



South East Solar & Electrical

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Customer No.: SOL4156

Project Name: SOL4156

Offer no.: SOL4156

12/01/2024

Your PV system from South East Solar & Electrical

Address of Installation

1 Firs Avenue
Muswell Hill
London
N10 3LY



Project Description:

Forecasting reports are calculated assuming a rate of inflation slightly below the prevailing rate reported by The Office of National Statistics's Consumer Price Index.

Project Overview

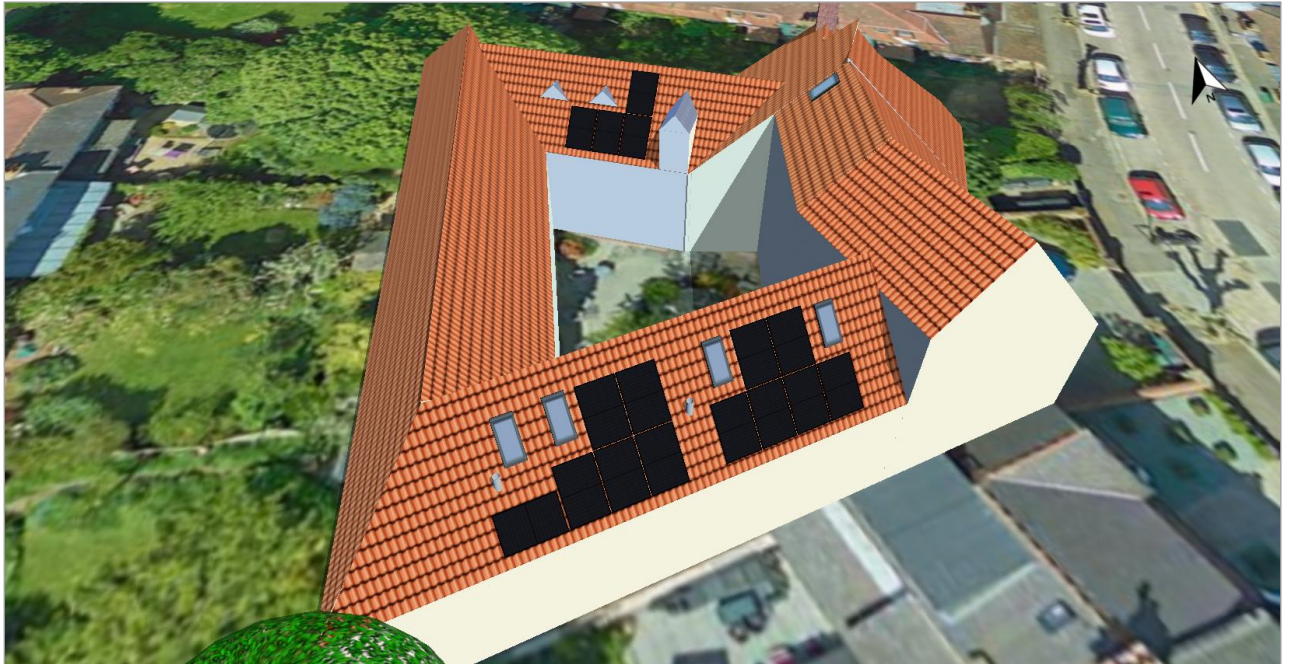


Figure: Overview Image, 3D Design

PV System

3D, Grid-connected PV System with Electrical Appliances and Battery Systems

Climate Data	London Weather c., GBR (2001 - 2020)
Values source	Meteonorm 8.2
PV Generator Output	6.88 kWp
PV Generator Surface	31.2 m ²
Number of PV Modules	16
Number of Inverters	1
No. of battery systems	2

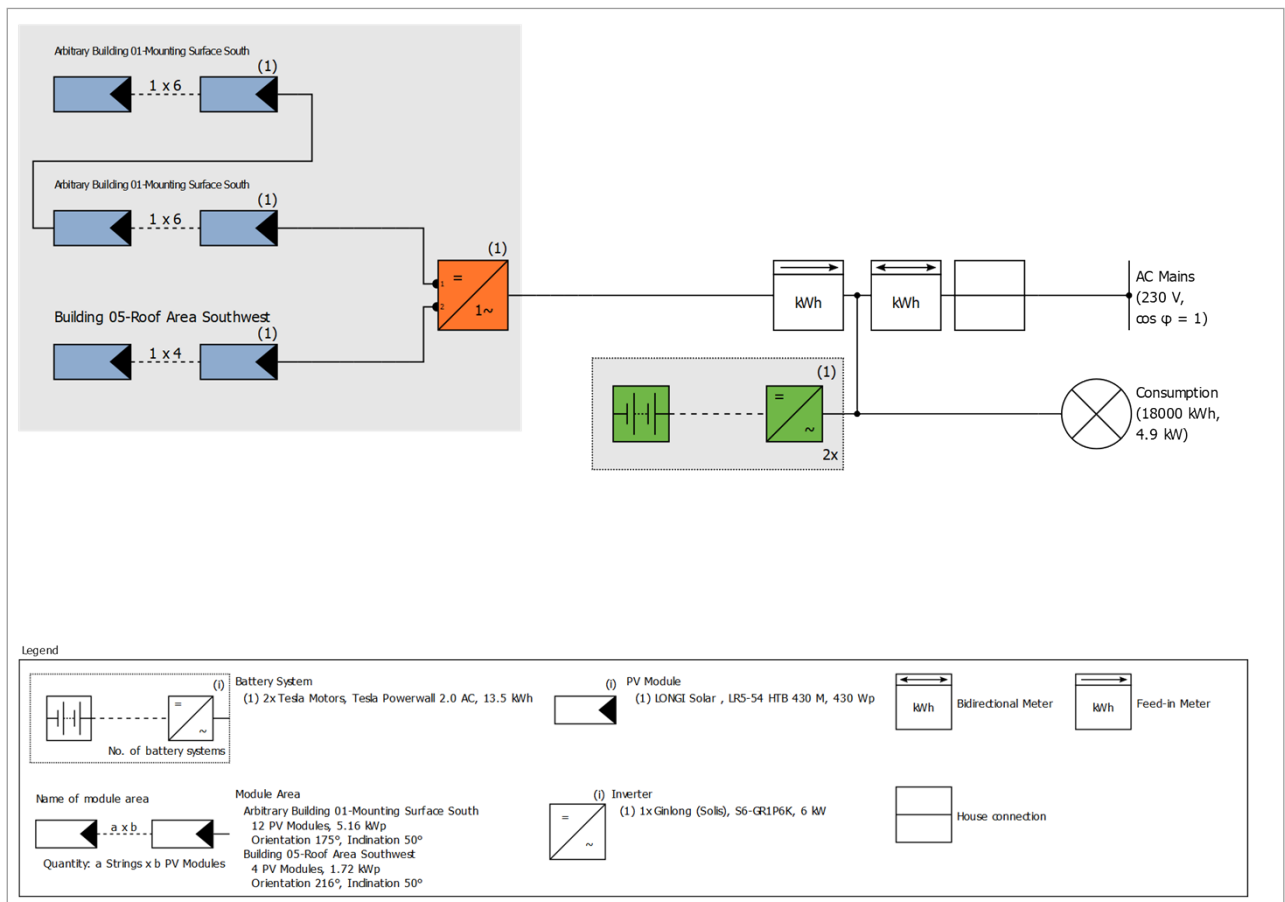


Figure: Schematic diagram

Production Forecast

Production Forecast

PV Generator Output	6.88 kWp
Spec. Annual Yield	875.26 kWh/kWp
Performance Ratio (PR)	83.14 %
Yield Reduction due to Shading	13.9 %
PV Generator Energy (AC grid)	6,026 kWh/Year
Direct Own Use	4,138 kWh/Year
Battery Charge	1,884 kWh/Year
Clipping at Feed-in Point	0 kWh/Year
Grid Export	4 kWh/Year
Own Power Consumption	99.9 %
CO ₂ Emissions avoided	2,732 kg / year
Level of Self-sufficiency	32.4 %

Financial Analysis

Your Gain

Total investment costs	9,895.00 £
Internal Rate of Return (IRR)	25.66 %
Amortization Period	4.5 Years
Electricity Production Costs	0.0657 £/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 and Battery Systems
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Climate Data

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

Consumption

Total Consumption	18000 kWh
UK Household	18000 kWh
Load Peak	4.9 kW

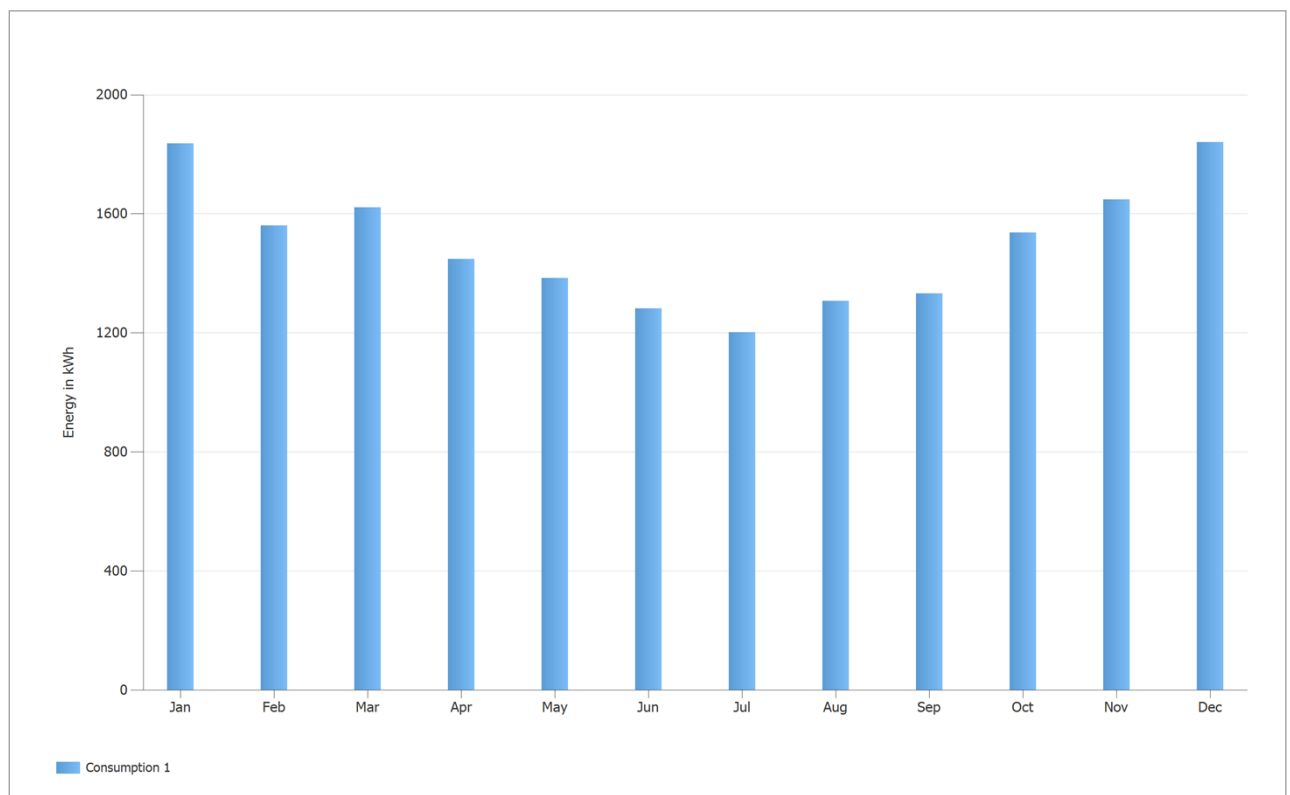


Figure: Consumption

Module Areas

1. Module Area - Arbitrary Building 01-Mounting Surface South

PV Generator, 1. Module Area - Arbitrary Building 01-Mounting Surface South

Name	Arbitrary Building 01-Mounting Surface South
PV Modules	12 x LR5-54 HTB 430 M (v3)
Manufacturer	LONGI Solar
Inclination	50 °
Orientation	South 175 °
Installation Type	Roof parallel
PV Generator Surface	23.4 m ²

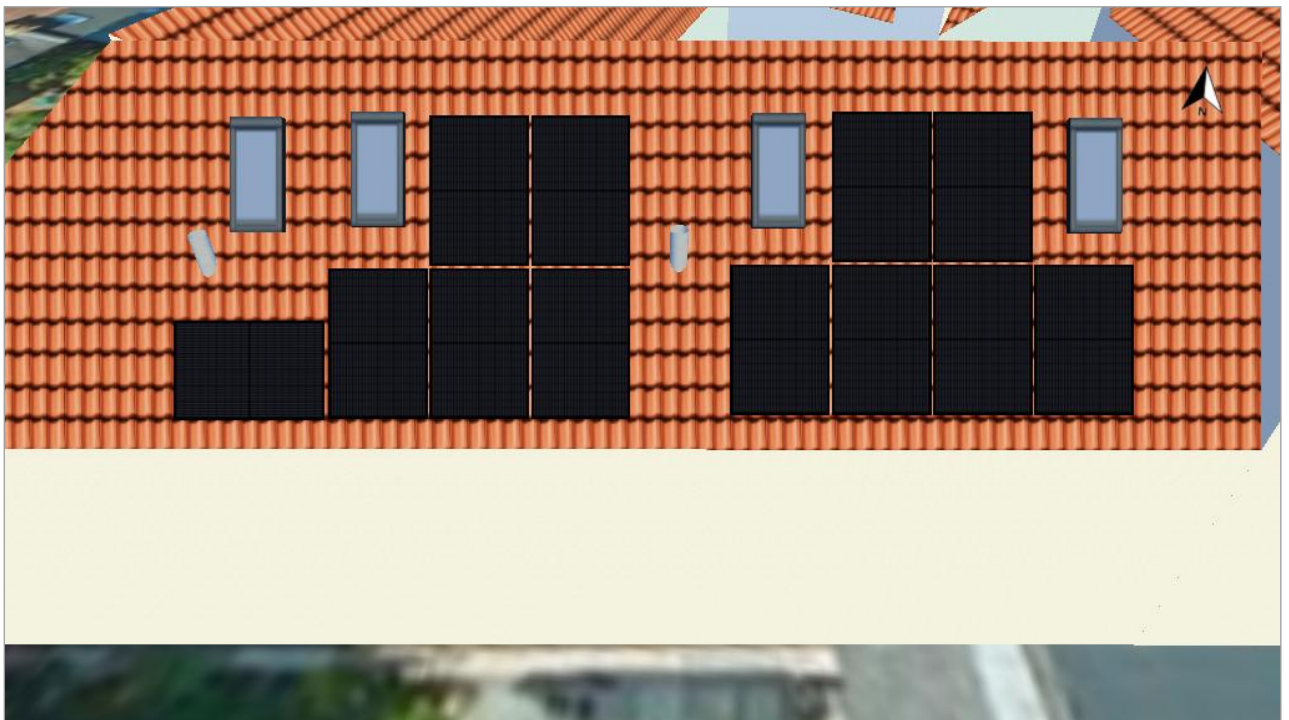


Figure: 1. Module Area - Arbitrary Building 01-Mounting Surface South

2. Module Area - Building 05-Roof Area Southwest

PV Generator, 2. Module Area - Building 05-Roof Area Southwest

Name	Building 05-Roof Area Southwest
PV Modules	4 x LR5-54 HTB 430 M (v3)
Manufacturer	LONGI Solar
Inclination	50 °
Orientation	Southwest 216 °
Installation Type	Roof parallel
PV Generator Surface	7.8 m ²

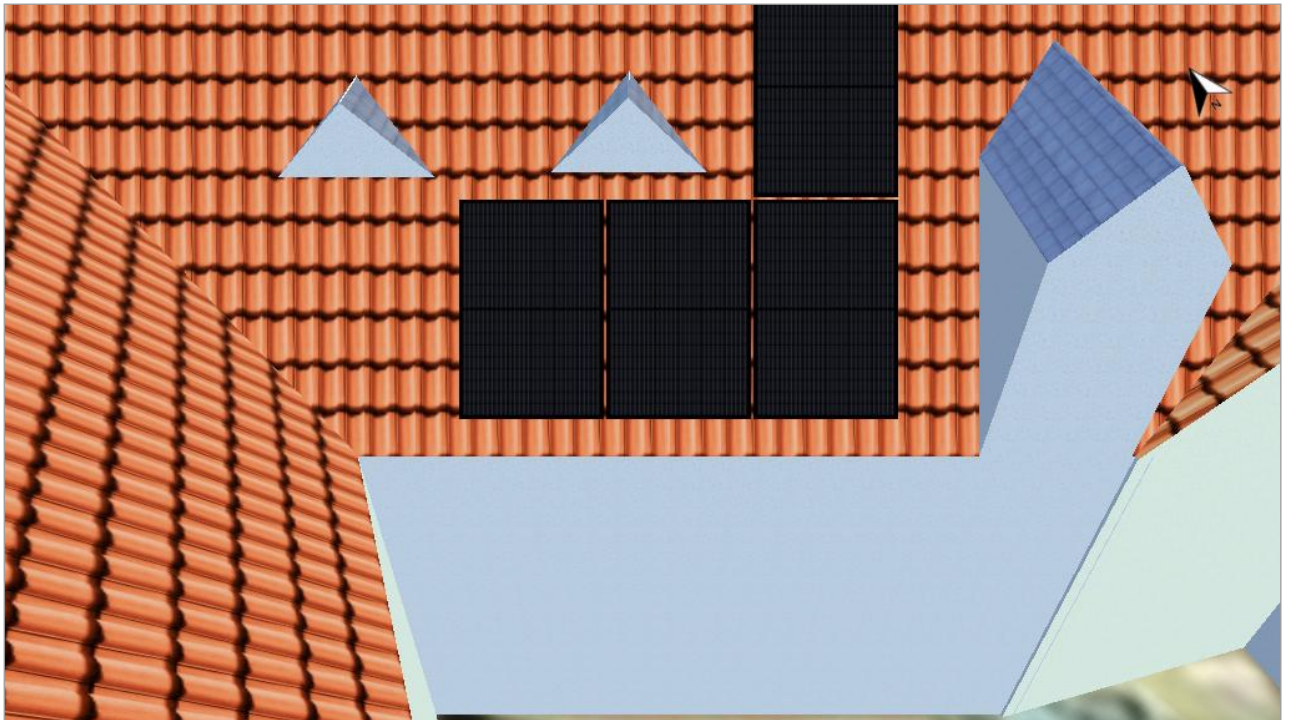


Figure: 2. Module Area - Building 05-Roof Area Southwest

Horizon Line, 3D Design

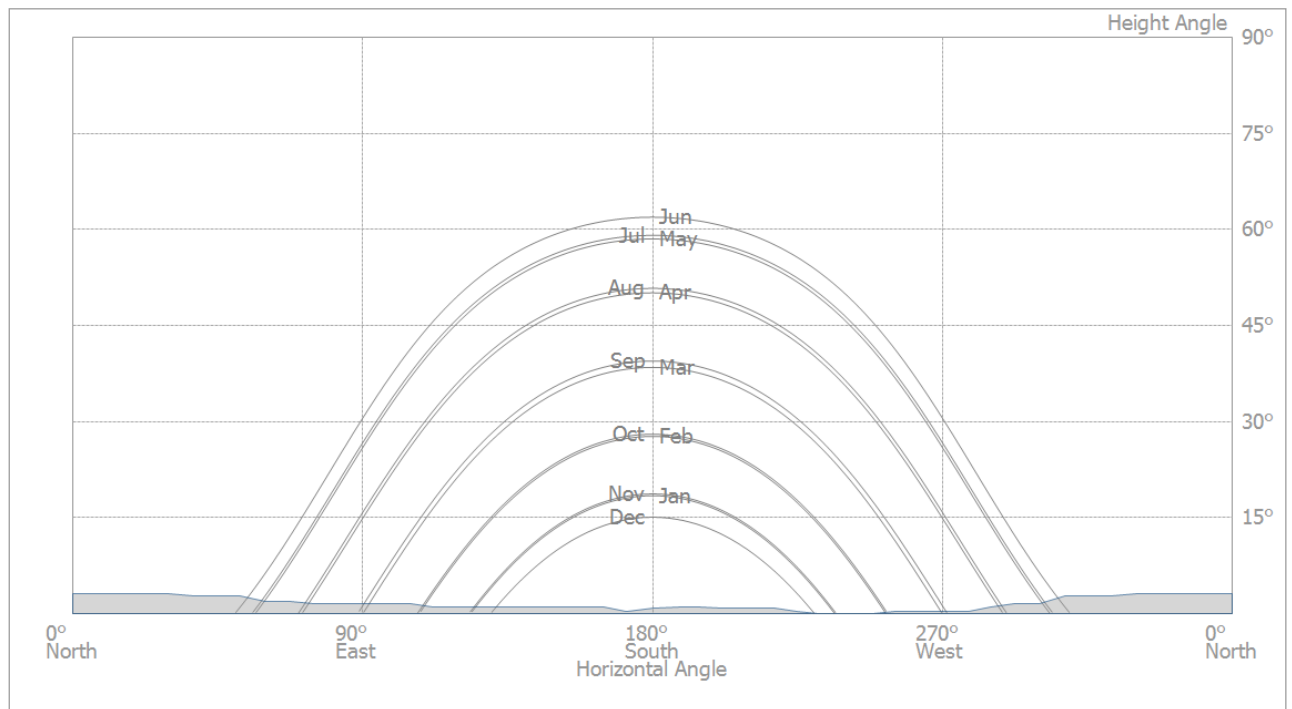


Figure: Horizon (3D Design)

Inverter configuration

Configuration 1

Module Areas	Arbitrary Building 01-Mounting Surface South + Building 05-Roof Area Southwest
Inverter 1	
Model	S6-GR1P6K (v2)
Manufacturer	Ginlong (Solis)
Quantity	1
Sizing Factor	114.7 %
Configuration	MPP 1: 1 x 6 + 1 x 6 MPP 2: 1 x 4

AC Mains

AC Mains

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

Battery Systems

Battery System - Group 1

Model	Tesla Powerwall 2.0 AC (v3)
Manufacturer	Tesla Motors
Quantity	2
Battery Inverter	
Type of Coupling	AC coupling
Nominal output	4.6 kW
Battery	
Manufacturer	Tesla Motors
Model	Powerwall 2 (v1)
Quantity	1
Battery Energy	13.5 kWh
Battery Type	Lithium iron phosphate

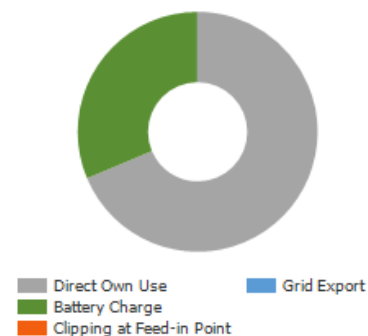
Simulation Results

Results Total System

PV System

PV Generator Output	6.88 kWp
Spec. Annual Yield	875.26 kWh/kWp
Performance Ratio (PR)	83.14 %
Yield Reduction due to Shading	13.9 %
PV Generator Energy (AC grid)	6,026 kWh/Year
Direct Own Use	4,138 kWh/Year
Battery Charge	1,884 kWh/Year
Clipping at Feed-in Point	0 kWh/Year
Grid Export	4 kWh/Year
Own Power Consumption	99.9 %
CO ₂ Emissions avoided	2,732 kg / year

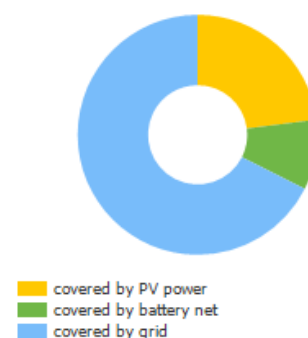
PV Generator Energy (AC grid)



Appliances

Appliances	18,000 kWh/Year
Standby Consumption (Inverter)	4 kWh/Year
Total Consumption	18,004 kWh/Year
covered by PV power	4,138 kWh/Year
covered by battery net	1,702 kWh/Year
covered by grid	12,165 kWh/Year
Solar Fraction	32.4 %

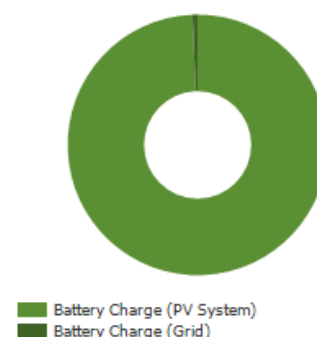
Total Consumption



Battery System

Charge at beginning	27 kWh
Battery Charge (Total)	1,896 kWh/Year
Battery Charge (PV System)	1,884 kWh/Year
Battery Charge (Grid)	12 kWh/Year
Battery Energy for the Covering of Consumption	1,714 kWh/Year
Battery discharge into the grid	0 kWh/Year
Losses due to charging/discharging	199 kWh/Year
Losses in Battery	11 kWh/Year
Cycle Load	2.5 %
Service Life	>20 Years

Battery Charge (Total)



Level of Self-sufficiency

Total Consumption	18,004 kWh/Year
covered by grid	12,165 kWh/Year
Level of Self-sufficiency	32.4 %

Energy Flow Graph

Project: SOL4156

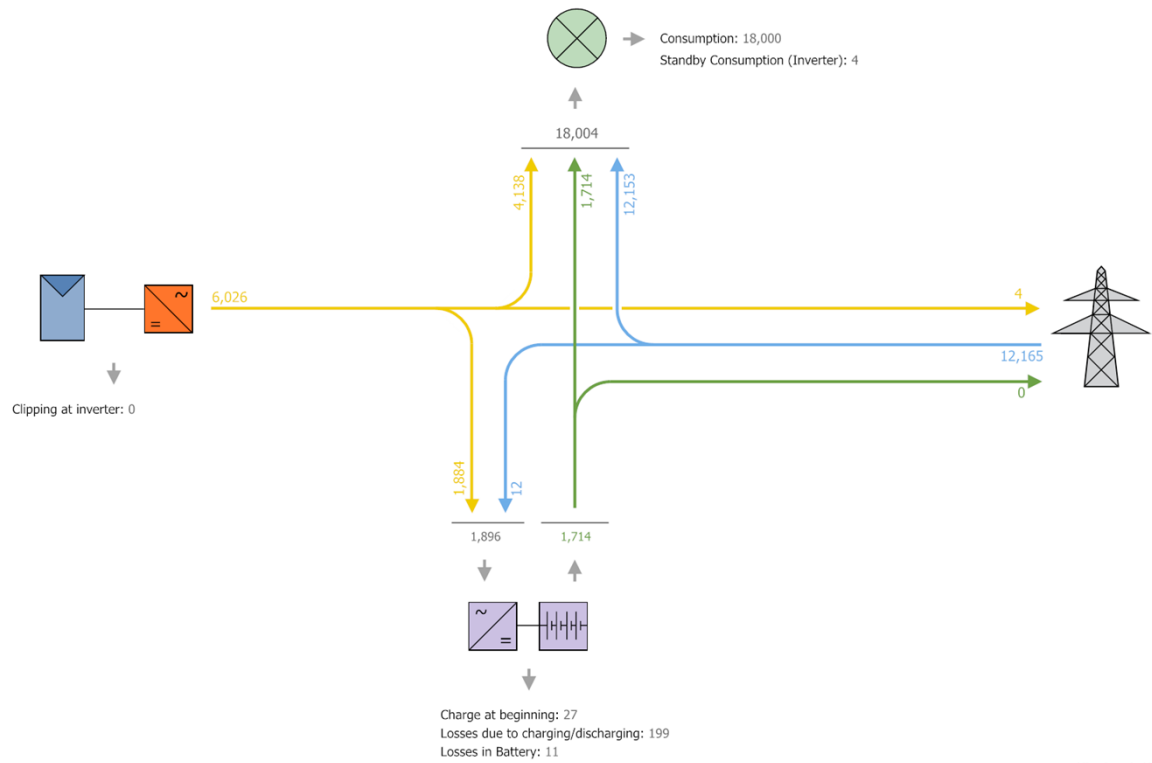


Figure: Energy flow

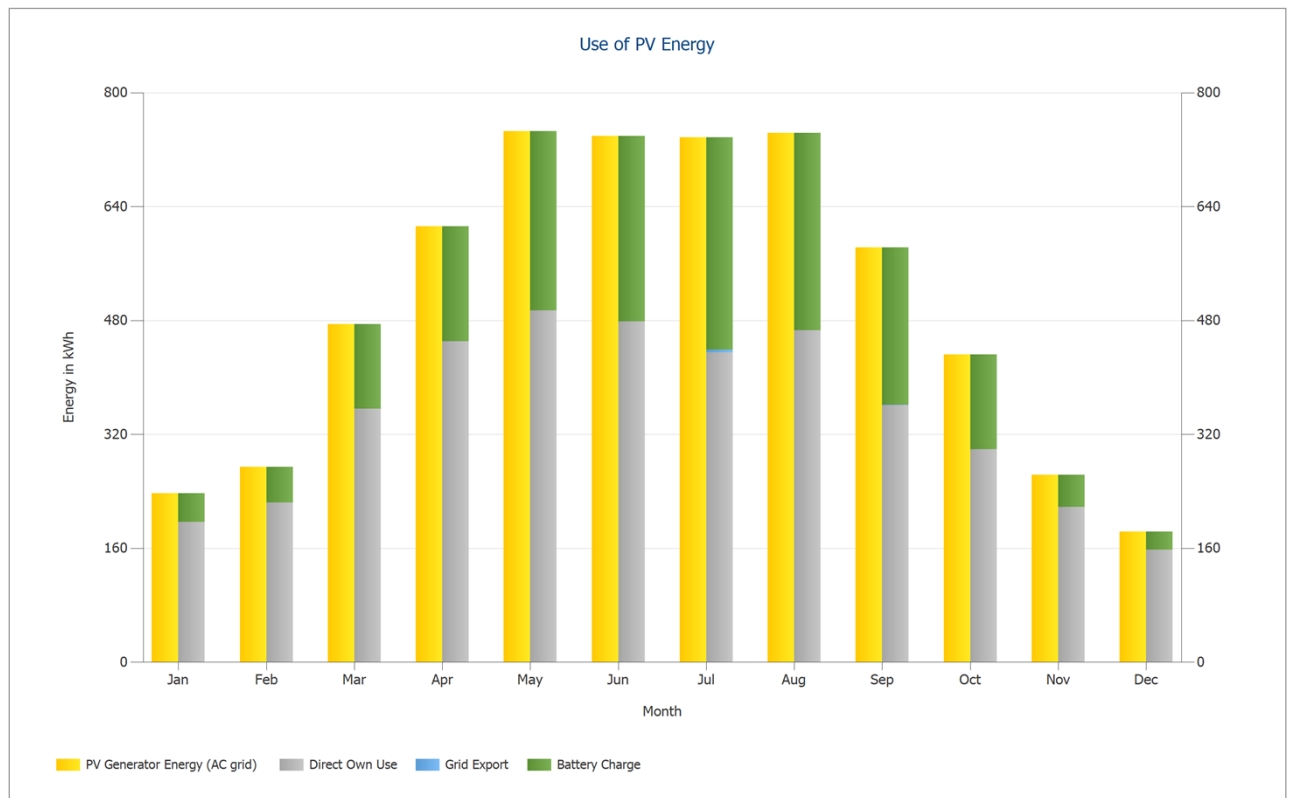


Figure: Use of PV Energy

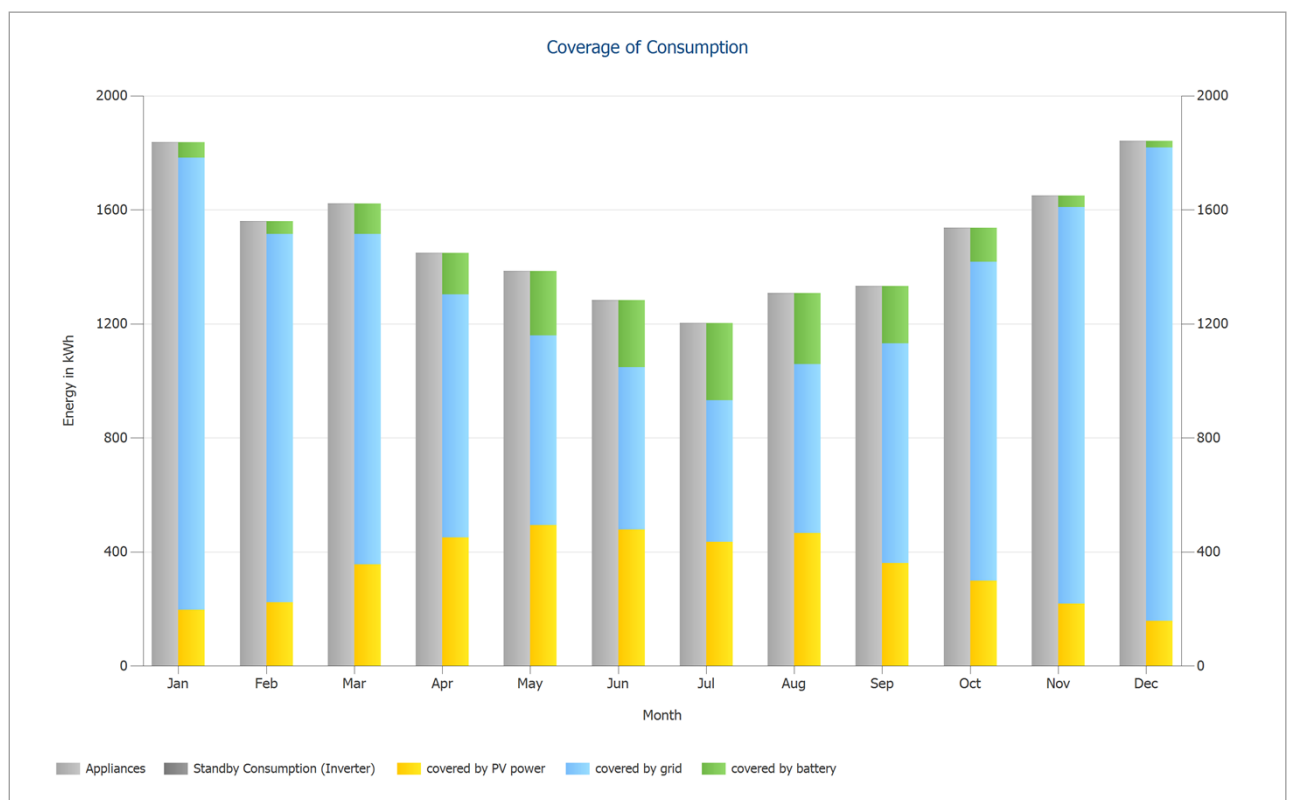


Figure: Coverage of Consumption

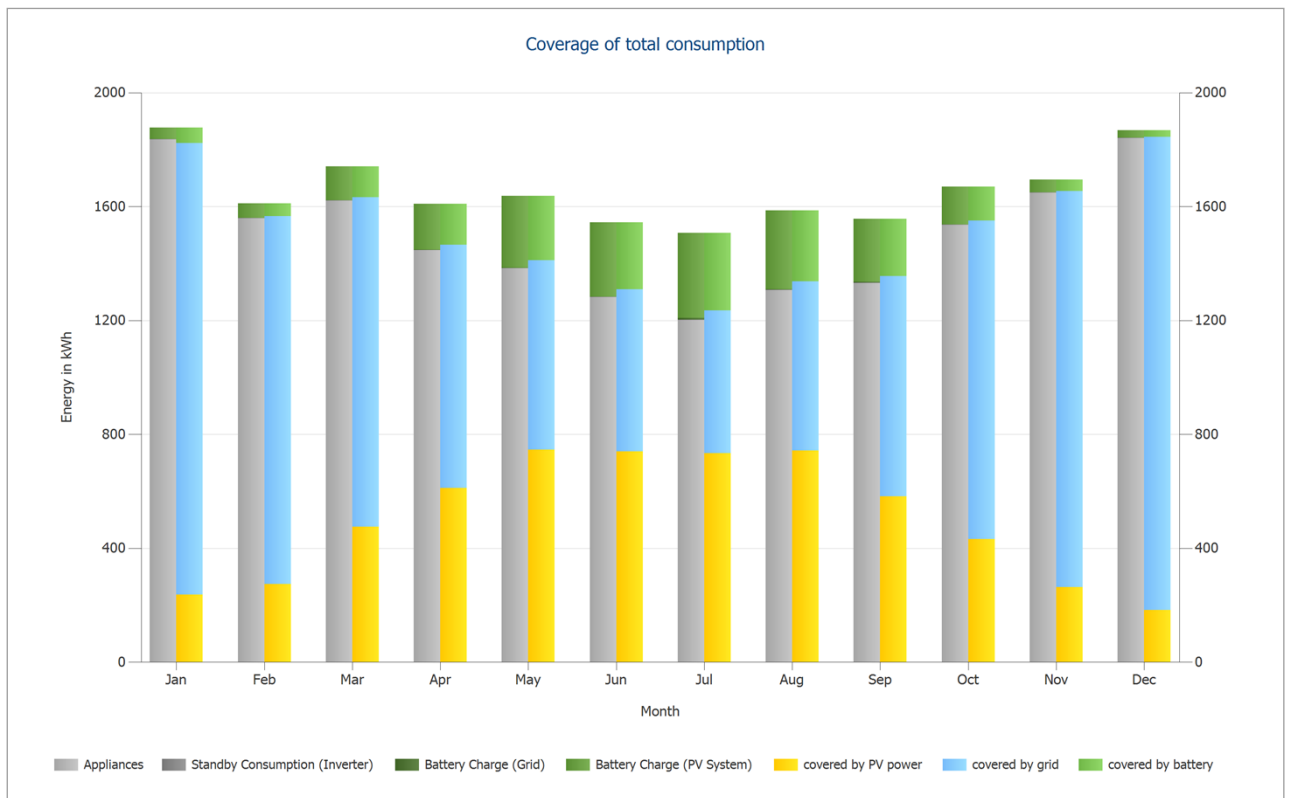


Figure: Coverage of total consumption

Financial Analysis

Overview

System Data

Grid Export in the first year (incl. module degradation)	4 kWh/Year
PV Generator Output	6.9 kWp
Start of Operation of the System	05/01/2024
Assessment Period	25 Years
Interest on Capital	0 %

Economic Parameters

Internal Rate of Return (IRR)	25.66 %
Accrued Cash Flow (Cash Balance)	98,950.04 £
Amortization Period	4.5 Years
Electricity Production Costs	0.0657 £/kWh

Payment Overview

Specific Investment Costs	1,438.23 £/kWp
Investment Costs	9,895.00 £
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	0.23 £/Year
First year savings	1,983.99 £/Year

SEG - Octopus Energy - Outgoing Fixed - SEG eligible

Validity	01/01/2020 - 31/12/2039
Specific feed-in / export Remuneration	0.055 £/kWh
Feed-in / Export Tariff	0.2305 £/Year

34p/kW (Example)

Energy Price	0.34 £/kWh
Base Price	4.4712 £/Month
Inflation Rate for Energy Price	6 %/Year

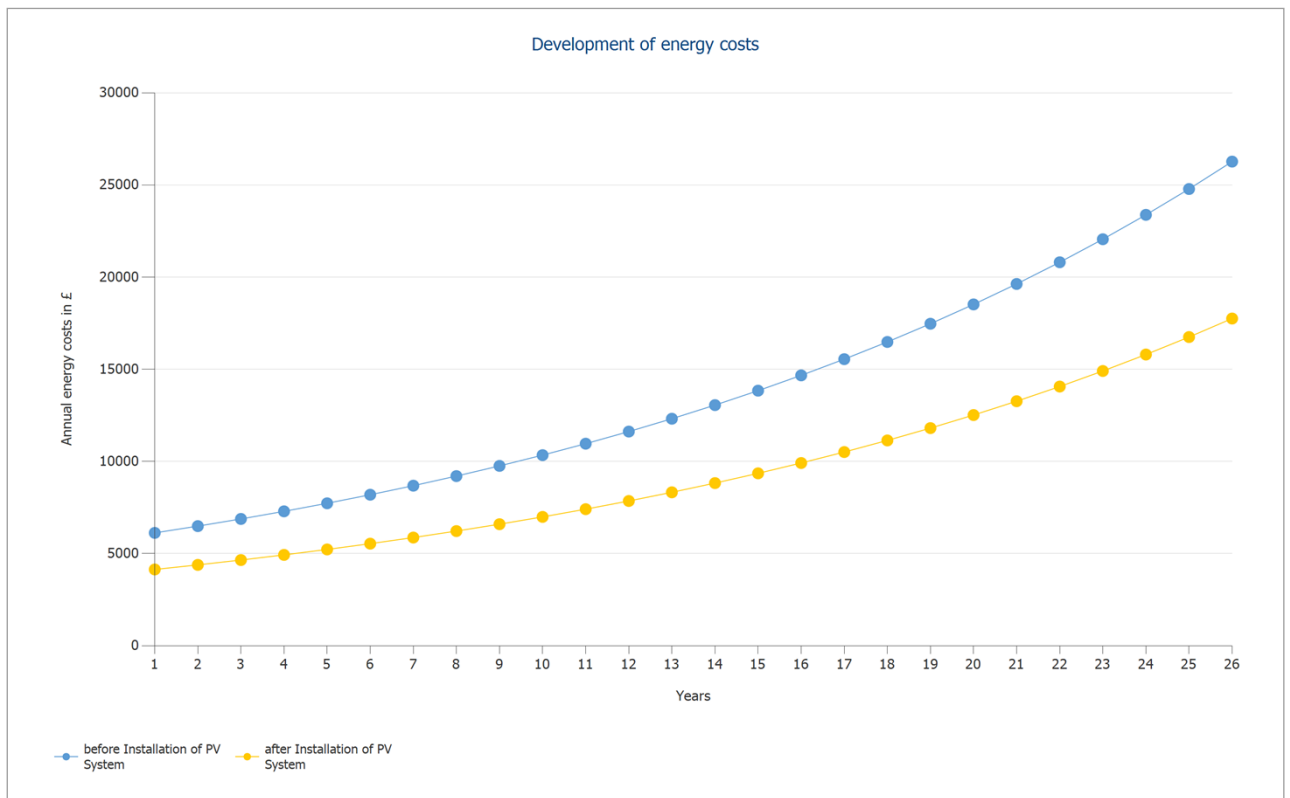


Figure: Development of energy costs

Cash flow

Cash flow

	Year 1	Year 2	Year 3	Year 4	Year 5
Investments	-£9,895.00	£0.00	£0.00	£0.00	£0.00
Feed-in / Export Tariff	£0.23	£0.23	£0.23	£0.23	£0.23
Electricity Savings	£1,972.98	£2,103.03	£2,229.21	£2,362.96	£2,504.74
Annual Cash Flow	-£7,921.79	£2,103.26	£2,229.44	£2,363.19	£2,504.97
Accrued Cash Flow (Cash Balance)	-£7,921.79	-£5,818.53	-£3,589.09	-£1,225.90	£1,279.06

Cash flow

	Year 6	Year 7	Year 8	Year 9	Year 10
Investments	£0.00	£0.00	£0.00	£0.00	£0.00
Feed-in / Export Tariff	£0.23	£0.23	£0.23	£0.23	£0.23
Electricity Savings	£2,655.02	£2,814.32	£2,983.18	£3,162.17	£3,351.90
Annual Cash Flow	£2,655.25	£2,814.55	£2,983.41	£3,162.40	£3,352.13
Accrued Cash Flow (Cash Balance)	£3,934.32	£6,748.87	£9,732.28	£12,894.69	£16,246.82

Cash flow

	Year 11	Year 12	Year 13	Year 14	Year 15
Investments	£0.00	£0.00	£0.00	£0.00	£0.00
Feed-in / Export Tariff	£0.23	£0.23	£0.23	£0.23	£0.23
Electricity Savings	£3,553.02	£3,766.20	£3,992.17	£4,231.70	£4,485.60
Annual Cash Flow	£3,553.25	£3,766.43	£3,992.40	£4,231.93	£4,485.83
Accrued Cash Flow (Cash Balance)	£19,800.07	£23,566.50	£27,558.90	£31,790.83	£36,276.67

Cash flow

	Year 16	Year 17	Year 18	Year 19	Year 20
Investments	£0.00	£0.00	£0.00	£0.00	£0.00
Feed-in / Export Tariff	£0.23	£0.21	£0.21	£0.21	£0.21
Electricity Savings	£4,754.74	£5,040.02	£5,342.43	£5,662.97	£6,002.75
Annual Cash Flow	£4,754.97	£5,040.23	£5,342.64	£5,663.18	£6,002.96
Accrued Cash Flow (Cash Balance)	£41,031.64	£46,071.87	£51,414.51	£57,077.69	£63,080.65

Cash flow

	Year 21	Year 22	Year 23	Year 24	Year 25
Investments	£0.00	£0.00	£0.00	£0.00	£0.00
Feed-in / Export Tariff	£0.21	£0.21	£0.21	£0.21	£0.21
Electricity Savings	£6,362.91	£6,744.69	£7,149.37	£7,578.33	£8,033.03
Annual Cash Flow	£6,363.12	£6,744.90	£7,149.58	£7,578.54	£8,033.24
Accrued Cash Flow (Cash Balance)	£69,443.77	£76,188.67	£83,338.25	£90,916.79	£98,950.04

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

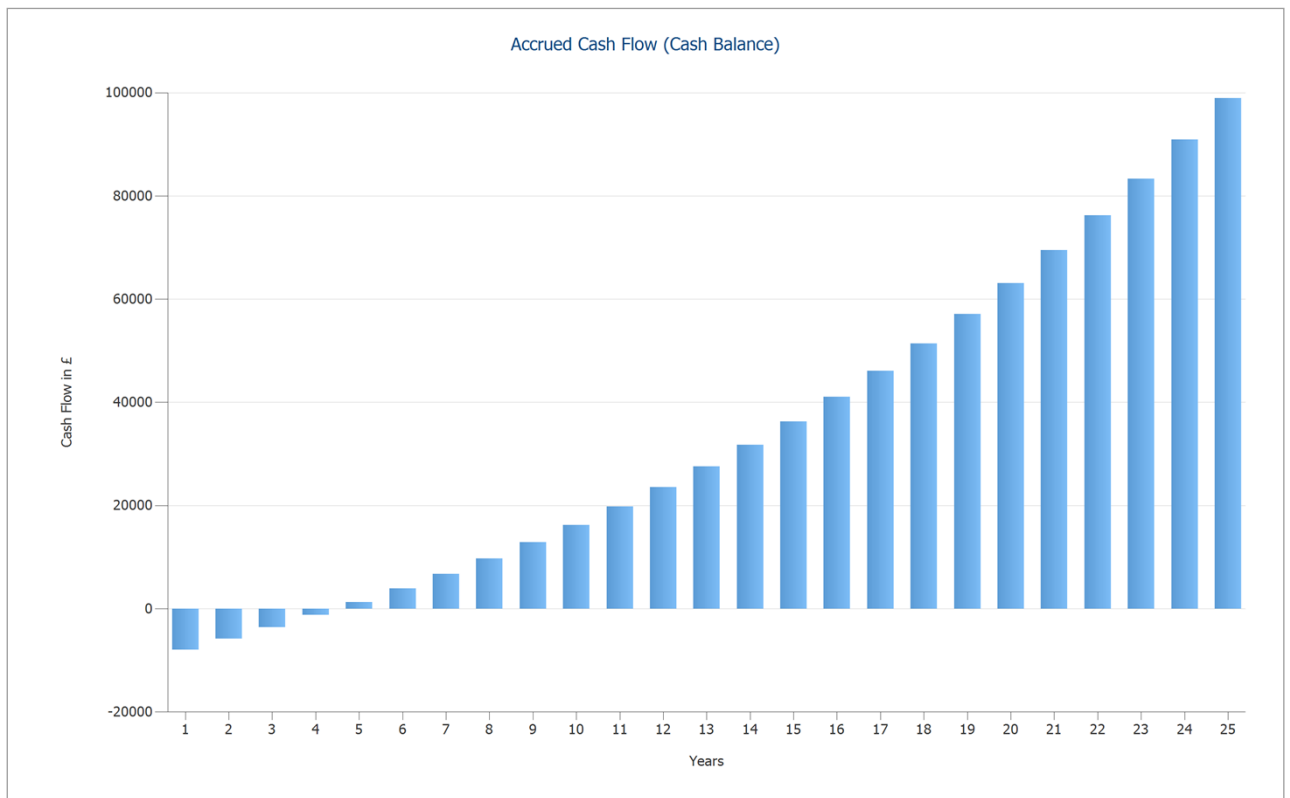


Figure: Accrued Cash Flow (Cash Balance)



Plans and parts list

Circuit Diagram

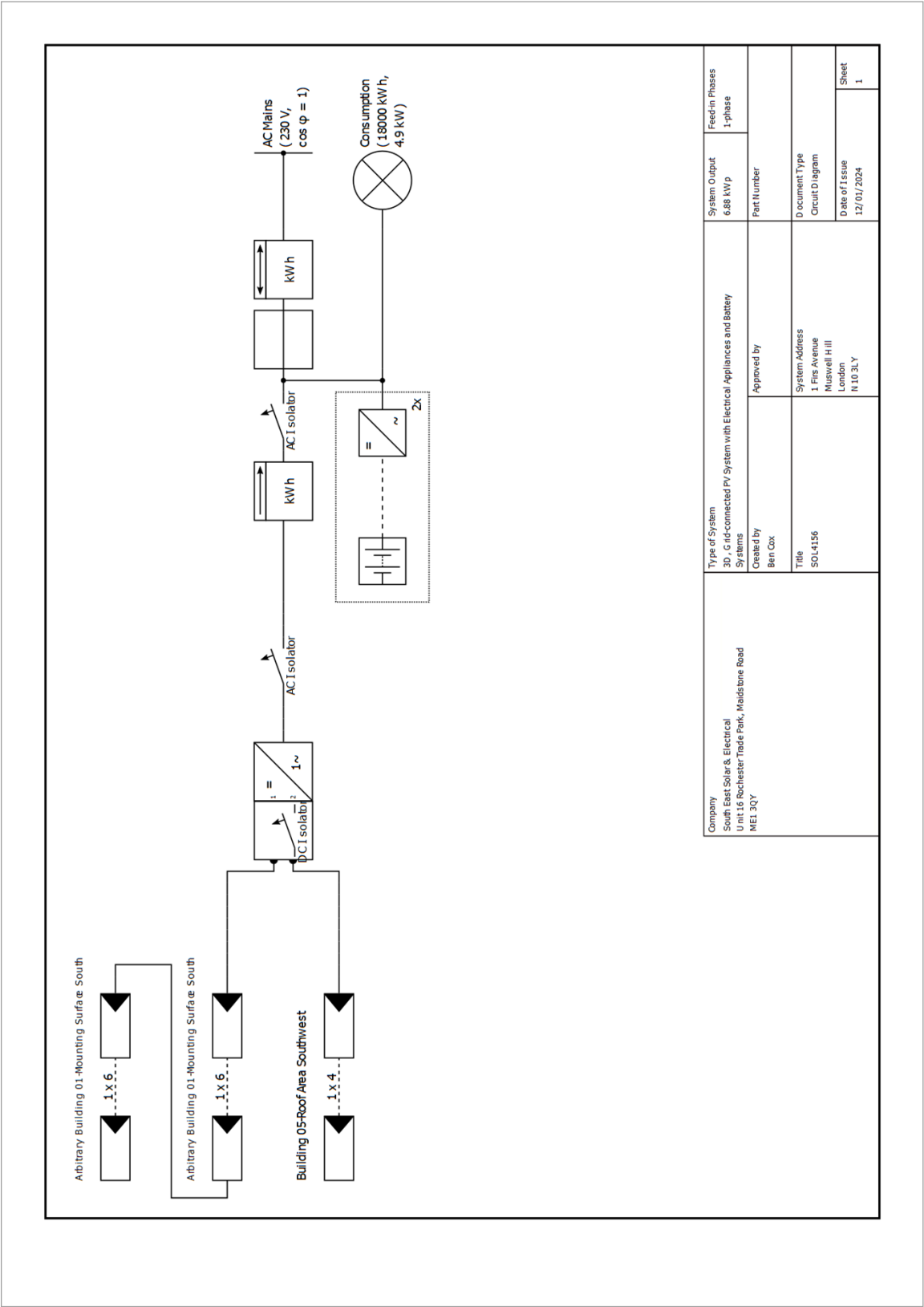


Figure: Circuit Diagram

Overview plan

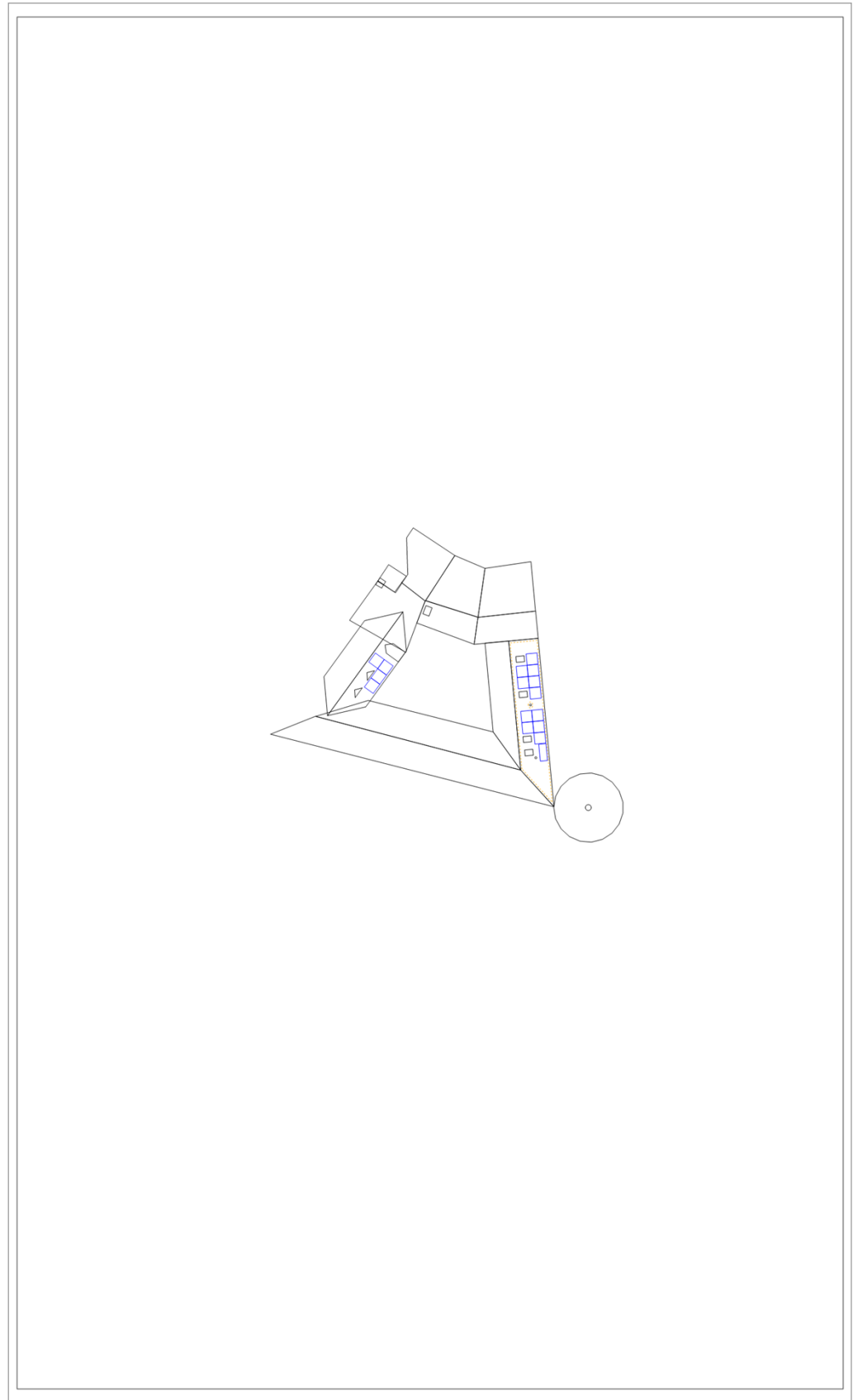


Figure: Overview plan

Dimensioning Plan

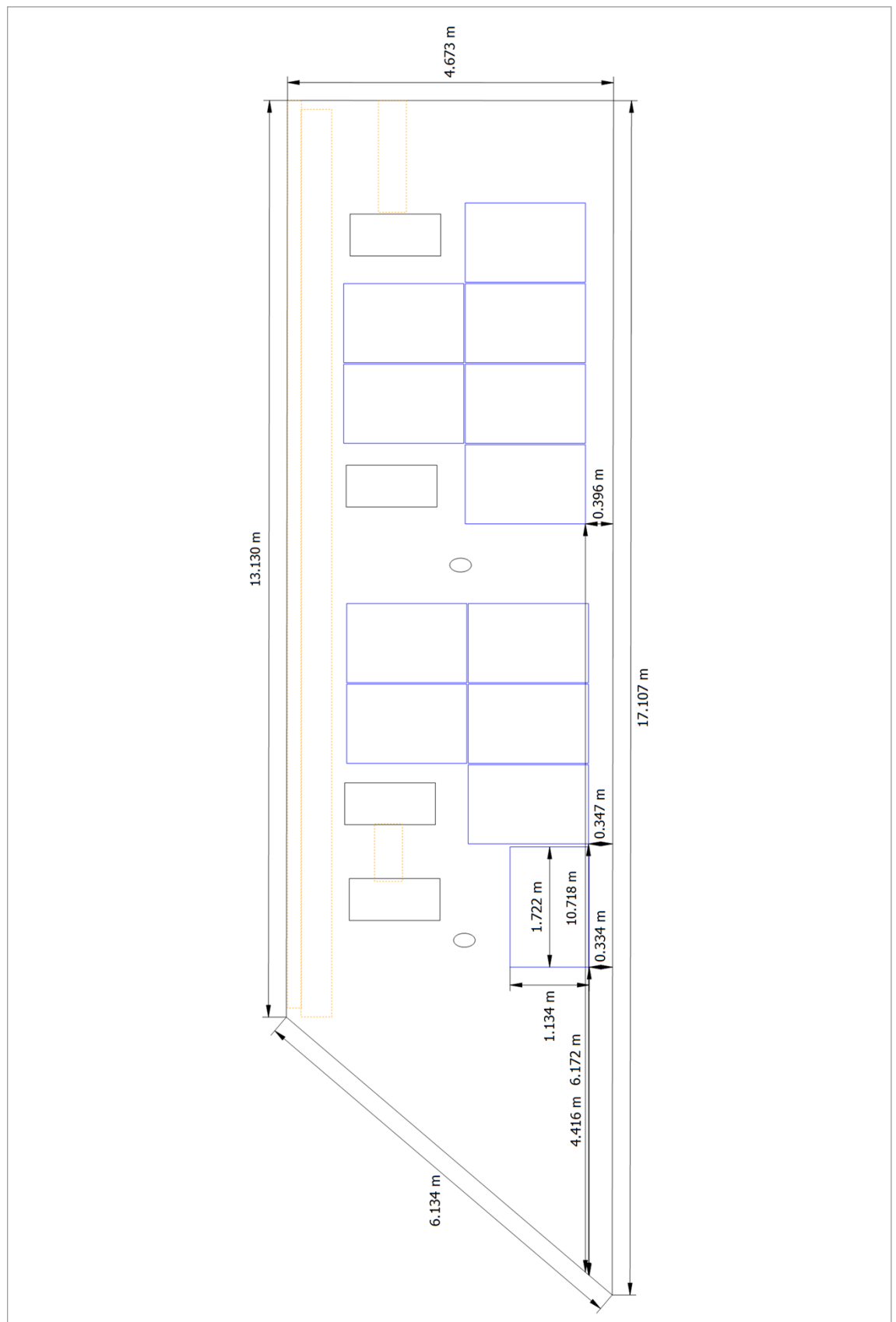


Figure: Arbitrary Building 01 - Mounting Surface South

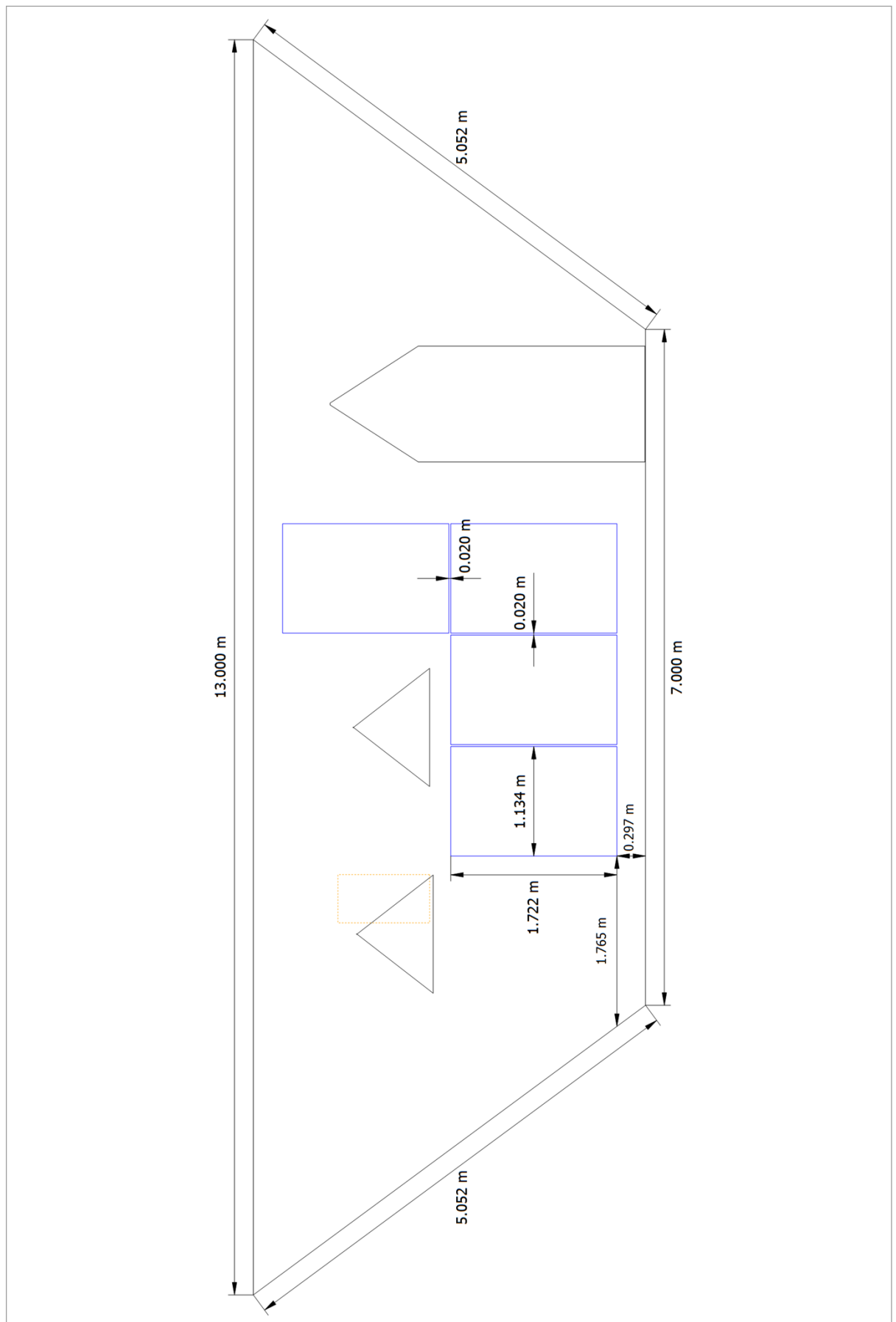


Figure: Building 05 - Roof Area Southwest

String Plan

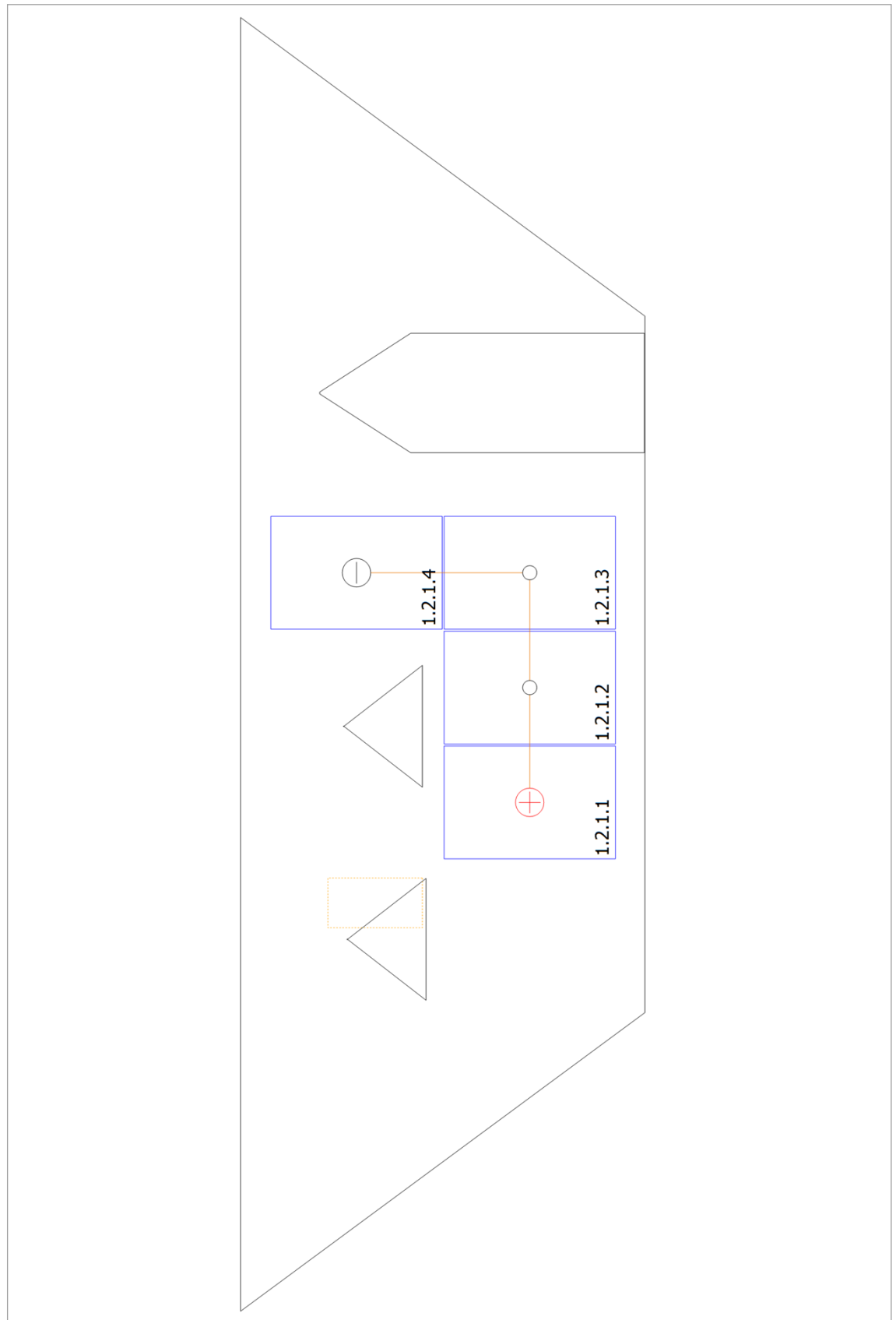


Figure: Building 05 - Roof Area Southwest

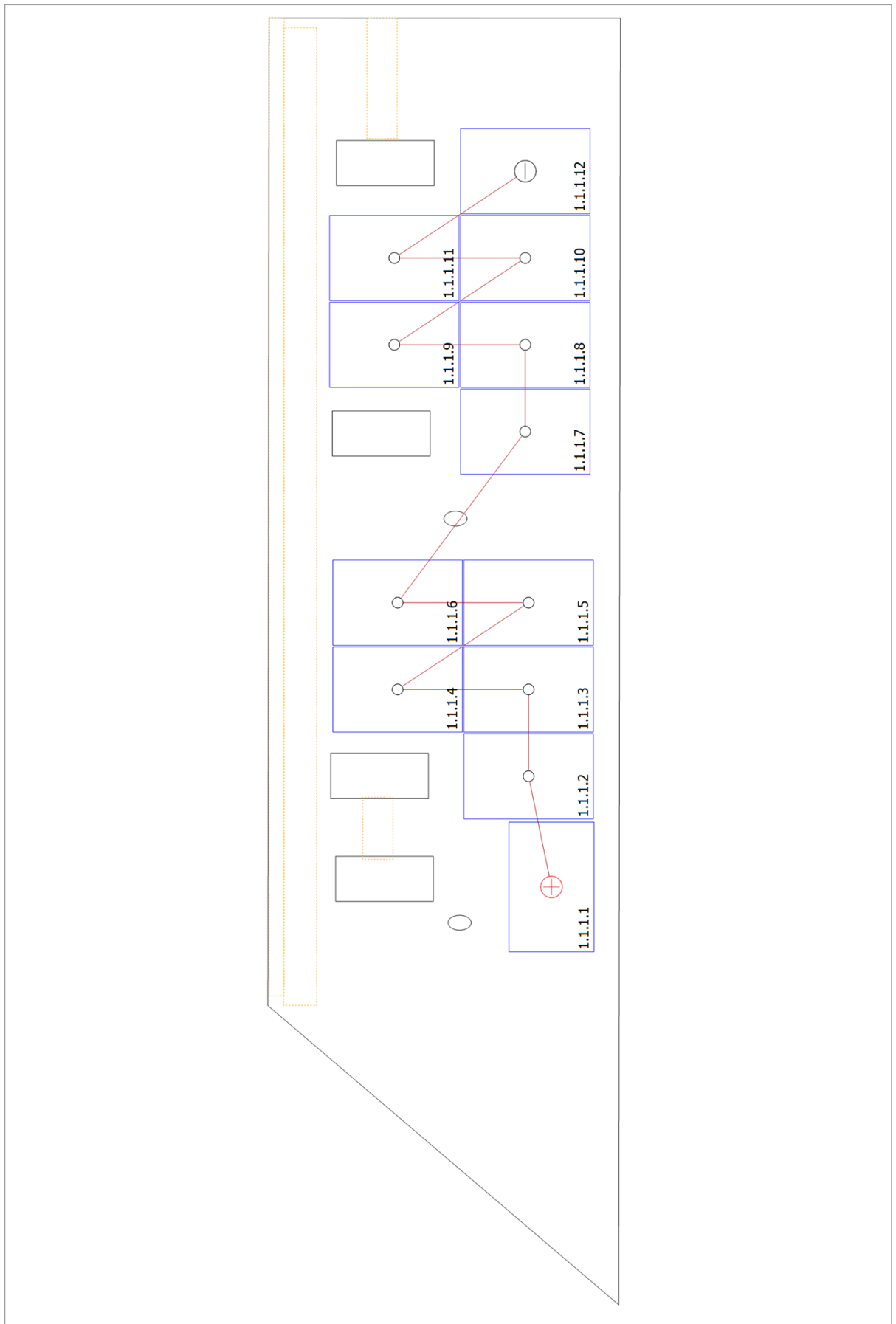


Figure: Arbitrary Building 01 - Mounting Surface South

Parts list

Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		LONGI Solar	LR5-54 HTB 430 M	16	Piece
2	Inverter		Ginlong (Solis)	S6-GR1P6K	1	Piece
3	Battery System		Tesla Motors	Tesla Powerwall 2.0 AC	2	Piece
4	Components			Feed-in Meter	1	Piece
5	Components			Circuit Breaker AC Isolator	2	Piece
6	Components			House connection	1	Piece
7	Components			Bidirectional Meter	1	Piece

Screenshots, 3D Design Environment

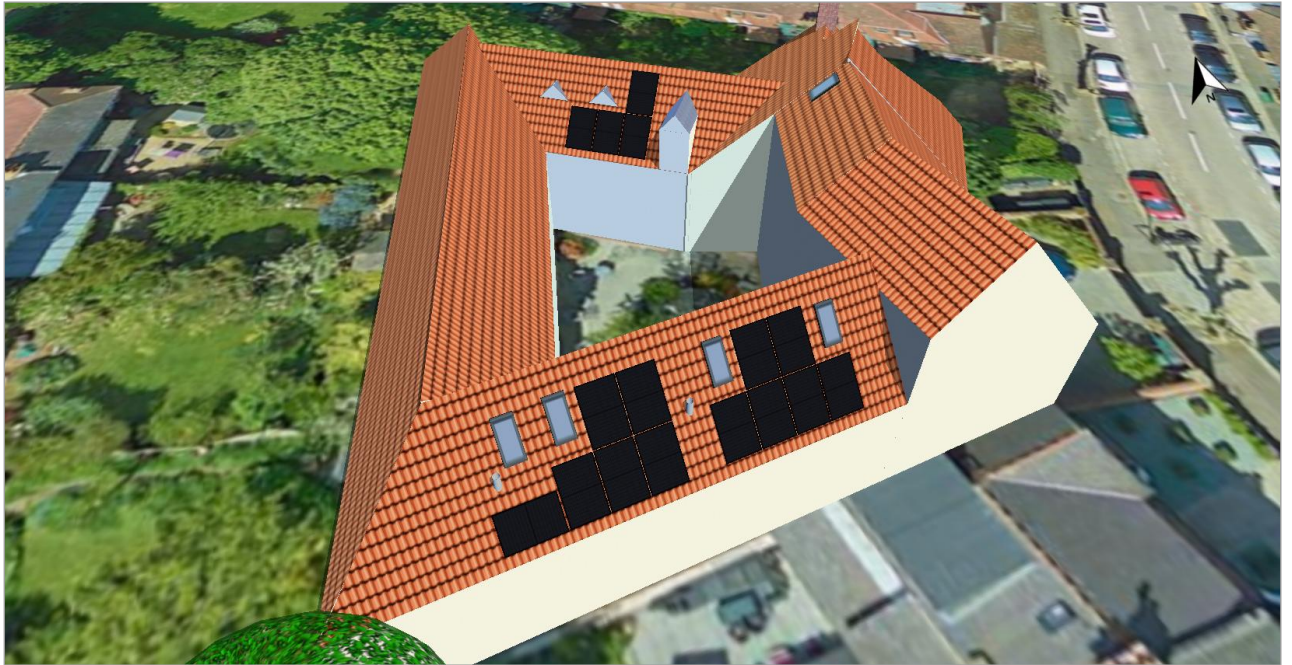


Figure: Screenshot01