
April	143.0	63.00	14.40	181.8	175.3	4949	4645	0.907
May	187.0	78.00	19.60	235.3	227.0	6212	5817	0.878
June	201.0	82.00	24.00	254.7	246.2	6649	6234	0.869
July	214.0	77.00	26.30	278.1	269.2	7153	6696	0.855
August	180.0	69.00	25.70	233.4	225.7	6047	5671	0.863
September	127.0	55.00	20.90	165.0	159.0	4398	4143	0.892
October	81.0	42.00	16.00	103.3	99.1	2835	2678	0.921
November	43.0	24.00	10.70	55.2	52.7	1545	1449	0.932
December	34.0	19.00	5.49	43.1	41.2	1232	1149	0.946
Year	1431.0	613.00	15.40	1833.6	1768.1	49004	45998	0.891
Legends: GlobHor Global horizontal irradiation DiffHor Horizontal diffuse irradiation T_Amb T amb. 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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