MARA ELECTRICAL

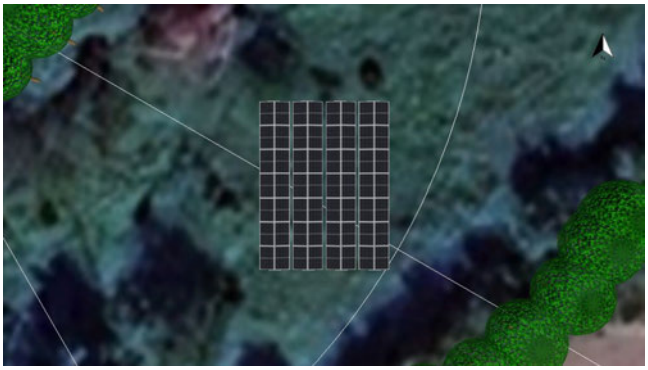
[redacted]

22/04/2026

Your PV system from Mara Electrical

Address of Installation

52.97641771571854, -2.9622035418257178



Project Overview

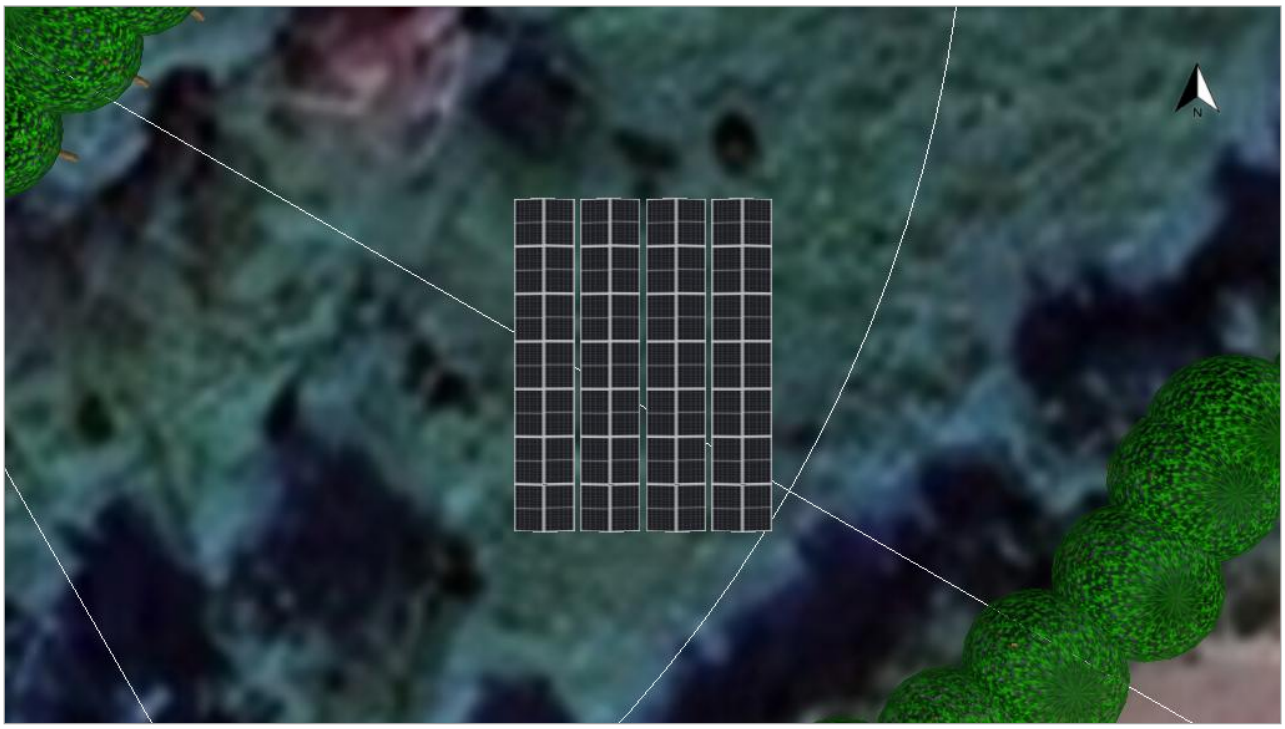


Figure: Overview Image, 3D Design

PV System

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

Climate Data	Wrexham, GBR (2001 - 2020)	
Values source	Meteonorm 9.0 (i)	
PV Generator Output	25.2	kWp
PV Generator Surface	111.6	m²
Number of PV Modules	56	
Number of Inverters	1	
No. of battery systems	1	

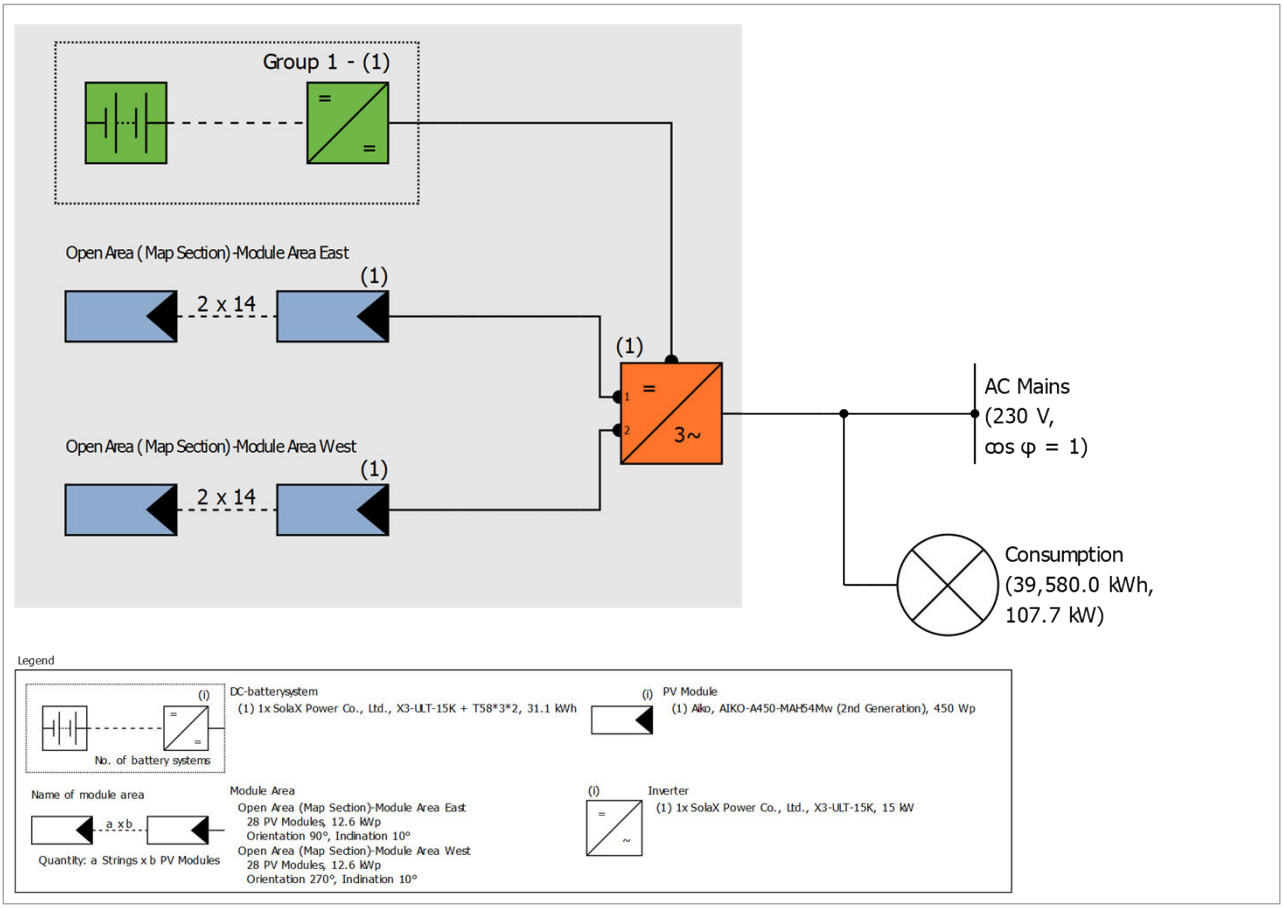


Figure: Schematic diagram

Production Forecast

Production Forecast		
PV Generator Output	25.20	kWp
Spec. Annual Yield	747.43	kWh/kWp
Performance Ratio (PR)	80.92	%
Yield Reduction due to Shading	15.3	%
PV Generator Energy (AC grid) with battery	18,428	kWh/Year
Direct Own Use	13,765	kWh/Year
Grid Export	4,663	kWh/Year
Own Power Consumption	74.6	%
CO_2 Emissions avoided	6,826	kg / year
Level of Self-sufficiency	34.7	%

Financial Analysis

Your Gain

Total investment costs	[redacted]
Internal Rate of Return (IRR)	
Amortization Period	
Electricity Production Costs	
Energy Balance/Feed-in Concept	

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

Consumption

Total Consumption	39580 kWh
Household, load profile with high night proportion	39580 kWh
Load Peak	107.7 kW

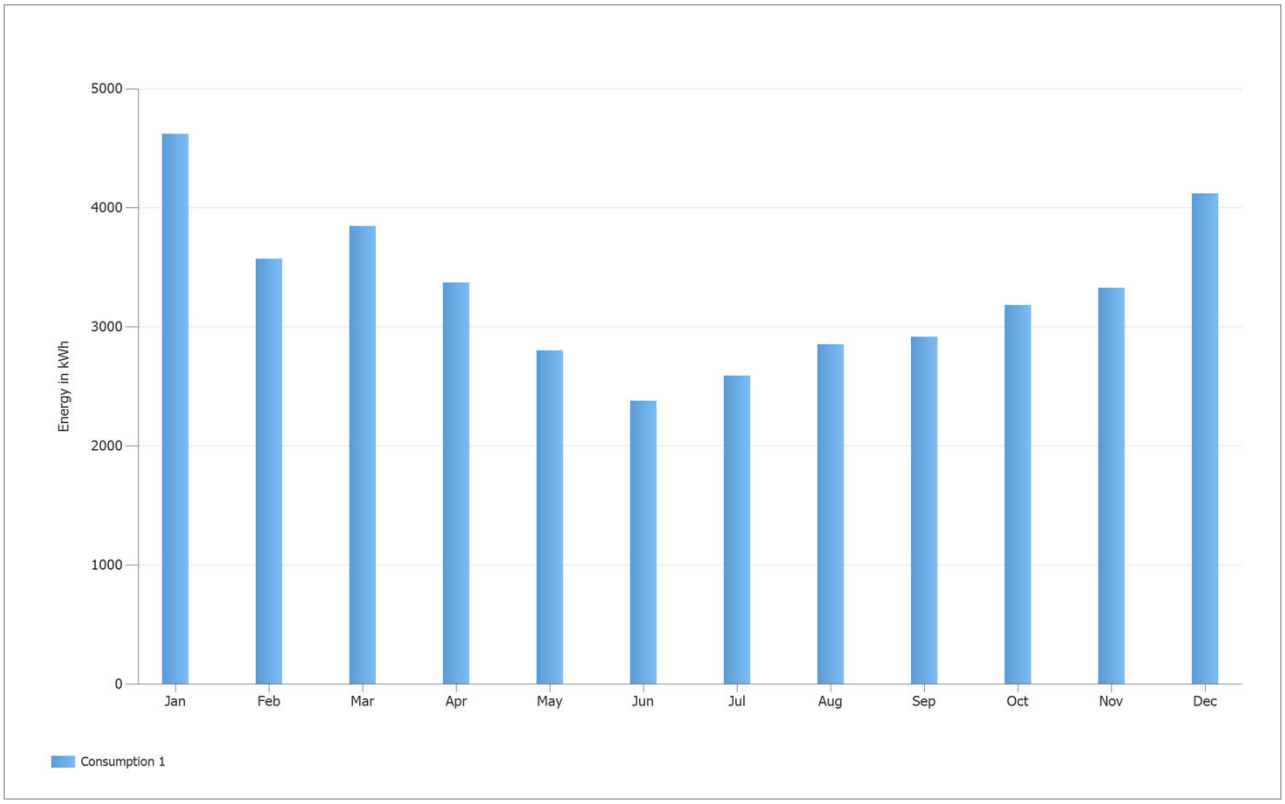


Figure: Consumption

Module Areas

1. Module Area - Open Area (Map Section)-Module Area East

PV Generator, 1. Module Area - Open Area (Map Section)-Module Area East

Name	Open Area (Map Section)-Module Area East	
PV Modules	28 x AIKO-A450-MAH54Mw (2nd Generation) (v2)	
Manufacturer	Aiko	
Inclination	10	°
Orientation	East 90	°
Installation Type	Mounted - Open Space	
PV Generator Surface	55.8	m²

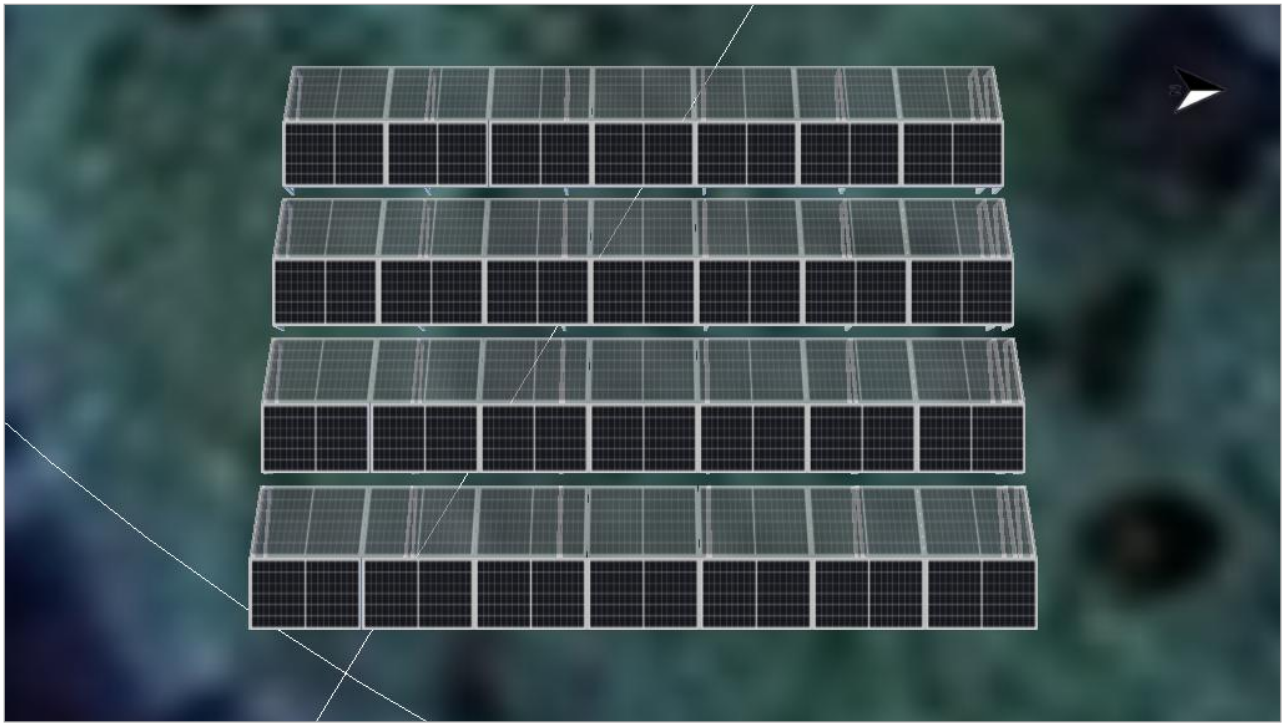


Figure: 1. Module Area - Open Area (Map Section)-Module Area East

2. Module Area - Open Area (Map Section)-Module Area West

PV Generator, 2. Module Area - Open Area (Map Section)-Module Area West

Name	Open Area (Map Section)-Module Area West	
PV Modules	28 x AIKO-A450-MAH54Mw (2nd Generation) (v2)	
Manufacturer	Aiko	
Inclination	10	°
Orientation	West 270	°
Installation Type	Mounted - Open Space	
PV Generator Surface	55.8	m²

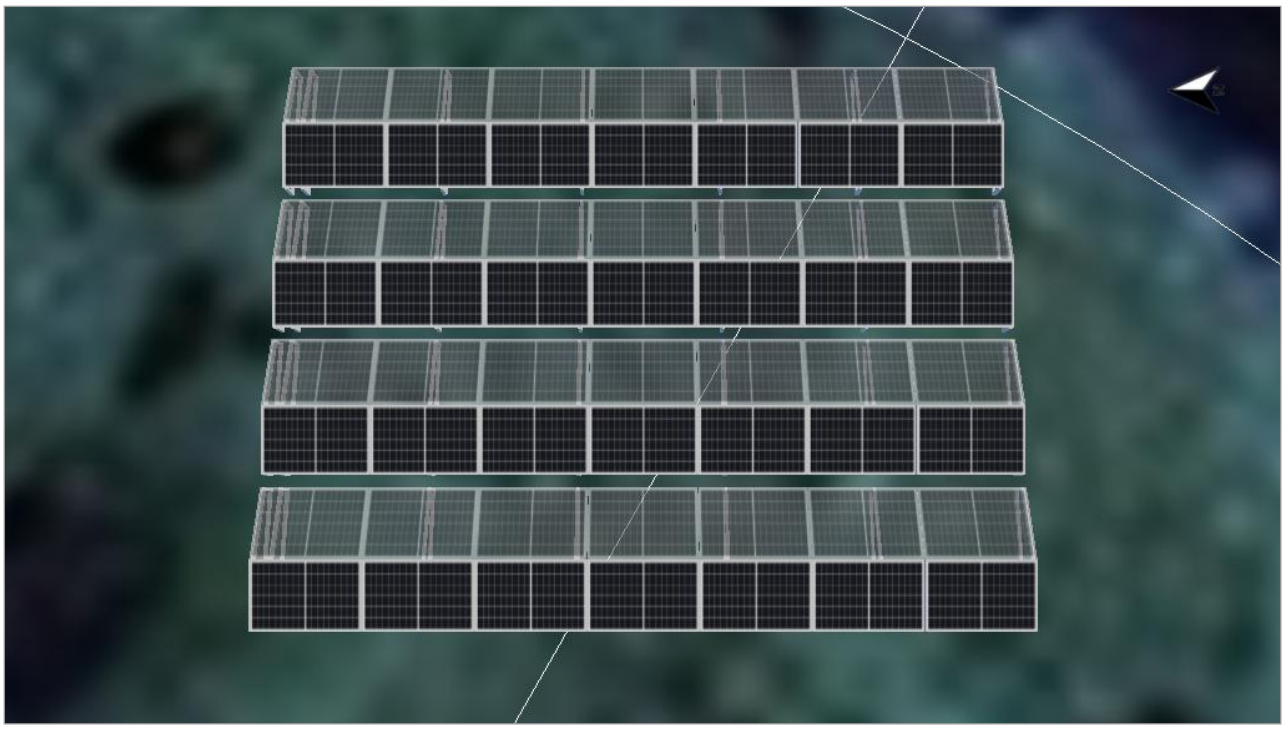


Figure: 2. Module Area - Open Area (Map Section)-Module Area West

Horizon Line, 3D Design

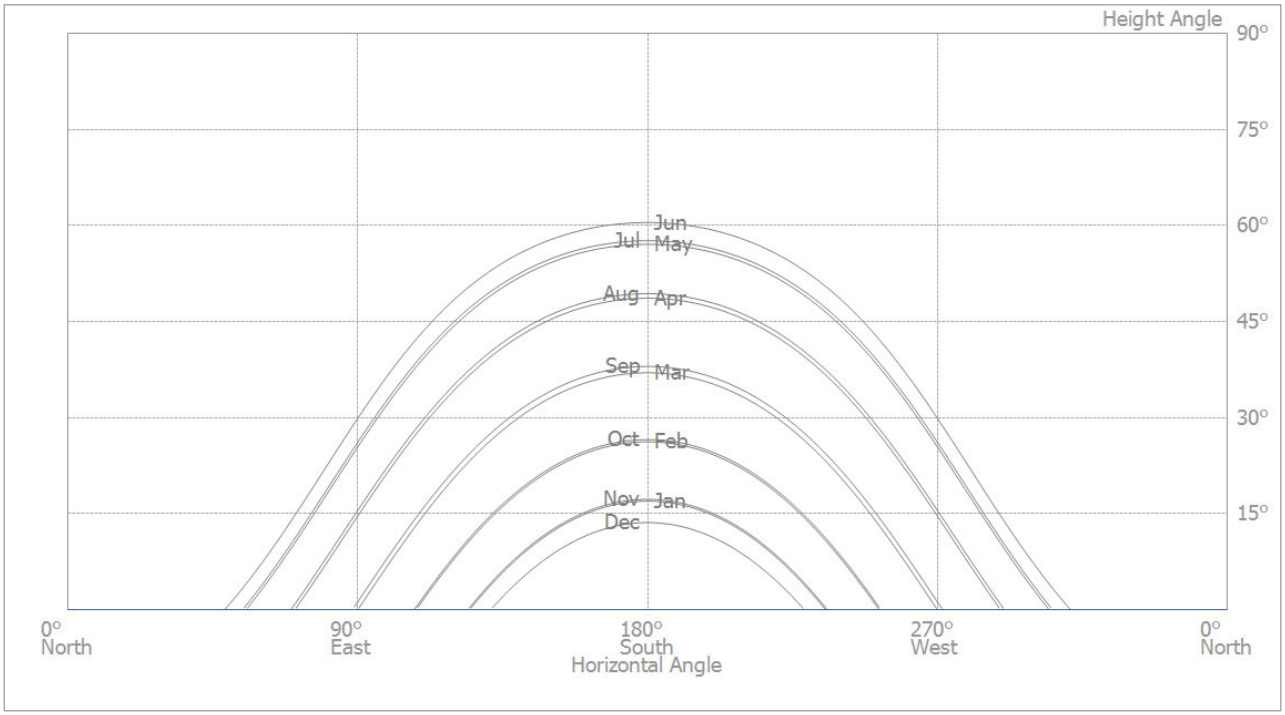


Figure: Horizon (3D Design)

Inverter configuration

Configuration 1

Module Areas	Open Area (Map Section)-Module Area East + Open Area (Map Section)-Module Area West
Inverter 1	
Model	X3-ULT-15K (v4)
Manufacturer	SolaX Power Co., Ltd.
Quantity	1
Sizing Factor	168 %
Configuration	MPP 1: 2 x 14
	MPP 2: 2 x 14

AC Mains

AC Mains

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

Battery Systems

Battery System - Group 1

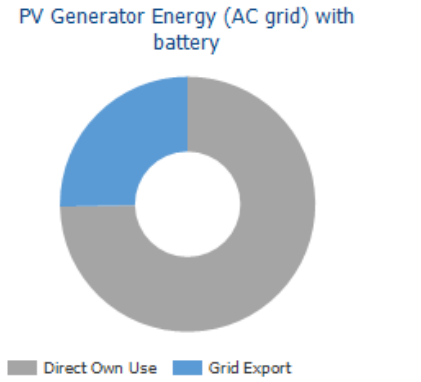
Model	X3-ULT-15K + T58*3*2 (v3)	
Manufacturer	SolaX Power Co., Ltd.	
Quantity	1	
Battery Inverter		
Type of coupling	DC intermediate circuit coupling	
Nominal output	15	kW
Battery		
Manufacturer	SolaX Power Co., Ltd.	
Model	T58 (v2)	
Quantity	6	
Battery Energy	31.1	kWh
Battery Type	Lithium iron phosphate	

Simulation Results

Results Total System

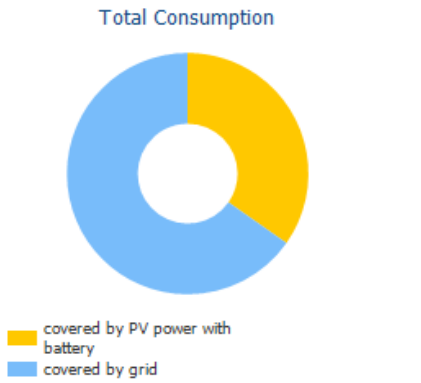
PV System

PV Generator Output	25.20	kWp
Spec. Annual Yield	747.43	kWh/kWp
Performance Ratio (PR)	80.92	%
Yield Reduction due to Shading	15.3	%
PV Generator Energy (AC grid) with battery	18,428	kWh/Year
Direct Own Use	13,765	kWh/Year
Grid Export	4,663	kWh/Year
Own Power Consumption	74.6	%
CO_2 Emissions avoided	6,826	kg / year



Appliances

Appliances	39,580	kWh/Year
Standby Consumption (Inverter)	43	kWh/Year
Total Consumption	39,623	kWh/Year
covered by PV power with battery	13,765	kWh/Year
covered by grid	25,858	kWh/Year
Solar Fraction	34.7	%



Battery System

Charge at beginning	31	kWh
Battery Charge (PV System)	6,042	kWh/Year
Battery Energy for the Covering of Consumption	5,591	kWh/Year
Battery discharge into the grid	60	kWh/Year
Losses due to charging/discharging	369	kWh/Year
Losses in Battery	53	kWh/Year
Cycle Load	3.7	%
Service Life	>20	Years

Level of Self-sufficiency

Total Consumption	39,623	kWh/Year
covered by grid	25,858	kWh/Year
Level of Self-sufficiency	34.7	%

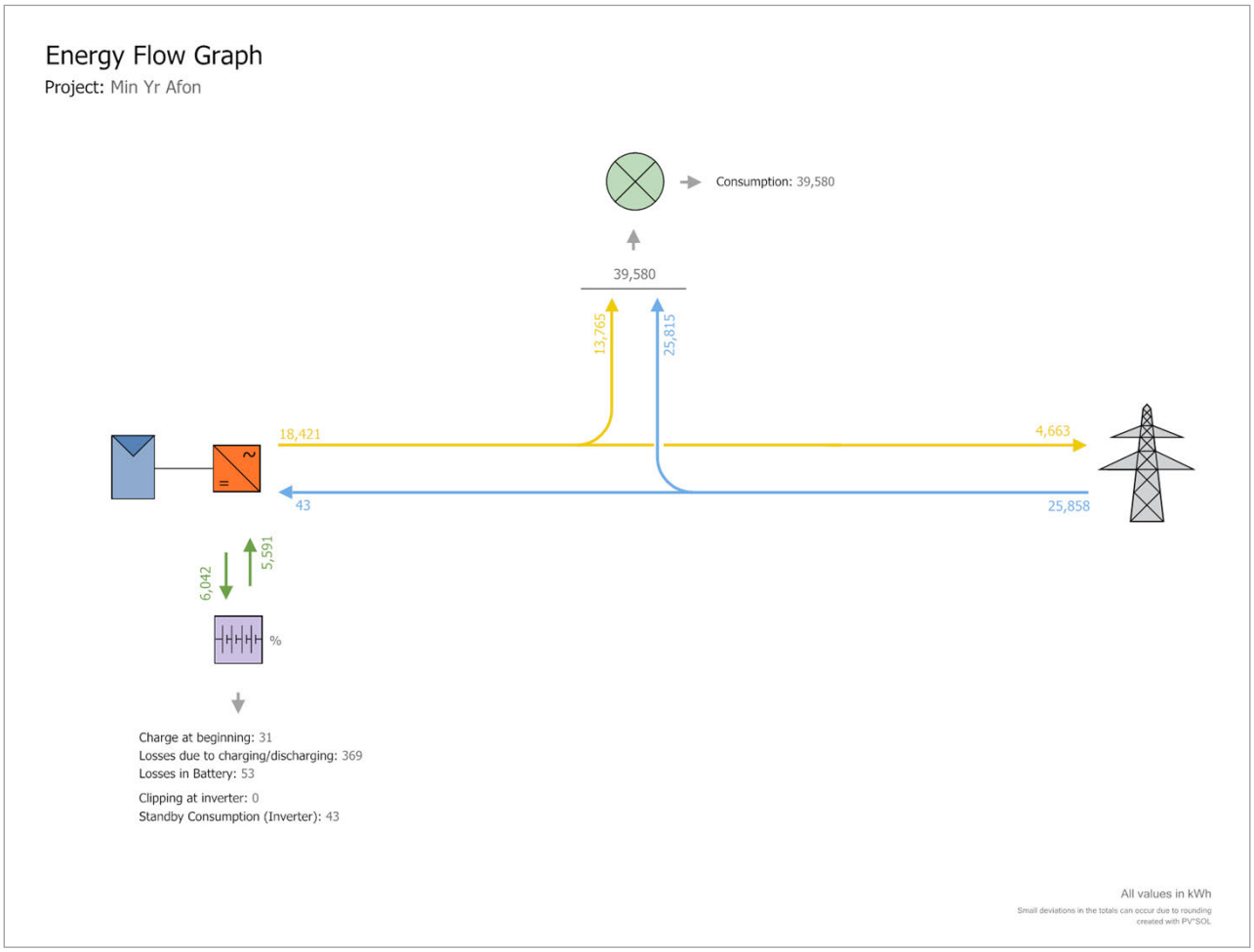


Figure: Energy flow

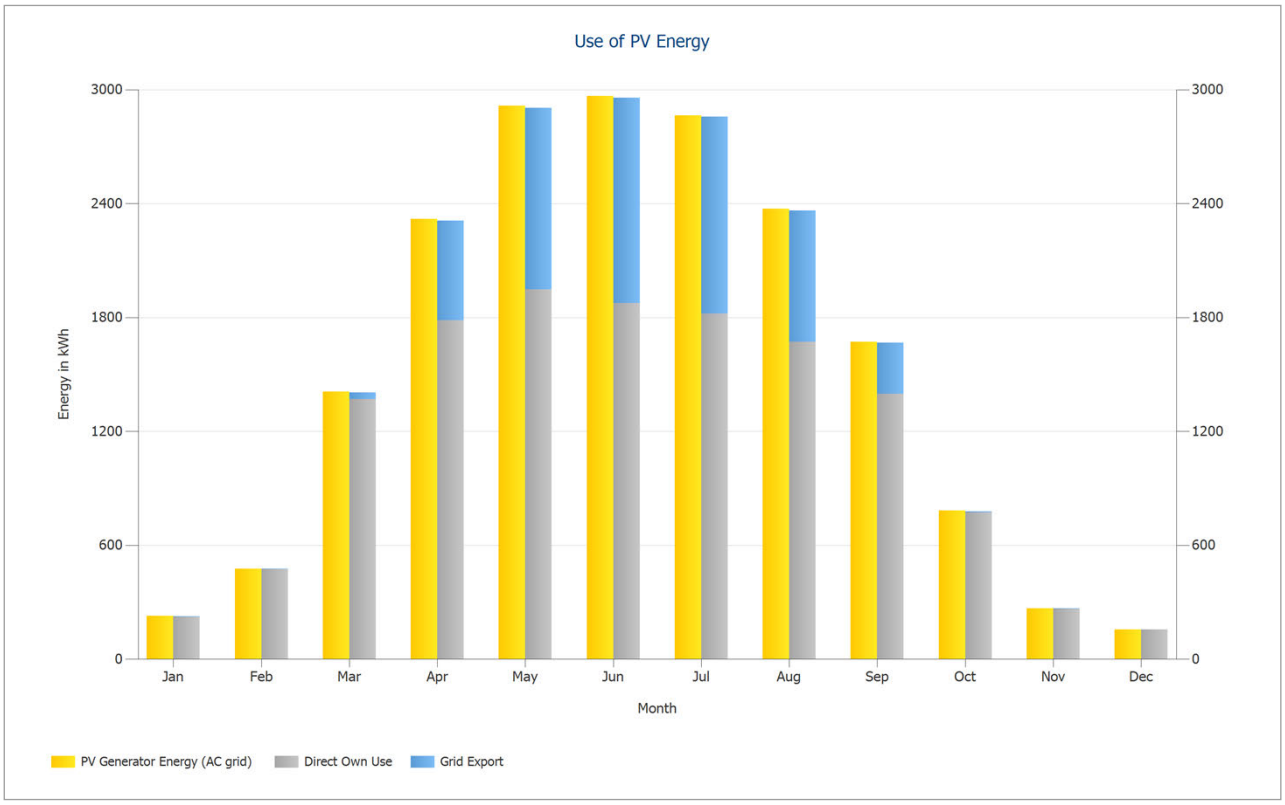


Figure: Use of PV Energy

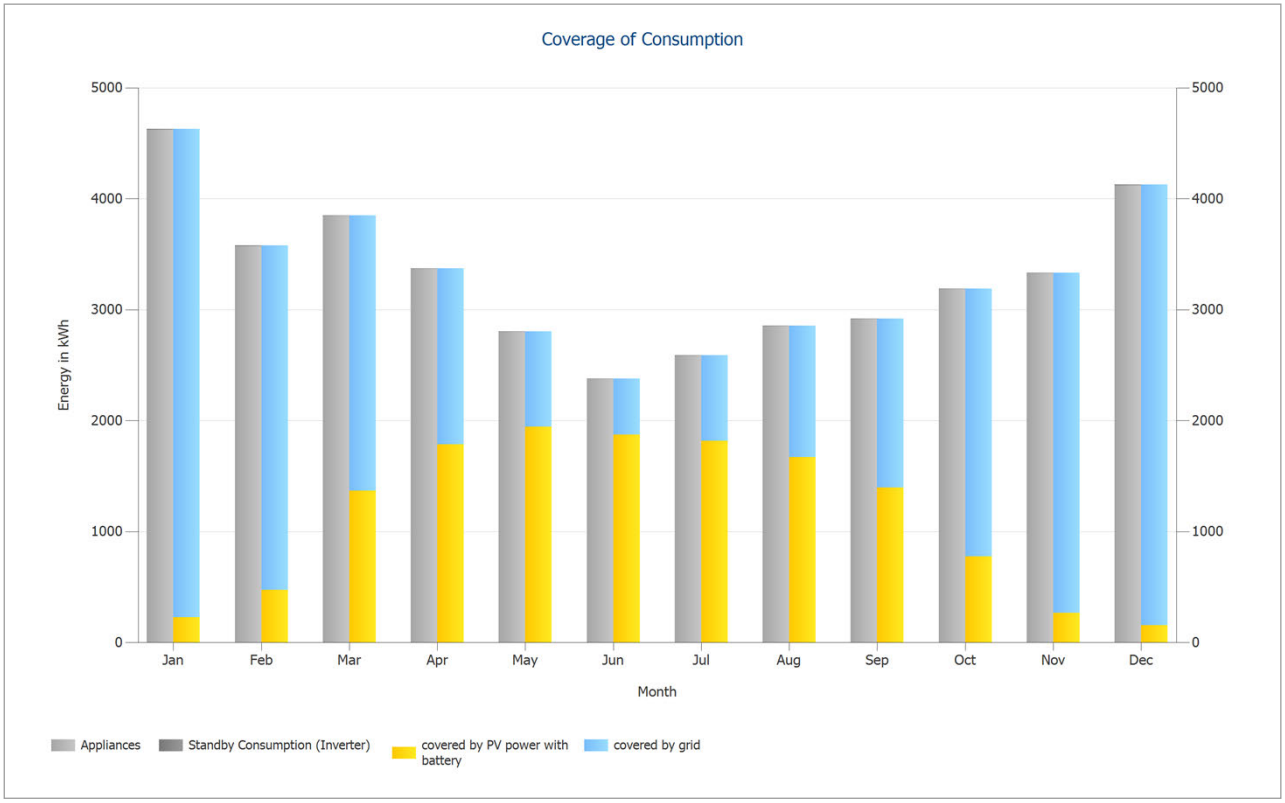


Figure: Coverage of Consumption

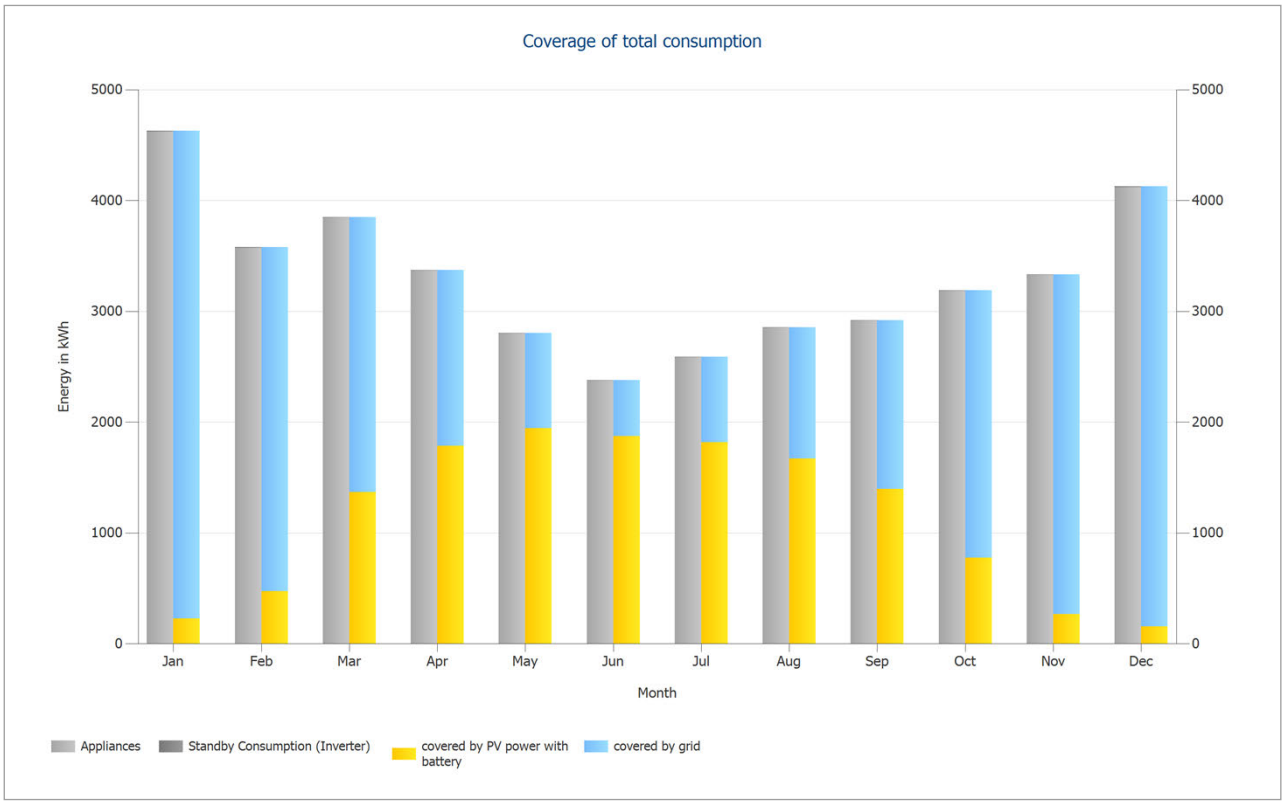


Figure: Coverage of total consumption

Financial Analysis

Overview

System Data

Grid Export in the first year (incl. module degradation)	4,663 kWh/Year
PV Generator Output	25.2 kWp
Assessment Period (Input)	20 Years
Interest on Capital	1 %

Start, duration and end of remuneration

Start of Operation of the System	07/04/2026
Remuneration period	20 Years
End of remuneration	06/04/2046

Economic Parameters

Internal Rate of Return (IRR)	16.47 %

[redacted]

[redacted]

[redacted]

Cash flow









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

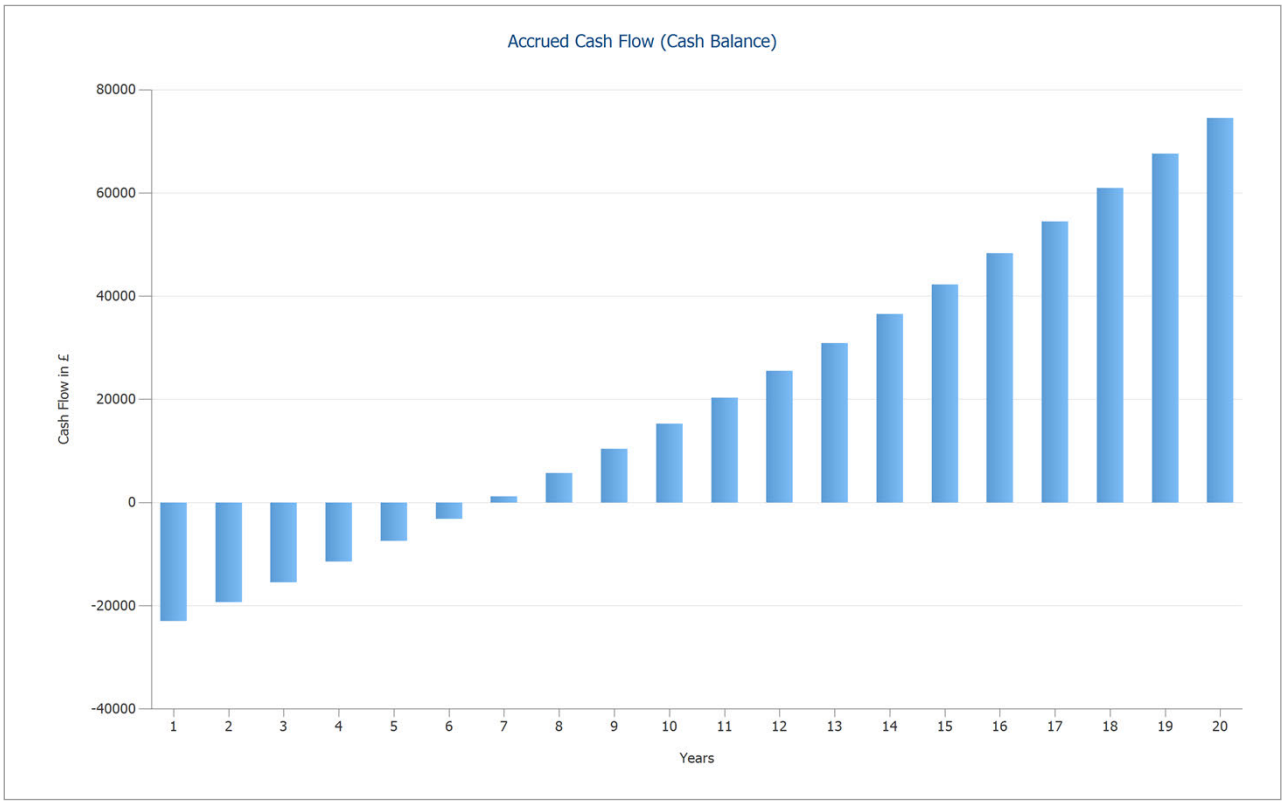


Figure: Accrued Cash Flow (Cash Balance)

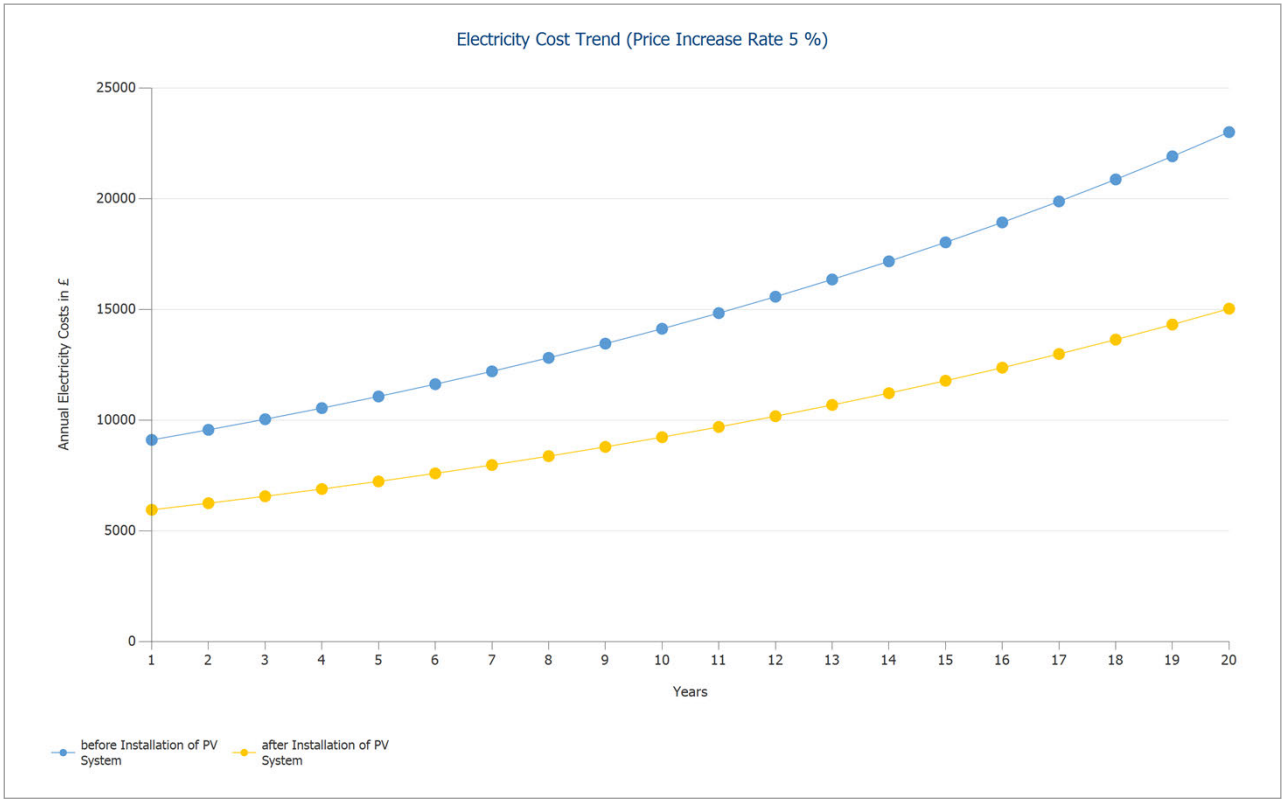


Figure: Electricity Cost Trend (Price Increase Rate 5 %)

Plans and parts list

Parts list

Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		Aiko	AIKO-A450-MAH54Mw (2nd Generation)	56	Piece
2	Inverter		SolaX Power Co., Ltd.	X3-ULT-15K	1	Piece
3	Battery System		SolaX Power Co., Ltd.	X3-ULT-15K + T58*3*2	1	Piece

Screenshots, 3D Design

Environment

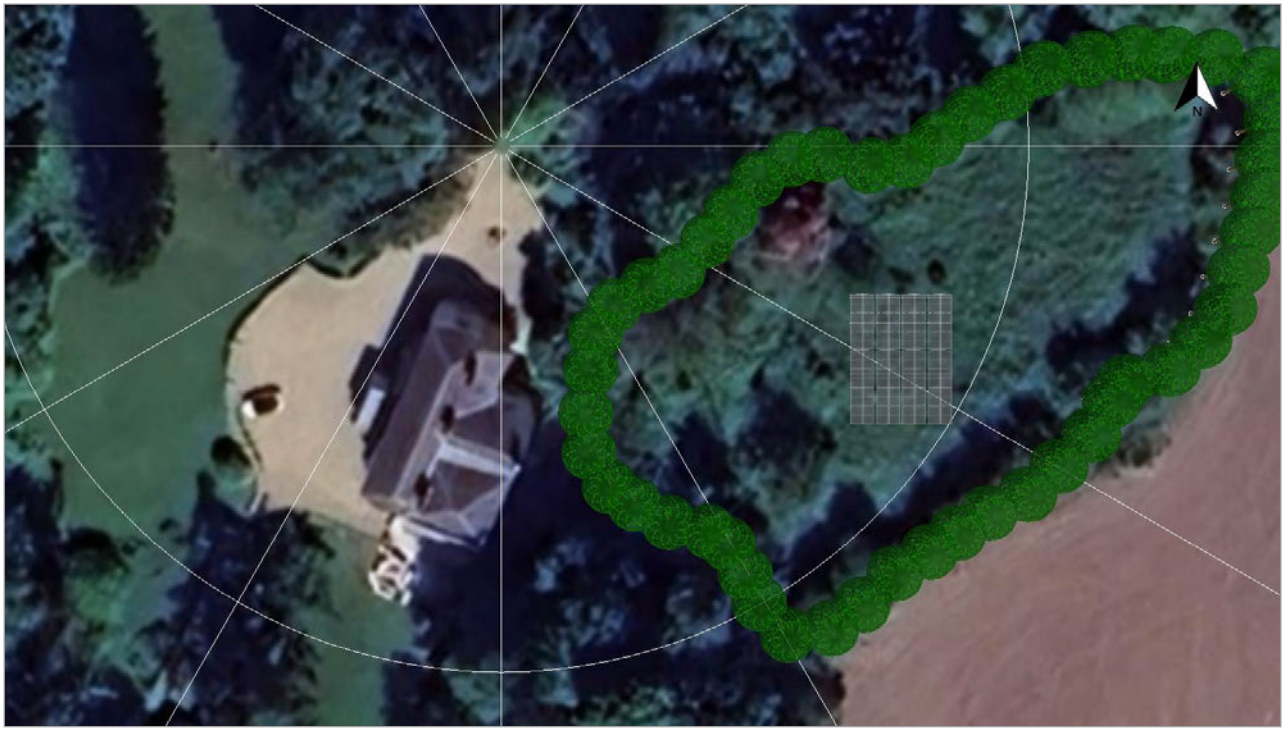


Figure: Screenshot01

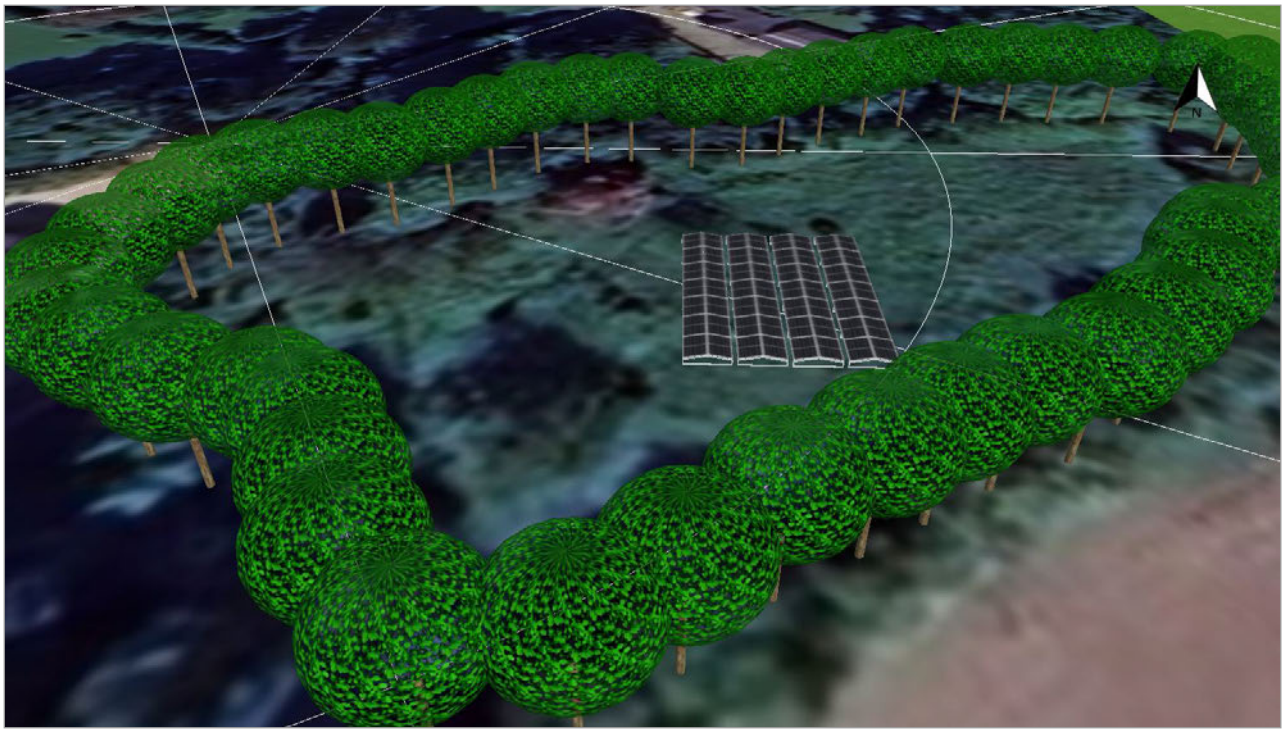


Figure: Screenshot02