

Perfect Sense Energy
Oakland House, Wigan, WN7 3ET

United Kingdom

Contact person:

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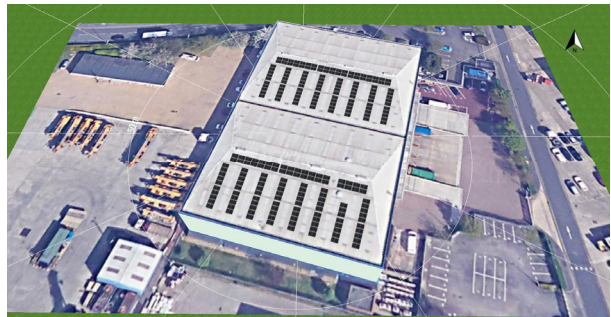
Project Name: Unit 5 Swallowfield Way

26/02/2026

Your PV system from Perfect Sense Energy

Address of Installation

Unit 5 Swallowfield Way, Hayes UB3 1DQ



Project Description:

Height estimated 10m and pitch estimated 10 degrees.

Avoided skylights and roof furniture. 50% roof coverage, prioritising S-facing elevations to maximise yield.

Cut edge corrosion present - this has been avoided for treatment purposes.

Consumption modelled from presumed 280,000kWh/annum figure and 24-hour, 5-days a week operational profile.

Project Overview

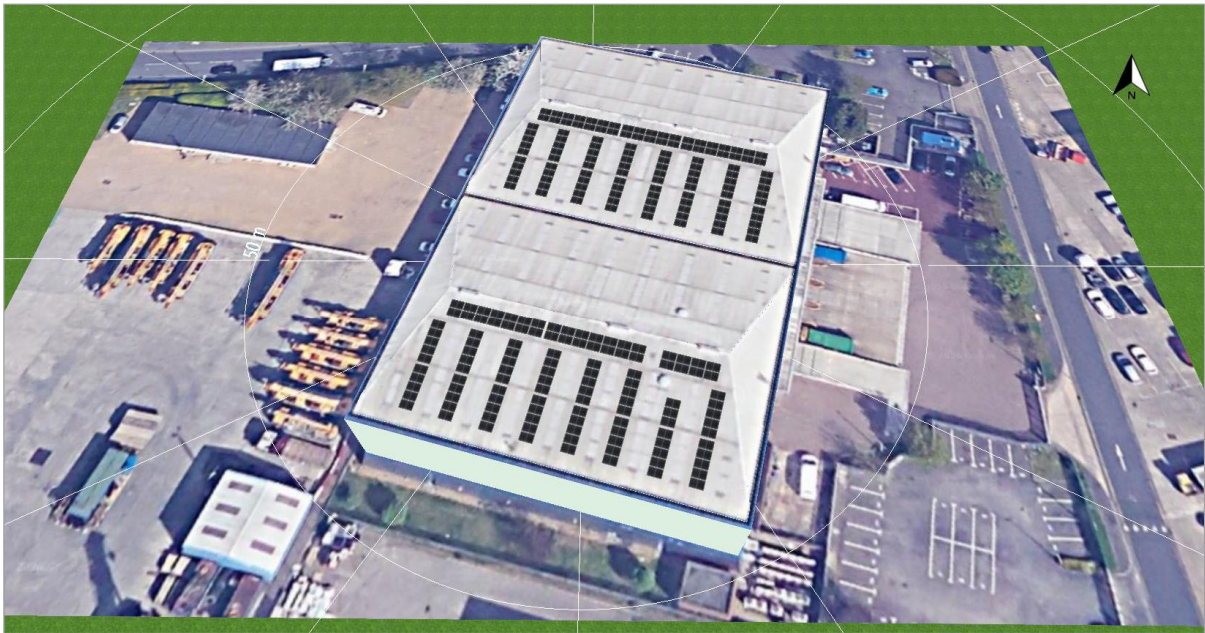


Figure: Overview Image, 3D Design

PV System

3D, Grid-connected PV System with Electrical Appliances

Climate Data	Hayes, GBR (2001 - 2020)
Values source	Meteonorm 9.0 (i)
PV Generator Output	106.72 kWp
PV Generator Surface	463.6 m²
Number of PV Modules	232
Number of Inverters	2

Unit 5 Swallowfield Way

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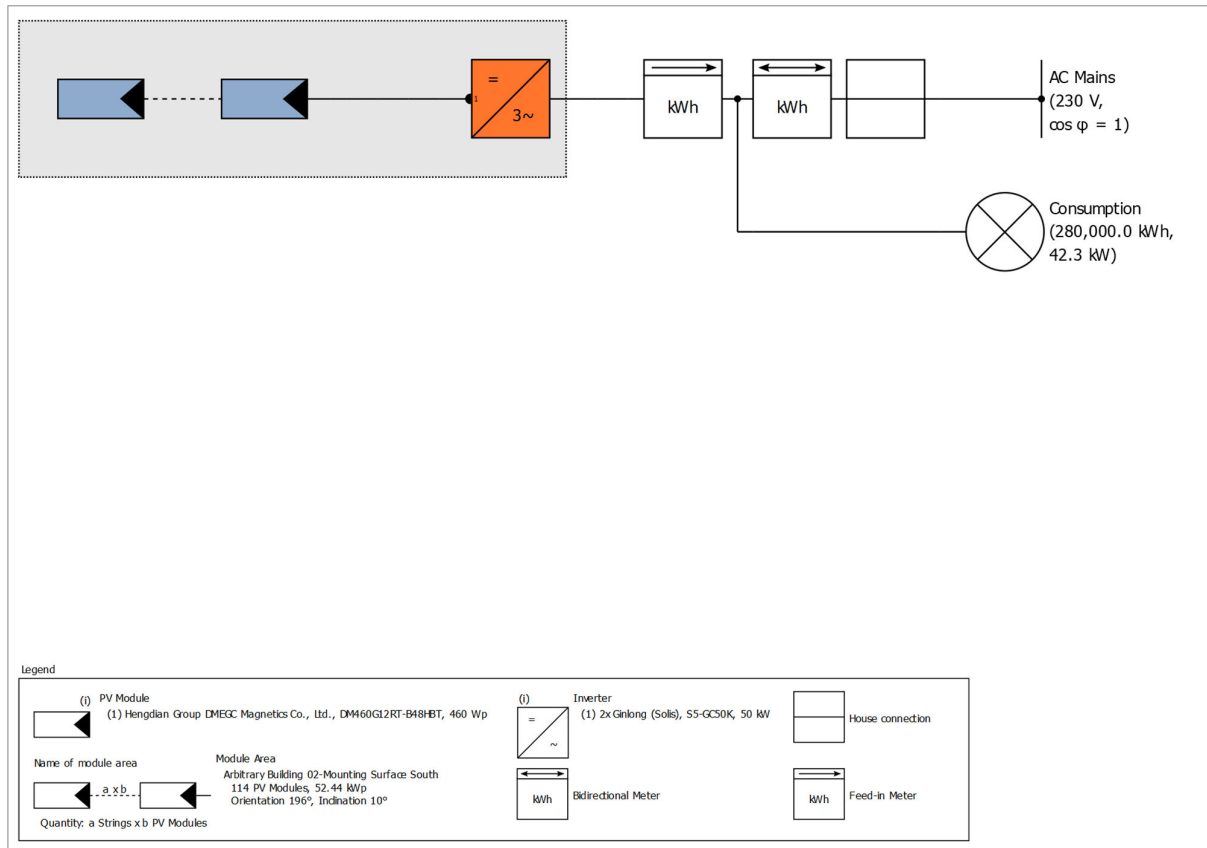


Figure: Schematic diagram

Production Forecast

Production Forecast

PV Generator Output	106.72 kWp
Spec. Annual Yield	964.23 kWh/kWp
Performance Ratio (PR)	88.39 %
Yield Reduction due to Shading	0.6 %
PV Generator Energy (AC grid)	102,925 kWh/Year
Own Consumption	68,479 kWh/Year
Clipping at Feed-in Point	0 kWh/Year
Grid Export	34,446 kWh/Year
Own Power Consumption	66.5 %
CO ₂ Emissions avoided	18,214 kg / year
Level of Self-sufficiency	24.5 %

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
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Climate Data

Location	Hayes, GBR (2001 - 2020)
Values source	Meteonorm 9.0 (i)
Data resolution	1 h
Simulation models used:	
- Diffuse Irradiation onto Horizontal Plane	Hofmann
- Irradiance onto tilted surface	Hay & Davies

Consumption

Total Consumption	280000 kWh
Unit 5 Swallowfield Way Consumption Profile	280000 kWh
Load Peak	42.3 kW

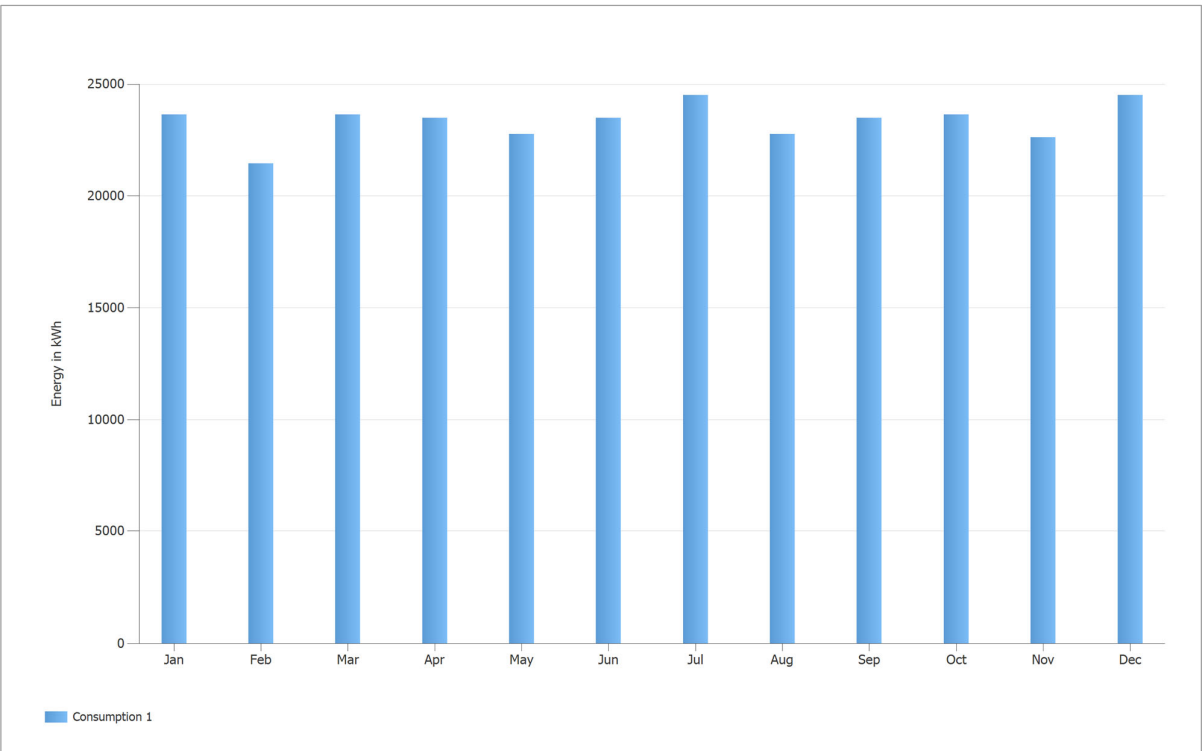


Figure: Consumption

Module Areas

1. Module Area - Arbitrary Building 02-Mounting Surface South

PV Generator, 1. Module Area - Arbitrary Building 02-Mounting Surface South

Name	Arbitrary Building 02-Mounting Surface South
PV Modules	114 x DM460G12RT-B48HBT (v1)
Manufacturer	Hengdian Group DMEGC Magnetics Co., Ltd.
Inclination	10 °
Orientation	South 196 °
Installation Type	Roof parallel
PV Generator Surface	227.8 m²

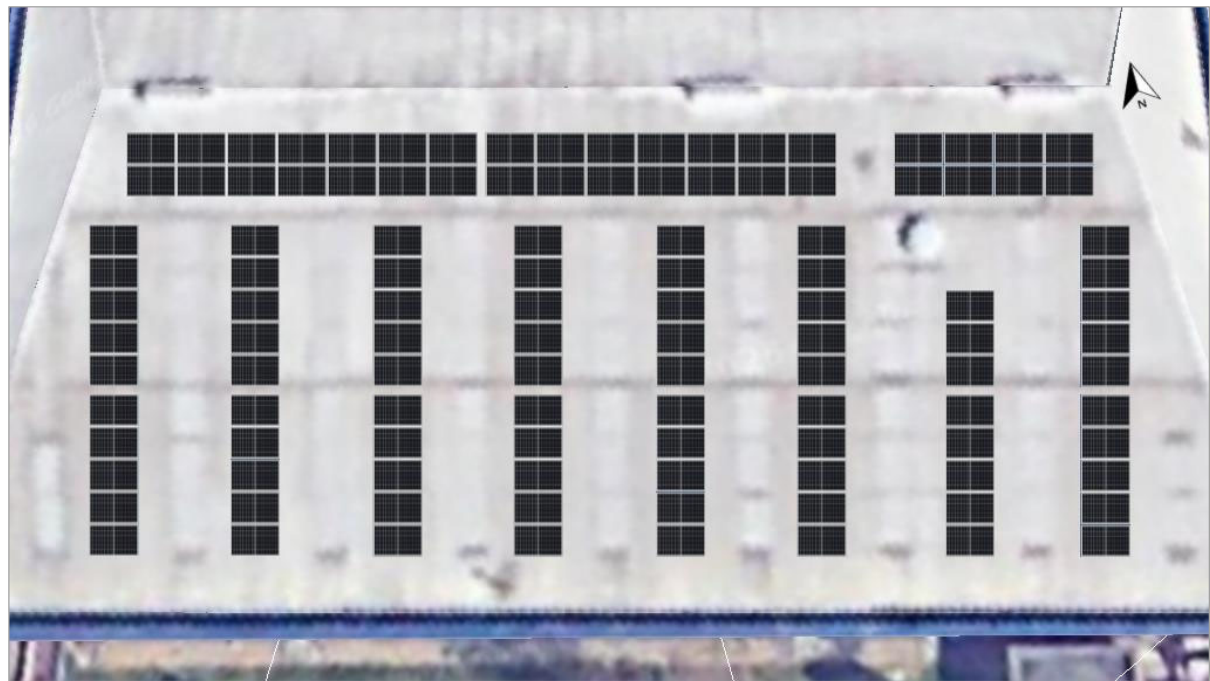


Figure: 1. Module Area - Arbitrary Building 02-Mounting Surface South

2. Module Area - Arbitrary Building 04-Mounting Surface South

PV Generator, 2. Module Area - Arbitrary Building 04-Mounting Surface South

Name	Arbitrary Building 04-Mounting Surface South
PV Modules	118 x DM460G12RT-B48HBT (v1)
Manufacturer	Hengdian Group DMEGC Magnetics Co., Ltd.
Inclination	10 °
Orientation	South 196 °
Installation Type	Roof parallel
PV Generator Surface	235.8 m²

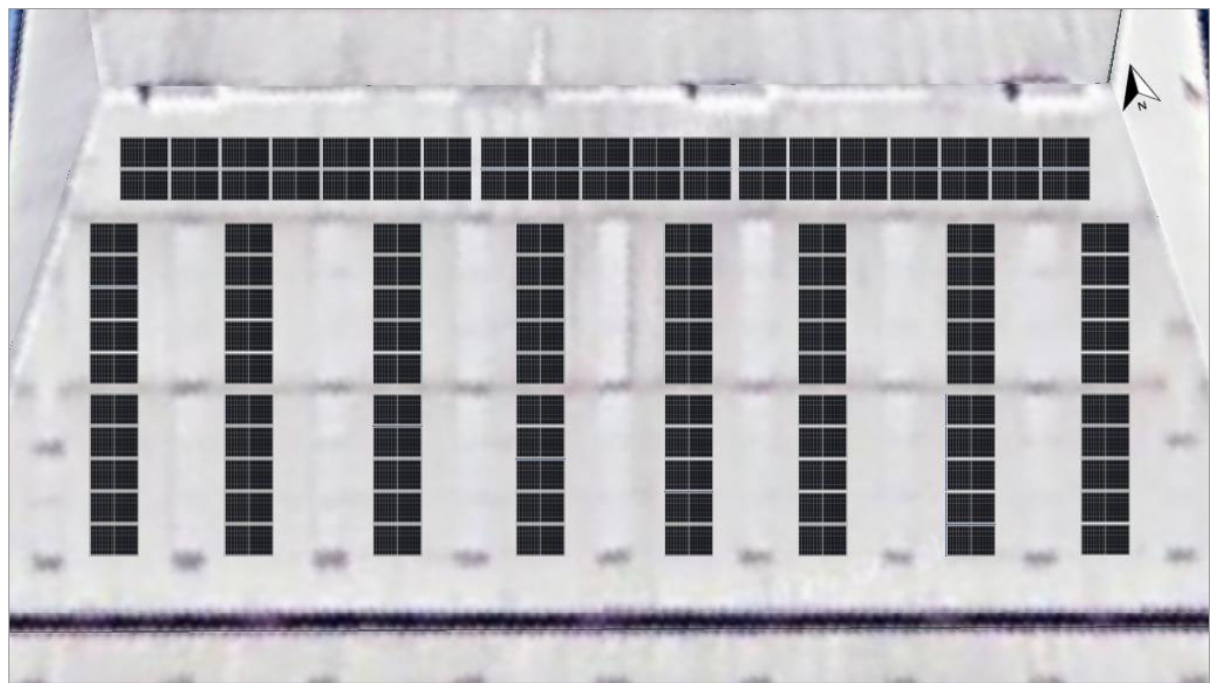


Figure: 2. Module Area - Arbitrary Building 04-Mounting Surface South

Horizon Line, 3D Design

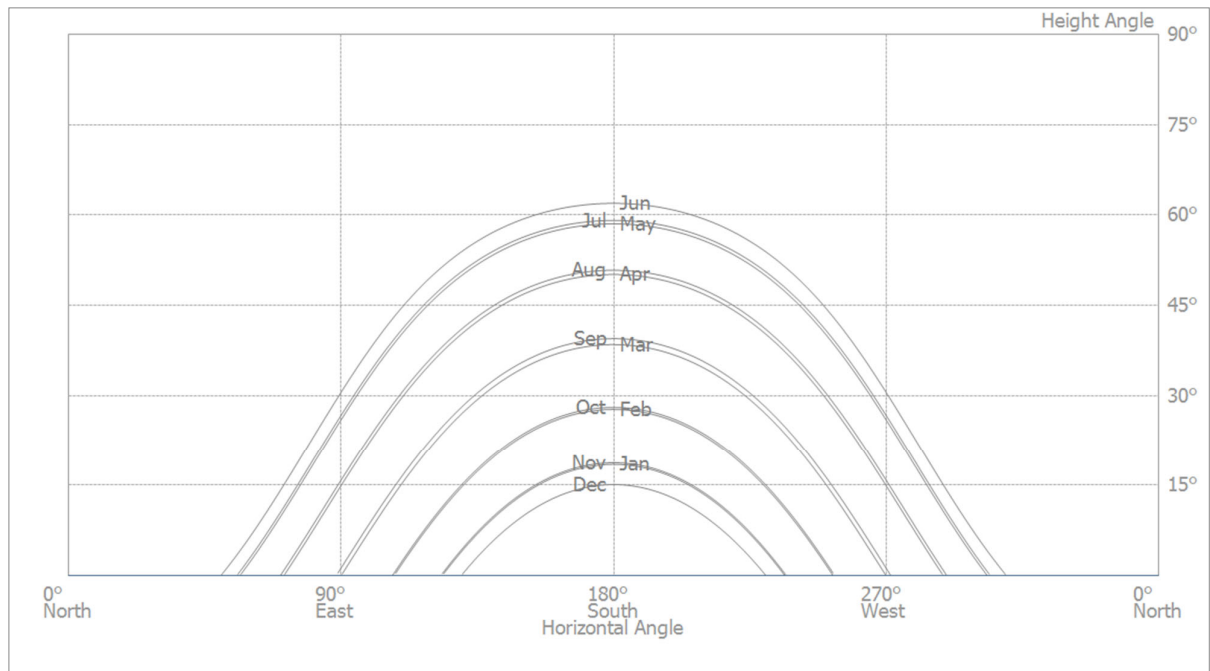


Figure: Horizon (3D Design)

Inverter configuration

Configuration 1	
Module Area	Arbitrary Building 02-Mounting Surface South
Inverter 1	
Model	S5-GC50K (v2)
Manufacturer	Ginlong (Solis)
Quantity	1
Sizing Factor	104.9 %
Configuration	MPP 1: 2 x 14
	MPP 2: 2 x 13
	MPP 3: 2 x 15
	MPP 4: 1 x 15
	MPP 5: 1 x 15
Configuration 2	
Module Area	Arbitrary Building 04-Mounting Surface South
Inverter 1	
Model	S5-GC50K (v2)
Manufacturer	Ginlong (Solis)
Quantity	1
Sizing Factor	108.6 %
Configuration	MPP 1: 1 x 20
	MPP 2: 1 x 18
	MPP 3: 2 x 15
	MPP 4: 2 x 15
	MPP 5: 1 x 20

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AC Mains

AC Mains

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

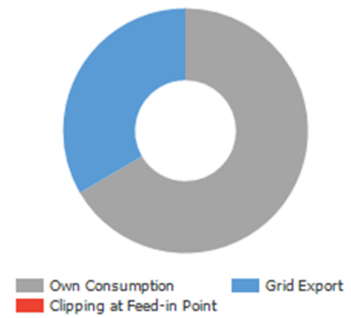
Simulation Results

Results Total System

PV System

PV Generator Output	106.72 kWp
Spec. Annual Yield	964.23 kWh/kWp
Performance Ratio (PR)	88.39 %
Yield Reduction due to Shading	0.6 %
PV Generator Energy (AC grid)	102,925 kWh/Year
Own Consumption	68,479 kWh/Year
Clipping at Feed-in Point	0 kWh/Year
Grid Export	34,446 kWh/Year
Own Power Consumption	66.5 %
CO ₂ Emissions avoided	18,214 kg / year

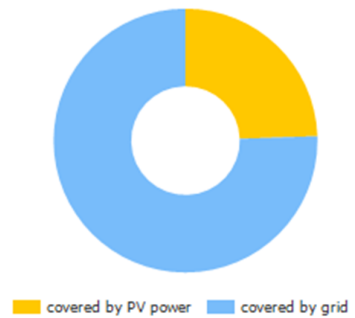
PV Generator Energy (AC grid)



Appliances

Appliances	280,000 kWh/Year
Standby Consumption (Inverter)	23 kWh/Year
Total Consumption	280,023 kWh/Year
covered by PV power	68,479 kWh/Year
covered by grid	211,544 kWh/Year
Solar Fraction	24.5 %

Total Consumption



Level of Self-sufficiency

Total Consumption	280,023 kWh/Year
covered by grid	211,544 kWh/Year
Level of Self-sufficiency	24.5 %

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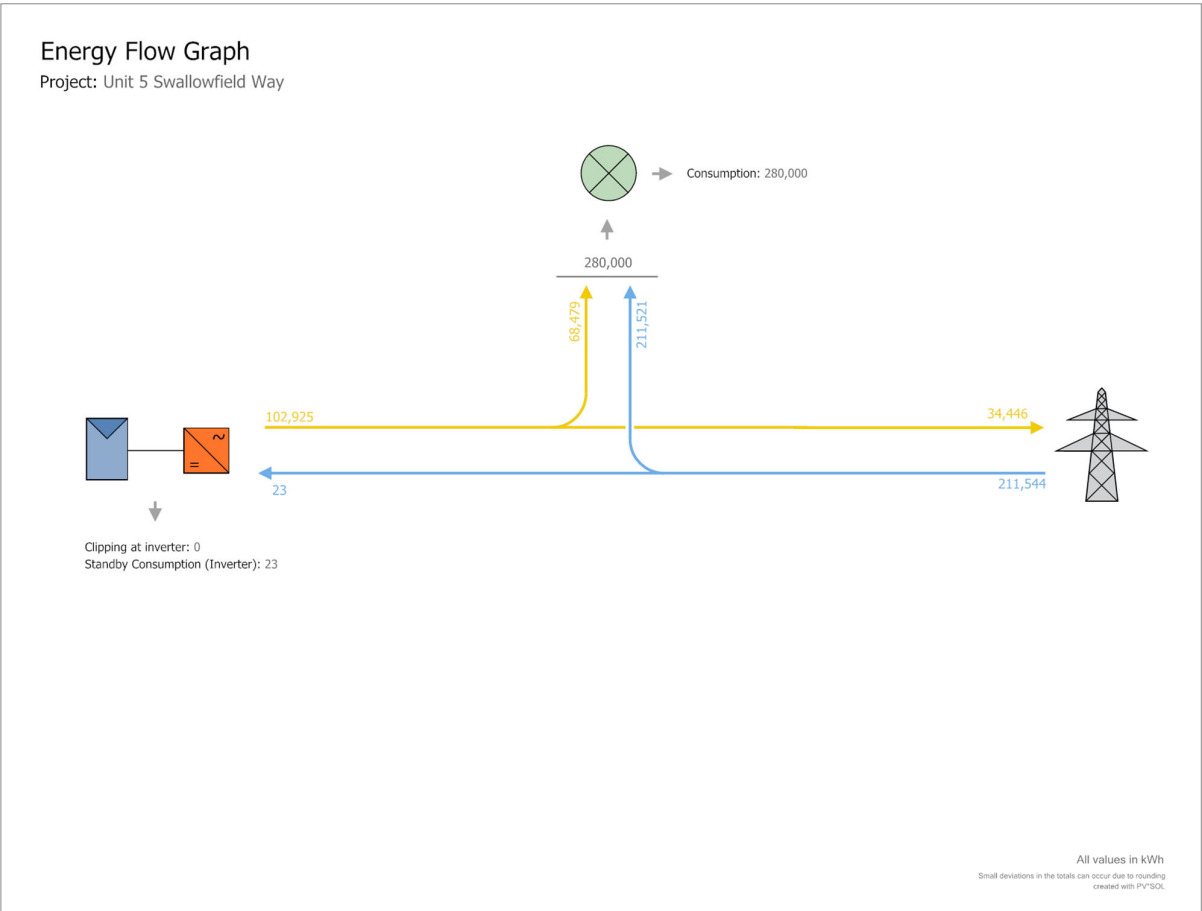


Figure: Energy flow

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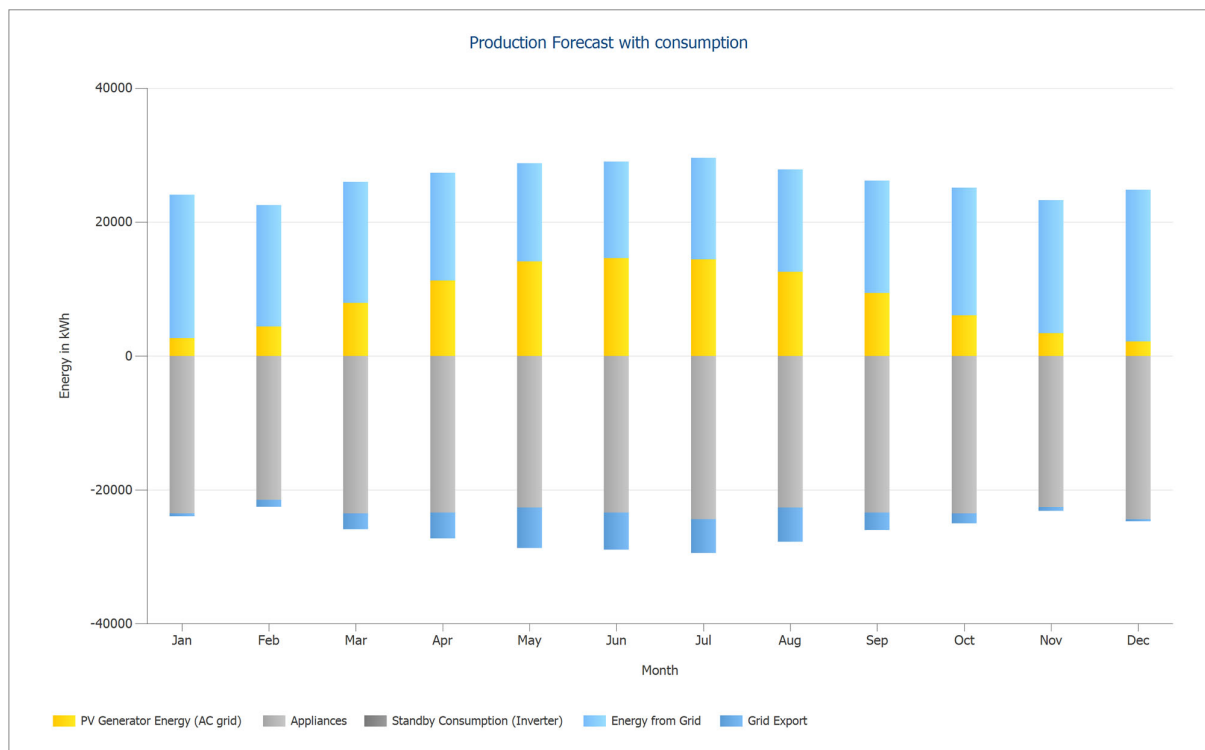


Figure: Production Forecast with consumption

Table: Production Forecast

	Jan	Feb	Mar	Apr	May	Jun
	kWh	kWh	kWh	kWh	kWh	kWh
PV Generator Energy (AC grid)	2641	4385.1	7887.1	11280.5	14108.3	14600.7
Appliances	-23635.4	-21460.4	-23635.4	-23490.4	-22765.4	-23490.4
Standby Consumption (Inverter)	-2.1	-1.7	-1.7	-1.7	-1.8	-2.5
Energy from Grid	21443.8	18153.6	18086.7	16072.5	14644.8	14423.4
Grid Export	-447.2	-1076.7	-2336.7	-3860.9	-5985.9	-5531.2

	Jul	Aug	Sep	Oct	Nov	Dec
	kWh	kWh	kWh	kWh	kWh	kWh
PV Generator Energy (AC grid)	14440.1	12577	9409.9	6051.7	3412.1	2131.6
Appliances	-24505.4	-22765.4	-23490.4	-23635.4	-22620.4	-24505.4
Standby Consumption (Inverter)	-2.1	-1.7	-1.6	-1.7	-1.9	-2.2
Energy from Grid	15109.2	15259.7	16736.8	19061.2	19858.8	22693.2
Grid Export	-5041.7	-5069.6	-2654.7	-1475.8	-648.6	-317.1

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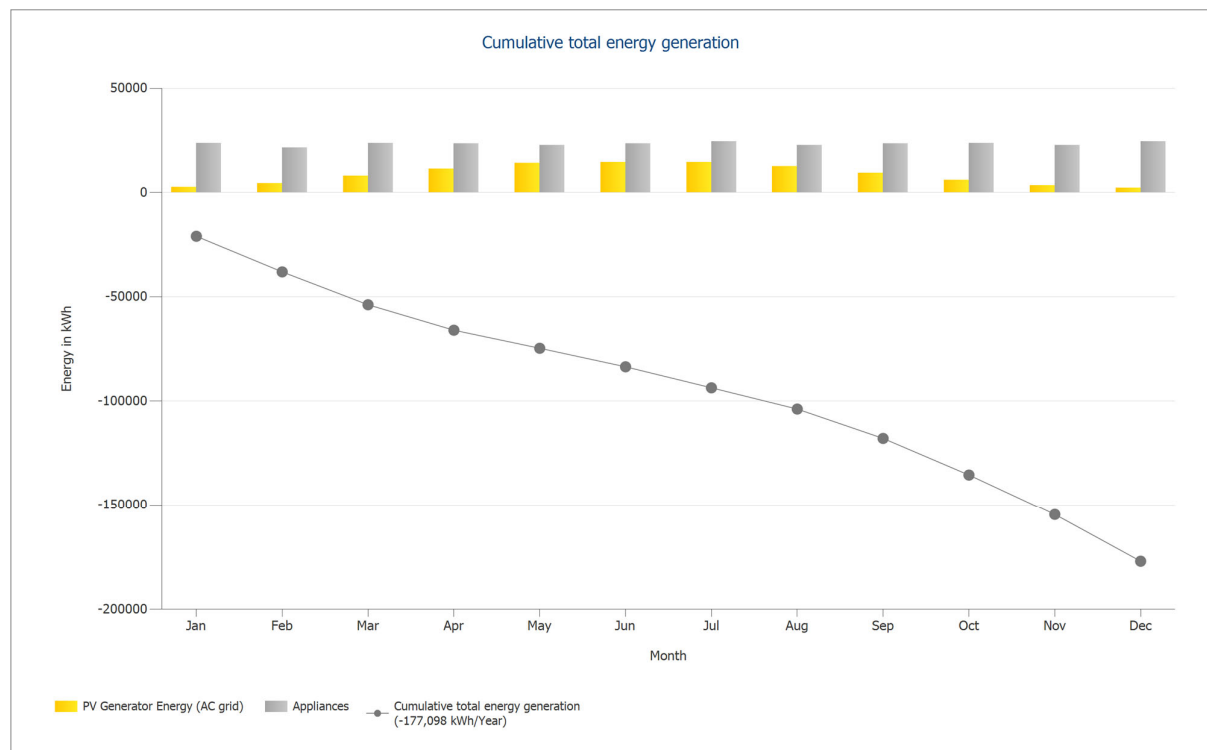


Figure: Cumulative total energy generation

Table: Cumulative total energy generation

	Jan	Feb	Mar	Apr	May	Jun
	kWh	kWh	kWh	kWh	kWh	kWh
PV Generator Energy (AC grid)	2641	4385.1	7887.1	11280.5	14108.3	14600.7
Appliances	23635.4	21460.4	23635.4	23490.4	22765.4	23490.4
Cumulative total energy generation (-177,098 kWh/Year)	-20996.5	-38073.5	-53823.5	-66035.1	-74694	-83586.2

	Jul	Aug	Sep	Oct	Nov	Dec
	kWh	kWh	kWh	kWh	kWh	kWh
PV Generator Energy (AC grid)	14440.1	12577	9409.9	6051.7	3412.1	2131.6
Appliances	24505.4	22765.4	23490.4	23635.4	22620.4	24505.4
Cumulative total energy generation (-177,098 kWh/Year)	-93653.7	-103843.8	-117926	-135511.4	-154721.6	-177097.7

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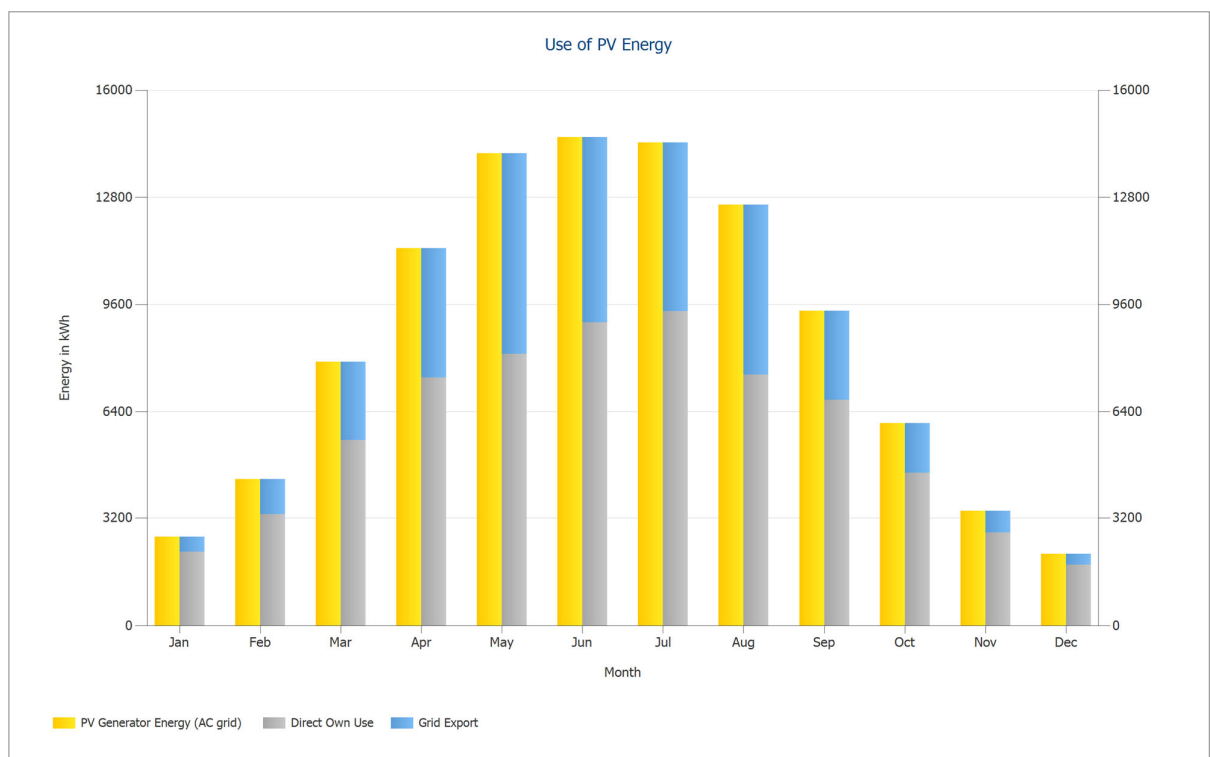


Figure: Use of PV Energy

Table: Use of PV Energy

	Jan	Feb	Mar	Apr	May	Jun
	kWh	kWh	kWh	kWh	kWh	kWh
PV Generator Energy (AC grid)	2641	4385.1	7887.1	11280.5	14108.3	14600.7
Direct Own Use	2193.8	3308.4	5550.4	7419.6	8122.4	9069.5
Grid Export	447.2	1076.7	2336.7	3860.9	5985.9	5531.2

	Jul	Aug	Sep	Oct	Nov	Dec
	kWh	kWh	kWh	kWh	kWh	kWh
PV Generator Energy (AC grid)	14440.1	12577	9409.9	6051.7	3412.1	2131.6
Direct Own Use	9398.4	7507.4	6755.2	4575.9	2763.5	1814.4
Grid Export	5041.7	5069.6	2654.7	1475.8	648.6	317.1

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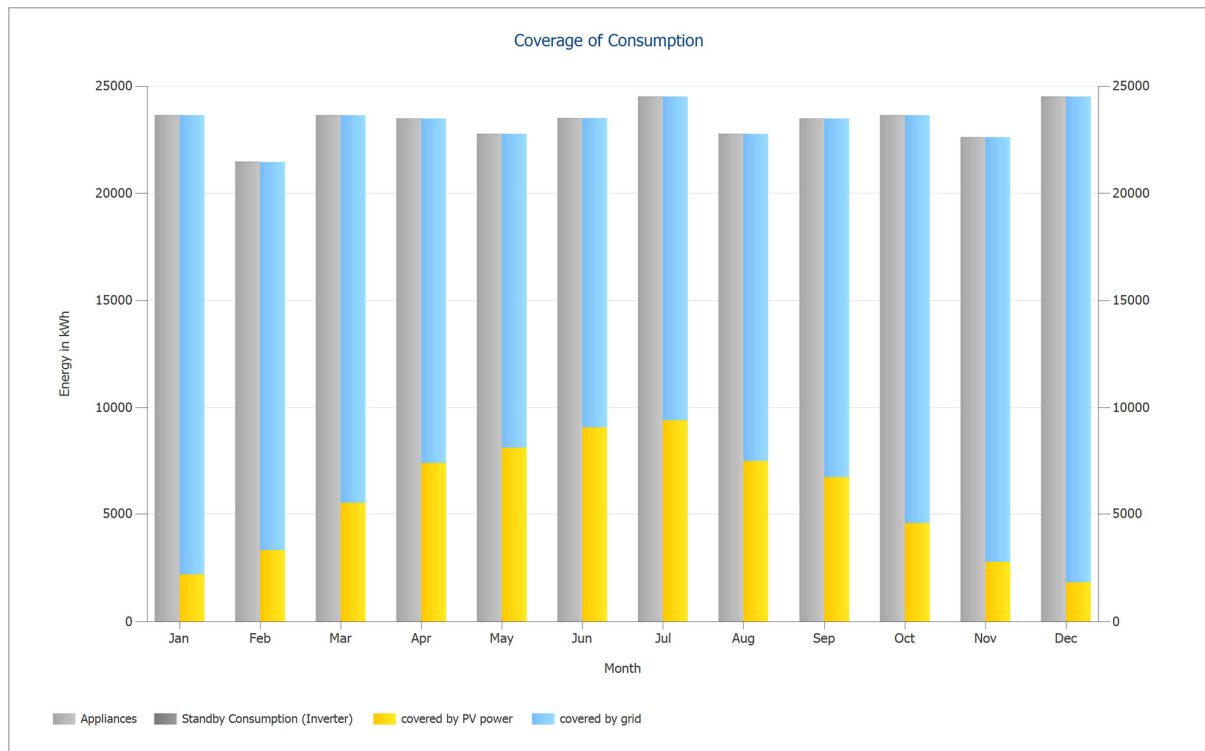


Figure: Coverage of Consumption

Table: Coverage of Consumption

	Jan	Feb	Mar	Apr	May	Jun
	kWh	kWh	kWh	kWh	kWh	kWh
Appliances	23635.4	21460.4	23635.4	23490.4	22765.4	23490.4
Standby Consumption (Inverter)	2.1	1.7	1.7	1.7	1.8	2.5
covered by PV power	2193.8	3308.4	5550.4	7419.6	8122.4	9069.5
covered by grid	21443.8	18153.6	18086.7	16072.5	14644.8	14423.4

	Jul	Aug	Sep	Oct	Nov	Dec
	kWh	kWh	kWh	kWh	kWh	kWh
Appliances	24505.4	22765.4	23490.4	23635.4	22620.4	24505.4
Standby Consumption (Inverter)	2.1	1.7	1.6	1.7	1.9	2.2
covered by PV power	9398.4	7507.4	6755.2	4575.9	2763.5	1814.4
covered by grid	15109.2	15259.7	16736.8	19061.2	19858.8	22693.2

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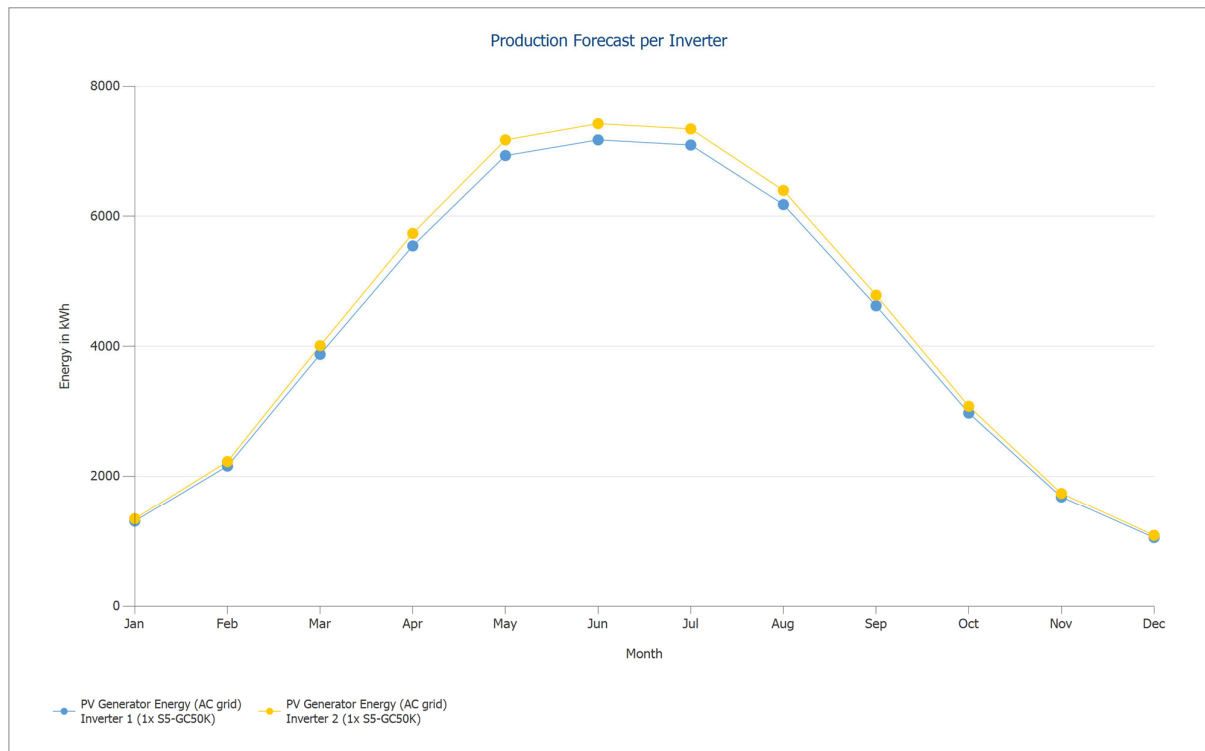


Figure: Production Forecast per Inverter

Table: Production Forecast per Inverter

	Jan	Feb	Mar	Apr	May	Jun
	kWh	kWh	kWh	kWh	kWh	kWh
PV Generator Energy (AC grid) Inverter 1 (1x S5-GC50K)	1302.4	2157.9	3876.4	5544.1	6933.3	7175
PV Generator Energy (AC grid) Inverter 2 (1x S5-GC50K)	1338.6	2227.2	4010.6	5736.4	7175	7425.8

	Jul	Aug	Sep	Oct	Nov	Dec
	kWh	kWh	kWh	kWh	kWh	kWh
PV Generator Energy (AC grid) Inverter 1 (1x S5-GC50K)	7095.7	6180	4623.2	2973.9	1678.8	1048.9
PV Generator Energy (AC grid) Inverter 2 (1x S5-GC50K)	7344.3	6397	4786.7	3077.8	1733.4	1082.6

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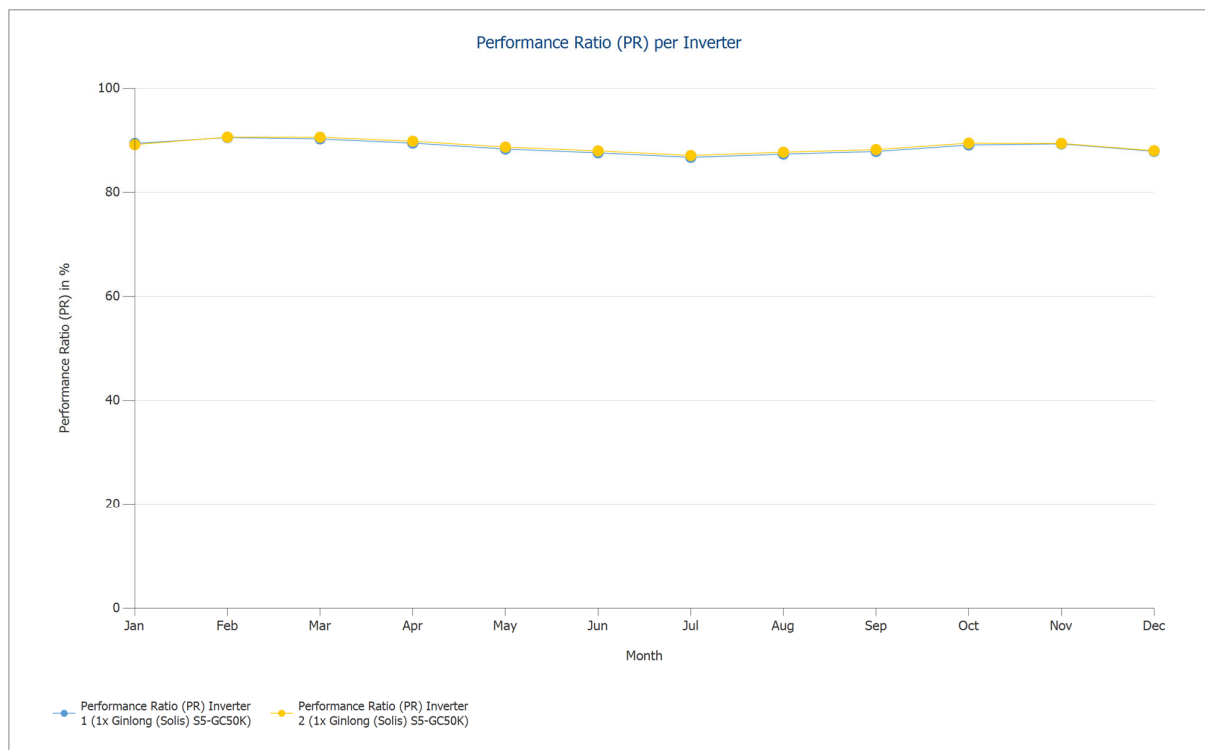


Figure: Performance Ratio (PR) per Inverter

Table: Performance Ratio (PR)

	Jan	Feb	Mar	Apr	May	Jun
	%	%	%	%	%	%
Performance Ratio (PR) Inverter 1 (1x Ginlong	89.4	90.5	90.3	89.5	88.3	87.6
Performance Ratio (PR) Inverter 2 (1x Ginlong	89.2	90.6	90.6	89.8	88.7	88
	Jul	Aug	Sep	Oct	Nov	Dec
	%	%	%	%	%	%
Performance Ratio (PR) Inverter 1 (1x Ginlong	86.7	87.3	87.8	89.1	89.3	87.9
Performance Ratio (PR) Inverter 2 (1x Ginlong	87.1	87.7	88.2	89.4	89.4	88

Unit 5 Swallowfield Way

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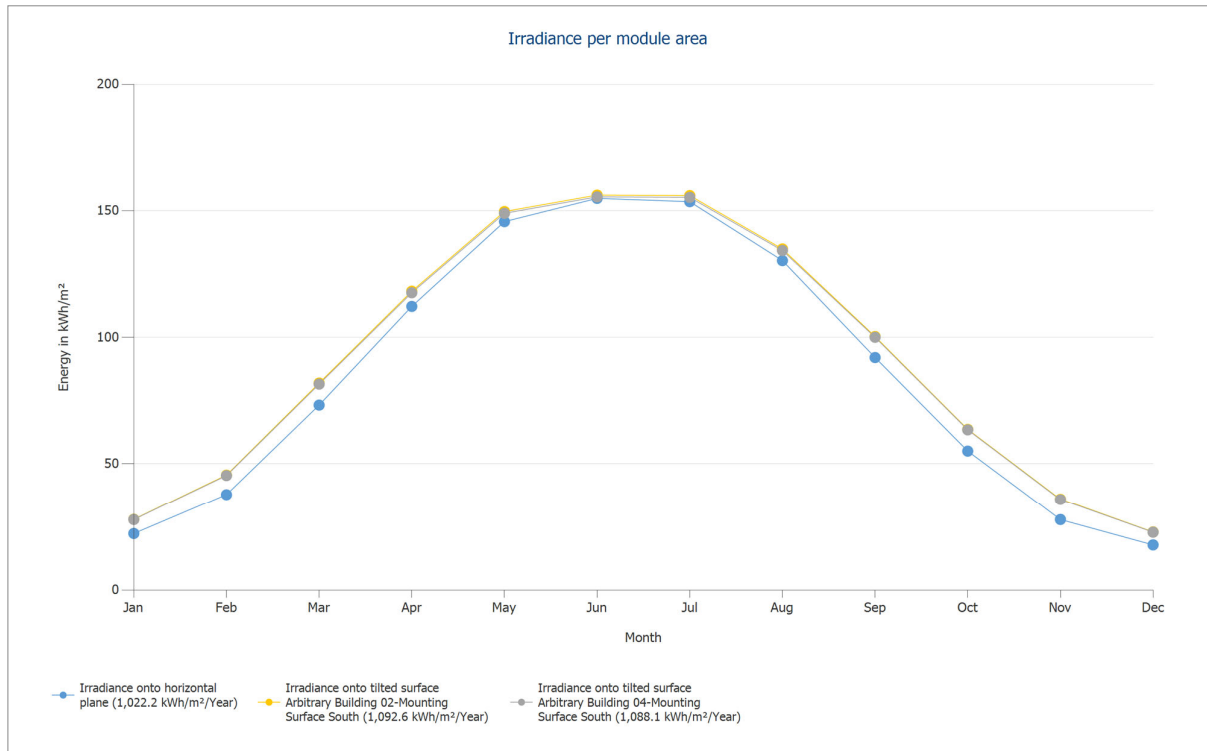


Figure: Irradiance per module area

Table: Irradiance per module area

	Jan	Feb	Mar	Apr	May	Jun
	kWh/m²	kWh/m²	kWh/m²	kWh/m²	kWh/m²	kWh/m²
Irradiance onto horizontal plane (1,022.2 kWh/m²/Year)	22.2	37.7	73.2	112.2	145.7	154.9
Irradiance onto tilted surface Arbitrary Building 02-Mounting Surface South	27.8	45.5	81.9	118.2	149.7	156.2
Irradiance onto tilted surface Arbitrary Building 04-Mounting Surface South	27.7	45.3	81.5	117.6	149	155.5

	Jul	Aug	Sep	Oct	Nov	Dec
	kWh/m²	kWh/m²	kWh/m²	kWh/m²	kWh/m²	kWh/m²
Irradiance onto horizontal plane (1,022.2 kWh/m²/Year)	153.6	130.3	92	55	27.7	17.7
Irradiance onto tilted surface Arbitrary Building 02-Mounting Surface South	156	134.9	100.3	63.6	35.9	22.8
Irradiance onto tilted surface Arbitrary Building 04-Mounting Surface South	155.3	134.3	100	63.4	35.7	22.7

Unit 5 Swallowfield Way

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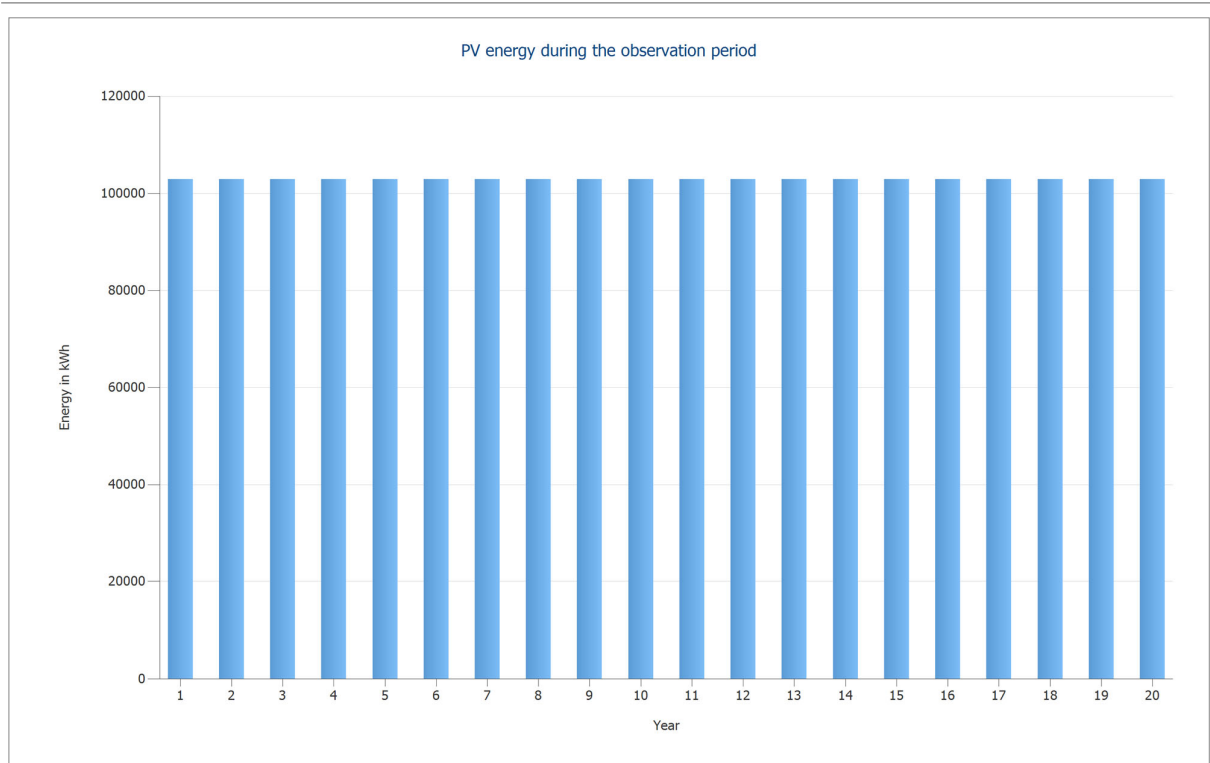


Figure: PV energy during the observation period

Table: PV energy during the observation period

	1	2	3	4	5	6
	kWh	kWh	kWh	kWh	kWh	kWh
Energy	102925.1	102925.1	102925.1	102925.1	102925.1	102925.1

	7	8	9	10	11	12
	kWh	kWh	kWh	kWh	kWh	kWh
Energy	102925.1	102925.1	102925.1	102925.1	102925.1	102925.1

	13	14	15	16	17	18
	kWh	kWh	kWh	kWh	kWh	kWh
Energy	102925.1	102925.1	102925.1	102925.1	102925.1	102925.1

	19	20
	kWh	kWh
Energy	102925.1	102925.1

Unit 5 Swallowfield Way

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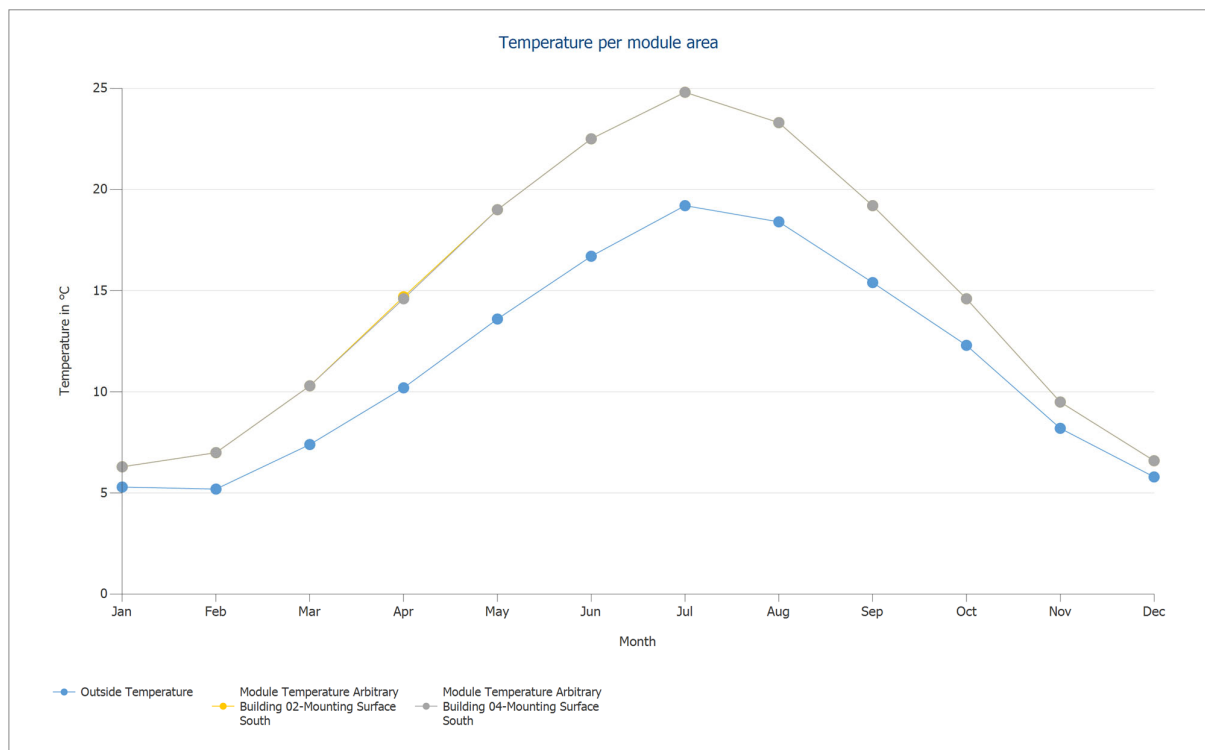


Figure: Temperature per module area

Table: Module Temperature

	Jan	Feb	Mar	Apr	May	Jun
	°C	°C	°C	°C	°C	°C
Outside Temperature	5.3	5.2	7.4	10.2	13.6	16.7
Module Temperature Arbitrary Building 02-Mounting Surface South	6.3	7	10.3	14.7	19	22.5
Module Temperature Arbitrary Building 04-Mounting Surface South	6.3	7	10.3	14.6	19	22.5

	Jul	Aug	Sep	Oct	Nov	Dec
	°C	°C	°C	°C	°C	°C
Outside Temperature	19.2	18.4	15.4	12.3	8.2	5.8
Module Temperature Arbitrary Building 02-Mounting Surface South	24.8	23.3	19.2	14.6	9.5	6.6
Module Temperature Arbitrary Building 04-Mounting Surface South	24.8	23.3	19.2	14.6	9.5	6.6

Unit 5 Swallowfield Way

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Results per Module Area

Arbitrary Building 02-Mounting Surface South

PV Generator Output	52.44 kWp
PV Generator Surface	227.78 m ²
Global Radiation at the Module	1092.63 kWh/m ²
Global Radiation on Module without reflection	1092.63 kWh/m ²
Performance Ratio (PR)	88.25 %
PV Generator Energy (AC grid)	50589.67 kWh/Year
Spec. Annual Yield	964.72 kWh/kWp

Arbitrary Building 04-Mounting Surface South

PV Generator Output	54.28 kWp
PV Generator Surface	235.78 m ²
Global Radiation at the Module	1088.05 kWh/m ²
Global Radiation on Module without reflection	1088.05 kWh/m ²
Performance Ratio (PR)	88.57 %
PV Generator Energy (AC grid)	52335.56 kWh/Year
Spec. Annual Yield	964.18 kWh/kWp

Plans and parts list

Overview plan

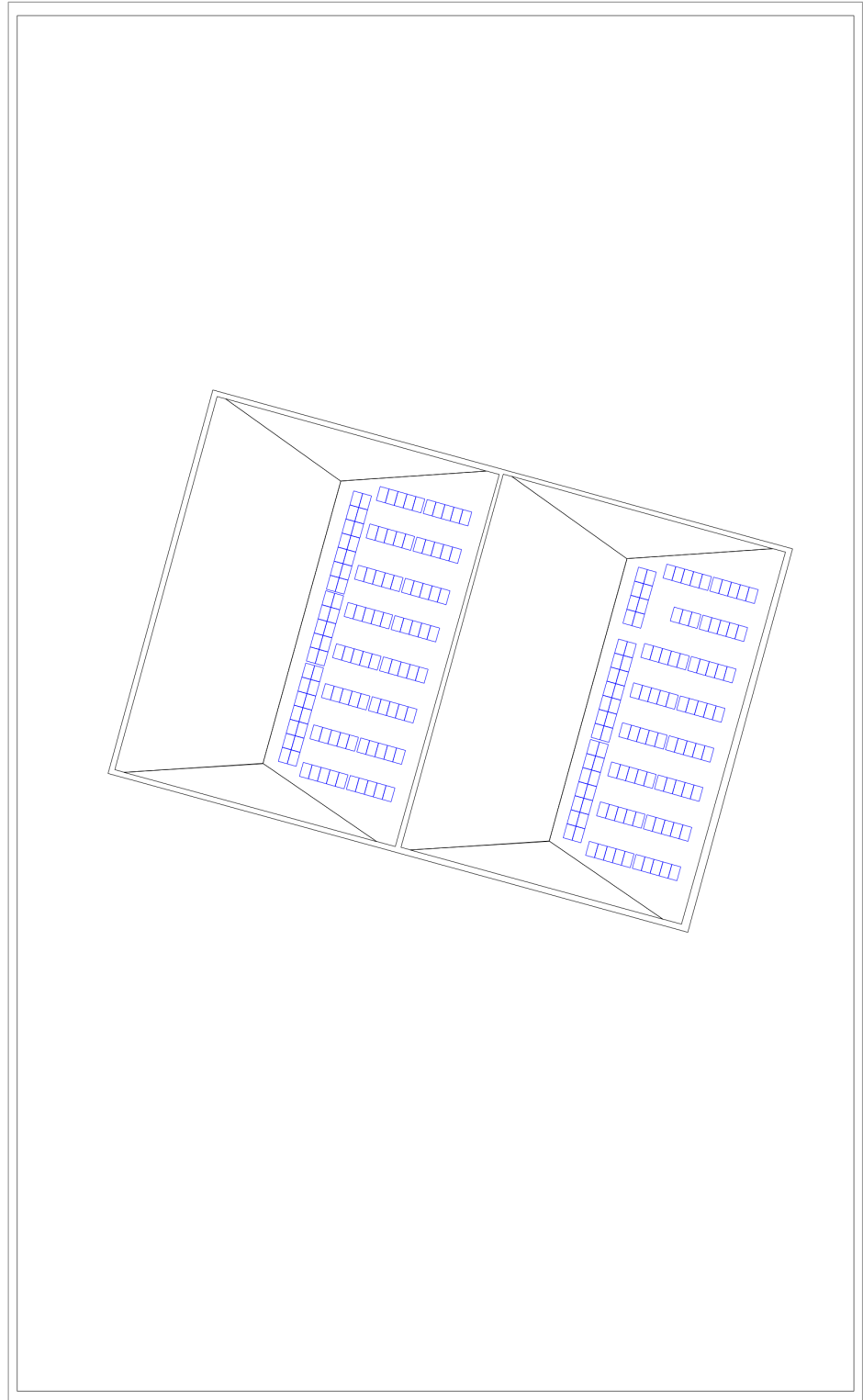


Figure: Overview plan

Dimensioning Plan

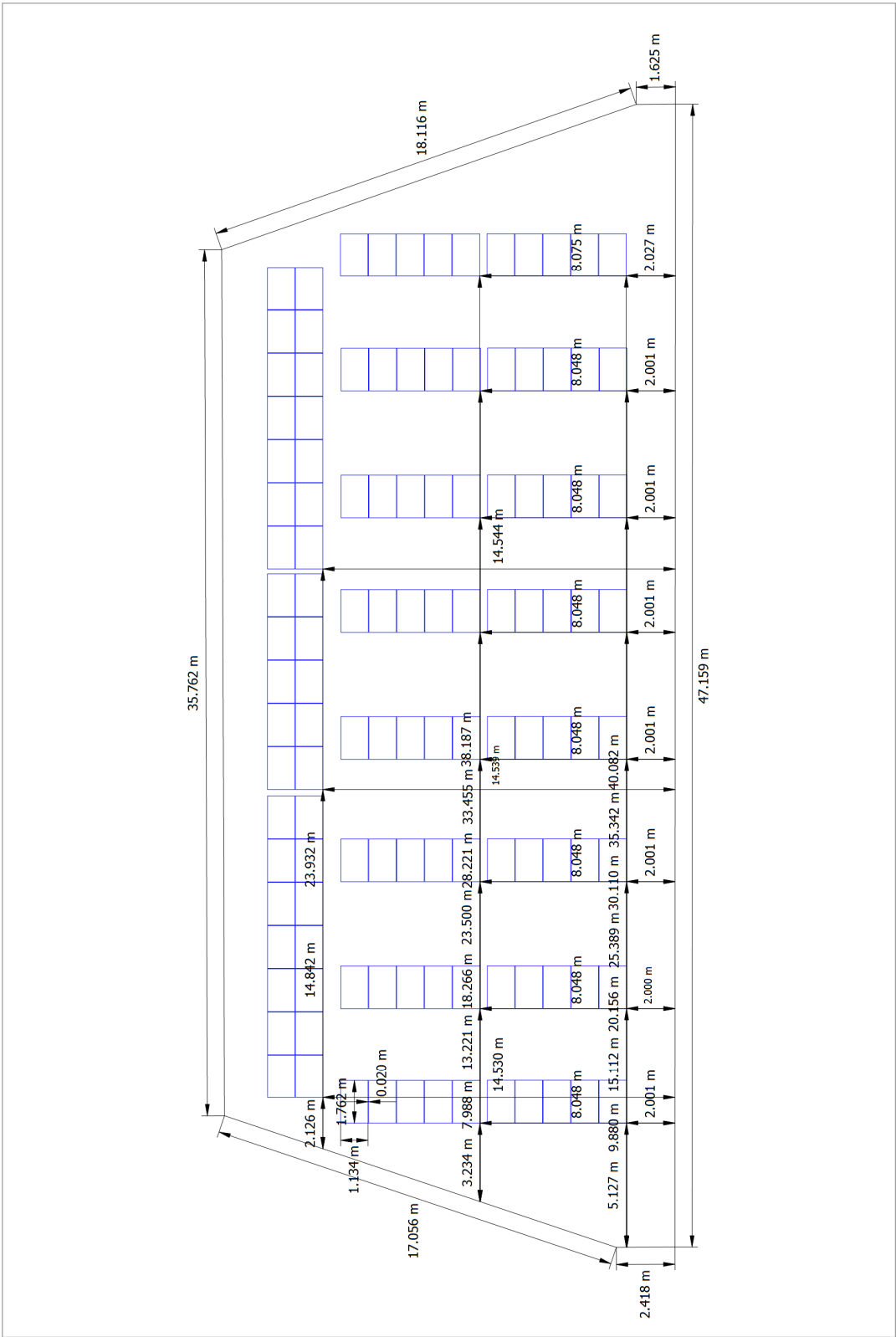


Figure: Arbitrary Building 04 - Mounting Surface South

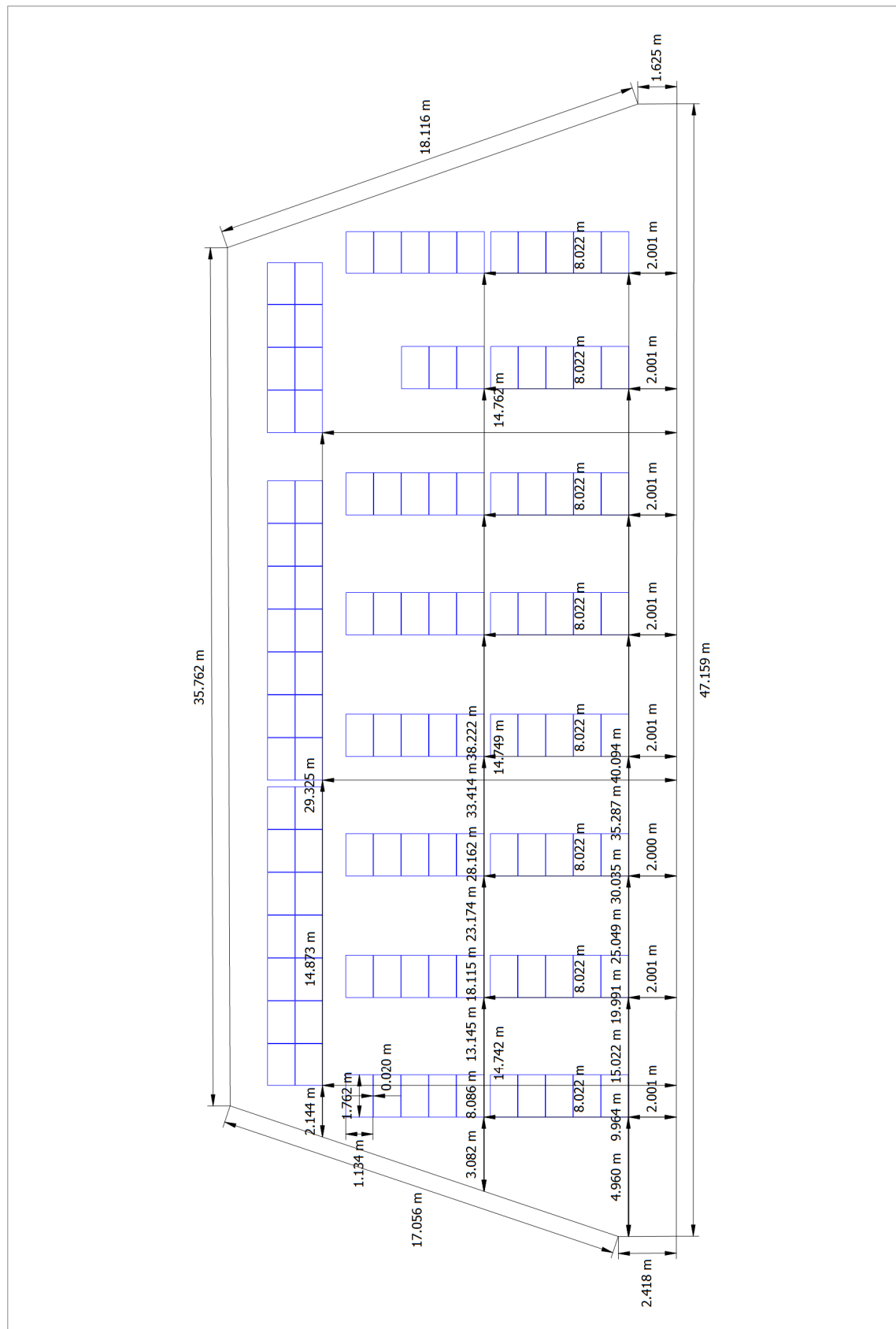


Figure: Arbitrary Building 02 - Mounting Surface South

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Parts list

Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		Hengdian Group DMEGC Magnetics Co., Ltd.	DM460G12RT- B48HBT	232	Piece
2	Inverter		Ginlong (Solis)	S5-GC50K	2	Piece
3	Components			Feed-in Meter	1	Piece
4	Components			House connection	1	Piece
5	Components			Bidirectional Meter	1	Piece

Screenshots, 3D Design Environment



Figure: Screenshot01