



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	64.5 kWp
PV Generator Surface	285.3 m ²
Number of PV Modules	129
Number of Inverters	2

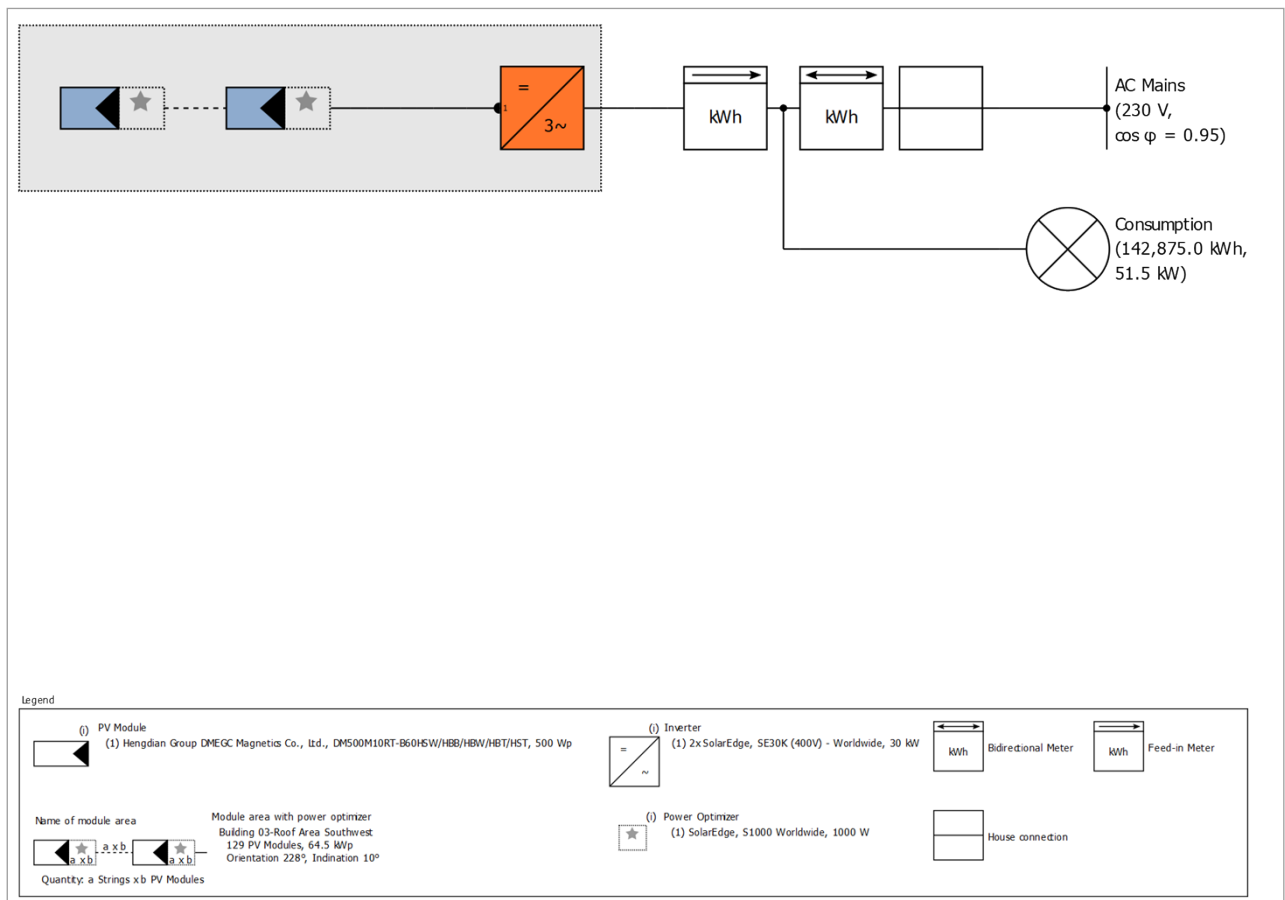


Figure: Schematic diagram

Production Forecast

Production Forecast

PV Generator Output	64.50 kWp
Spec. Annual Yield	982.69 kWh/kWp
Performance Ratio (PR)	87.85 %
Yield Reduction due to Shading	3.3 %
PV Generator Energy (AC grid)	63,419 kWh/Year
Own Consumption	48,729 kWh/Year
Clipping at Feed-in Point	0 kWh/Year
Grid Export	14,690 kWh/Year
Own Power Consumption	76.8 %
CO ₂ Emissions avoided	13,437 kg / year
Level of Self-sufficiency	34.1 %

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	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	142875 kWh
1-10-23 unit 12	142875 kWh
Load Peak	51.5 kW

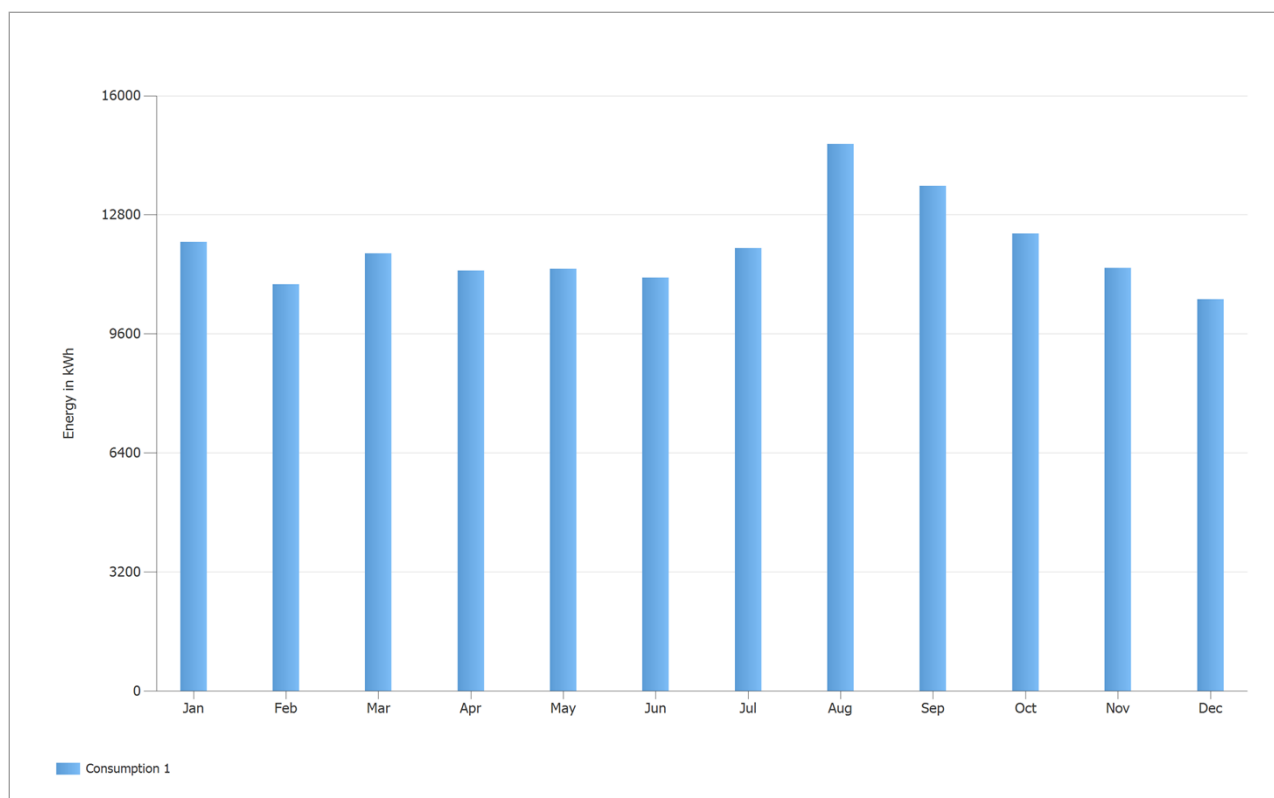


Figure: Consumption

Module Areas

1. Module Area - Building 03-Roof Area Southwest

PV Generator, 1. Module Area - Building 03-Roof Area Southwest

Name	Building 03-Roof Area Southwest
PV Modules	129 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	285.3 m ²



Figure: 1. Module Area - Building 03-Roof Area Southwest

Horizon Line, 3D Design

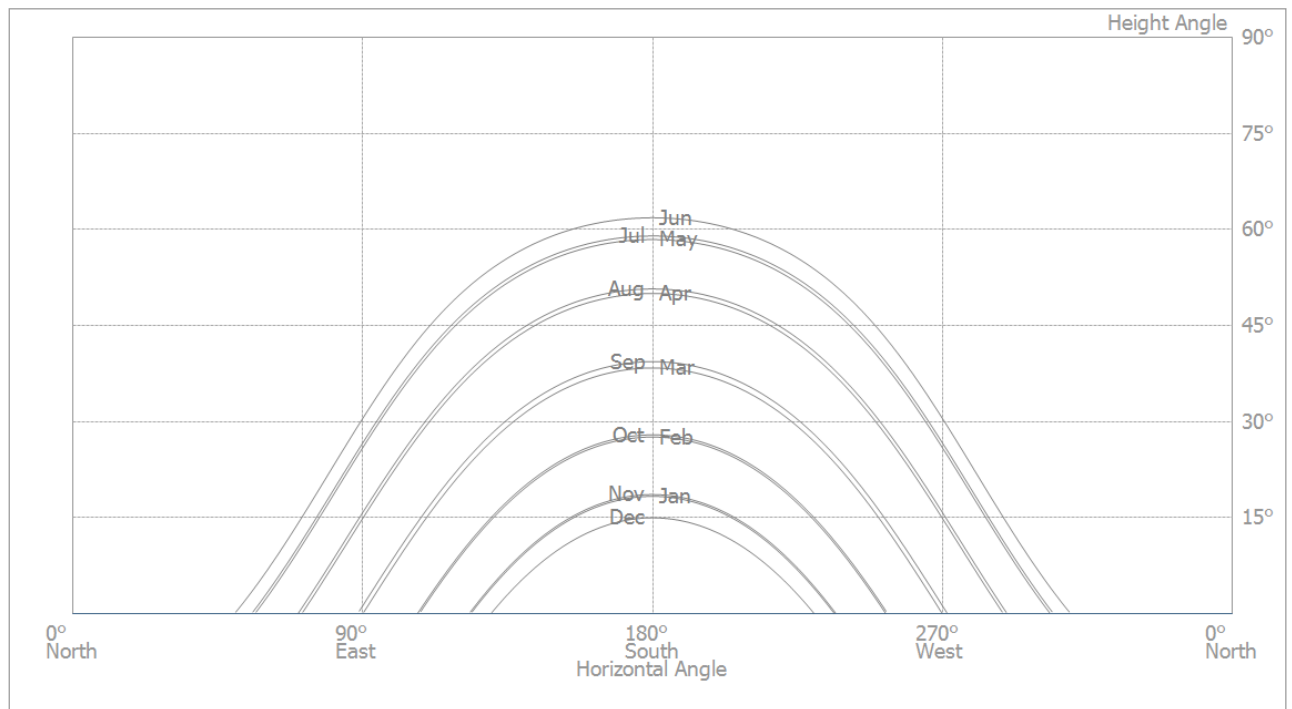


Figure: Horizon (3D Design)

Inverter configuration

Configuration 1

Module Area	Building 03-Roof Area Southwest
Inverter 1	
Model	SE30K (400V) - Worldwide (v2)
Manufacturer	SolarEdge
Quantity	1
Sizing Factor	114 %
Configuration	MPP 1: 1 x 16☆ [1 x 2] 1 x 16☆ [1 x 2] + 1 x 1☆ [1 x 1]
Power Optimizer	33x SolarEdge, S1000 Worldwide (v2)
Inverter 2	
Model	SE30K (400V) - Worldwide (v2)
Manufacturer	SolarEdge
Quantity	1
Sizing Factor	112.3 %
Configuration	MPP 1: 1 x 16☆ [1 x 2] 1 x 16☆ [1 x 2]
Power Optimizer	32x 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

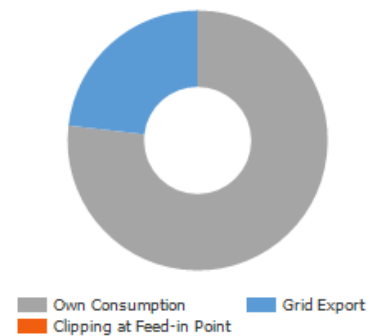
Simulation Results

Results Total System

PV System

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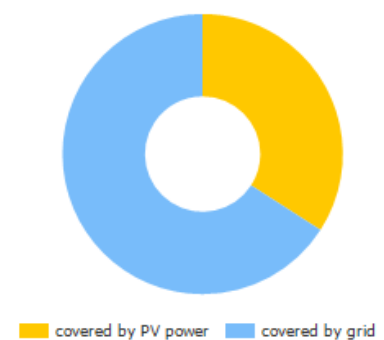
PV Generator Energy (AC grid)



Appliances

Appliances	142,875 kWh/Year
Standby Consumption (Inverter)	36 kWh/Year
Total Consumption	142,911 kWh/Year
covered by PV power	48,729 kWh/Year
covered by grid	94,181 kWh/Year
Solar Fraction	34.1 %

Total Consumption

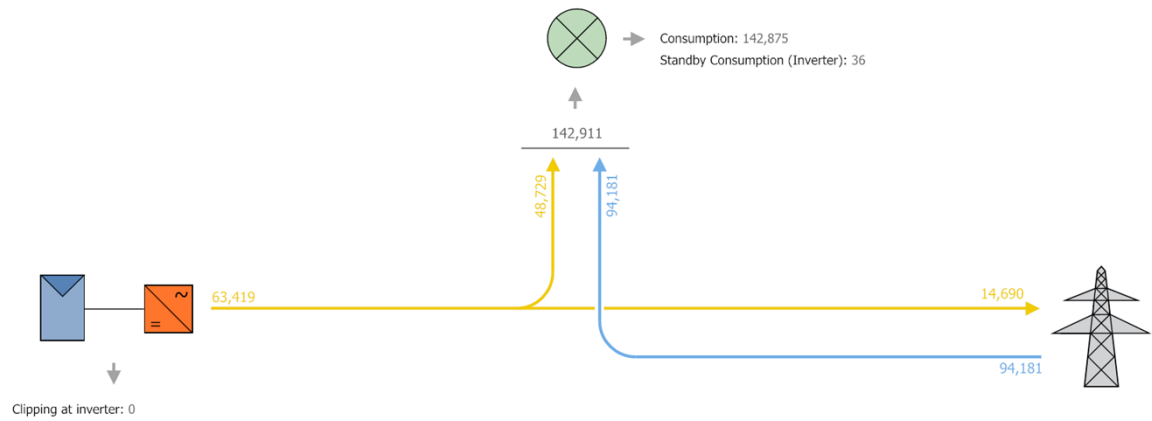


Level of Self-sufficiency

Total Consumption	142,911 kWh/Year
covered by grid	94,181 kWh/Year
Level of Self-sufficiency	34.1 %

Energy Flow Graph

Project: Volac Unit 12 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

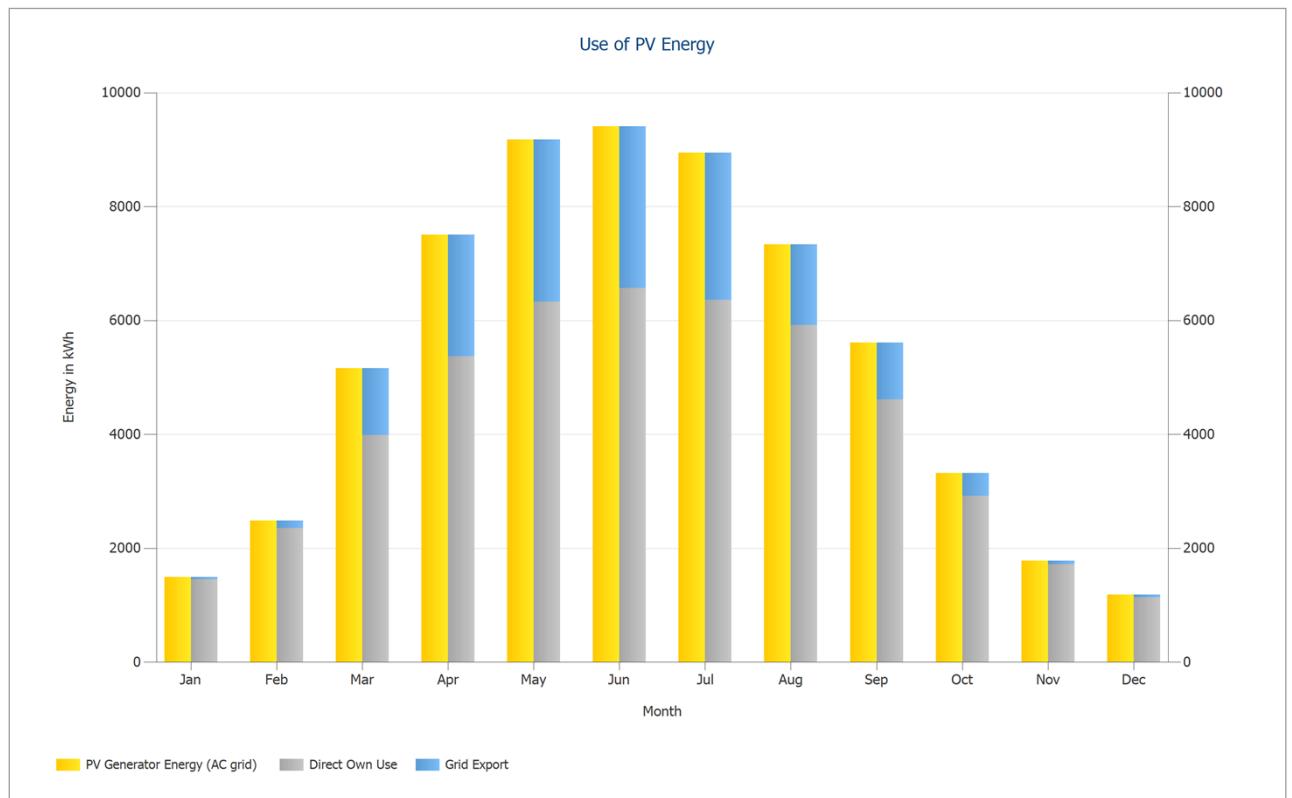


Figure: Use of PV Energy

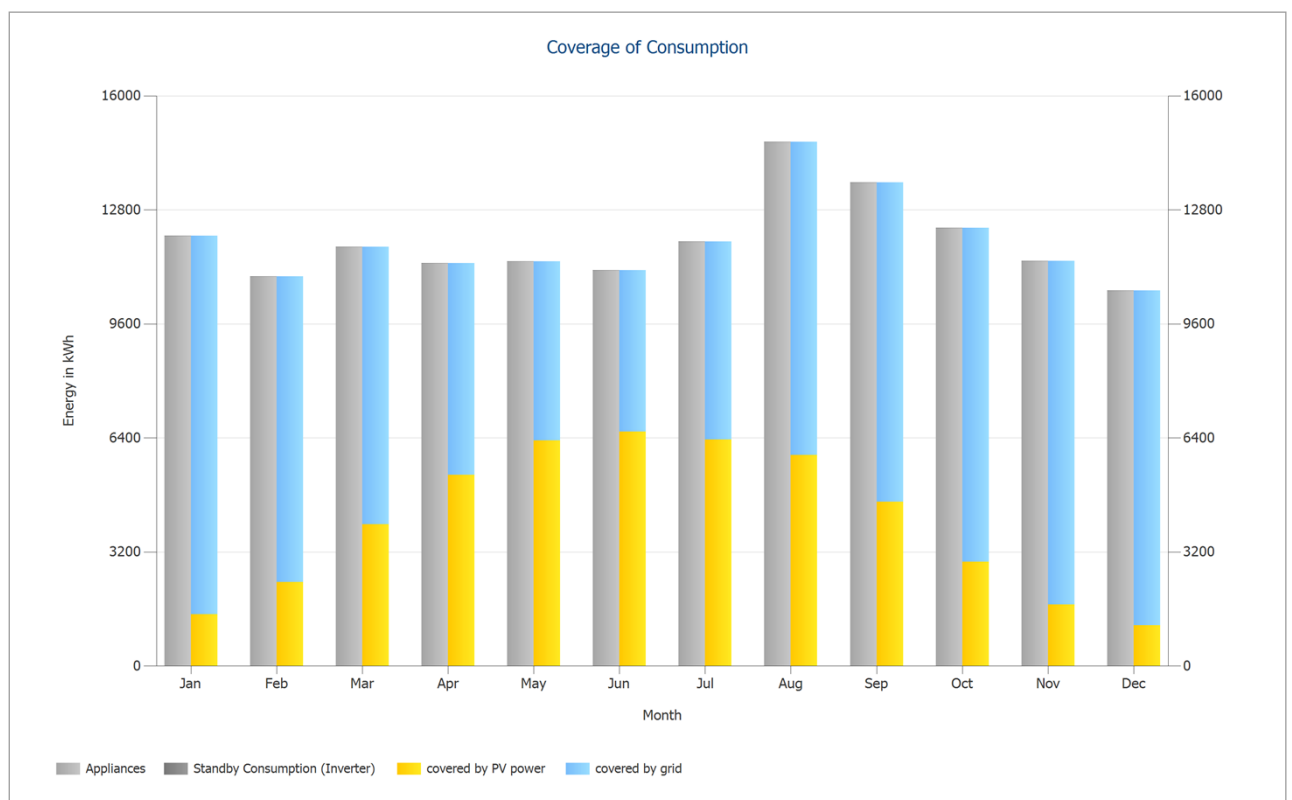


Figure: Coverage of Consumption

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	46.00 kWh/m ²	4.27 %
Module-independent shading	-6.15 kWh/m ²	-0.55 %
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	1,116.66 kWh/m²	
	1,116.66 kWh/m ²	
	x 285.258 m ²	
	= 318,536.24 kWh	
Global PV Radiation	318,536.24 kWh	
Bifaciality (80 % of back irradiance)	0.00 kWh	0.00 %
Soiling	-9,554.98 kWh	-3.00 %
STC Conversion (Rated Efficiency of Module 22.65 %)	-238,994.41 kWh	-77.35 %
Rated PV Energy	69,986.85 kWh	
Module-specific Partial Shading	-1,412.49 kWh	-2.02 %
Low-light performance	-484.45 kWh	-0.71 %
Deviation from the nominal module temperature	-511.88 kWh	-0.75 %
Diodes	-105.37 kWh	-0.16 %
Mismatch (Manufacturer Information)	0.00 kWh	0.00 %
Mismatch (Configuration/Shading)	-312.38 kWh	-0.46 %
Power optimizer (DC conversion/clipping)	-336.63 kWh	-0.50 %
PV Energy (DC) without inverter clipping	66,823.64 kWh	
Failing to reach the DC start output	0.00 kWh	0.00 %
Clipping on account of the MPP Voltage Range	-9.60 kWh	-0.01 %
Clipping on account of the max. DC Current	0.00 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	-3.36 kWh	-0.01 %
MPP Matching	0.00 kWh	0.00 %
PV energy (DC)	66,810.68 kWh	
Energy at the Inverter Input	66,810.68 kWh	
Input voltage deviates from rated voltage	0.00 kWh	0.00 %
DC/AC Conversion	-1,430.01 kWh	-2.14 %
Standby Consumption (Inverter)	-35.65 kWh	-0.05 %
Total Cable Losses	-1,961.42 kWh	-3.00 %
PV energy (AC) minus standby use	63,383.59 kWh	
PV Generator Energy (AC grid)	63,419.25 kWh	

Plans and parts list

Circuit Diagram

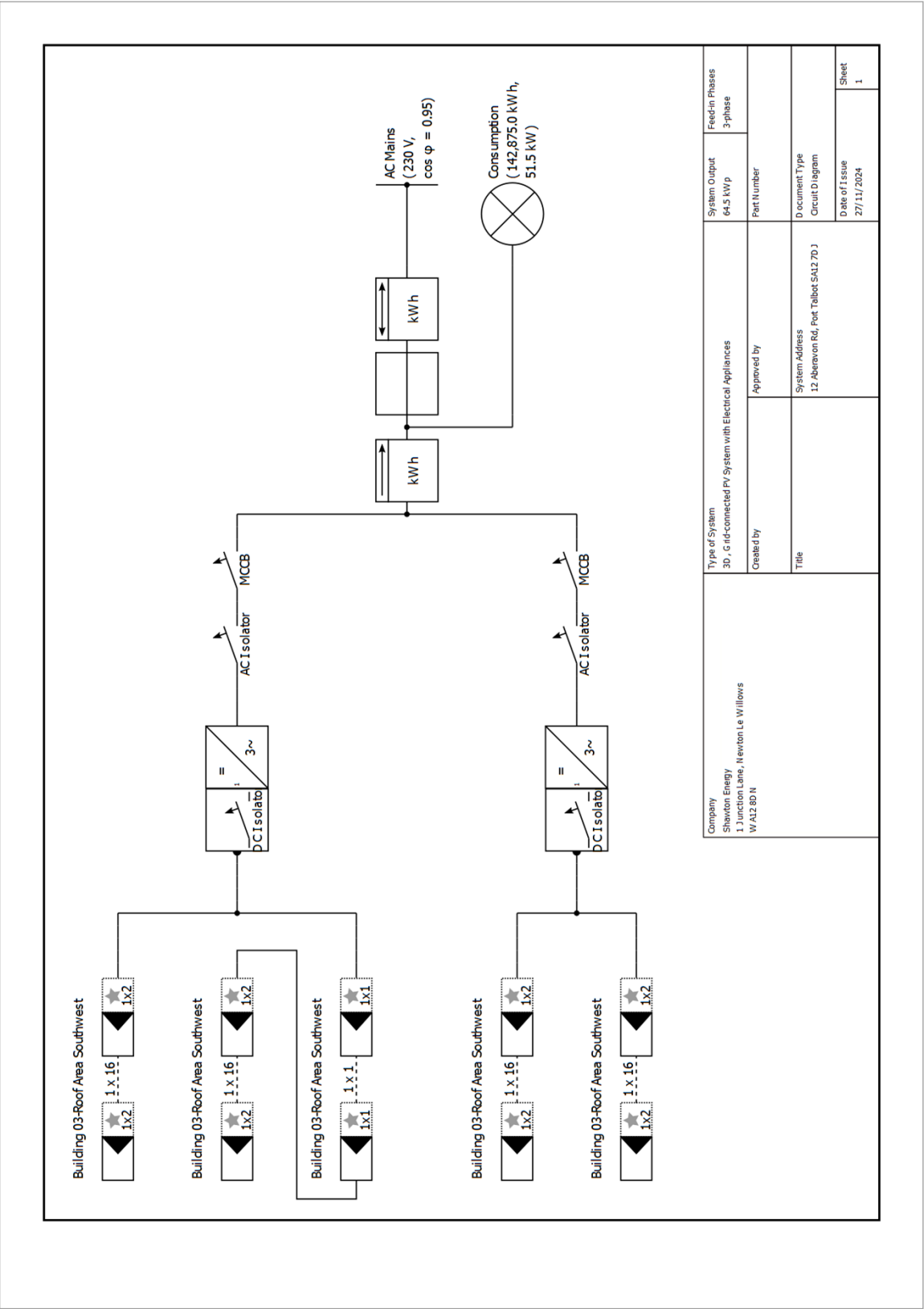


Figure: Circuit Diagram

Overview plan

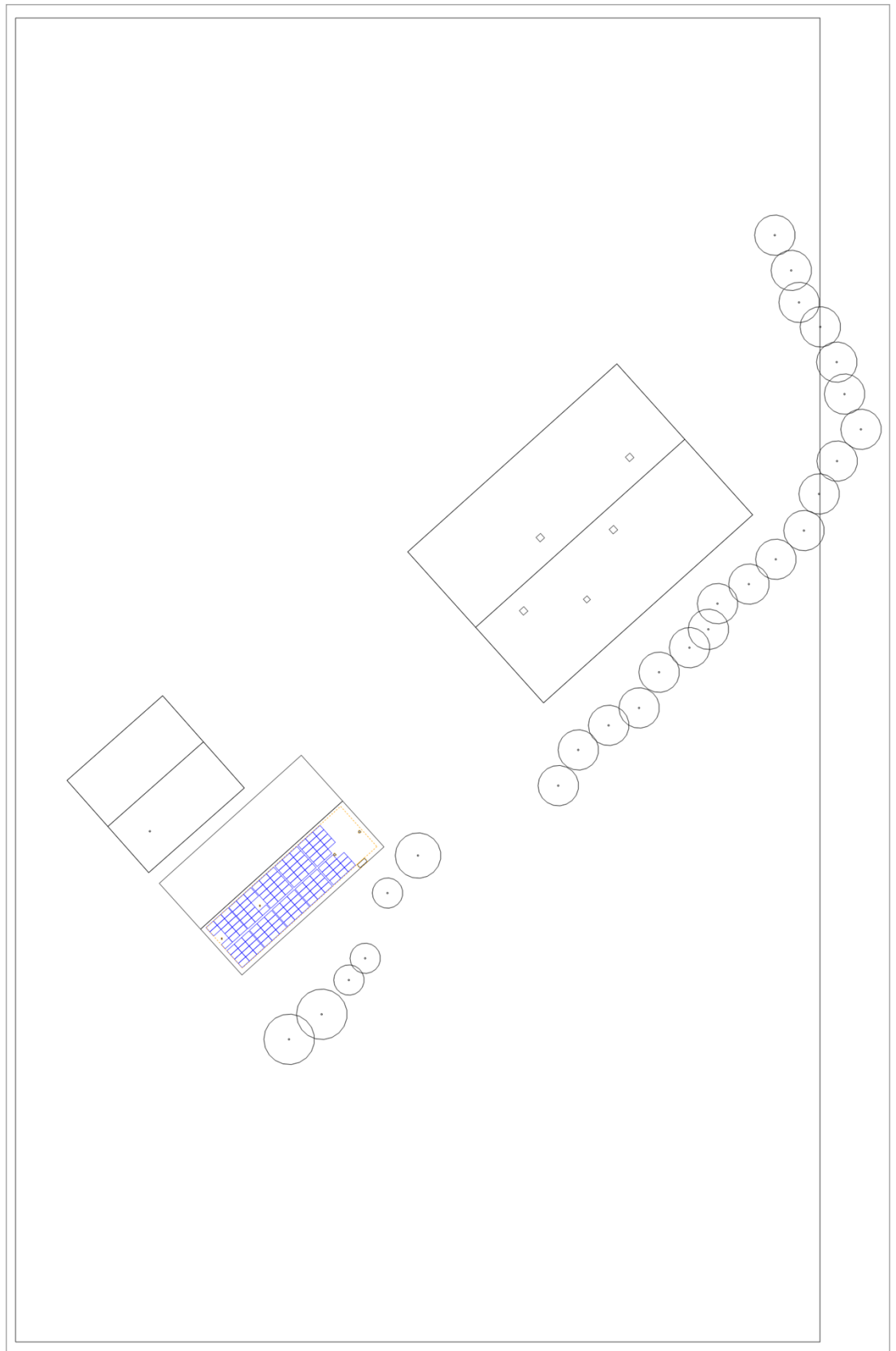


Figure: Overview plan

Dimensioning Plan

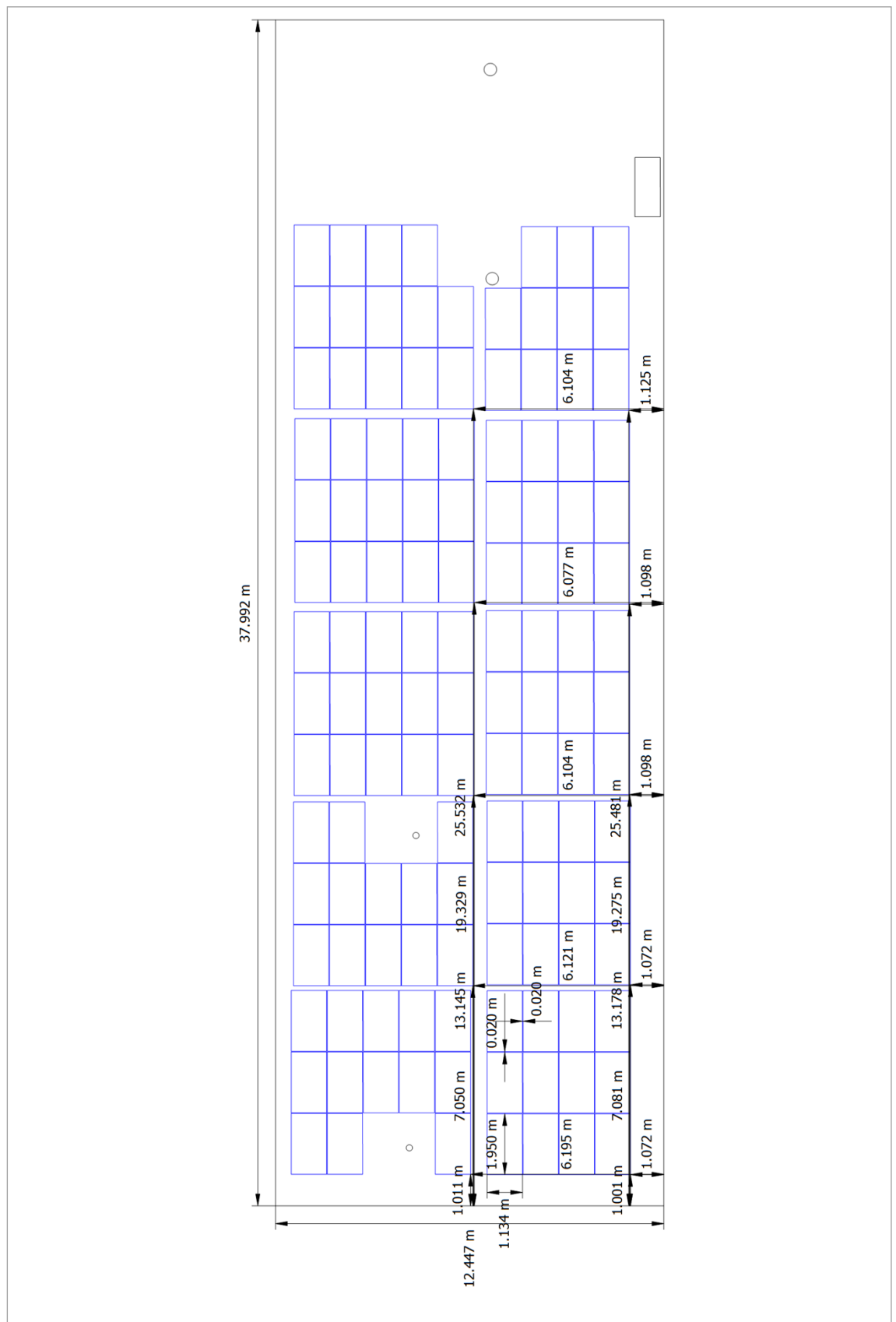


Figure: Building 03 - Roof Area Southwest

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

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	129	Piece
2	Inverter		SolarEdge	SE30K (400V) - Worldwide	2	Piece
3	Power Optimizer		SolarEdge	S1000 Worldwide	65	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	2	Piece
8	Components			Circuit Breaker MCCB	2	Piece