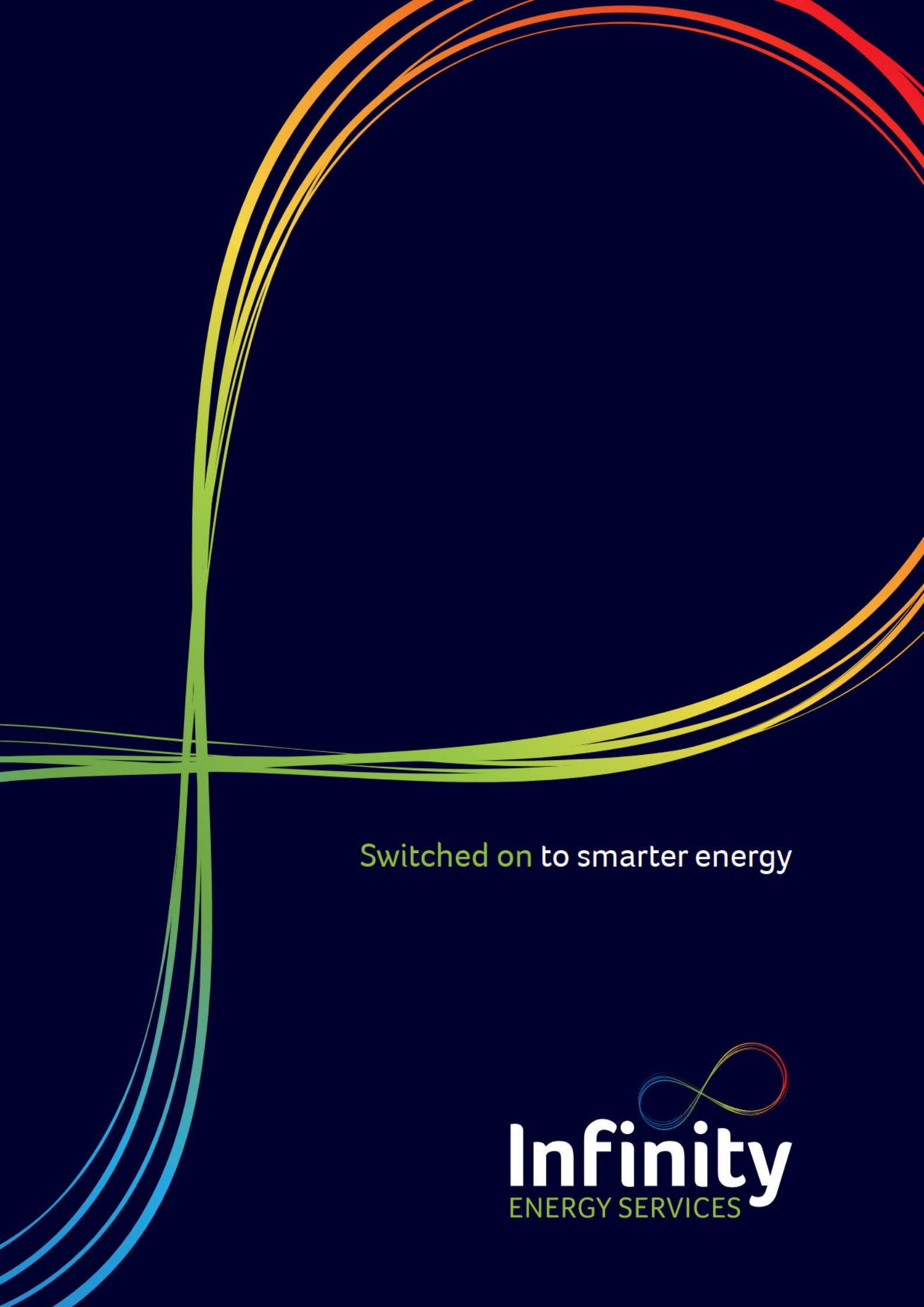
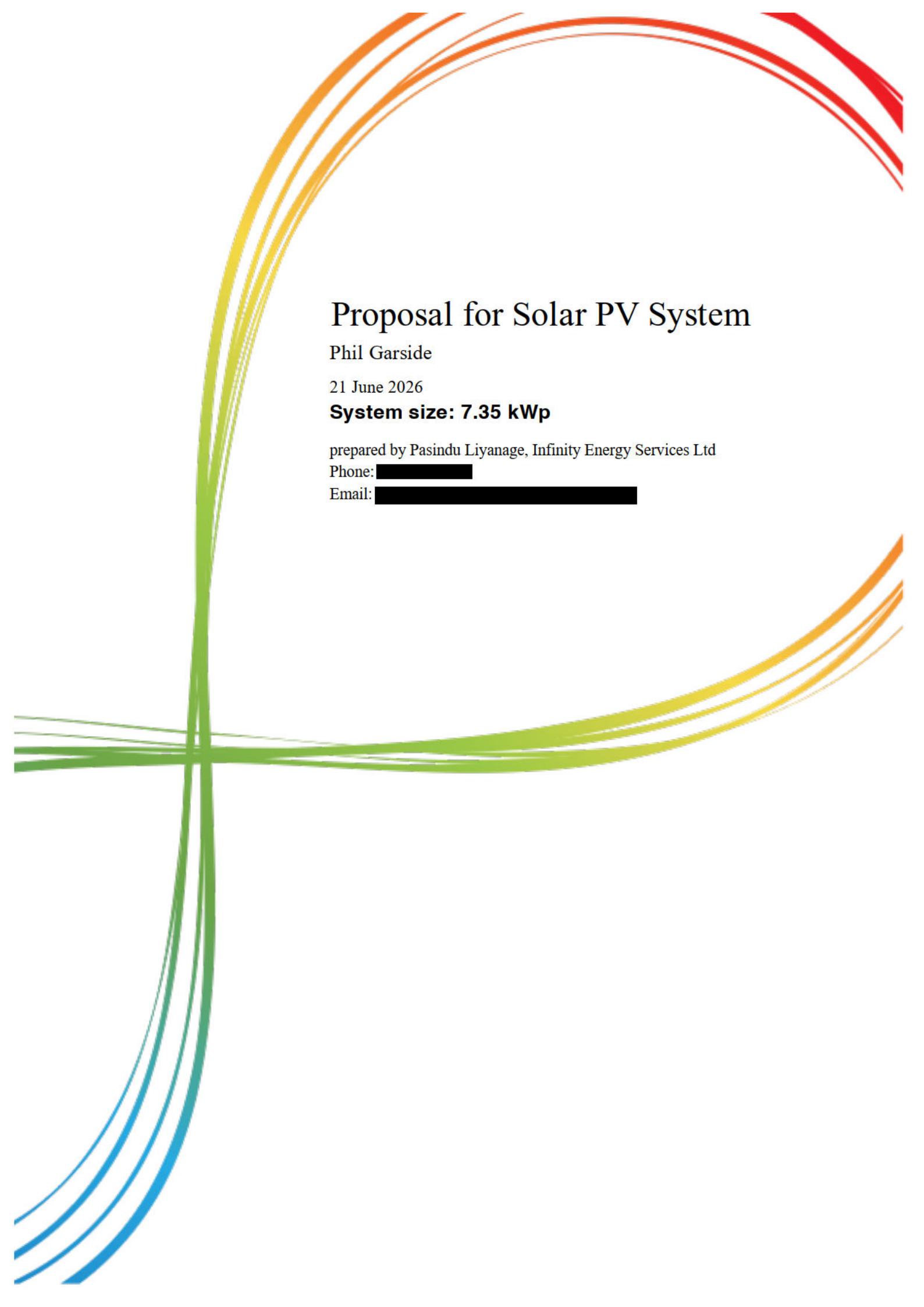




Switched on to smarter energy



Infinity
ENERGY SERVICES



Proposal for Solar PV System

Phil Garside

21 June 2026

System size: 7.35 kWp

prepared by Pasindu Liyanage, Infinity Energy Services Ltd

Phone: [REDACTED]

Email: [REDACTED]

Design Overview

Further to my survey of your home, we have produced this report for a suitable solar PV and battery system.

We recreated your roof in our solar CAD software. In addition to the 3D functionality, these CAD software also: a) Pulls in weather data from a local weather station, in order to improve the accuracy of its prediction of how much electricity your solar panel system will produce; b) Knows your exact location on the map, in particular the latitude, which dictates how much sun you are exposed to throughout the year; and c) Incorporates other relevant inputs such as your energy demand profile, how much you pay per unit for your electricity, any shading objects, and so on. You will find the full design report, together with visualisations, in the Appendix.

We have placed 15 'all black' solar panels on your East-facing roof (see graphic below). These are 490W panels made by Aiko and further panel details can be found on page 4 and in the data-sheet in the Appendix. This creates a 7.35 kWp solar panel system.

We then connect the panels to a 11.04 kW hybrid inverter made by Tesla. Full details about the choice and importance of the inverter can be found on page 4, and a data-sheet is in the Appendix.

We have included a Tesla Powerwall 3 which has 13.5 kWh of useable storage as well as a 'whole home' back-up function meaning that during a power-cut the Powerwall will continue to power your home.



Page 7

Accreditations, Warranties & References

Accreditations

We hold all the necessary accreditations to be able to install solar panel systems in the UK. These accreditations mean you are entitled to receive any subsidies that might be available, and also protect you as a consumer. Here are our certificate and membership numbers:

MCS Certificate Number:	NAP 14896
RECC / MCS Membership Number:	00048808



The Microgeneration Certification Scheme, **MCS**, certifies microgeneration products, such as solar panels, used to produce electricity and heat from renewable sources. MCS also certifies installation companies to ensure the microgeneration products have been installed and commissioned to the highest standard for the consumer.

As members of the Renewable Energy Consumer Code, **RECC**, we agree to abide by the Consumer Code. It covers all the factors that contribute to a high standard of consumer service, before, during and after a contract is agreed.

Warranties & Guarantees

The main components of the installation come with solid **product warranties** of at least 10 years. The exact product warranty lengths for the equipment we recommend are as follows:

Solar panels:	25 years
Hybrid Inverter(s):	10 years
Gateway:	10 years

In addition, Infinity Energy Services provides a free 6-year **insurance-backed guarantee** on our workmanship. In the first instance, if you are not 100% satisfied with our workmanship, you should contact us on 0800 909 8882 and we will come out and rectify it, free of charge. If our company is no longer trading, you would contact the insurance company, IWA, who will send a qualified company out to fix the problem, again free of charge.

The insurance policy also guarantees your deposit, such that if anything happens to us before

References

Infinity Energy Services has been installing solar PV systems since 2011. We are technically-led and put great emphasis on excellent electrical design, creating solar panels systems that produce the maximum amount of electricity possible in any given location.

We also pride ourselves on outstanding customer service; before, during, and after installation. We are happy to put you in touch with previous customers so you can hear their feedback direct. In the meantime, please refer to our Checktrade web:

The Appendix



Infinity Energy Services Ltd

Unit 6 Swanwick Business Centre, Bridge Road
Hampshire SO31 7GB

Phil Garside
10 Alexander Fields,
Upavon,
SN9 6NB

Contact person:

Pasindu Liyanage

Phone: [REDACTED]

E-Mail: [REDACTED]

Project Name: Garside-7.35kWp-Aiko490-T11.04-PW3

19/06/2026

Your PV system from Infinity Energy Services Ltd

Address of Installation

10 Alexander Fields,
Upavon,
SN9 6NB



Project Overview



Figure: Overview Image, 3D Design

PV System

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

Climate Data	Larkhill, GBR (2001 - 2020)	
Values source	Meteonorm 8.2	
PV Generator Output	7.35	kWp
PV Generator Surface	30.0	m ²
Number of PV Modules	15	
Number of Inverters	1	
No. of battery systems	1	

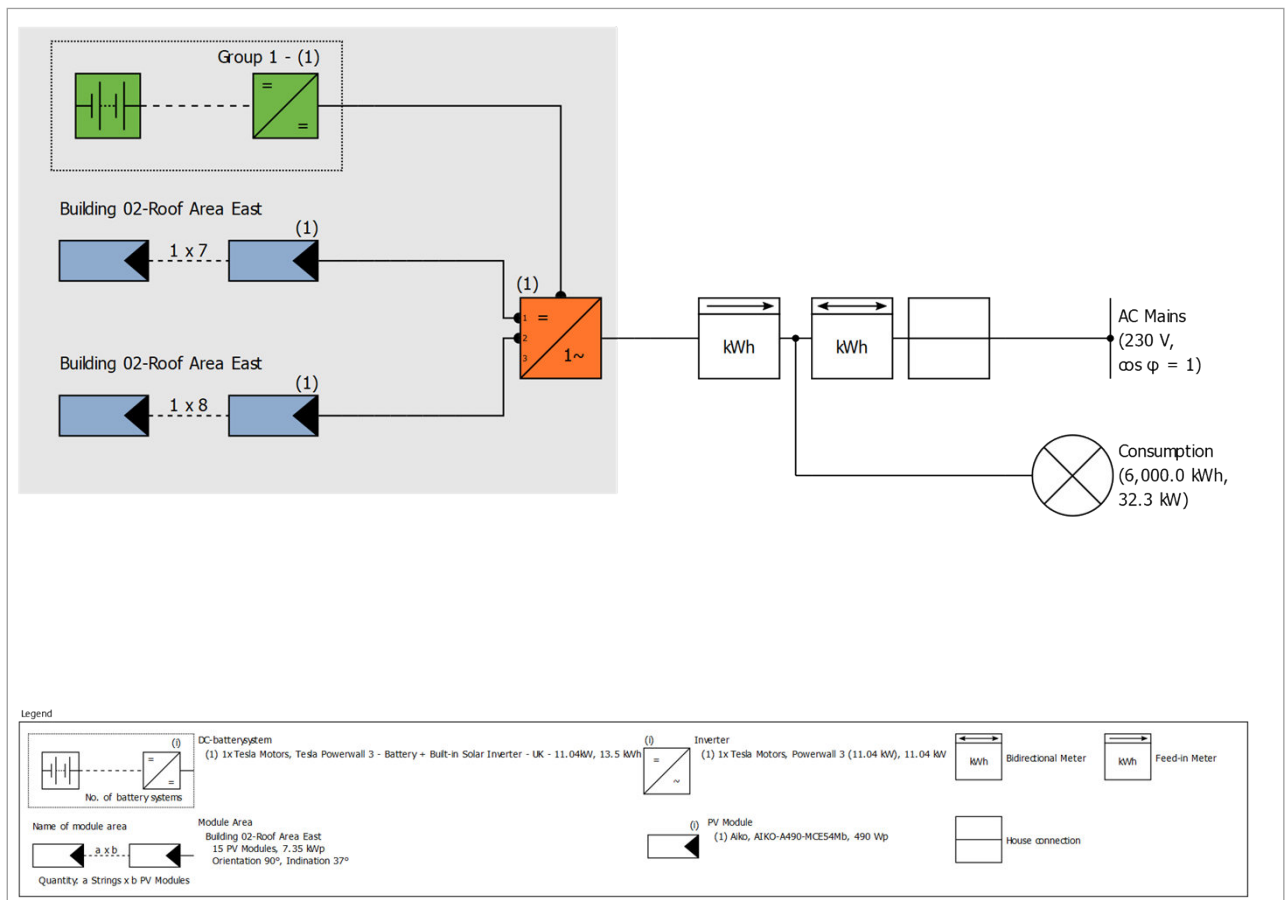


Figure: Schematic diagram

Production Forecast

Production Forecast

PV Generator Output	7.35 kWp
Spec. Annual Yield	915.29 kWh/kWp
Performance Ratio (PR)	91.35 %
Yield Reduction due to Shading	0.0 %
PV Generator Energy (AC grid) with battery	5,781 kWh/Year
Direct Own Use	3,554 kWh/Year
Grid Export	2,227 kWh/Year
Own Power Consumption	61.4 %
CO ₂ Emissions avoided	2,344 kg / year
Level of Self-sufficiency	59.1 %

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
----------------	---

Climate Data

Location	Larkhill, GBR (2001 - 2020)
Values source	Meteonorm 8.2
Data resolution	1 h
Simulation models used:	
- Diffuse Irradiation onto Horizontal Plane	Hofmann
- Irradiance onto tilted surface	Hay & Davies

Consumption

Total Consumption	6000 kWh
Household, seasonal pattern comparable with standard profile	6000 kWh
Load Peak	32.3 kW

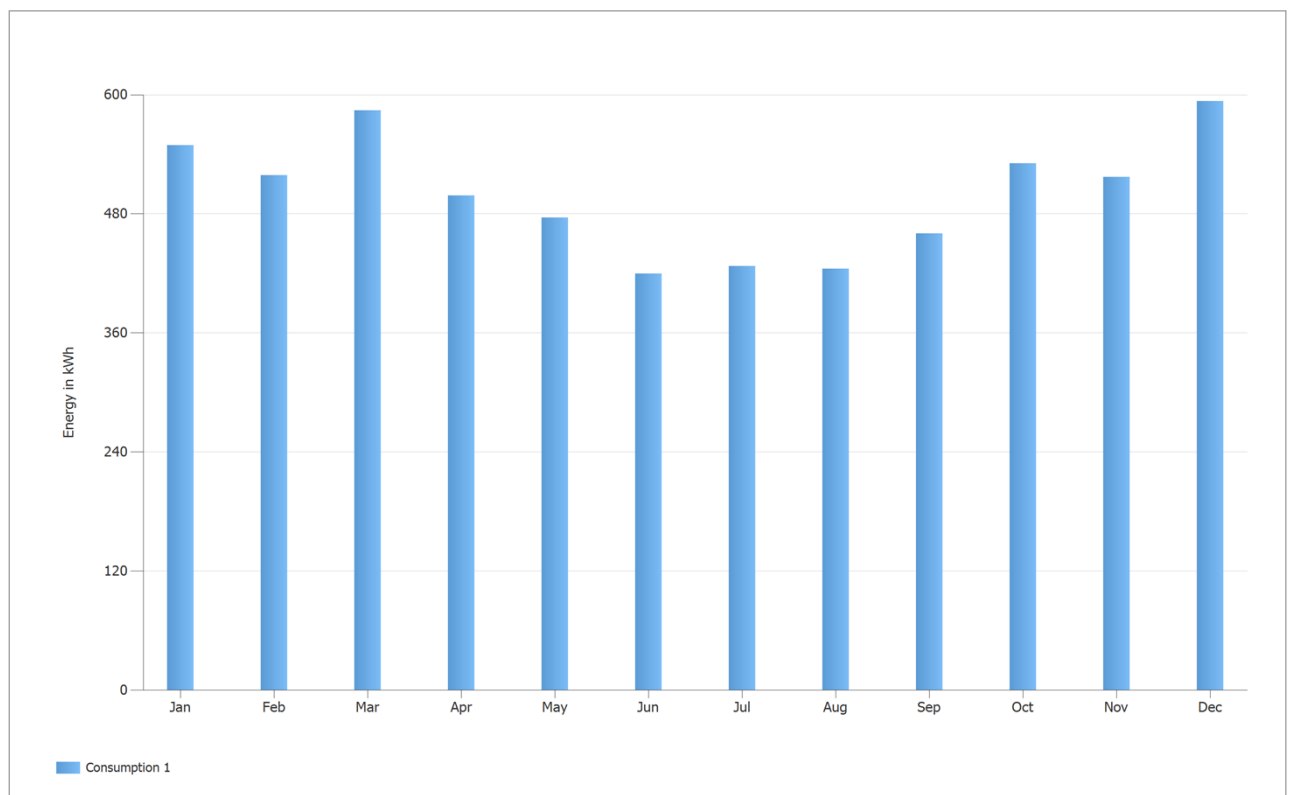


Figure: Consumption

Module Areas

1. Module Area - Building 02-Roof Area East

PV Generator, 1. Module Area - Building 02-Roof Area East

Name	Building 02-Roof Area East
PV Modules	15 x AIKO-A490-MCE54Mb (v1)
Manufacturer	Aiko
Inclination	37 °
Orientation	East 90 °
Installation Type	Roof parallel
PV Generator Surface	30.0 m ²

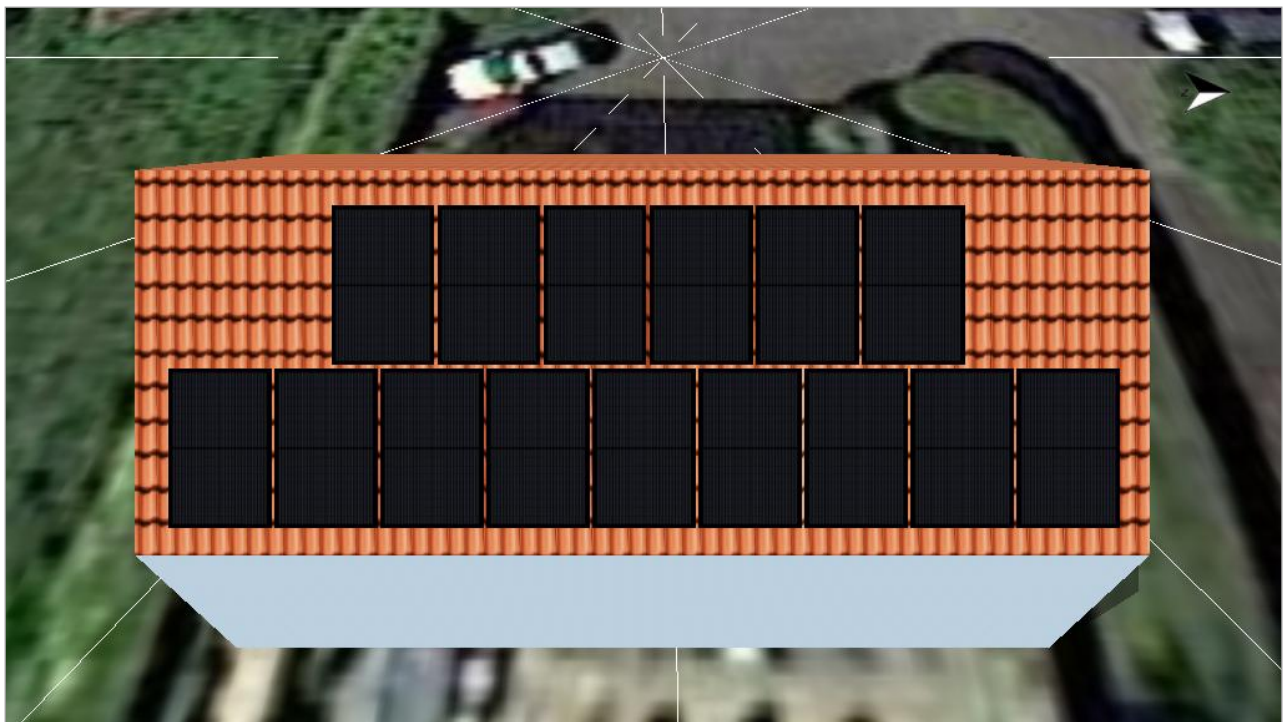


Figure: 1. Module Area - Building 02-Roof Area East

Horizon Line, 3D Design

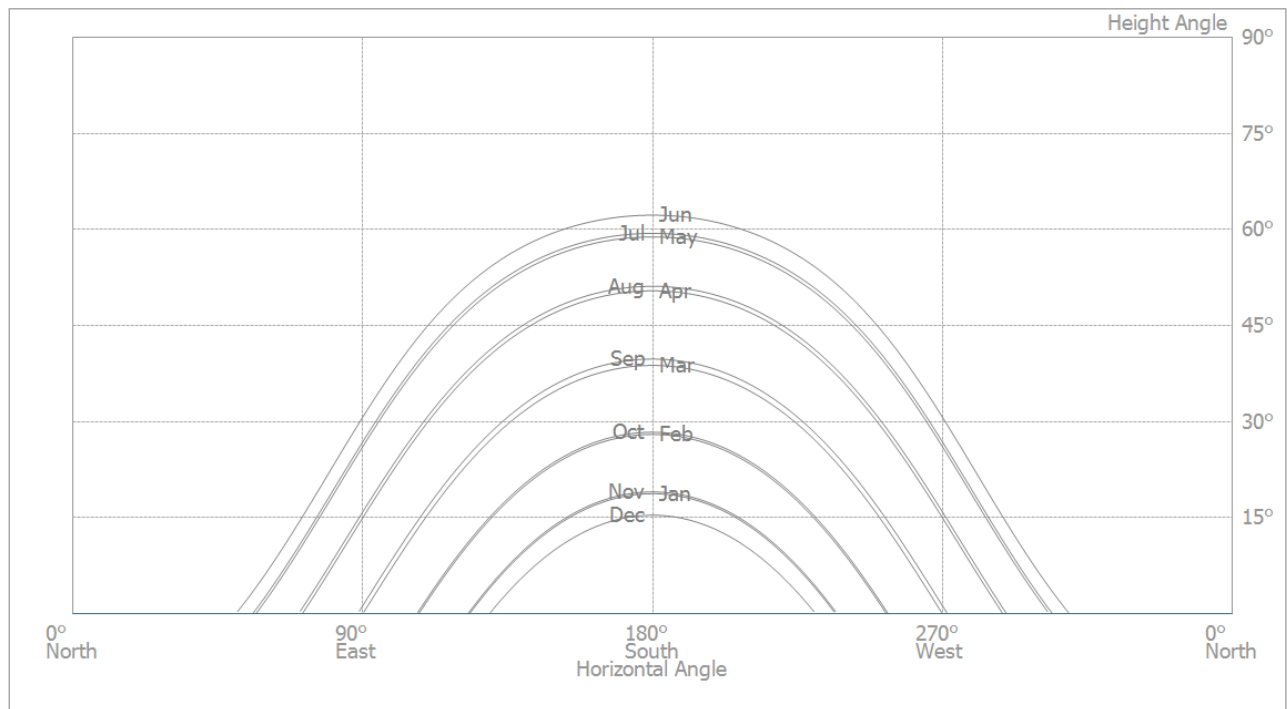


Figure: Horizon (3D Design)

Inverter configuration

Configuration 1

Module Area	Building 02-Roof Area East
Inverter 1	
Model	Powerwall 3 (11.04 kW) (v5)
Manufacturer	Tesla Motors
Quantity	1
Sizing Factor	66.6 %
Configuration	MPP 1: 1 x 7
	MPP 2: 1 x 8
	MPP 3: not allocated

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 3 - Battery + Built-in Solar Inverter - UK - 11.04kW (v4)	
Manufacturer	Tesla Motors	
Quantity	1	
Battery Inverter		
Type of coupling	DC intermediate circuit coupling	
Nominal output	11.04 kW	
Battery		
Manufacturer	Tesla Motors	
Model	Powerwall 3 (v2)	
Quantity	1	
Battery Energy	13.5 kWh	
Battery Type	Lithium iron phosphate	

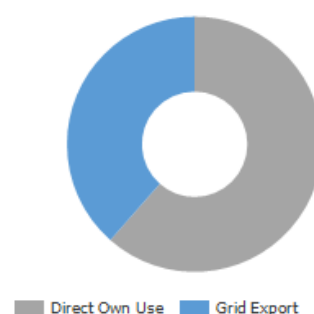
Simulation Results

Results Total System

PV System

PV Generator Output	7.35 kWp
Spec. Annual Yield	915.29 kWh/kWp
Performance Ratio (PR)	91.35 %
Yield Reduction due to Shading	0.0 %
PV Generator Energy (AC grid) with battery	5,781 kWh/Year
Direct Own Use	3,554 kWh/Year
Grid Export	2,227 kWh/Year
Own Power Consumption	61.4 %
CO ₂ Emissions avoided	2,344 kg / year

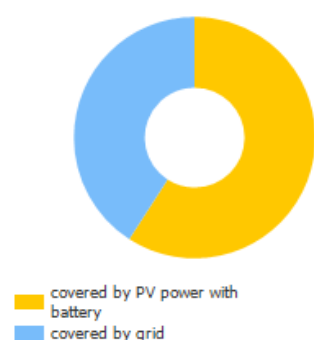
PV Generator Energy (AC grid) with battery



Appliances

Appliances	6,000 kWh/Year
Standby Consumption (Inverter)	13 kWh/Year
Total Consumption	6,013 kWh/Year
covered by PV power with battery	3,554 kWh/Year
covered by grid	2,459 kWh/Year
Solar Fraction	59.1 %

Total Consumption



Battery System

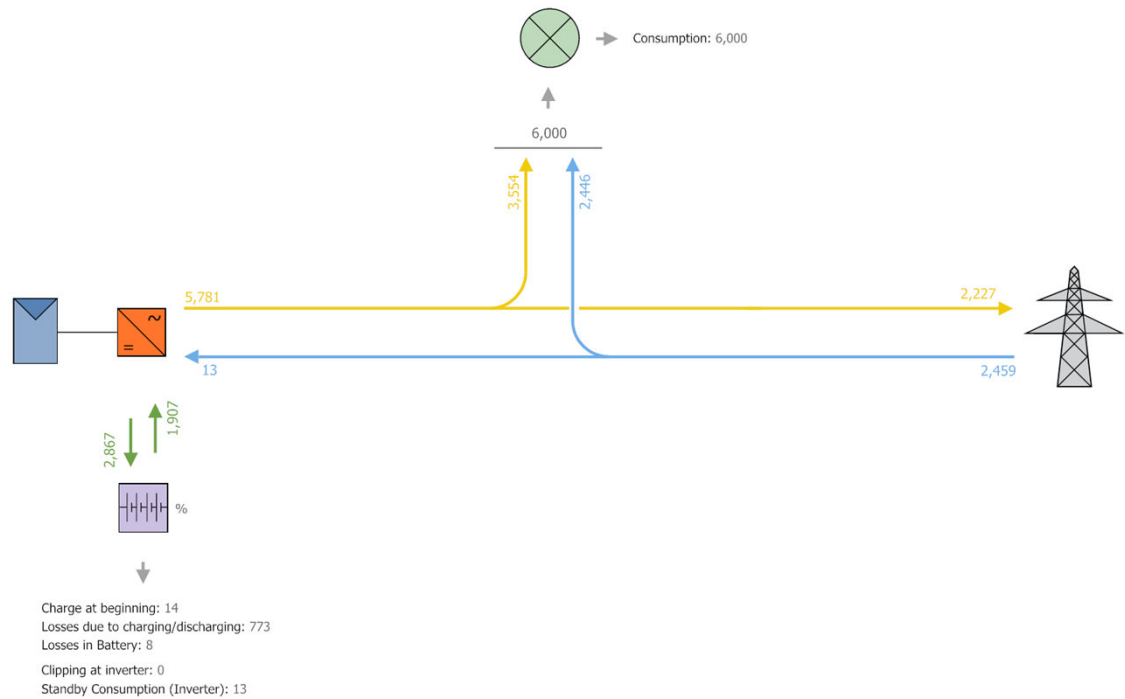
Charge at beginning	14 kWh
Battery Charge (PV System)	2,867 kWh/Year
Battery Energy for the Covering of Consumption	1,907 kWh/Year
Battery discharge into the grid	192 kWh/Year
Losses due to charging/discharging	773 kWh/Year
Losses in Battery	8 kWh/Year
Cycle Load	5.2 %
Service Life	19 Years

Level of Self-sufficiency

Total Consumption	6,013 kWh/Year
covered by grid	2,459 kWh/Year
Level of Self-sufficiency	59.1 %

Energy Flow Graph

Project: Garside-7.35kWp-Aiko490-T11.04-PW3



All values in kWh
 Small deviations in the totals can occur due to rounding
 created with PV*SOL

Figure: Energy flow

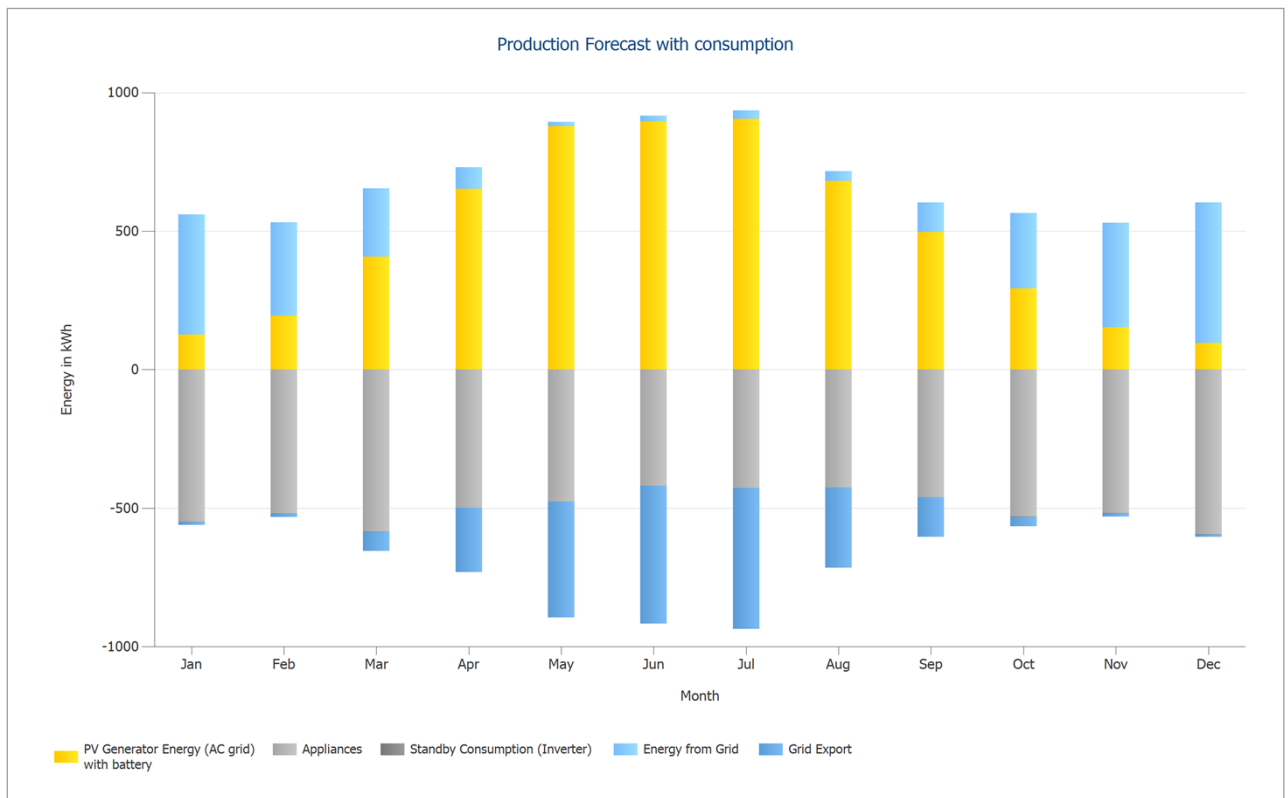


Figure: Production Forecast with consumption

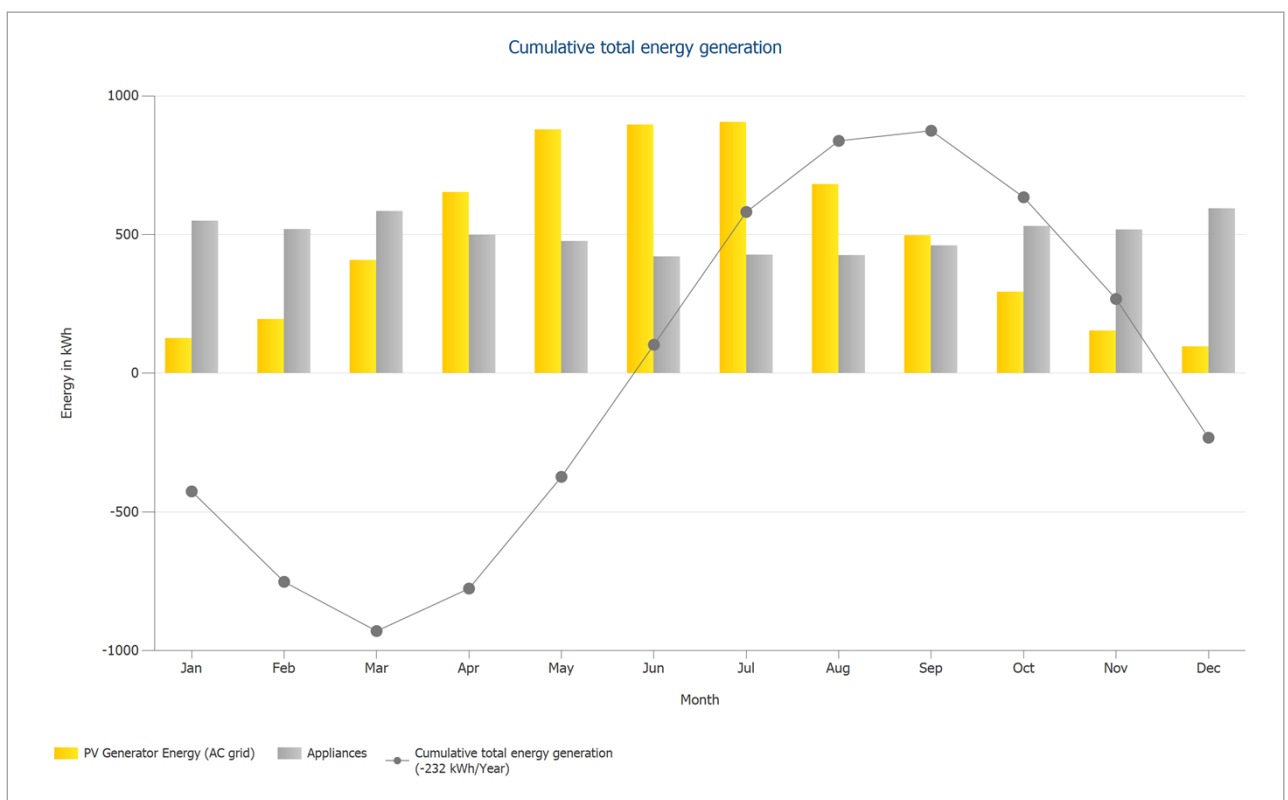


Figure: Cumulative total energy generation

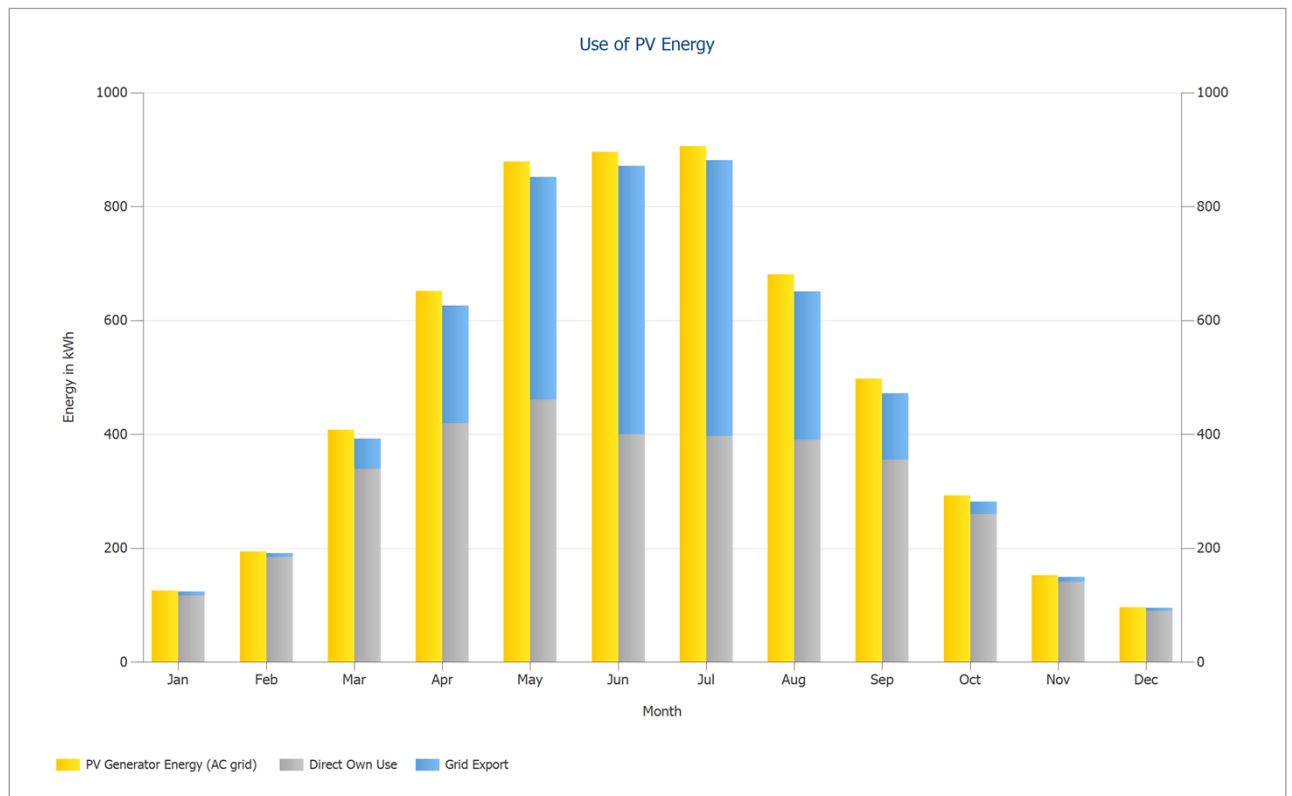


Figure: Use of PV Energy

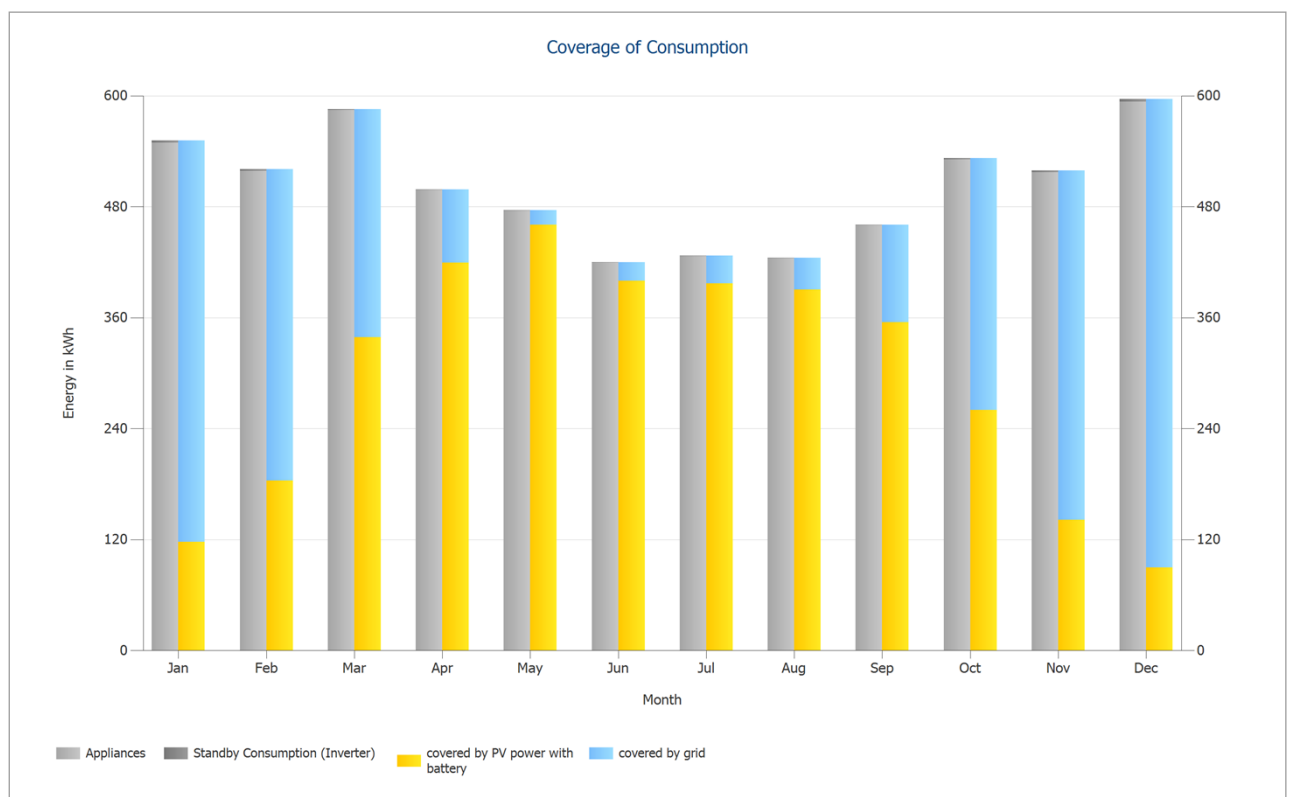


Figure: Coverage of Consumption

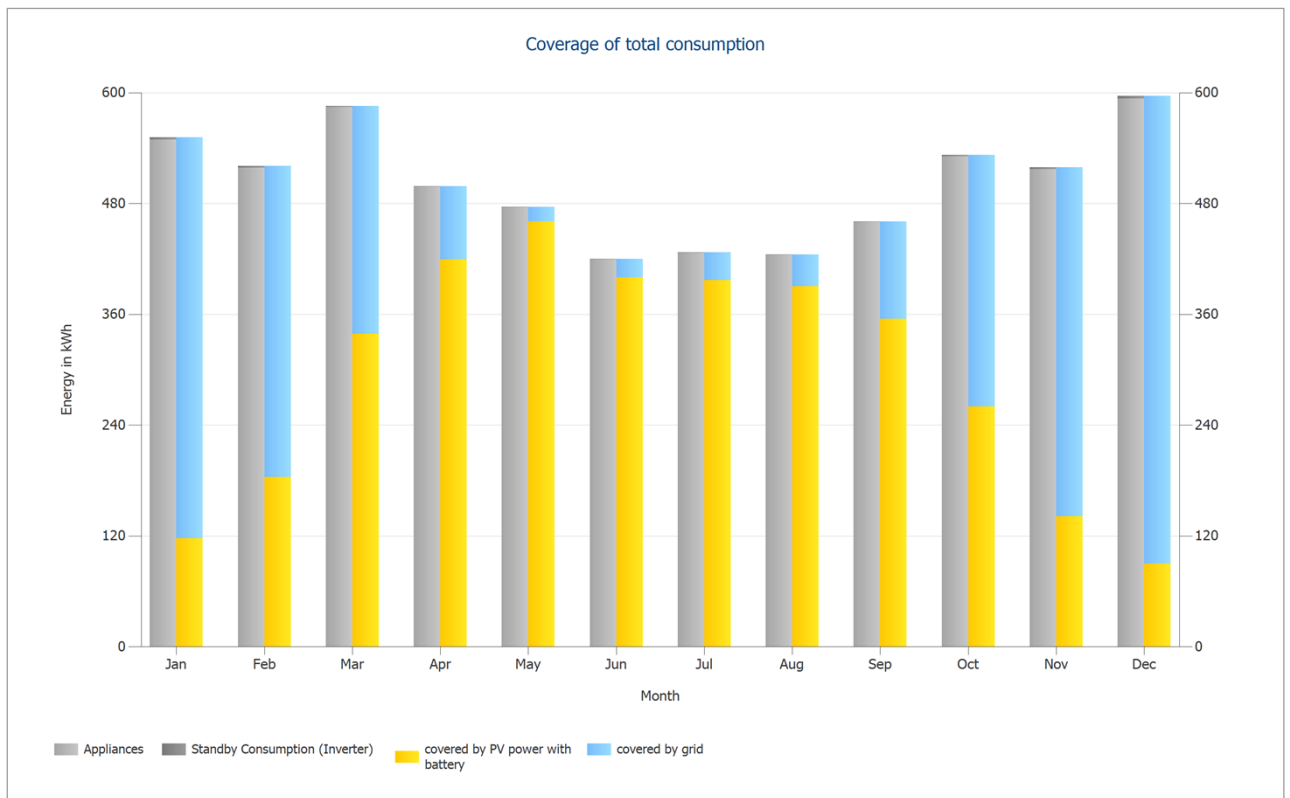


Figure: Coverage of total consumption

Plans and parts list

Circuit Diagram

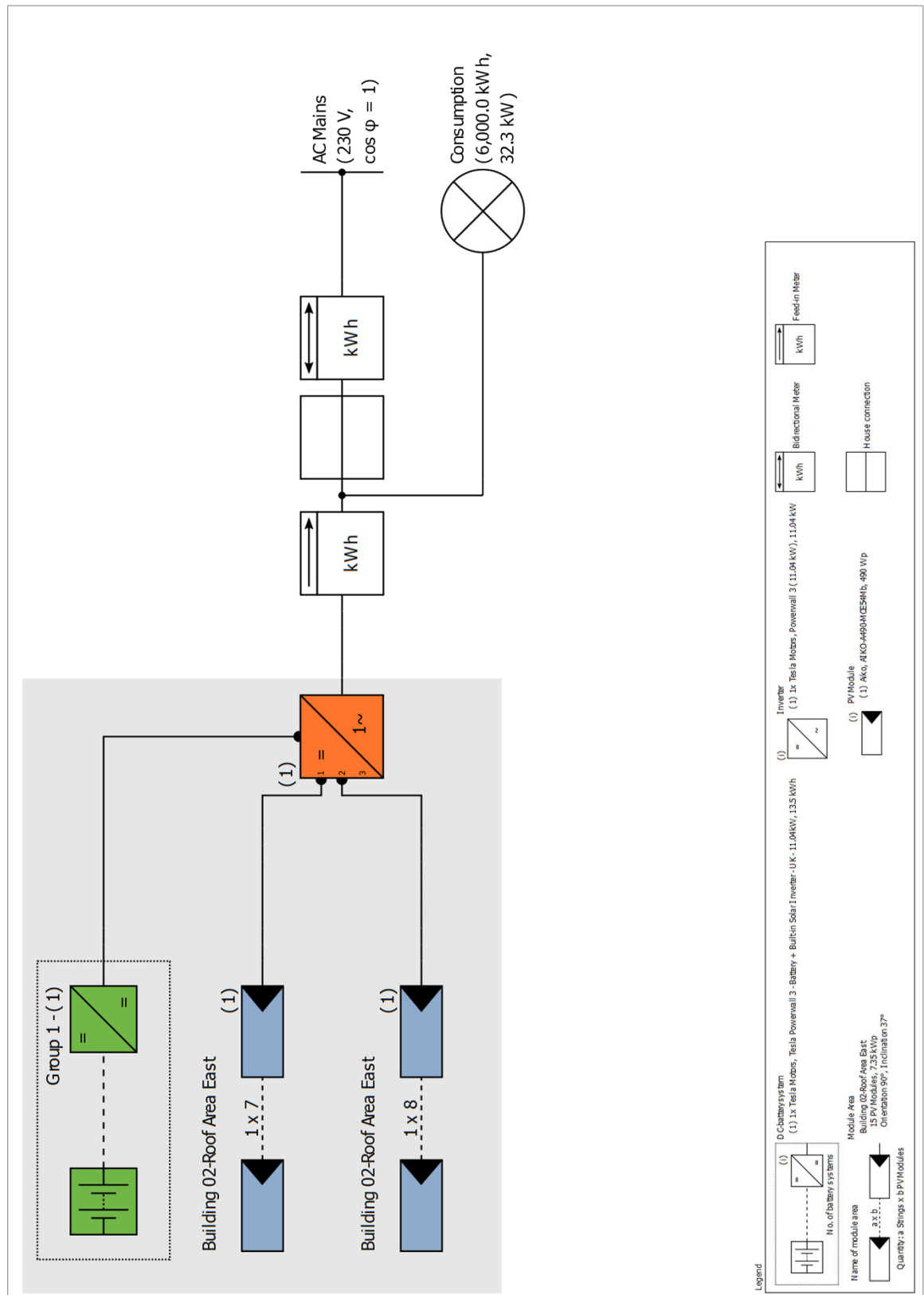


Figure: Circuit Diagram

Overview plan

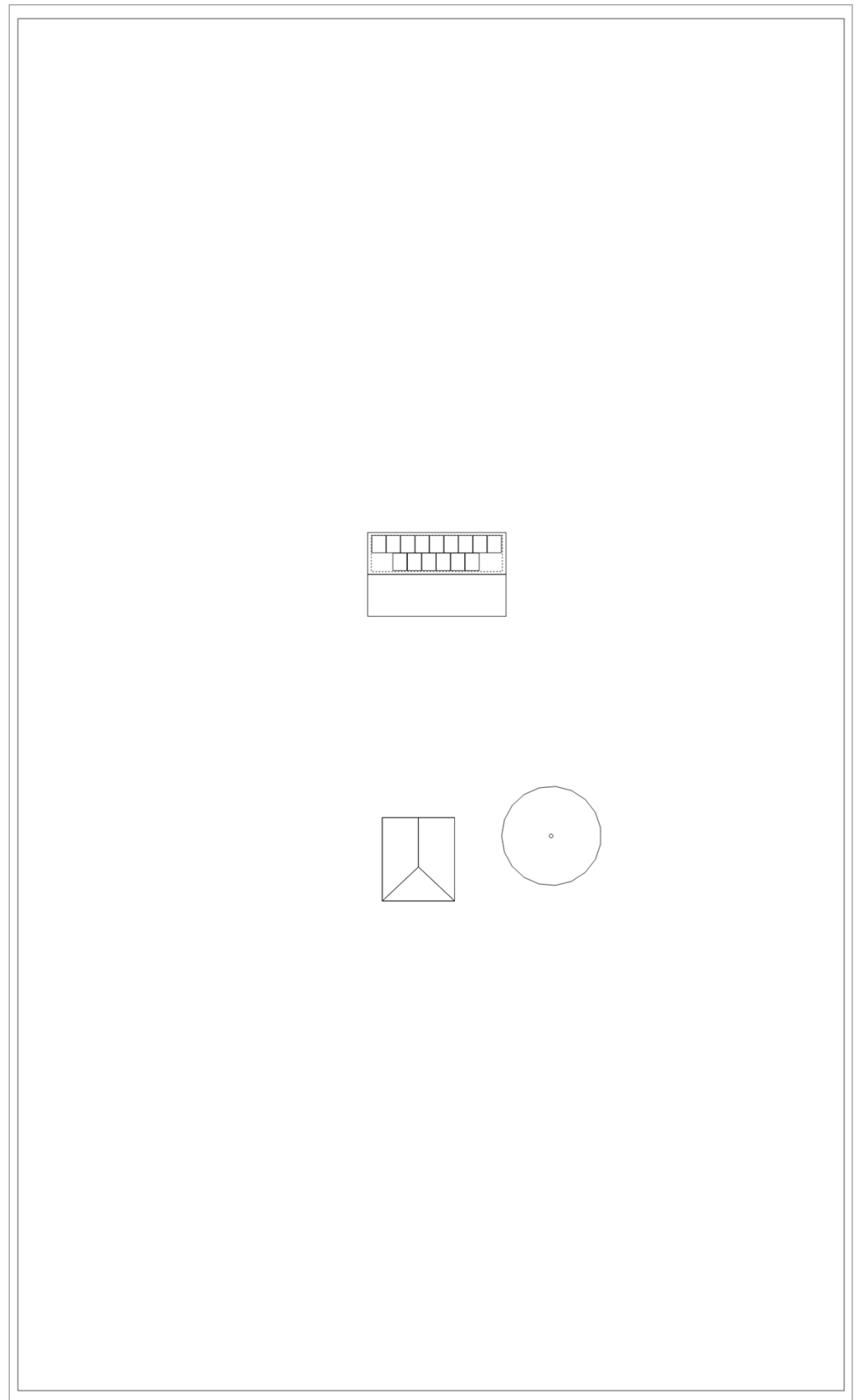


Figure: Overview plan

Dimensioning Plan

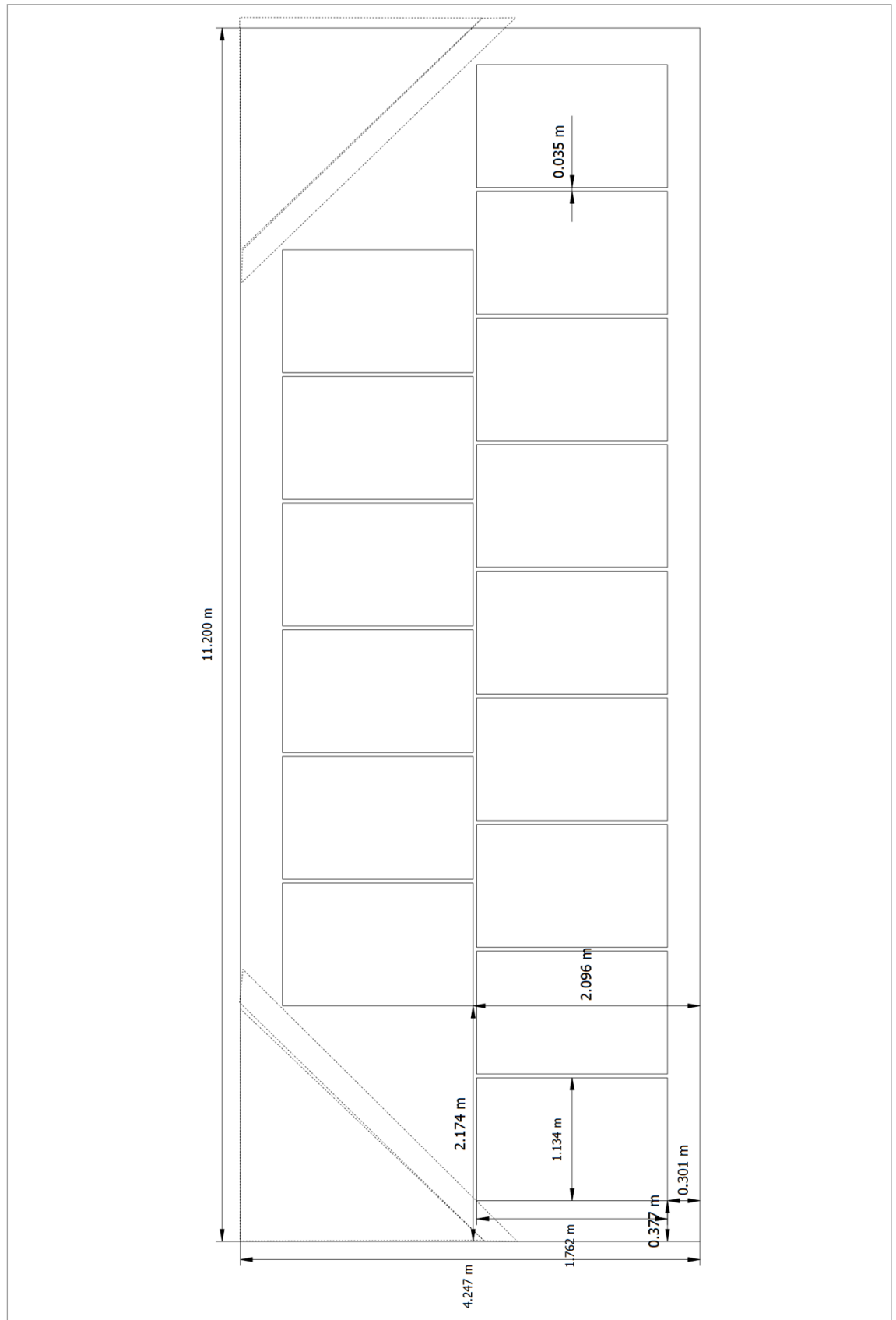


Figure: Building 02 - Roof Area East

String Plan

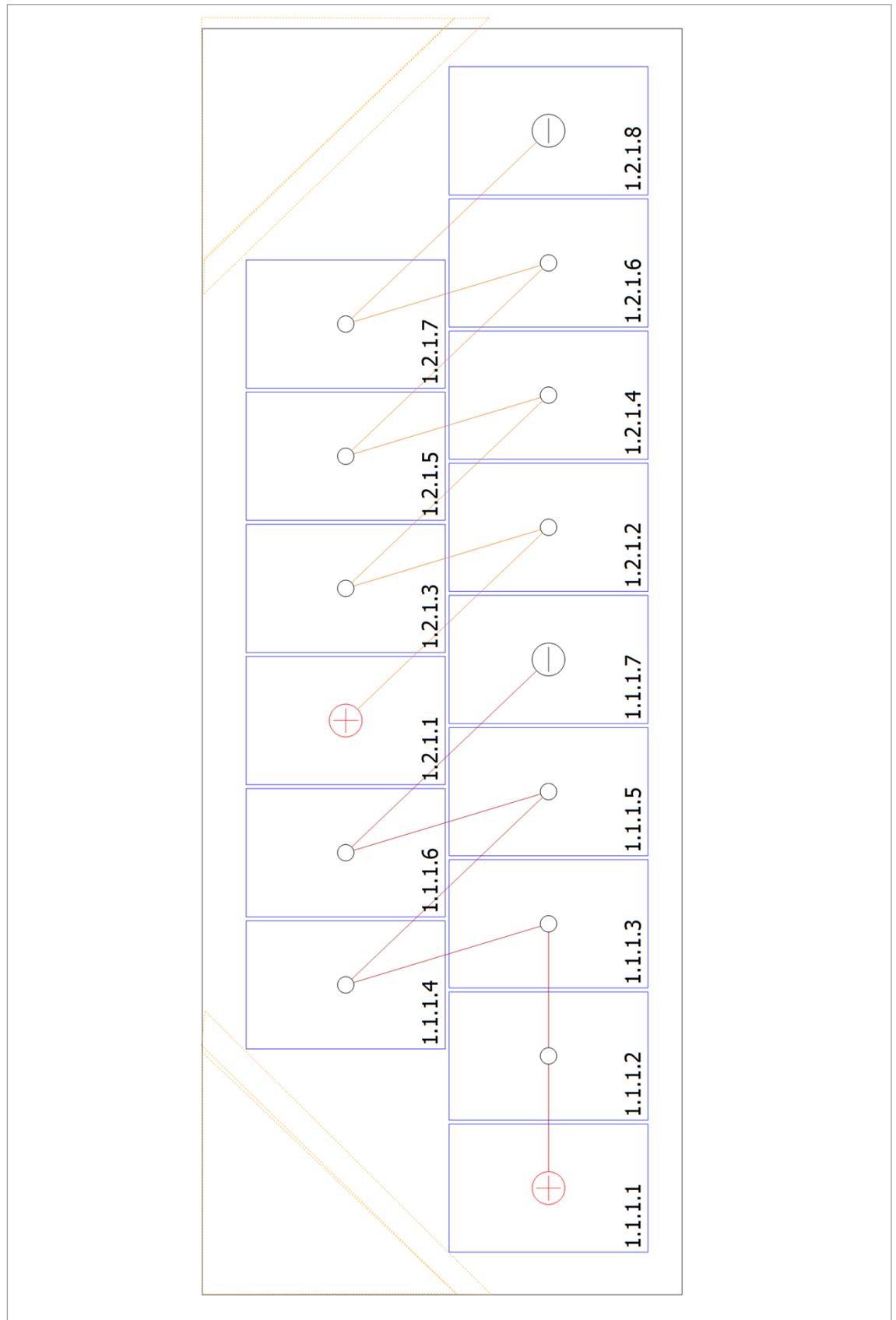


Figure: Building 02 - Roof Area East

Parts list

Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		Aiko	AIKO-A490-MCE54Mb	15	Piece
2	Inverter		Tesla Motors	Powerwall 3 (11.04 kW)	1	Piece
3	Battery System		Tesla Motors	Tesla Powerwall 3 - Battery + Built-in Solar Inverter - UK - 11.04kW	1	Piece
4	Components			Feed-in Meter	1	Piece

Screenshots, 3D Design Environment



Figure: Screenshot03

Configuration

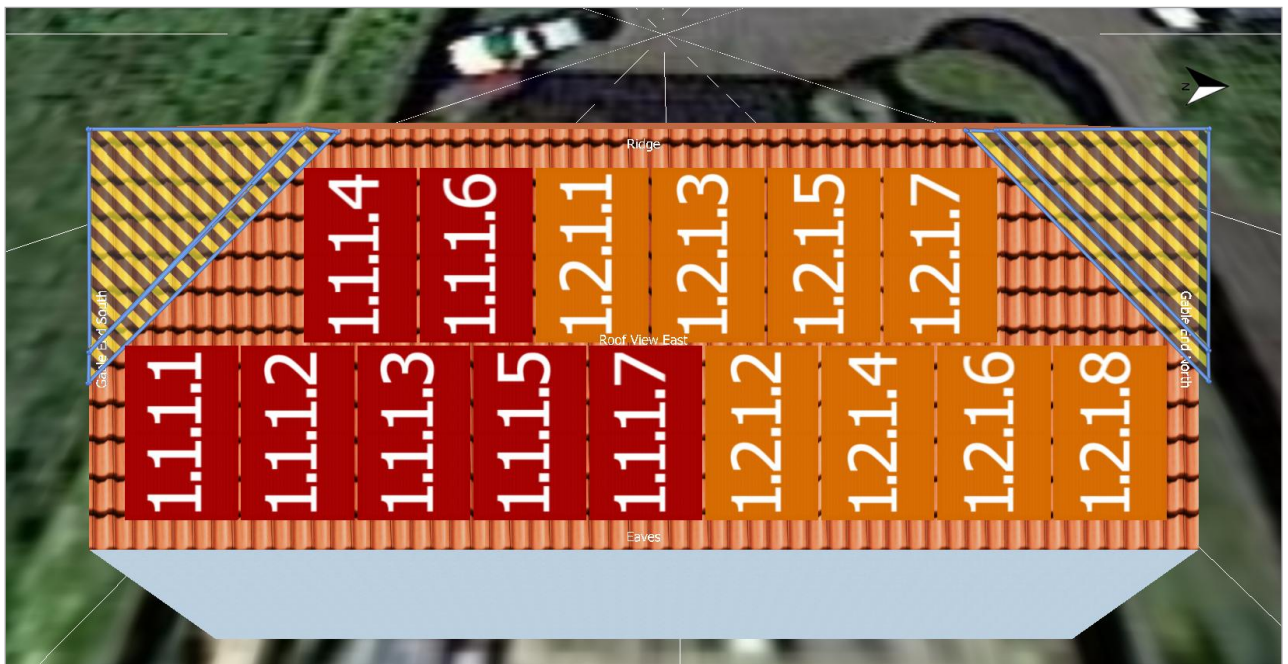


Figure: Screenshot05

Powerwall 3

Power Everything



Powerwall 3 is a fully integrated solar and battery system designed to accelerate the world's transition to sustainable energy. Powerwall 3 can store solar or grid energy for later use when the sun goes down or when the electricity prices are high; lowering their electricity bills, reducing their reliance on the grid, and power their homes during a grid outage. Once installed, customers can manage their home energy system using the Tesla App and customize system behavior to meet their energy goals.

Powerwall 3 achieves this by supporting up to 20 kW DC of solar and providing 11.04 kW AC of continuous power per unit. It has the ability to store up to 13.5 kWh of energy and start heavy loads rated up to 185 A LRA, meaning a single Powerwall 3 can support the power needs of most homes. Powerwall 3 is designed for fast and efficient installations, modular system expansion, and simple connection to any electrical service.



Powerwall 3 Technical Specifications

System Technical Specifications

Model Number	1707000-xx-y
Nominal Grid Voltage (Input & Output)	230 VAC
Grid Type	Single phase
Frequency	50 Hz
Maximum Continuous AC Output Current (Power at 230 V)	16 A (3.68 kW), 21.7 A (5 kW), 26.1 A (6 kW), 30.4 A (7 kW), 34.8 A (8 kW), 39.1 A (9 kW), 43.5 A (10 kW), 48 A (11.04 kW)
Overcurrent Protection Device	Configurable up to 63 A
Solar to Battery to Home/Grid Efficiency	89% ^{1,2}
Solar to Home/Grid Efficiency	97.5% ³
Supported Islanding Device	Backup Gateway 2
Connectivity	Wi-Fi (2.4 and 5 GHz), Ethernet, Cellular (LTE/4G ⁴)
Hardware Interface	Dry contact relay, Rapid Shutdown (RSD) certified switch and 2-pin connector, RS-485 for meters
AC Metering	Revenue Grade (+/- 0.5%)
Protections	Integrated arc fault circuit interrupter (AFCI), Isolation Monitor Interrupter (IMI), Integrated DC Isolator
Customer Interface	Tesla Mobile App
Warranty	10 years ⁵

Battery Technical Specifications

Nominal Battery Energy	13.5 kWh AC ²
Maximum Continuous Discharge Power	Configurable up to 11.04 kW
Maximum Continuous Charge Power	Configurable up to 5 kW
Output Power Factor Rating	0 - 1 (Grid Code configurable)
Maximum Continuous Current	Configurable up to 48 A
Maximum Output Fault Current	10 kA
Load Start Capability	185 A LRA (Locked Rotor Amps)
Power Scalability	Up to 4 Powerwall 3 units supported

Solar Technical Specifications

Maximum Solar STC Input	20 kW
Withstand Voltage	600 V DC
PV DC Input Voltage Range	60 — 550 V DC
PV DC MPPT Voltage Range	60 — 480 V DC
MPPTs	3
Maximum Current per MPPT (I_{mp})	26 A
Maximum Short Circuit Current per MPPT (I_{sc})	30 A

¹ Typical solar shifting use case.

² Values provided for 25°C (77°F), at beginning of life. 3.3 kW charge/discharge power.

³ Tested using CEC weighted efficiency methodology.

⁴ The customer is expected to provide internet connectivity for Powerwall 3; cellular should not be used as the primary mode of connectivity. Cellular connectivity subject to network operator service coverage and signal strength.

⁵ Powerwall 3 must be reliably connected to the internet to secure the full 10-year warranty.

Powerwall 3 Technical Specifications

Environmental Specifications

Operating Temperature	-20°C to 50°C ⁶
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	-20°C to 30°C, up to 95% RH, non-condensing, State of Energy (SOE): 25% initial
Maximum Elevation	3000 m
Environment	Indoor and outdoor rated
Enclosure Rating	IP55
Ingress Rating	IP67 (Battery & Power Electronics) IP55 (Wiring Compartment)
Pollution Rating	PD3
Operating Noise @ 1 m	< 50 db(A) typical, < 62 db(A) maximum

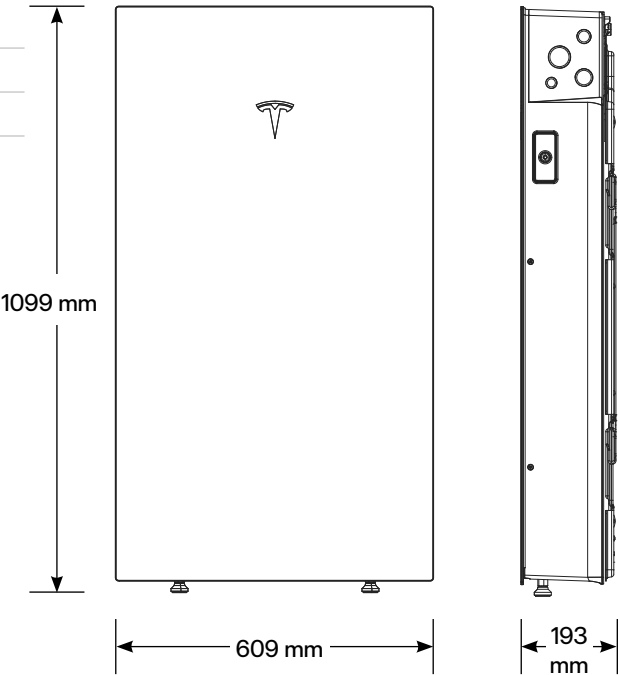
⁶ Powerwall 3 is designed to operate in all climates and in direct sunlight, from temperatures of -20°C to 50°C. Performance may be de-rated at operating temperatures above 40°C.

Compliance Information

Certifications	IEC 61000-6-1:2016, IEC 61000-6-3:2020, IEC 62477-1:2022, IEC 62109-1:2010, IEC 62109-2:2011, IEC 62933-5-2:2020, IEC 62619:2022, UL 9540A, UN 38.3, Radio Equipment Directive 2014/53/EU, EN 50549-1:2023, EN 50549-10:2022, G98 Issue 1 - Amd 7:Oct 2022, G99 Issue 1 - Amd 9:Oct 2022, G100 Issue 2 - Amd 2
Grid Connection	United Kingdom
Emissions	FCC Part 15 Class B, ICES 003
Environmental	RoHS Directive 2011/65/EU REACH Regulation EC 1907/2006
Seismic	AC156, IEEE 693-2005 (high)
Fire Testing	Meets the unit level performance criteria of UL 9540A

Mechanical Specifications

Dimensions	1099 x 609 x 193 mm
Weight	130 kg
Mounting Options	Floor or wall mount



Backup Gateway 2 Specifications

Backup Gateway 2 provides energy management and monitoring for solar self-consumption, time-based control, and backup operation. When Powerwall 3 is in Backup mode, Backup Gateway 2 controls connection to the grid, detects outage, and provides backup power.

Electrical Specifications

AC Voltage (Nominal) ¹	230 V (Line-to-Neutral) 400 V (Line-to-Line)
Feed-In Type	Single Phase, Three Phase
Grid Frequency	50-60 Hz
Maximum Overcurrent Protection Device	100 A (single-phase service) 80 A (2- and 3-phase service)
Maximum Input Short Circuit Current ²	16 kA
Overvoltage Category	Category III
AC Meter	Revenue accurate (+/- 0.2 %)
Compatible Earthing Systems ³	TN or TT networks
Distribution boards intended to be operated by ordinary persons (DBO) Type	Type B
Safety	IEC 61439-1, IEC 61439-3

¹ 230 V (Line-to-Line) is not a supported three-phase configuration.
² 16 kA rating when installed with current limiting fuse compliant to BS 88.3; 10 kA rating without fuse.
³ TT earthing networks supported for Gateways with part number 1152100-13-H and higher.

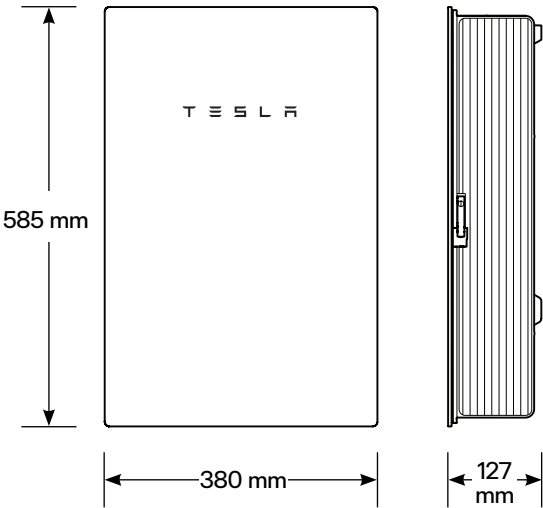
Environmental Specifications

Operating Temperature ⁴	-20°C to 50°C
Operating Humidity (RH)	Up to 100%, condensing
Maximum Altitude	3000 m
Ingress Rating	IP55
Environmental Category	Outdoor rated
Wet Location Rating	Yes
Pollution Degree	PD2

⁴ Performance may be de-rated in extreme ambient temperatures.

Mechanical Specifications

Dimensions	585 x 380 x 127 mm
Weight	11.4 kg
Breaker Space (DIN rail)	Up to 9 single pole breakers
Mounting Options	Wall mount



NEOSTAR

3S54 Mono-Glass Module

465W-495W

Technical Features:

 Partial Shading Optimisation

 Better Temperature Coefficient

 High Temperature Restriction

 Micro-crack Resistance

 Higher Power

 Lower BOS

 More Aesthetic Values

 Infinite Technology



red dot winner 2023



Product
Warranty



Performance
Warranty



Warranty partner

Munich RE



Made in China

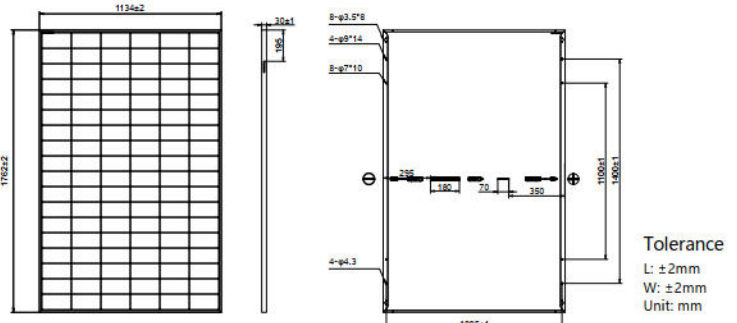
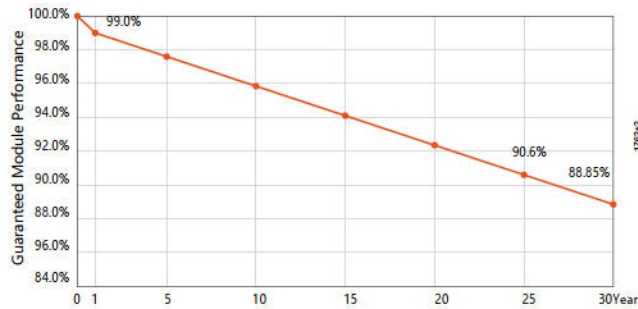
495W
Output

24.8%
Efficiency

1%
First-year Degradation

0.35%
Annual Degradation from Year 2-30

30-year Linear Performance Warranty



Electrical Characteristics (STC: AM1.5 1000W/m² 25°C NOCT: AM1.5 800W/m² 20°C 1m/s)

Power Binning Tolerance: 0~+3%

Module Type	AIKO-A465-MCE54Mb		AIKO-A470-MCE54Mb		AIKO-A475-MCE54Mb		AIKO-A480-MCE54Mb		AIKO-A485-MCE54Mb		AIKO-A490-MCE54Mb		AIKO-A495-MCE54Mb	
Test Conditions	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
P _{max} [W]	465	352	470	356	475	360	480	364	485	367	490	371	495	375
V _{oc} [V]	40.60	38.52	40.70	38.61	40.80	38.71	40.90	38.80	41.00	38.90	41.10	38.99	41.20	39.09
V _{mp} [V]	34.20	32.45	34.30	32.54	34.40	32.64	34.50	32.73	34.60	32.83	34.70	32.92	34.80	33.02
I _{sc} [A]	14.69	11.87	14.72	11.89	14.76	11.93	14.80	11.96	14.84	11.99	14.88	12.02	14.92	12.06
I _{mp} [A]	13.60	10.87	13.71	10.96	13.81	11.04	13.92	11.13	14.02	11.21	14.13	11.29	14.23	11.37
Module Efficiency	23.3%		23.5%		23.8%		24.0%		24.3%		24.5%		24.8%	

Product Specification

Cell Type	N-Type BC
Glass	3.2mm tempered glass
Backsheet	High weather resistant backsheet
Frame	Black anodized aluminum
Cable	4mm ² (IEC) 12AWG(UL) ±1200mm
No. of Cells	108(6*18)
Junction Box	IP68, 3 bypass diodes
Connector	PV-KST4-EVO 2A/6I/ PV-KBT4-EVO 2A/6I from Staubli Electrical Connectors AG
Weight	20.6kg±3%
Dimension	1762*1134*30mm
Package Detail	37pcs per pallet / 222pcs per 20'GP / 962pcs per 40'HC

Temperature Ratings (STC)

Temperature Coefficient of I _{sc}	+ 0.05%/ °C
Temperature Coefficient of V _{oc}	- 0.22%/ °C
Temperature Coefficient of P _{max}	- 0.26%/ °C

Installation Guide

T _{g8} max	70°C
Module Operation Temperature	-40°C - +85°C
Maximum Series Fuse Rating	25A
Protection Class	ClassII
P _{MAX} and V _{OC} and I _{SC} Tolerance	±3%
Maximum System Voltage	DC1500V
Maximum Static Loading	Front 5400Pa Back 2400Pa
Hail Test	40 mm diameter hail at 27.5 m/s
Fire Rating	IEC Class C



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