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UK

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Manchester Central Convention Complex

Windmill Street, Manchester, M2 3GX

Project Name: Manchester Central Convention Complex

06/11/2025

Your PV system from Atlantic Renewables

Address of Installation

Windmill Street, Manchester, M2 3GX



Project Description:

1. Total Quoted Cost: £177,648 + VAT
2. The Solar system is anticipated to generate a minimum estimated output of - 177,016kWh of clean green carbon-free electricity each year.
3. 28.77% Yield/Return on Investment (or 3.6 Year Amortization)
4. 100% Own Power Consumption on site of Solar PV Energy Generated
5. £0.278 Cost per kWh Import - Unit price cost per kWh from the customers energy provider for imported energy (used in Solar Report)
6. £0.00 Cost per kWh Export - Unit price paid by energy company for exported energy

Project Overview



Figure: Overview Image, 3D Design

PV System

3D, Grid-connected PV System with Electrical Appliances

Climate Data	Manchester, GBR (2001 - 2020)	
Values source	Meteonorm 8.2(i)	
PV Generator Output	249.6	kWp
PV Generator Surface	1,053.5	m²
Number of PV Modules	390	
Number of Inverters	7	

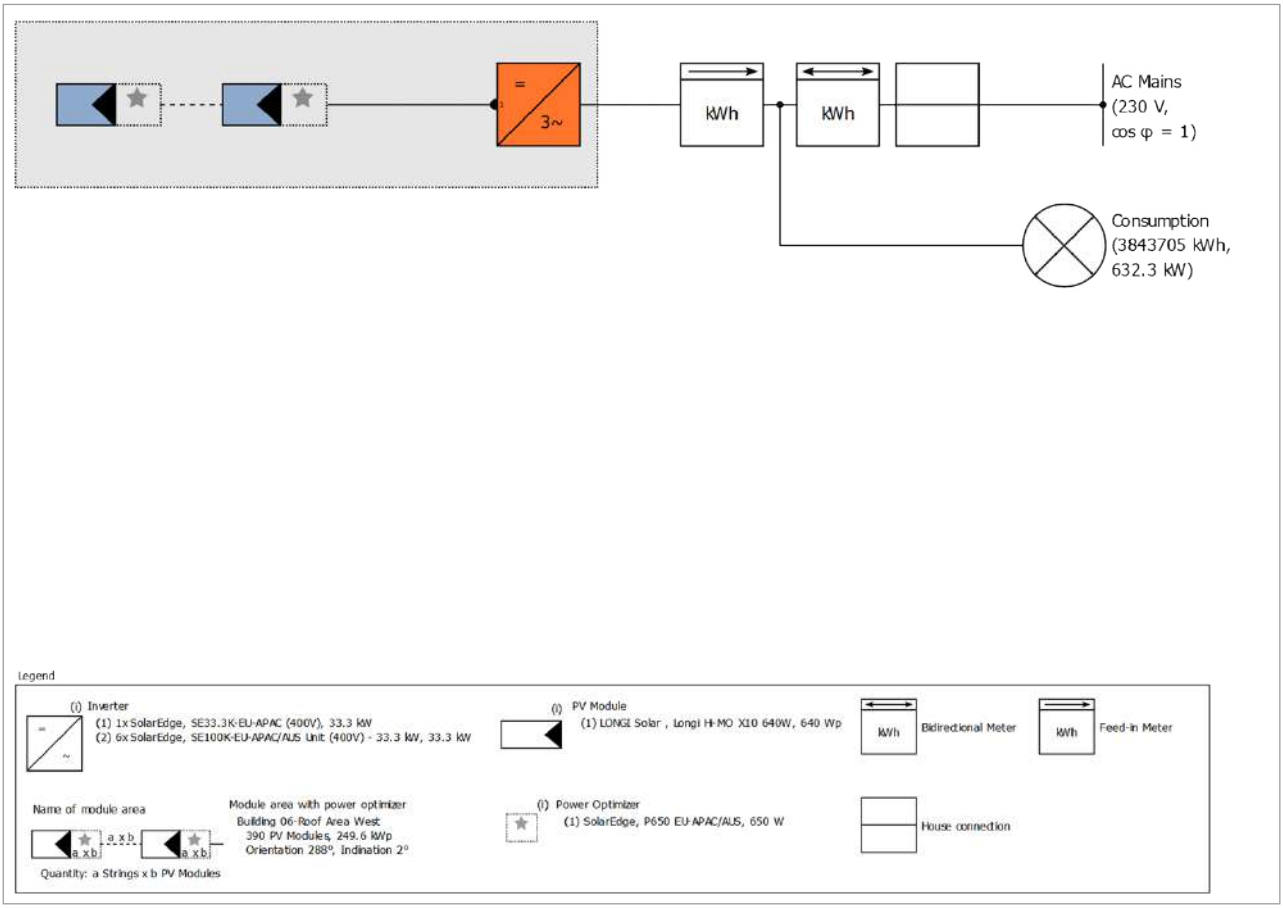


Figure: Schematic diagram

Production Forecast

Production Forecast		
PV Generator Output	249.60	kWp
Spec. Annual Yield	708.50	kWh/kWp
Performance Ratio (PR)	76.49	%
Yield Reduction due to Shading	14.4	%
PV Generator Energy (AC grid)	177,016	kWh/Year
Own Consumption	177,016	kWh/Year
Clipping at Feed-in Point	0	kWh/Year
Grid Export	0	kWh/Year
Own Power Consumption	100.0	%
CO_2 Emissions avoided	35,368	kg / year
Level of Self-sufficiency	4.6	%

Financial Analysis

Your Gain

Total investment costs	177,648.00	£
Internal Rate of Return (IRR)	28.77	%
Amortization Period	3.6	Years
Electricity Production Costs	0.0402	£/kWh
Energy Balance/Feed-in Concept	Surplus Feed-in	

The results have been calculated with a mathematical model calculation from Valentin Software GmbH (PV*SOL algorithms). The actual yields from the solar power system may differ as a result of weather variations, the efficiency of the modules and inverter, and other factors.

Set-up of the System

Overview

System Data

Type of System	3D, Grid-connected PV System with Electrical Appliances

Climate Data

Location	Manchester, GBR (2001 - 2020)
Values source	Meteonorm 8.2(i)
Resolution of the data	1 h
Simulation models used:	
- Diffuse Irradiation onto Horizontal Plane	Hofmann
- Irradiance onto tilted surface	Hay & Davies

Consumption

Total Consumption	3843705 kWh
Office building 16000 m²	3843705 kWh
Load Peak	632.3 kW

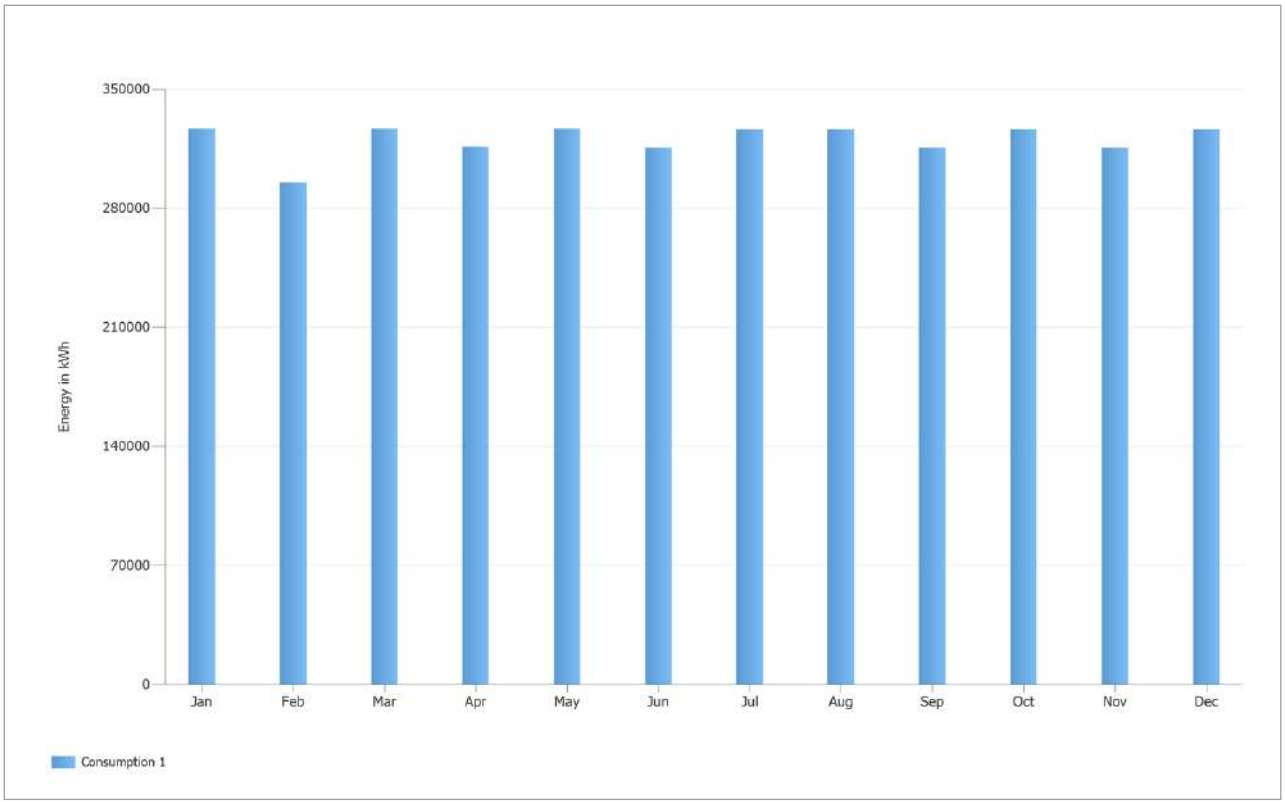


Figure: Consumption

Module Areas

1. Module Area - Building 06-Roof Area West

PV Generator, 1. Module Area - Building 06-Roof Area West

Name	Building 06-Roof Area West
PV Modules	390 x Longi Hi-MO X10 640W (v1)
Manufacturer	LONGI Solar
Inclination	2 °
Orientation	West 288 °
Installation Type	Roof parallel
PV Generator Surface	1,053.5 m²

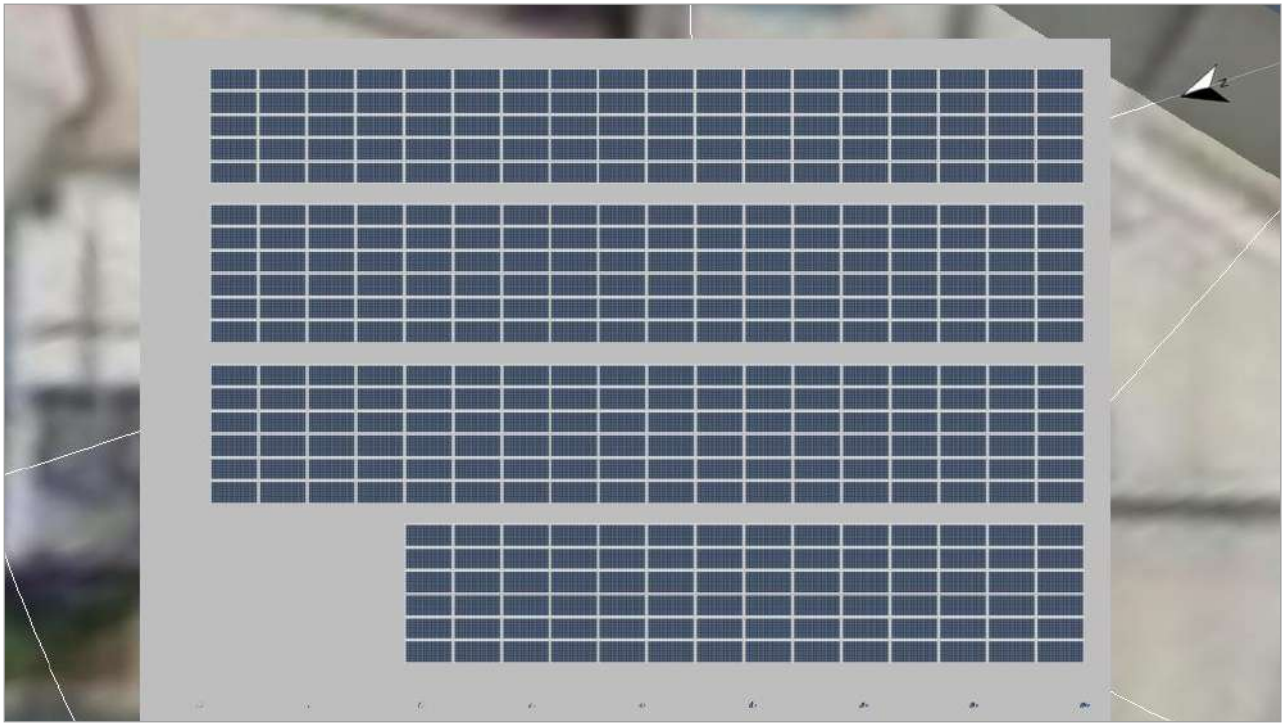


Figure: 1. Module Area - Building 06-Roof Area West

Horizon Line, 3D Design

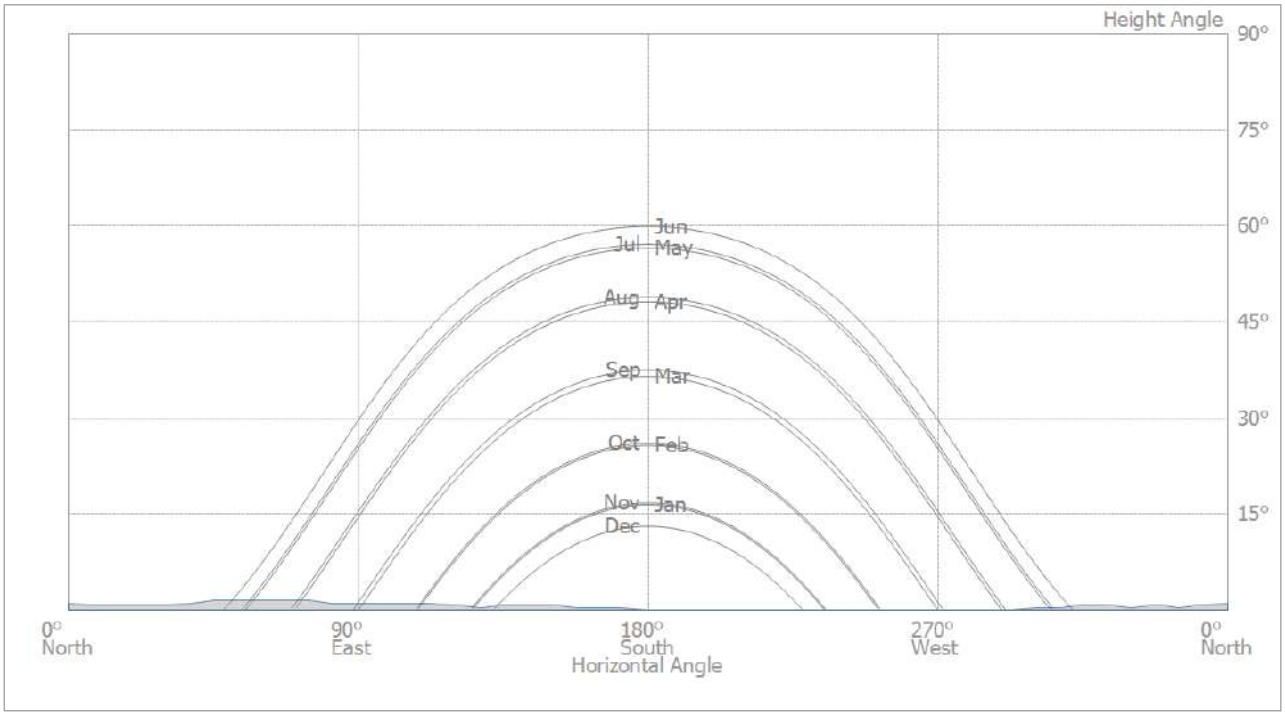


Figure: Horizon (3D Design)

Inverter configuration

Configuration 1

Module Area	Building 06-Roof Area West
Inverter 1	
Model	SE33.3K-EU-APAC (400V) (v2)
Manufacturer	SolarEdge
Quantity	1
Sizing Factor	107.6 %
Configuration	MPP 1:
	2 x 19☆ [1 x 1] || 1 x 18☆ [1 x 1]
Power Optimizer	56x SolarEdge, P650 EU-APAC/AUS (v2)
Inverter 2	
Model	SE100K-EU-APAC/AUS Unit (400V) - 33.3 kW (v1)
Manufacturer	SolarEdge
Quantity	2
Sizing Factor	105.7 %
Configuration	MPP 1:
	1 x 19☆ [1 x 1] || 2 x 18☆ [1 x 1]
Power Optimizer	110x SolarEdge, P650 EU-APAC/AUS (v2)
Inverter 3	
Model	SE100K-EU-APAC/AUS Unit (400V) - 33.3 kW (v1)
Manufacturer	SolarEdge
Quantity	4
Sizing Factor	107.6 %
Configuration	MPP 1:
	2 x 19☆ [1 x 1] || 1 x 18☆ [1 x 1]
Power Optimizer	224x SolarEdge, P650 EU-APAC/AUS (v2)

AC Mains

AC Mains

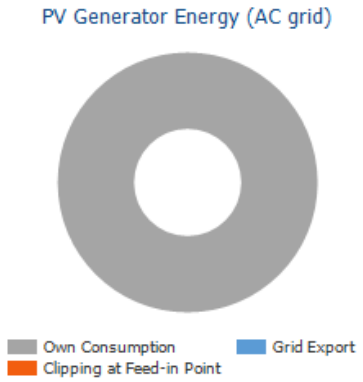
Number of Phases	3
Mains voltage between phase and neutral	230 V
Displacement Power Factor (cos phi)	+/- 1

Simulation Results

Results Total System

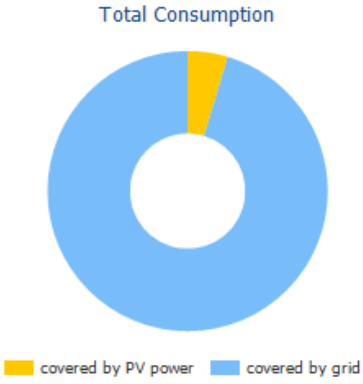
PV System

PV Generator Output	249.60	kWp
Spec. Annual Yield	708.50	kWh/kWp
Performance Ratio (PR)	76.49	%
Yield Reduction due to Shading	14.4	%
PV Generator Energy (AC grid)	177,016	kWh/Year
Own Consumption	177,016	kWh/Year
Clipping at Feed-in Point	0	kWh/Year
Grid Export	0	kWh/Year
Own Power Consumption	100.0	%
CO_2 Emissions avoided	35,368	kg / year



Appliances

Appliances	3,843,705	kWh/Year
Standby Consumption (Inverter)	175	kWh/Year
Total Consumption	3,843,880	kWh/Year
covered by PV power	177,016	kWh/Year
covered by grid	3,666,864	kWh/Year
Solar Fraction	4.6	%



Level of Self-sufficiency

Total Consumption	3,843,880	kWh/Year
covered by grid	3,666,864	kWh/Year
Level of Self-sufficiency	4.6	%

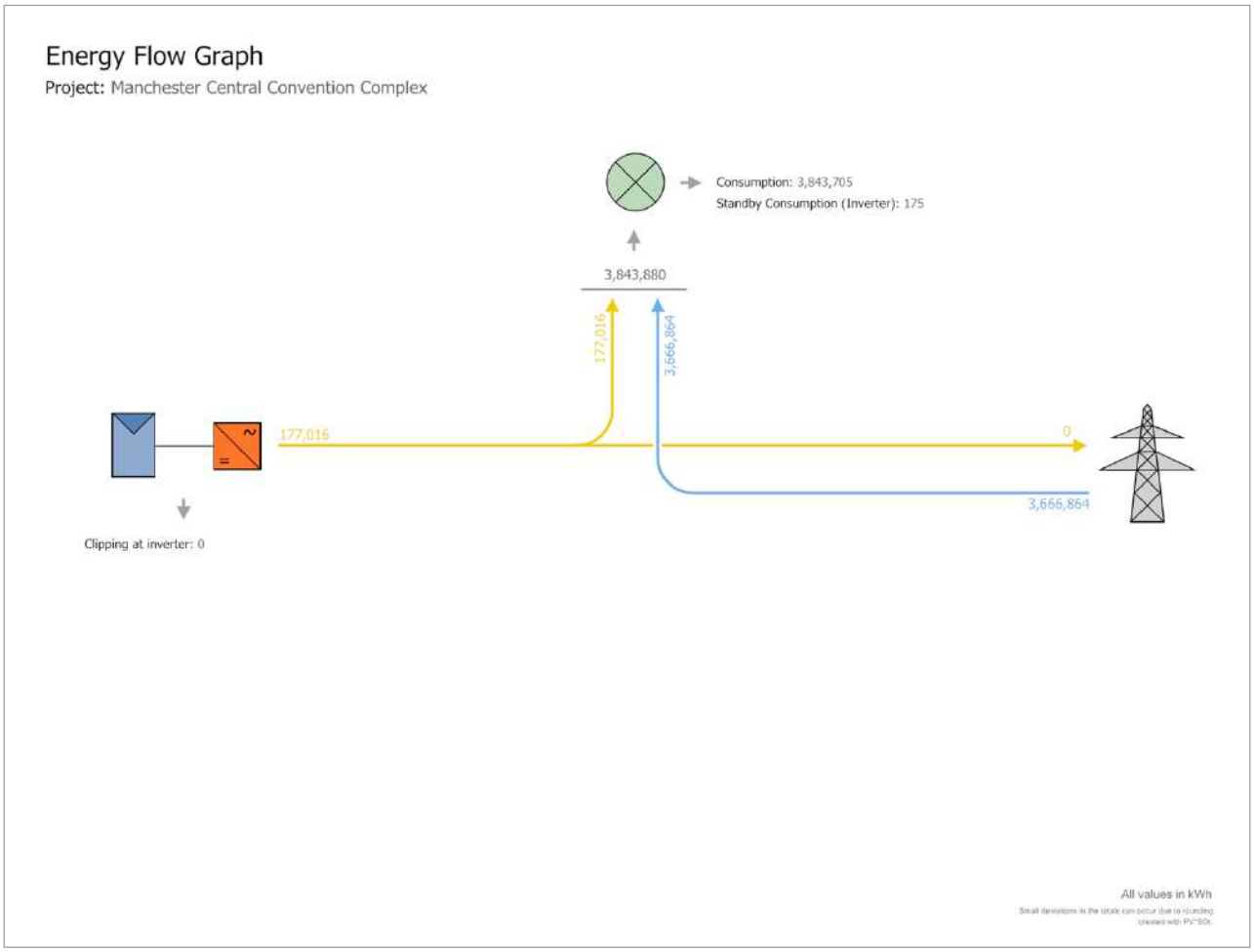


Figure: Energy flow

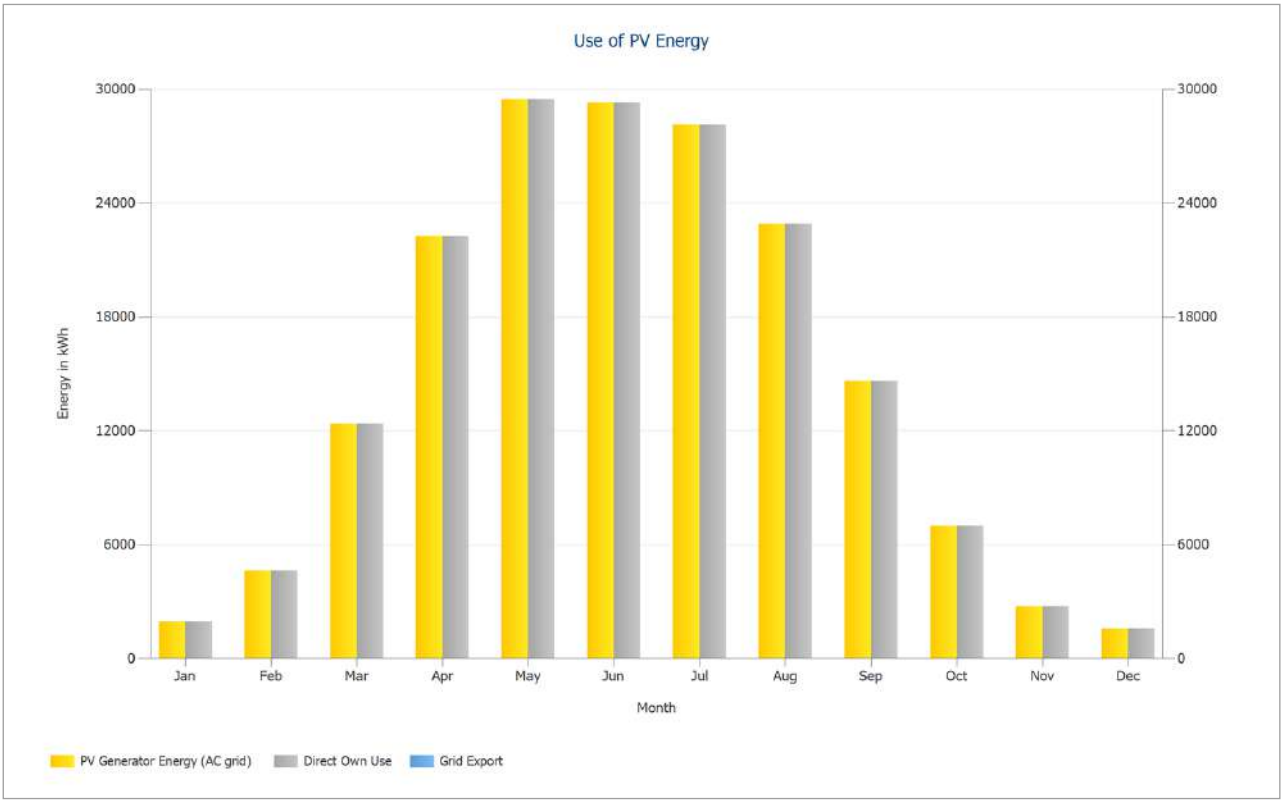


Figure: Use of PV Energy

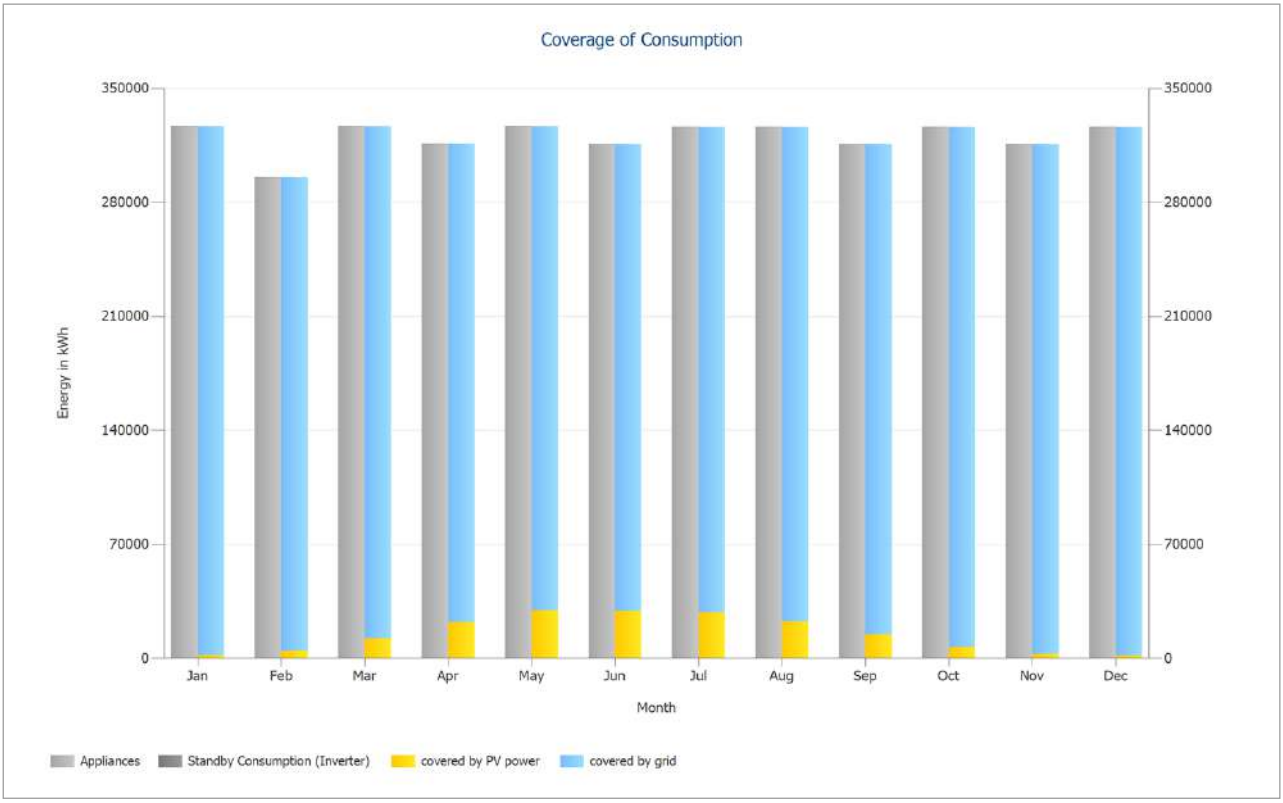


Figure: Coverage of Consumption

Financial Analysis

Overview

System Data

Grid Export in the first year (incl. module degradation)	0	kWh/Year
PV Generator Output	249.6	kWp
Start of Operation of the System	23/04/2025	
Assessment Period	25	Years
Interest on Capital	0	%

Economic Parameters

Internal Rate of Return (IRR)	28.77	%
Accrued Cash Flow (Cash Balance)	1,400,055.58	£
Amortization Period	3.6	Years
Electricity Production Costs	0.0402	£/kWh

Payment Overview

Specific Investment Costs	711.73	£/kWp
Investment Costs	177,648.00	£
One-off Payments	0.00	£
Incoming Subsidies	0.00	£
Annual Costs	0.00	£/Year
Other Revenue or Savings	0.00	£/Year

Remuneration and Savings

Total Payment from Utility in First Year	0.00	£/Year
First year savings	48,627.37	£/Year
MCCC (Example)		
Energy Price	0.278	£/kWh
Inflation Rate for Energy Price	3	%/Year

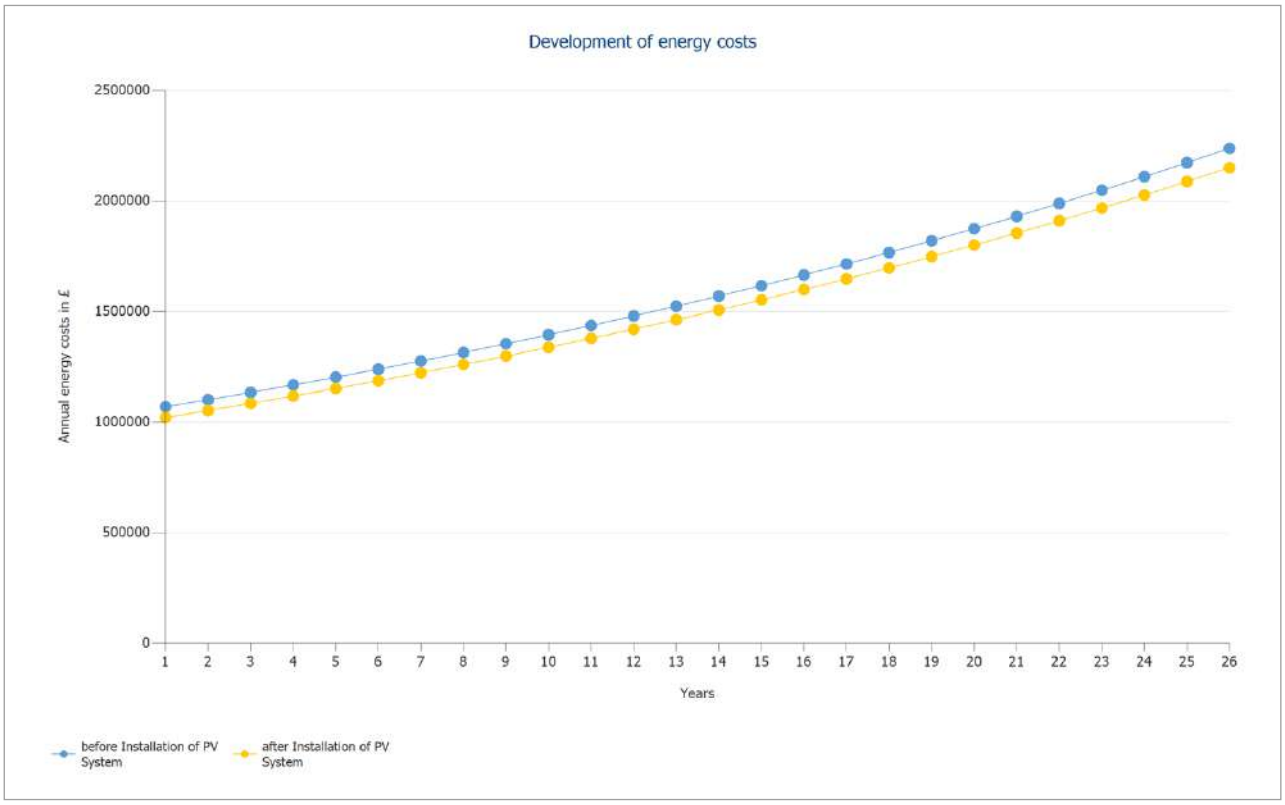


Figure: Development of energy costs

Cash flow

Cash flow

	Year 1	Year 2	Year 3	Year 4	Year 5
Investments	-£177,648.00	£0.00	£0.00	£0.00	£0.00
Electricity Savings	£48,235.32	£49,119.85	£49,730.83	£50,452.72	£51,278.93
Annual Cash Flow	**-£129,412.68**	**£49,119.85**	**£49,730.83**	**£50,452.72**	**£51,278.93**
Accrued Cash Flow (Cash Balance)	-£129,412.68	-£80,292.83	-£30,562.00	£19,890.72	£71,169.66

Cash flow

	Year 6	Year 7	Year 8	Year 9	Year 10
Investments	£0.00	£0.00	£0.00	£0.00	£0.00
Electricity Savings	£52,203.69	£53,222.05	£54,329.78	£55,523.19	£56,799.26
Annual Cash Flow	**£52,203.69**	**£53,222.05**	**£54,329.78**	**£55,523.19**	**£56,799.26**
Accrued Cash Flow (Cash Balance)	£123,373.35	£176,595.39	£230,925.17	£286,448.36	£343,247.62

Cash flow

	Year 11	Year 12	Year 13	Year 14	Year 15
Investments	£0.00	£0.00	£0.00	£0.00	£0.00
Electricity Savings	£58,155.43	£59,589.64	£61,100.18	£62,685.79	£64,345.52
Annual Cash Flow	**£58,155.43**	**£59,589.64**	**£61,100.18**	**£62,685.79**	**£64,345.52**
Accrued Cash Flow (Cash Balance)	£401,403.04	£460,992.68	£522,092.86	£584,778.65	£649,124.17

Cash flow

	Year 16	Year 17	Year 18	Year 19	Year 20
Investments	£0.00	£0.00	£0.00	£0.00	£0.00
Electricity Savings	£66,078.71	£67,885.09	£69,764.58	£71,717.27	£73,743.61
Annual Cash Flow	**£66,078.71**	**£67,885.09**	**£69,764.58**	**£71,717.27**	**£73,743.61**
Accrued Cash Flow (Cash Balance)	£715,202.87	£783,087.96	£852,852.54	£924,569.81	£998,313.42

Cash flow

	Year 21	Year 22	Year 23	Year 24	Year 25
Investments	£0.00	£0.00	£0.00	£0.00	£0.00
Electricity Savings	£75,844.16	£78,019.76	£80,271.28	£82,599.97	£85,006.99
Annual Cash Flow	**£75,844.16**	**£78,019.76**	**£80,271.28**	**£82,599.97**	**£85,006.99**
Accrued Cash Flow (Cash Balance)	£1,074,157.58	£1,152,177.35	£1,232,448.62	£1,315,048.59	£1,400,055.58

Degradation and inflation rates are applied on a monthly basis over the entire observation period. This is done in the first year.

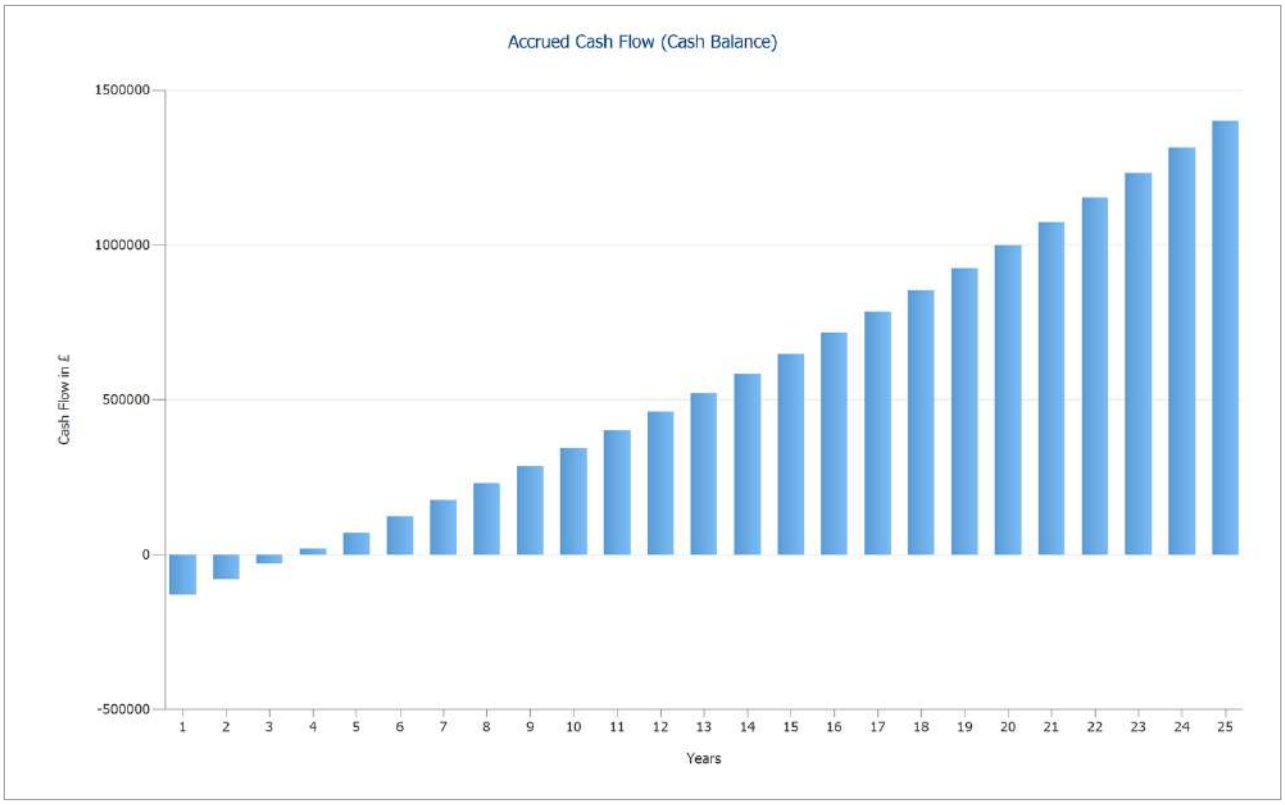


Figure: Accrued Cash Flow (Cash Balance)

Plans and parts list

Circuit Diagram

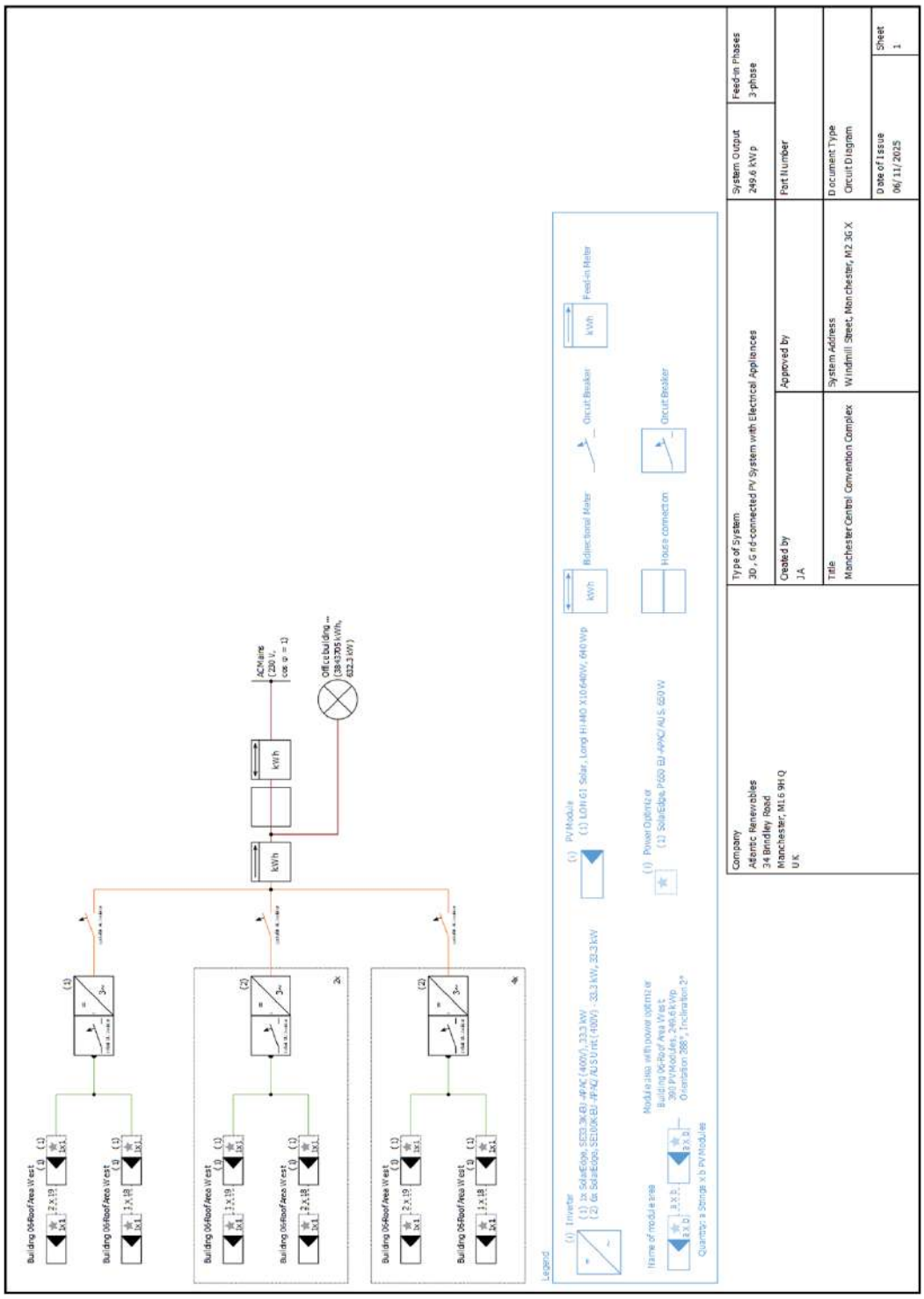


Figure: Circuit Diagram

Overview plan

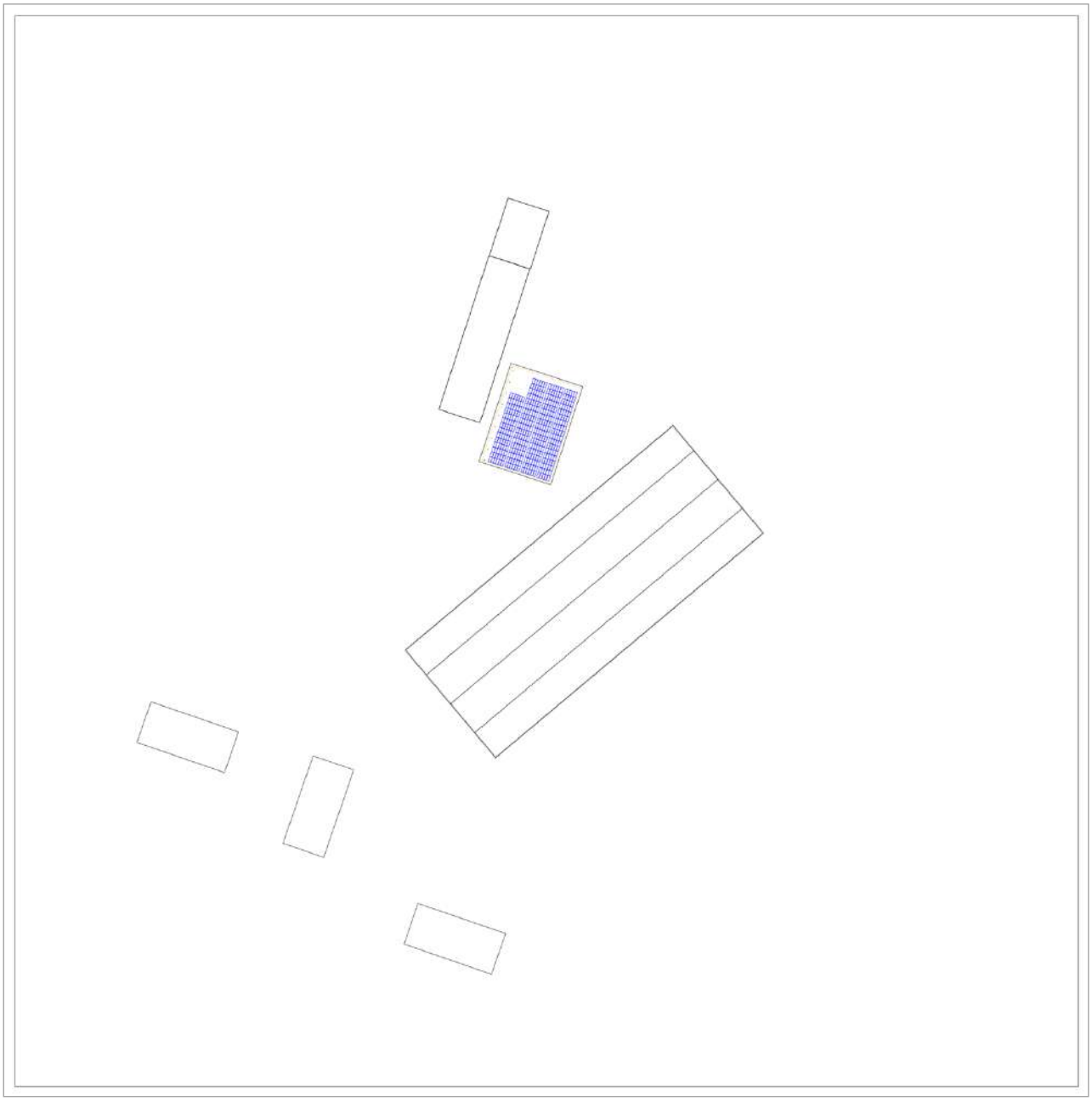


Figure: Overview plan

Dimensioning Plan

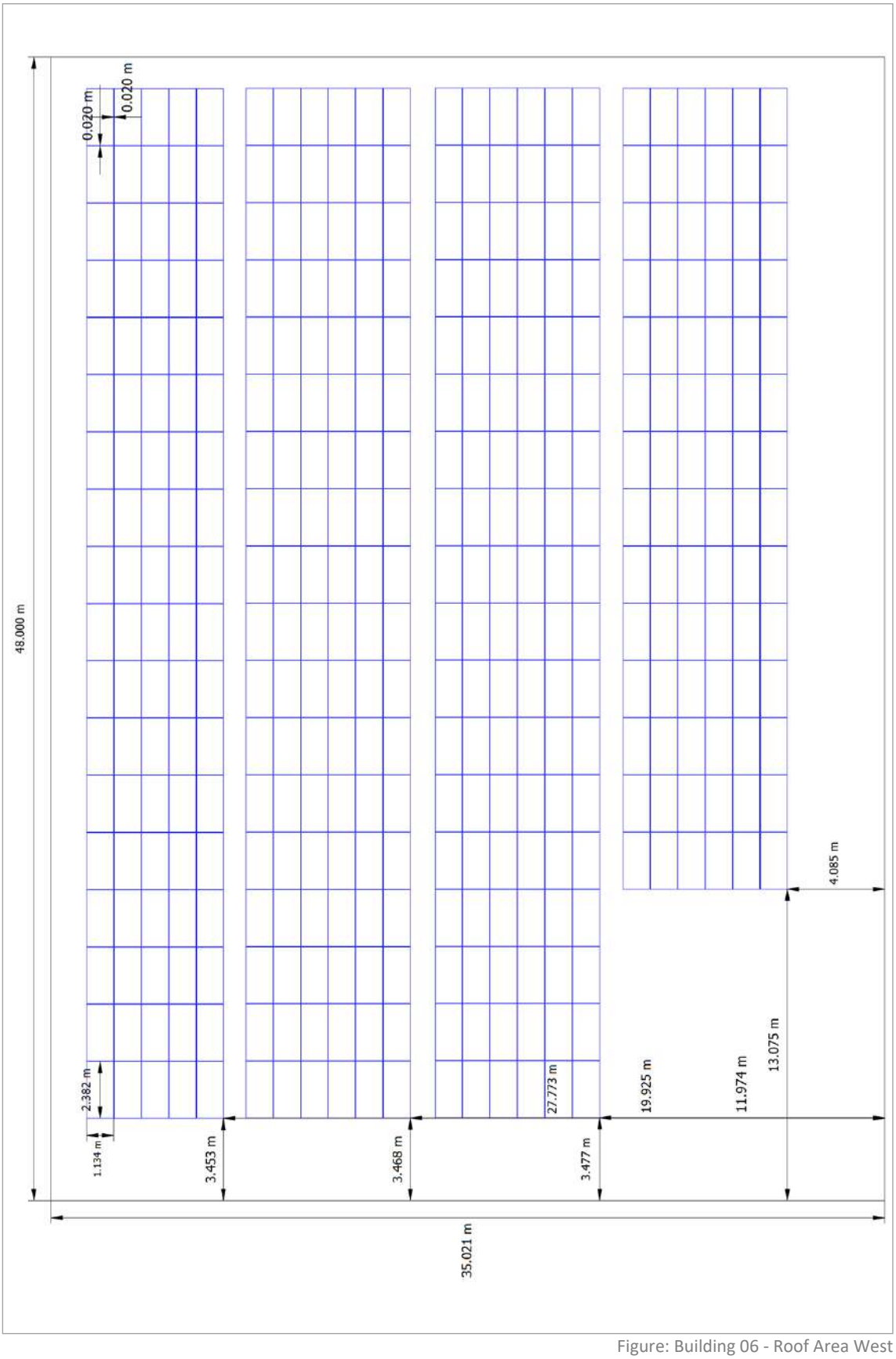


Figure: Building 06 - Roof Area West

String Plan

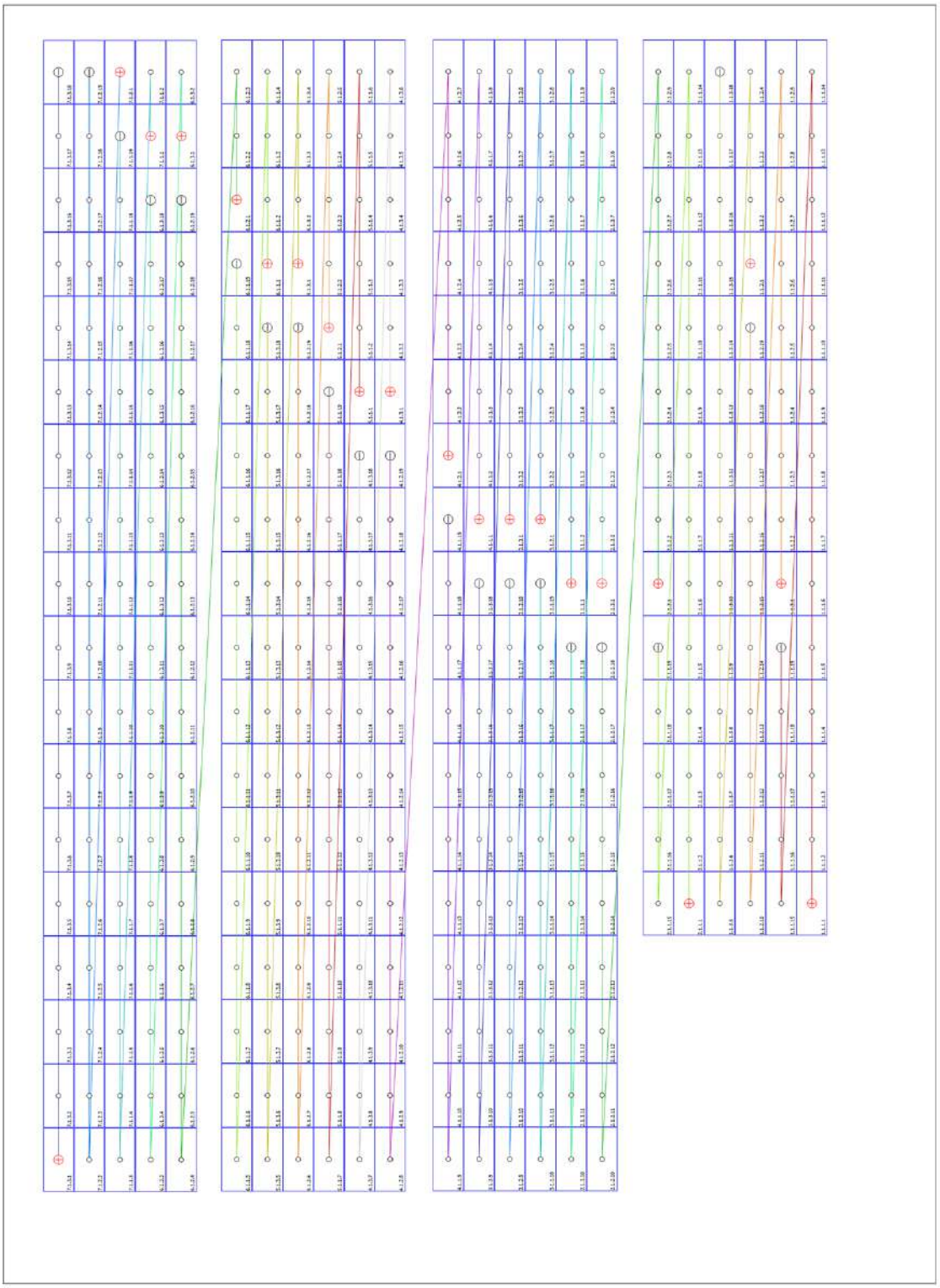


Figure: Building 06 - Roof Area West

Parts list

Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		LONGI Solar	Longi Hi-MO X10 640W	390	Piece
2	Inverter		SolarEdge	SE33.3K-EU-APAC (400V)	1	Piece
3	Inverter		SolarEdge	SE100K-EU-APAC/AUS Unit (400V) - 33.3 kW	6	Piece
4	Power Optimizer		SolarEdge	P650 EU-APAC/AUS	390	Piece
5	Components			Feed-in Meter	1	Piece
6	Components			House connection	1	Piece
7	Components			Bidirectional Meter	1	Piece

Screenshots, 3D Design

Configuration



Figure: Screenshot02

Shading

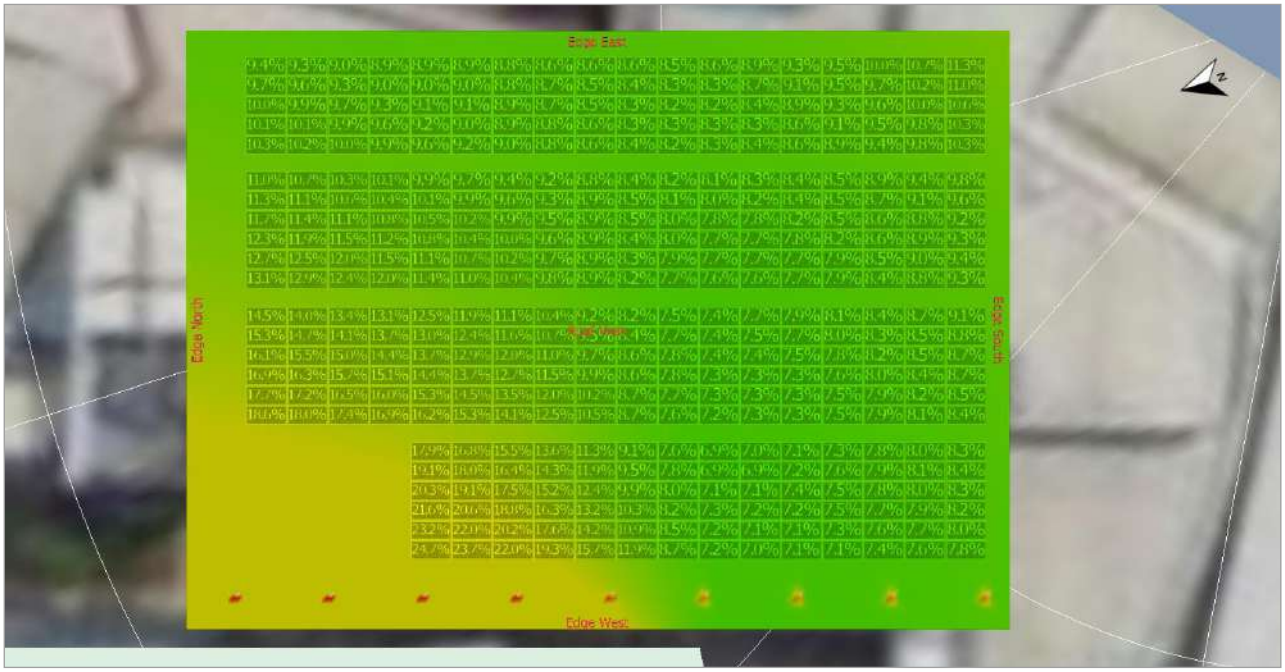


Figure: Screenshot03