

Assura

Ball Haye Road
Leek
ST13 6QR

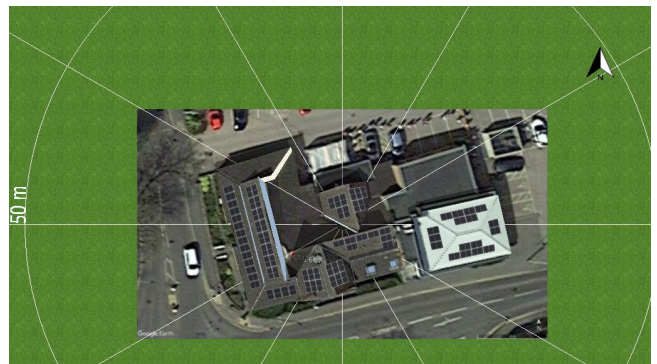
Project Name: Carbon Zero Energy PV installation

29/11/2023

Your PV system

Address of Installation

Ball Haye Road
Leek
ST13 6QR



Project Description:

Installation of grid connected solar PV system

Project Overview



Figure: Overview Image, 3D Design

PV System

3D, Grid-connected PV System with Electrical Appliances

Climate Data	Leek, GBR (2001 - 2020)
Values source	Meteonorm 8.2(i)
PV Generator Output	34.83 kWp
PV Generator Surface	161.8 m ²
Number of PV Modules	81
Number of Inverters	5

Carbon Zero Energy PV installation

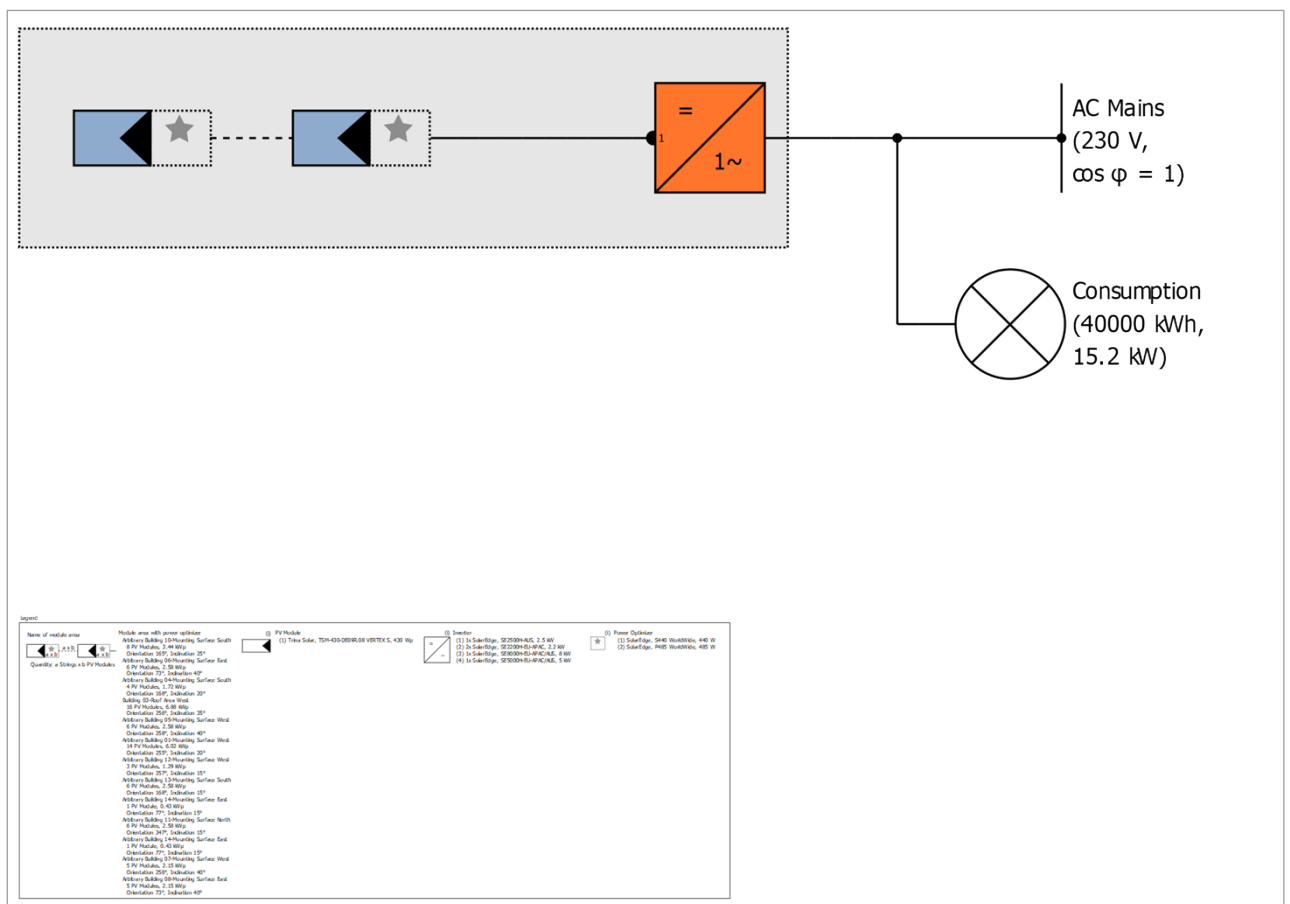


Figure: Schematic diagram

Production Forecast

Production Forecast

PV Generator Output	34.83 kWp
Spec. Annual Yield	845.16 kWh/kWp
Performance Ratio (PR)	86.63 %
Yield Reduction due to Shading	5.3 %

PV Generator Energy (AC grid)	29,491 kWh/Year
Own Consumption	18,608 kWh/Year
Clipping at Feed-in Point	0 kWh/Year
Grid Export	8,537 kWh/Year

Own Power Consumption	71.0 %
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CO ₂ Emissions avoided	5,681 kg / year
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Level of Self-sufficiency	46.5 %
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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	Leek, GBR (2001 - 2020)
Values source	Meteonorm 8.2(i)
Resolution of the data	1 h
Simulation models used:	
- Diffuse Irradiation onto Horizontal Plane	Hofmann
- Irradiance onto tilted surface	Hay & Davies

Consumption

Total Consumption	40000 kWh
5 days Assura	40000 kWh
Load Peak	15.2 kW

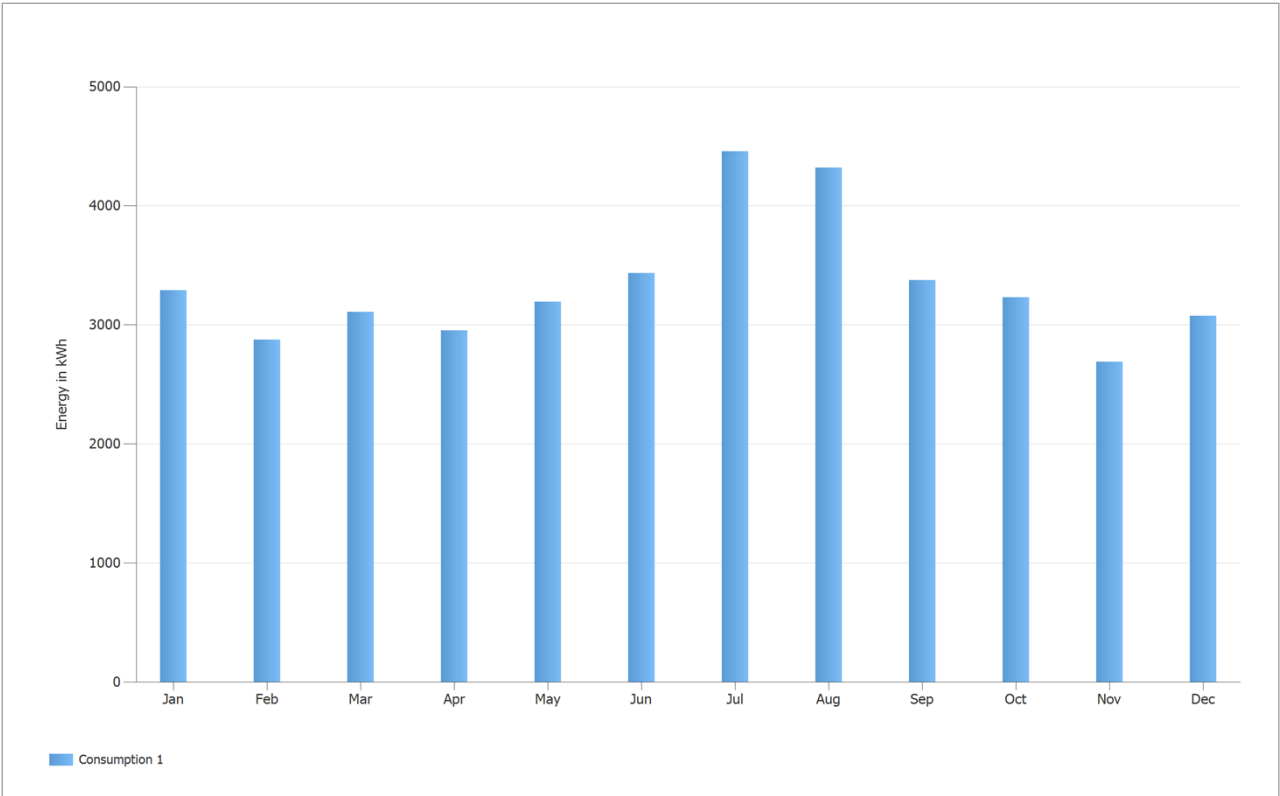


Figure: Consumption

Module Areas

1. Module Area - Arbitrary Building 10-Mounting Surface South

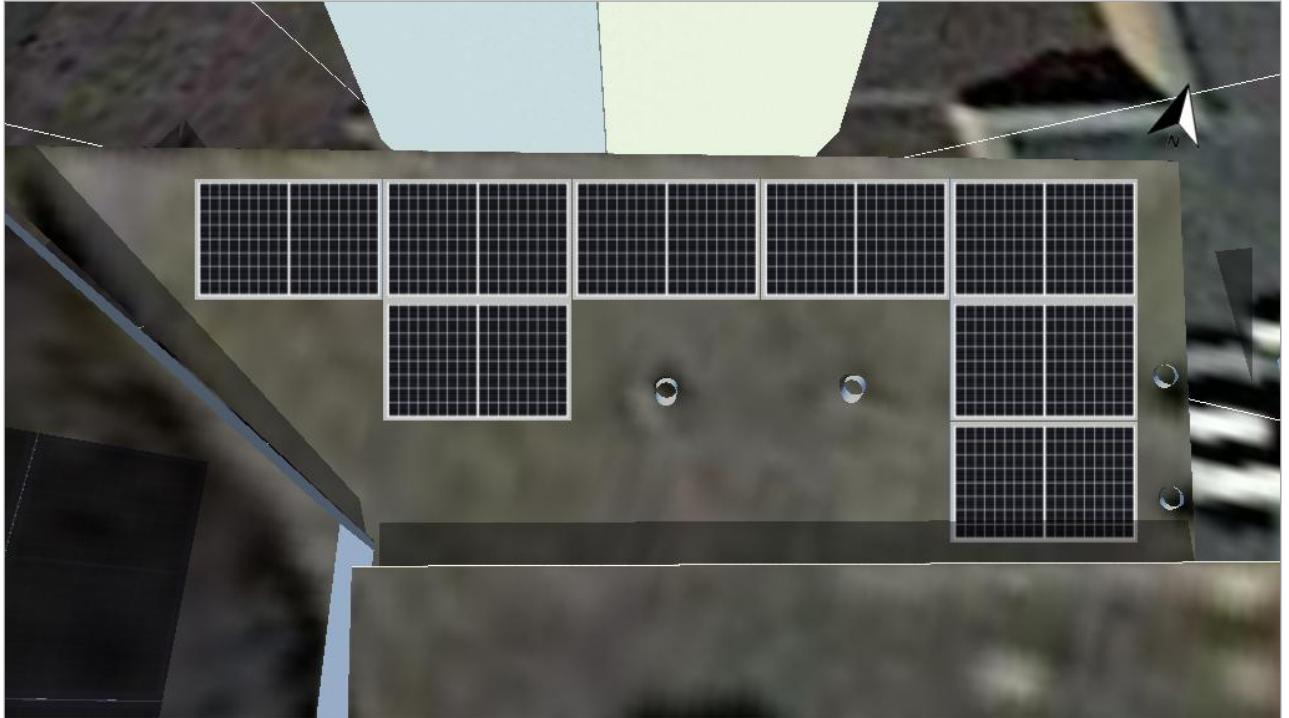


Figure: 1. Module Area - Arbitrary Building 10-Mounting Surface South

Degradation of Module, 1. Module Area - Arbitrary Building 10-Mounting Surface South

Characteristic curve	Linear (straight line)
Remaining power (power output) after 25 years	85 %

2. Module Area - Arbitrary Building 06-Mounting Surface East

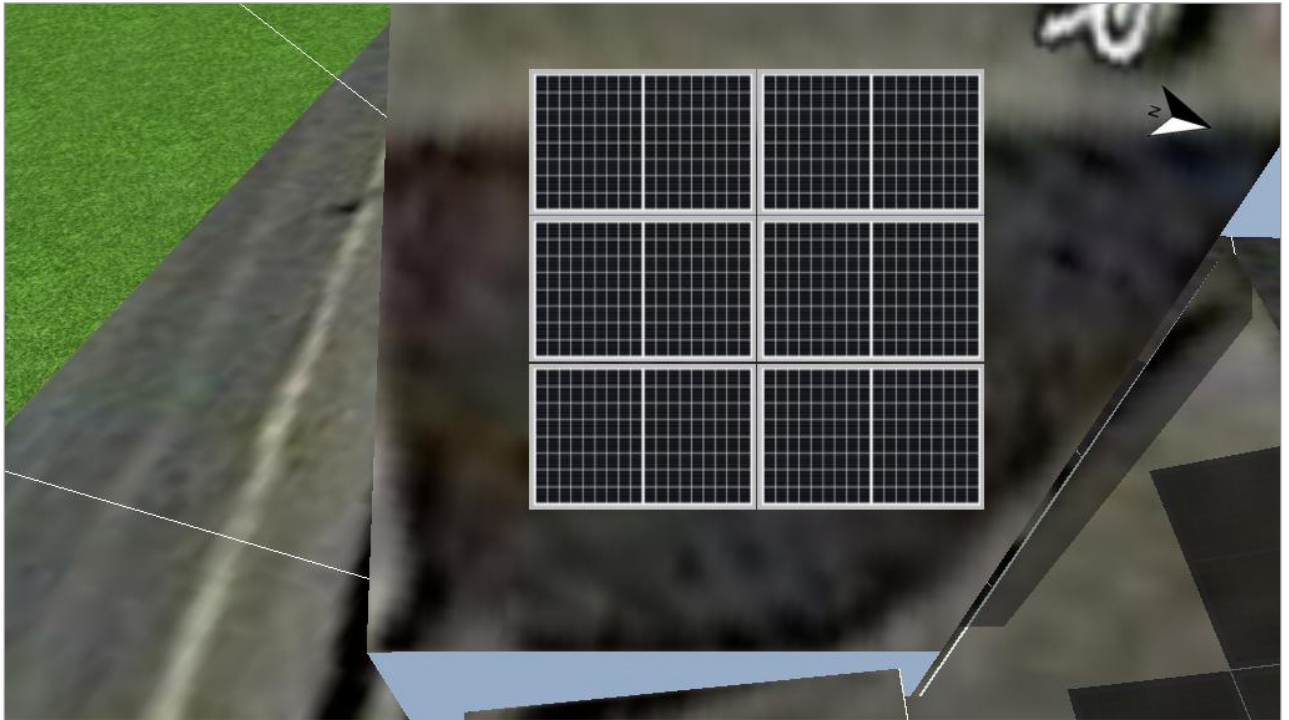


Figure: 2. Module Area - Arbitrary Building 06-Mounting Surface East

Degradation of Module, 2. Module Area - Arbitrary Building 06-Mounting Surface East

Characteristic curve	Linear (straight line)
Remaining power (power output) after 25 years	85 %

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

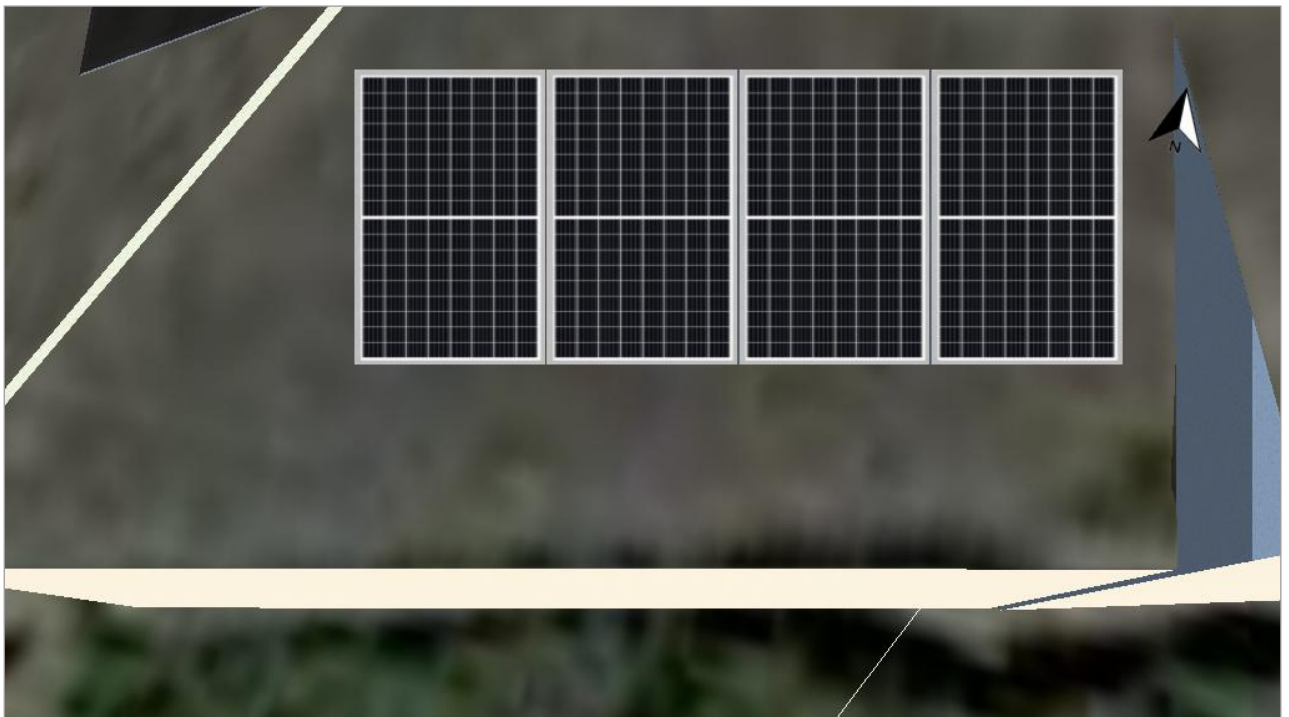


Figure: 3. Module Area - Arbitrary Building 04-Mounting Surface South

Carbon Zero Energy PV installation

Degradation of Module, 3. Module Area - Arbitrary Building 04-Mounting Surface South

Characteristic curve	Linear (straight line)
Remaining power (power output) after 25 years	85 %

4. Module Area - Building 03-Roof Area West

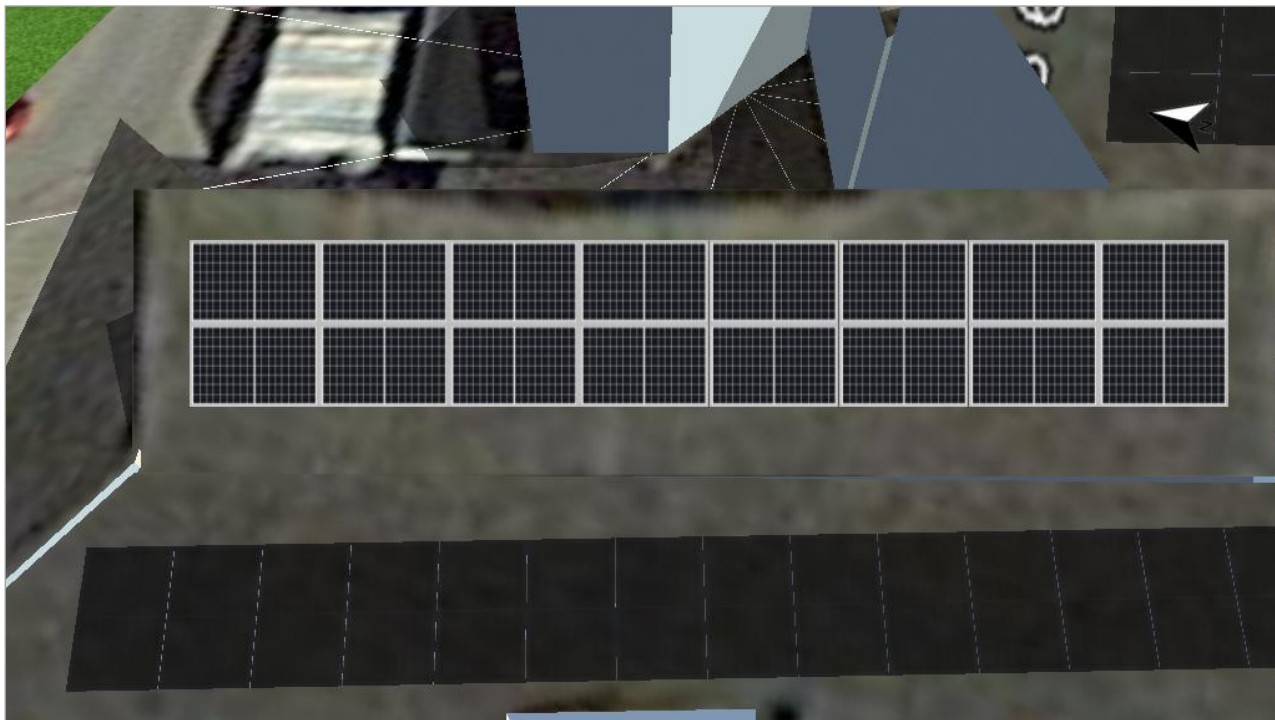


Figure: 4. Module Area - Building 03-Roof Area West

Degradation of Module, 4. Module Area - Building 03-Roof Area West

Characteristic curve	Linear (straight line)
Remaining power (power output) after 25 years	85 %

5. Module Area - Arbitrary Building 05-Mounting Surface West

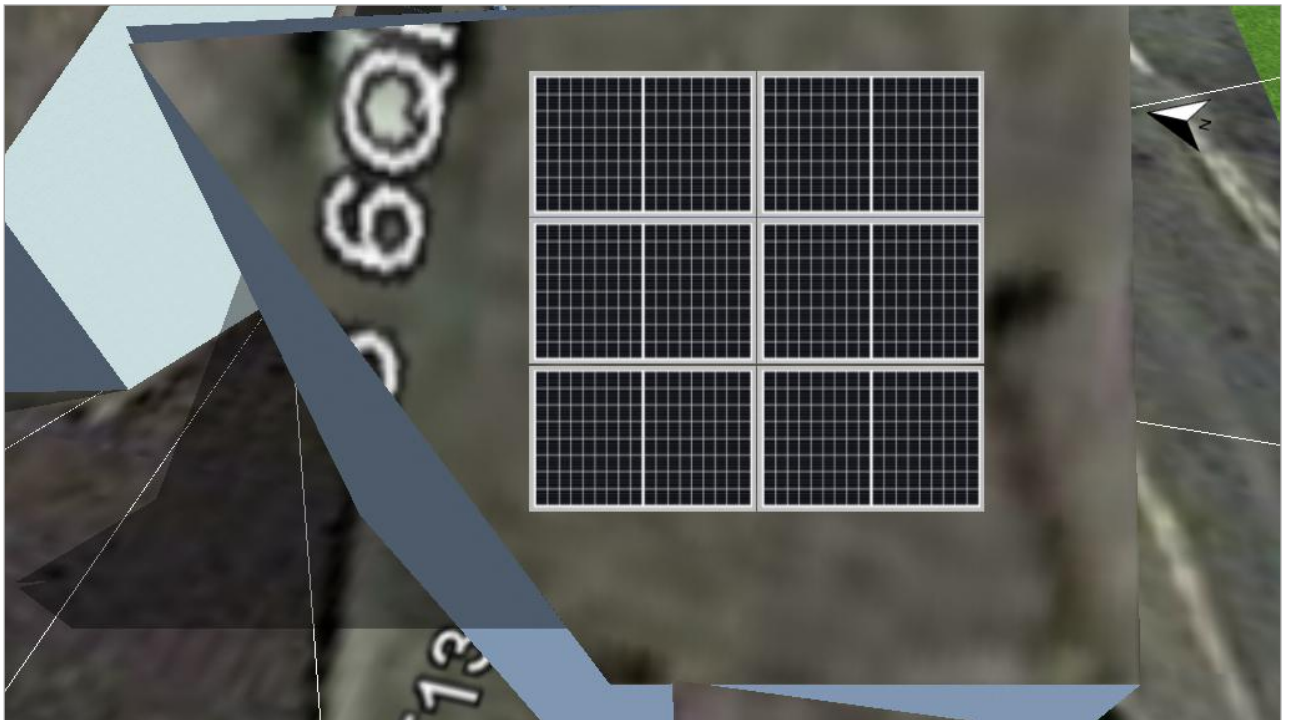


Figure: 5. Module Area - Arbitrary Building 05-Mounting Surface West

Degradation of Module, 5. Module Area - Arbitrary Building 05-Mounting Surface West

Characteristic curve	Linear (straight line)
Remaining power (power output) after 25 years	85 %

6. Module Area - Arbitrary Building 01-Mounting Surface West

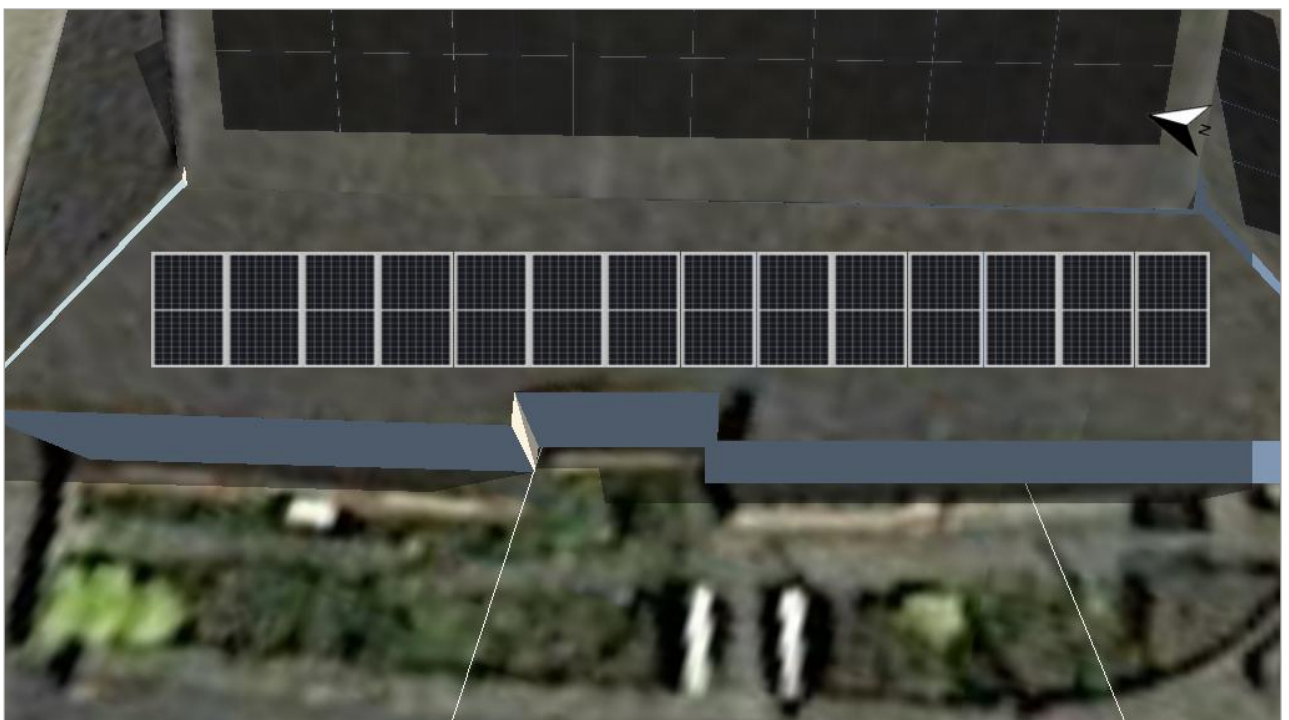


Figure: 6. Module Area - Arbitrary Building 01-Mounting Surface West

Degradation of Module, 6. Module Area - Arbitrary Building 01-Mounting Surface West

Characteristic curve	Linear (straight line)
Remaining power (power output) after 25 years	85 %

7. Module Area - Arbitrary Building 12-Mounting Surface West

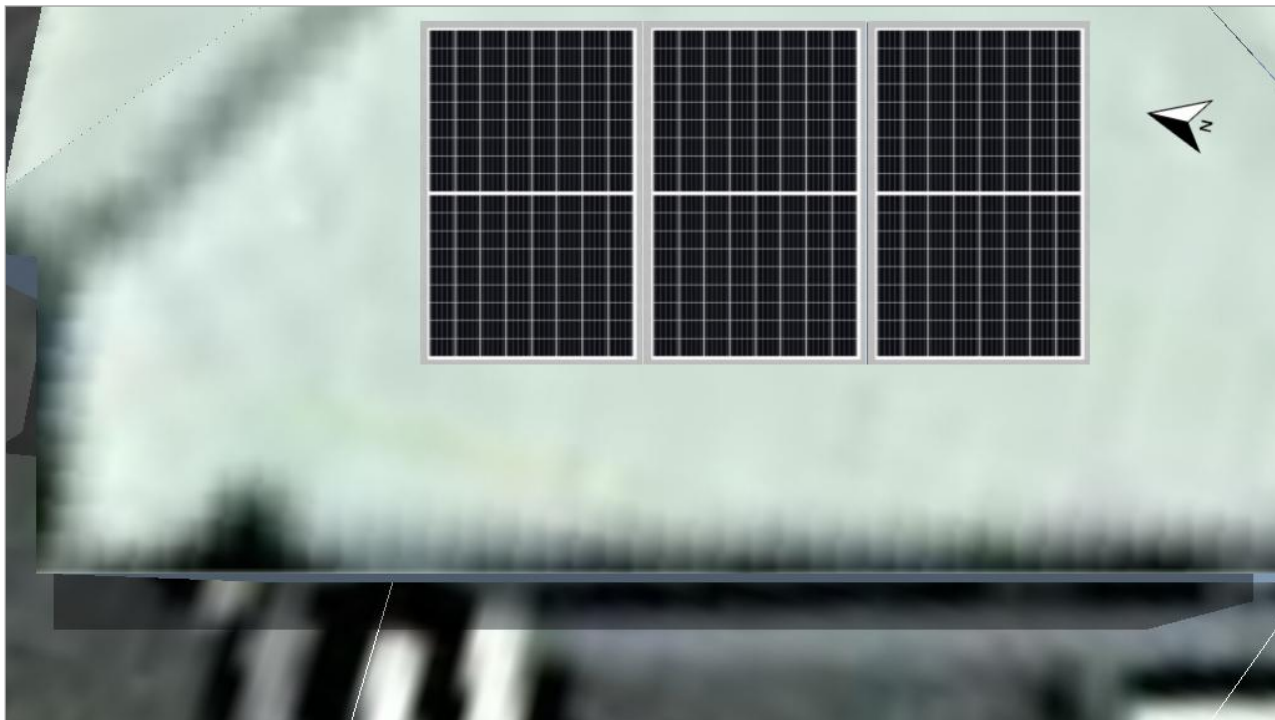


Figure: 7. Module Area - Arbitrary Building 12-Mounting Surface West

Degradation of Module, 7. Module Area - Arbitrary Building 12-Mounting Surface West

Characteristic curve	Linear (straight line)
Remaining power (power output) after 25 years	85 %

8. Module Area - Arbitrary Building 13-Mounting Surface South

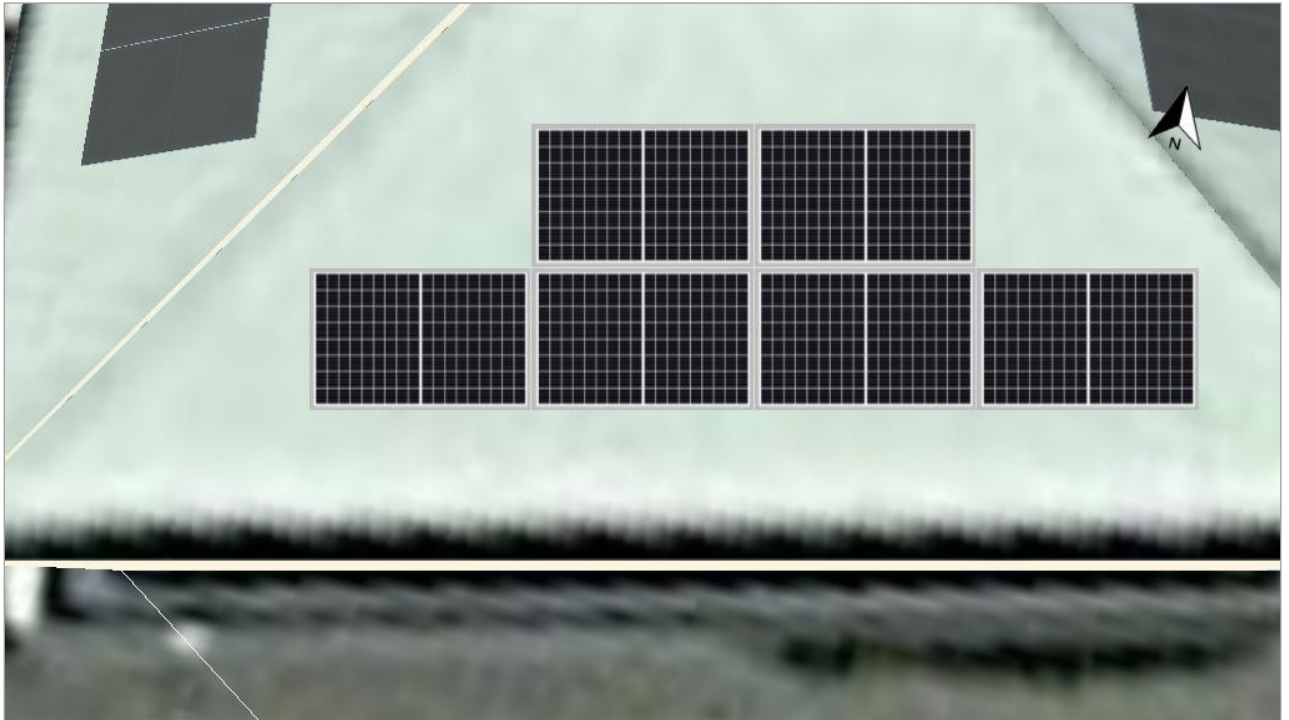


Figure: 8. Module Area - Arbitrary Building 13-Mounting Surface South

Degradation of Module, 8. Module Area - Arbitrary Building 13-Mounting Surface South

Characteristic curve	Linear (straight line)
Remaining power (power output) after 25 years	85 %

9. Module Area - Arbitrary Building 14-Mounting Surface East

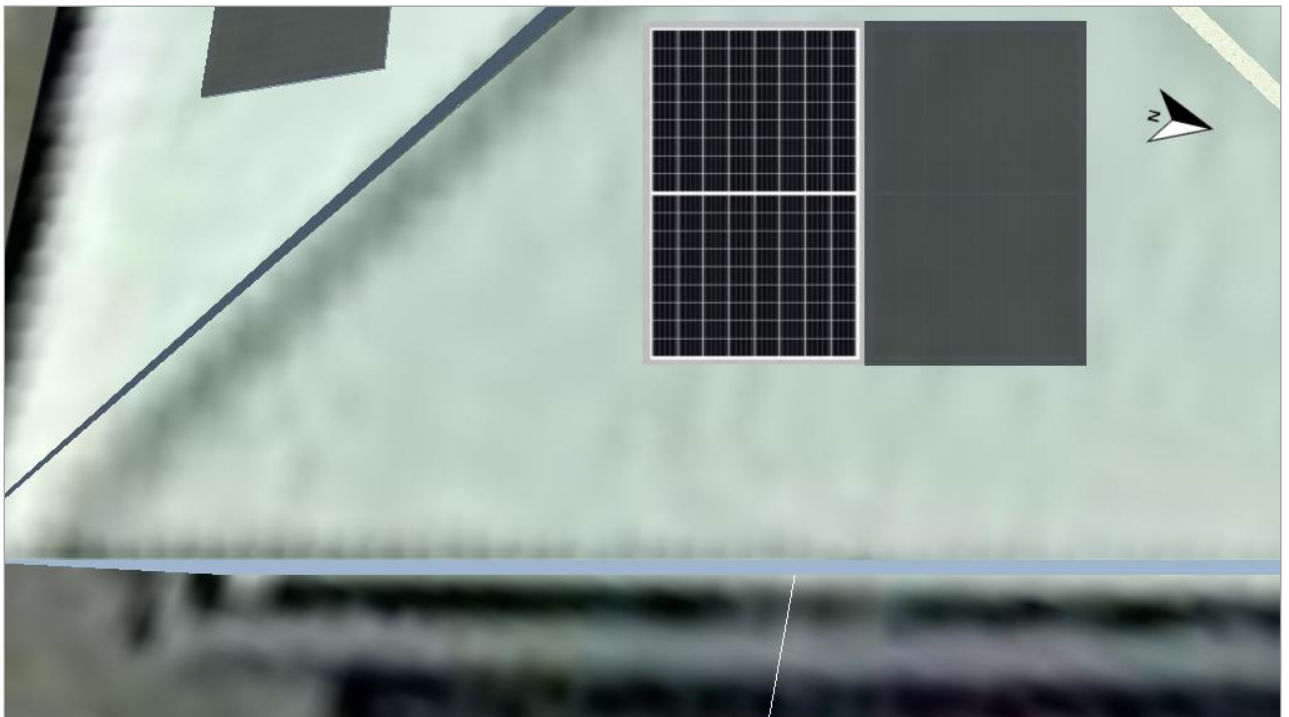


Figure: 9. Module Area - Arbitrary Building 14-Mounting Surface East

Degradation of Module, 9. Module Area - Arbitrary Building 14-Mounting Surface East

Characteristic curve	Linear (straight line)
Remaining power (power output) after 25 years	85 %

10. Module Area - Arbitrary Building 11-Mounting Surface North

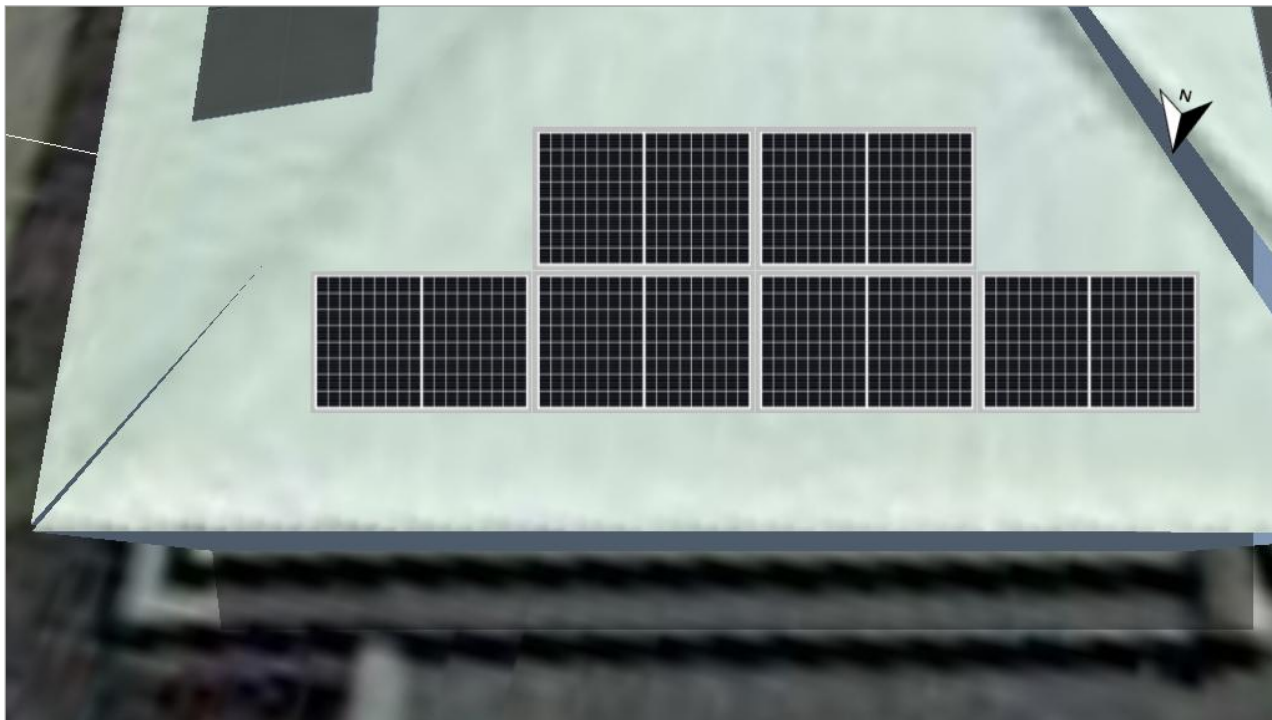


Figure: 10. Module Area - Arbitrary Building 11-Mounting Surface North

Degradation of Module, 10. Module Area - Arbitrary Building 11-Mounting Surface North

Characteristic curve	Linear (straight line)
Remaining power (power output) after 25 years	85 %

11. Module Area - Arbitrary Building 14-Mounting Surface East

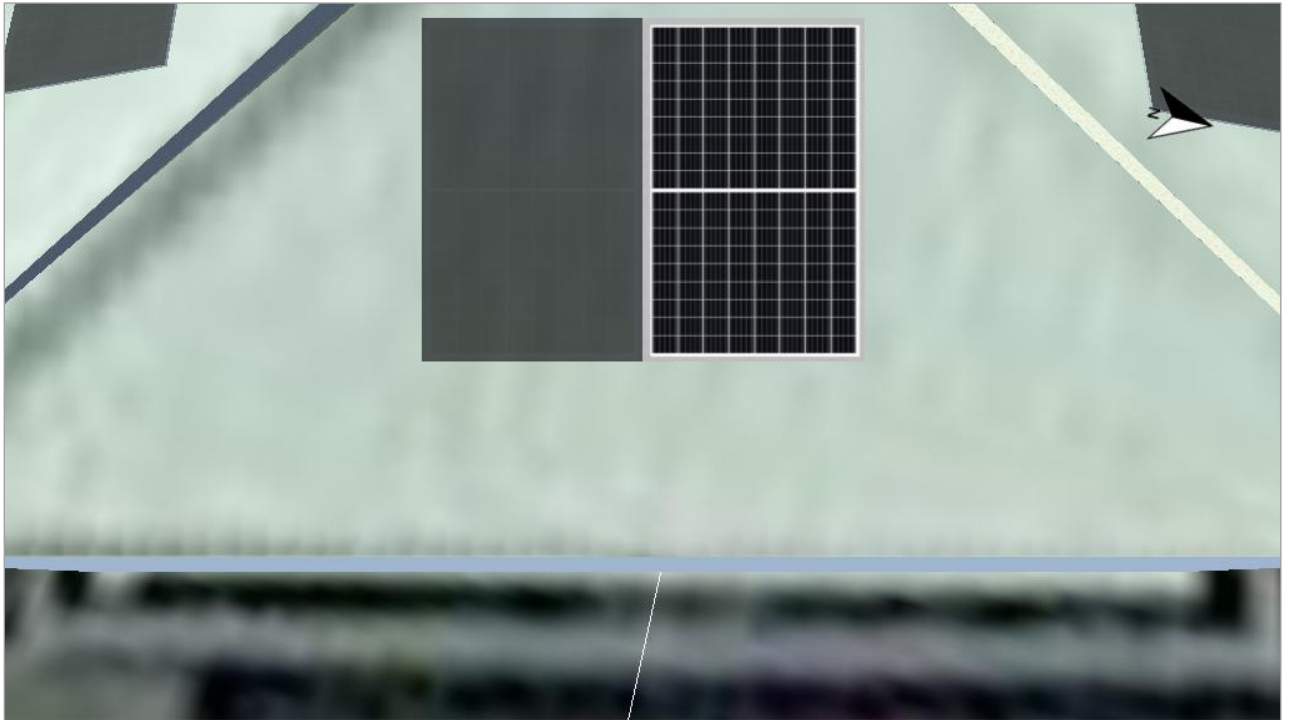


Figure: 11. Module Area - Arbitrary Building 14-Mounting Surface East

Degradation of Module, 11. Module Area - Arbitrary Building 14-Mounting Surface East

Characteristic curve	Linear (straight line)
Remaining power (power output) after 25 years	85 %

12. Module Area - Arbitrary Building 07-Mounting Surface West

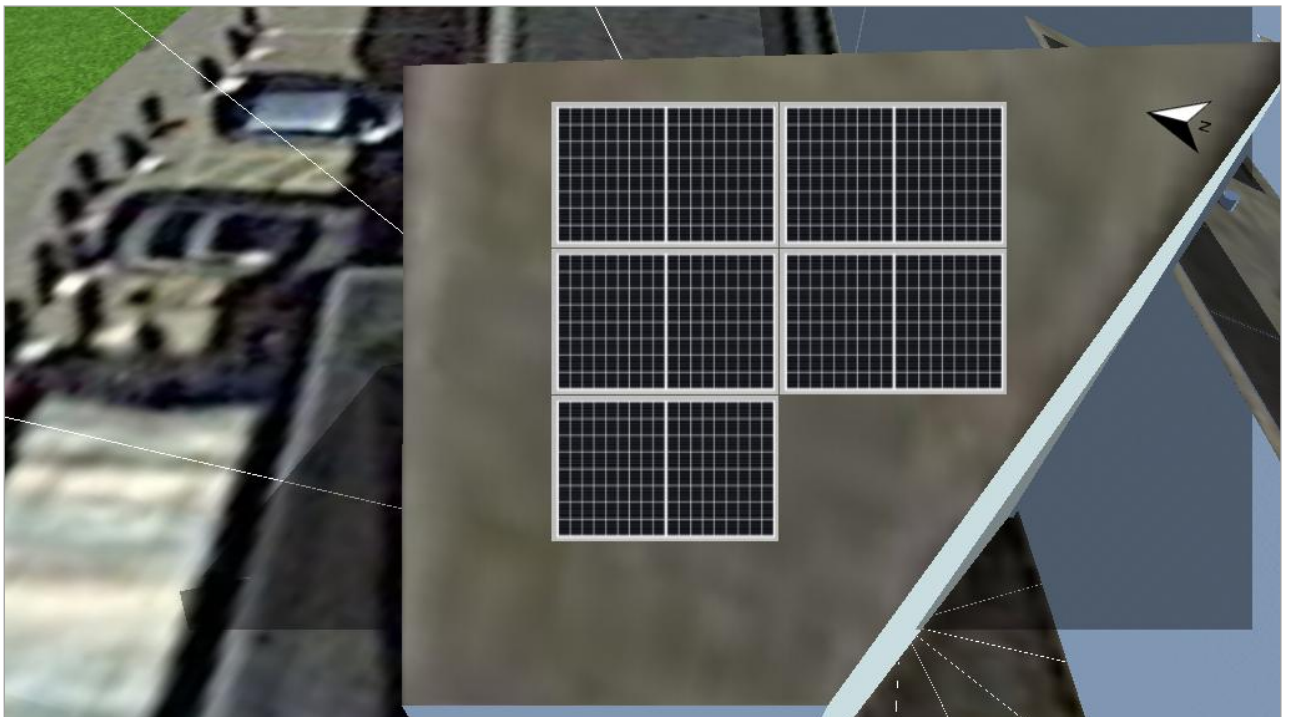


Figure: 12. Module Area - Arbitrary Building 07-Mounting Surface West

Degradation of Module, 12. Module Area - Arbitrary Building 07-Mounting Surface West

Characteristic curve	Linear (straight line)
Remaining power (power output) after 25 years	85 %

13. Module Area - Arbitrary Building 08-Mounting Surface East

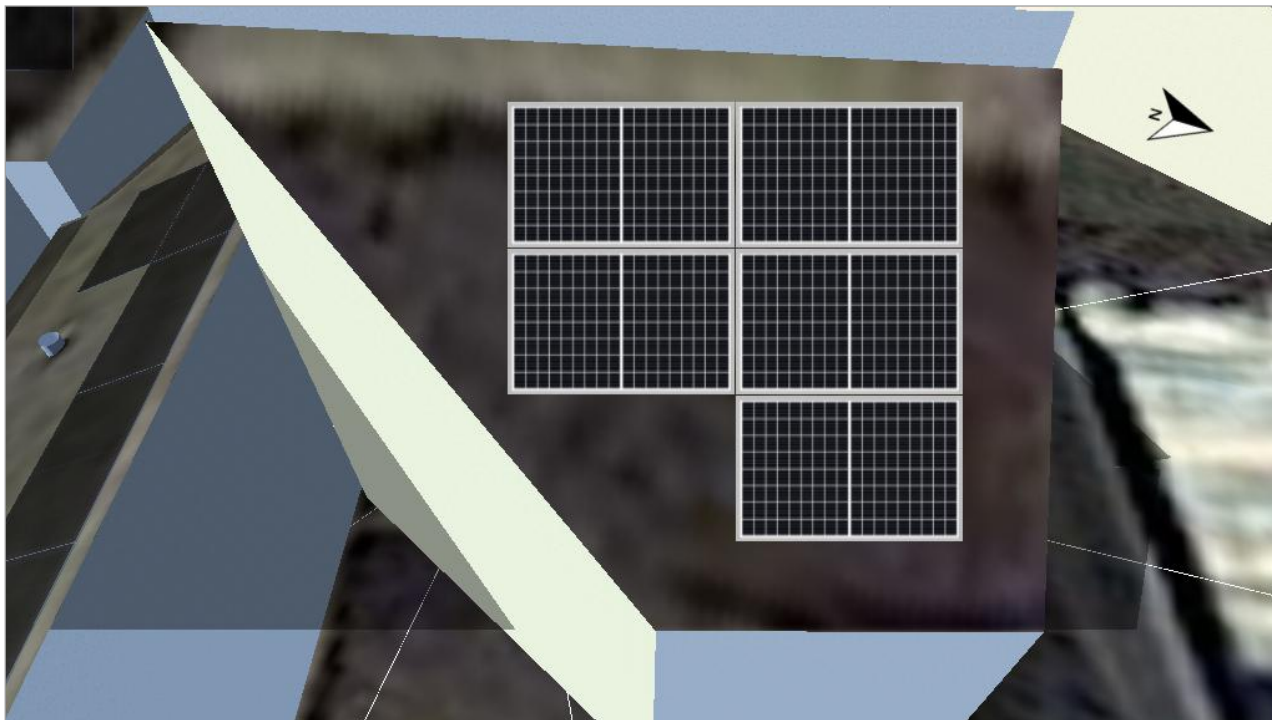


Figure: 13. Module Area - Arbitrary Building 08-Mounting Surface East

Degradation of Module, 13. Module Area - Arbitrary Building 08-Mounting Surface East

Characteristic curve	Linear (straight line)
Remaining power (power output) after 25 years	85 %

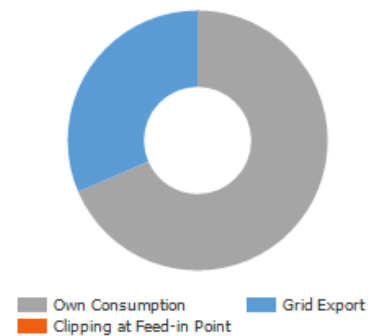
Simulation Results

Results Total System

PV System

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Performance Ratio (PR)	86.63 %
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PV Generator Energy (AC grid)	29,491 kWh/Year
Own Consumption	18,608 kWh/Year
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Own Power Consumption	71.0 %
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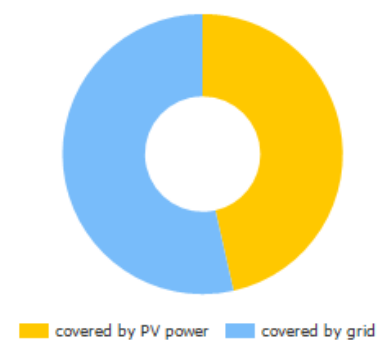
PV Generator Energy (AC grid)



Appliances

Appliances	40,000 kWh/Year
Standby Consumption (Inverter)	54 kWh/Year
Total Consumption	40,054 kWh/Year
covered by PV power	18,608 kWh/Year
covered by grid	21,446 kWh/Year
Solar Fraction	46.5 %

Total Consumption



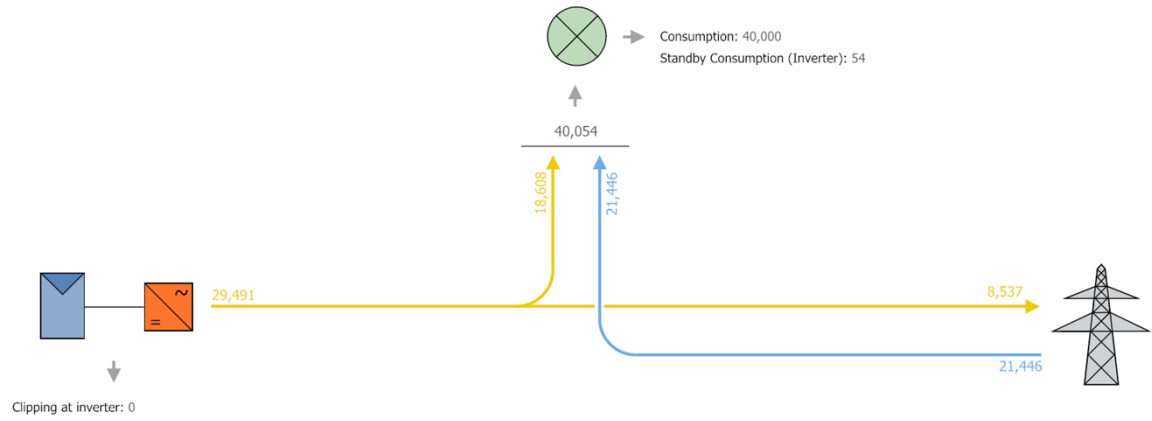
Level of Self-sufficiency

Total Consumption	40,054 kWh/Year
covered by grid	21,446 kWh/Year
Level of Self-sufficiency	46.5 %

Carbon Zero Energy PV installation

Energy Flow Graph

Project: Carbon Zero Energy PV installation



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

Figure: Energy flow

Carbon Zero Energy PV installation

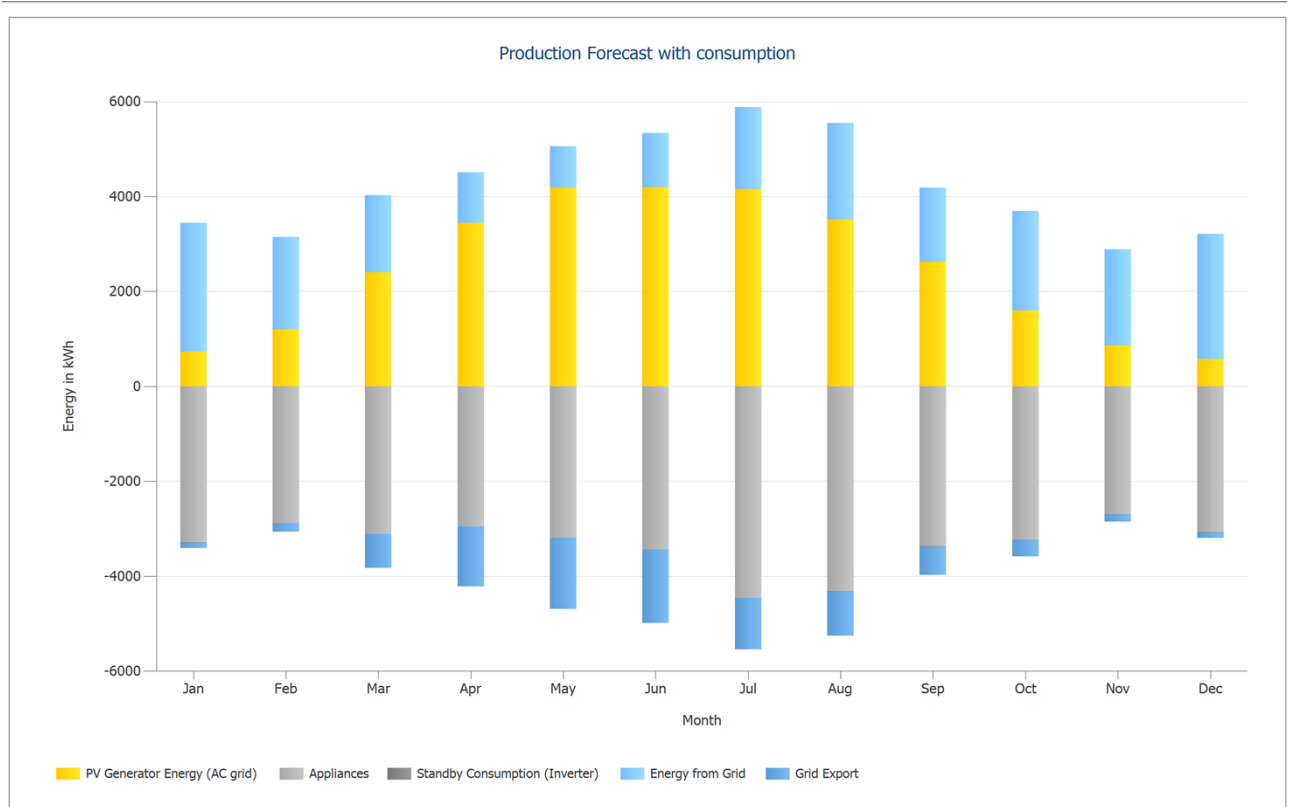


Figure: Production Forecast with consumption

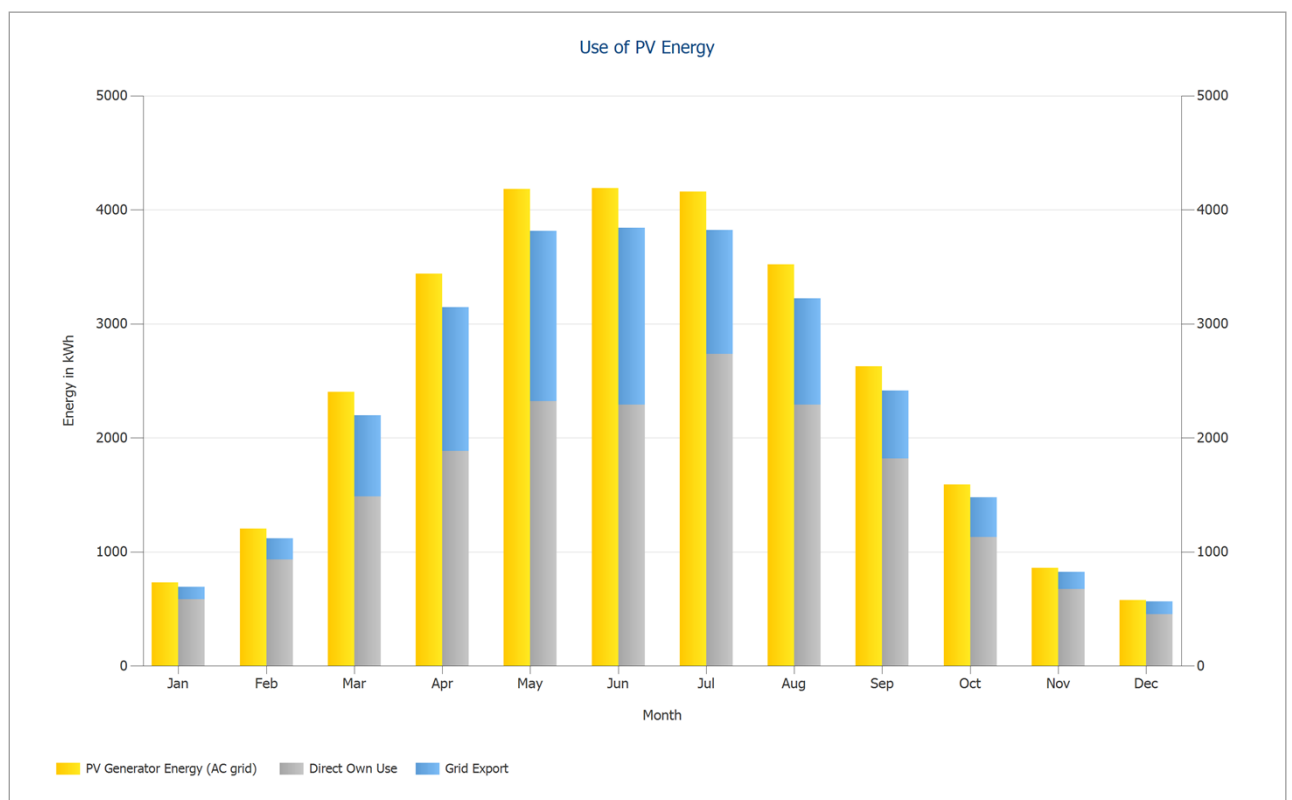


Figure: Use of PV Energy

Carbon Zero Energy PV installation

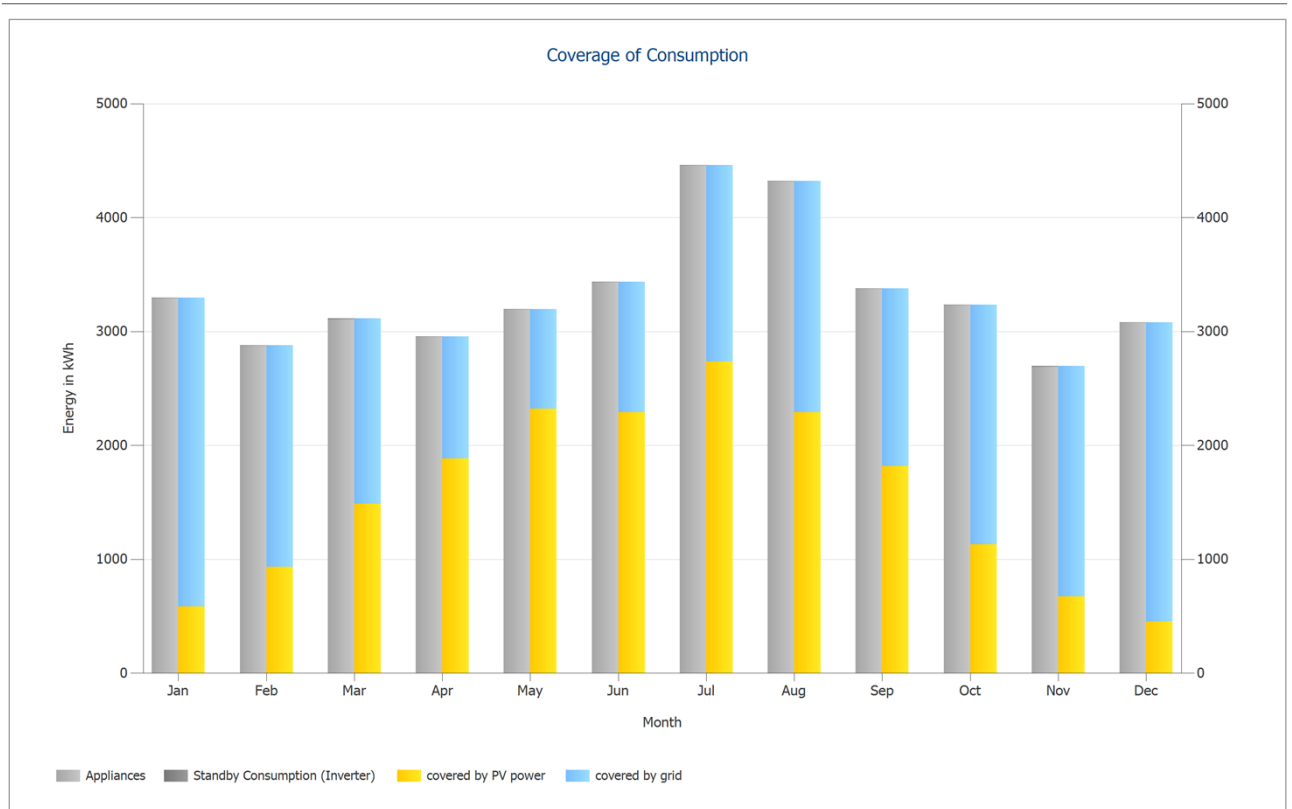


Figure: Coverage of Consumption