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Project Name: Barton Perival College

Offer no.: 184

15/03/2024

Your PV system from Evergen Solar

Address of Installation

SO50 5ZA



Barton Peveril
Sixth Form College

Project Overview



Figure: Overview Image, 3D Design

PV System

3D, Grid-connected PV System with Electrical Appliances

Climate Data	Eastleigh, GBR (1996 - 2015)
Values source	Meteonorm 8.1(i)
PV Generator Output	35.2 kWp
PV Generator Surface	165.3 m ²
Number of PV Modules	64
Number of Inverters	1

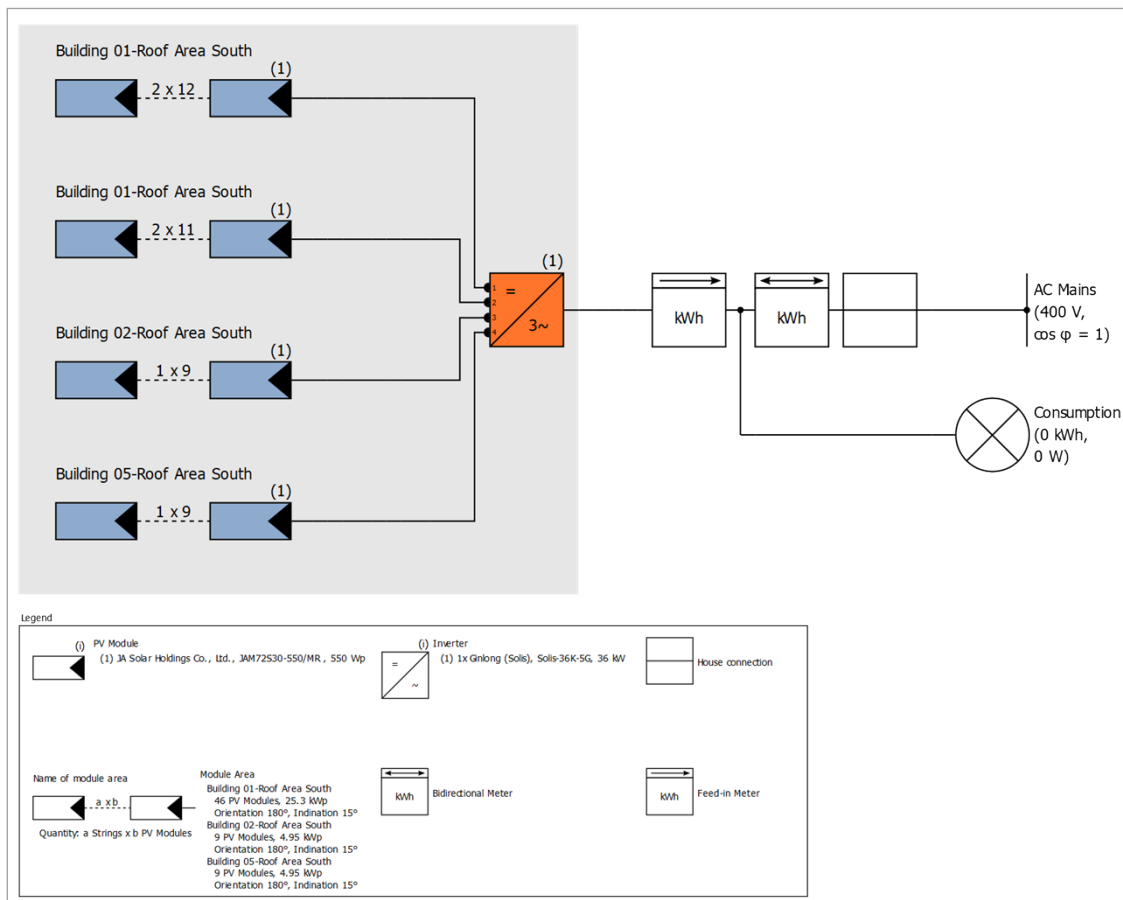


Figure: Schematic diagram

Production Forecast

Production Forecast

PV Generator Output	35.20 kWp
Spec. Annual Yield	1,154.50 kWh/kWp
Performance Ratio (PR)	93.81 %
Yield Reduction due to Shading	0.6 %
PV Generator Energy (AC grid)	40,661 kWh/Year
Own Consumption	0 kWh/Year
Surplus consumption	0 kWh/Year
Down-regulation at Feed-in Point	0 kWh/Year
Grid Export	40,661 kWh/Year
Own Power Consumption	-0.1 %
CO ₂ Emissions avoided	16,255 kg / year
Level of Self-sufficiency	0.0 %

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

Module Areas

1. Module Area - Building 01-Roof Area South

PV Generator, 1. Module Area - Building 01-Roof Area South

Name	Building 01-Roof Area South
PV Modules	46 x JAM72S30-550/MR (v1)
Manufacturer	JA Solar Holdings Co., Ltd.
Inclination	15 °
Orientation	South 180 °
Installation Type	Roof parallel
PV Generator Surface	118.8 m ²

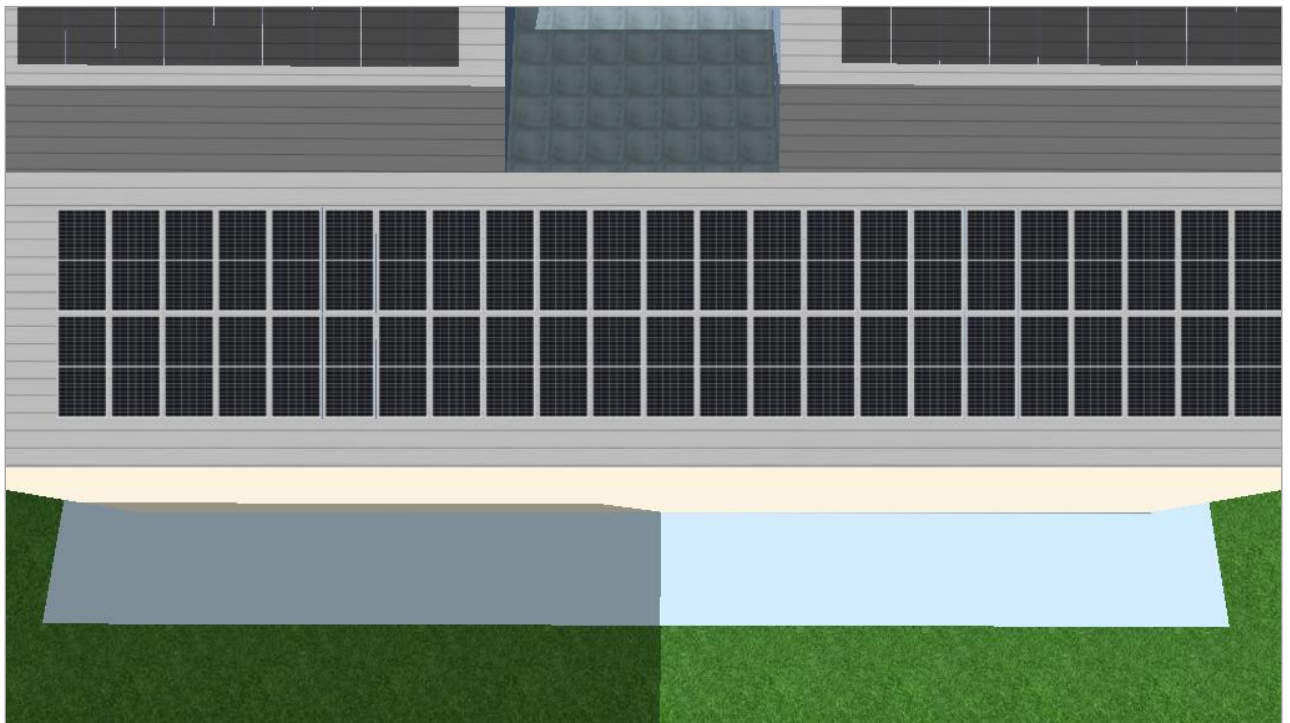


Figure: 1. Module Area - Building 01-Roof Area South

2. Module Area - Building 02-Roof Area South

PV Generator, 2. Module Area - Building 02-Roof Area South

Name	Building 02-Roof Area South
PV Modules	9 x JAM72S30-550/MR (v1)
Manufacturer	JA Solar Holdings Co., Ltd.
Inclination	15 °
Orientation	South 180 °
Installation Type	Roof parallel
PV Generator Surface	23.2 m ²

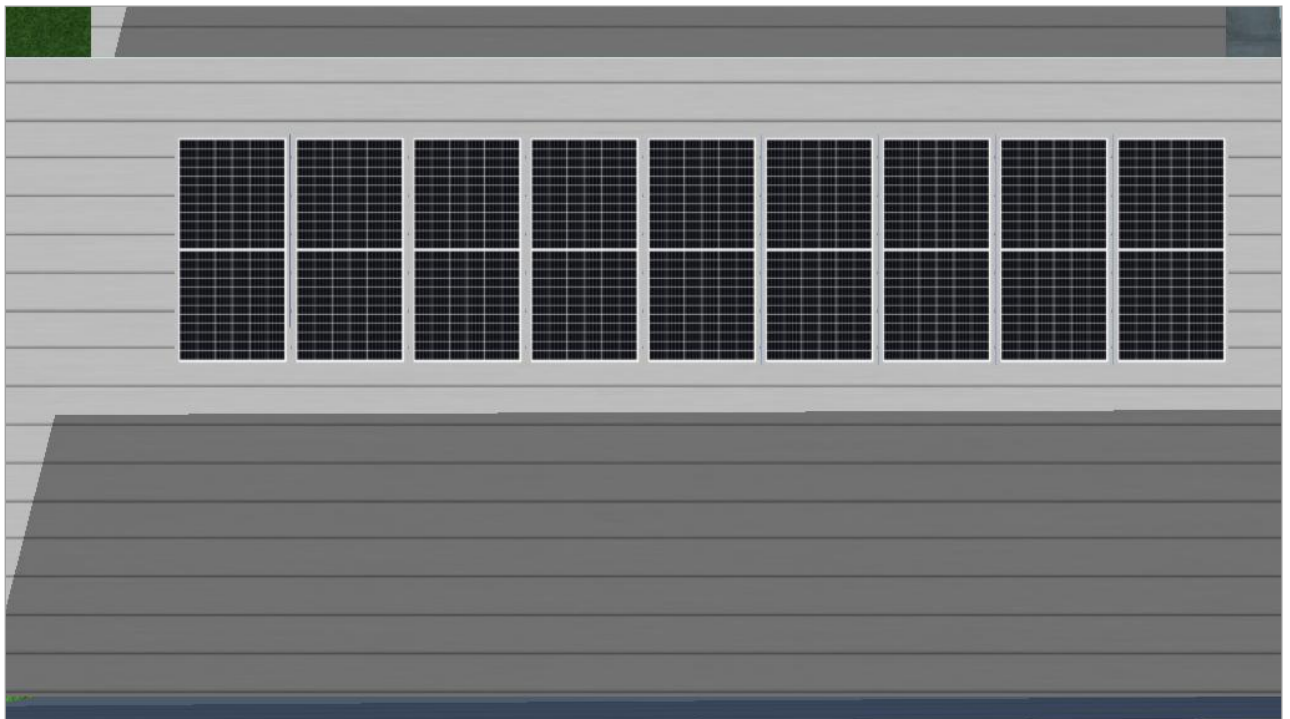


Figure: 2. Module Area - Building 02-Roof Area South

3. Module Area - Building 05-Roof Area South

PV Generator, 3. Module Area - Building 05-Roof Area South

Name	Building 05-Roof Area South
PV Modules	9 x JAM72S30-550/MR (v1)
Manufacturer	JA Solar Holdings Co., Ltd.
Inclination	15 °
Orientation	South 180 °
Installation Type	Roof parallel
PV Generator Surface	23.2 m ²

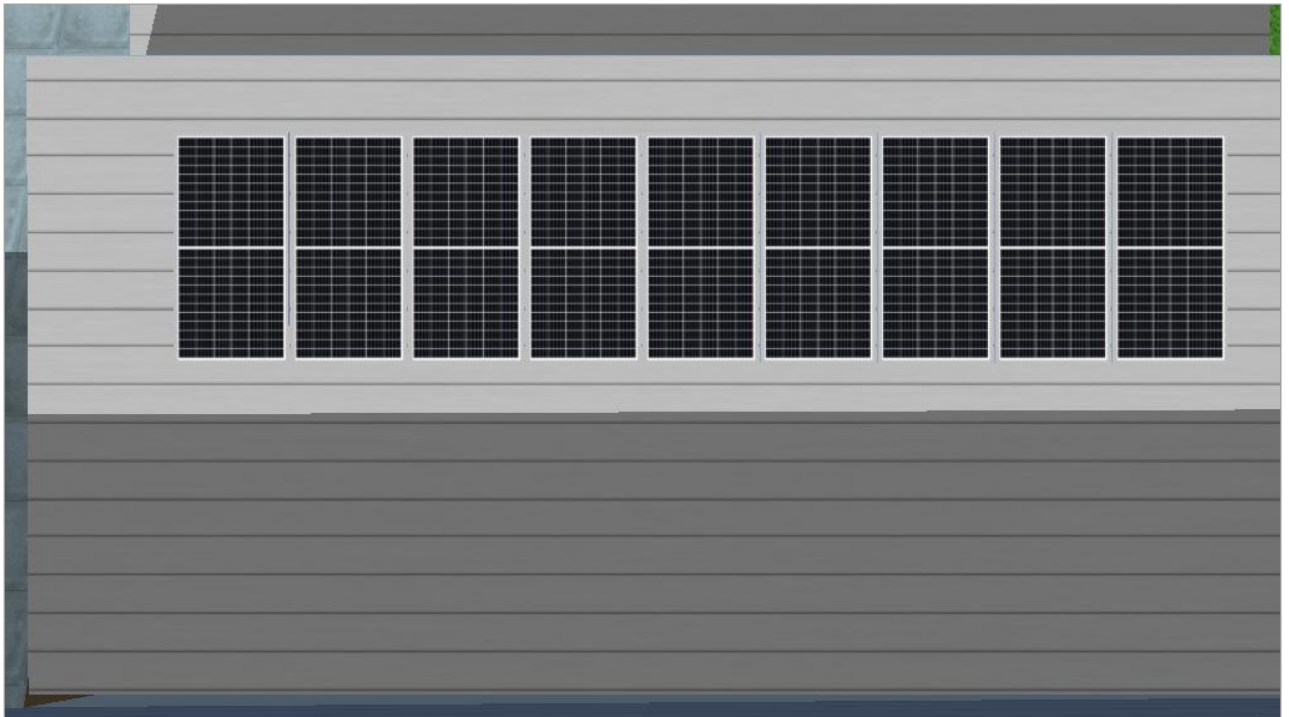


Figure: 3. Module Area - Building 05-Roof Area South

Horizon Line, 3D Design

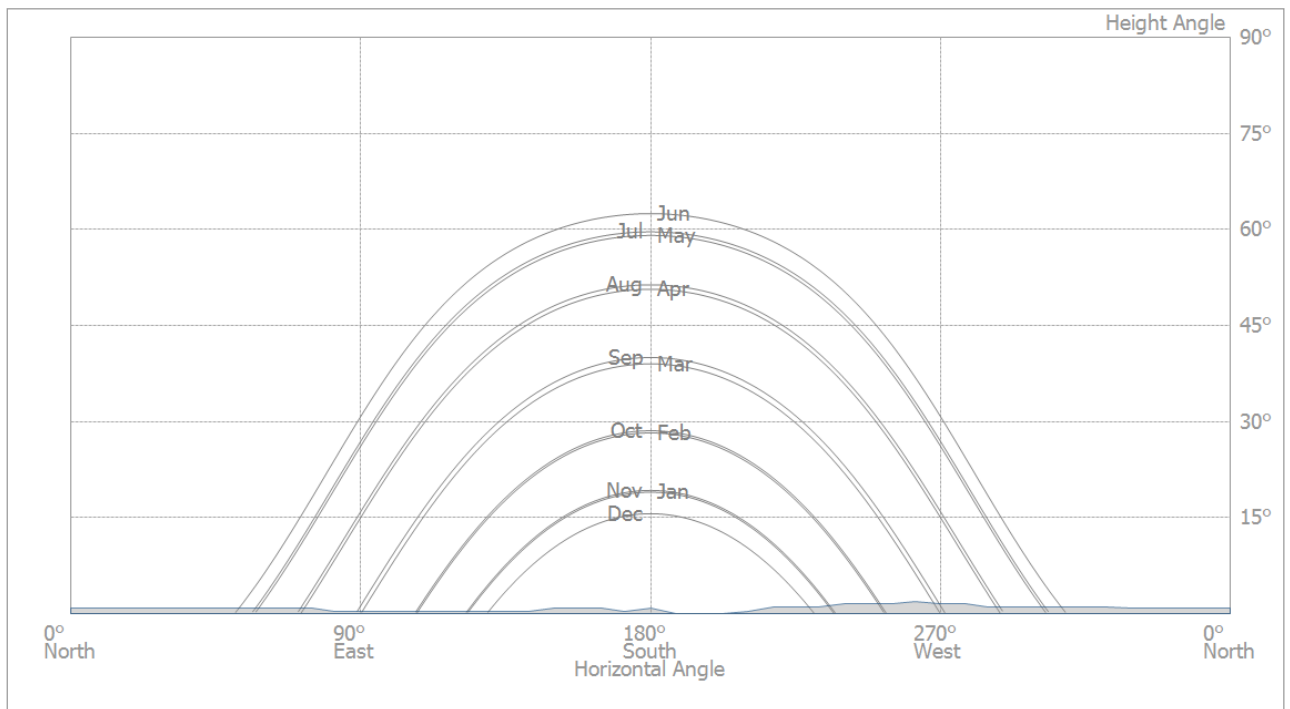


Figure: Horizon (3D Design)

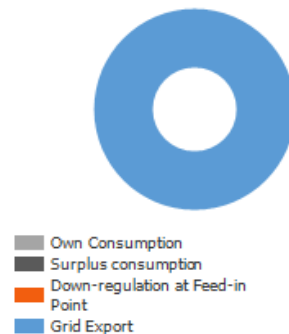
Simulation Results

Results Total System

PV System

PV Generator Output	35.20 kWp
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Grid Export	40,661 kWh/Year
Own Power Consumption	-0.1 %
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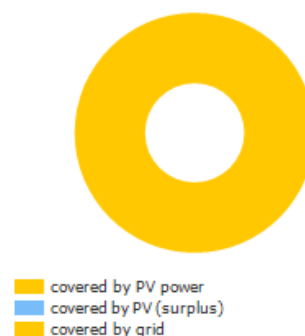
PV Generator Energy (AC grid)



Appliances

Appliances	0 kWh/Year
Standby Consumption (Inverter)	23 kWh/Year
Surplus consumption	0 kWh/Year
Total Consumption	23 kWh/Year
covered by PV power	0 kWh/Year
covered by PV (surplus)	0 kWh/Year
covered by grid	23 kWh/Year
Solar Fraction	0.0 %

Total Consumption

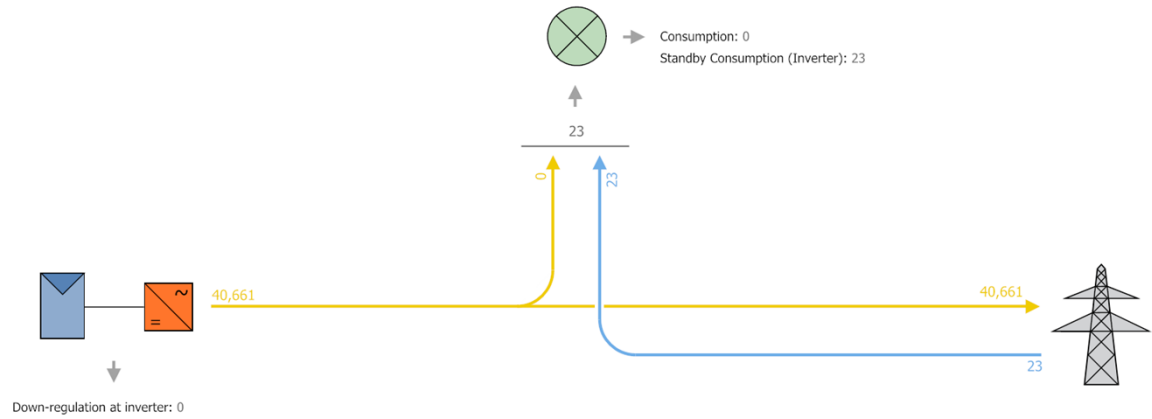


Level of Self-sufficiency

Total Consumption	23 kWh/Year
covered by grid	23 kWh/Year
Level of Self-sufficiency	0.0 %

Energy Flow Graph

Project: Barton Perival College



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

Figure: Energy flow

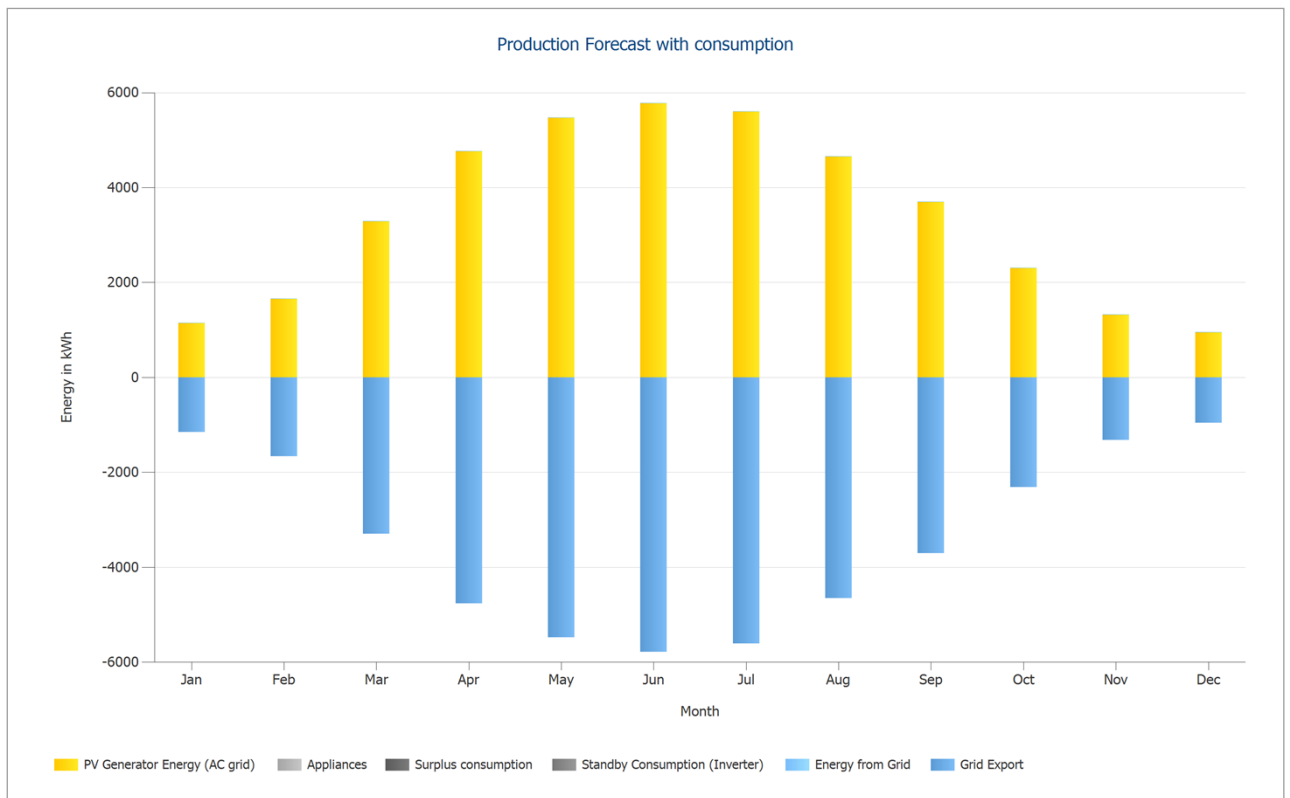


Figure: Production Forecast with consumption

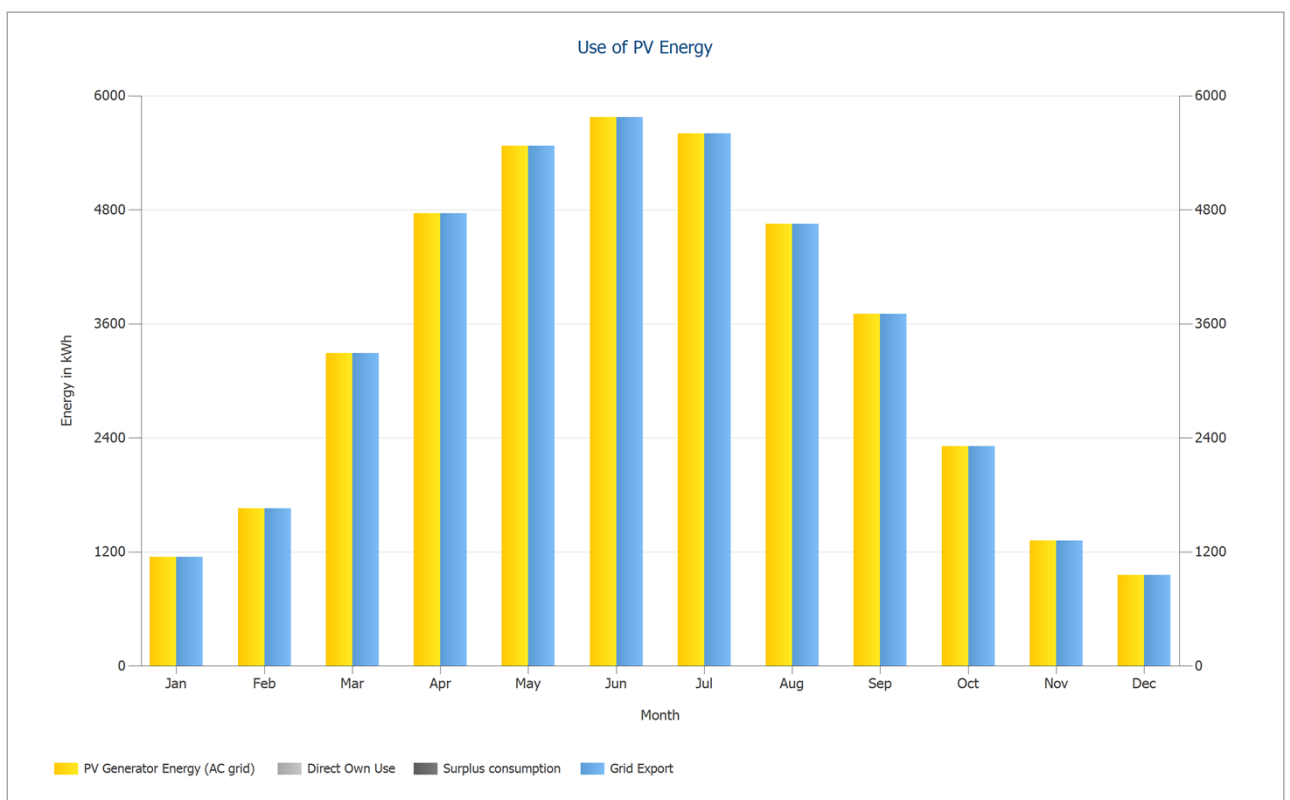


Figure: Use of PV Energy

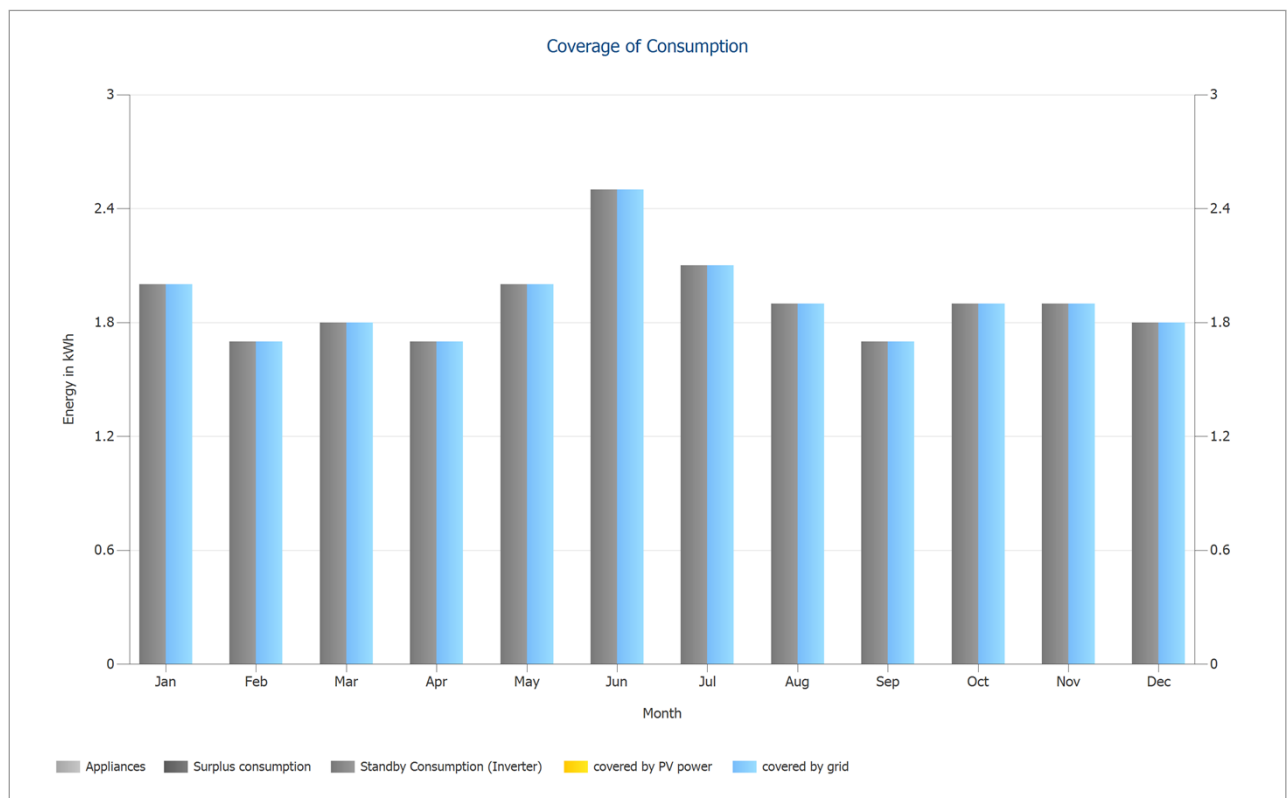


Figure: Coverage of Consumption

Results per Module Area

Building 01-Roof Area South

PV Generator Output	25.30 kWp
PV Generator Surface	118.83 m ²
Global Radiation at the Module	1231.70 kWh/m ²
Global Radiation on Module without reflection	1233.09 kWh/m ²
Performance Ratio (PR)	94.15 %
PV Generator Energy (AC grid)	29378.57 kWh/Year
Spec. Annual Yield	1161.21 kWh/kWp

Building 02-Roof Area South

PV Generator Output	4.95 kWp
PV Generator Surface	23.25 m ²
Global Radiation at the Module	1222.46 kWh/m ²
Global Radiation on Module without reflection	1223.85 kWh/m ²
Performance Ratio (PR)	93.05 %
PV Generator Energy (AC grid)	5637.69 kWh/Year
Spec. Annual Yield	1138.93 kWh/kWp

Building 05-Roof Area South

PV Generator Output	4.95 kWp
PV Generator Surface	23.25 m ²
Global Radiation at the Module	1222.46 kWh/m ²
Global Radiation on Module without reflection	1223.85 kWh/m ²
Performance Ratio (PR)	93.17 %
PV Generator Energy (AC grid)	5645.01 kWh/Year
Spec. Annual Yield	1140.41 kWh/kWp

Data Sheets

PV Module Data Sheet

PV Module: JAM72S30-550/MR (v1)

Manufacturer	JA Solar Holdings Co., Ltd.
Available	Yes

Electrical Data

Cell Type	Si monocrystalline
Half-cell module	Yes
Cell Count	144
Number of Bypass Diodes	3
Loss voltage per bypass diode	1 V
Integrated power optimizer	No
Only Transformer Inverters suitable	No

I/V Characteristics at STC

MPP Voltage	41.96 V
MPP Current	13.11 A
Open Circuit Voltage	49.9 V
Short-Circuit Current	14 A
Increase open circuit voltage before stabilisation	0 %
Nominal output	550 W
Fill Factor	78.74 %
Efficiency	21.29 %

I/V Part Load Characteristics

Values source	Manufacturer/user-created
Irradiance	200 W/m ²
Voltage in MPP at Part Load	40.816 V
Current in MPP at Part Load	2.677 A
Open Circuit Voltage (Part Load)	46.974 V
Short Circuit Current at Part Load	2.8 A

Additional Parameters

Temperature Coefficient of Voc	-113.1 mV/K
Temperature Coefficient of Isc	5.87 mA/K
Temperature Coefficient of Pmpp	-0.35 %/K
Incident Angle Modifier (IAM)	100 %
Maximum System Voltage	1500 V

Mechanical Data

Width	1134 mm
Height	2278 mm
Depth	30 mm
Frame Width	33 mm
Weight	27.8 kg

Inverter Data Sheet

Inverter: Solis-36K-5G (v2)

Manufacturer	Ginlong (Solis)
Available	Yes
Electrical data - DC	
DC nominal output	36 kW
Max. DC Power	62.4 kW
Nom. DC Voltage	600 V
Max. Input Voltage	1100 V
Max. Input Current	104 A
Max. short circuit current	160 A
Number of DC Inlets	8
Electrical data - AC	
AC Power Rating	36 kW
Max. AC Power	39.6 kVA
Nom. AC Voltage	230 V
Number of Phases	3
With Transformer	No
Electrical data - other	
Change in Efficiency when Input Voltage deviates from Rated Voltage	0.15 %/100V
Min. Feed-in Power	35 W
Standby Consumption	20 W
Night Consumption	1 W
MPP Tracker	
Output Range < 20% of Power Rating	99.6 %
Output Range > 20% of Power Rating	99.9 %
Count of MPP Trackers	4
MPP Tracker 1-4	
Max. Input Current	26 A
Max. short circuit current	40 A
Max. Input Power	15.6 kW
Min. MPP Voltage	200 V
Max. MPP Voltage	1000 V

Plans and parts list

Overview plan

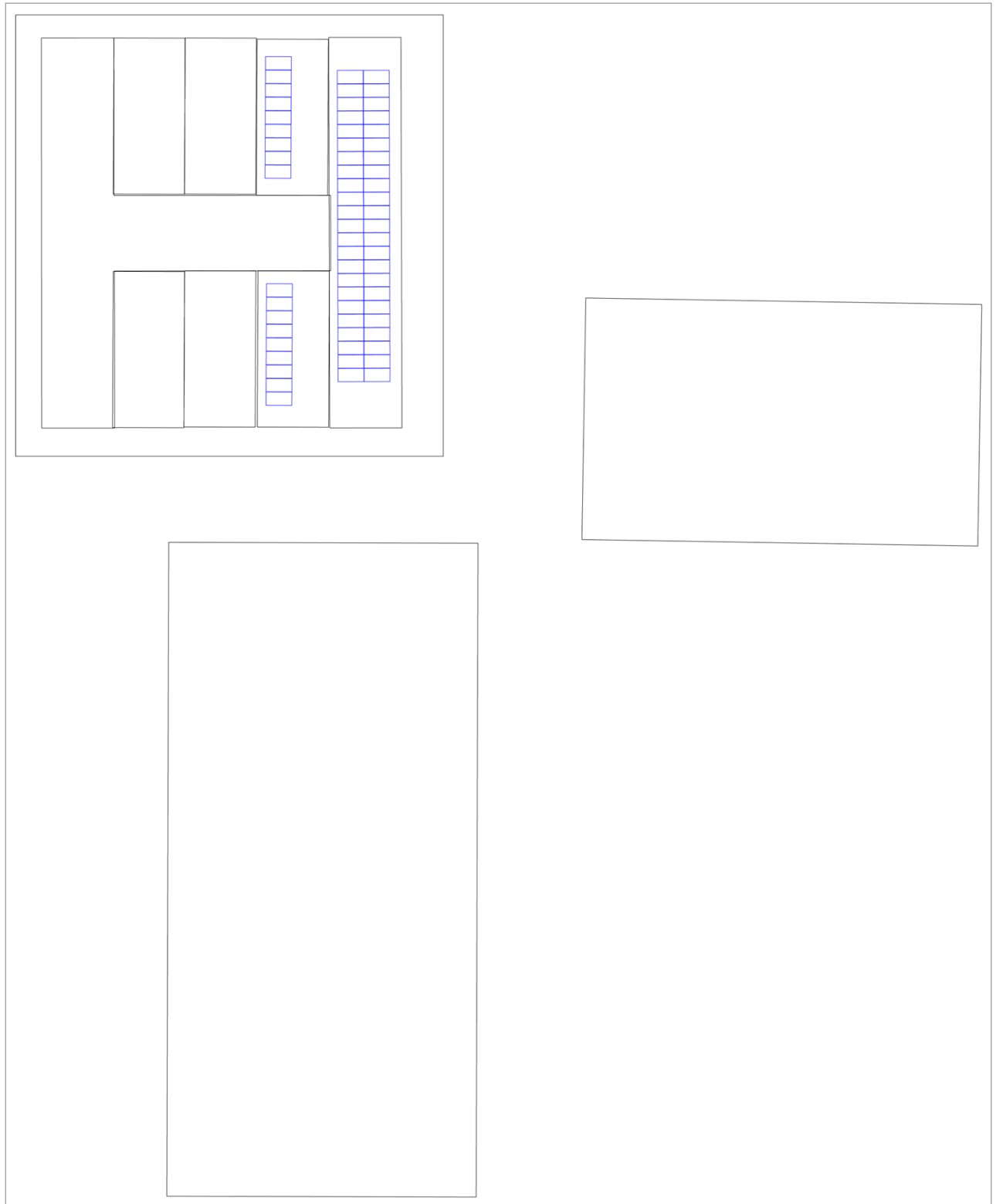


Figure: Overview plan

Parts list

Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		JA Solar Holdings Co., Ltd.	JAM72S30-550/MR	64	Piece
2	Inverter		Ginlong (Solis)	Solis-36K-5G	1	Piece

Screenshots, 3D Design Environment

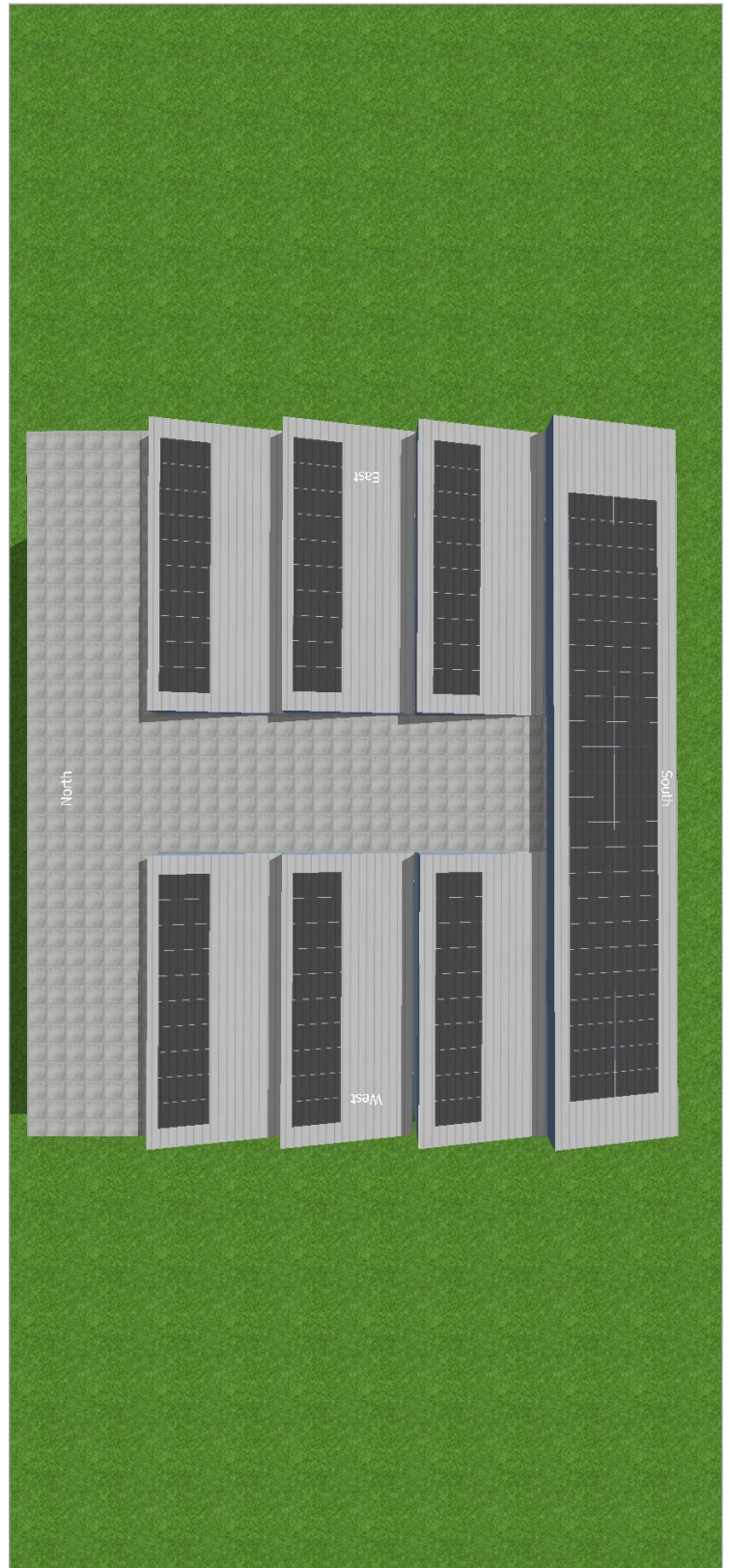


Figure: Screenshot02

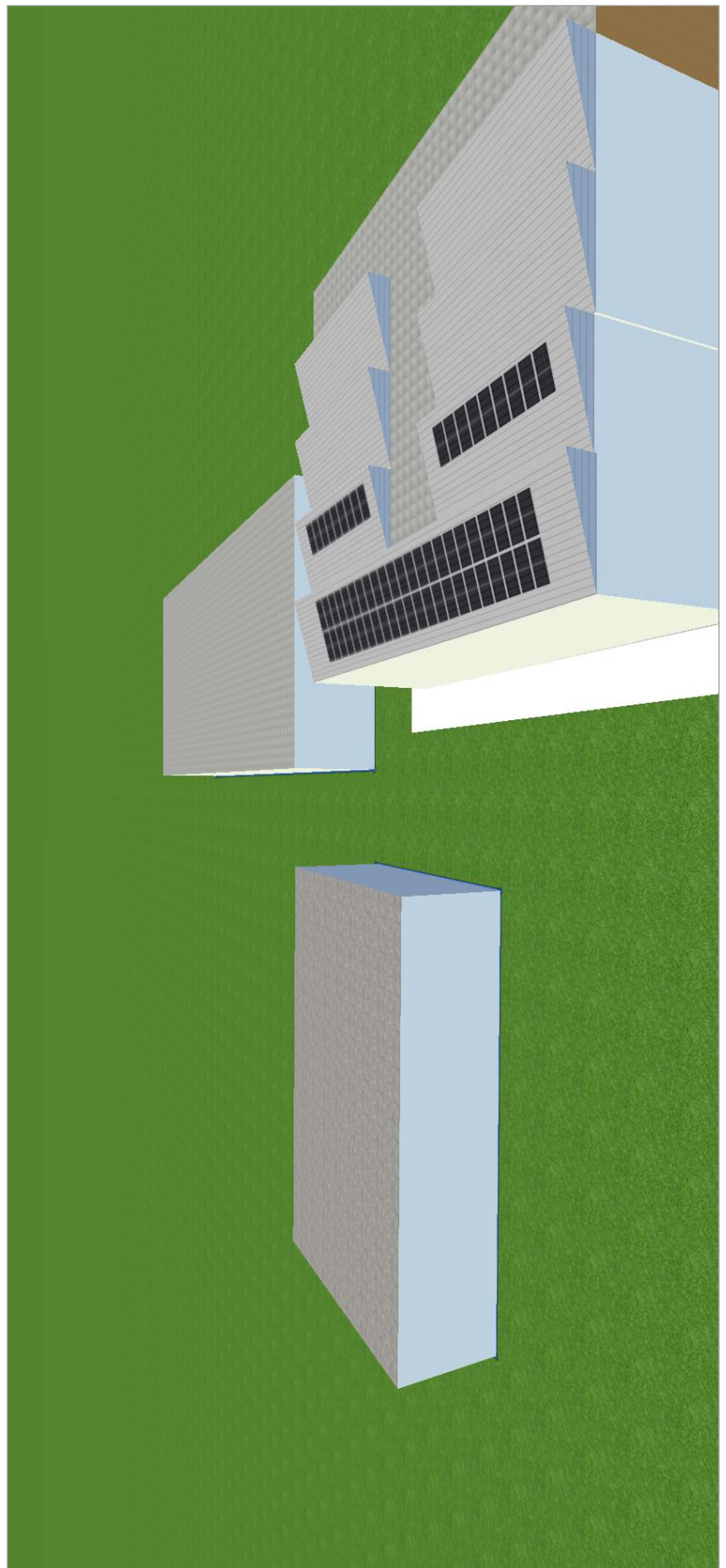


Figure: Screenshot05

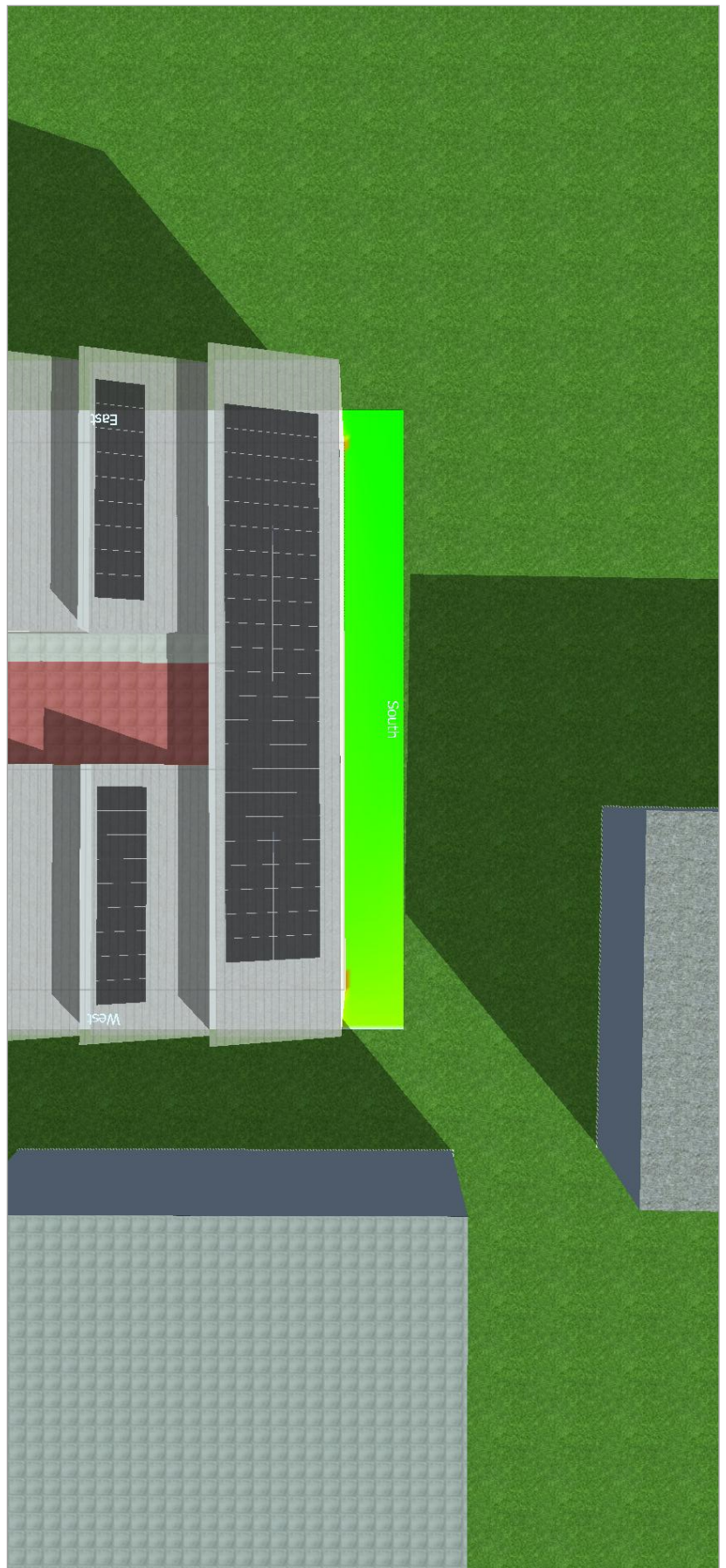


Figure: Screenshot07

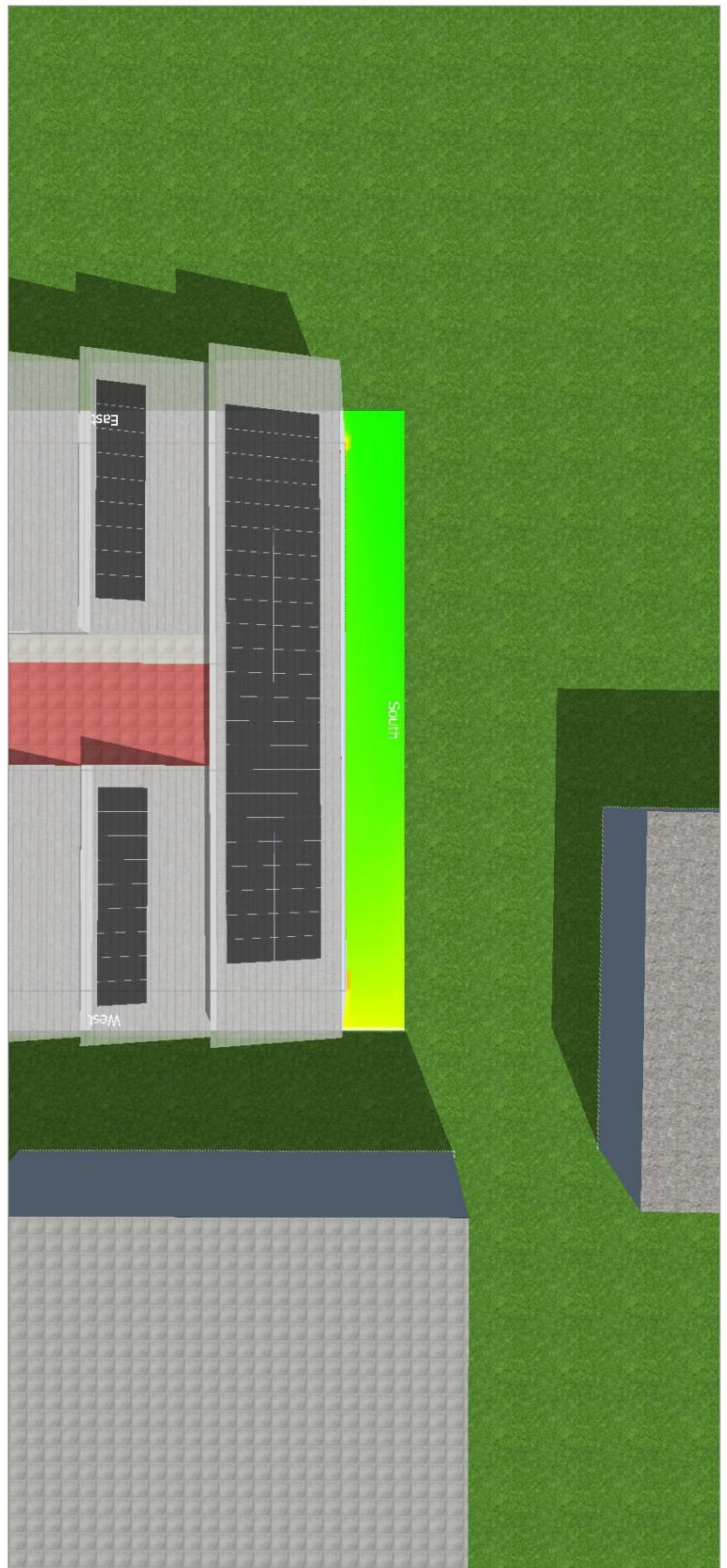


Figure: Screenshot08

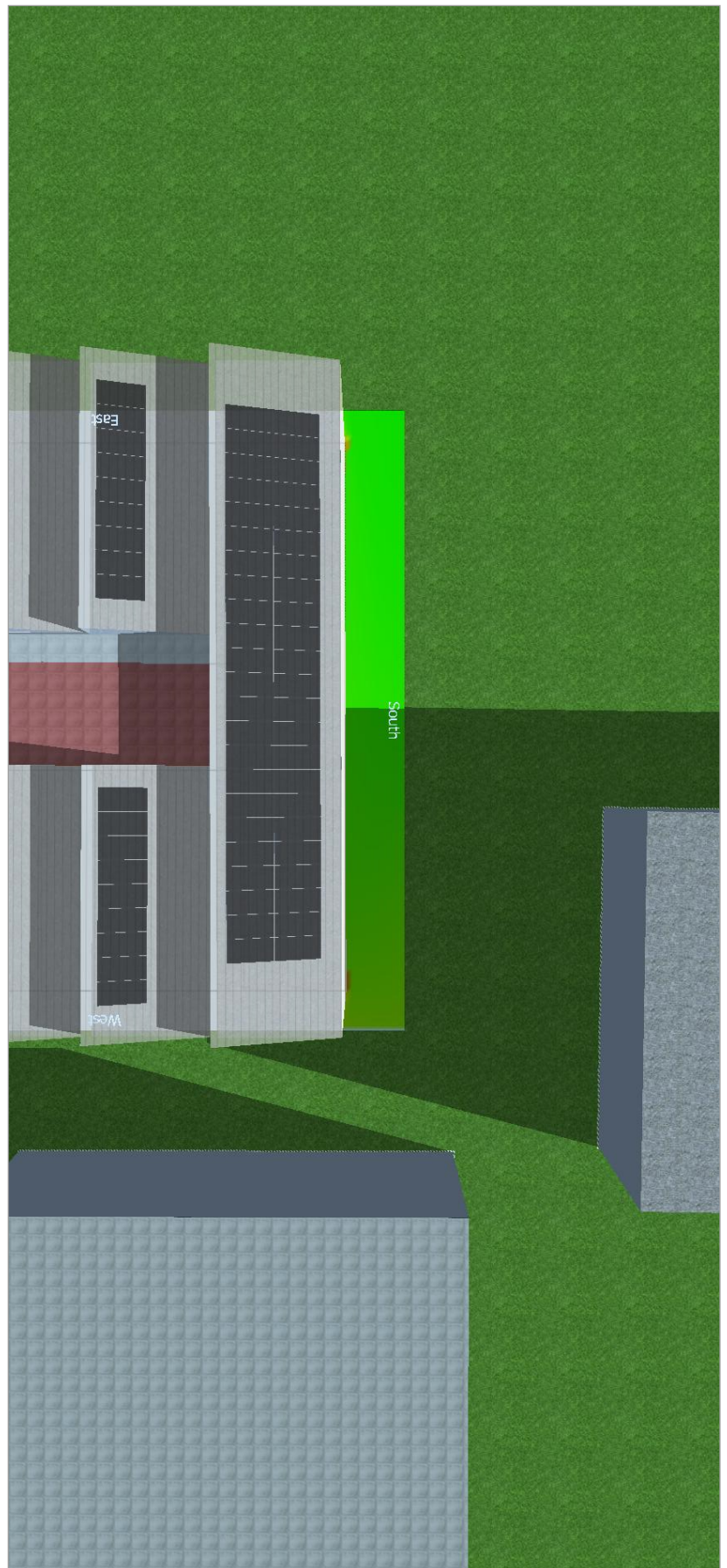


Figure: Screenshot09

Configuration



Figure: Screenshot04

Shading



Figure: Screenshot01



Figure: Screenshot03

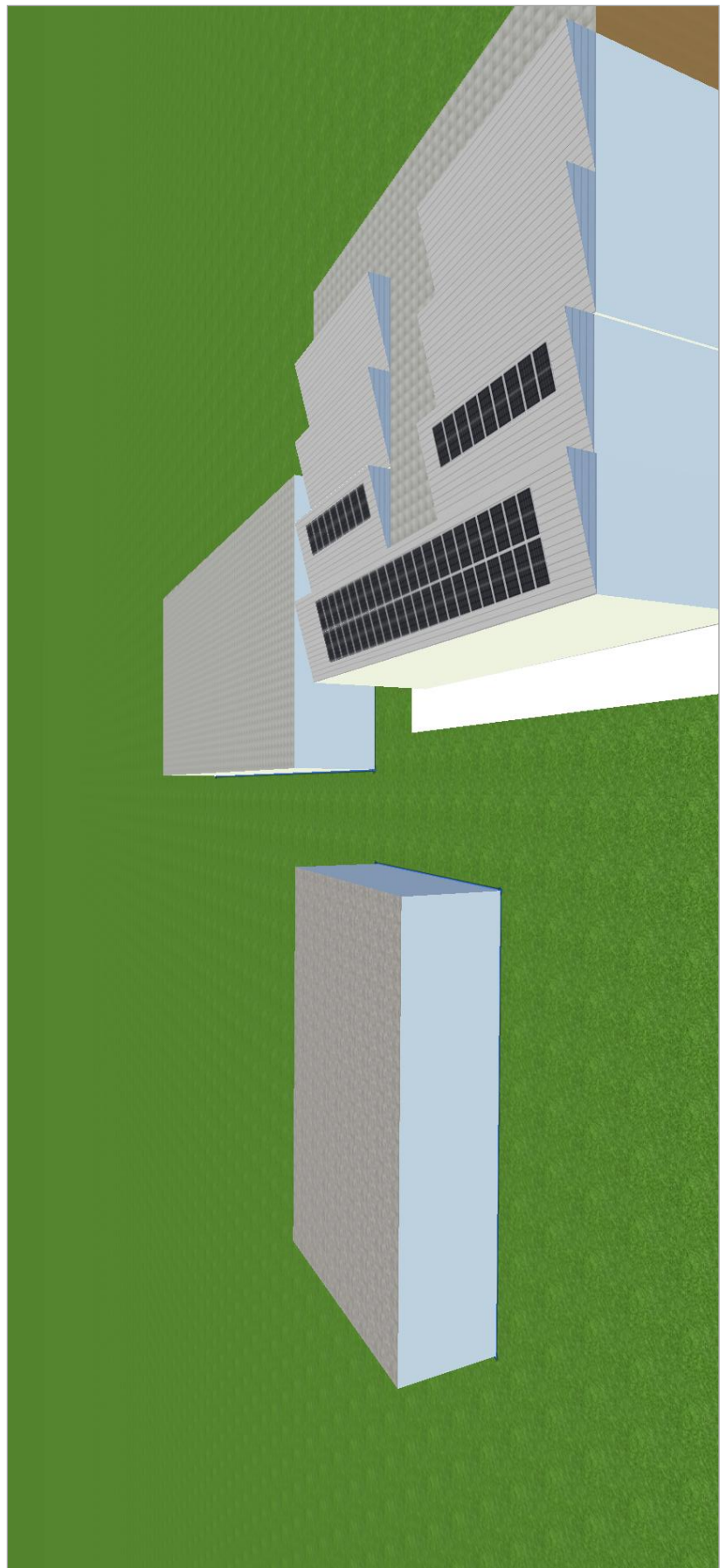


Figure: Screenshot06