Regione Abruzzo
Provincia di Teramo
Comune di Corropoli

PROGETTO DEFINITIVO

Nome progetto

"Corropoli"

Oggetto

Progetto per la realizzazione di un impianto fotovoltaico e relative opere di connessione, con potenza nominale di 21,759 MW e una potenza in immissione di 19,80 MW, da ubicarsi nei Comuni di Corropoli (TE) e Alba Adriatica (TE).

Firmato digitalmente da:
GIANLUCA MEDULLI

Titolo

Calcolo producibilità

Progettazione

SYNIERGY.
YOUR TRANSITION TO THE FUTURE

SYNIERGY S.R.L.
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PROGETTAZIONE:

Dott. Ing. GIANLUCA MEDULLI
Sez. A n. 1310
Ordine degli Ingegneri Provincia di Campobasso
Industriale

STUDIOEKÓ

STUDIO EKO S.R.L.
Via Giulio Pastore, 1/a
86039 - Termoli (CB)

Richiedente

Corropoli SOLAR

CORROPOLI SOLAR S.R.L.
Via Caravaggio 125,
65125 - Pescara (PE)

FIRMA PER BENESTARE

Rev.	Data	Motivo Revisione	Eseguito	Verificato	Approvato
5					
4					
3					
2					
1					
0	08/03/24	Emissione	AC	GM	LC

Livello Progetto:	Codice di rintracciabilità:	Codice elaborato:
PD		SYN069.PD.RC.002
Scala:	File:	Foglio: PDF

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Version 7.4.5

PVsyst - Simulation report

Grid-Connected System

Project: Corropoli 19,8 MWp

Variant: corropoli 19.8 MWp pitch4.6mt

Sheds system

System power: 21.76 MWp

Corropoli - Italia

PVsyst V7.4.5
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Project summary

Geographical Site
Corropoli
Italia

Situation

Latitude	42.83 °N
Longitude	13.83 °E
Altitude	135 m
Time zone	UTC+1

Project settings

Albedo	0.20

Meteo data
Corropoli
Meteonorm 8.1 (1991-2002), Sat=100% - Sintetico

System summary

Grid-Connected System

Sheds system

PV Field Orientation
Fixed plane
Tilt/Azimuth 55 / 0 °

Near Shadings
Linear shadings : Fast (table)

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	35672 units
Pnom total	21.76 MWp

Inverters

Nb. of units	66 units
Pnom total	19.80 MWac
Pnom ratio	1.099

Results summary

Produced Energy	26779843 kWh/year	Specific production	1231 kWh/kWp/year	Perf. Ratio PR	77.34 %

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General parameters, PV Array Characteristics, System losses 3
Near shading definition - Iso-shadings diagram 4
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Grid-Connected System

PV Field Orientation

Orientation

Fixed plane	
Tilt/Azimuth	55 / 0 °

Sheds system

Sheds configuration

Nb. of sheds	1710 units

Sizes

Sheds spacing	4.55 m
Collector width	1.41 m
Ground Cov. Ratio (GCR)	31.0 %

Shading limit angle

Limit profile angle	17.1 °

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	JKM-610N-78HL4-BDV
(Original PVsyst database)	
Unit Nom. Power	610 Wp
Number of PV modules	35672 units
Nominal (STC)	21.76 MWp
Modules	2548 string x 14 In series
At operating cond. (50°C)	
Pmpp	20.14 MWp
U mpp	591 V
I mpp	34045 A

Inverter

Manufacturer	Generic
Model	SUN2000-330KTL-H1
(Original PVsyst database)	
Unit Nom. Power	300 kWac
Number of inverters	66 units
Total power	19800 kWac
Operating voltage	550-1500 V
Max. power (=>30°C)	330 kWac
Pnom ratio (DC:AC)	1.10
Power sharing within this inverter	

Total PV power

Nominal (STC)	21760 kWp
Total	35672 modules
Module area	99714 m²

Total inverter power

Total power	19800 kWac
Max. power	21780 kWac
Number of inverters	66 units
Pnom ratio	1.10

Array losses

Array Soiling Losses
Loss Fraction 2.0 %

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.	0.28 mΩ
Loss Fraction	1.5 % at STC

LID - Light Induced Degradation
Loss Fraction 2.0 %

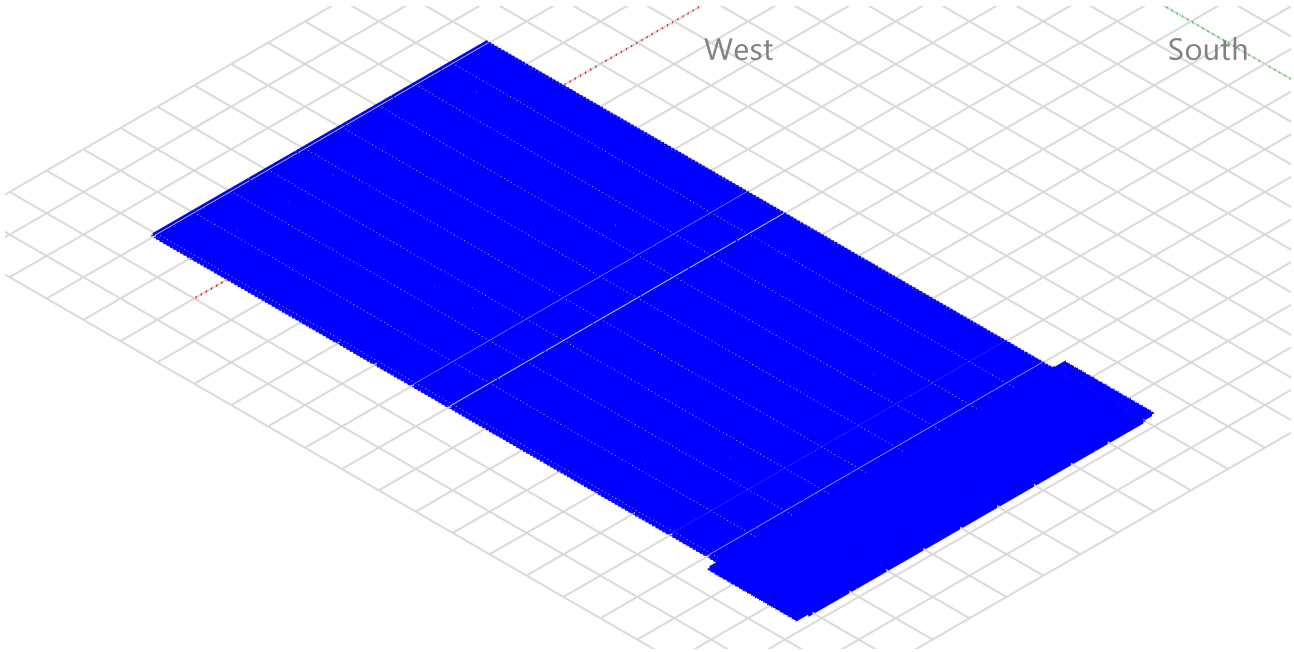
Module Quality Loss
Loss Fraction -0.8 %

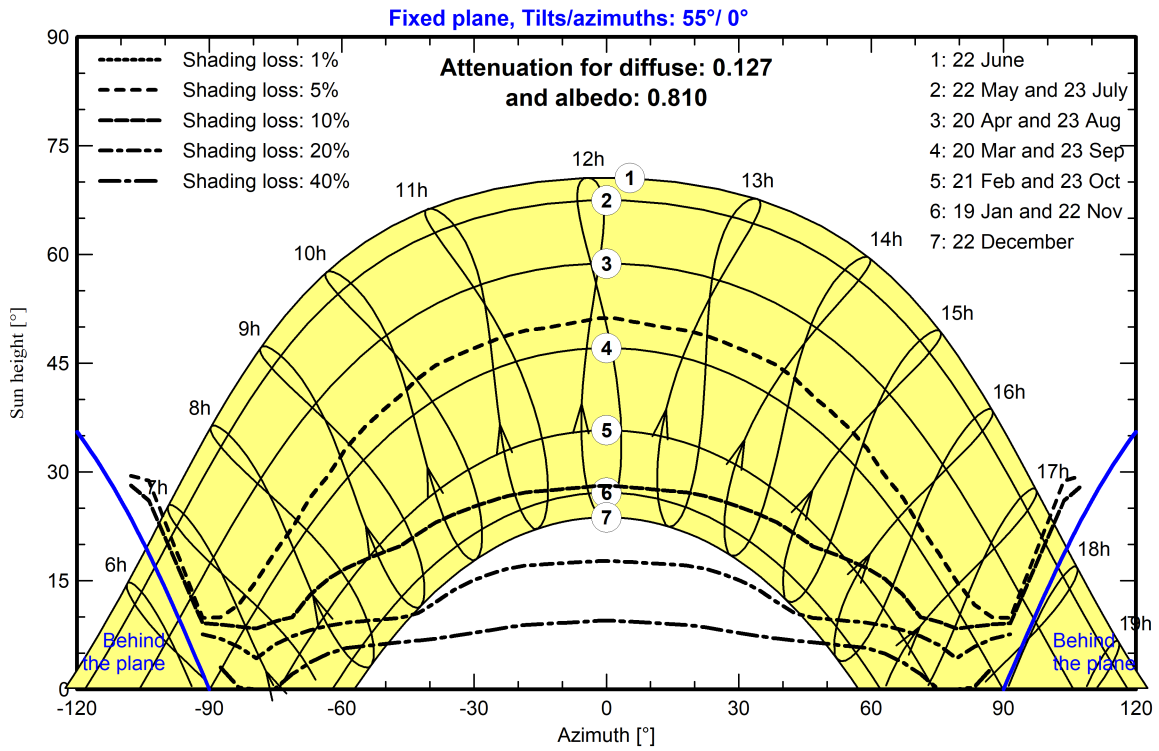
Module mismatch losses
Loss Fraction 2.0 % at MPP

Strings Mismatch loss
Loss Fraction 0.1 %

IAM loss factor
Incidence effect (IAM): 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


West
South


Fixed plane, Tilts/azimuths: 55°/ 0°
Attenuation for diffuse: 0.127
and albedo: 0.810
Shading loss: 1%
Shading loss: 5%
Shading loss: 10%
Shading loss: 20%
Shading loss: 40%
1: 22 June
2: 22 May and 23 July
3: 20 Apr and 23 Aug
4: 20 Mar and 23 Sep
5: 21 Feb and 23 Oct
6: 19 Jan and 22 Nov
7: 22 December
Sun height [°]
Azimuth [°]
Behind the plane
Behind the plane

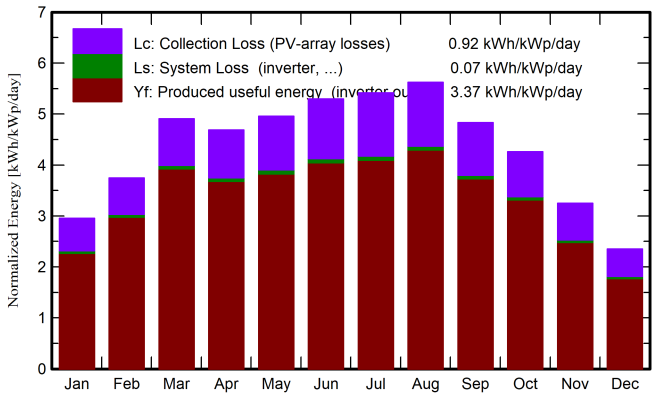
System Production

Produced Energy 36079250 kWh/year

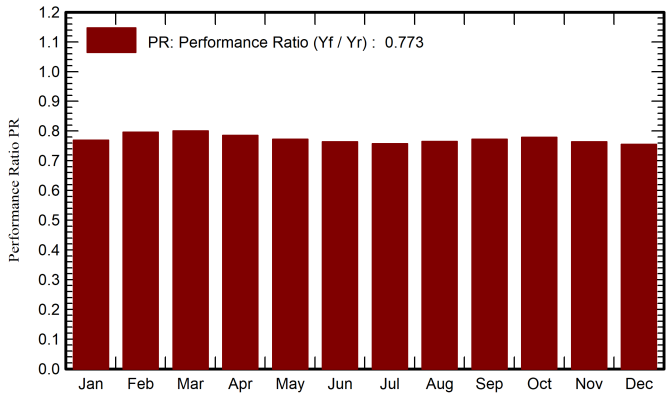
Specific production 1750 kWh/kWp/year

Perf. Ratio PR 77.34 %

Normalized productions (per installed kWp)



Performance Ratio PR

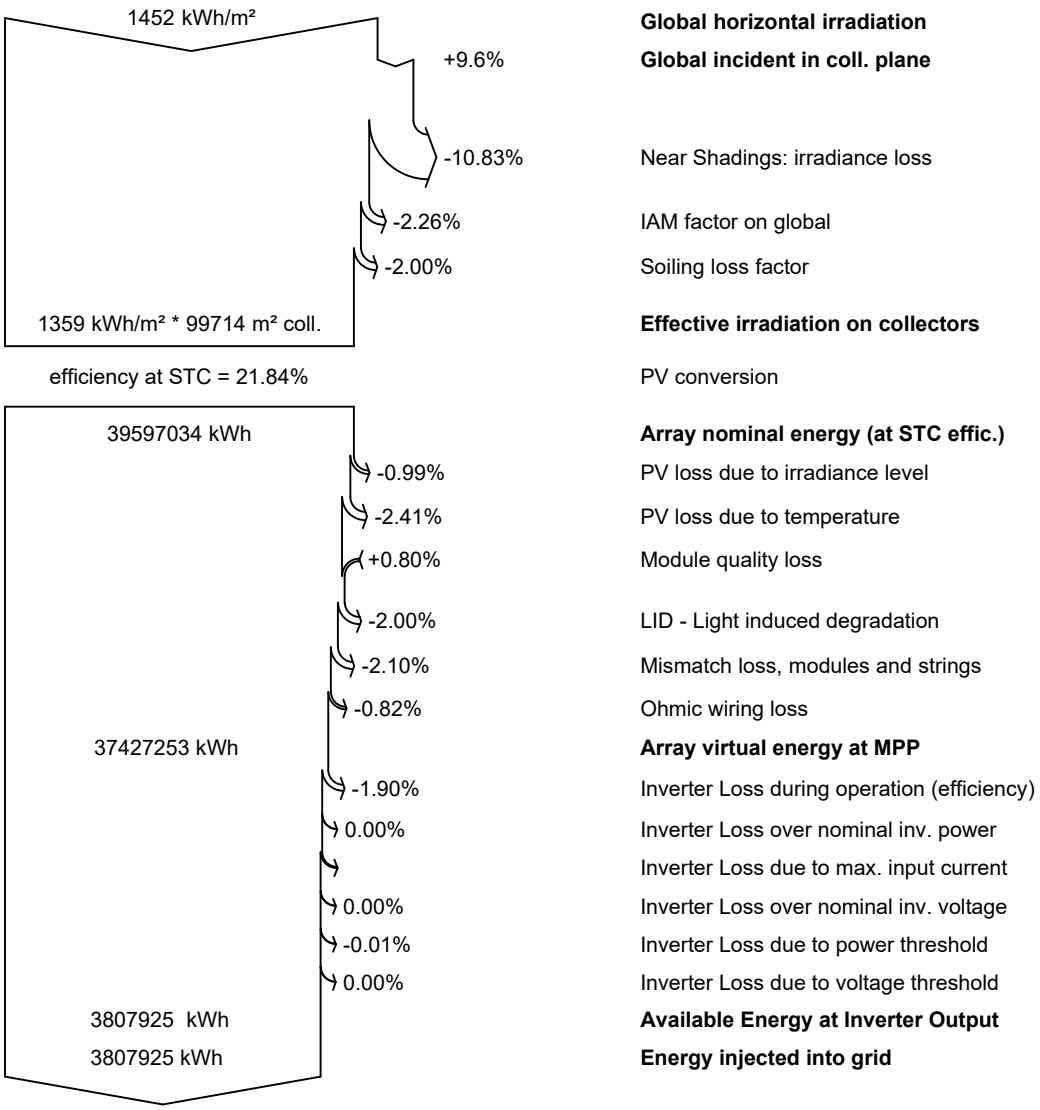


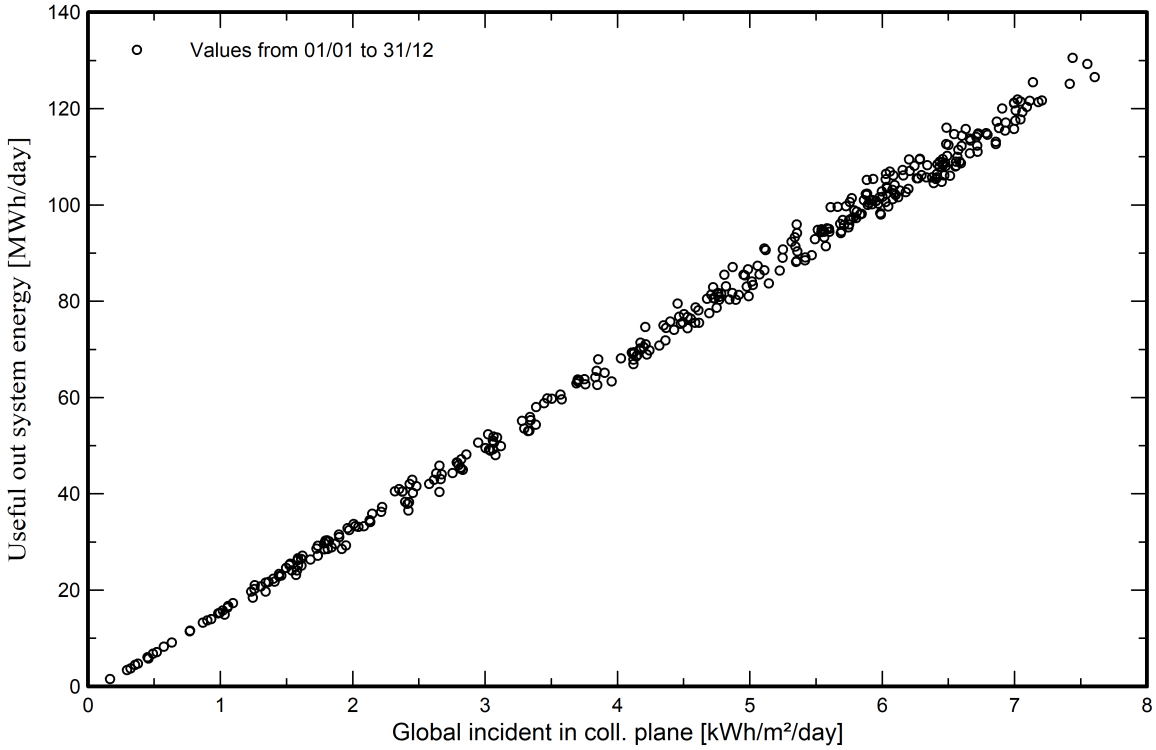
Balances and main results

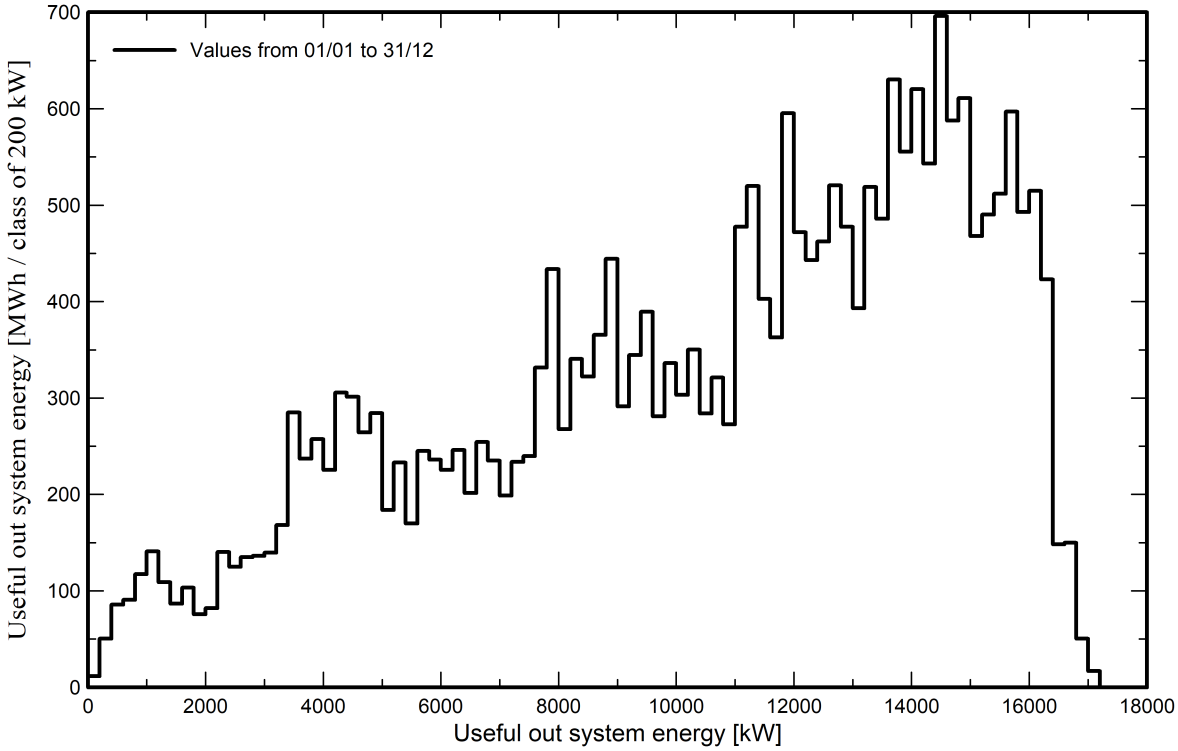
	GlobHor kWh/m²	DiffHor kWh/m²	T_Amb °C	GlobInc kWh/m²	GlobEff kWh/m²	EArray kWh	E_Grid kWh	PR ratio
January	49.2	24.71	5.95	91.5	75.4	1564779	1532103	0.770
February	68.5	33.54	6.91	104.8	89.7	1848587	1814544	0.796
March	119.6	55.65	10.35	152.1	132.0	2694991	2650058	0.801
April	141.0	70.75	13.43	140.6	121.0	2450878	2403035	0.785
May	178.2	80.72	18.02	153.7	131.5	2636435	2582115	0.772
June	197.9	89.01	22.44	159.0	135.6	2693635	2640358	0.763
July	204.5	74.50	25.23	167.8	144.2	2818431	2763536	0.757
August	181.1	74.10	24.71	174.2	150.6	2950326	2898200	0.764
September	126.6	59.32	19.98	145.0	125.4	2483477	2438045	0.773
October	91.2	44.17	16.15	132.1	113.5	2280428	2239997	0.779
November	53.1	24.29	11.37	97.5	81.5	1654372	1621329	0.764
December	40.7	25.53	7.18	72.8	58.8	1226992	1196523	0.755
Year	1451.7	656.30	15.19	1591.3	1359.2	37303330	36079250	0.773

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


1452 kWh/m²
Global horizontal irradiation
+9.6%
Global incident in coll. plane
-10.83%
Near Shadings: irradiance loss
-2.26%
IAM factor on global
-2.00%
Soiling loss factor
1359 kWh/m² * 99714 m² coll.
Effective irradiation on collectors
efficiency at STC = 21.84%
PV conversion
39597034 kWh
Array nominal energy (at STC effic.)
-0.99%
PV loss due to irradiance level
-2.41%
PV loss due to temperature
+0.80%
Module quality loss
-2.00%
LID - Light induced degradation
-2.10%
Mismatch loss, modules and strings
-0.82%
Ohmic wiring loss
37427253 kWh
Array virtual energy at MPP
-1.90%
Inverter Loss during operation (efficiency)
0.00%
Inverter Loss over nominal inv. power
Inverter Loss due to max. input current
0.00%
Inverter Loss over nominal inv. voltage
-0.01%
Inverter Loss due to power threshold
0.00%
Inverter Loss due to voltage threshold
3807925 kWh
Available Energy at Inverter Output
3807925 kWh
Energy injected into grid


Values from 01/01 to 31/12
Useful out system energy [MWh/day]
Global incident in coll. plane [kWh/m²/day]
0
20
40
60
80
100
120
140
0
1
2
3
4
5
6
7
8


Values from 01/01 to 31/12
Useful out system energy [MWh / class of 200 kW]
Useful out system energy [kW]
0
100
200
300
400
500
600
700
0
2000
4000
6000
8000
10000
12000
14000
16000
18000

Single-line diagram

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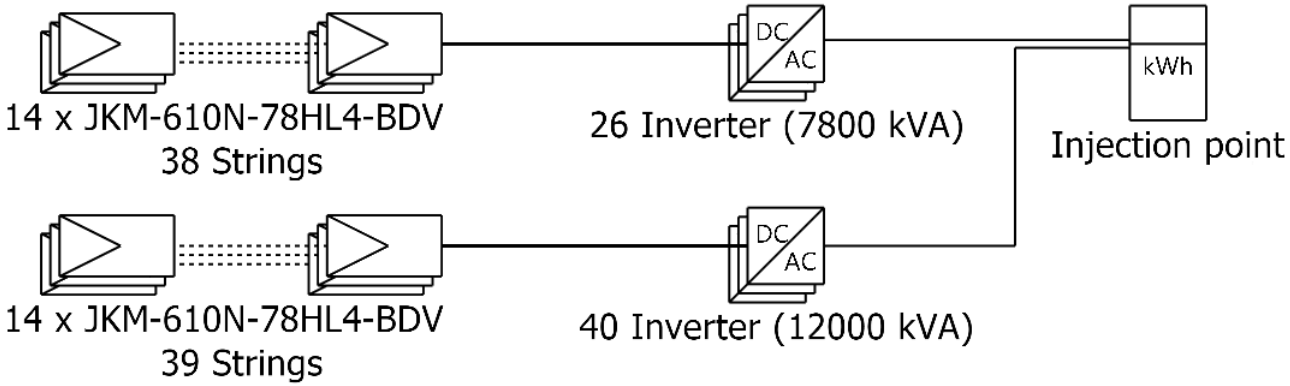

PV module	JKM-610N-78HL4-BDV
Inverter	SUN2000-330KTL-H1
String	14 x JKM-610N-78HL4-BDV

Corropoli 19,8 MWp

VC0 : corropoli 19.8 MWppitch4.6mt

12/02/24