

Grid-Connected System: Simulation parameters

Project :	Camden High Street 125-133		
Geographical Site	Camden High Street London	Country	United Kingdom
Situation	Latitude 51.5°N	Longitude	0.1°W
Time defined as	Legal Time Time zone UT+0	Altitude	31 m
	Albedo 0.20		
Meteo data :	Camden High Street London, Meteororm SYN File		

Simulation variant :	New simulation variant
	Simulation date 13/07/18 09h56

Simulation parameters

Collector Plane Orientation	Tilt 12°	Azimuth	-23°
6 Sheds	Pitch 1.45 m	Collector width	0.99 m
Inactive band	Top 0.00 m	Bottom	0.00 m
Shading limit angle	Gamma 23.14 °	Occupation Ratio	68.3 %
Shadings electrical effect	Cell size 15.6cm	Strings in width	3

Horizon	Free Horizon
Near Shadings	Mutual shadings of sheds Electrical effect

PV Arrays Characteristics (2 kinds of array defined)

PV module	Si-mono	Model	MPE 360 MP 05	
	Manufacturer	Schueco		
Array#1: Number of PV modules	In series	7 modules	In parallel	2 strings
Total number of PV modules	Nb. modules	14	Unit Nom. Power	360 Wp
Array global power	Nominal (STC)	5.04 kWp	At operating cond.	4466 Wp (50°C)
Array operating characteristics (50°C)	U mpp	448 V	I mpp	10.0 A
Array#2: Number of PV modules	In series	9 modules	In parallel	1 strings
Total number of PV modules	Nb. modules	9	Unit Nom. Power	360 Wp
Array global power	Nominal (STC)	3240 Wp	At operating cond.	2871 Wp (50°C)
Array operating characteristics (50°C)	U mpp	576 V	I mpp	5.0 A
Total Arrays global power	Nominal (STC)	8 kWp	Total	23 modules
	Module area	62.0 m²	Cell area	50.4 m²

Inverter	Model	Symo 8.2-3-M	
	Manufacturer	Fronius International	
	Operating Voltage	150-800 V	Unit Nom. Power 8.20 kW AC
Array#1:	Number of Inverter	0.5	Total Power 4.1 kW AC
Array#2:	Number of Inverter	0.5	Total Power 4.1 kW AC
Total	Number of Inverter	1	Total Power 8 kW AC

PV Array loss factors

Thermal Loss factor	Uc (const)	20.0 W/m²K	Uv (wind)	0.6 W/m²K / m/s
=> Nominal Oper. Coll. Temp. (G=800 W/m², Tamb=20°C, Wind=1 m/s.)			NOCT	55 °C
Wiring Ohmic Loss	Array#1	254 mOhm	Loss Fraction	0.5 % at STC
	Array#2	652 mOhm	Loss Fraction	0.5 % at STC
	Global		Loss Fraction	0.5 % at STC
Array Soiling Losses			Loss Fraction	1.0 %
Module Quality Loss			Loss Fraction	3.8 %
Module Mismatch Losses			Loss Fraction	2.5 % at MPP

Grid-Connected System: Simulation parameters (continued)

Incidence effect, ASHRAE parametrization $IAM = 1 - bo (1/\cos i - 1)$ bo Parameter 0.05

User's needs :

Unlimited load (grid)

Grid-Connected System: Main results

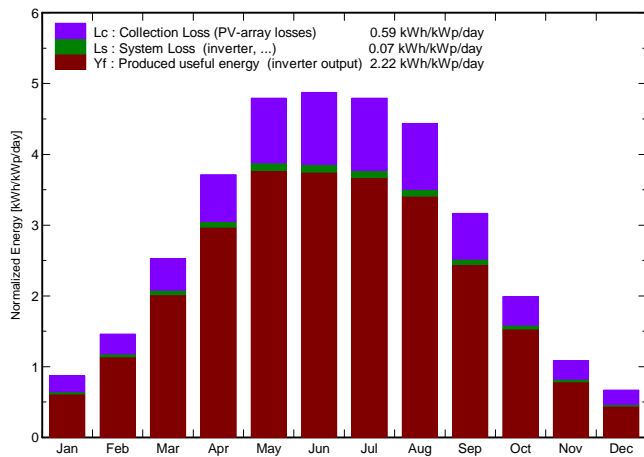
Project : Camden High Street 125-133

Simulation variant : New simulation variant

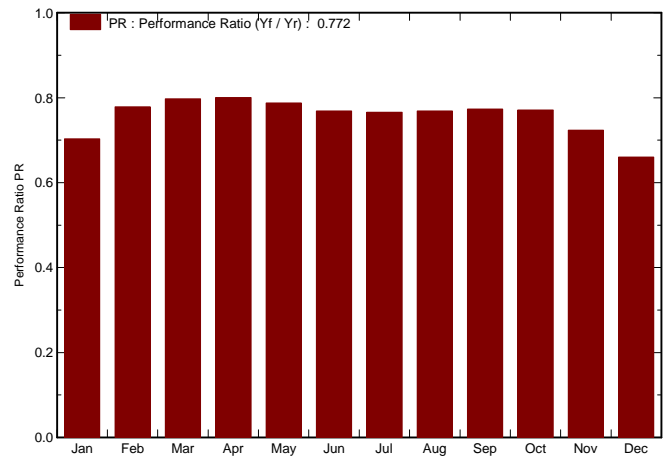
Main system parameters		System type	Grid-Connected	
PV Field Orientation	Sheds disposition, tilt	12°	azimuth	-23°
PV modules	Model	MPE 360 MP 05	Pnom	360 Wp
PV Array	Nb. of modules	23	Pnom total	8.28 kWp
Inverter	Model	Symo 8.2-3-M	Pnom	8.20 kW ac
User's needs	Unlimited load (grid)			

Main simulation results	
System Production	Produced Energy 6.71 MWh/year Specific prod. 810 kWh/kWp/year Performance Ratio PR 77.2 %

Normalized productions (per installed kWp): Nominal power 8.28 kWp



Performance Ratio PR



New simulation variant Balances and main results

	GlobHor	T Amb	GlobInc	GlobEff	EArray	E_Grid	EffArrR	EffSysR
	kWh/m ²	°C	kWh/m ²	kWh/m ²	MWh	MWh	%	%
January	20.9	6.56	27.1	23.4	0.166	0.158	9.87	9.40
February	35.3	6.60	40.9	37.8	0.274	0.264	10.79	10.41
March	69.5	8.28	78.4	73.9	0.534	0.518	10.99	10.66
April	105.0	10.83	111.4	105.8	0.759	0.738	10.99	10.70
May	143.2	14.09	148.7	141.7	0.996	0.969	10.81	10.52
June	143.8	17.12	146.3	139.2	0.958	0.931	10.57	10.27
July	145.3	18.83	148.7	141.4	0.970	0.943	10.53	10.24
August	130.3	18.81	137.5	131.1	0.900	0.875	10.56	10.27
September	86.6	16.18	94.9	89.7	0.626	0.608	10.64	10.33
October	53.6	12.90	61.7	57.7	0.407	0.394	10.65	10.31
November	26.0	9.25	32.6	28.8	0.204	0.195	10.10	9.67
December	16.0	6.75	20.8	17.4	0.120	0.114	9.34	8.82
Year	975.5	12.22	1049.0	988.0	6.913	6.707	10.63	10.32

Legends: GlobHor Horizontal global 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 EffArrR Effic. Eout array / rough area EffSysR Effic. Eout system / rough area
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Grid-Connected System: Loss diagram

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Loss diagram over the whole year

