Version 7.1.7

PVsyst - Simulation report

Grid-Connected System

Project: Homefield Rise 18-28

Variant: New simulation variant

Unlimited sheds

System power: 27.30 kWp

Homefield Rise 18-28 - United Kingdom

Author

Bauder Ltd (United Kingdom)

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Project summary

Geographical Site
Homefield Rise 18-28
United Kingdom

Situation

Latitude	51.37 °N
Longitude	0.10 °E
Altitude	63 m
Time zone	UTC

Project settings

Albedo	0.20

Meteo data
Homefield Rise 18-28
Meteonorm 7.3 (1986-2005), Sat=34% - Synthetic

System summary

Grid-Connected System

Unlimited sheds

PV Field Orientation

Sheds	
tilt	12 °
azimuth	23 °

Near Shadings
Mutual shadings of sheds
Electrical effect

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	70 units
Pnom total	27.30 kWp

Inverters

Nb. of units	1 Unit
Pnom total	25.00 kWac
Pnom ratio	1.092

Results summary

Produced Energy	24.25 MWh/year	Specific production	888 kWh/kWp/year	Perf. Ratio PR	84.93 %

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General parameters

Grid-Connected System — **Unlimited sheds**

PV Field Orientation

Orientation		Sheds configuration		Models used	
Sheds		Nb. of sheds	10 units	Transposition	Perez
tilt	12 °	Unlimited sheds		Diffuse	Perez, Meteonorm
azimuth	23 °	**Sizes**		Circumsolar	separate
		Sheds spacing	1.45 m		
		Collector width	0.99 m		
		Ground Cov. Ratio (GCR)	68.3 %		
		Shading limit angle			
		Limit profile angle	23.1 °		
		Shadings electrical effect			
		Cell size	15.6 cm		
		Strings in width	3 units		

Horizon
Free Horizon

Near Shadings
Mutual shadings of sheds
Electrical effect

User's needs
Unlimited load (grid)

PV Array Characteristics

PV module

Manufacturer	JA solar
Model	JAM60-S20-390-MR
(Original PVsyst database)	
Unit Nom. Power	390 Wp
Number of PV modules	70 units
Nominal (STC)	27.30 kWp

Inverter

Manufacturer	Ginlong Technologies
Model	Solis-25K
(Original PVsyst database)	
Unit Nom. Power	25.0 kWac
Number of inverters	1 Unit
Total power	25.0 kWac

Array #1 - PV Array

Number of PV modules	36 units	Number of inverters	2 * MPPT 25% 0.5 units
Nominal (STC)	14.04 kWp	Total power	12.5 kWac
Modules	2 Strings x 18 In series		
At operating cond. (50°C)		Operating voltage	200-800 V
Pmpp	12.81 kWp	Pnom ratio (DC:AC)	1.12
U mpp	577 V		
I mpp	22 A		

Array #2 - Sub-array #2

Number of PV modules	34 units	Number of inverters	2 * MPPT 25% 0.5 units
Nominal (STC)	13.26 kWp	Total power	12.5 kWac
Modules	2 Strings x 17 In series		
At operating cond. (50°C)		Operating voltage	200-800 V
Pmpp	12.10 kWp	Pnom ratio (DC:AC)	1.06
U mpp	545 V		
I mpp	22 A		

Total PV power

Nominal (STC)	27 kWp
Total	70 modules
Module area	131 m²

Total inverter power

Total power	25 kWac
Nb. of inverters	1 Unit
Pnom ratio	1.09

Array losses

Array Soiling Losses
Loss Fraction 1.5 %

Thermal Loss factor
Module temperature according to irradiance
Uc (const) 20.0 W/m²K
Uv (wind) 0.0 W/m²K/m/s

LID - Light Induced Degradation
Loss Fraction 1.0 %

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

DC wiring losses

Global wiring resistance 10 mΩ
Loss Fraction 1.5 % at STC

Array #1 - PV Array
Global array res. 431 mΩ
Loss Fraction 1.5 % at STC

Array #2 - Sub-array #2
Global array res. 407 mΩ
Loss Fraction 1.5 % at STC

AC wiring losses

Inv. output line up to injection point
Inverter voltage 400 Vac mono
Loss Fraction 0.0 % at STC

Inverter: Solis-25K
Wire section (1 Inv.) Copper 1 x 2 x 16 mm²
Wires length 0 m

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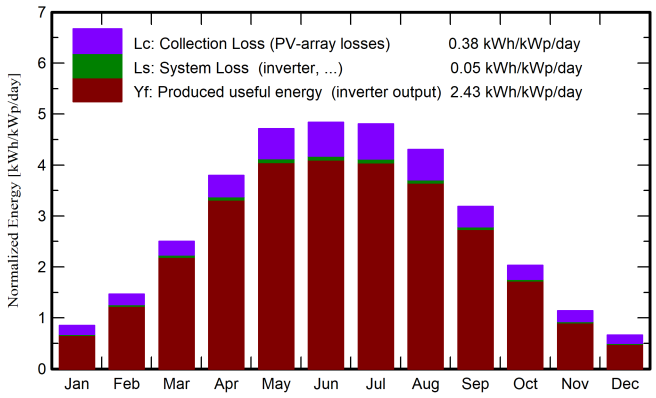
Main results

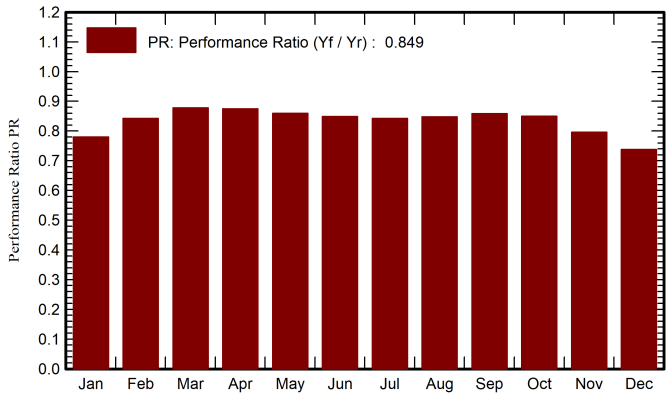
System Production

Produced Energy	24.25 MWh/year	Specific production	888 kWh/kWp/year
		Performance Ratio PR	84.93 %

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 MWh	E_Grid MWh	PR ratio
January	20.7	14.33	5.84	26.3	22.5	0.579	0.560	0.780
February	33.2	19.72	5.88	41.0	37.1	0.966	0.943	0.843
March	68.8	41.07	7.88	77.6	72.7	1.896	1.860	0.878
April	107.7	67.36	10.55	113.8	107.6	2.767	2.719	0.875
May	141.9	74.88	14.06	146.2	138.7	3.494	3.432	0.860
June	143.8	86.10	17.12	145.2	137.3	3.424	3.363	0.849
July	146.3	75.97	18.80	149.1	141.4	3.490	3.427	0.842
August	127.3	71.79	18.56	133.4	126.3	3.143	3.089	0.848
September	86.7	52.48	15.60	95.7	90.5	2.284	2.242	0.858
October	54.1	34.37	12.30	63.0	58.3	1.493	1.462	0.850
November	26.4	15.30	8.56	34.2	29.9	0.764	0.743	0.796
December	16.0	11.59	5.88	20.5	17.0	0.429	0.413	0.738
Year	972.9	564.95	11.79	1046.0	979.3	24.729	24.253	0.849

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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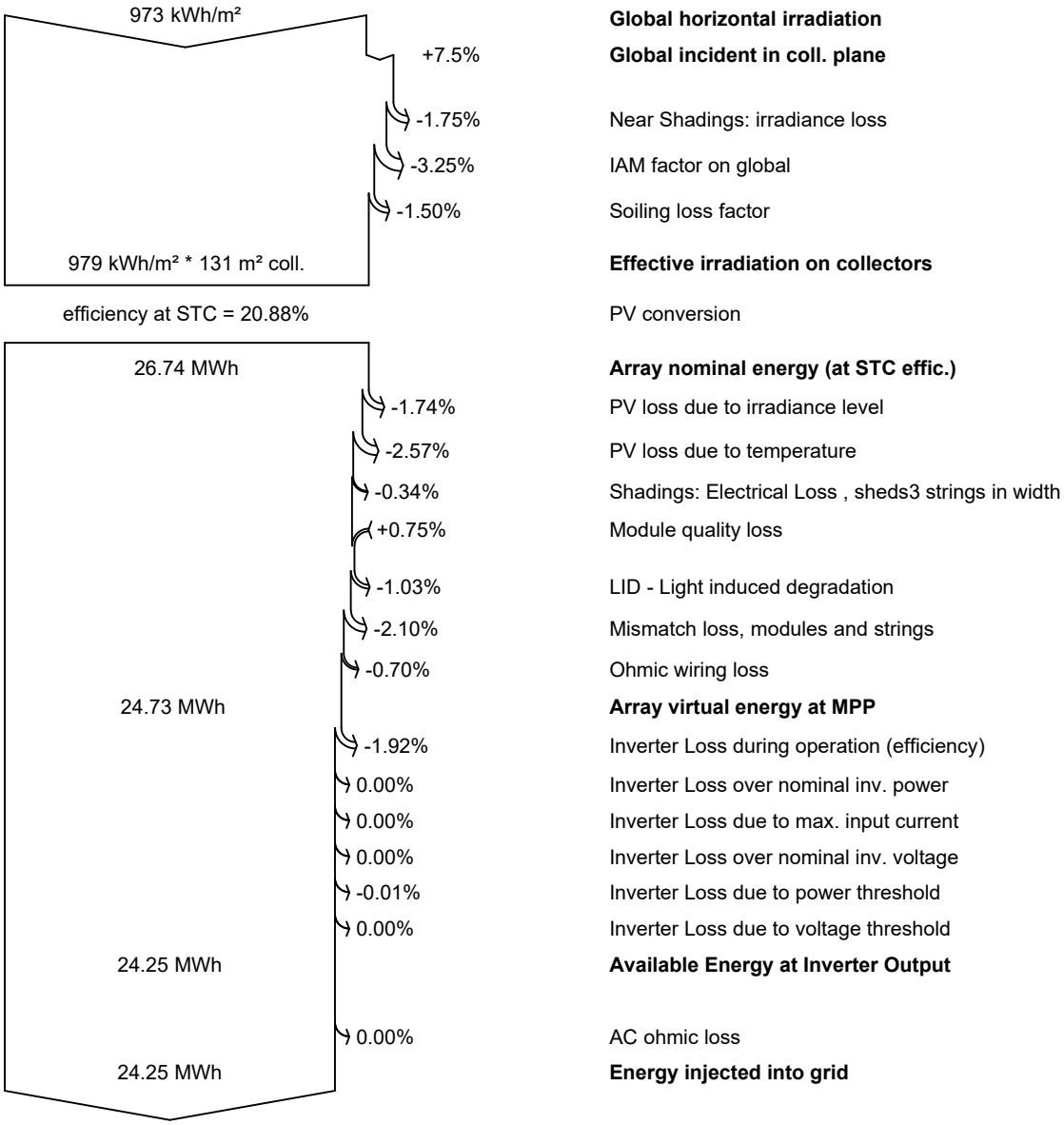
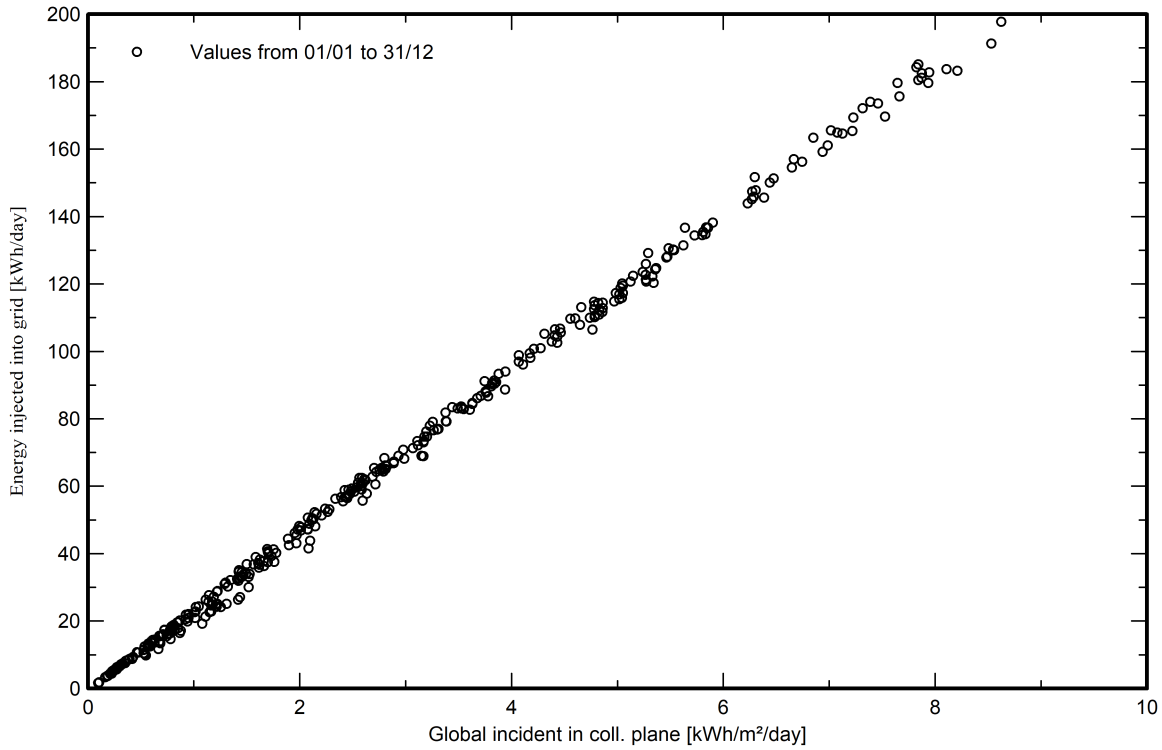
Loss diagram



Special graphs

Daily Input/Output diagram



System Output Power Distribution