

**Project Name:** Agladze 32-Old fridge 568kw  
**Offer no.:** Agladze 32-Old fridge 568kw

03.06.2025

## Your PV system

Address of Installation

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## Project Overview



Figure: Overview Image, 3D Design

## PV System

### 3D, Grid-connected PV System

Climate Data	Tbilisi, GEO (1996 - 2015)
Values source	Meteonorm 8.1(i)
PV Generator Output	360,8 kWp
PV Generator Surface	1 601,3 m <sup>2</sup>
Number of PV Modules	820
Number of Inverters	3

## Agladze 32-Old fridge 568kw

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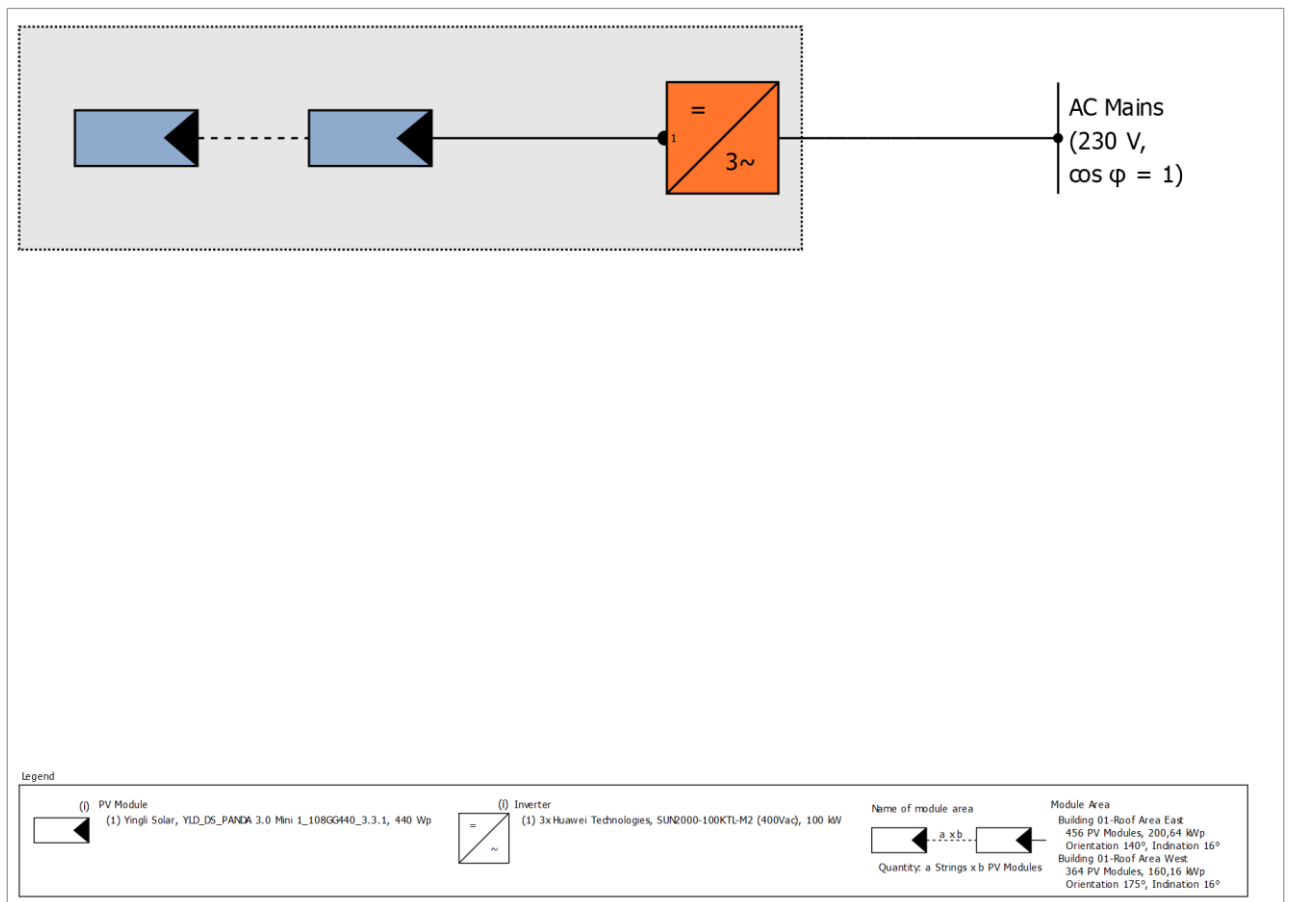


Figure: Schematic diagram

## Production Forecast

### Production Forecast

PV Generator Output	360,80 kWp
Spec. Annual Yield	1 350,20 kWh/kWp
Performance Ratio (PR)	83,13 %
Yield Reduction due to Shading	2,3 %
Grid Export	487 200 kWh/Year
Grid Export in the first year (incl. module degradation)	476 892 kWh/Year
Standby Consumption (Inverter)	48 kWh/Year
CO <sub>2</sub> Emissions avoided	228 962 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
Start of Operation	31.07.2023

### Climate Data

Location	Tbilisi, GEO (1996 - 2015)
Values source	Meteonorm 8.1(i)
Data resolution	1 h
Simulation models used:	
- Diffuse Irradiation onto Horizontal Plane	Hofmann
- Irradiance onto tilted surface	Hay & Davies

## Module Areas

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

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

Name	Building 01-Roof Area East
PV Modules	456 x YLD_DS_PANDA 3.0 Mini 1_108GG440_3.3.1 (v1)
Manufacturer	Yingli Solar
Inclination	16 °
Orientation	Southeast 140 °
Installation Type	Mounted - Roof
PV Generator Surface	890,5 m <sup>2</sup>

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

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

Name	Building 01-Roof Area West
PV Modules	364 x YLD_DS_PANDA 3.0 Mini 1_108GG440_3.3.1 (v1)
Manufacturer	Yingli Solar
Inclination	16 °
Orientation	South 175 °
Installation Type	Mounted - Roof
PV Generator Surface	710,8 m <sup>2</sup>

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### Horizon Line, 3D Design

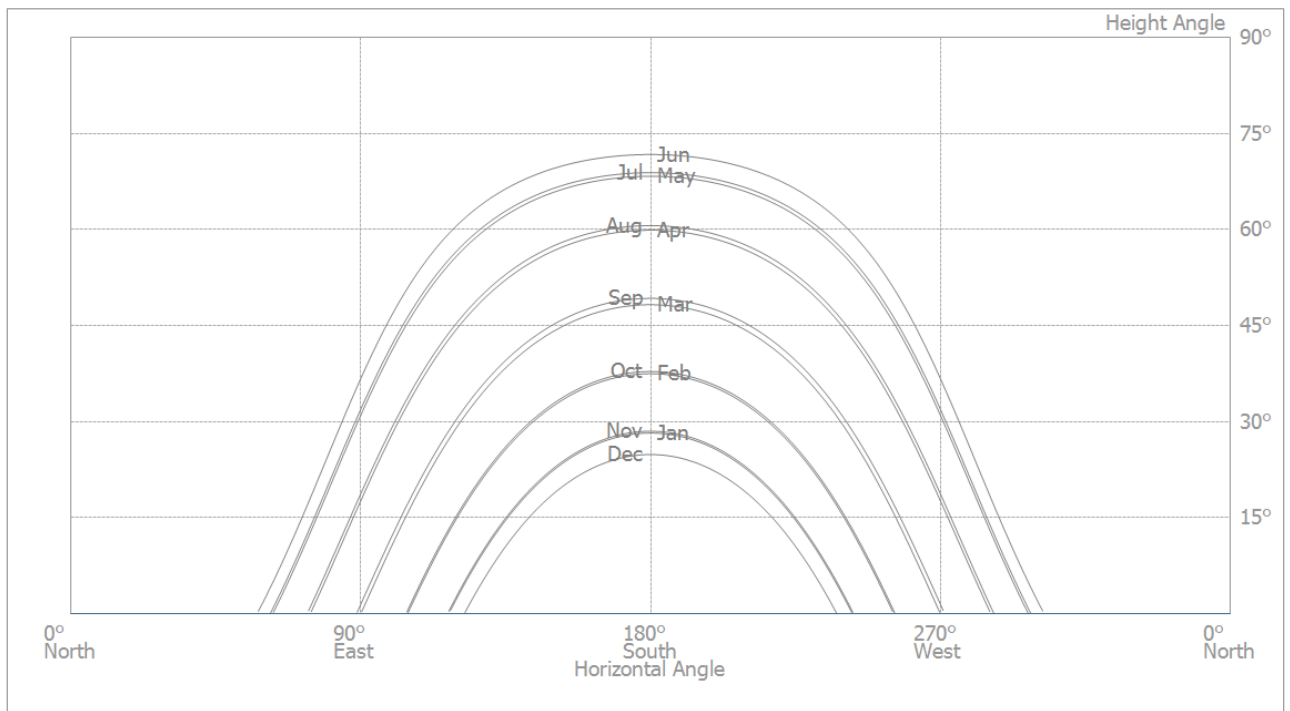


Figure: Horizon (3D Design)

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### Inverter configuration

#### Configuration 1

Module Areas	Building 01-Roof Area East + Building 01-Roof Area West
Inverter 1	
Model	SUN2000-100KTL-M2 (400Vac) (v1)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	125,4 %
Configuration	MPP 1: 2 x 19
	MPP 2: 1 x 19
	MPP 3: 2 x 19
	MPP 4: 1 x 19
	MPP 5: 2 x 19
	MPP 6: 1 x 19
	MPP 7: 2 x 19
	MPP 8: 1 x 19
	MPP 9: 2 x 19
	MPP 10: 1 x 19

#### Inverter 2

Model	SUN2000-100KTL-M2 (400Vac) (v1)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	125,4 %
Configuration	MPP 1: 2 x 19
	MPP 2: 1 x 19
	MPP 3: 2 x 19
	MPP 4: 1 x 19
	MPP 5: 2 x 19
	MPP 6: 1 x 19
	MPP 7: 2 x 19
	MPP 8: 1 x 19
	MPP 9: 2 x 19
	MPP 10: 1 x 19

#### Inverter 3

Model	SUN2000-100KTL-M2 (400Vac) (v1)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	110 %
Configuration	MPP 1: 2 x 16
	MPP 2: 1 x 17
	MPP 3: 2 x 16
	MPP 4: 1 x 17
	MPP 5: 2 x 17
	MPP 6: 1 x 17
	MPP 7: 2 x 17
	MPP 8: 1 x 17
	MPP 9: 2 x 17
	MPP 10: 1 x 16

# Simulation Results

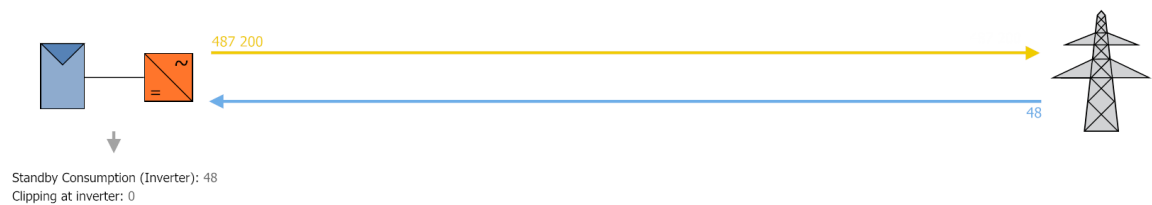
## Results Total System

### PV System

PV Generator Output	360,80 kWp
Spec. Annual Yield	1 350,20 kWh/kWp
Performance Ratio (PR)	83,13 %
Yield Reduction due to Shading	2,3 %
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Standby Consumption (Inverter)	48 kWh/Year
CO <sub>2</sub> Emissions avoided	228 962 kg / year

### Energy Flow Graph

Project: Agladze 32-Old fridge 568kw



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

Figure: Energy flow

## Agladze 32-Old fridge 568kw

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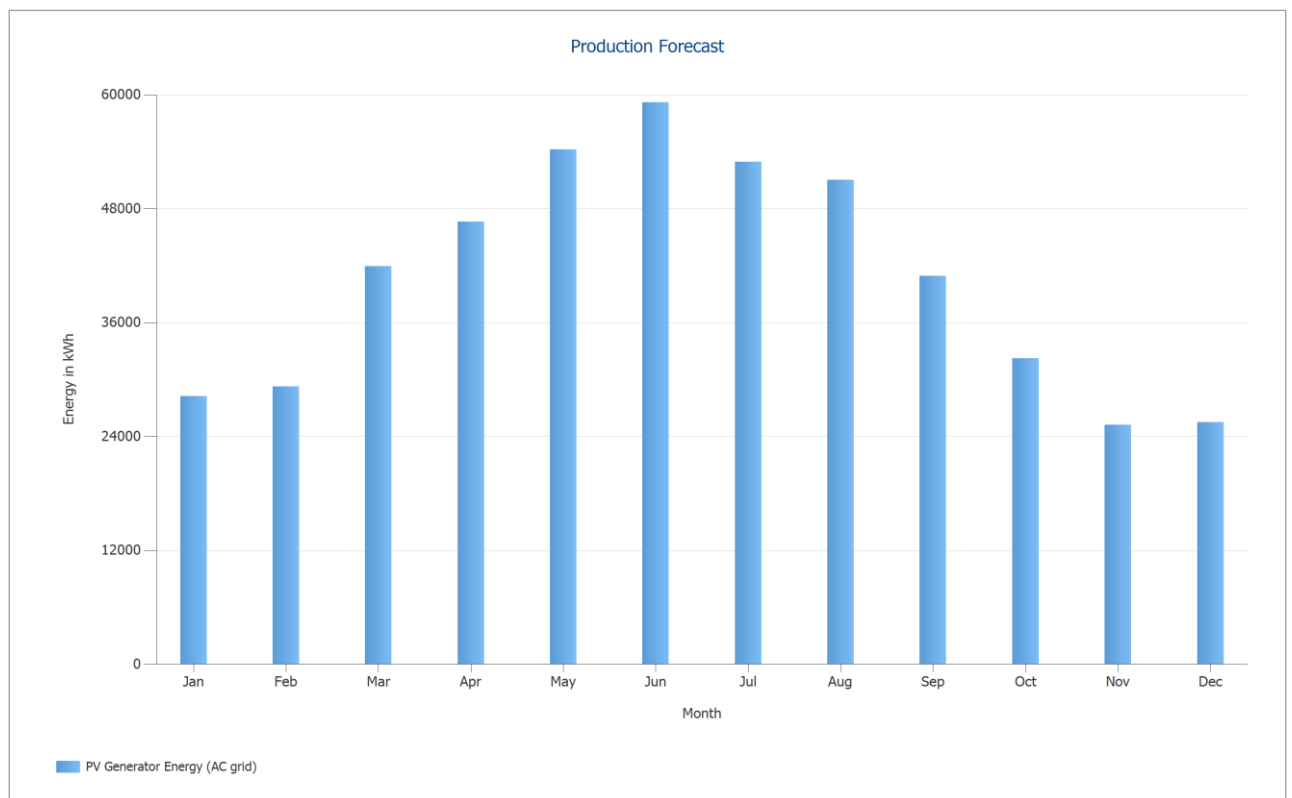


Figure: Production Forecast

## Results per Module Area

### Building 01-Roof Area East

PV Generator Output	200,64 kWp
PV Generator Surface	890,45 m <sup>2</sup>
Global Radiation at the Module	1516,32 kWh/m <sup>2</sup>
Global Radiation on Module without reflection	1601,96 kWh/m <sup>2</sup>
Performance Ratio (PR)	83,35 %
PV Generator Energy (AC grid)	267991,67 kWh/Year
Spec. Annual Yield	1335,68 kWh/kWp

### Building 01-Roof Area West

PV Generator Output	160,16 kWp
PV Generator Surface	710,80 m <sup>2</sup>
Global Radiation at the Module	1566,53 kWh/m <sup>2</sup>
Global Radiation on Module without reflection	1650,88 kWh/m <sup>2</sup>
Performance Ratio (PR)	82,87 %
PV Generator Energy (AC grid)	219208,28 kWh/Year
Spec. Annual Yield	1368,68 kWh/kWp



# Data Sheets

## PV Module Data Sheet

PV Module: YLD\_DS\_PANDA 3.0 Mini 1\_108GG440\_3.3.1 (v1)

Manufacturer	Yingli Solar
Available	Yes

### Electrical Data

Cell Type	Si monocrystalline
Half-cell module	Yes
Cell Count	108
Number of Bypass Diodes	3
Loss voltage per bypass diode	1 V
Integrated power optimizer	No
Only Transformer Inverters suitable	No

### I/V Characteristics at STC

MPP Voltage	32,27 V
MPP Current	13,64 A
Open Circuit Voltage	38,87 V
Short-Circuit Current	14,29 A
Increase open circuit voltage before stabilisation	0 %
Nominal output	440 W
Fill Factor	79,24 %
Efficiency	22,54 %

### I/V Part Load Characteristics (calculated)

Values source	Standard (PV*SOL Model)
Irradiance	200 W/m <sup>2</sup>
Voltage in MPP at Part Load	30,5 V
Current in MPP at Part Load	2,73 A
Open Circuit Voltage (Part Load)	34,99 V
Short Circuit Current at Part Load	2,86 A

### Additional Parameters

Temperature Coefficient of Voc	-148,5 mV/K
Temperature Coefficient of Isc	5,7 mA/K
Temperature Coefficient of Pmpp	-0,35 %/K
Incident Angle Modifier (IAM)	95 %
Maximum System Voltage	1500 V

### Mechanical Data

Width	1134 mm
Height	1722 mm
Depth	30 mm
Frame Width	30 mm
Weight	20,6 kg

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### Inverter Data Sheet

Inverter: SUN2000-100KTL-M2 (400Vac) (v1)

Manufacturer	Huawei Technologies
Available	Yes
<b>Electrical data - DC</b>	
DC nominal output	101,63 kW
Max. DC Power	122,2 kW
Nom. DC Voltage	600 V
Max. Input Voltage	1100 V
Max. Input Current	300 A
Max. short circuit current	400 A
Number of DC Inlets	20
<b>Electrical data - AC</b>	
AC Power Rating	100 kW
Max. AC Power	110 kVA
Nom. AC Voltage	230 V
Number of Phases	3
With Transformer	No
<b>Electrical data - other</b>	
Change in Efficiency when Input Voltage deviates from Rated Voltage	0,14 %/100V
Min. Feed-in Power	150 W
Standby Consumption	3,5 W
Night Consumption	3,5 W
<b>MPP Tracker</b>	
Output Range < 20% of Power Rating	99,99 %
Output Range > 20% of Power Rating	99,99 %
Count of MPP Trackers	10
<b>MPP Tracker 1-10</b>	
Max. Input Current	30 A
Max. short circuit current	40 A
Max. Input Power	21 kW
Min. MPP Voltage	200 V
Max. MPP Voltage	1000 V

## Plans and parts list

### Overview plan

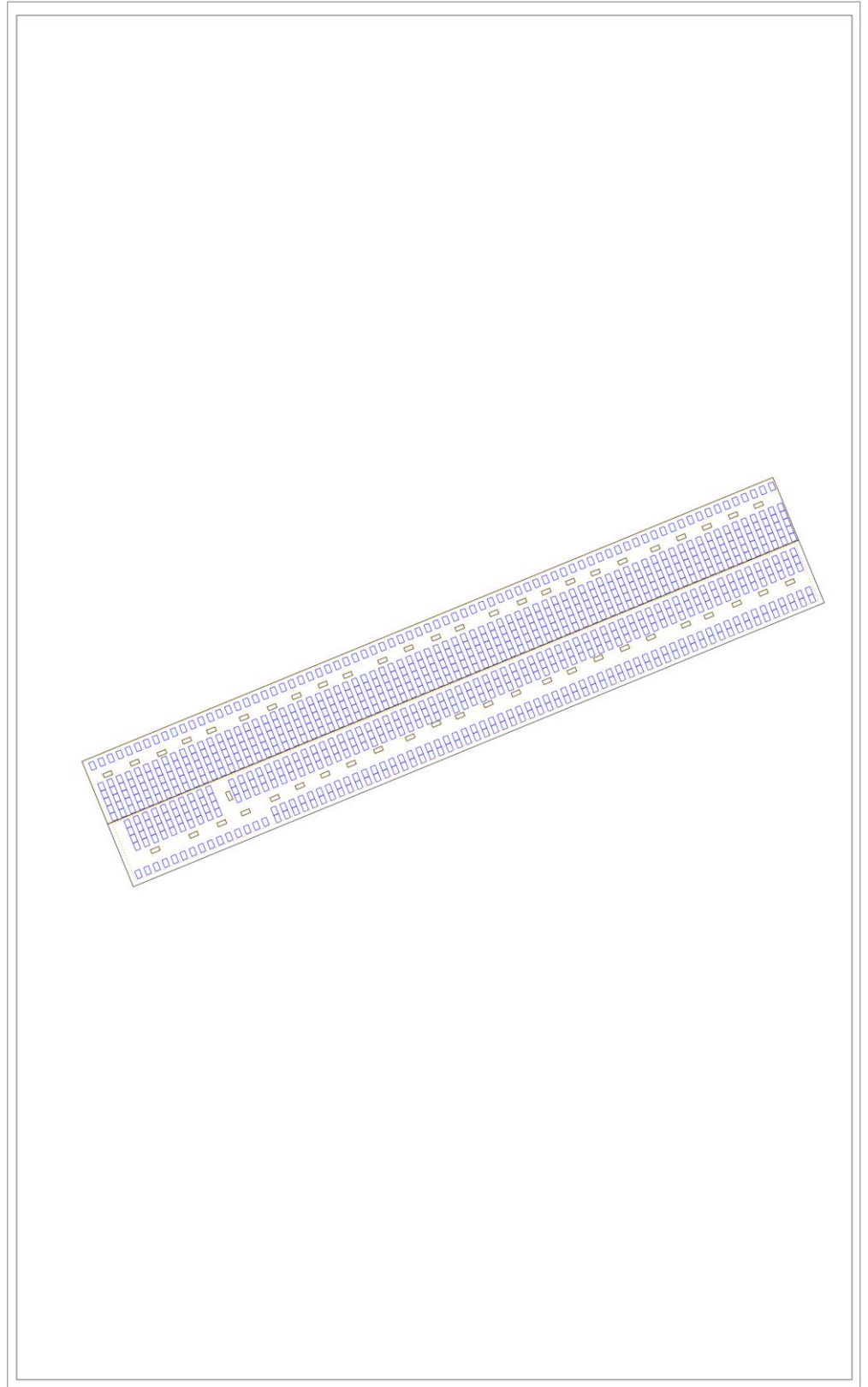


Figure: Overview plan

## Dimensioning Plan

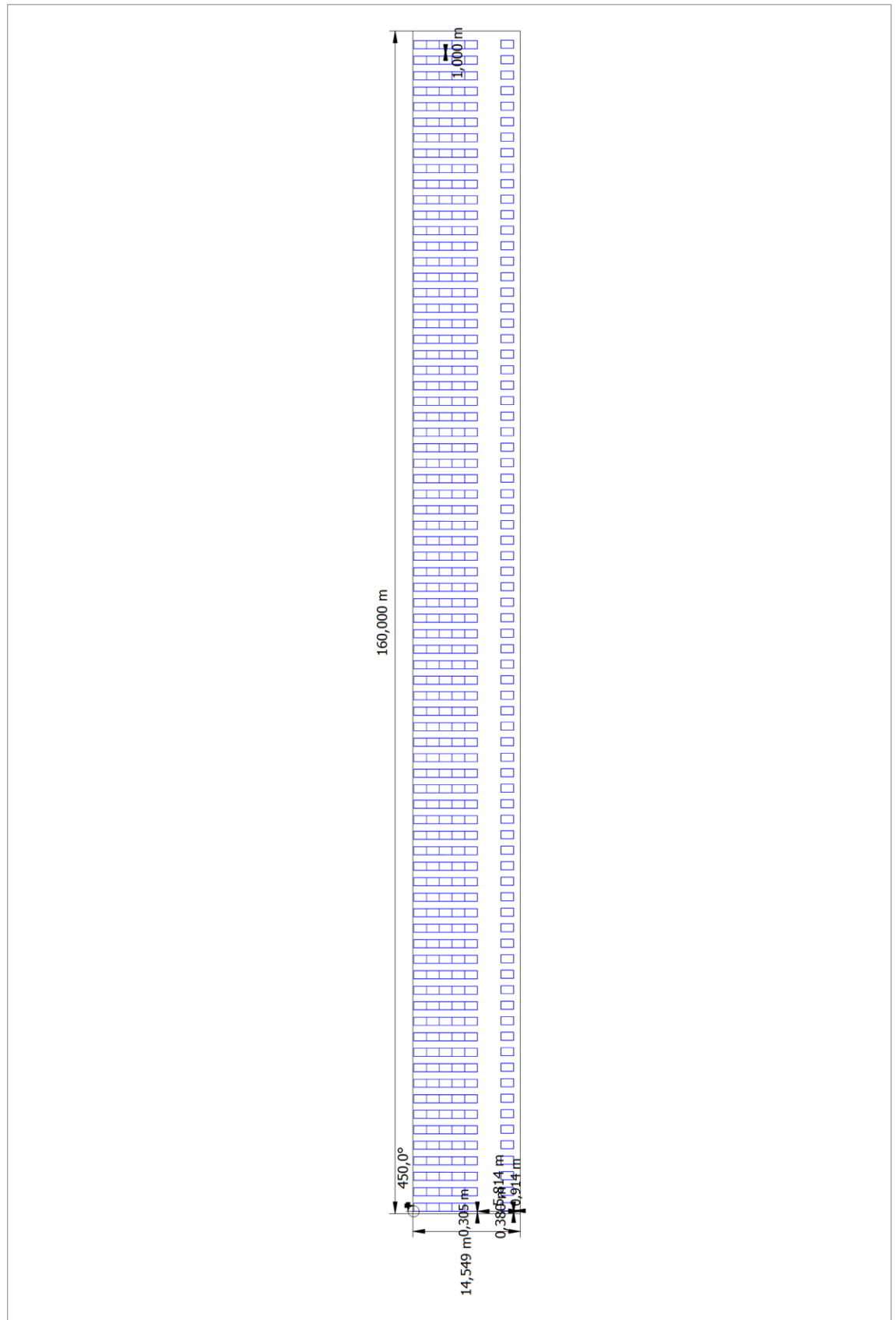


Figure: Building 01 - Roof Area East

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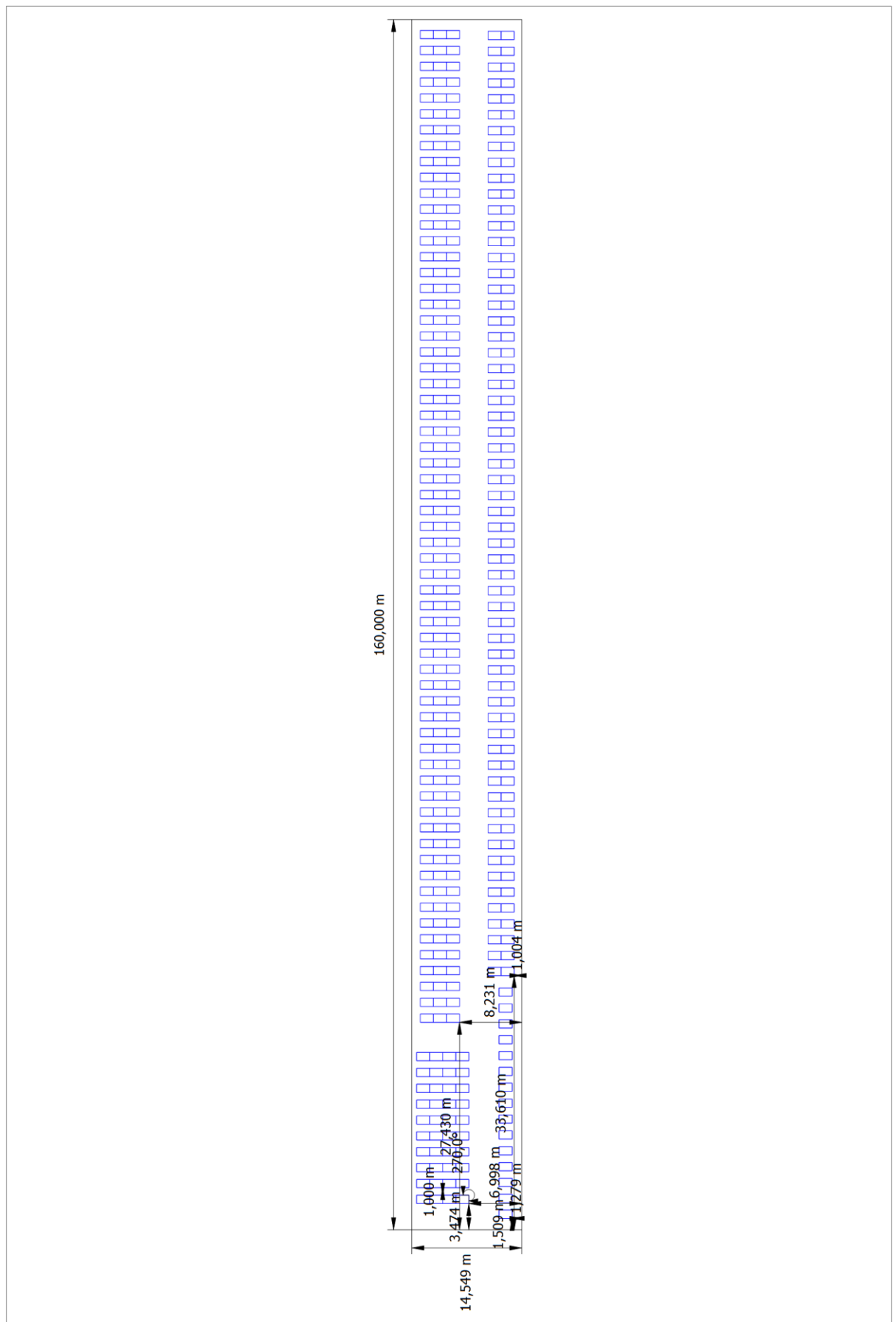


Figure: Building 01 - Roof Area West

## Agladze 32-Old fridge 568kw

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### Parts list

#### Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		Yingli Solar	YLD_DS_PANDA 3.0 Mini 1_108GG440_3.3.1	820	Piece
2	Inverter		Huawei Technologies	SUN2000-100KTL-M2 3 (400Vac)	3	Piece

## Screenshots, 3D Design

### Shading

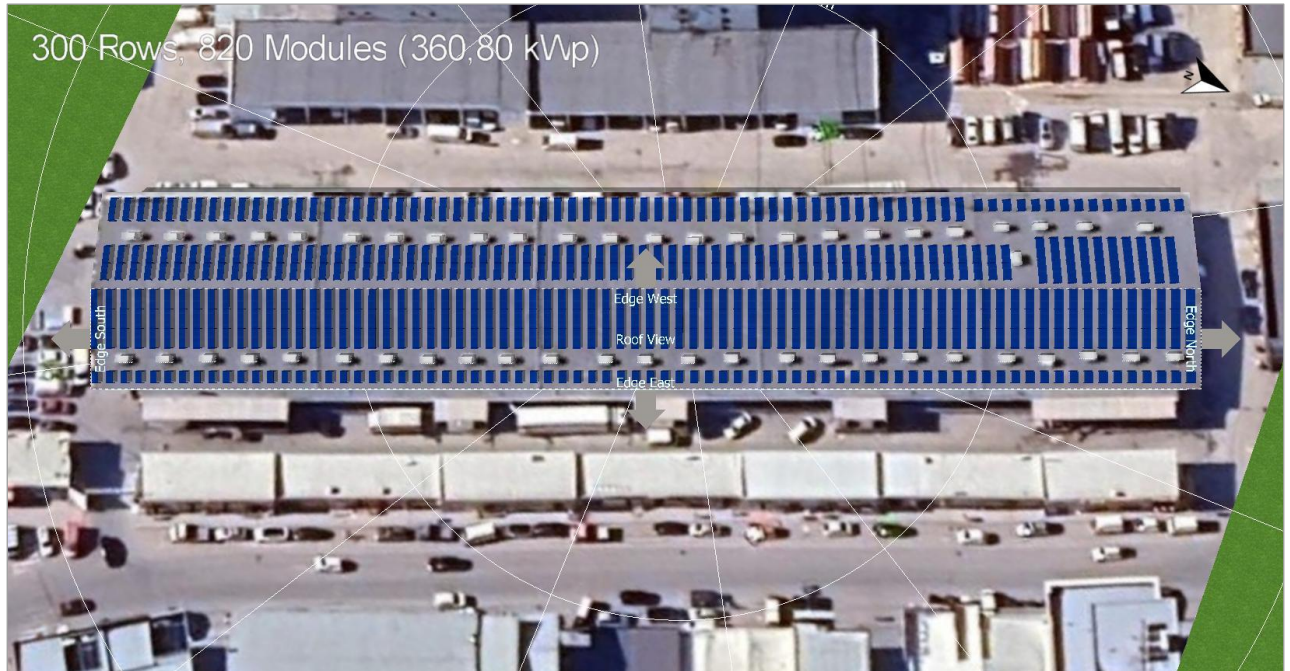


Figure: Screenshot01