Sureserve Energy Services
Enterprise Point, Altrincham Rd, Manchester
M22 9AF
United Kingdom

Project Name: Sainsbury's Superstore Heaton Park
Offer no.: PR250227

06/10/2025

Documentation- PR250227

Customer Details

Company	Sainsbury's
Customer Number	
Contact person	Colin Smith
Address	
Phone	
Fax	
E-Mail	colinj.smith@sainsburys.co.uk

Project Data

Project Name	Sainsbury's Superstore Heaton Park
Offer no.	PR250227
Project Designer	JB
Address	Sainsbury's, Heaton Park Rd, Manchester M9 0QS

Project Description:
Rooftop PV

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	294.84	kWp
PV Generator Surface	1,294.8	m²
Number of PV Modules	648	
Number of Inverters	3	

Sainsbury's Superstore Heaton Park

Project Designer: JB
Offer Number: PR250227

Client: Sainsbury's, Colin Smith

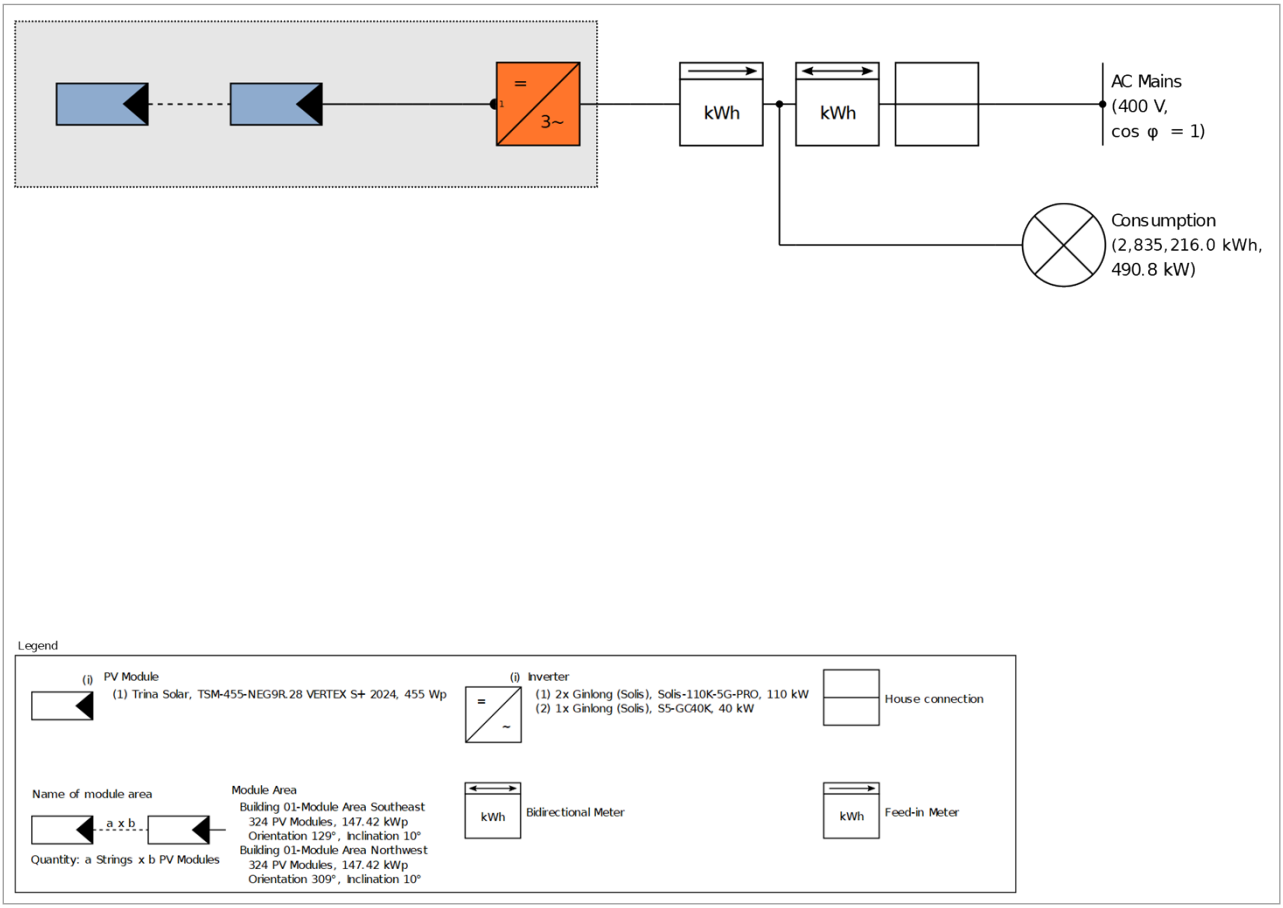


Figure: Schematic diagram

Production Forecast

Production Forecast

PV Generator Output	294.84	kWp
Spec. Annual Yield	896.35	kWh/kWp
Performance Ratio (PR)	92.81	%
Yield Reduction due to Shading	2.9	%
PV Generator Energy (AC grid)	264,308	kWh/Year
Own Consumption	262,921	kWh/Year
Clipping at Feed-in Point	0	kWh/Year
Grid Export	1,387	kWh/Year
Own Power Consumption	99.5	%
CO_2 Emissions avoided	59,463	kg / year
Level of Self-sufficiency	9.3	%

Financial Analysis

Your Gain

Total investment costs	258,928.22	£
Internal Rate of Return (IRR)	25.16	%
Amortization Period	4 Years, 3 months	
Electricity Production Costs	0.0392	£/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
Start of Operation	01/01/2026

Climate Data

Location	Manchester, GBR (2001 - 2020)
Values source	Meteonorm 8.2(i)
Data resolution	1 h
Simulation models used:	
- Diffuse Irradiation onto Horizontal Plane	Reindl reduced
- Irradiance onto tilted surface	Perez

Consumption

Total Consumption	2835216 kWh
SainHEATON_PARK_HH_CSV_2024	2835216 kWh
Load Peak	490.8 kW

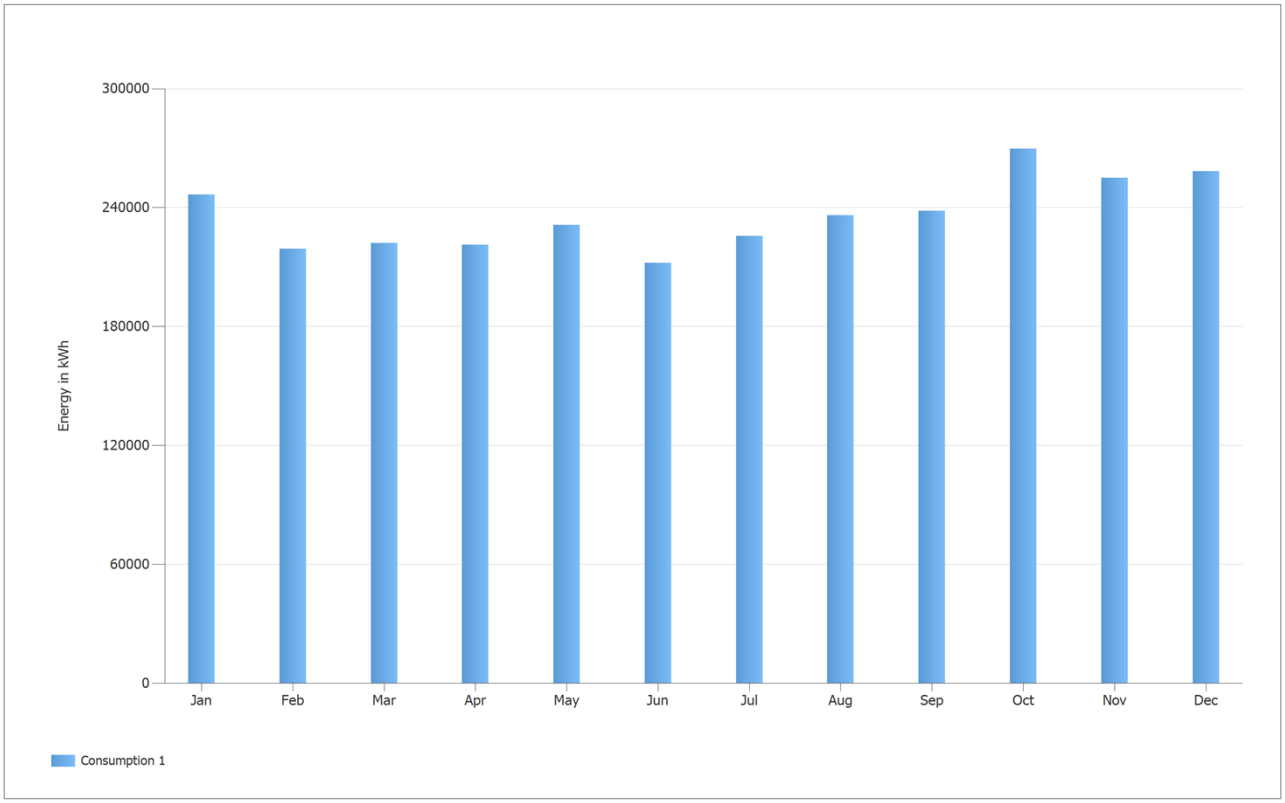


Figure: Consumption

Module Areas

1. Module Area - Building 01-Module Area Southeast

PV Generator, 1. Module Area - Building 01-Module Area Southeast

Name	Building 01-Module Area Southeast
PV Modules	324 x TSM-455-NEG9R.28 VERTEX S+ 2024 (v1)
Manufacturer	Trina Solar
Inclination	10 °
Orientation	Southeast 129 °
Installation Type	Mounted - Roof
PV Generator Surface	647.4 m²



Figure: 1. Module Area - Building 01-Module Area Southeast

Degradation of Module, 1. Module Area - Building 01-Module Area Southeast

Characteristic curve	Exponential
Remaining power (power output) after 1 year	99 %
Remaining power (power output) after 30 years	87.4 %

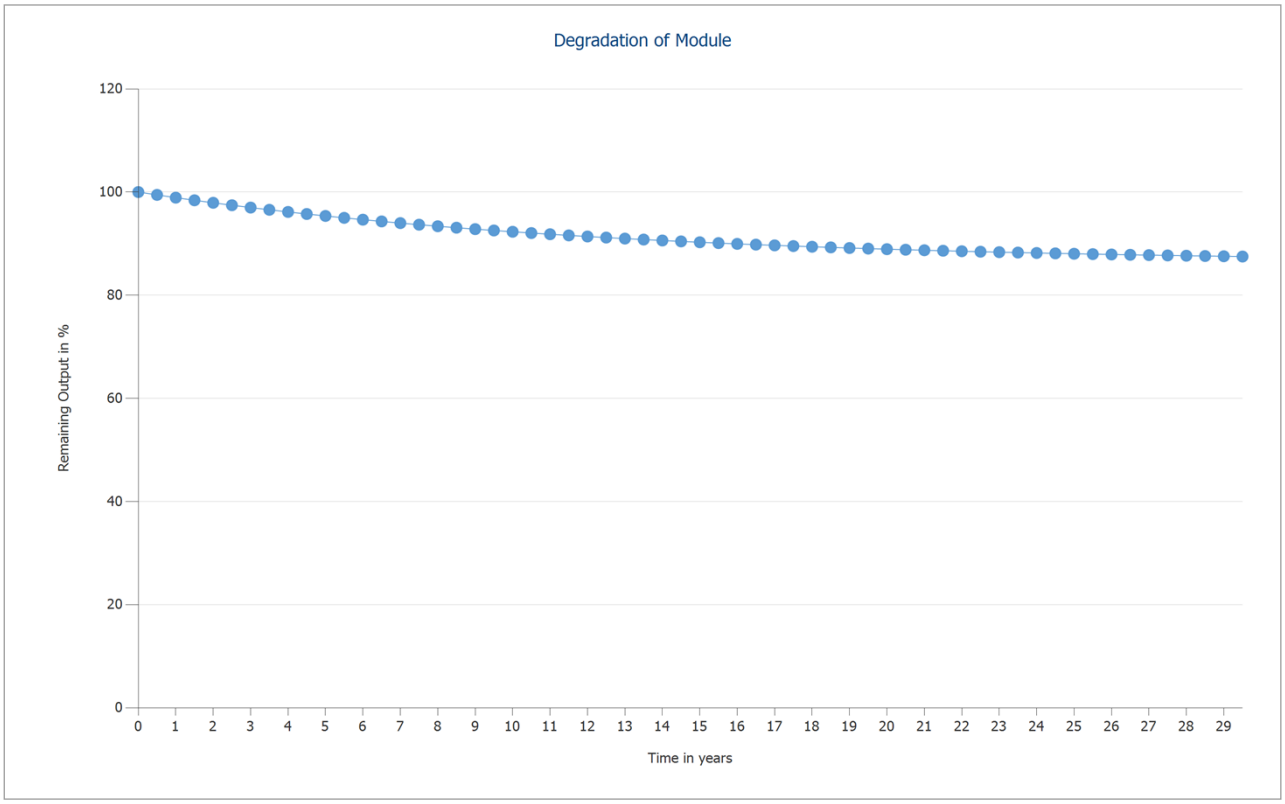


Figure: Degradation of Module, 1. Module Area - Building 01-Module Area Southeast

2. Module Area - Building 01-Module Area Northwest

PV Generator, 2. Module Area - Building 01-Module Area Northwest

Name	Building 01-Module Area Northwest
PV Modules	324 x TSM-455-NEG9R.28 VERTEX S+ 2024 (v1)
Manufacturer	Trina Solar
Inclination	10 °
Orientation	Northwest 309 °
Installation Type	Mounted - Roof
PV Generator Surface	647.4 m²



Figure: 2. Module Area - Building 01-Module Area Northwest

Degradation of Module, 2. Module Area - Building 01-Module Area Northwest

Characteristic curve	Exponential
Remaining power (power output) after 1 year	99 %
Remaining power (power output) after 30 years	87.4 %

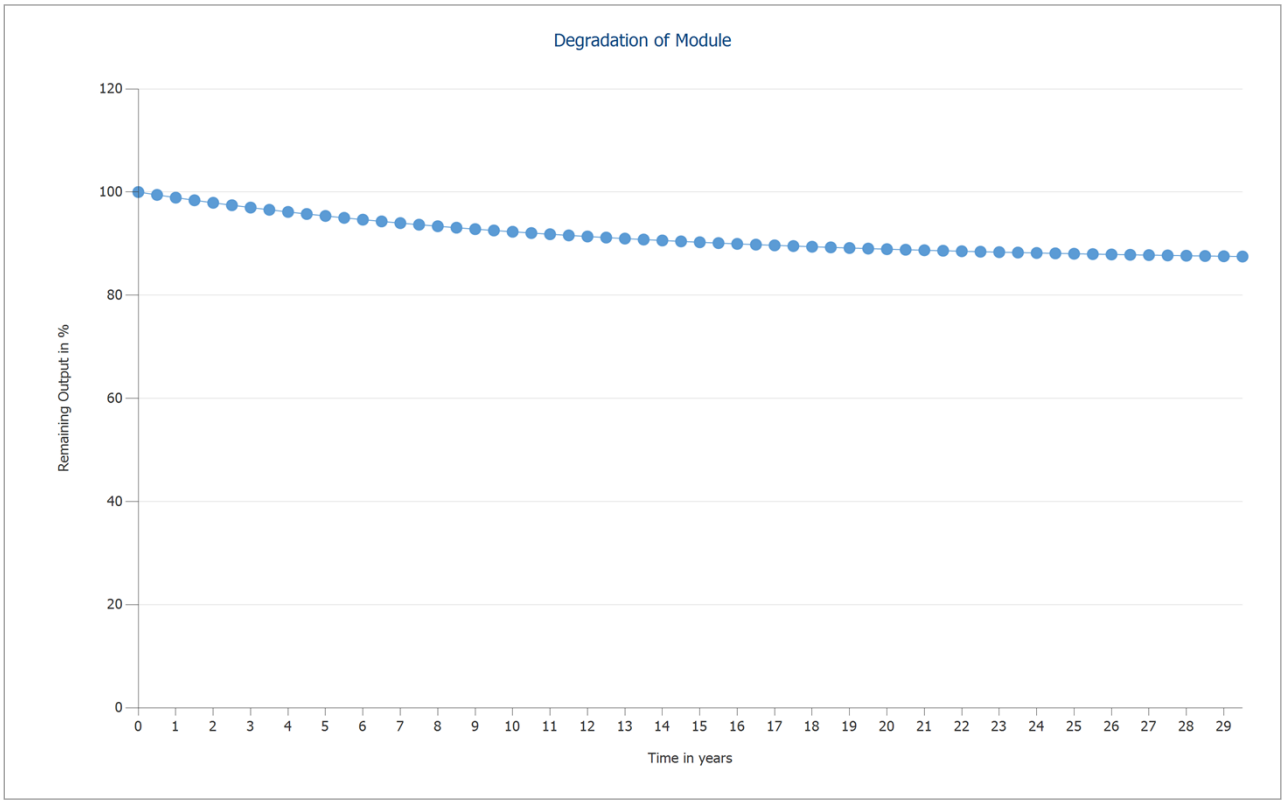


Figure: Degradation of Module, 2. Module Area - Building 01-Module Area Northwest

Horizon Line, 3D Design

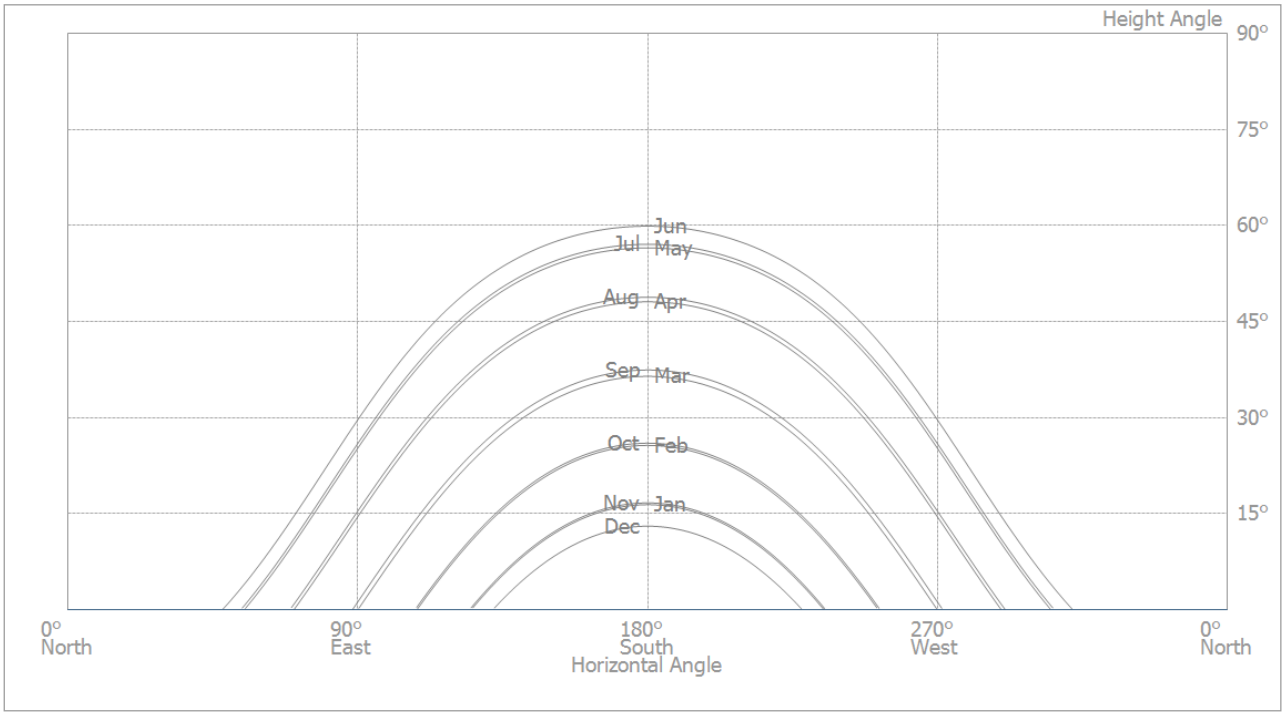


Figure: Horizon (3D Design)

Inverter configuration

Configuration 1

Module Areas	Building 01-Module Area Southeast + Building 01-Module Area Northwest
Inverter 1	
Model	Solis-110K-5G-PRO (v1)
Manufacturer	Ginlong (Solis)
Quantity	2
Sizing Factor	114.2 %
Configuration	MPP 1: 2 x 18
	MPP 2: 2 x 17
	MPP 3: 2 x 17
	MPP 4: 2 x 17
	MPP 5: 2 x 18
	MPP 6: 2 x 17
	MPP 7: 2 x 17
	MPP 8: 2 x 17
Inverter 2	
Model	S5-GC40K (v2)
Manufacturer	Ginlong (Solis)
Quantity	1
Sizing Factor	109.2 %
Configuration	MPP 1: 2 x 12
	MPP 2: 2 x 12
	MPP 3: 2 x 12
	MPP 4: 2 x 12

AC Mains

AC Mains

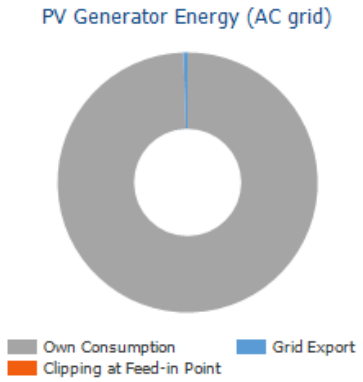
Number of Phases	3
Mains voltage between phase and neutral	400 V
Displacement Power Factor (cos phi)	+/- 1

Simulation Results

Results Total System

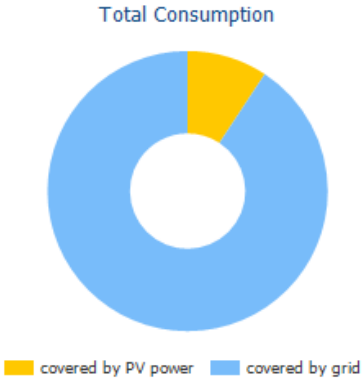
PV System

PV Generator Output	294.84	kWp
Spec. Annual Yield	896.35	kWh/kWp
Performance Ratio (PR)	92.81	%
Yield Reduction due to Shading	2.9	%
PV Generator Energy (AC grid)	264,308	kWh/Year
Own Consumption	262,921	kWh/Year
Clipping at Feed-in Point	0	kWh/Year
Grid Export	1,387	kWh/Year
Own Power Consumption	99.5	%
CO_2 Emissions avoided	59,463	kg / year



Appliances

Appliances	2,835,216	kWh/Year
Standby Consumption (Inverter)	29	kWh/Year
Total Consumption	2,835,245	kWh/Year
covered by PV power	262,921	kWh/Year
covered by grid	2,572,324	kWh/Year
Solar Fraction	9.3	%



Level of Self-sufficiency

Total Consumption	2,835,245	kWh/Year
covered by grid	2,572,324	kWh/Year
Level of Self-sufficiency	9.3	%

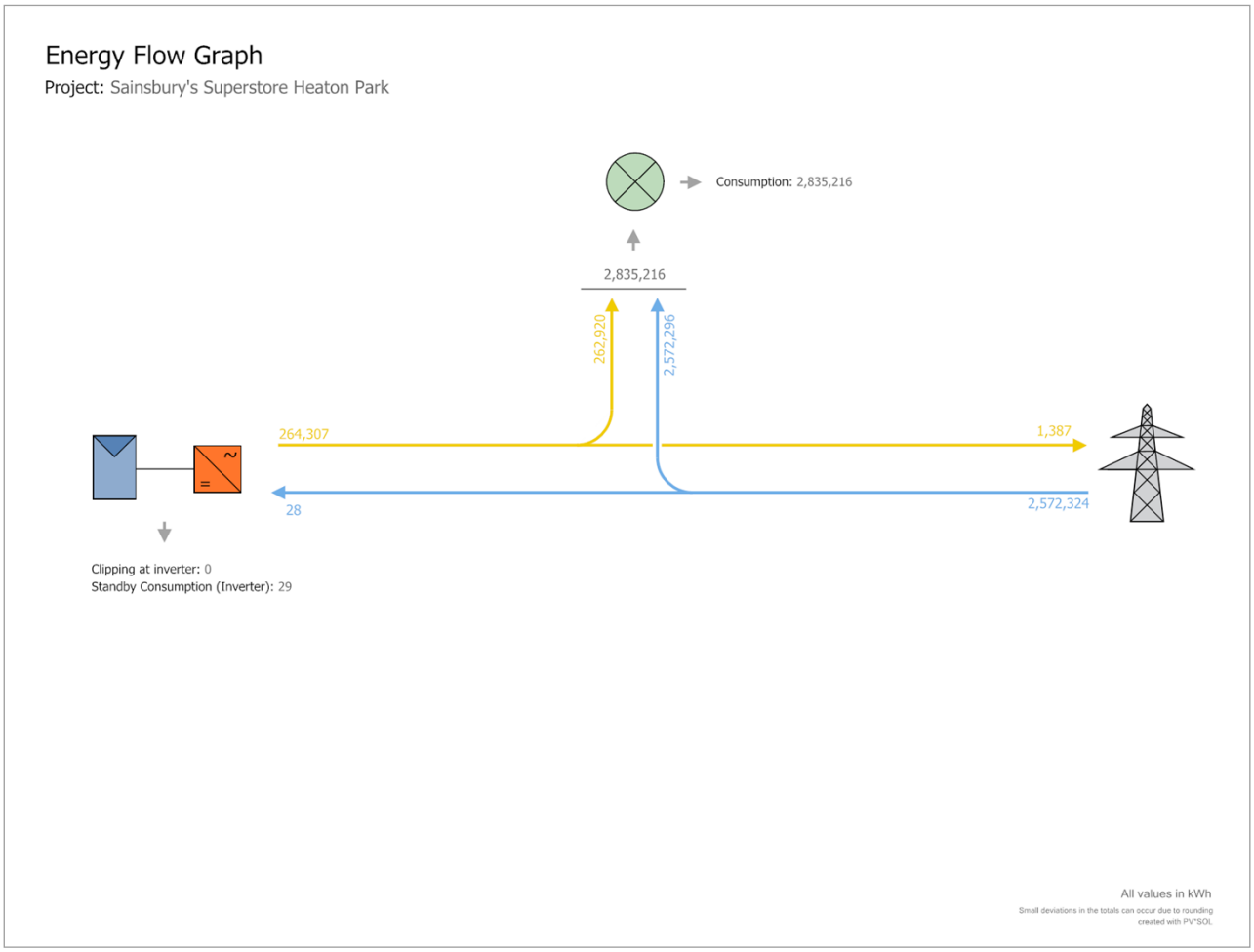


Figure: Energy flow

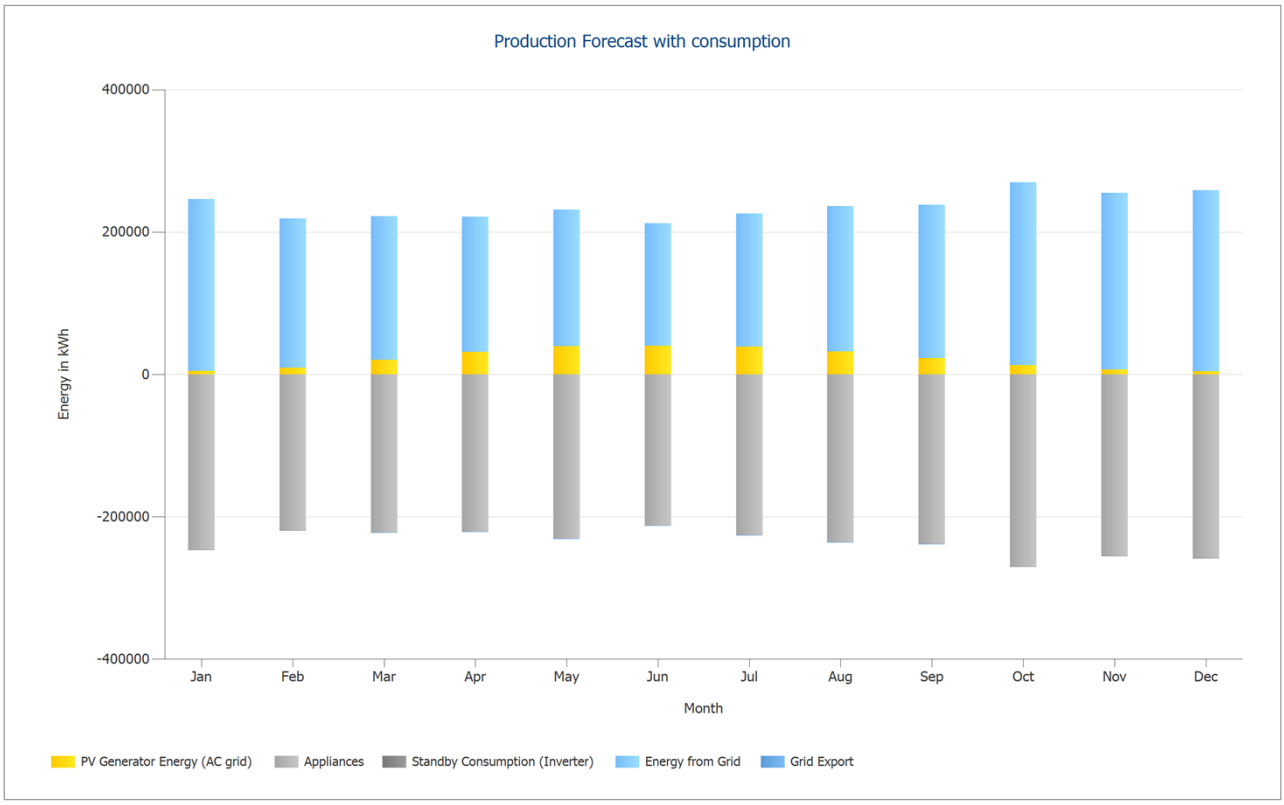


Figure: Production Forecast with consumption

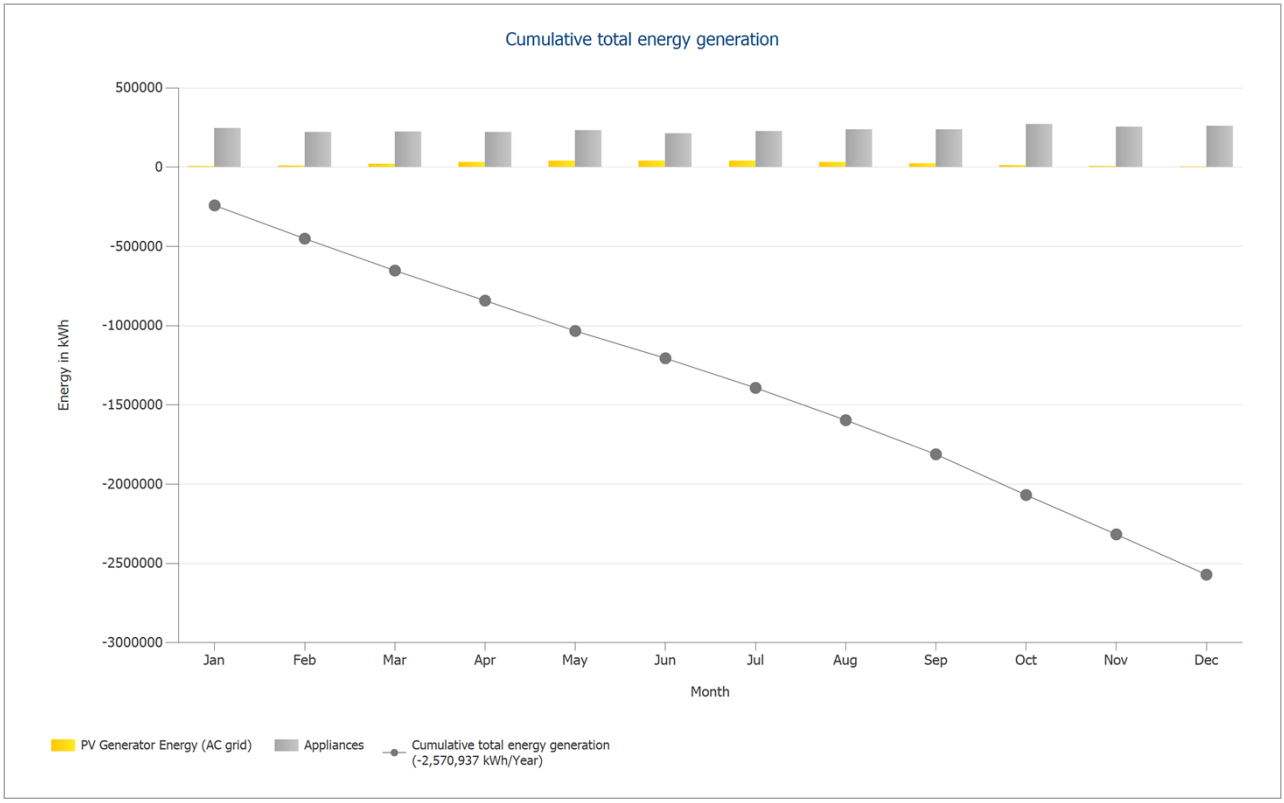


Figure: Cumulative total energy generation

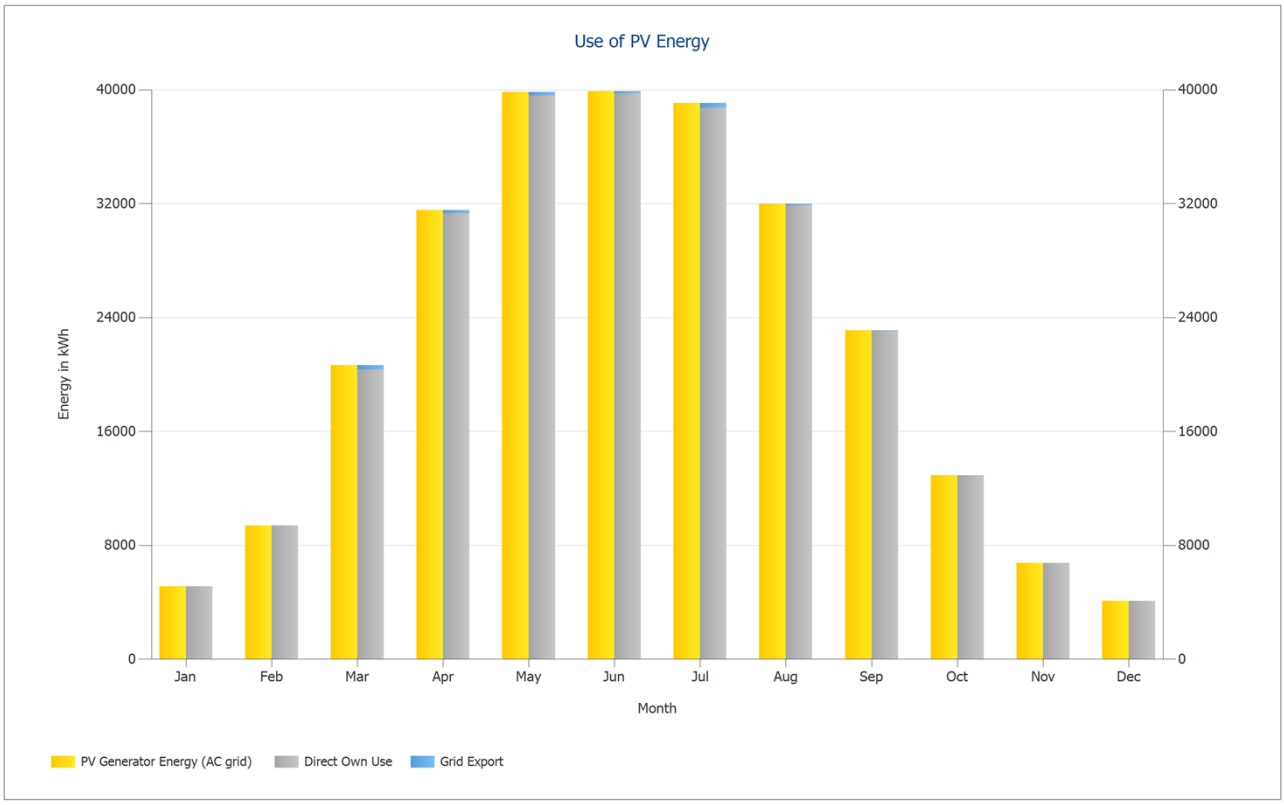


Figure: Use of PV Energy

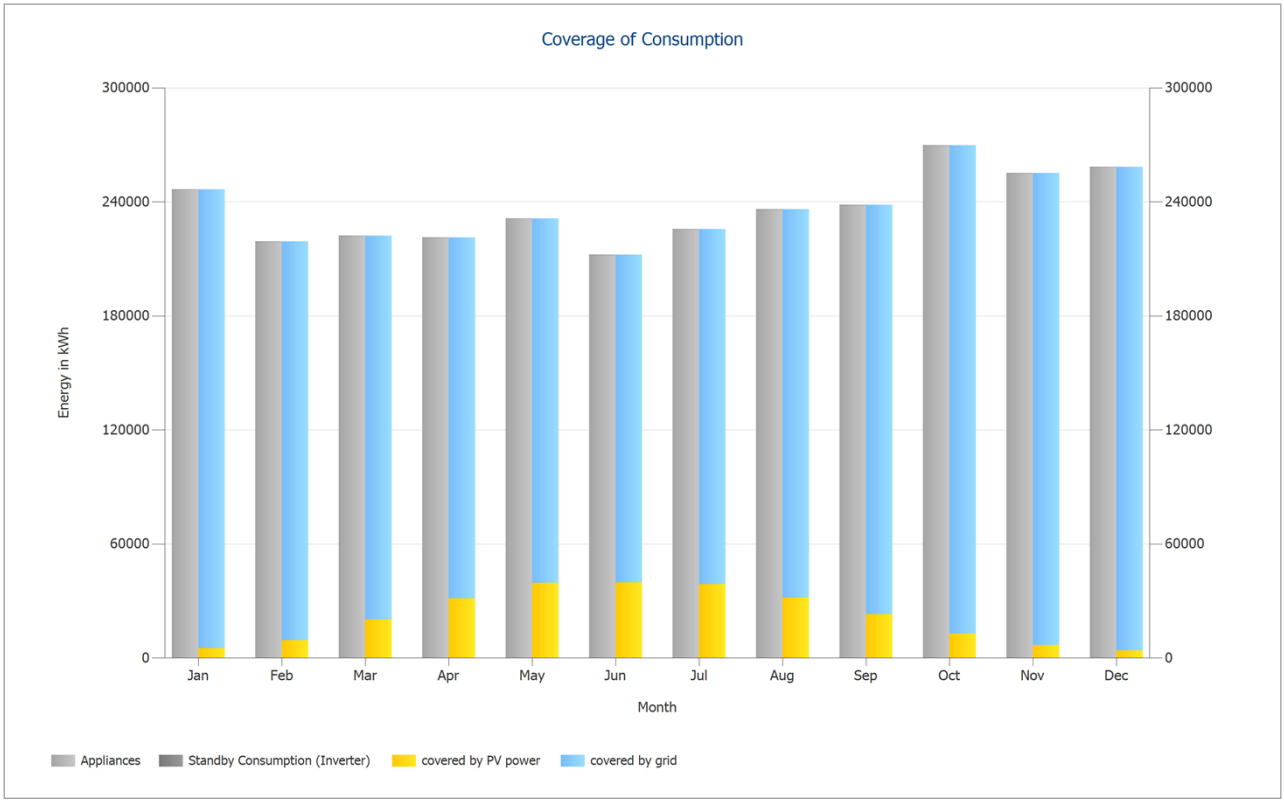


Figure: Coverage of Consumption

Results per Module Area

Building 01-Module Area Southeast

PV Generator Output	147.42	kWp
PV Generator Surface	647.39	m²
Global Radiation at the Module	1025.68	kWh/m²
Global Radiation on Module without reflection	1025.68	kWh/m²
Performance Ratio (PR)	93.44	%
PV Generator Energy (AC grid)	141270.97	kWh/Year
Spec. Annual Yield	958.29	kWh/kWp

Building 01-Module Area Northwest

PV Generator Output	147.42	kWp
PV Generator Surface	647.39	m²
Global Radiation at the Module	906.13	kWh/m²
Global Radiation on Module without reflection	906.13	kWh/m²
Performance Ratio (PR)	92.12	%
PV Generator Energy (AC grid)	123036.54	kWh/Year
Spec. Annual Yield	834.60	kWh/kWp

Energy balance Sankey-Diagram

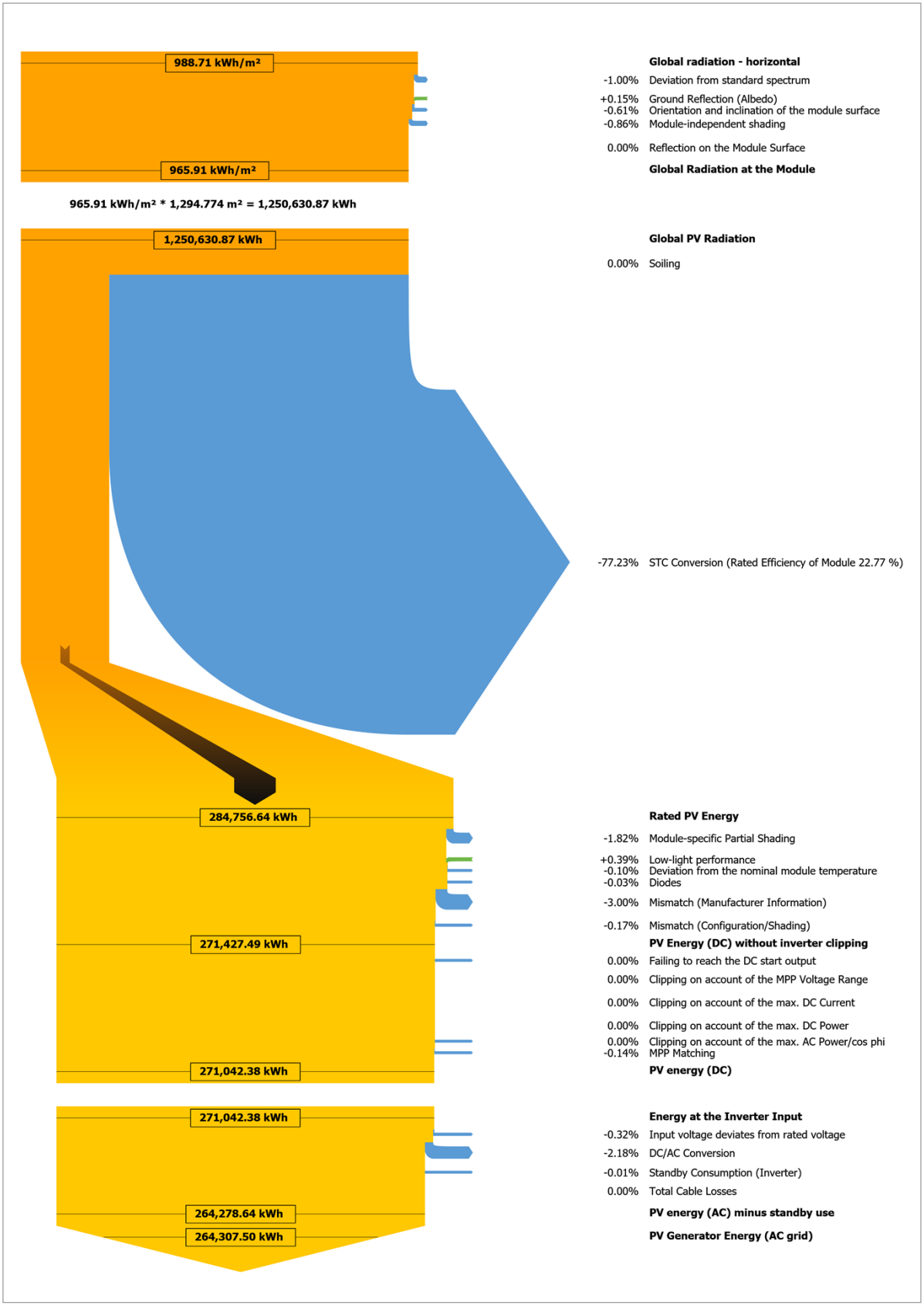


Figure: Energy balance Sankey-Diagram

Financial Analysis

Overview

System Data

Grid Export in the first year (incl. module degradation)	1,380	kWh/Year
PV Generator Output	294.8	kWp
Assessment Period (Input)	25 Years	
Interest on Capital	0	%

Start, duration and end of remuneration

Start of Operation of the System	01/01/2026
Remuneration period	25 Years
End of remuneration	31/12/2050

Economic Parameters

Internal Rate of Return (IRR)	25.16	%
Accrued Cash Flow (Cash Balance)	1,942,557.72	£
Amortization Period	4 Years, 3 months	
Electricity Production Costs	0.0392	£/kWh

Payment Overview

Specific Investment Costs	878.20	£/kWp
Investment Costs	258,928.22	£
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	166.80	£/Year
First year savings	57,505.20	£/Year

Standard Scottish Power export rate - Building System	
Validity	09/05/2024 - 08/05/2049
Specific feed-in / export Remuneration	0.12 £/kWh
Feed-in / Export Tariff	166.7953 £/Year
Inflation Rate for Feed-in / Export Tariff	2.00 %/Year

Sainsbury's 2025 (Example)	
Energy Price	0.22 £/kWh
Inflation Rate for Energy Price	4 %/Year

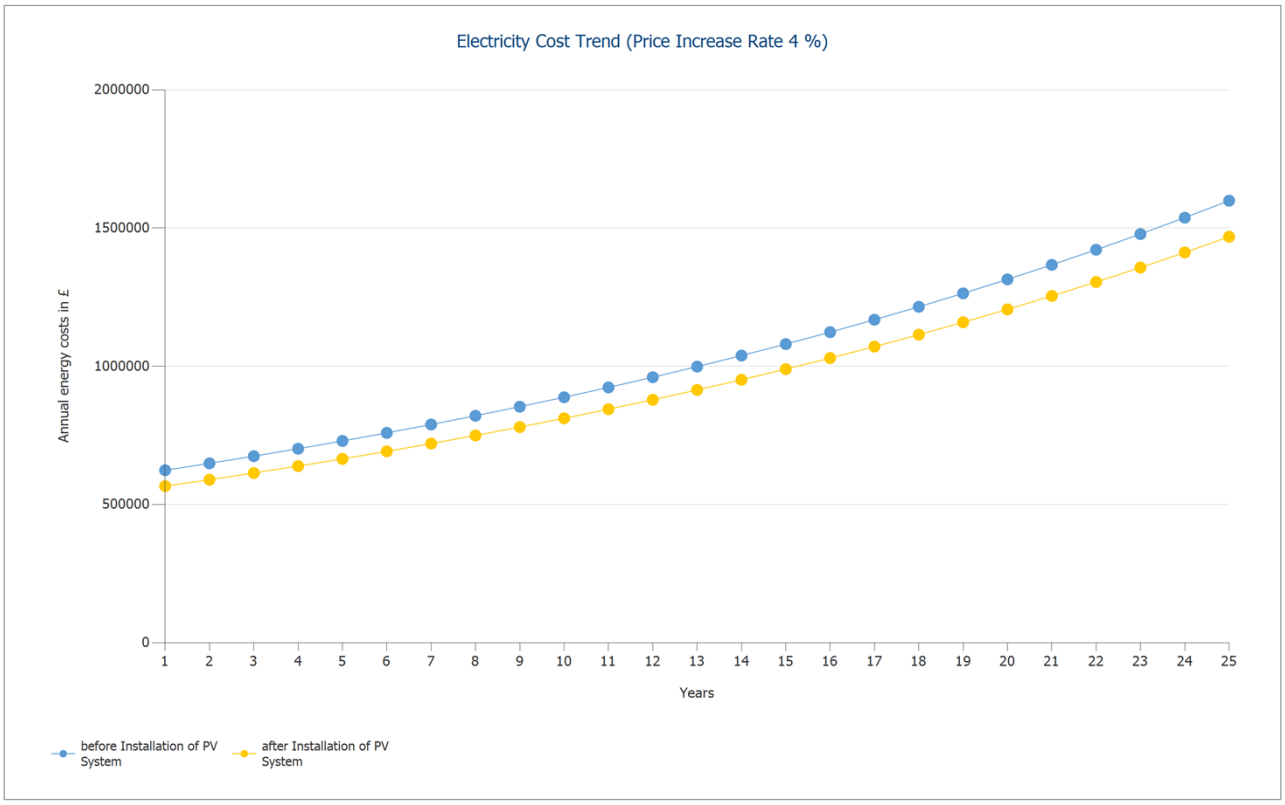


Figure: Electricity Cost Trend (Price Increase Rate 4 %)

Cash flow

Cash flow

	Year 1	Year 2	Year 3	Year 4	Year 5
	01/01/2026 - 31/12/2026	01/01/2027 - 31/12/2027	01/01/2028 - 31/12/2028	01/01/2029 - 31/12/2029	01/01/2030 - 31/12/2030
Investments	-£258,928.22	£0.00	£0.00	£0.00	£0.00
Feed-in / Export Tariff	£166.80	£168.37	£170.08	£171.93	£173.92
Electricity Savings	£57,505.20	£59,178.72	£60,945.84	£62,809.17	£64,771.49
Annual Cash Flow	**-£201,256.22**	**£59,347.09**	**£61,115.92**	**£62,981.10**	**£64,945.41**
Accrued Cash Flow (Cash Balance)	-£201,256.22	-£141,909.13	-£80,793.21	-£17,812.11	£47,133.30

Cash flow

	Year 6	Year 7	Year 8	Year 9	Year 10
	01/01/2031 - 31/12/2031	01/01/2032 - 31/12/2032	01/01/2033 - 31/12/2033	01/01/2034 - 31/12/2034	01/01/2035 - 31/12/2035
Investments	£0.00	£0.00	£0.00	£0.00	£0.00
Feed-in / Export Tariff	£176.03	£178.27	£180.64	£183.13	£185.74
Electricity Savings	£66,835.66	£69,004.82	£71,282.21	£73,671.22	£76,175.47
Annual Cash Flow	**£67,011.69**	**£69,183.09**	**£71,462.85**	**£73,854.35**	**£76,361.21**
Accrued Cash Flow (Cash Balance)	£114,144.99	£183,328.08	£254,790.93	£328,645.28	£405,006.49

Cash flow

	Year 11	Year 12	Year 13	Year 14	Year 15
	01/01/2036 - 31/12/2036	01/01/2037 - 31/12/2037	01/01/2038 - 31/12/2038	01/01/2039 - 31/12/2039	01/01/2040 - 31/12/2040
Investments	£0.00	£0.00	£0.00	£0.00	£0.00
Feed-in / Export Tariff	£188.47	£191.31	£194.27	£197.35	£200.54
Electricity Savings	£78,798.68	£81,544.89	£84,418.19	£87,422.99	£90,563.72
Annual Cash Flow	**£78,987.15**	**£81,736.20**	**£84,612.46**	**£87,620.34**	**£90,764.26**
Accrued Cash Flow (Cash Balance)	£483,993.64	£565,729.84	£650,342.30	£737,962.64	£828,726.90

Cash flow

	Year 16	Year 17	Year 18	Year 19	Year 20
	01/01/2041 - 31/12/2041	01/01/2042 - 31/12/2042	01/01/2043 - 31/12/2043	01/01/2044 - 31/12/2044	01/01/2045 - 31/12/2045
Investments	£0.00	£0.00	£0.00	£0.00	£0.00
Feed-in / Export Tariff	£203.84	£207.26	£210.78	£214.42	£218.17
Electricity Savings	£93,845.32	£97,272.61	£100,850.90	£104,585.69	£108,482.52
Annual Cash Flow	**£94,049.16**	**£97,479.87**	**£101,061.68**	**£104,800.11**	**£108,700.69**
Accrued Cash Flow (Cash Balance)	£922,776.06	£1,020,255.93	£1,121,317.61	£1,226,117.72	£1,334,818.41

Sainsbury's Superstore Heaton Park

Project Designer: JB
Offer Number: PR250227 **Client:** Sainsbury's, Colin Smith

Cash flow

	Year 21	Year 22	Year 23	Year 24	Year 25
	01/01/2046 - 31/12/2046	01/01/2047 - 31/12/2047	01/01/2048 - 31/12/2048	01/01/2049 - 31/12/2049	01/01/2050 - 31/12/2050
Investments	£0.00	£0.00	£0.00	£0.00	£0.00
Feed-in / Export Tariff	£222.02	£225.99	£230.08	£90.53	£0.00
Electricity Savings	£112,547.44	£116,786.64	£121,206.59	£125,814.04	£130,615.98
Annual Cash Flow	**£112,769.46**	**£117,012.63**	**£121,436.67**	**£125,904.57**	**£130,615.98**
Accrued Cash Flow (Cash Balance)	£1,447,587.87	£1,564,600.50	£1,686,037.17	£1,811,941.74	£1,942,557.72

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

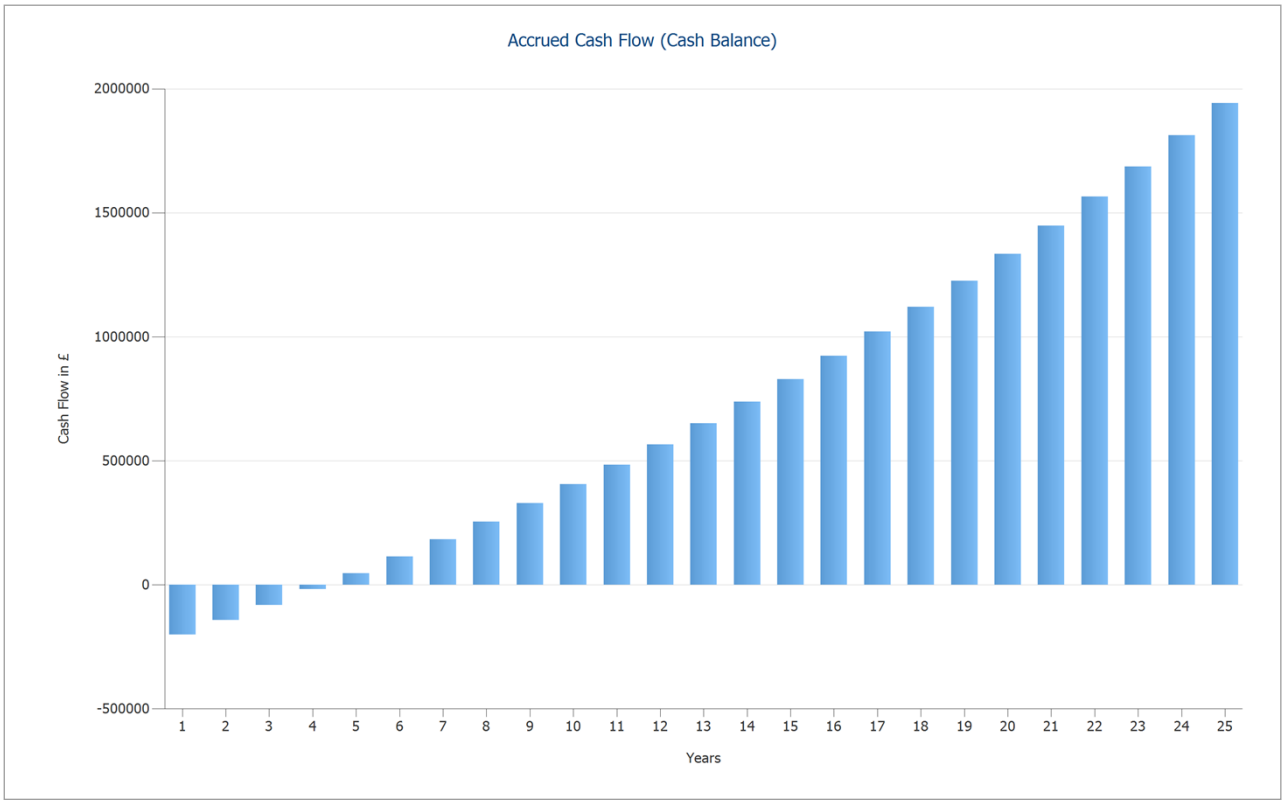


Figure: Accrued Cash Flow (Cash Balance)

Plans and parts list

Circuit Diagram

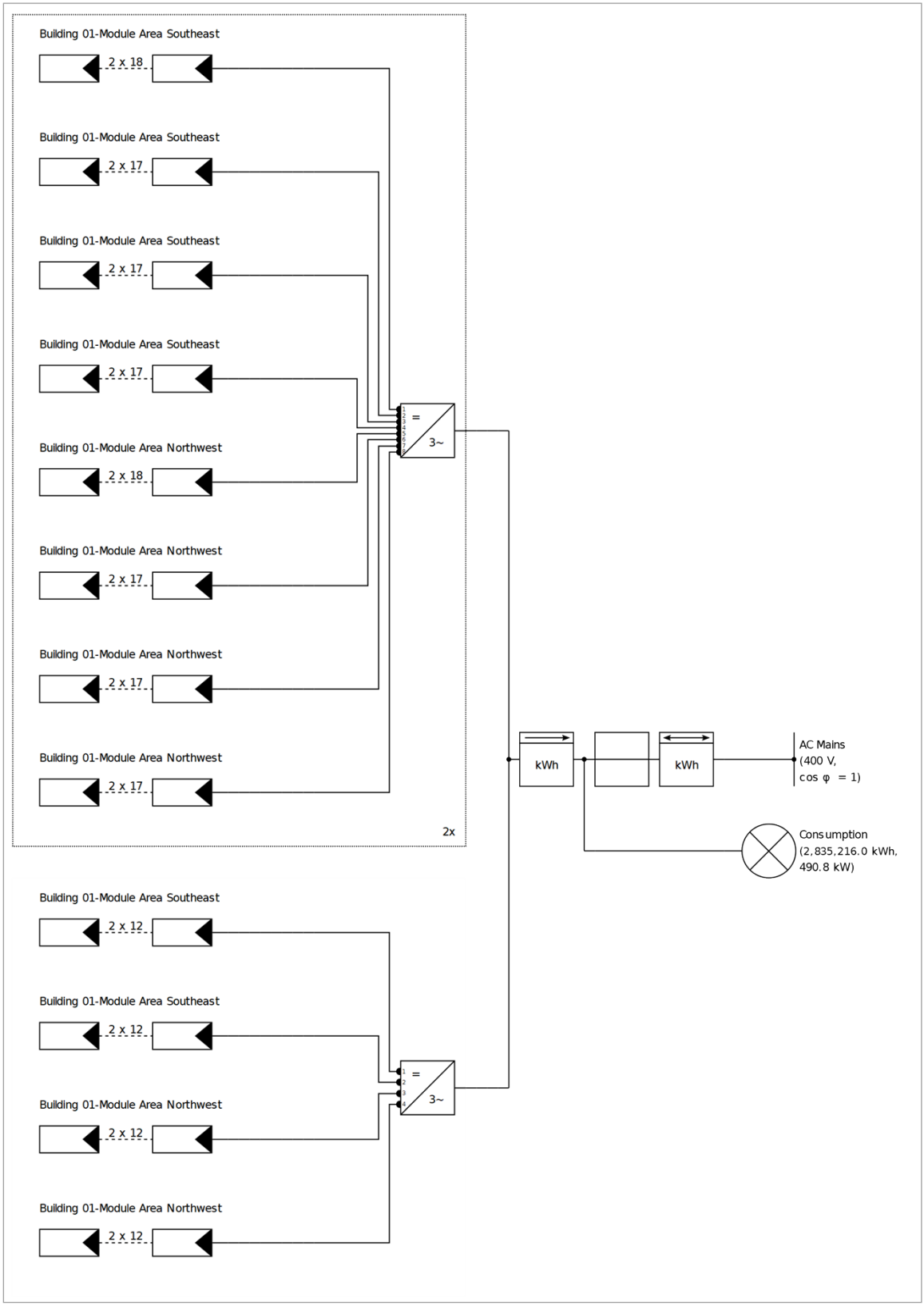


Figure: Circuit Diagram

Overview plan

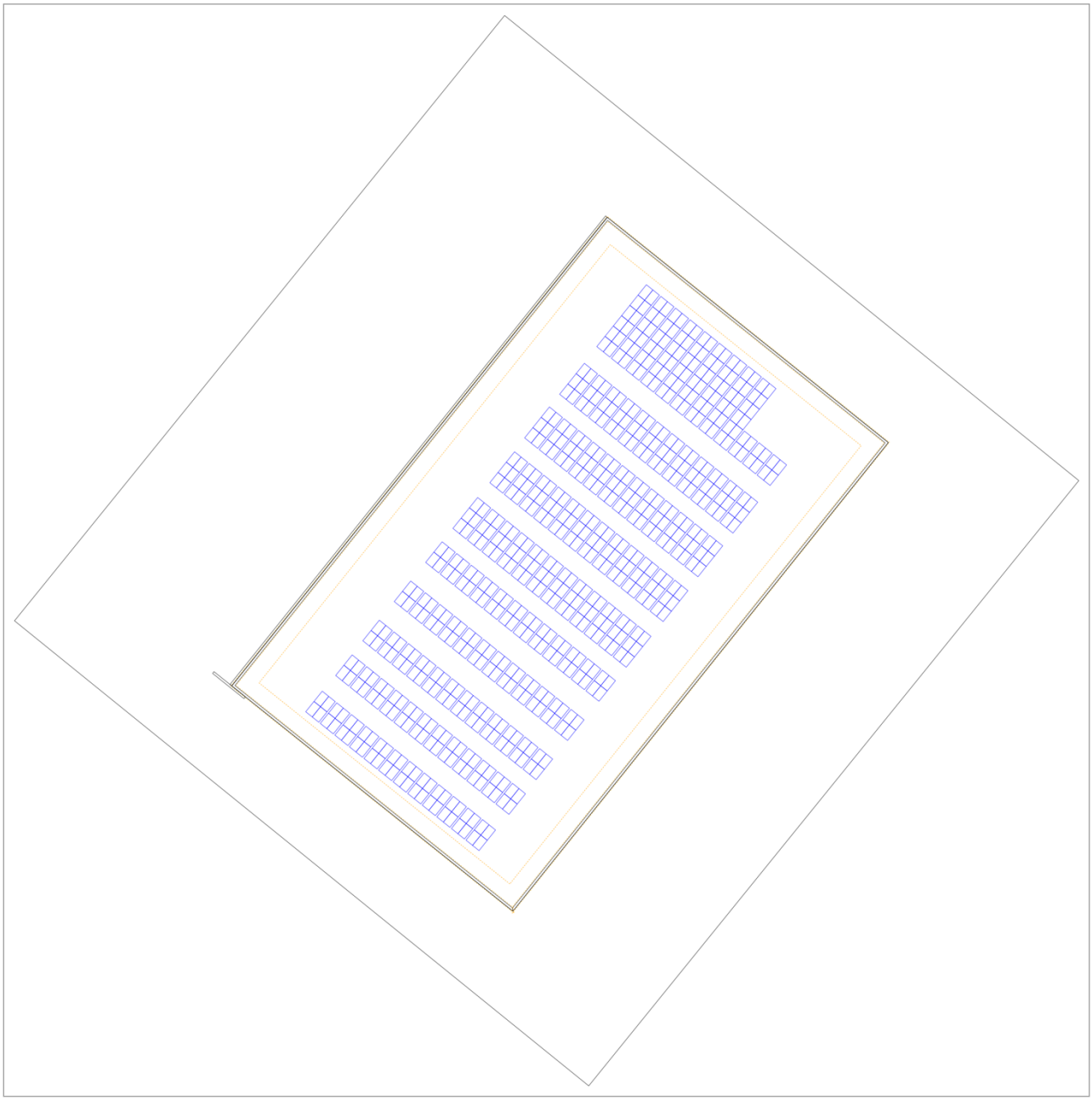


Figure: Overview plan

Dimensioning Plan

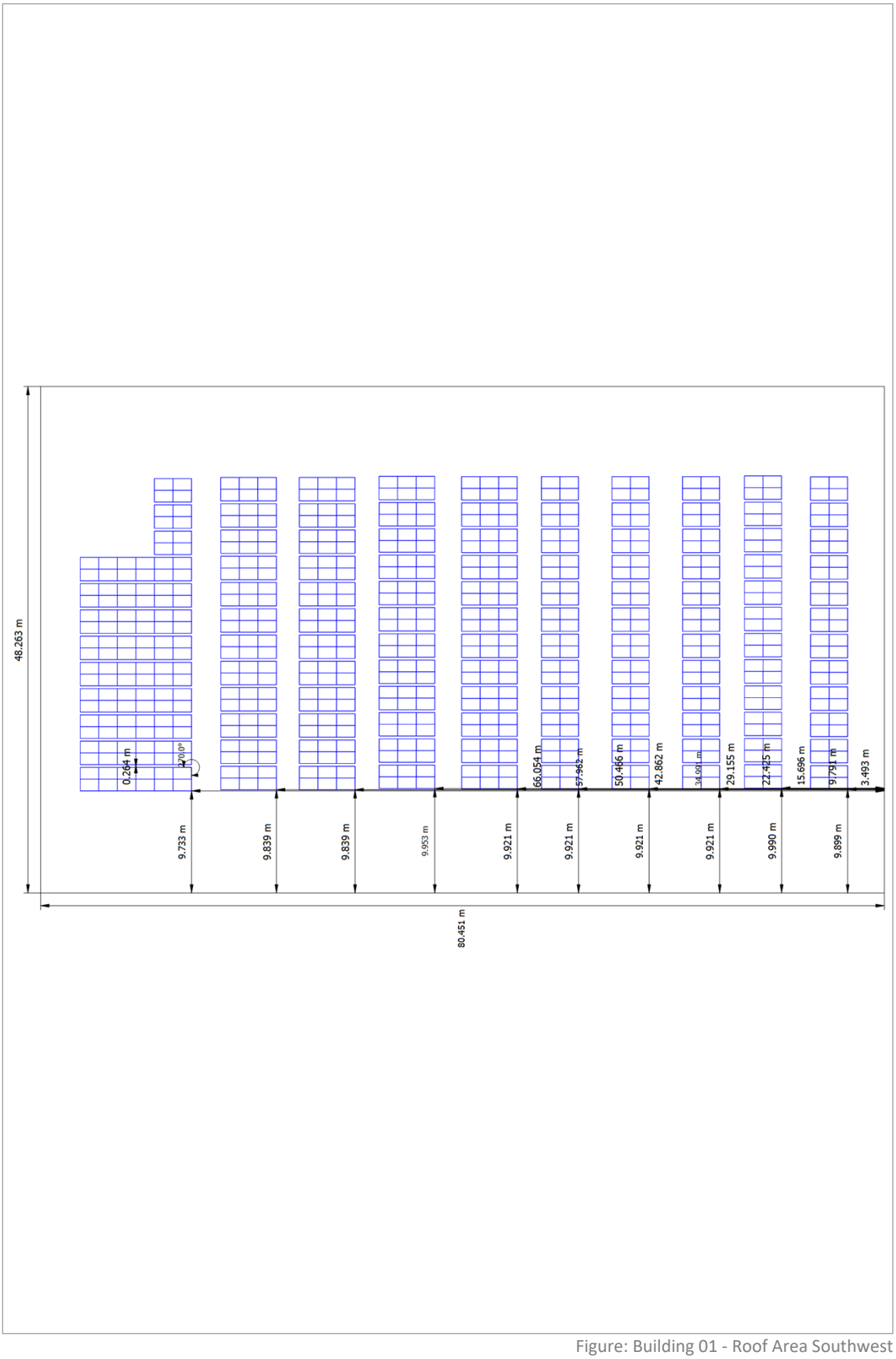


Figure: Building 01 - Roof Area Southwest

Parts list

Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		Trina Solar	TSM-455-NEG9R.28 VERTEX S+ 2024	648	Piece
2	Inverter		Ginlong (Solis)	Solis-110K-5G-PRO	2	Piece
3	Inverter		Ginlong (Solis)	S5-GC40K	1	Piece
4	Components			Feed-in Meter	1	Piece
5	Components			House connection	1	Piece
6	Components			Bidirectional Meter	1	Piece