



Shawton Energy
1 Junction Lane, Newton Le Willows
WA12 8DN

Volac International Ltd - Unit 2

27/11/2024

Your PV system from Shawton Energy

Address of Installation

12 Aberavon Rd, Port Talbot SA12 7DJ



Project Overview



Figure: Overview Image, 3D Design

PV System

3D, Grid-connected PV System with Electrical Appliances

Climate Data	Port Talbot, GBR (2001 - 2020)
Values source	Meteonorm 8.2(i)
PV Generator Output	363.5 kWp
PV Generator Surface	1,607.6 m ²
Number of PV Modules	727
Number of Inverters	8

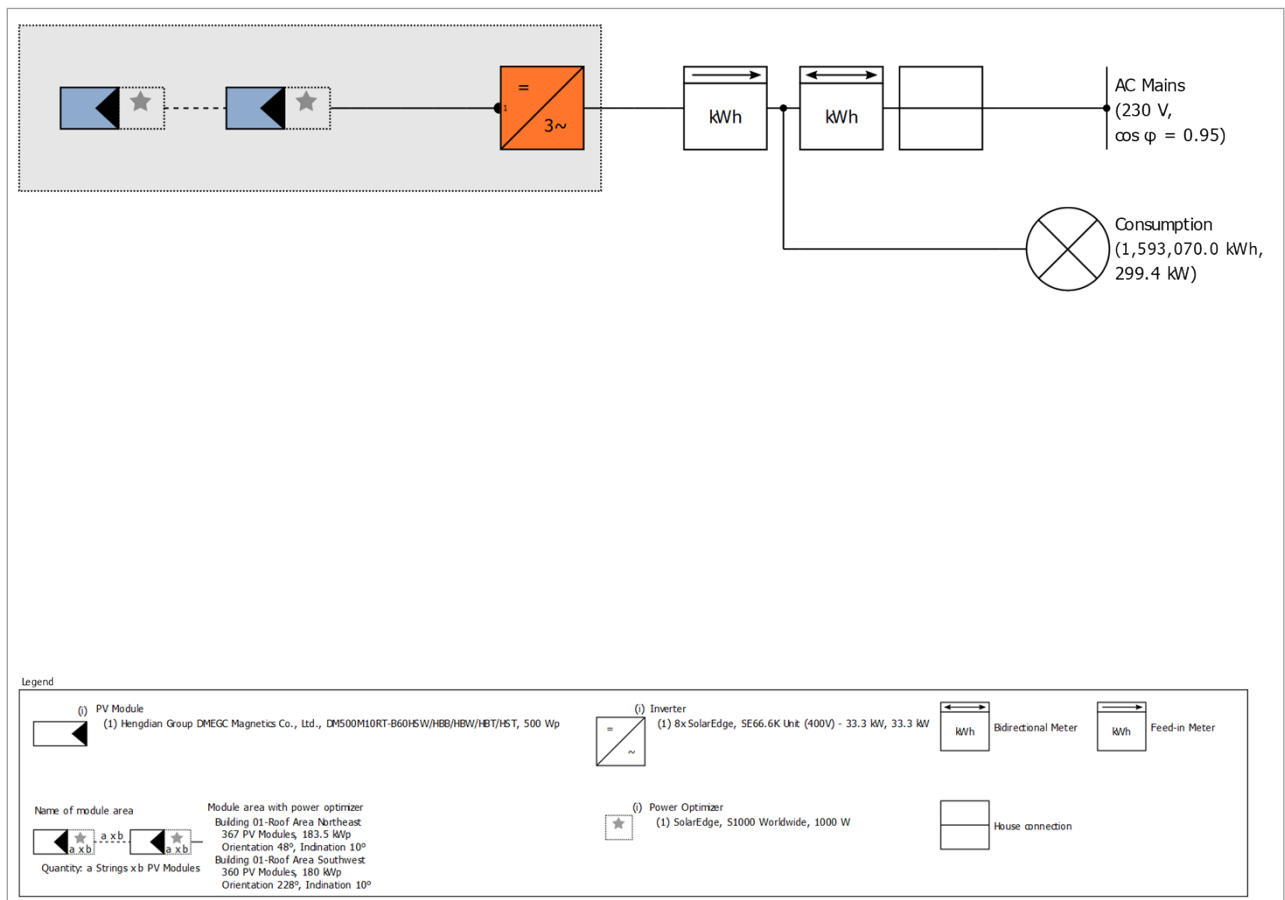


Figure: Schematic diagram

Production Forecast

Production Forecast

PV Generator Output	363.50 kWp
Spec. Annual Yield	921.75 kWh/kWp
Performance Ratio (PR)	86.62 %
Yield Reduction due to Shading	4.3 %
PV Generator Energy (AC grid)	335,269 kWh/Year
Own Consumption	326,459 kWh/Year
Clipping at Feed-in Point	0 kWh/Year
Grid Export	8,810 kWh/Year
Own Power Consumption	97.4 %
CO ₂ Emissions avoided	71,032 kg / year
Level of Self-sufficiency	20.5 %

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

Climate Data

Location Port Talbot, GBR (2001 - 2020)

Values source Meteonorm 8.2(i)

Data resolution 1 h

Simulation models used:

- Diffuse Irradiation onto Horizontal Plane Perez & Ineichen
- Irradiance onto tilted surface Perez

Consumption

Total Consumption 1593070 kWh

1-10-23 1593070 kWh

Load Peak 299.4 kW

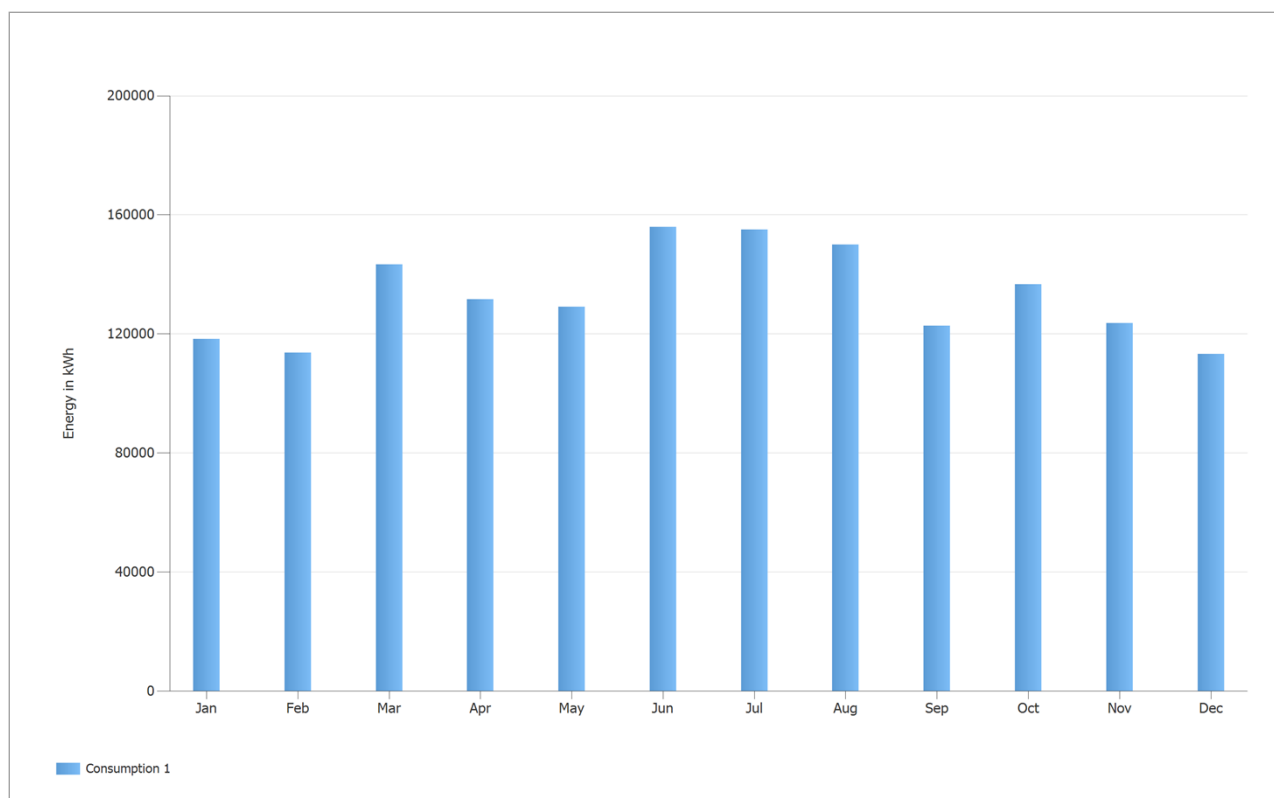


Figure: Consumption

Module Areas

1. Module Area - Building 01-Roof Area Northeast

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

Name	Building 01-Roof Area Northeast
PV Modules	367 x DM500M10RT- B60HSW/HBB/HBW/HBT/HST (v2)
Manufacturer	Hengdian Group DMEGC Magnetics Co., Ltd.
Inclination	10 °
Orientation	Northeast 48 °
Installation Type	Roof parallel
PV Generator Surface	811.5 m ²



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

2. Module Area - Building 01-Roof Area Southwest

PV Generator, 2. Module Area - Building 01-Roof Area Southwest

Name	Building 01-Roof Area Southwest
PV Modules	360 x DM500M10RT- B60HSW/HBB/HBW/HBT/HST (v2)
Manufacturer	Hengdian Group DMEGC Magnetics Co., Ltd.
Inclination	10 °
Orientation	Southwest 228 °
Installation Type	Roof parallel
PV Generator Surface	796.1 m ²



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

Horizon Line, 3D Design

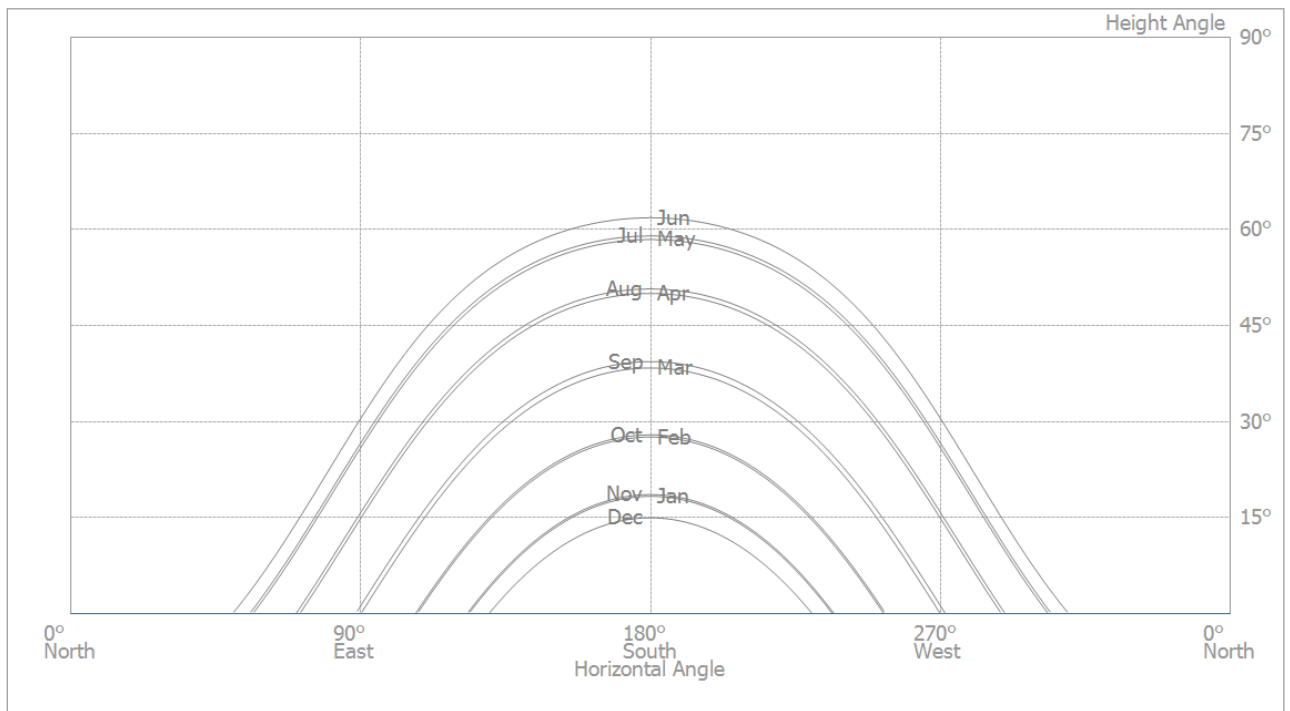


Figure: Horizon (3D Design)

Inverter configuration

Configuration 1

Module Areas	Building 01-Roof Area Northeast + Building 01-Roof Area Southwest
Inverter 1	
Model	SE66.6K Unit (400V) - 33.3 kW (v1)
Manufacturer	SolarEdge
Quantity	1
Sizing Factor	142.2 %
Configuration	MPP 1:
	1 x 15☆ [1 x 2]
	1 x 15☆ [1 x 2]
	1 x 15☆ [1 x 2]
Power Optimizer	45x SolarEdge, S1000 Worldwide (v2)
Inverter 2	
Model	SE66.6K Unit (400V) - 33.3 kW (v1)
Manufacturer	SolarEdge
Quantity	1
Sizing Factor	145.4 %
Configuration	MPP 1:
	1 x 16☆ [1 x 2]
	1 x 15☆ [1 x 2]
	1 x 15☆ [1 x 2]
Power Optimizer	46x SolarEdge, S1000 Worldwide (v2)
Inverter 3	
Model	SE66.6K Unit (400V) - 33.3 kW (v1)
Manufacturer	SolarEdge
Quantity	1
Sizing Factor	145.4 %
Configuration	MPP 1:
	1 x 16☆ [1 x 2]
	1 x 15☆ [1 x 2]
	1 x 15☆ [1 x 2]
Power Optimizer	46x SolarEdge, S1000 Worldwide (v2)
Inverter 4	
Model	SE66.6K Unit (400V) - 33.3 kW (v1)
Manufacturer	SolarEdge
Quantity	1
Sizing Factor	147 %
Configuration	MPP 1:
	1 x 16☆ [1 x 2]
	1 x 15☆ [1 x 2]
	1 x 15☆ [1 x 2] + 1 x 1☆ [1 x 1]
Power Optimizer	47x SolarEdge, S1000 Worldwide (v2)
Inverter 5	
Model	SE66.6K Unit (400V) - 33.3 kW (v1)
Manufacturer	SolarEdge
Quantity	1
Sizing Factor	142.2 %
Configuration	MPP 1:
	1 x 15☆ [1 x 2]
	1 x 15☆ [1 x 2]
	1 x 15☆ [1 x 2]
Power Optimizer	45x SolarEdge, S1000 Worldwide (v2)

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Inverter 6

Model	SE66.6K Unit (400V) - 33.3 kW (v1)
Manufacturer	SolarEdge
Quantity	1
Sizing Factor	142.2 %
Configuration	MPP 1:
	1 x 15☆ [1 x 2]
	1 x 15☆ [1 x 2]
	1 x 15☆ [1 x 2]
Power Optimizer	45x SolarEdge, S1000 Worldwide (v2)

Inverter 7

Model	SE66.6K Unit (400V) - 33.3 kW (v1)
Manufacturer	SolarEdge
Quantity	1
Sizing Factor	142.2 %
Configuration	MPP 1:
	1 x 15☆ [1 x 2]
	1 x 15☆ [1 x 2]
	1 x 15☆ [1 x 2]
Power Optimizer	45x SolarEdge, S1000 Worldwide (v2)

Inverter 8

Model	SE66.6K Unit (400V) - 33.3 kW (v1)
Manufacturer	SolarEdge
Quantity	1
Sizing Factor	142.2 %
Configuration	MPP 1:
	1 x 15☆ [1 x 2]
	1 x 15☆ [1 x 2]
	1 x 15☆ [1 x 2]
Power Optimizer	45x SolarEdge, S1000 Worldwide (v2)

AC Mains

AC Mains

Number of Phases	3
Mains voltage between phase and neutral	230 V
Displacement Power Factor (cos phi)	+/- 0.95

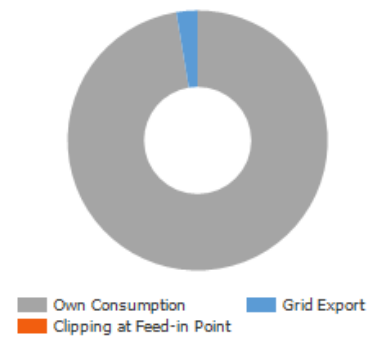
Simulation Results

Results Total System

PV System

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Yield Reduction due to Shading	4.3 %
PV Generator Energy (AC grid)	335,269 kWh/Year
Own Consumption	326,459 kWh/Year
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Grid Export	8,810 kWh/Year
Own Power Consumption	97.4 %
CO ₂ Emissions avoided	71,032 kg / year

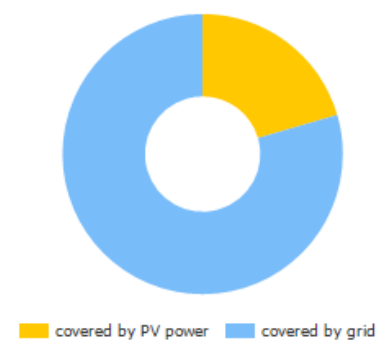
PV Generator Energy (AC grid)



Appliances

Appliances	1,593,070 kWh/Year
Standby Consumption (Inverter)	214 kWh/Year
Total Consumption	1,593,284 kWh/Year
covered by PV power	326,459 kWh/Year
covered by grid	1,266,825 kWh/Year
Solar Fraction	20.5 %

Total Consumption

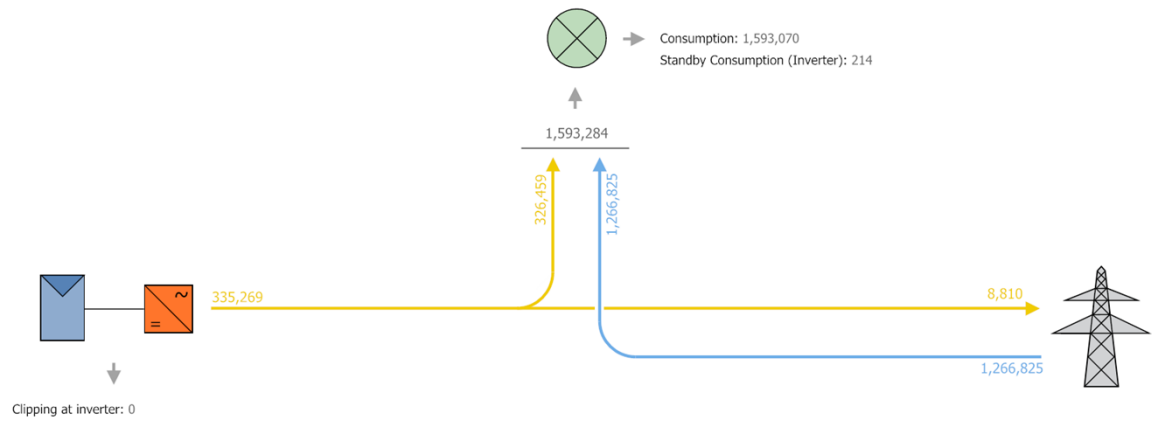


Level of Self-sufficiency

Total Consumption	1,593,284 kWh/Year
covered by grid	1,266,825 kWh/Year
Level of Self-sufficiency	20.5 %

Energy Flow Graph

Project: Volac Unit 2 with Skylights Covered 27.11.24 CP



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

Figure: Energy flow

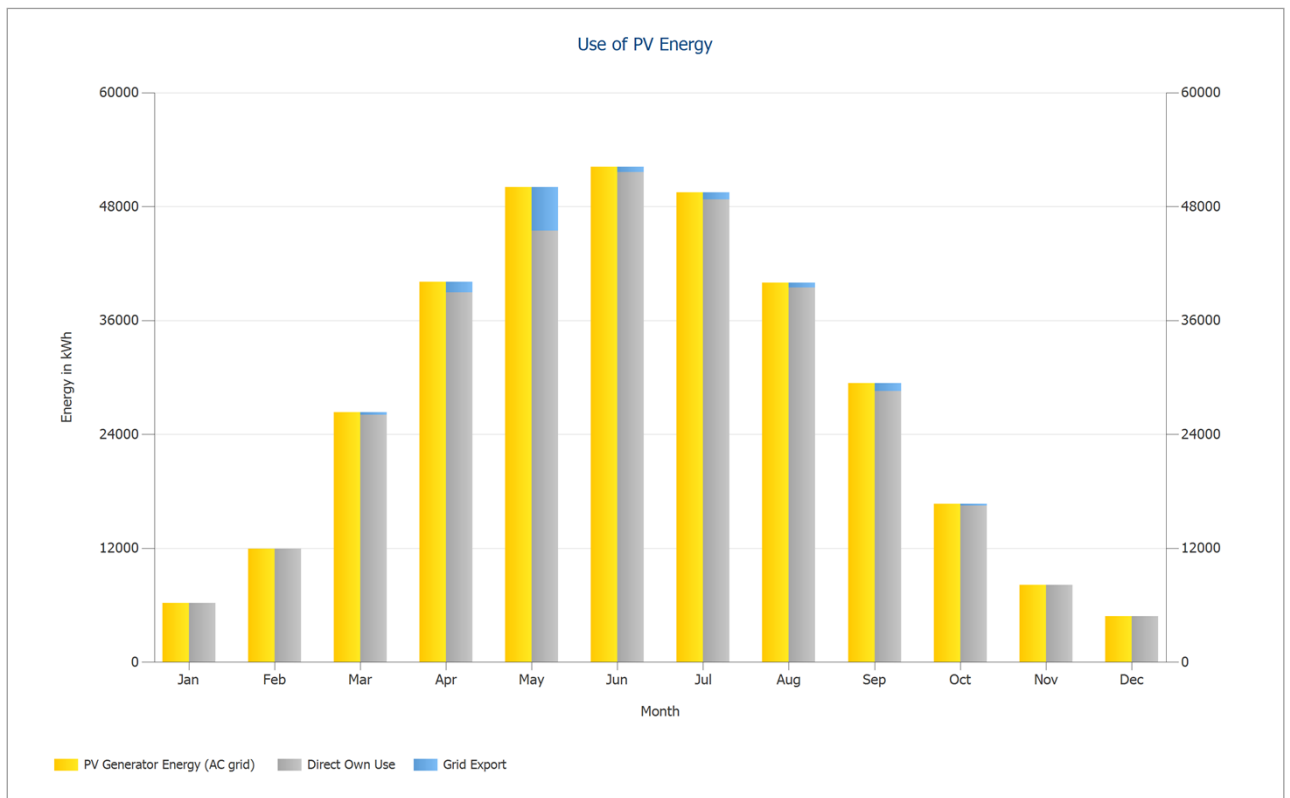


Figure: Use of PV Energy

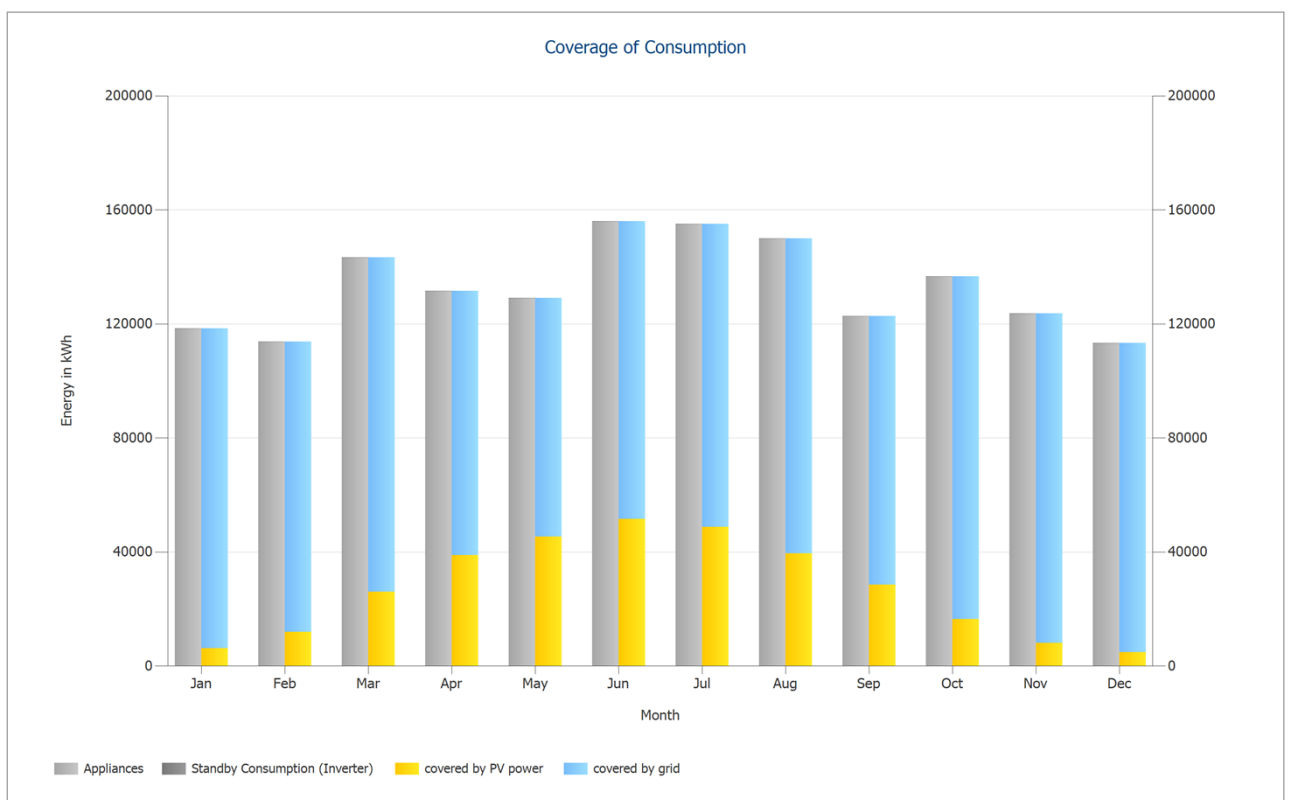


Figure: Coverage of Consumption

PV System Energy Balance

PV System Energy Balance

Global radiation - horizontal	1,086.04 kWh/m²	
Deviation from standard spectrum	-10.86 kWh/m ²	-1.00 %
Ground Reflection (Albedo)	1.63 kWh/m ²	0.15 %
Orientation and inclination of the module surface	-8.50 kWh/m ²	-0.79 %
Module-independent shading	-6.09 kWh/m ²	-0.57 %
Reflection on the Module Surface	0.00 kWh/m ²	0.00 %
Irradiance on the rear side of the module	0.00 kWh/m ²	0.00 %
Global Radiation at the Module	1,062.22 kWh/m²	
	1,062.22 kWh/m ²	
	x 1607.615 m ²	
	= 1,707,647.67 kWh	
Global PV Radiation	1,707,647.67 kWh	
Bifaciality (80 % of back irradiance)	0.00 kWh	0.00 %
Soiling	-51,223.40 kWh	-3.00 %
STC Conversion (Rated Efficiency of Module 22.65 %)	-1,281,230.28 kWh	-77.35 %
Rated PV Energy	375,193.99 kWh	
Module-specific Partial Shading	-11,785.16 kWh	-3.14 %
Low-light performance	-2,804.71 kWh	-0.77 %
Deviation from the nominal module temperature	-2,124.79 kWh	-0.59 %
Diodes	-400.04 kWh	-0.11 %
Mismatch (Manufacturer Information)	0.00 kWh	0.00 %
Mismatch (Configuration/Shading)	-1,637.63 kWh	-0.46 %
Power optimizer (DC conversion/clipping)	-1,788.33 kWh	-0.50 %
PV Energy (DC) without inverter clipping	354,653.32 kWh	
Failing to reach the DC start output	0.00 kWh	0.00 %
Clipping on account of the MPP Voltage Range	-112.76 kWh	-0.03 %
Clipping on account of the max. DC Current	-3.16 kWh	0.00 %
Clipping on account of the max. DC Power	0.00 kWh	0.00 %
Clipping on account of the max. AC Power/cos phi	-1,511.26 kWh	-0.43 %
MPP Matching	0.00 kWh	0.00 %
PV energy (DC)	353,026.13 kWh	
Energy at the Inverter Input	353,026.13 kWh	
Input voltage deviates from rated voltage	0.00 kWh	0.00 %
DC/AC Conversion	-7,387.70 kWh	-2.09 %
Standby Consumption (Inverter)	-213.87 kWh	-0.06 %
Total Cable Losses	-10,369.15 kWh	-3.00 %
PV energy (AC) minus standby use	335,055.41 kWh	
PV Generator Energy (AC grid)	335,269.28 kWh	



Plans and parts list

Circuit Diagram

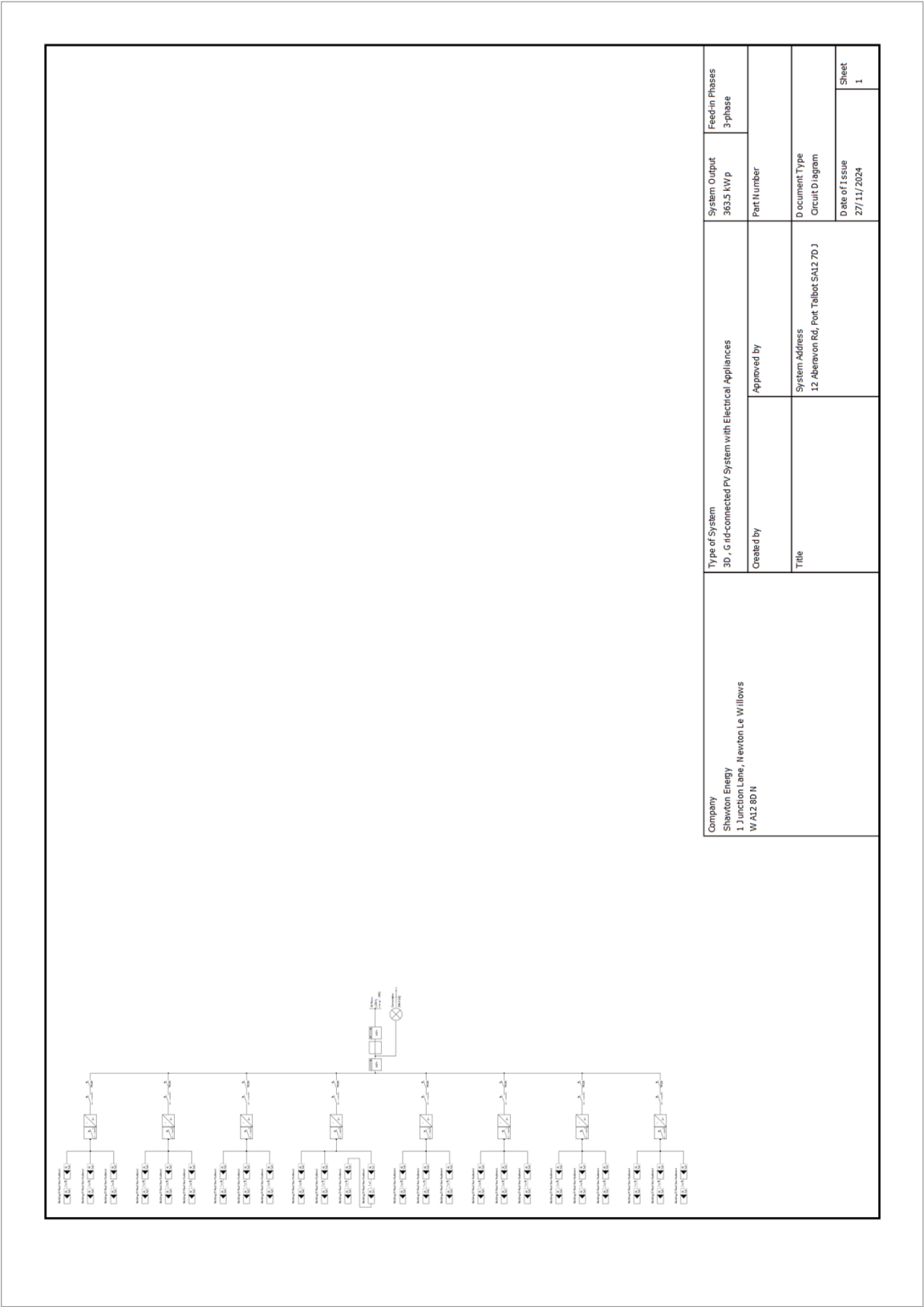


Figure: Circuit Diagram

Overview plan

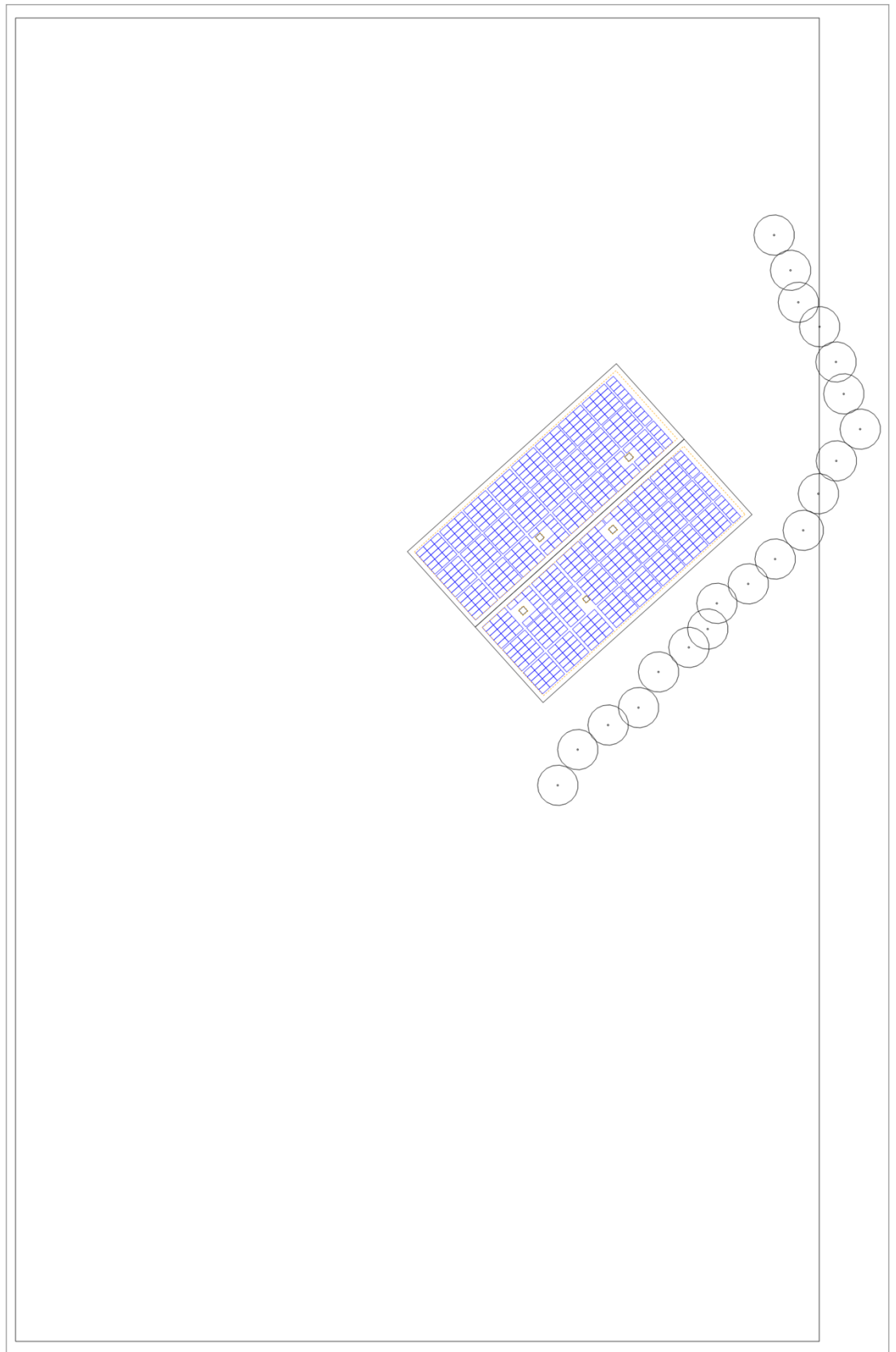
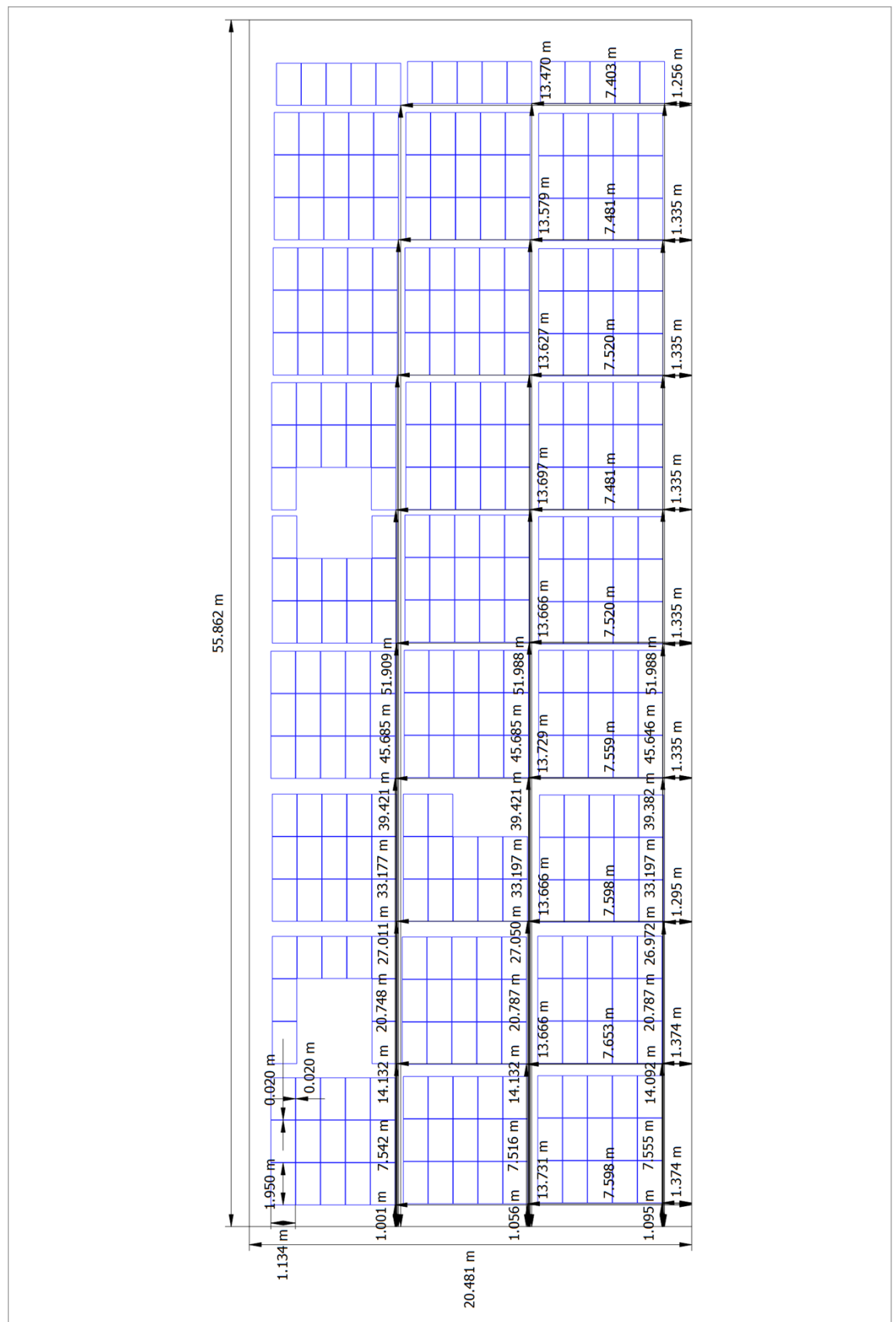


Figure: Overview plan

 Created with PV*SOL premium 2025 (R1)
Valentin Software GmbH



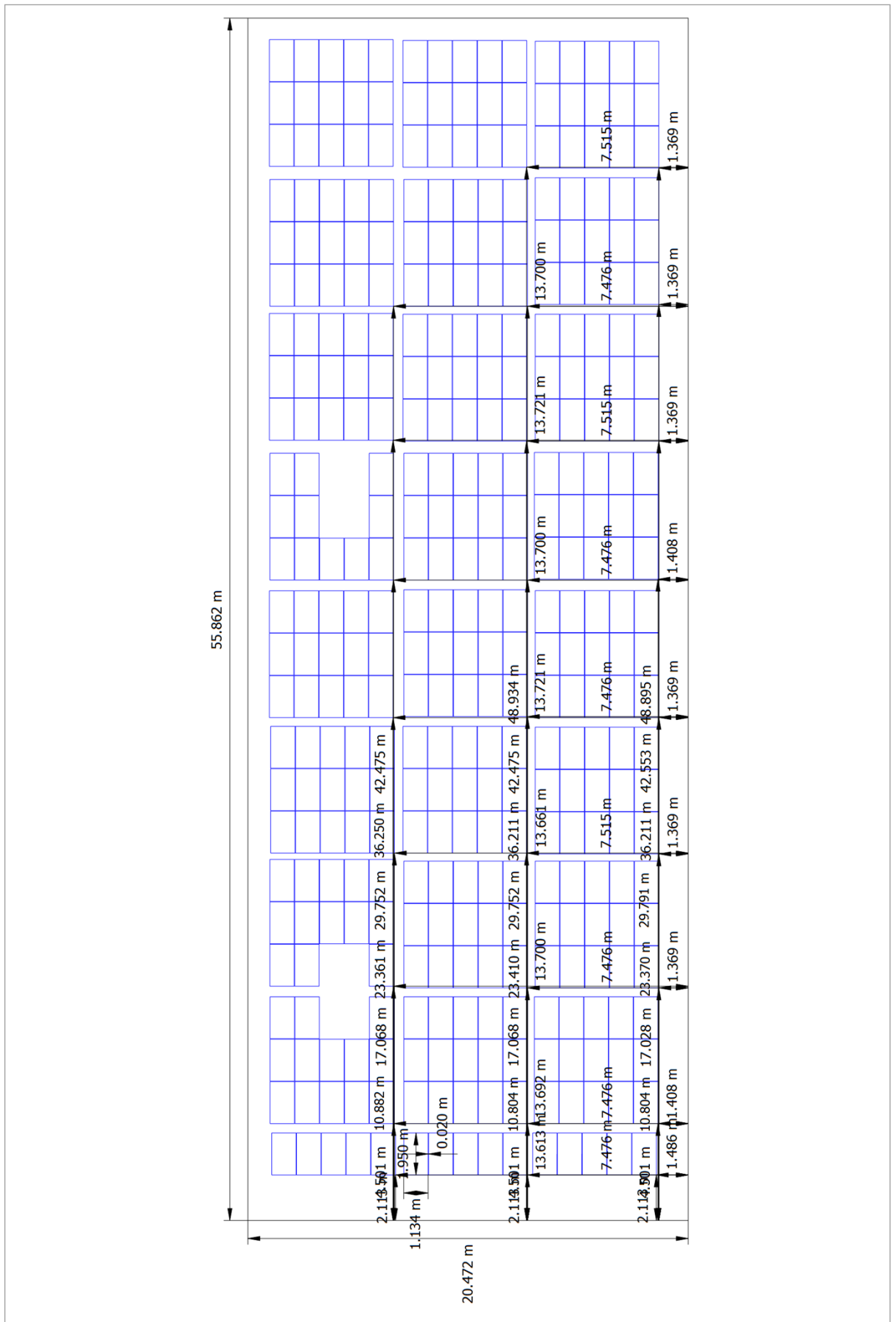


Figure: Building 01 - Roof Area Northeast

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Figure: Building 01 - Roof Area Southwest

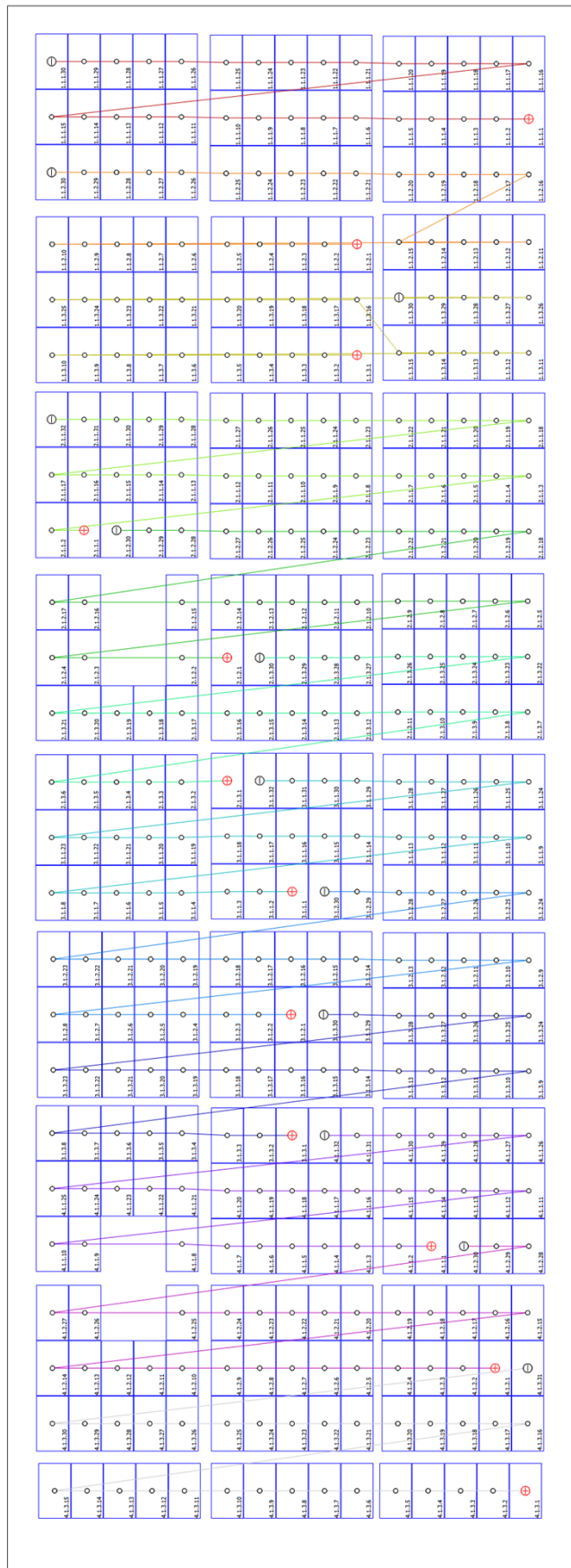


Figure: Building 01 - Roof Area Northeast

Parts list

Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		Hengdian Group DMEGC Magnetics Co., Ltd.	DM500M10RT- B60HSW/HBB/HBW/ HBT/HST	727	Piece
2	Inverter		SolarEdge	SE66.6K Unit (400V) - 8 33.3 kW	8	Piece
3	Power Optimizer		SolarEdge	S1000 Worldwide	364	Piece
4	Components			Feed-in Meter	1	Piece
5	Components			House connection	1	Piece
6	Components			Bidirectional Meter	1	Piece
7	Components			Circuit Breaker AC Isolator	8	Piece
8	Components			Circuit Breaker MCCB	8	Piece