

## Stonehouse Court Hotel

Bristol Rd, Stonehouse, Stroud GL10 3RA

Project Name: Stonehouse Court Hotel

15/12/2022

## Your PV system

### Address of Installation

Bristol Rd, Stonehouse, Stroud GL10 3RA



## Project Overview



Figure: Overview Image, 3D Design

## PV System

### 3D, Grid-connected PV System with Electrical Appliances

Climate Data	Stonehouse, GBR (1996 - 2015)
Values source	Meteonorm 8.1(i)
PV Generator Output	55.06 kWp
PV Generator Surface	266.1 m <sup>2</sup>
Number of PV Modules	143
Number of Inverters	2

# Stonehouse Court Hotel

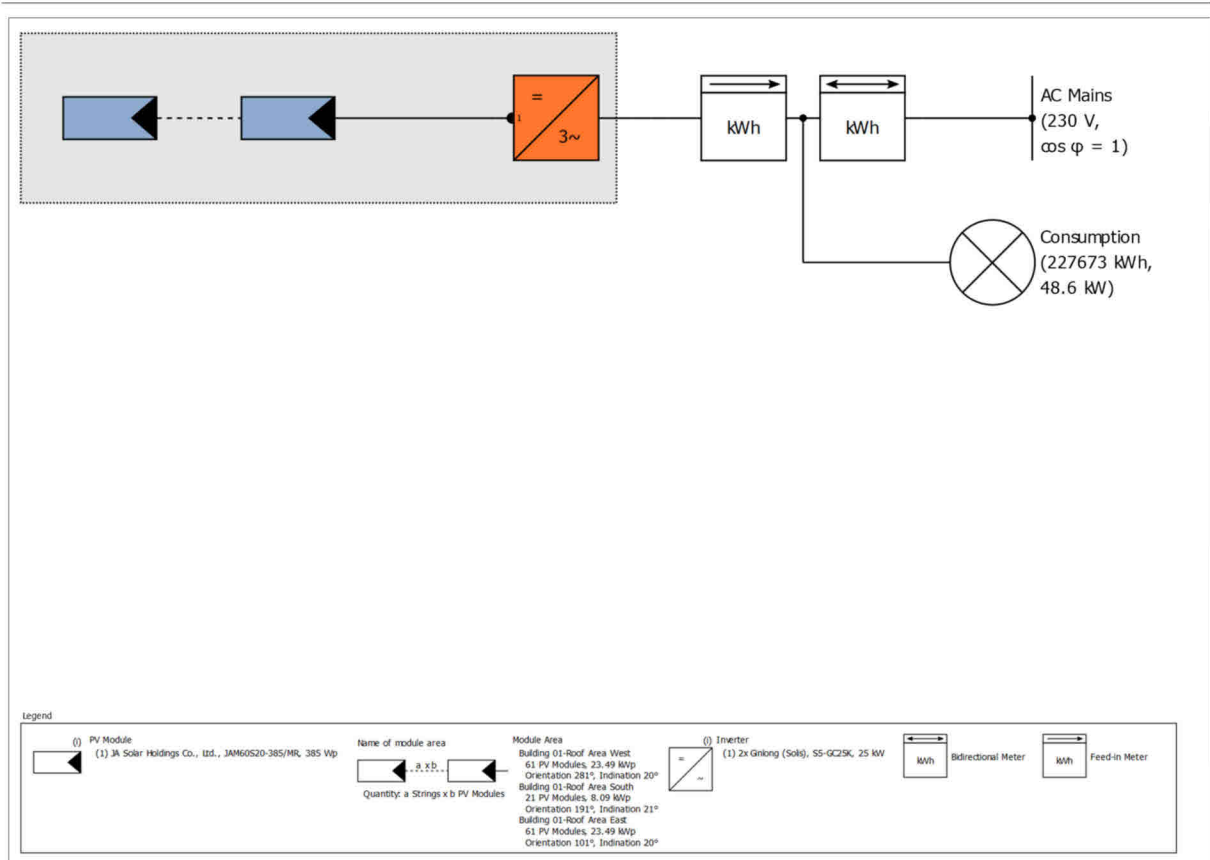


Figure: Schematic diagram

## Production Forecast

### Production Forecast

PV Generator Output	55.06 kWp
Spec. Annual Yield	936.02 kWh/kWp
Performance Ratio (PR)	90.81 %
Yield Reduction due to Shading	0.0 %/Year
PV Generator Energy (AC grid)	51,542 kWh/Year
Own Consumption	50,567 kWh/Year
Down-regulation at Feed-in Point	0 kWh/Year
Grid Feed-in	975 kWh/Year
Own Power Consumption	98.1 %
CO <sub>2</sub> Emissions avoided	24,220 kg / year
Level of Self-sufficiency	22.2 %

# Set-up of the System

## Overview

### System Data

Type of System 3D, Grid-connected PV System with Electrical Appliances

### Climate Data

Location Stonehouse, GBR (1996 - 2015)

Values source Meteonorm 8.1(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 227673 kWh

BDEW load profile household (H0) 227673 kWh

Load Peak 48.6 kW

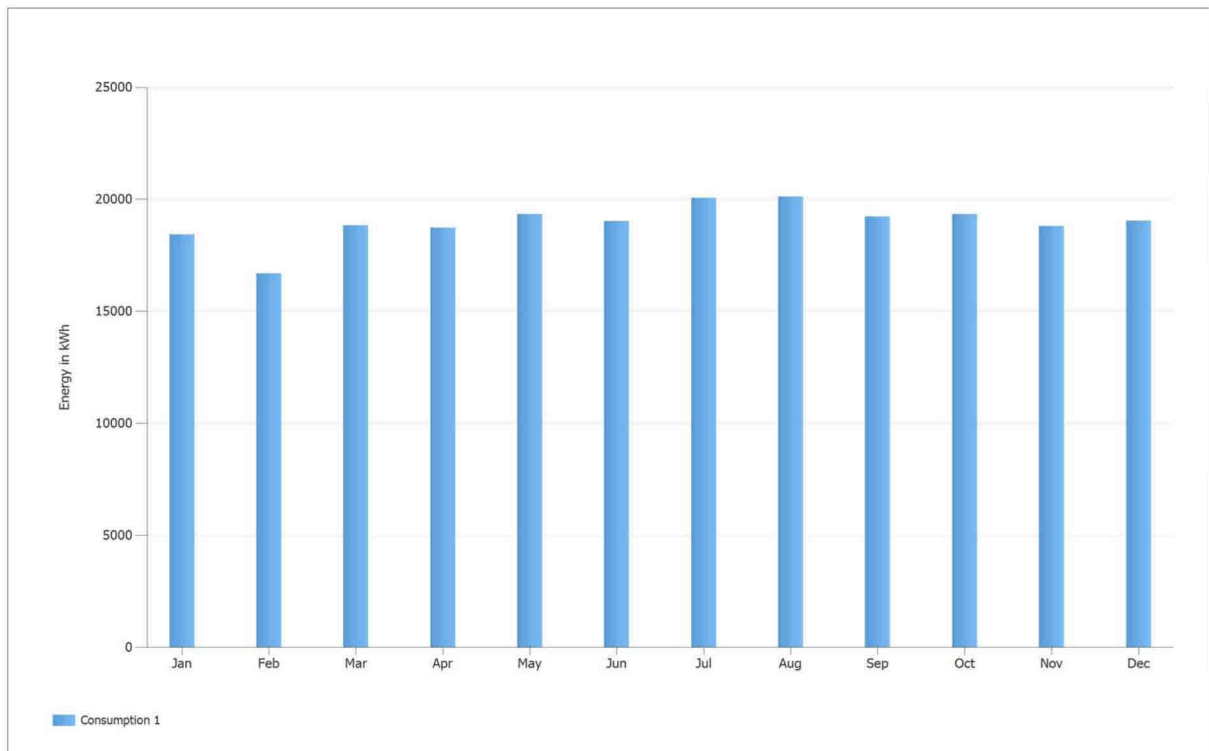


Figure: Consumption

## Module Areas

### 1. Module Area - Building 01-Roof Area West

#### PV Generator, 1. Module Area - Building 01-Roof Area West

Name	Building 01-Roof Area West
PV Modules	61 x JAM60S20-385/MR (v6)
Manufacturer	JA Solar Holdings Co., Ltd.
Inclination	20 °
Orientation	West 281 °
Installation Type	Roof parallel
PV Generator Surface	113.5 m <sup>2</sup>

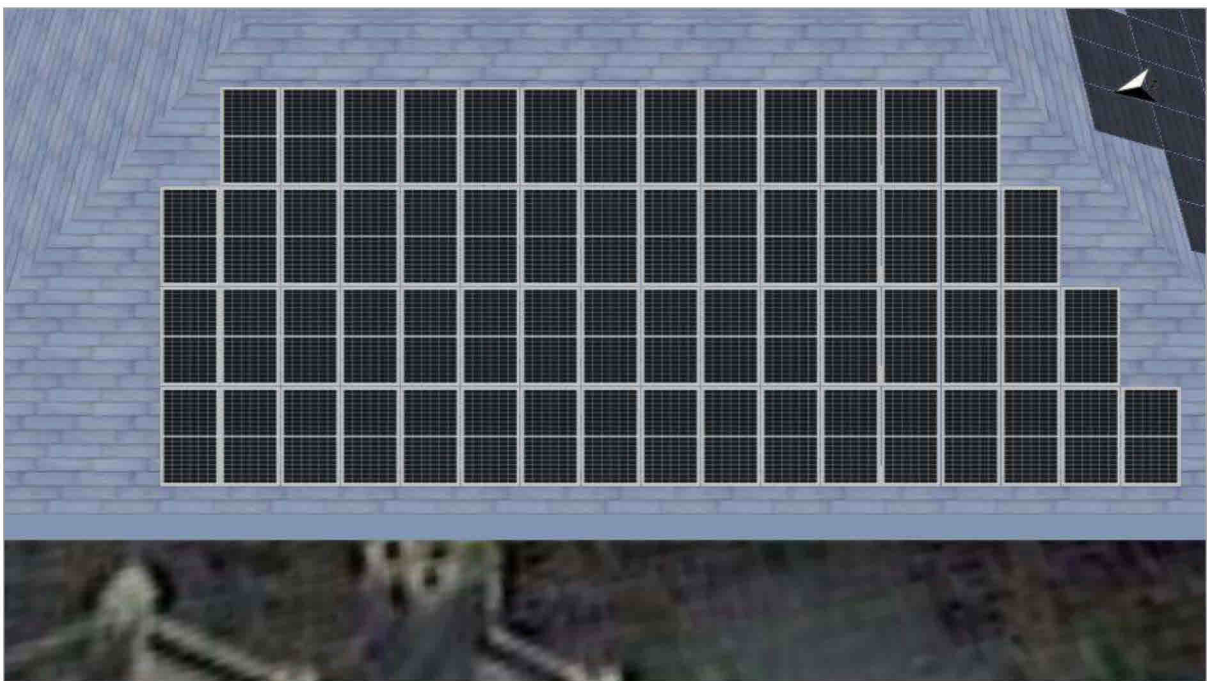


Figure: 1. Module Area - Building 01-Roof Area West

## Stonehouse Court Hotel

### 2. Module Area - Building 01-Roof Area South

#### PV Generator, 2. Module Area - Building 01-Roof Area South

Name	Building 01-Roof Area South
PV Modules	21 x JAM60S20-385/MR (v6)
Manufacturer	JA Solar Holdings Co., Ltd.
Inclination	21 °
Orientation	South 191 °
Installation Type	Roof parallel
PV Generator Surface	39.1 m <sup>2</sup>



Figure: 2. Module Area - Building 01-Roof Area South

## Stonehouse Court Hotel

### 3. Module Area - Building 01-Roof Area East

#### PV Generator, 3. Module Area - Building 01-Roof Area East

Name	Building 01-Roof Area East
PV Modules	61 x JAM60S20-385/MR (v6)
Manufacturer	JA Solar Holdings Co., Ltd.
Inclination	20 °
Orientation	East 101 °
Installation Type	Roof parallel
PV Generator Surface	113.5 m <sup>2</sup>

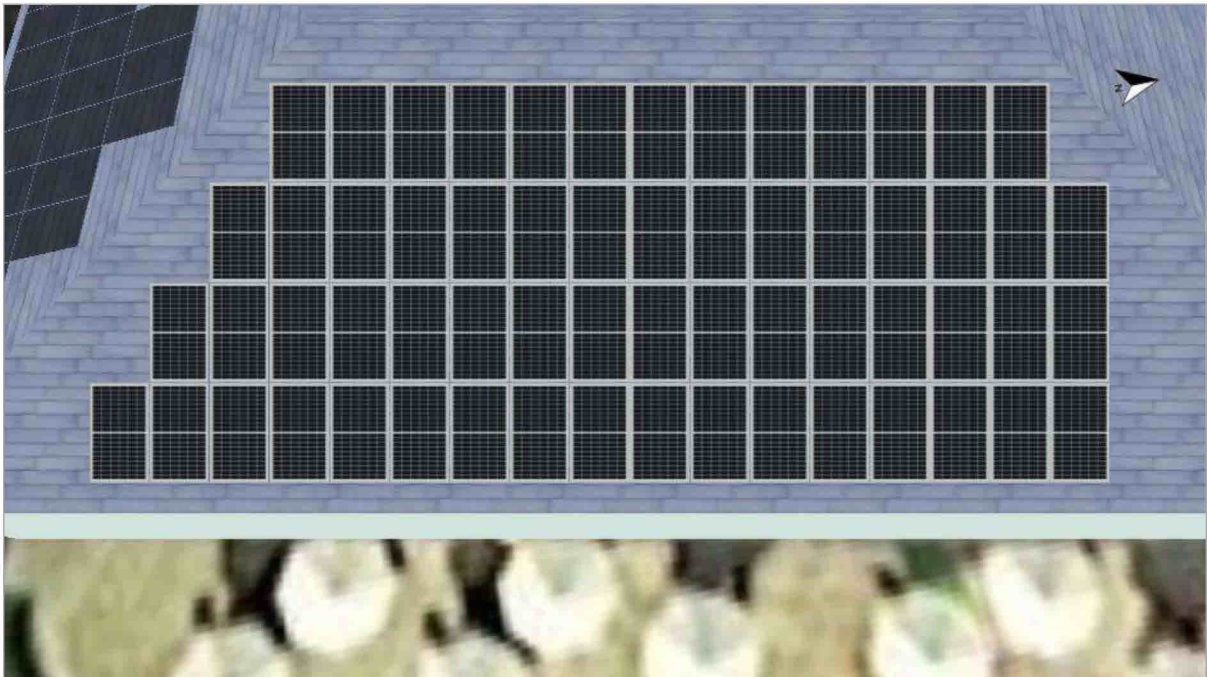


Figure: 3. Module Area - Building 01-Roof Area East

## Horizon Line, 3D Design

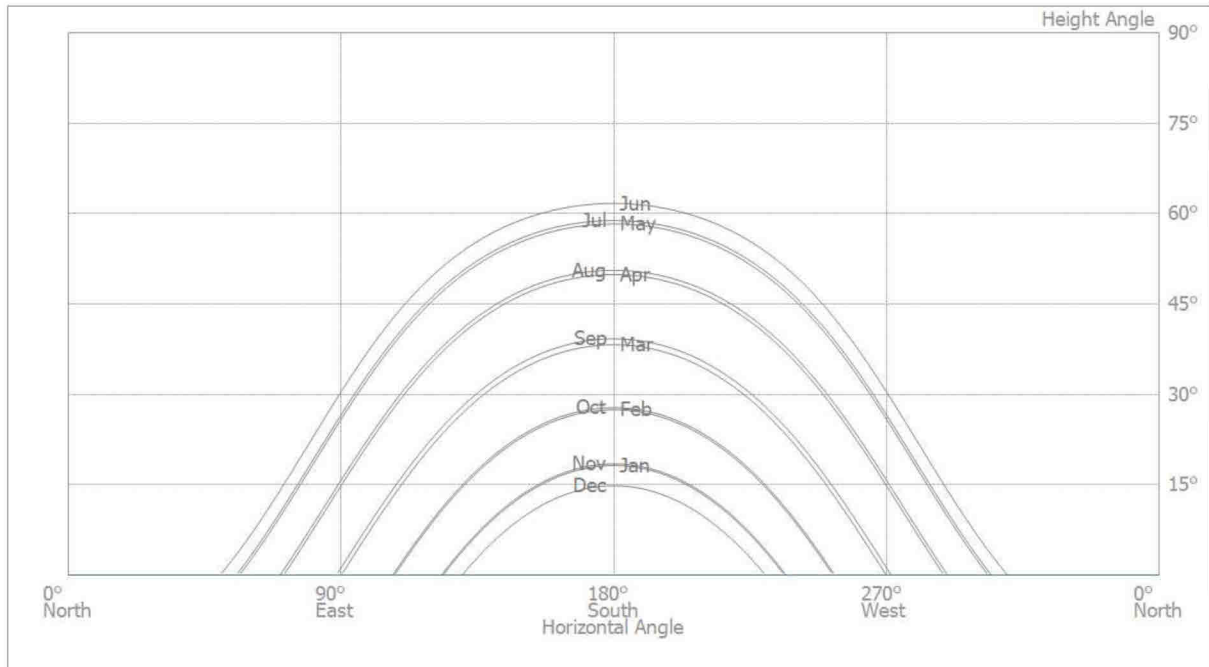


Figure: Horizon (3D Design)

## Inverter configuration

### Configuration 1

Module Areas Building 01-Roof Area West + Building 01-Roof Area South  
+ Building 01-Roof Area East

#### Inverter 1

Model	S5-GC25K (v1)
Manufacturer	Ginlong (Solis)
Quantity	1
Sizing Factor	110.9 %
Configuration	MPP 1: 2 x 15 MPP 2: 2 x 15 MPP 3: 1 x 11 + 1 x 1

#### Inverter 2

Model	S5-GC25K (v1)
Manufacturer	Ginlong (Solis)
Quantity	1
Sizing Factor	109.3 %
Configuration	MPP 1: 2 x 15 MPP 2: 2 x 15 MPP 3: 1 x 10 + 1 x 1



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## AC Mains

### AC Mains

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

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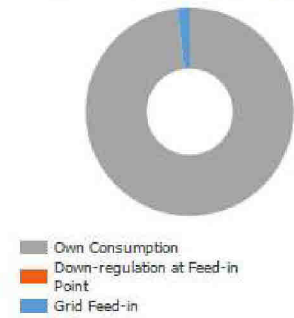
# Simulation Results

## Results Total System

### PV System

PV Generator Output	55.06 kWp
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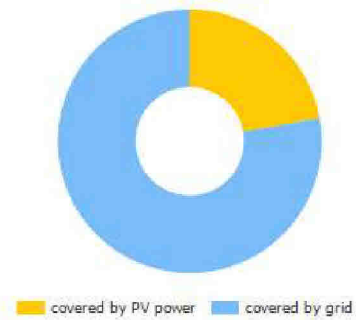
PV Generator Energy (AC grid)



### Appliances

Appliances	227,673 kWh/Year
Standby Consumption (Inverter)	9 kWh/Year
Total Consumption	227,682 kWh/Year
covered by PV power	50,567 kWh/Year
covered by grid	177,115 kWh/Year
Solar Fraction	22.2 %

Total Consumption



### Level of Self-sufficiency

Total Consumption	227,682 kWh/Year
covered by grid	177,115 kWh/Year
Level of Self-sufficiency	22.2 %

# Stonehouse Court Hotel

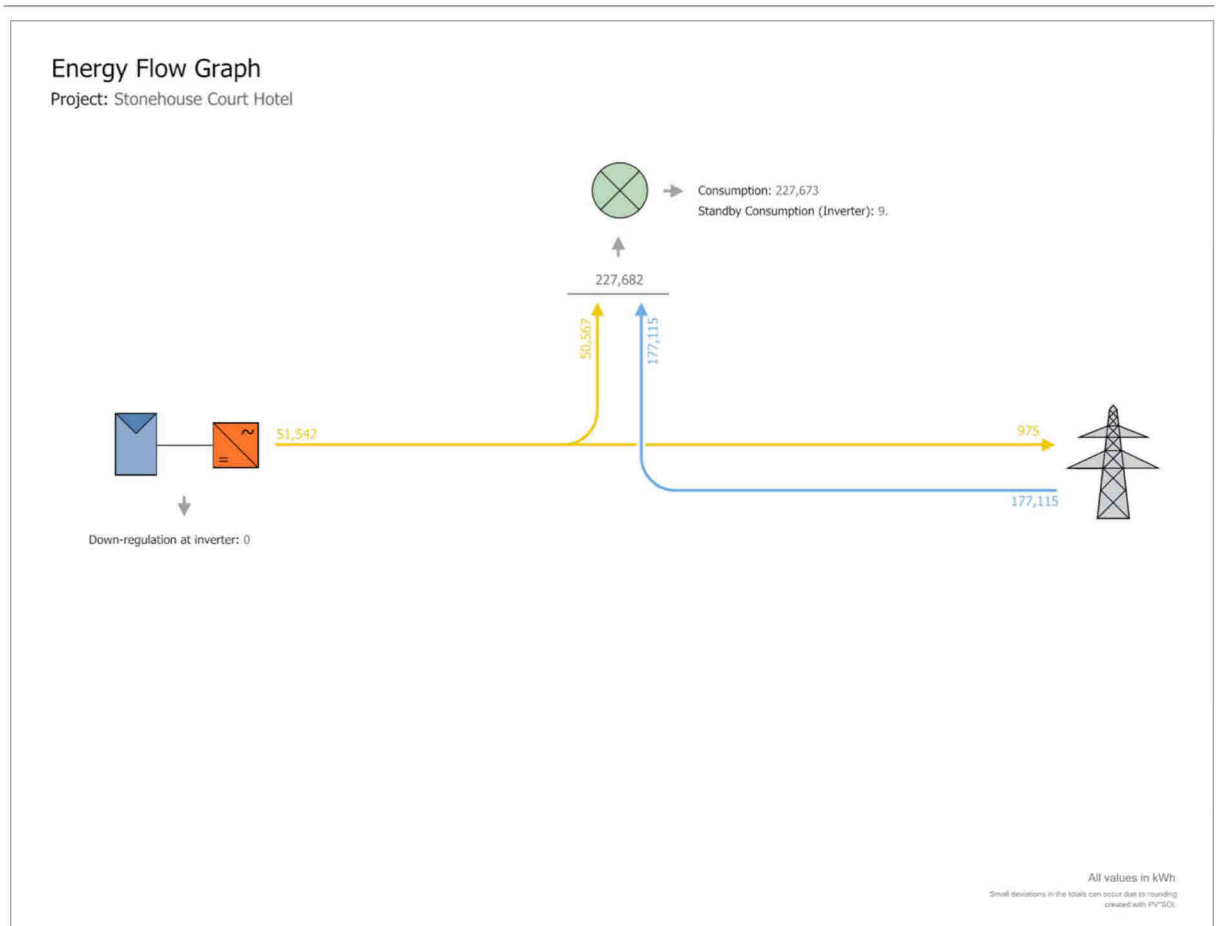


Figure: Energy flow

# Stonehouse Court Hotel

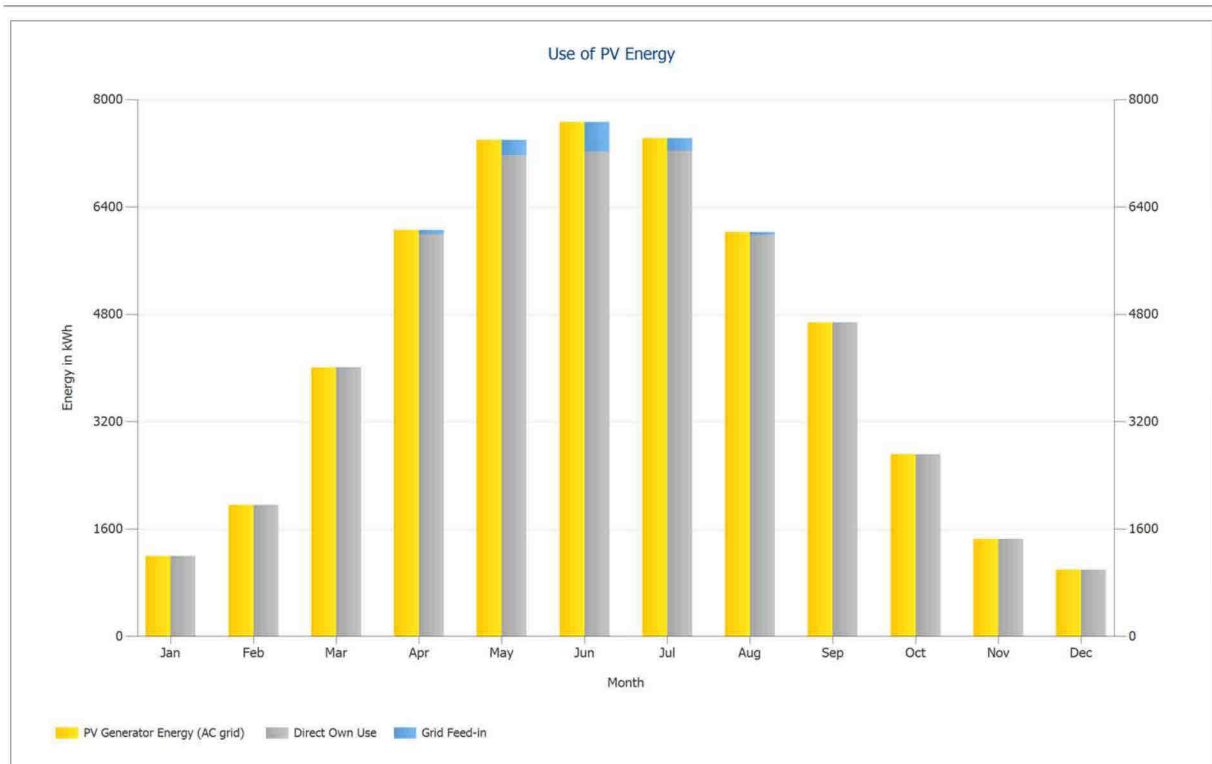


Figure: Use of PV Energy

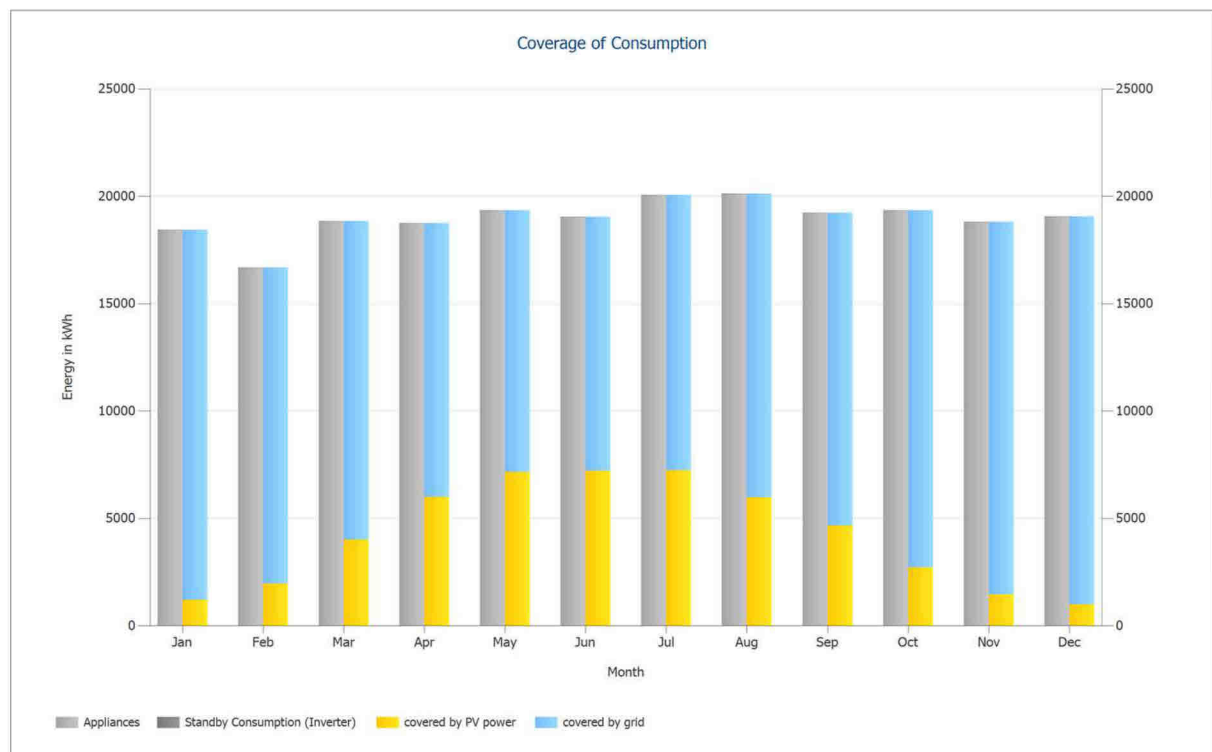


Figure: Coverage of Consumption

# Plans and parts list

## Circuit Diagram

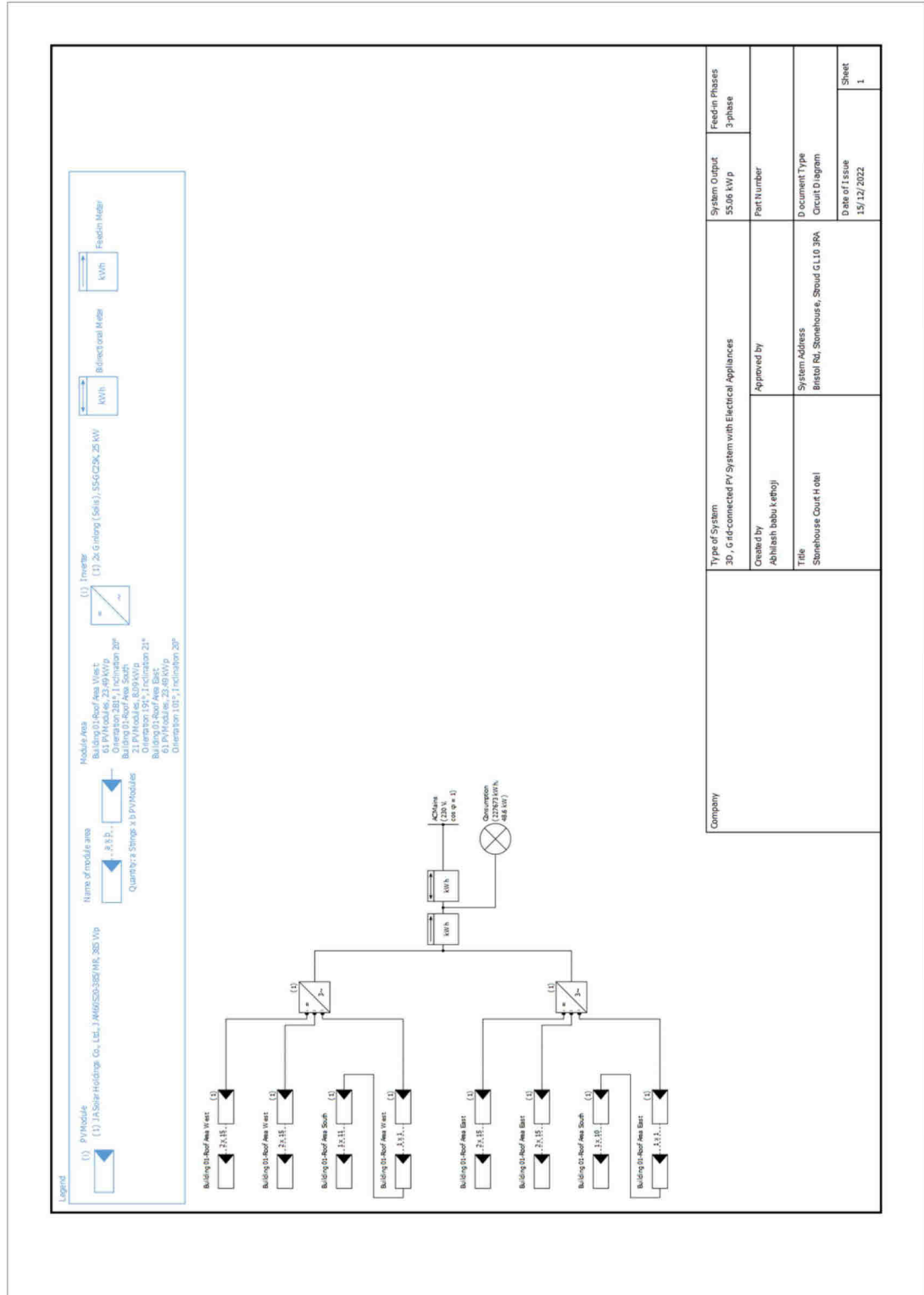


Figure: Circuit Diagram

## Overview plan

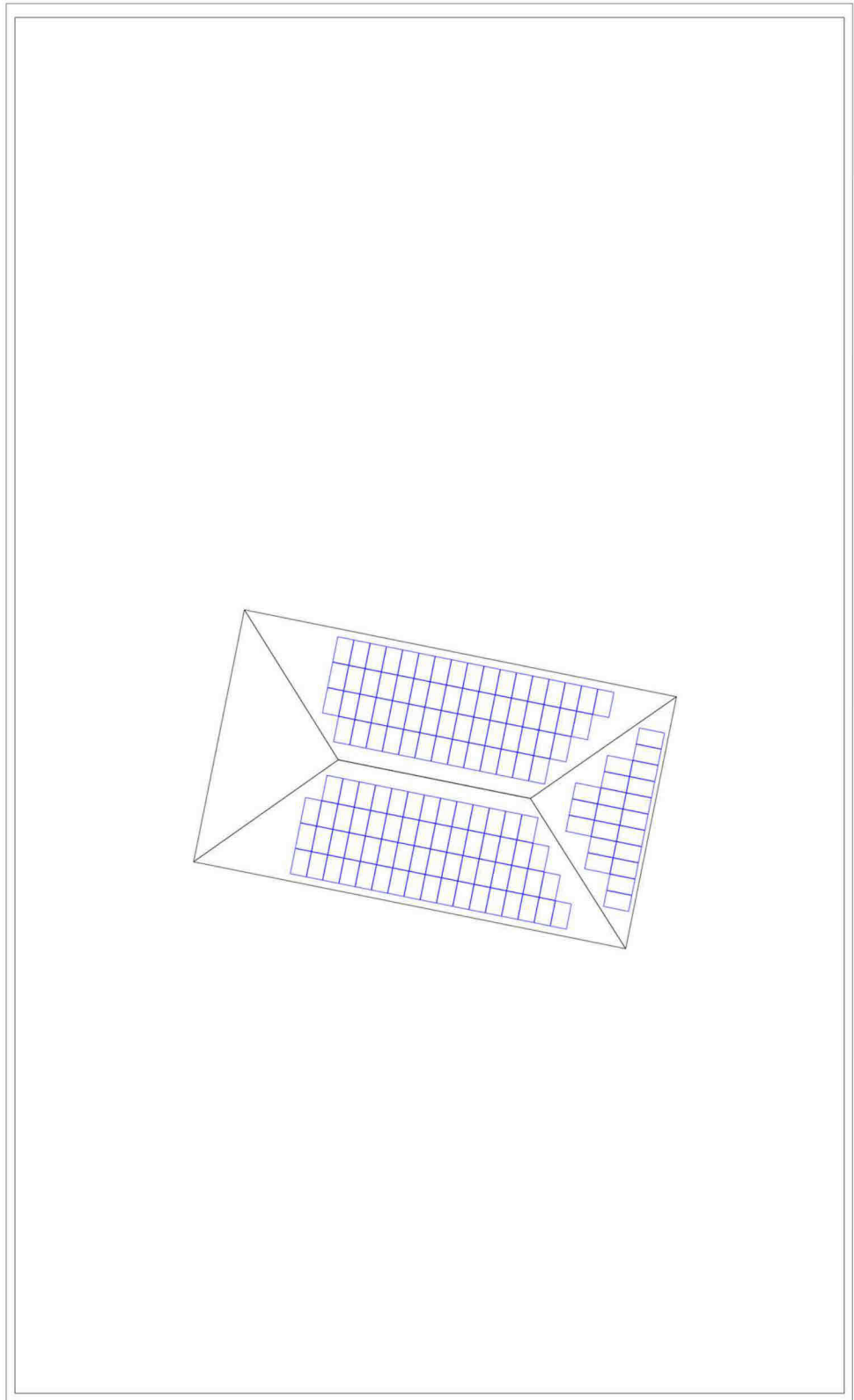


Figure: Overview plan

## Dimensioning Plan

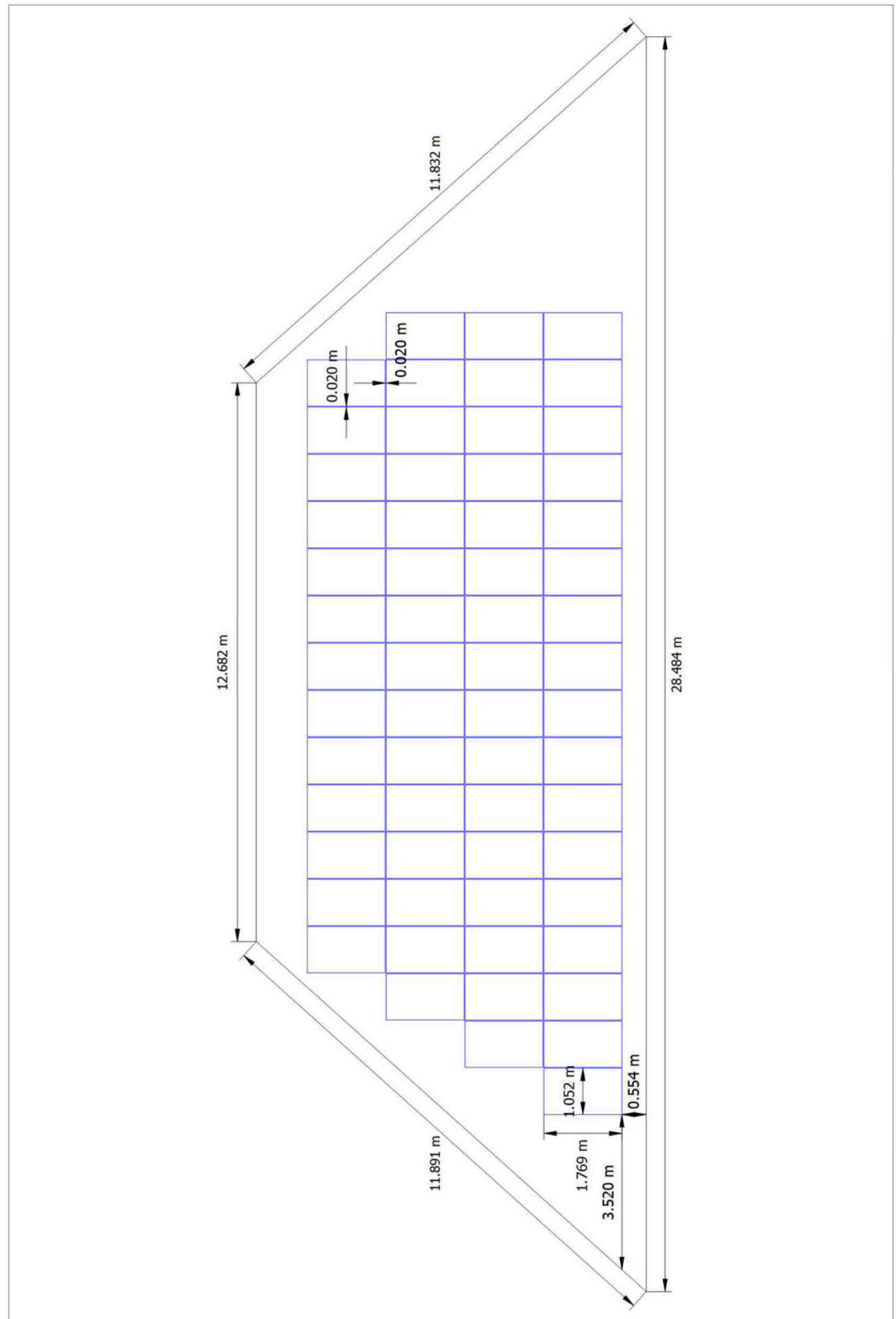


Figure: Building 01-Roof Area East

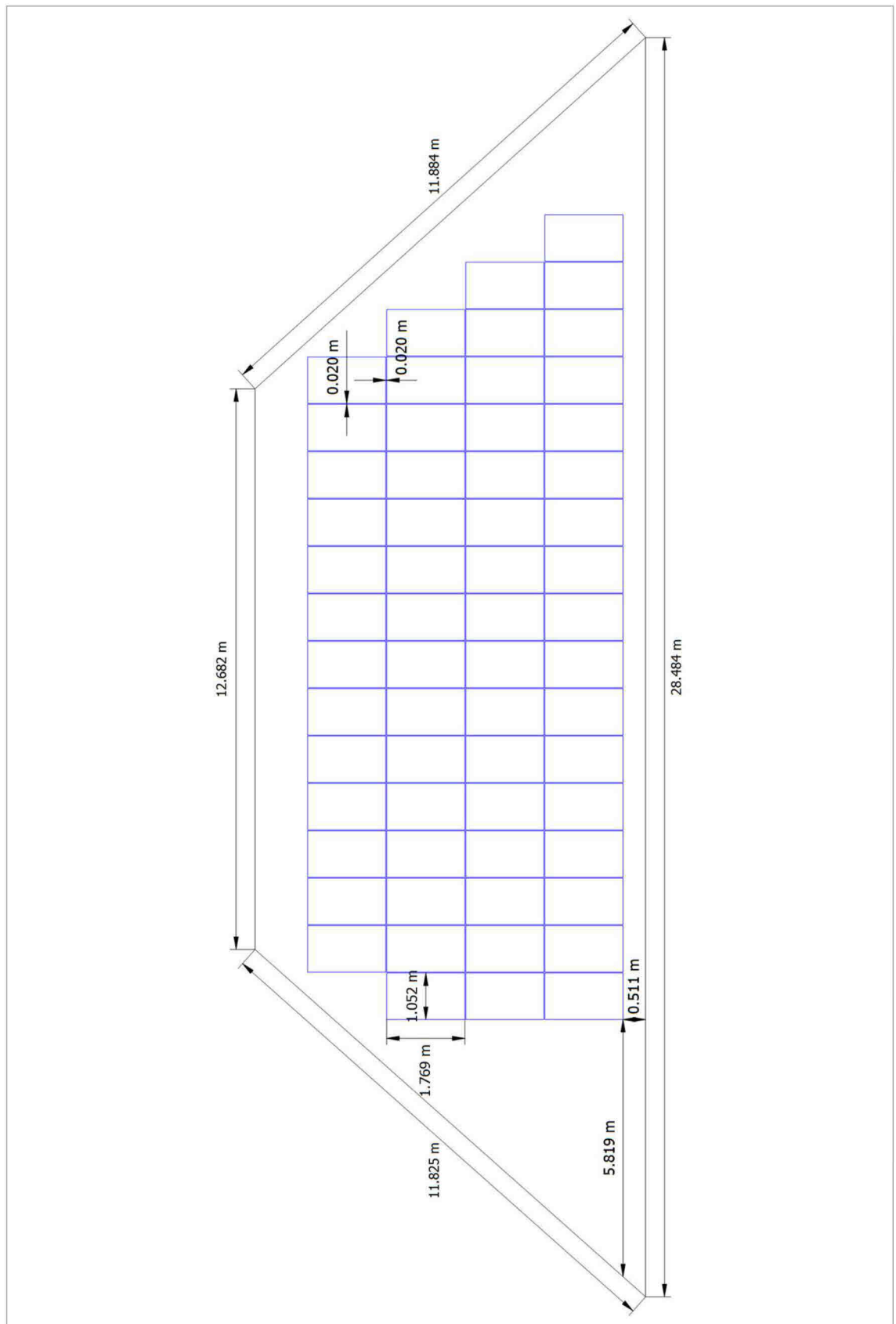


Figure: Building 01-Roof Area West



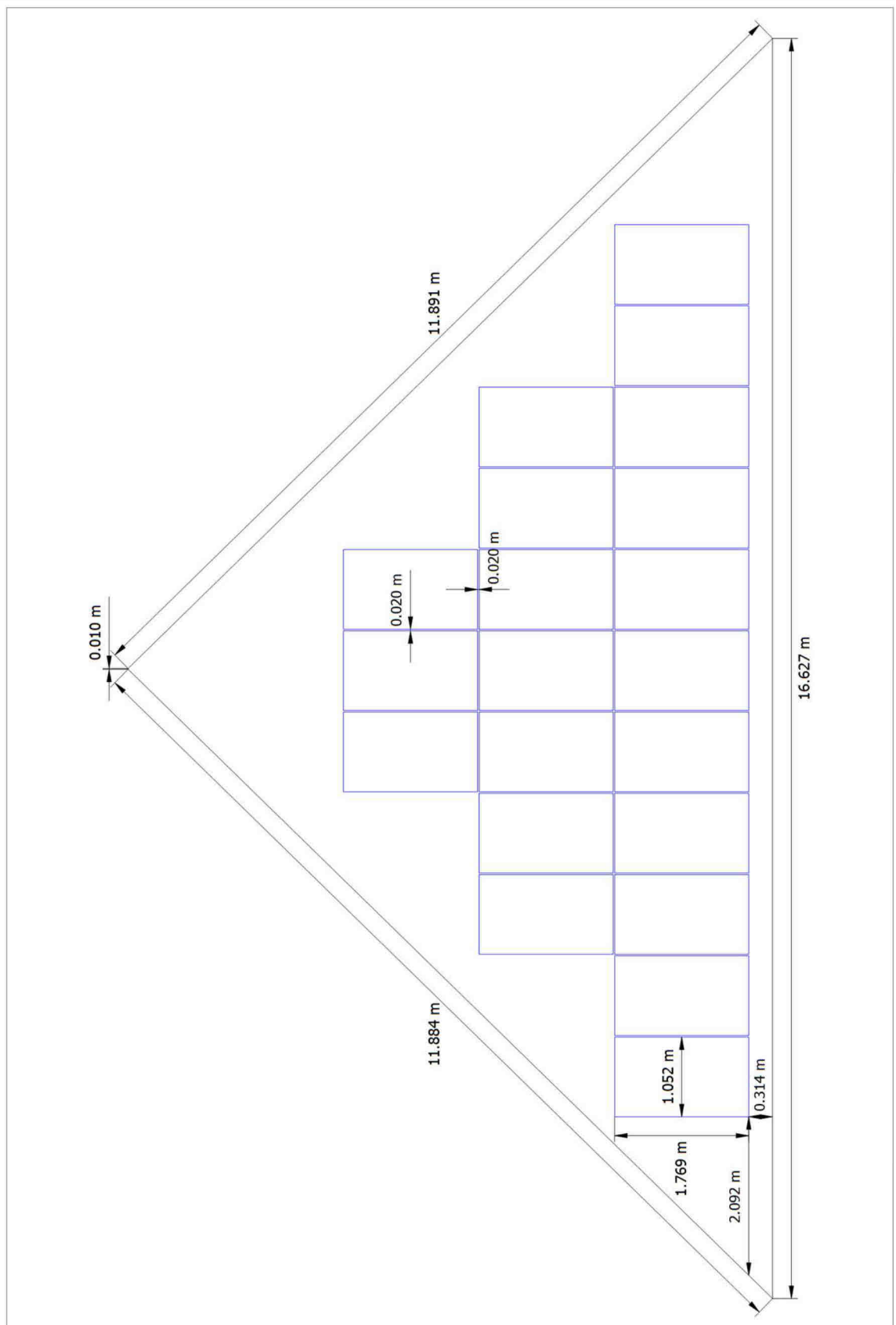


Figure: Building 01-Roof Area South

# String Plan

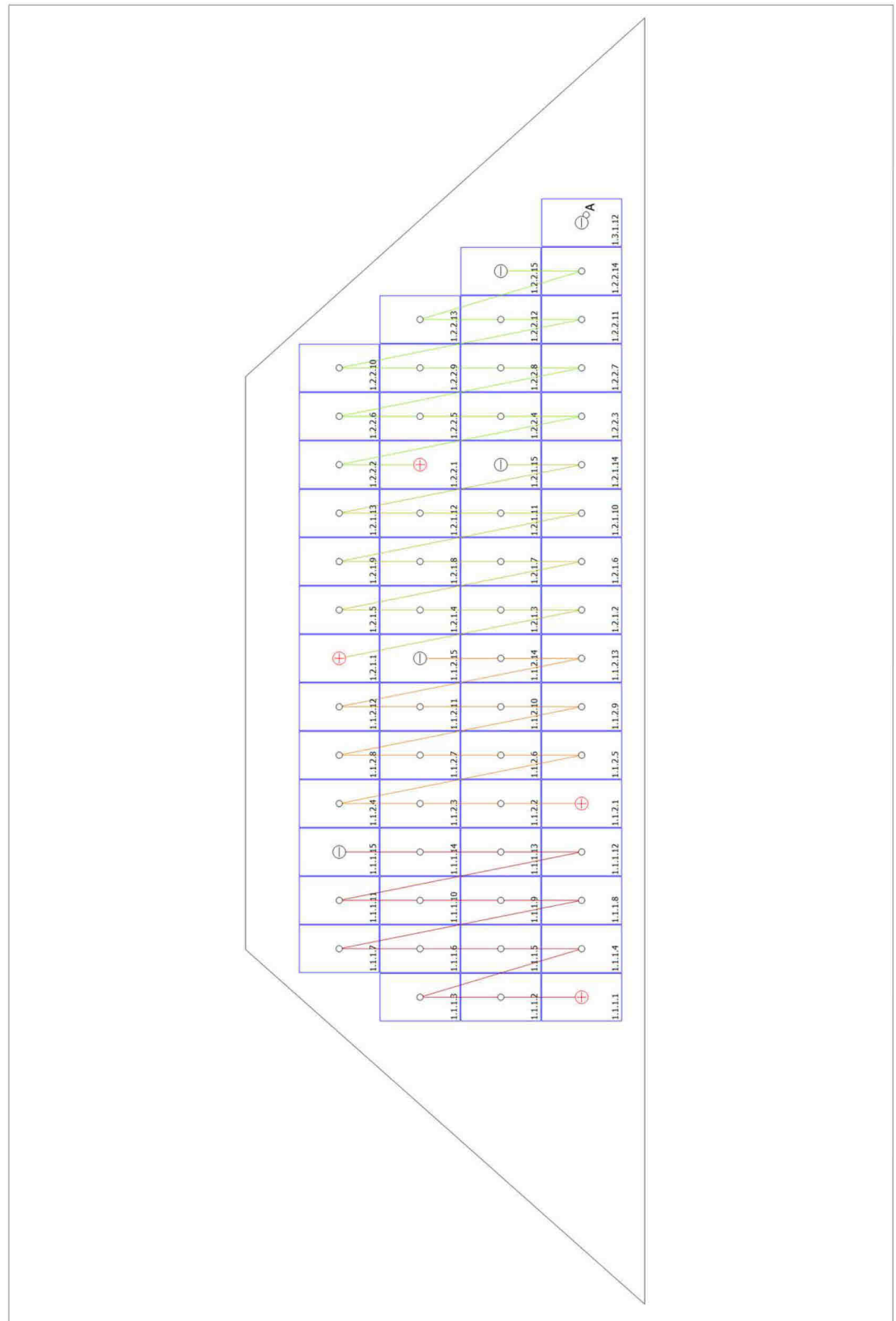


Figure: Building 01-Roof Area West



Figure: Building 01-Roof Area East

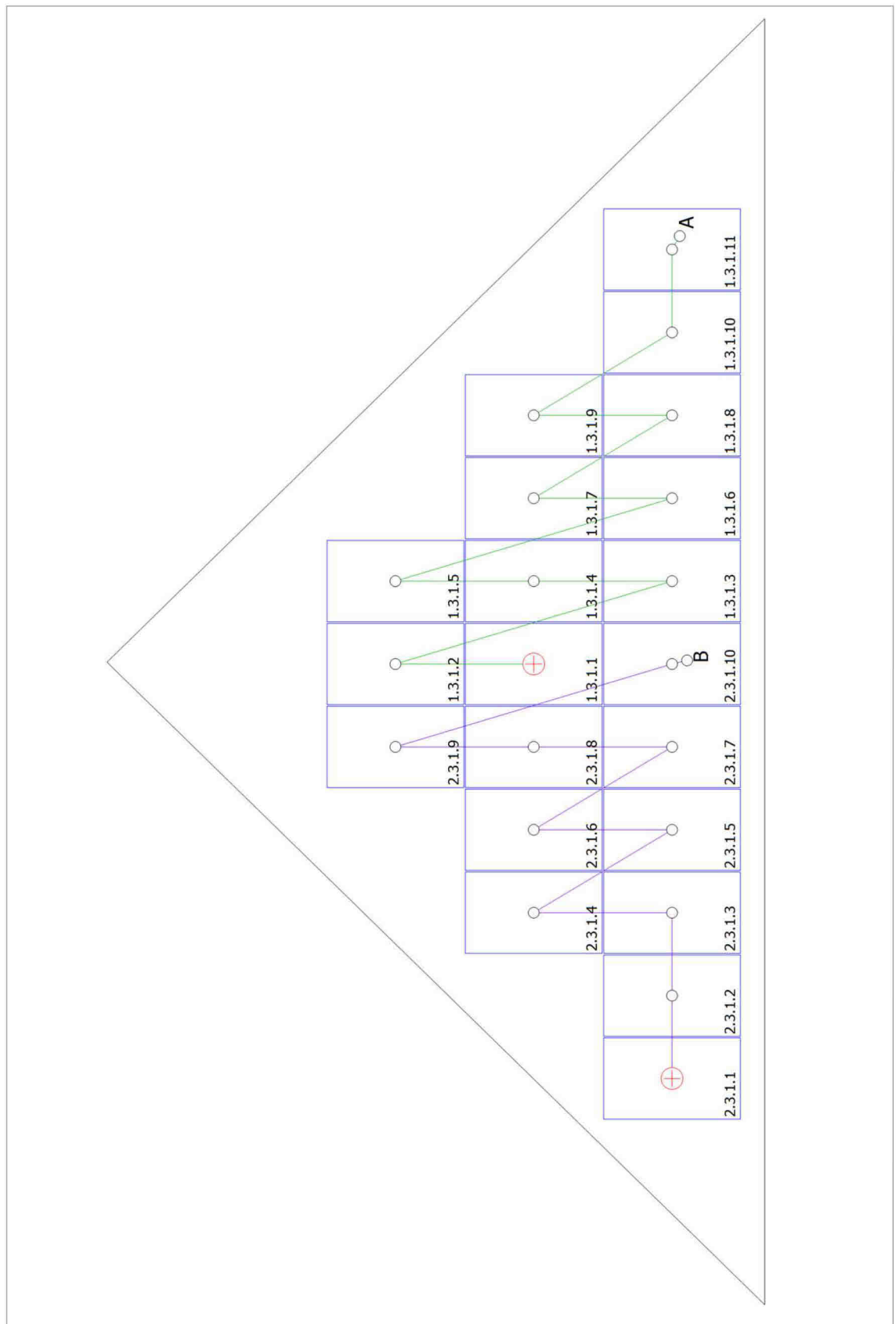


Figure: Building 01-Roof Area South

## Parts list

### Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		JA Solar Holdings Co., Ltd.	JAM60S20-385/MR	143	Piece
2	Inverter		Ginlong (Solis)	S5-GC25K	2	Piece
3	Components			Feed-in Meter	1	Piece
4	Components			Bidirectional Meter	1	Piece