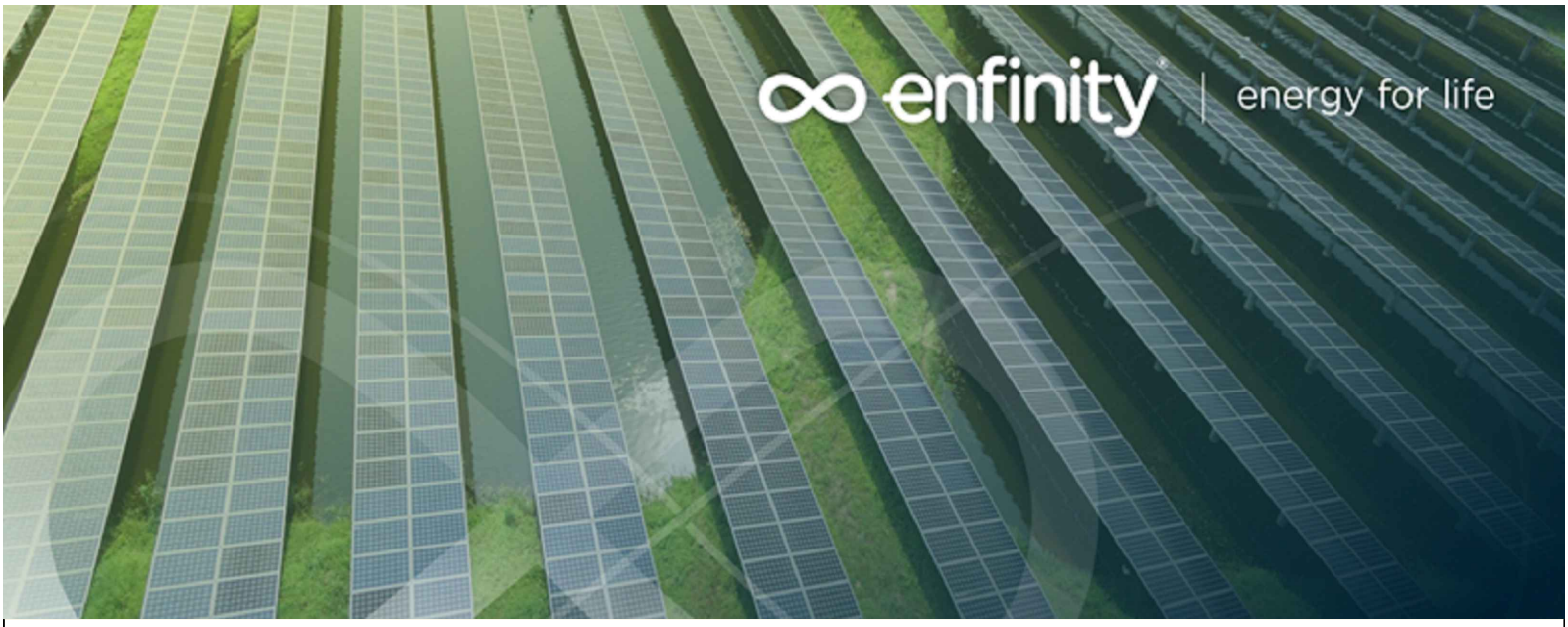


IMPIANTO FOTOVOLTAICO EG SALICE SRL

E OPERE CONNESSE

POTENZA IMPIANTO 27,46 MWp - COMUNE DI MONTALTO DI CASTRO (VT)

Proponente

EG SALICE S.R.L.
VIA DEI PELLEGRINI 22 · 20122 MILANO (MI) · P.IVA: 12084680961· PEC: egsalice@pec.it

Alessandro Ceschiat
30.12.2021
12:16:32
GMT+00:00

Progettazione

Ing. Piero Farenti
Via Don Giuseppe Corda snc
03030 - Santopadre (FR)
tel 0776 531040 mail: info@farenti.it
PEC: piero@pec.farenti.it

ORDINE DEGLI INGEGNERI DELLA PROVINCIA DI FROSINONE
Dott. Ing. PIERO FARENTI
Sez. A n. 1733
Settori: civile ed ambientale, industriale, dell'informazione

Farenti Piero
30.12.2021
14:06:35
GMT+00:00

Collaboratori

Ing. Andrea Farenti - Via Don Giuseppe Corda snc
03030 - Santopadre (FR)
tel 0776 531040 - email: info@farenti.it - PEC: andrea@pec.farenti.it

Coordinamento progettuale

Farenti S.r.l.
Via don Giuseppe Corda snc - 03030 Santopadre (FR) - P. IVA 02604750600
tel 0776 531040 Fax 07761800135

Titolo Elaborato

STIMA PRODUCIBILITA'

LIVELLO PROGETTAZIONE	CODICE ELABORATO	FILENAME	RIFERIMENTO	DATA	SCALA
-	E14	-	-	27/12/2021	S/S

Revisioni

REV.	DATA	DESCRIZIONE	ESEGUITO	VERIFICATO	APPROVATO
0	27/12/2021	-	RGS	AF	MD

COMUNE DI MONTALTO
DI CASTRO (VT)
REGIONE LAZIO

REGIONE LAZIO

enfinity

STIMA PRODUCIBILITA’

Sommario

DATI PROGETTO

Project summary

Geographical Site
Montalto di Castro
Italy

Situation

Latitude	42.36 °N
Longitude	11.67 °E
Altitude	65 m
Time zone	UTC

Project settings

Albedo	0.20

Meteo data
Montalto di Castro
SolarGIS Monthly aver. , period not spec. - Synthetic

System summary

Grid-Connected System

Trackers single array, with backtracking

PV Field Orientation

Tracking plane, horizontal N-S axis	
Axis azimuth	0 °

Near Shadings

According to strings	
Electrical effect	80 %

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	39228 units
Pnom total	27.46 MWp

Inverters

Nb. of units	115 units
Pnom total	23.00 MWac
Grid power limit	17.16 MWac
Grid lim. Pnom ratio	1.600

Results summary

Produced Energy	43 GWh/year	Specific production	1580 kWh/kWp/year	Perf. Ratio PR	75.52 %
Apparent energy	43375 MVAh				

Table of contents

General parameters

Grid-Connected System — **Trackers single array, with backtracking**

PV Field Orientation

Orientation
Tracking plane, horizontal N-S axis
Axis azimuth 0 °

Backtracking strategy
Nb. of trackers 59 units
Single array

Sizes
Tracker Spacing 9.50 m
Collector width 4.49 m
Ground Cov. Ratio (GCR) 47.3 %
Phi min / max. -/+ 60.0 °

Backtracking limit angle
Phi limits +/- 61.6 °

Models used
Transposition Perez
Diffuse Perez, Meteonorm
Circumsolar separate

Horizon
Free Horizon

Near Shadings
According to strings
Electrical effect 80 %

User's needs
Unlimited load (grid)

Grid injection point

Grid power limitation
Active Power 17.16 MWac
Pnom ratio 1.600

Power factor
Cos(phi) (leading) 1.000

PV Array Characteristics

PV module
Manufacturer Trina Solar
Model TSM-700DEG21C.20
(Custom parameters definition)
Unit Nom. Power 700 Wp
Number of PV modules 39228 units
Nominal (STC) 27.46 MWp
Modules 1401 Strings x 28 In series
At operating cond. (50°C)
Pmpp 24.08 MWp
U mpp 888 V
I mpp 27129 A

Inverter
Manufacturer Huawei Technologies
Model SUN2000-215KTL-H3
(Custom parameters definition)
Unit Nom. Power 200 kWac
Number of inverters 115 units
Total power 23000 kWac
Operating voltage 500-1500 V
Max. power (=>33°C) 215 kWac
Pnom ratio (DC:AC) 1.19

Total PV power
Nominal (STC) 27460 kWp
Total 39228 modules
Module area 123375 m²
Cell area 113918 m²

Total inverter power
Total power 23000 kWac
Number of inverters 115 units
Pnom ratio 1.19

Array losses

Array Soiling Losses
Loss Fraction 1.5 %

Thermal Loss factor
Module temperature according to irradiance
Uc (const) 30.0 W/m²K
Uv (wind) 1.2 W/m²K/m/s

DC wiring losses
Global array res. 0.27 mΩ
Loss Fraction 0.7 % at STC

LID - Light Induced Degradation
Loss Fraction 1.5 %

Module Quality Loss
Loss Fraction -0.8 %

Module mismatch losses
Loss Fraction 1.0 % at MPP

Strings Mismatch loss
Loss Fraction 0.1 %

Array losses

IAM loss factor

Incidence effect (IAM): User defined profile

0°	40°	50°	60°	70°	75°	80°	85°	90°
1.000	1.000	0.998	0.992	0.983	0.961	0.933	0.853	0.000

System losses

Auxiliaries loss

Proportionnal to Power 4.0 W/kW
20.0 kW from Power thresh.
Night aux. cons. 5.00 kW

AC wiring losses

Inv. output line up to MV transfo

Inverter voltage 800 Vac tri
Loss Fraction 1.90 % at STC

Inverter: SUN2000-215KTL-H3

Wire section (115 Inv.) Copper 115 x 3 x 70 mm²
Average wires length 193 m

MV line up to Injection

MV Voltage 30 kV
Wires Copper 3 x 300 mm²
Length 17000 m
Loss Fraction 3.19 % at STC

AC losses in transformers

MV transfo

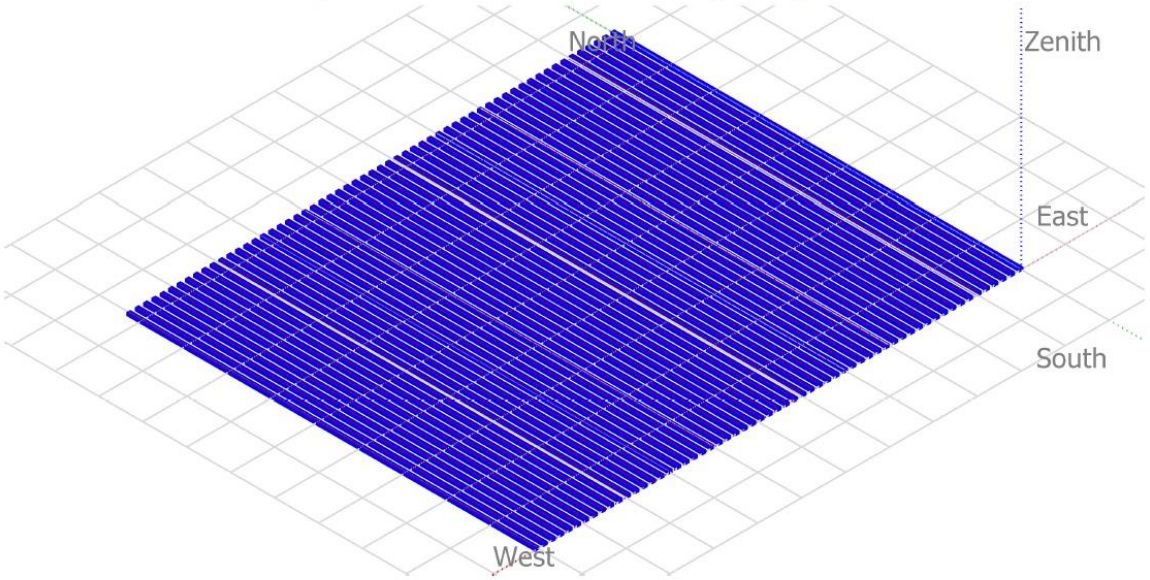
Grid voltage 30 kV

Operating losses at STC

Nominal power at STC 26955 kVA
Iron loss (24/24 Connexion) 40.43 kW
Loss Fraction 0.15 % at STC
Coils equivalent resistance 3 x 0.39 mΩ
Loss Fraction 1.65 % at STC

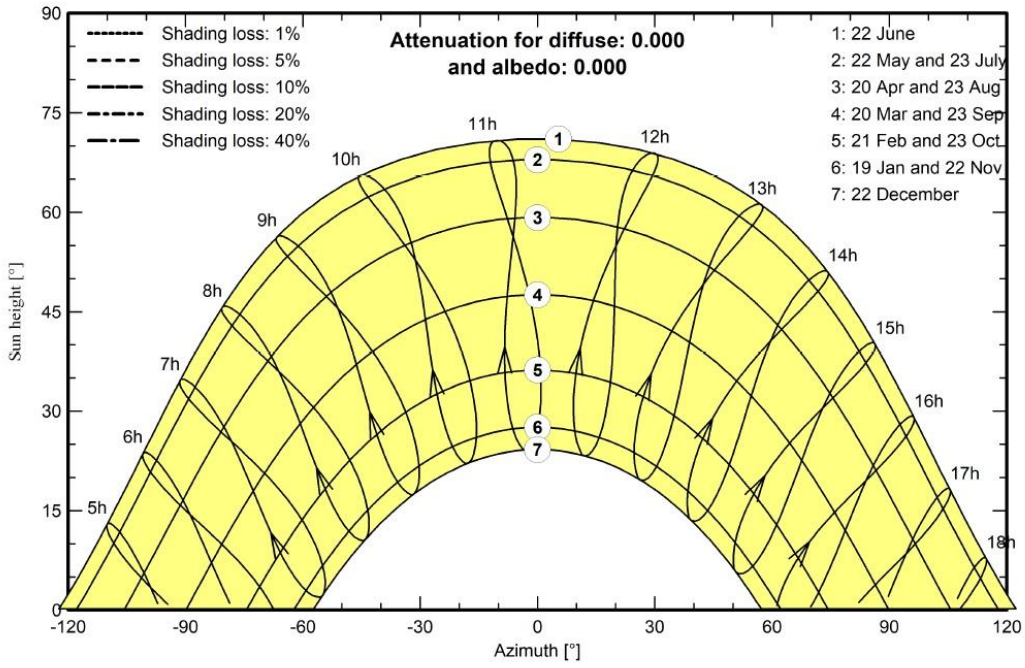
Near shadings parameter

Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram

Orientation #1



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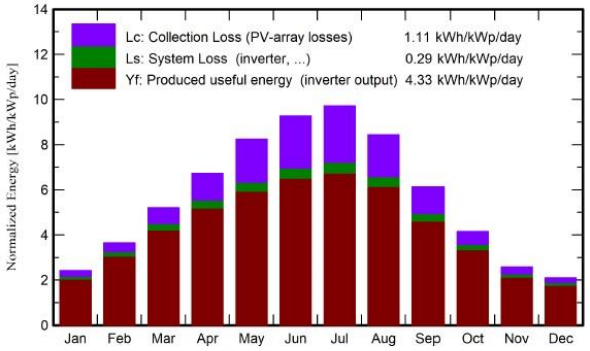
Main results

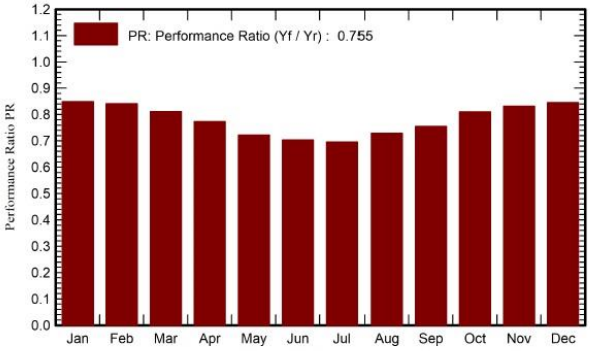
System Production

Produced Energy	43 GWh/year	Specific production	1580 kWh/kWp/year
Apparent energy	43375 MVAh	Performance Ratio PR	75.52 %

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 GWh	E_Grid GWh	PR ratio
January	56.6	25.20	10.10	74.8	71.4	1.858	1.745	0.849
February	78.0	31.60	10.20	102.1	97.8	2.517	2.358	0.841
March	125.6	50.10	12.10	161.5	155.3	3.844	3.601	0.812
April	156.9	63.30	14.50	201.6	194.0	4.574	4.285	0.774
May	199.3	76.80	18.20	255.5	246.2	5.410	5.064	0.722
June	217.2	76.30	22.10	278.1	268.3	5.738	5.370	0.703
July	229.9	70.30	24.80	301.0	291.0	6.149	5.750	0.696
August	199.3	66.10	25.10	261.6	252.6	5.605	5.242	0.730
September	142.4	55.40	21.80	183.9	176.8	4.078	3.814	0.755
October	99.7	43.70	18.50	128.5	123.2	3.051	2.860	0.811
November	59.1	28.00	14.60	77.3	73.5	1.881	1.766	0.832
December	49.0	22.00	11.20	65.4	62.2	1.618	1.518	0.845
Year	1613.0	608.80	16.97	2091.5	2012.3	46.322	43.375	0.755

Legends

GlobHor	Global horizontal irradiation	EArray	Effective energy at the output of the array
DiffHor	Horizontal diffuse irradiation	E_Grid	Energy injected into grid
T_Amb	Ambient Temperature	PR	Performance Ratio
GlobInc	Global incident in coll. plane		
GlobEff	Effective Global, corr. for IAM and shadings		

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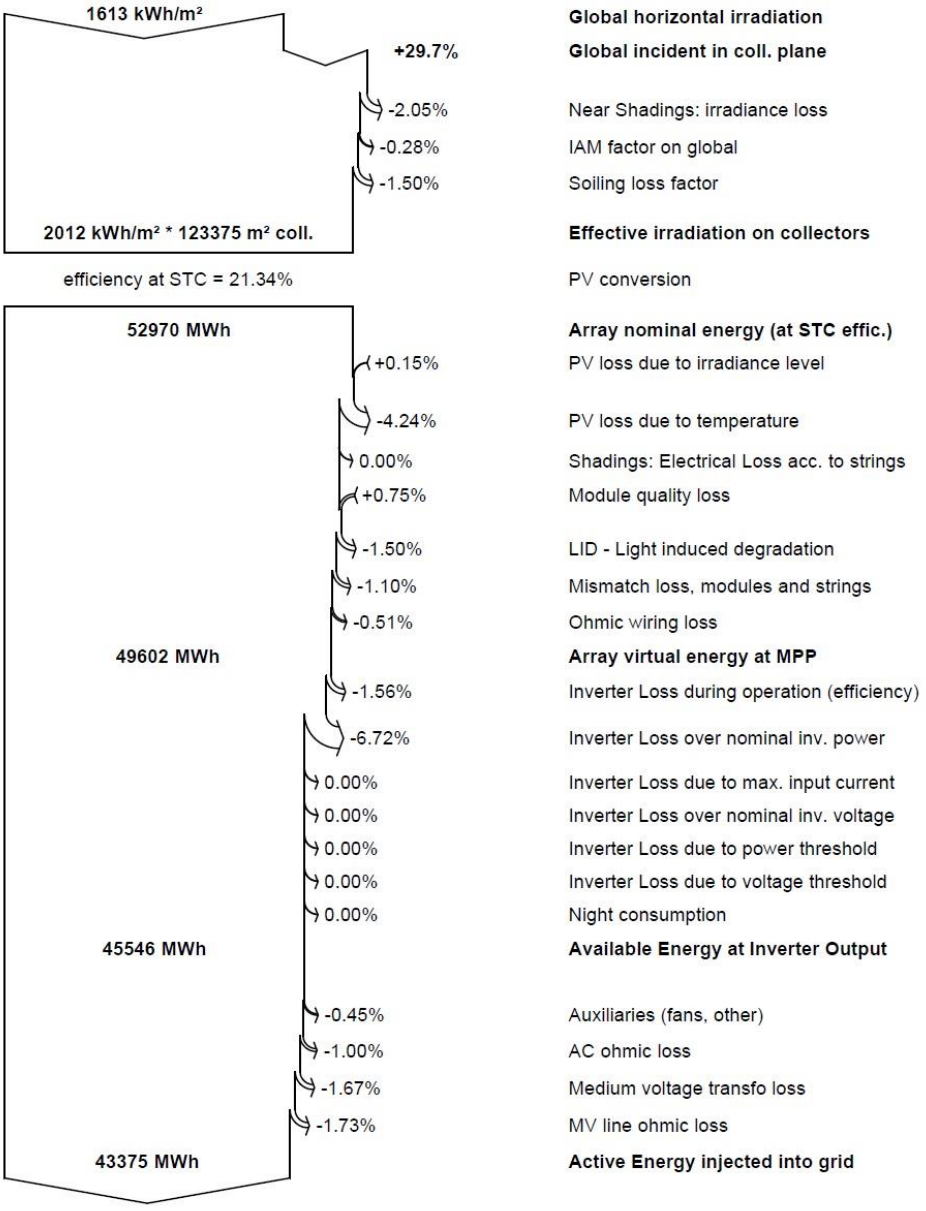
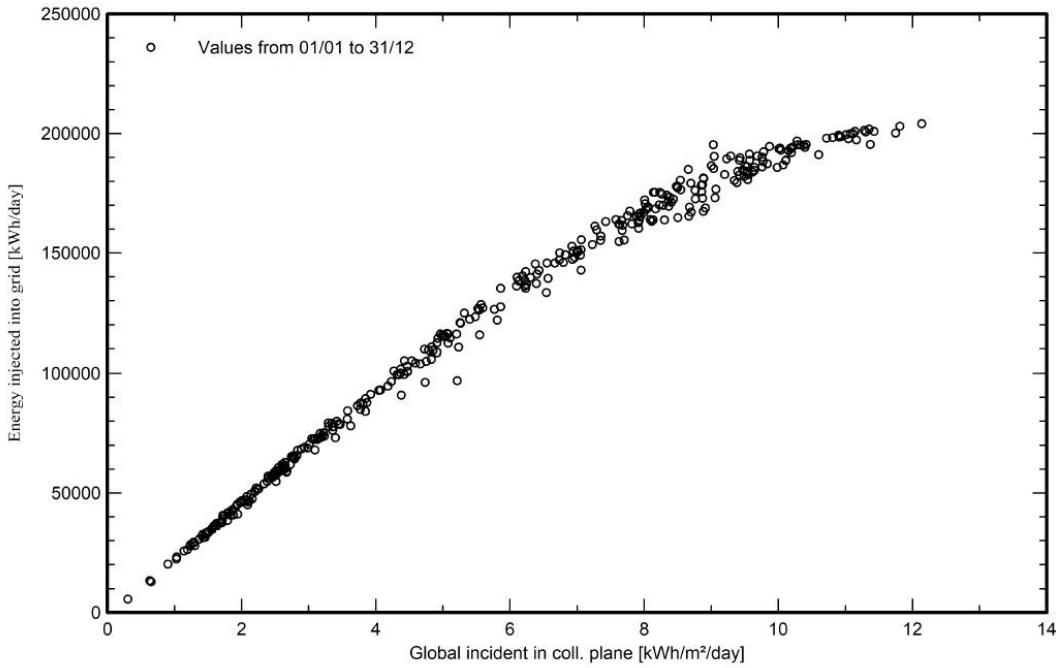
Loss diagram



Special graphs

Daily Input/Output diagram



System Output Power Distribution