



Versatile Renewable Solutions

Project Name: Clackmannan Health Centre

15/09/2023

Your PV system from Versatile Renewable Solutions

Address of Installation



Project Overview



Figure: Overview Image, 3D Design

PV System

3D, Grid-connected PV System

Climate Data	Clackmannan, GBR (1996 - 2015)
Values source	Meteonorm 8.1(i)
PV Generator Output	36.9 kWp
PV Generator Surface	175.7 m ²
Number of PV Modules	90
Number of Inverters	1

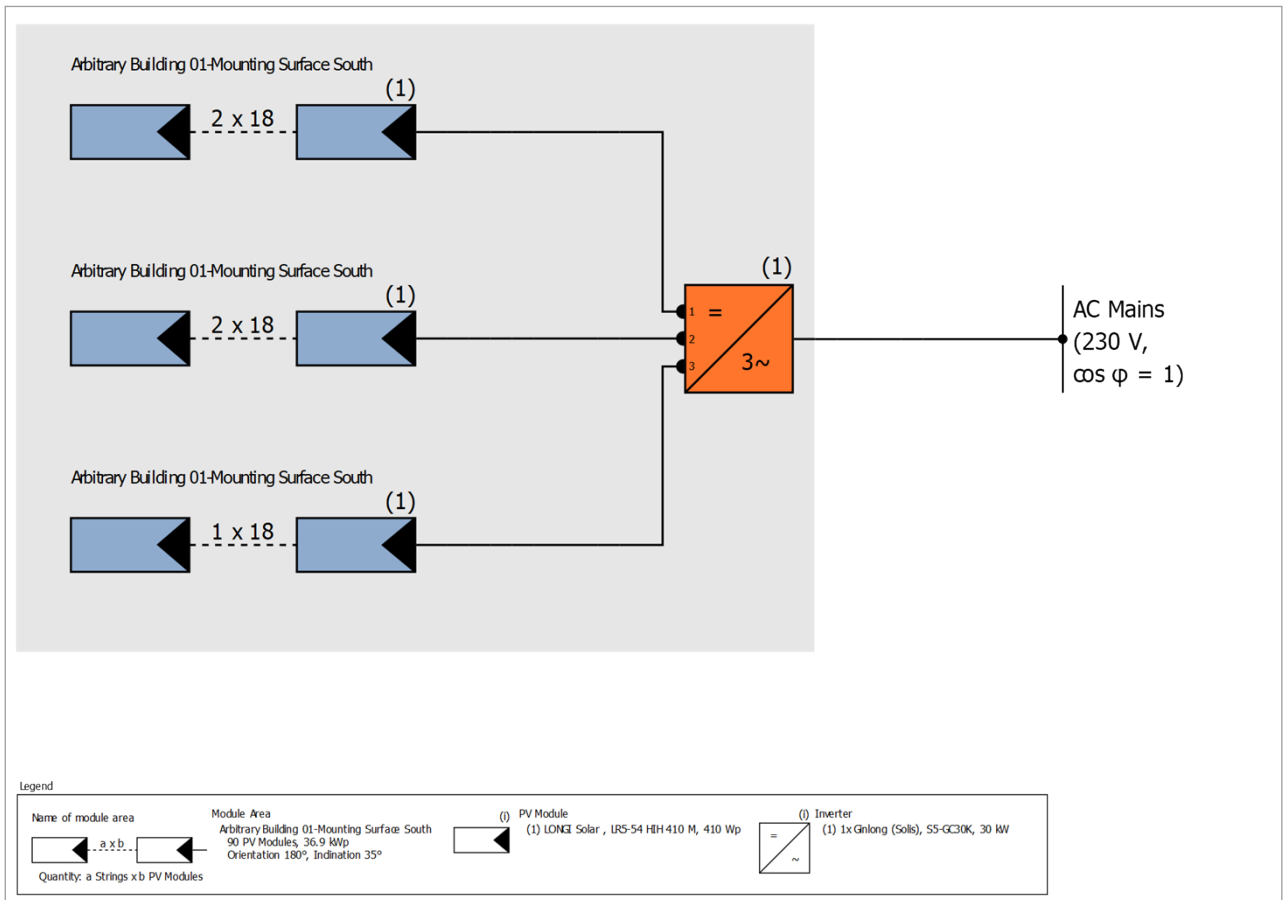


Figure: Schematic diagram

Production Forecast

Production Forecast

PV Generator Output	36.90 kWp
Spec. Annual Yield	870.89 kWh/kWp
Performance Ratio (PR)	85.01 %
Yield Reduction due to Shading	9.4 %/Year
Grid Feed-in	32,152 kWh/Year
Grid Feed-in in the first year (incl. module degradation)	32,017 kWh/Year
Standby Consumption (Inverter)	16 kWh/Year
CO ₂ Emissions avoided	7,488 kg / year

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
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Climate Data

Location	Clackmannan, 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

Module Areas

1. Module Area - Arbitrary Building 01-Mounting Surface South

PV Generator, 1. Module Area - Arbitrary Building 01-Mounting Surface South

Name	Arbitrary Building 01-Mounting Surface South
PV Modules	90 x LR5-54 HIH 410 M (v1)
Manufacturer	LONGI Solar
Inclination	35 °
Orientation	South 180 °
Installation Type	Roof parallel
PV Generator Surface	175.7 m ²



Figure: 1. Module Area - Arbitrary Building 01-Mounting Surface South

Horizon Line, 3D Design

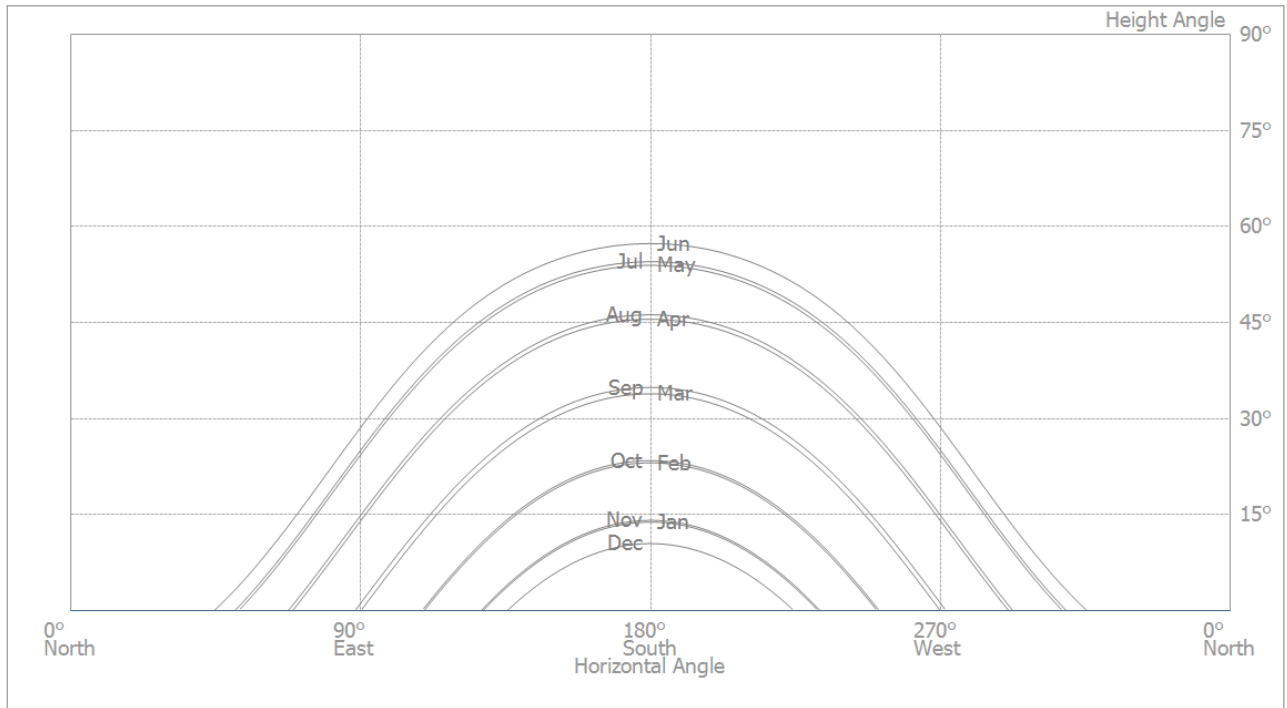


Figure: Horizon (3D Design)

Inverter configuration

Configuration 1

Module Area	Arbitrary Building 01-Mounting Surface South
Inverter 1	
Model	S5-GC30K (v2)
Manufacturer	Ginlong (Solis)
Quantity	1
Sizing Factor	123 %
Configuration	MPP 1: 2 x 18 MPP 2: 2 x 18 MPP 3: 1 x 18

AC Mains

AC Mains

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

Simulation Results

Results Total System

PV System

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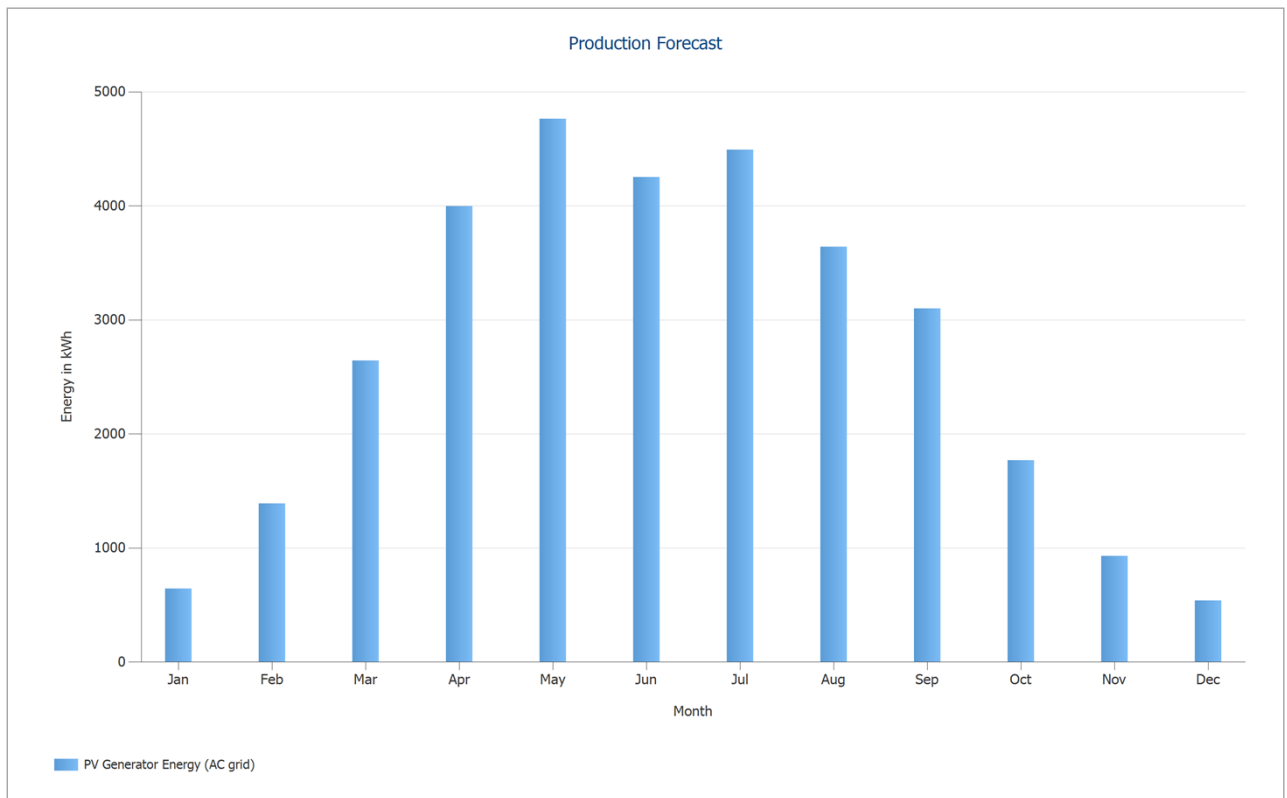


Figure: Production Forecast

Plans and parts list

Circuit Diagram

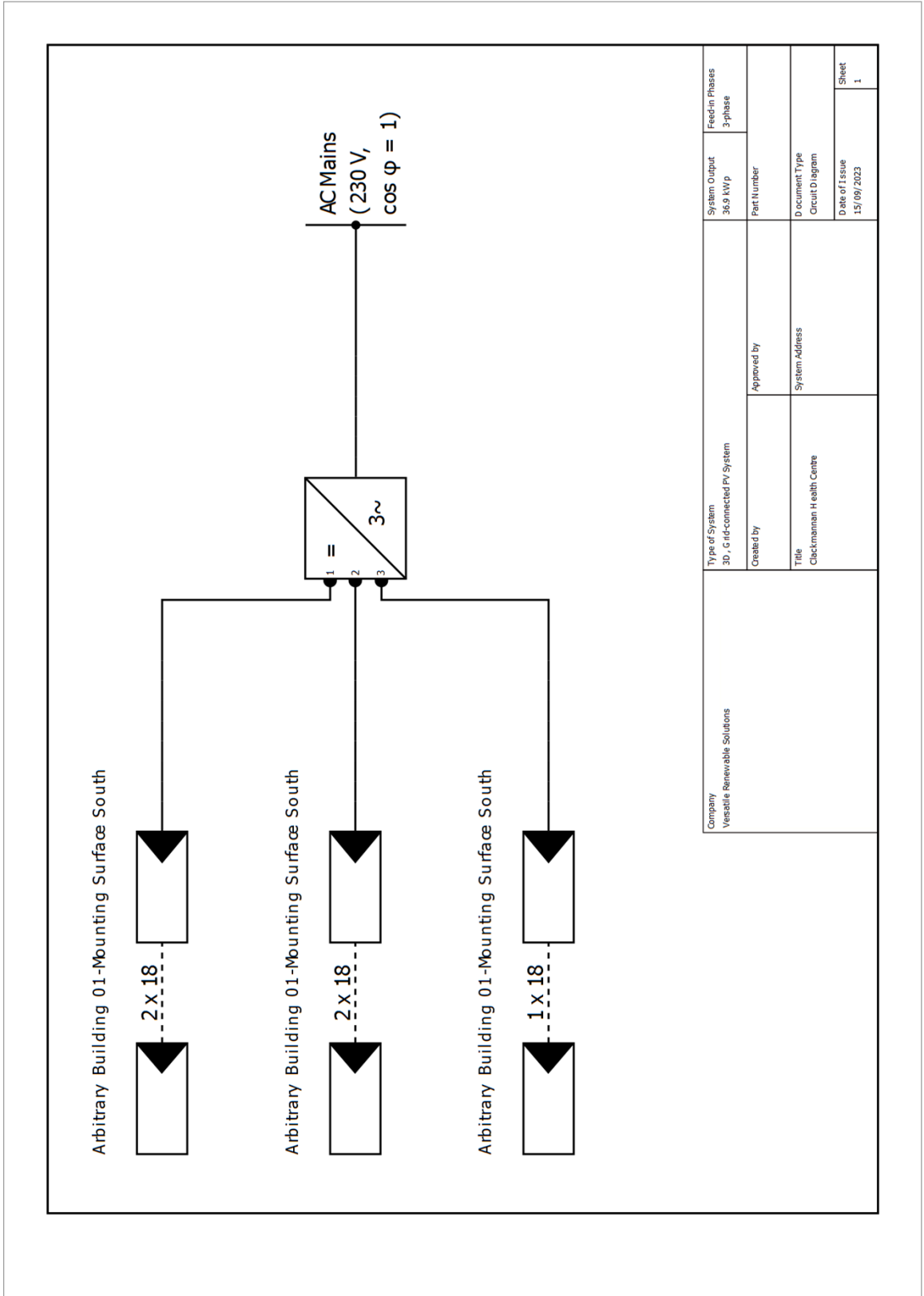


Figure: Circuit Diagram

Overview plan

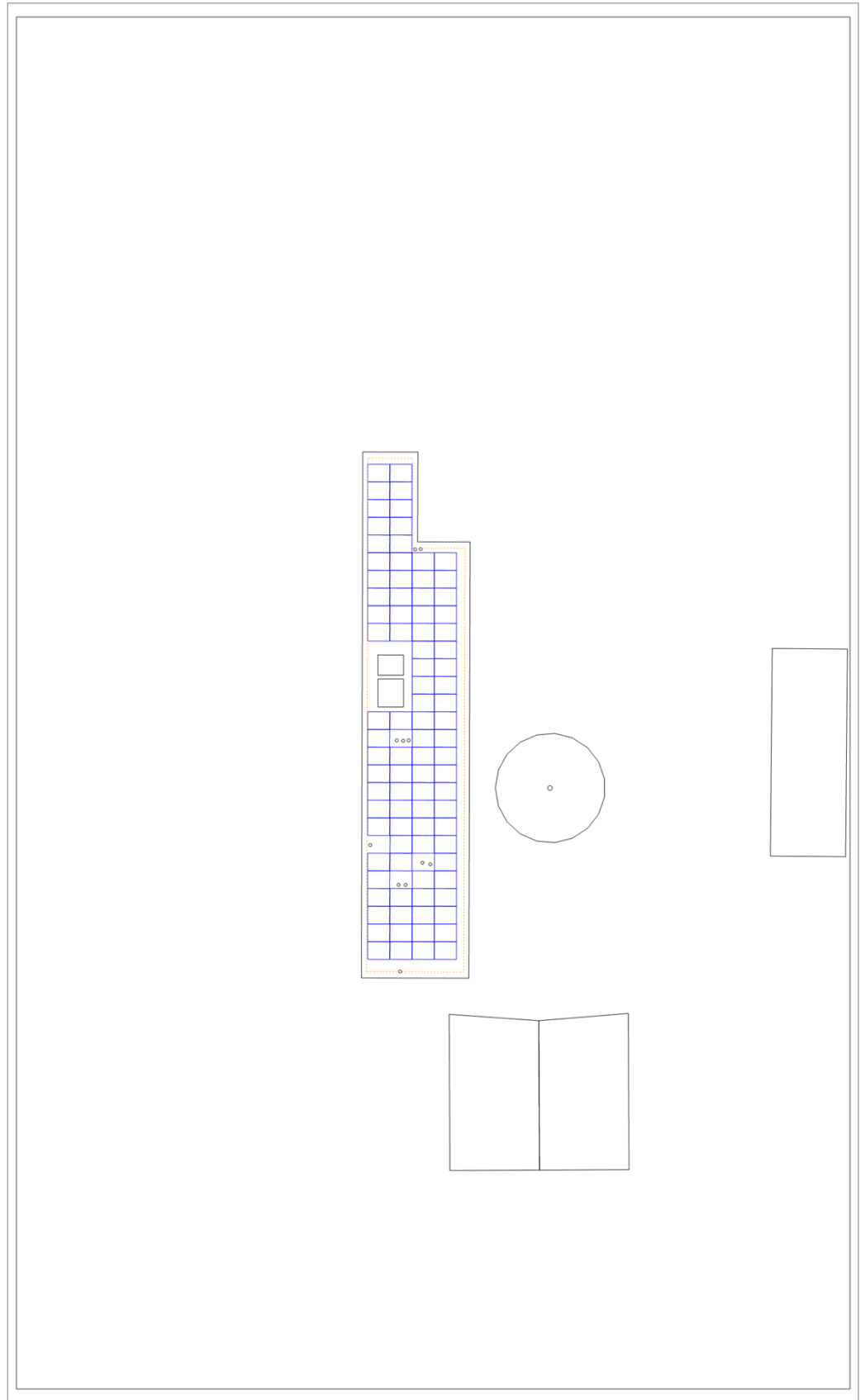


Figure: Overview plan

Dimensioning Plan

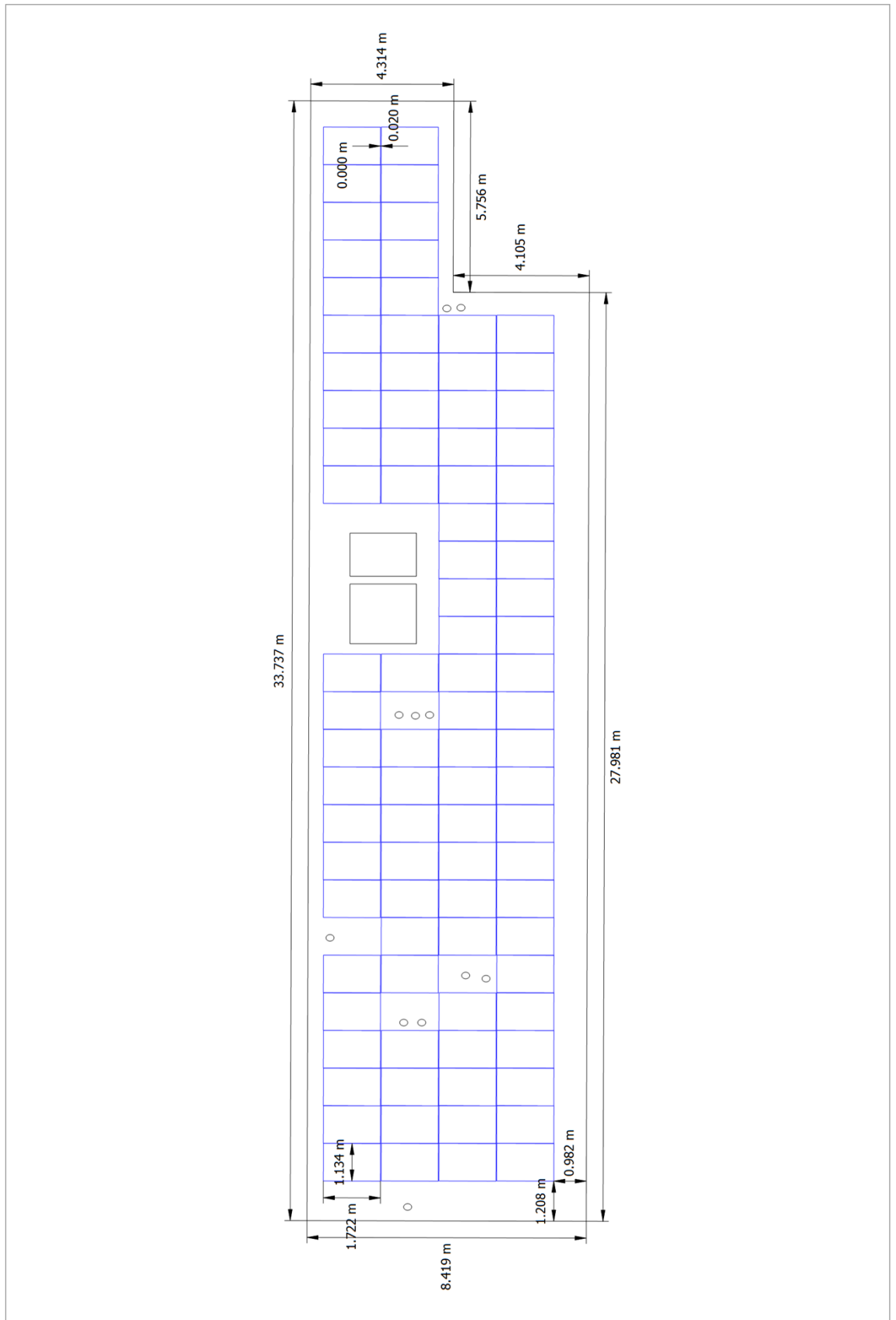


Figure: Arbitrary Building 01-Mounting Surface South

String Plan

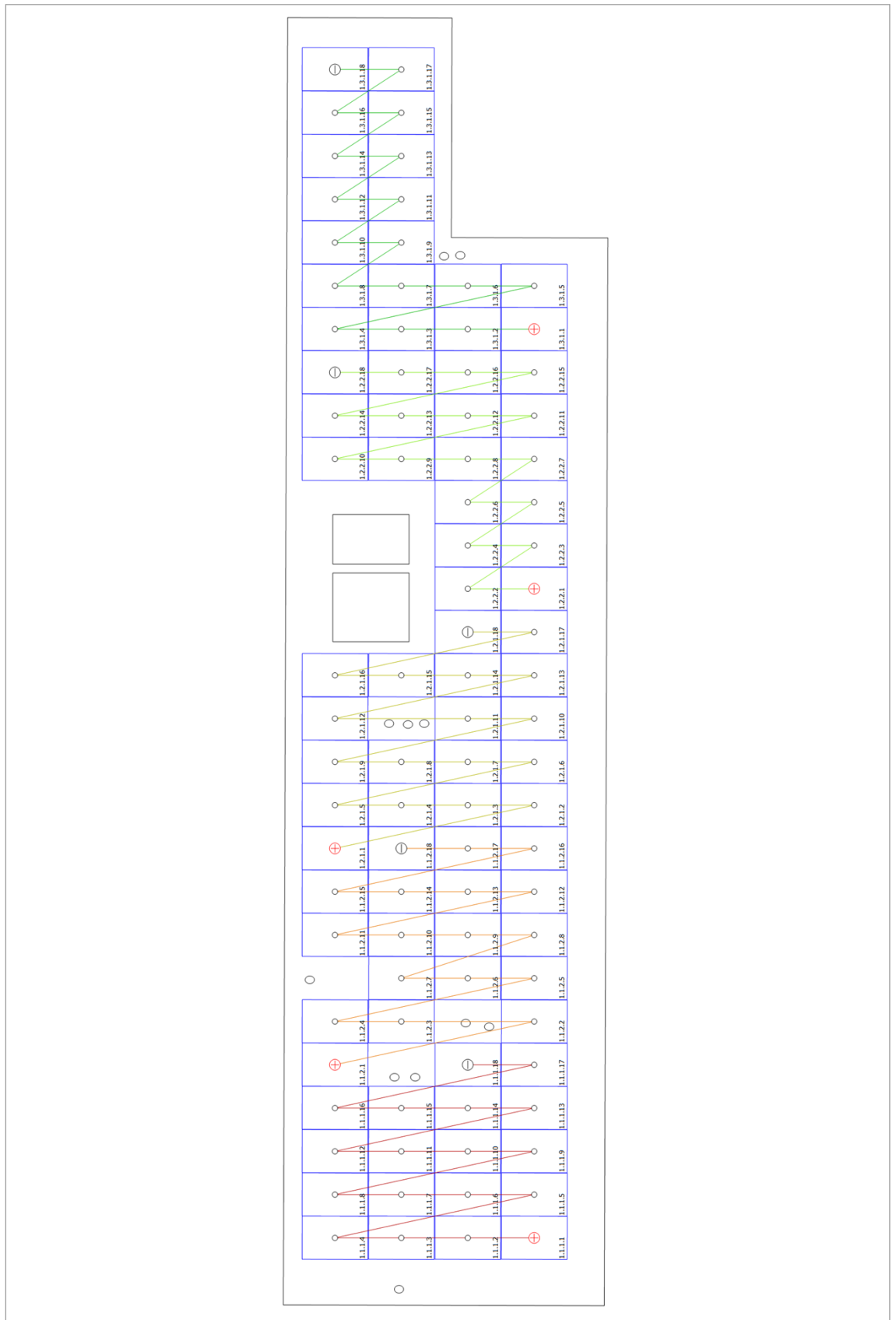


Figure: Arbitrary Building 01-Mounting Surface South

Parts list

Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		LONGI Solar	LR5-54 HIH 410 M	90	Piece
2	Inverter		Ginlong (Solis)	S5-GC30K	1	Piece