

IMPIANTO FOTOVOLTAICO EG AMBIENTALE SRL E OPERE CONNESSE

POTENZA IMPIANTO 14,55MWp - COMUNE DI CODIGORO (FE)

Proponente

EG AMBIENTALE S.R.L.

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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 : Minarelli					
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 : Minnarelli Rev1 14.55 - 10.5m - 580 - Best Case					
		Simulation date	20/07/21 16h18		
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	60°
		Tracking algorithm	Astronomic calculation		
Backtracking strategy					
Nb. of trackers		125	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	+/- 61.4° Ground Cov. Ratio (GCR) 47.3%		
Models used					
Transposition		Perez	Diffuse	Perez, Meteorom separate	
			Circumsolar		
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		61.4°	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		14.6 MW	Pnom ratio	1.000	
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	965 strings
Total number of PV modules		nb. modules	25090	Unit Nom. Power	580 Wp
Array global power		Nominal (STC)	14552 kWp	At operating cond.	13274 kWp (50°C)
Array operating characteristics (50°C)		U mpp	1039 V	I mpp	12772 A
Total area		Module area	68598 m²	Cell area	64621 m²
Inverter					
Custom parameters definition		Model	SUN2000-215KTL-H0		
Characteristics		Manufacturer	Huawei Technologies		
		Unit Nom. Power	200 kWac	Oper. Voltage	500-1500 V
		Max. power (=>33°C)	215 kWac		
Inverter pack		Total power	14600 kWac	Pnom ratio	1.00
		Nb. of inverters	73 units		
Total					
Total power		14600 kWac	Pnom ratio	1.00	

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Grid-Connected System: Simulation parameters

PV Array loss factors

Array Soiling Losses			Loss Fraction	1.5 %
Thermal Loss factor	Uc (const)	31.0 W/m²K	Uv (wind)	1.6 W/m²K / m/s
Wiring Ohmic Loss	Global array res.	0.72 m•	Loss Fraction	0.8 % at STC
LID - Light Induced Degradation			Loss Fraction	1.5 %
Module Quality Loss			Loss Fraction	-0.7 %
Module mismatch losses			Loss Fraction	0.4 % at MPP
Strings Mismatch loss			Loss Fraction	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	800 Vac tri		
	Wires: 3 x 10000 mm²	585 m	Loss Fraction	2.5 % at STC

MV transfo

	Grid Voltage	30 kV		
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One MV transfo

Operating losses at STC	Iron loss (24/24 Connexion)	28.71 kW	Loss Fraction	0.2 % at STC
	Copper (resistive) loss	3 x 0.58 m•	Loss Fraction	1.3 % at STC

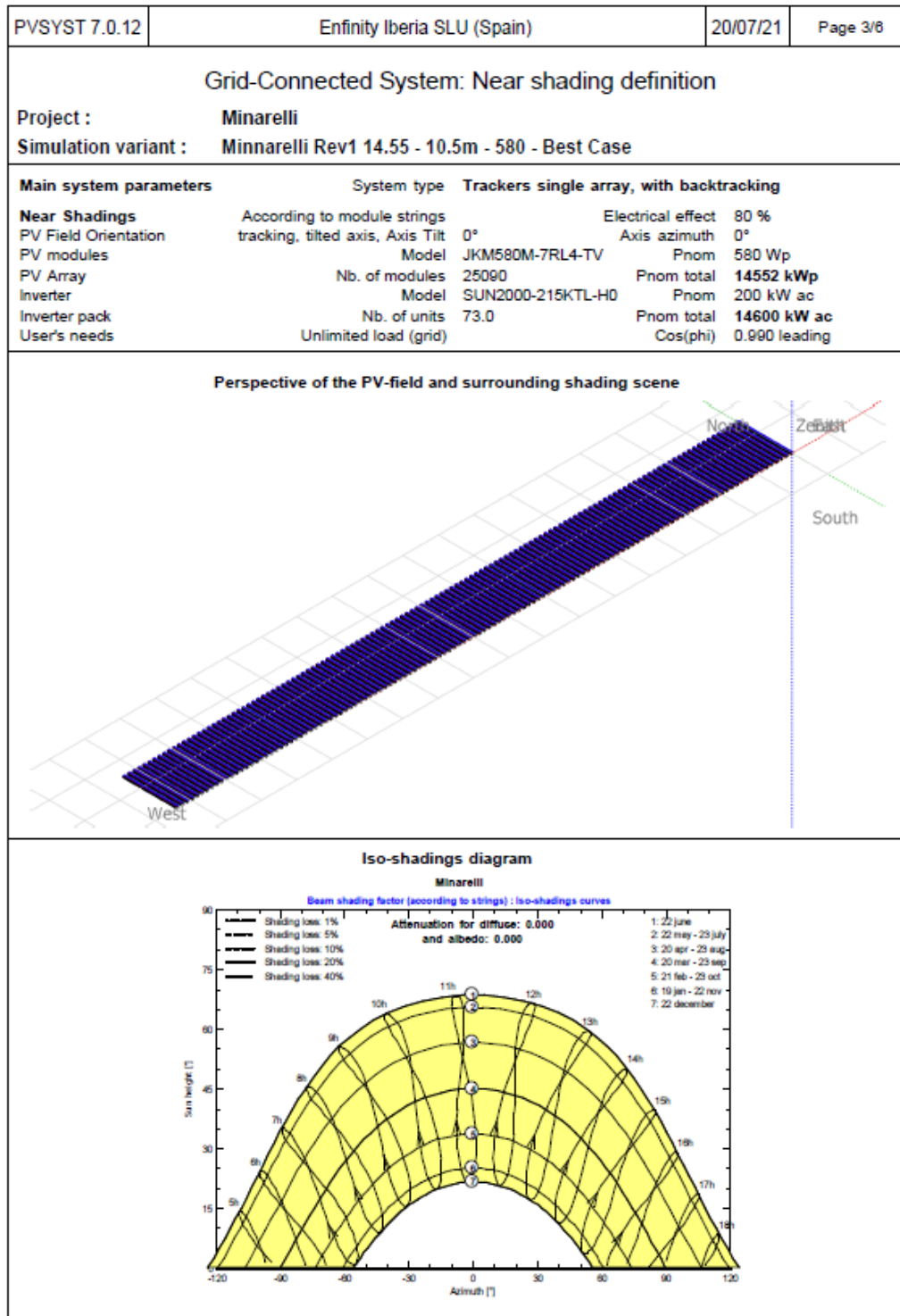
MV line up to Injection

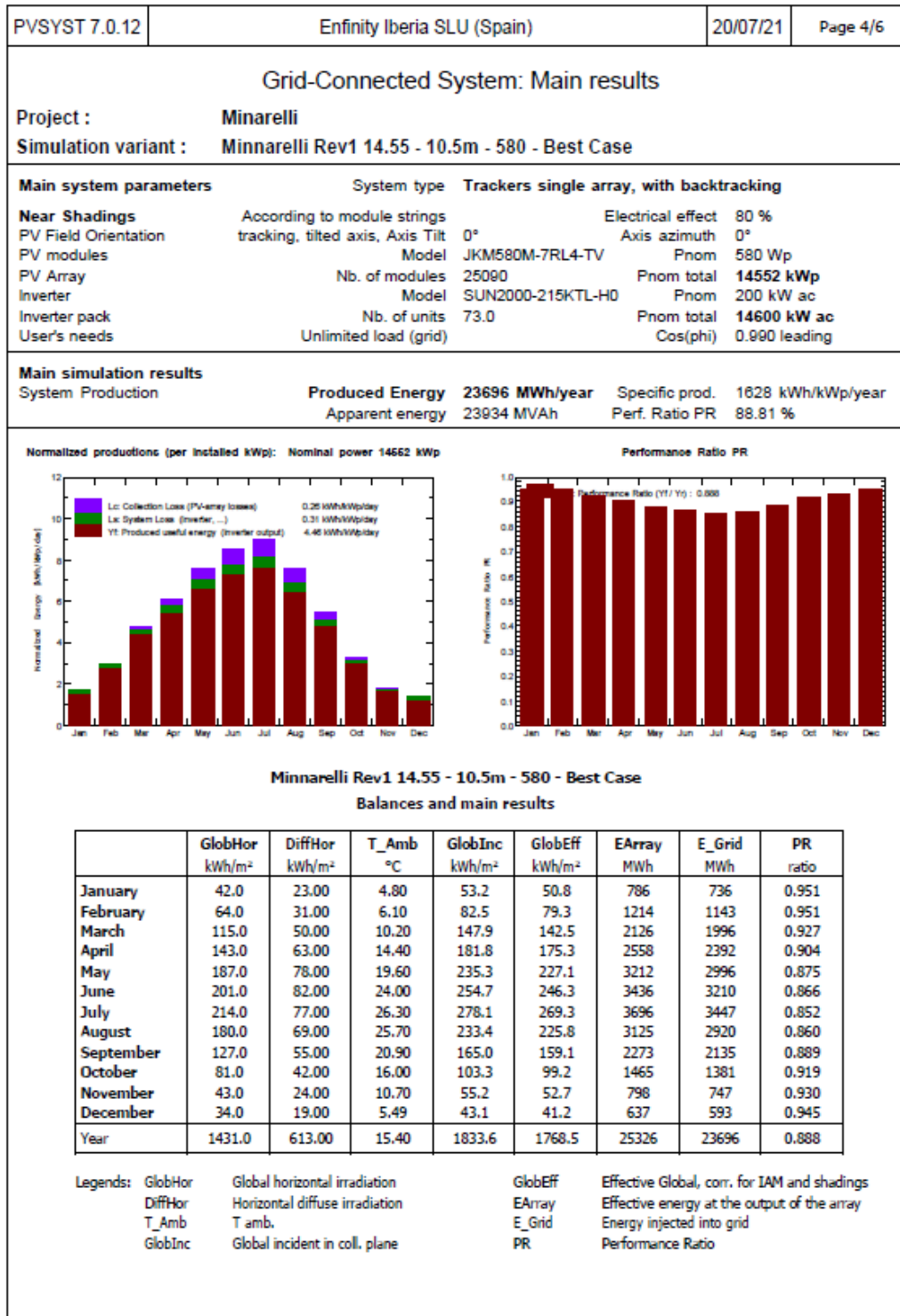
	MV Voltage	30 kV		
	Wires: 3 x 150 mm²	13000 m	Loss Fraction	2.60 % at STC

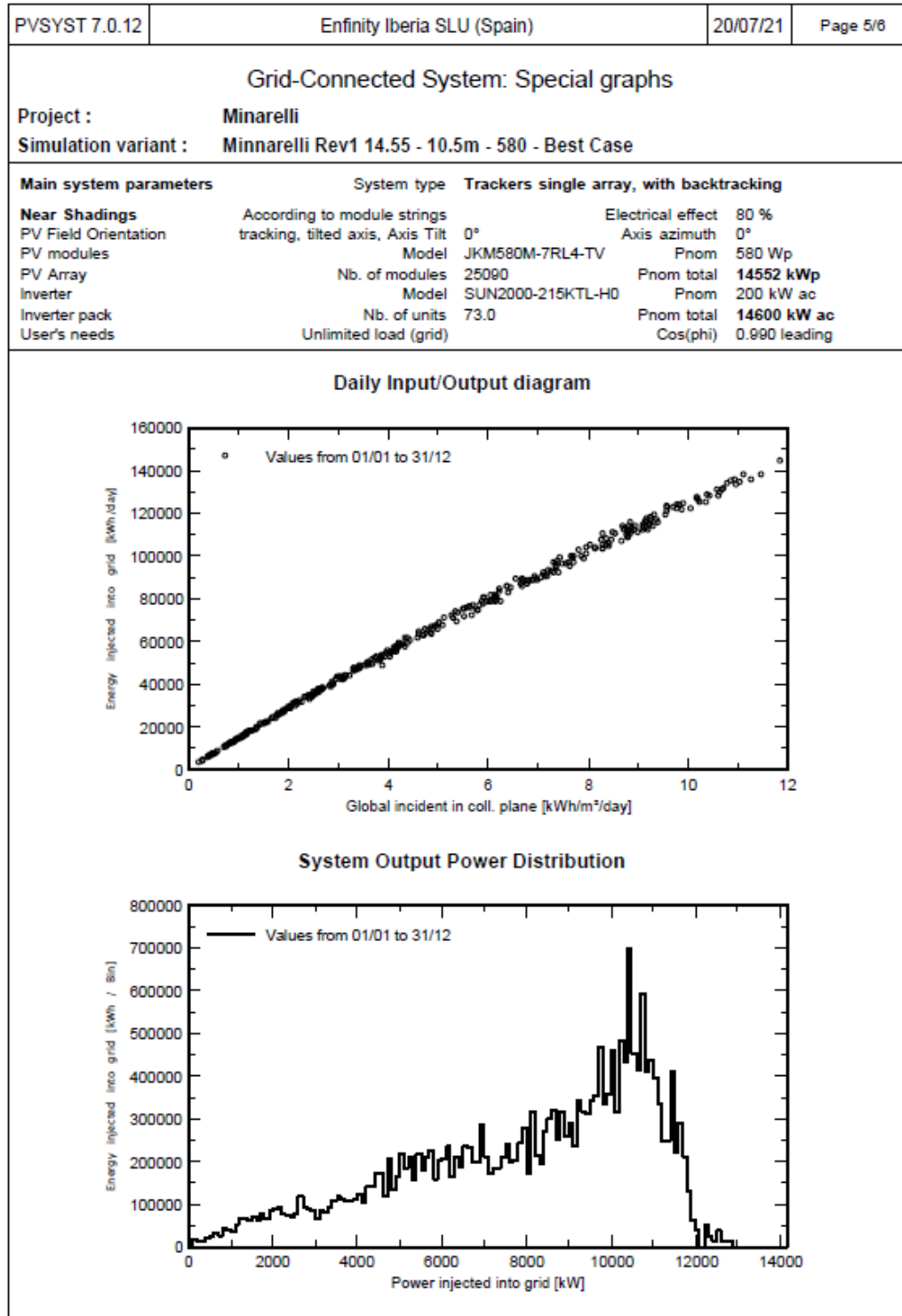
Auxiliaries loss

	Proportionnal to Power	4.0 W/kW	... from Power thresh.	0.0 kW
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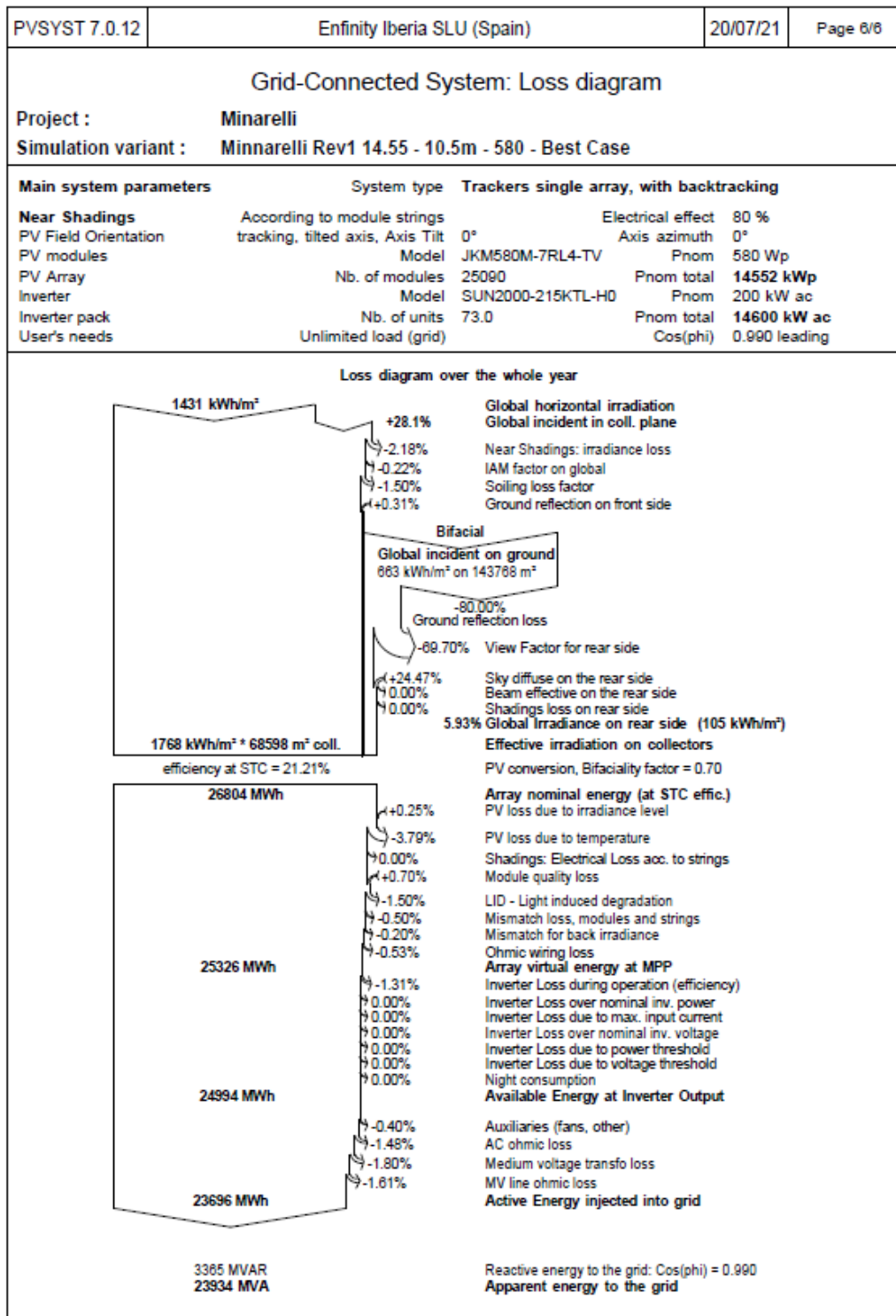
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