ENSTALL

Project plan

FVE MŠ U vysočanského pivovaru, Roof E

Location: U Vysočanského pivovaru, 190 00 Praha 9, Czechia

Calculation date: 08-07-2025

FlatFix Fusion

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Scan the code for the product manual.

Overview

General

Expected installation date	30-10-2025
Generated by	Tomáš Tajtl (tomas.tajtl@eletajenergy.cz)*

* This person can open this project in the calculator via https://calculator.eu.enstall.com/3250399/4204864.

Location

Address	U Vysočanského pivovaru, 190 00 Praha 9, Czechia
Wind zone	1*
Terrain category	II
Wind pressure	588.04 N/m²
Snow zone	1*
Characteristic value of snow on the ground	0.7 kN/m²
Environment	Normal
Snow load on the roof	426.63 N/m²
Altitude above sea level	199.0 m*
Consequence class	CC1
Reference period	15 years
Calculation date	08-07-2025

* Automatically determined based on the address.

Roof specification

Roof height	7.0 m
Parapet height	300 mm
Edge zone depth short side	1.09 m
Edge zone depth long side	1.46 m
Roof pitch	0.0°
Roofing material	PVC
Roof orientation from north	-23.0°

System specification

Panel model	Aiko A-MAH54Mb (GEN II) (440 - 460Wp) Neostar 2S (2nd generation)
Panel dimensions	1757 mm x 1134 mm x 30 mm
Panel weight	21.0 kg
Panel count	46
Panel angle of inclination landscape	11.3°
Configuration	Dual
Orientation	Landscape
Row distance	2,374 mm
Grounding/bonding option	OFF
Segment count	3
Panel power	460 Wp
Total power	21.160 kWp

Complete list of materials

Total roof bill of materials

Article number	Description	Amount
1000612	Mounting screw M6 x 12mm	29
1000655	Mounting screw M6 x 55mm	116
1003022	Universal mid clamp with bonding	68
1004330	FlatFix end clamp 30mm	48
1007011	FlatFix Fusion base plate bracket	31
1007012	FlatFix Fusion base plate	122
1007022	FlatFix Fusion - Low base	58
1007031	FlatFix Fusion high base	29
1007042*	MLPE Clip Lightweight up to 2kg	46
1007121	FlatFix Fusion base profile 210mm	14
1007196	FlatFix Fusion base profile 1077mm	58
1007210	FlatFix Fusion ballast container 1700	26
1007211	FlatFix Fusion stabilizer 1700	23
1007226	FlatFix Fusion wind deflector left (base profile 1030mm - 1077mm)	12
1007227	FlatFix Fusion wind deflector right (base profile 1030mm - 1077mm)	12
1008085	Self-tapping sheet metal screw 6,0x25 mm SW10 HEX/T30	110

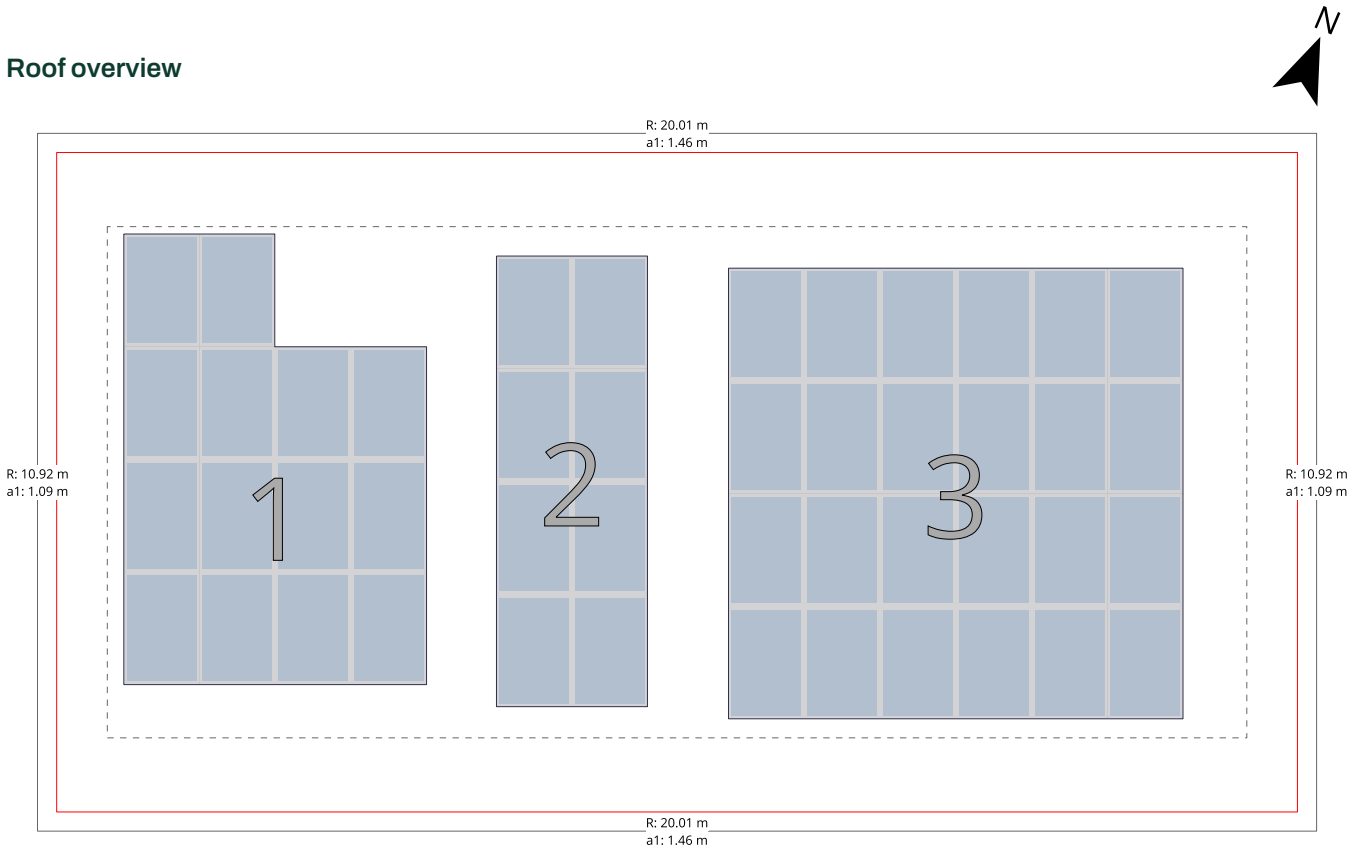
* Optional article

Number of ballast units

Number of bricks (210 mm x 105 mm x 80 mm, 4.0 kg/pc)	233

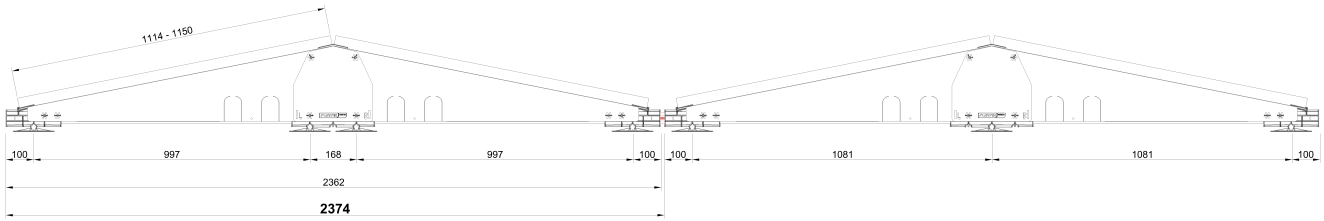
Assembly

Roof overview

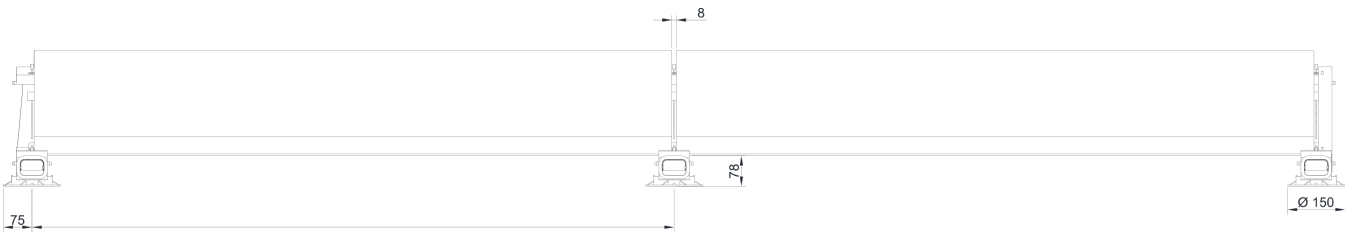


R: XXm	Length of outer roof side
	No-Go zone width (30cm)
a1: XXm	Edge zone width from roof edge

Dual landscape configuration with row distance of 2,374 mm



Rear view

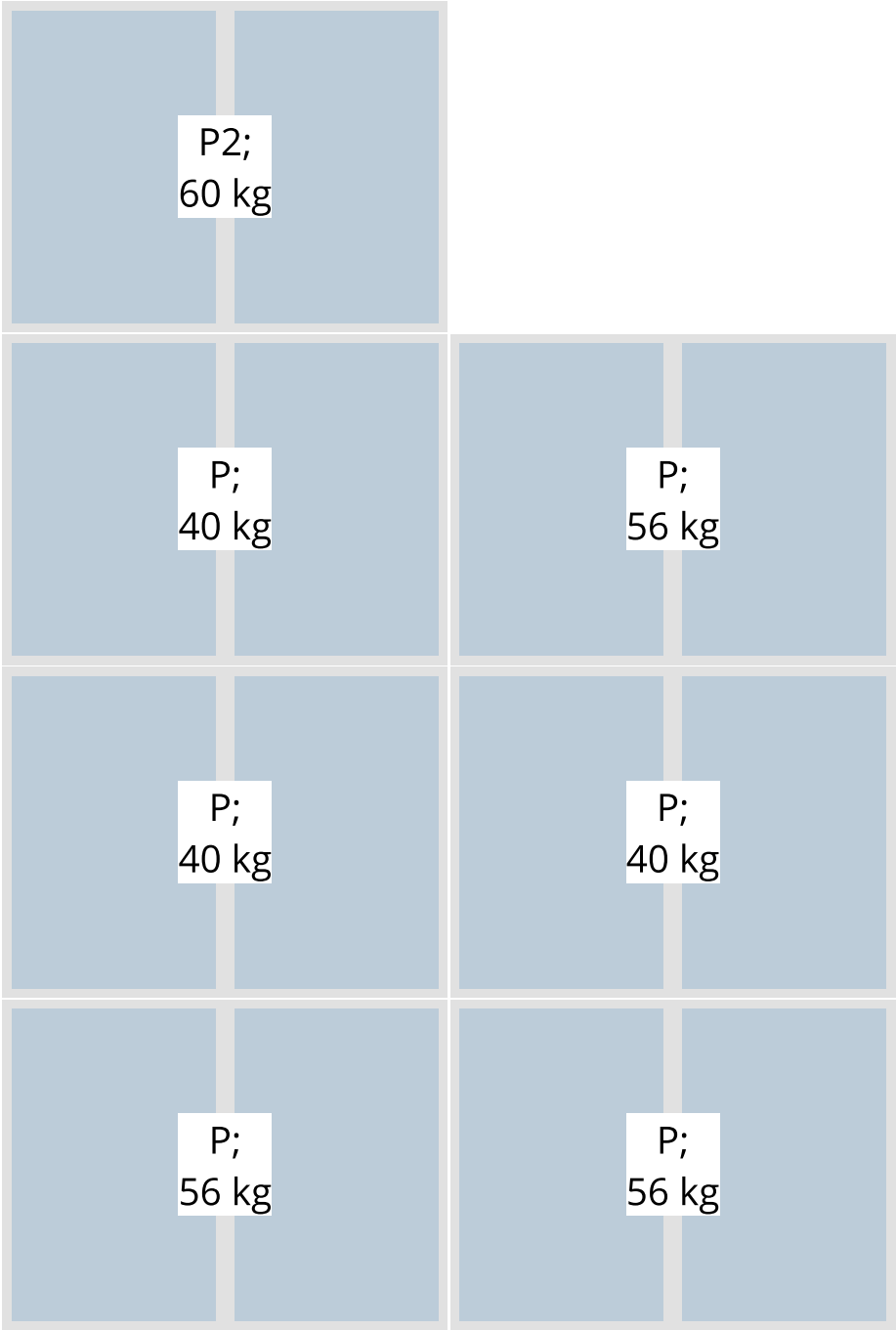


Segment 1

Panel count	14
Total power	6.440 kWp
Configuration	Dual
Orientation	Landscape
Row distance	2,374 mm
Grounding/bonding option	OFF

This assembly plan is applicable for the highlighted segments

Ballast



Check the manual for more information on the exact (perimeter) positions of the ballast containers.

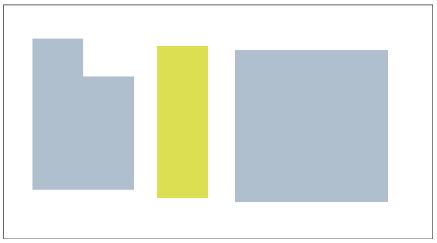
Weight per ballast unit	4.0 kg
Number of ballast units	87

Materials

Article number	Description	Amount
1000612	Mounting screw M6 x 12mm	9
1000655	Mounting screw M6 x 55mm	36
1003022	Universal mid clamp with bonding	20
1004330	FlatFix end clamp 30mm	16
1007011	FlatFix Fusion base plate bracket	11
1007012	FlatFix Fusion base plate	38
1007022	FlatFix Fusion - Low base	18
1007031	FlatFix Fusion high base	9
1007042	MLPE Clip Lightweight up to 2kg	14
1007121	FlatFix Fusion base profile 210mm	4
1007196	FlatFix Fusion base profile 1077mm	18
1007210	FlatFix Fusion ballast container 1700	8
1007211	FlatFix Fusion stabilizer 1700	7
1007226	FlatFix Fusion wind deflector left (base profile 1030mm - 1077mm)	4
1007227	FlatFix Fusion wind deflector right (base profile 1030mm - 1077mm)	4
1008085	Self-tapping sheet metal screw 6,0x25 mm SW10 HEX/T30	38

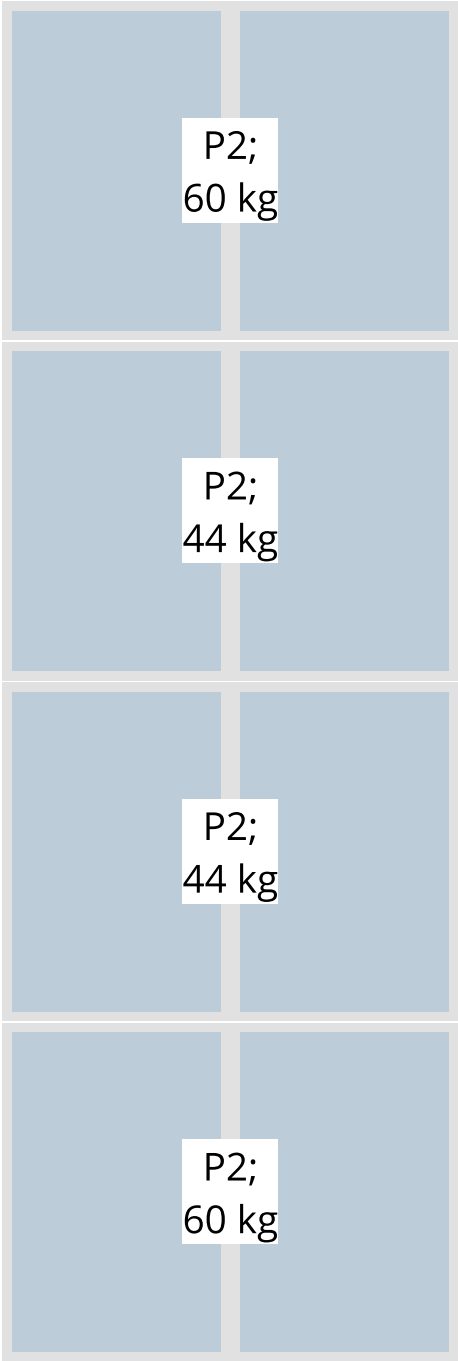
Segment 2

Panel count	8
Total power	3.680 kWp
Configuration	Dual
Orientation	Landscape
Row distance	2,374 mm
Grounding/bonding option	OFF



This assembly plan is applicable for the highlighted segments

Ballast



Check the manual for more information on the exact (perimeter) positions of the ballast containers.

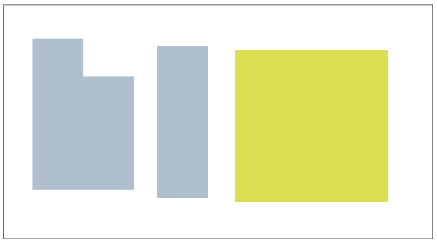
Weight per ballast unit	4.0 kg
Number of ballast units	52

Materials

Article number	Description	Amount
1000612	Mounting screw M6 x 12mm	5
1000655	Mounting screw M6 x 55mm	20
1003022	Universal mid clamp with bonding	12
1004330	FlatFix end clamp 30mm	8
1007011	FlatFix Fusion base plate bracket	10
1007012	FlatFix Fusion base plate	25
1007022	FlatFix Fusion - Low base	10
1007031	FlatFix Fusion high base	5
1007042	MLPE Clip Lightweight up to 2kg	8
1007196	FlatFix Fusion base profile 1077mm	10
1007210	FlatFix Fusion ballast container 1700	8
1007211	FlatFix Fusion stabilizer 1700	4
1007226	FlatFix Fusion wind deflector left (base profile 1030mm - 1077mm)	2
1007227	FlatFix Fusion wind deflector right (base profile 1030mm - 1077mm)	2
1008085	Self-tapping sheet metal screw 6,0x25 mm SW10 HEX/T30	28

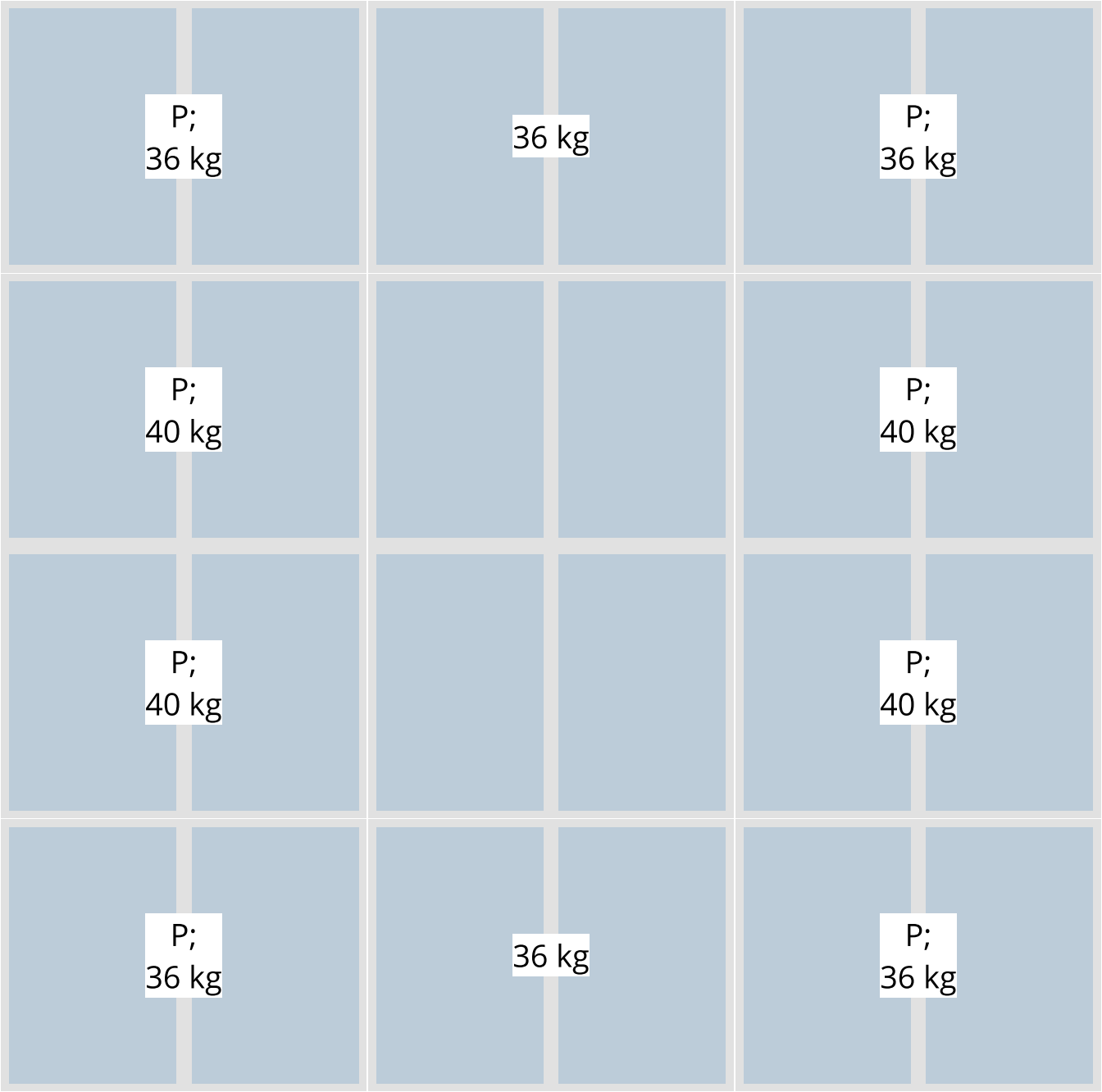
Segment 3

Panel count	24
Total power	11.040 kWp
Configuration	Dual
Orientation	Landscape
Row distance	2,374 mm
Grounding/bonding option	OFF



This assembly plan is applicable for the highlighted segments

Ballast



Check the manual for more information on the exact (perimeter) positions of the ballast containers.

Weight per ballast unit	4.0 kg
Number of ballast units	94

Materials

Article number	Description	Amount
1000612	Mounting screw M6 x 12mm	15
1000655	Mounting screw M6 x 55mm	60
1003022	Universal mid clamp with bonding	36
1004330	FlatFix end clamp 30mm	24
1007011	FlatFix Fusion base plate bracket	10
1007012	FlatFix Fusion base plate	59
1007022	FlatFix Fusion - Low base	30
1007031	FlatFix Fusion high base	15
1007042	MLPE Clip Lightweight up to 2kg	24
1007121	FlatFix Fusion base profile 210mm	10
1007196	FlatFix Fusion base profile 1077mm	30
1007210	FlatFix Fusion ballast container 1700	10
1007211	FlatFix Fusion stabilizer 1700	12
1007226	FlatFix Fusion wind deflector left (base profile 1030mm - 1077mm)	6
1007227	FlatFix Fusion wind deflector right (base profile 1030mm - 1077mm)	6
1008085	Self-tapping sheet metal screw 6,0x25 mm SW10 HEX/T30	44

Calculations

Input

Address	U Vysočanského pivovaru, 190 00 Praha 9, Czechia
Wind zone	1 (22.5 m/s)*
Terrain category	II
Air density	1.25 kg/m³
Wind exposure factor (c_e)	2.16
Orography factor	1.0
Wind pressure	588.04 N/m²
Snow zone	1*
Characteristic value of snow on the ground	0.7 kN/m²
Topography (snow exposure factor)	Normal (1.0)
Snow load form coefficient	0.8
Snow load on the roof	426.63 N/m²
Altitude above sea level	199.0 m*
Consequence class	CC1
Reference period	15 years
Roof height	7.0 m
Parapet height	300 mm
Edge zone depth short side	1.09 m
Edge zone depth long side	1.46 m
Roof pitch	0.0°
Roof area	218.51 m²
Roofing material	PVC
Friction Coefficient	0.45
Roof orientation from north	-23.0°
High building safety factor	1.03
Panel model	Aiko A-MAH54Mb (GEN II) (440 - 460Wp) Neostar 2S (2nd generation)
Panel dimensions	1757 mm x 1134 mm x 30 mm
Panel weight	21.0 kg
Panel count	46
Panel angle of inclination landscape	11.3°

Configuration	Dual
Orientation	Landscape
Row distance	2,374 mm
Grounding/bonding option	OFF
Segment count	3
Panel power	460 Wp
Total power	21.160 kWp

* Automatically determined based on the address.

Enstall's FlatFix Fusion calculation is certified by Peutz. The certificate show that Enstall has correctly applied the wind tunnel measurements for FlatFix Fusion, combined with results of mechanical lift tests and that all results have been correctly and safely processed in the Enstall calculator. The results of the studies and their translation into a method for calculating ballast have been tested against the standards CUR Recommendation 103: 2005, NEN 7250: 2021 and the Eurocodes EN 1990 and EN 1991-1-4 with their corresponding national annexes.

Roof loads

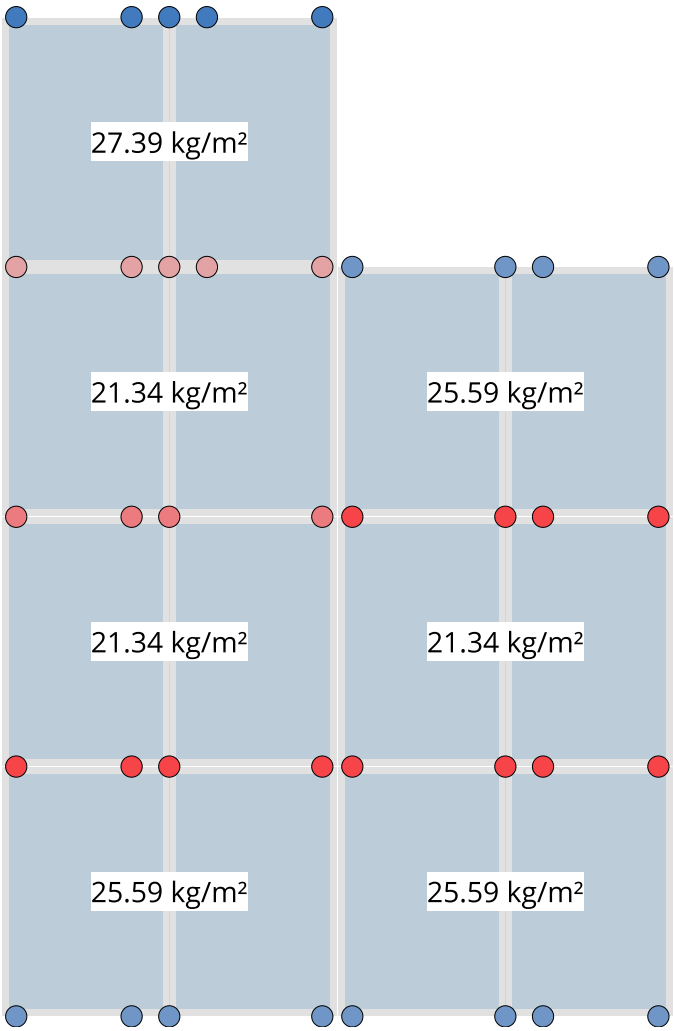
Total weight	2,126.78 kg
Total ballast weight	932.0 kg
Total system weight	228.78 kg
Total panel weight	966.0 kg
Number of ballast units (210mm x 105mm x 80mm)	233
Roof area (gross)	218.51 m²
System area (projected area)	97.0 m²
Average load over roof area	9.73 kg/m²
Average load over system area	21.93 kg/m²
Max load over panel area	27.39 kg/m²
Max static point load (at base plate)	13.74 kPa*, 24.75 kg/base plate
Max dynamic point load (at base plate)	59.77 kPa*, 107.67 kg/base plate

* Irregularities in the roof can cause deviating point pressures

Roof loads for segment 1

Total weight	713.34 kg
Total ballast weight	348.0 kg
Total system weight	71.34 kg
Total panel weight	294.0 kg
System area (projected area)	29.54 m²
Average roof load over system area	24.15 kg/m²
Max static point load (at base plate)	13.74 kPa, 24.75 kg/base plate
Max dynamic point load (at base plate)	53.8 kPa, 96.91 kg/base plate

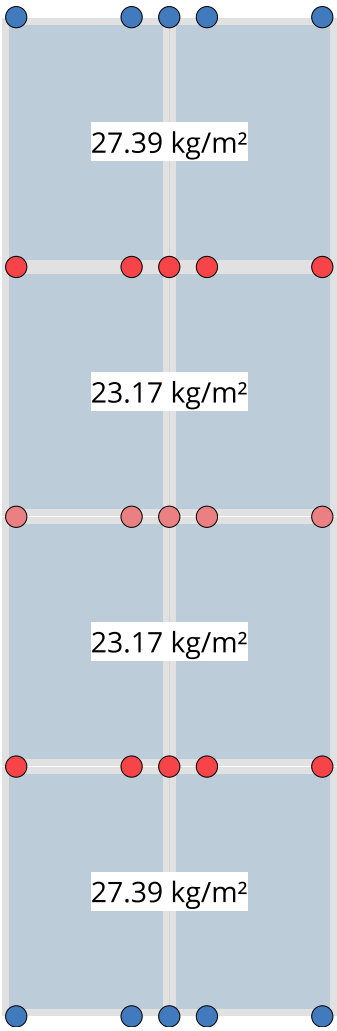
6.45 kPa 13.74 kPa



Roof loads for segment 2

Total weight	427.91 kg
Total ballast weight	208.0 kg
Total system weight	51.91 kg
Total panel weight	168.0 kg
System area (projected area)	16.82 m²
Average roof load over system area	25.44 kg/m²
Max static point load (at base plate)	11.81 kPa, 21.28 kg/base plate
Max dynamic point load (at base plate)	44.04 kPa, 79.32 kg/base plate

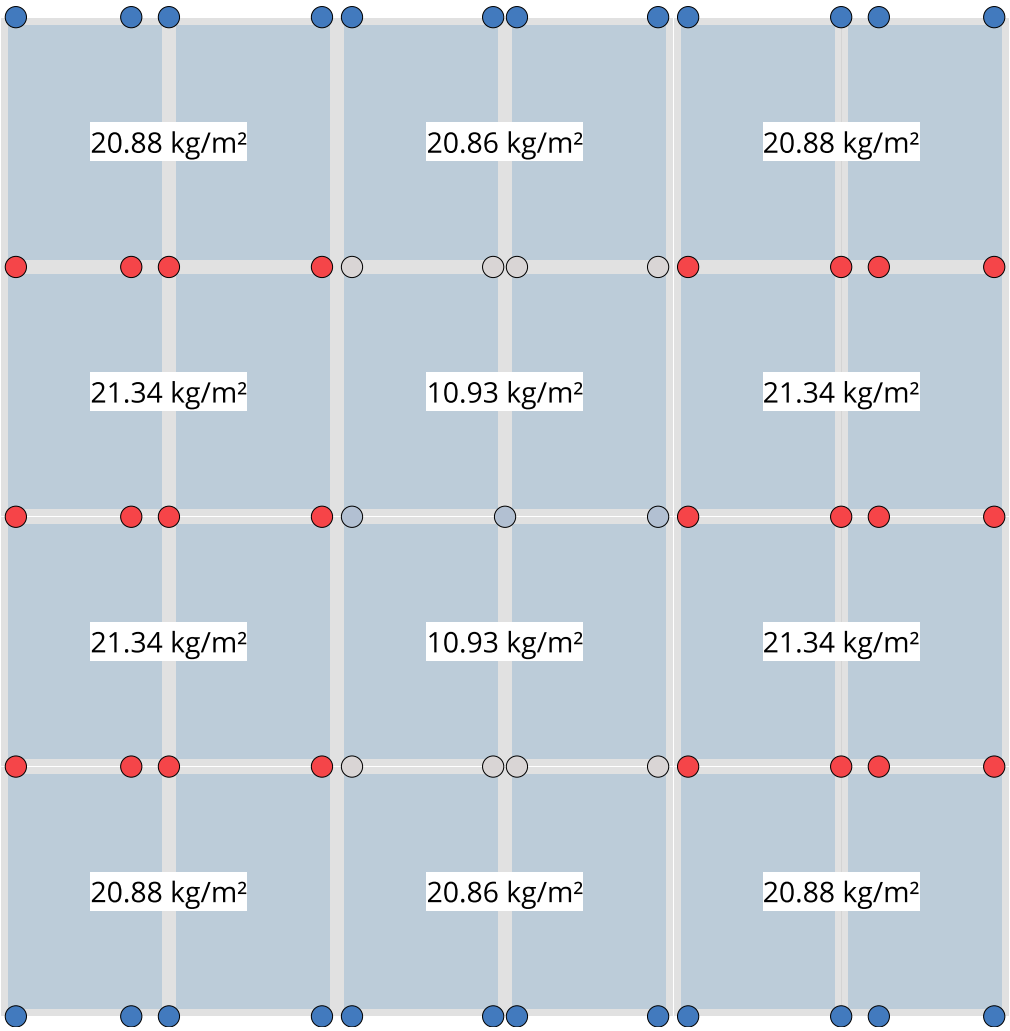
6.45 kPa 11.81 kPa



Roof loads for segment 3

Total weight	985.53 kg
Total ballast weight	376.0 kg
Total system weight	105.53 kg
Total panel weight	504.0 kg
System area (projected area)	50.64 m²
Average roof load over system area	19.46 kg/m²
Max static point load (at base plate)	12.38 kPa, 22.3 kg/base plate
Max dynamic point load (at base plate)	59.77 kPa, 107.67 kg/base plate

6.16 kPa 12.38 kPa



Disclaimer

Please read this information carefully before starting with the design and installation of the PV system.

The output for the design of the PV system is generated by using the calculator tool made available through the website of Enstall Europe B.V. ("**Enstall**") at www.enstall.com (the "**Calculator**"). The responsibility for the correct application of the output derived from the Calculator lies with the user of the Calculator and/or the installer or any other person responsible for the installation of the PV system, which output may be subject to or impacted by many different variables and factors. The installation of a PV system onto an existing building can for example impact the existing building loads (e.g., as a result of snow and wind) or the building construction. To avoid personal injury and/or property damages, the installer or any other person responsible for the installation of a PV system should ensure that the static calculations applicable to the existing building are reviewed and confirmed beforehand by a qualified technician. Any applicable regulations, including (but not limited to) NEN 7250, EN 1990, EN 1991-1-3, EN 1991-1-4 and relevant national annexes, should be observed and adhered to. Failure to obtain such confirmation or observe and adhere to applicable regulations may, amongst others, lead to failure of the roof load-bearing structure of the building. It is advisable to consult with the insurer of the building in case of the intention to install a PV system or in case of any other intended changes to the building.

The installer or any other person responsible for the installation of a PV system should also consider, confirm or control applicable design elements which include (but are not limited to):

a. changes as a result of the additional weight of the complete PV system on the building;
b. changes as a result of the changed geometry of the building's roof;
c. changes as a result of the dynamic wind pressure and possible accumulation of rain or any other precipitation on the building;
d. the loads occurring during installation on the building, roofing material and insulation;
e. the compatibility of the insulation and roofing material at the location of the contact points of the long-term PV-system's support structure, as a result of the pressure point;
f. the compatibility of the roofing material in combination with the support structure at the location of the contact points;
g. the effect of thermal performance of the building on the PV system and vice versa; and/or
h. the effect of any movement and vibrations of the roof on the PV system and vice versa.

In addition, the installer or any other person responsible for the installation of a PV system should confirm the compatibility of any third party products, components or materials (including PV panels) used in conjunction with Enstall's products, if such third party products, components or materials have not been provided for such use by or on behalf of Enstall or the use of which has not been expressly authorized by Enstall. Reference to a third party product in the Calculator should not be deemed an express or implied authorization by Enstall. Enstall's products should always be used in accordance with instructions set out in the most recent version of the applicable manual, available via www.enstall.com.

Prices in the Calculator are indicative and are subject to change resulting from, amongst others, fluctuations in commodity prices.

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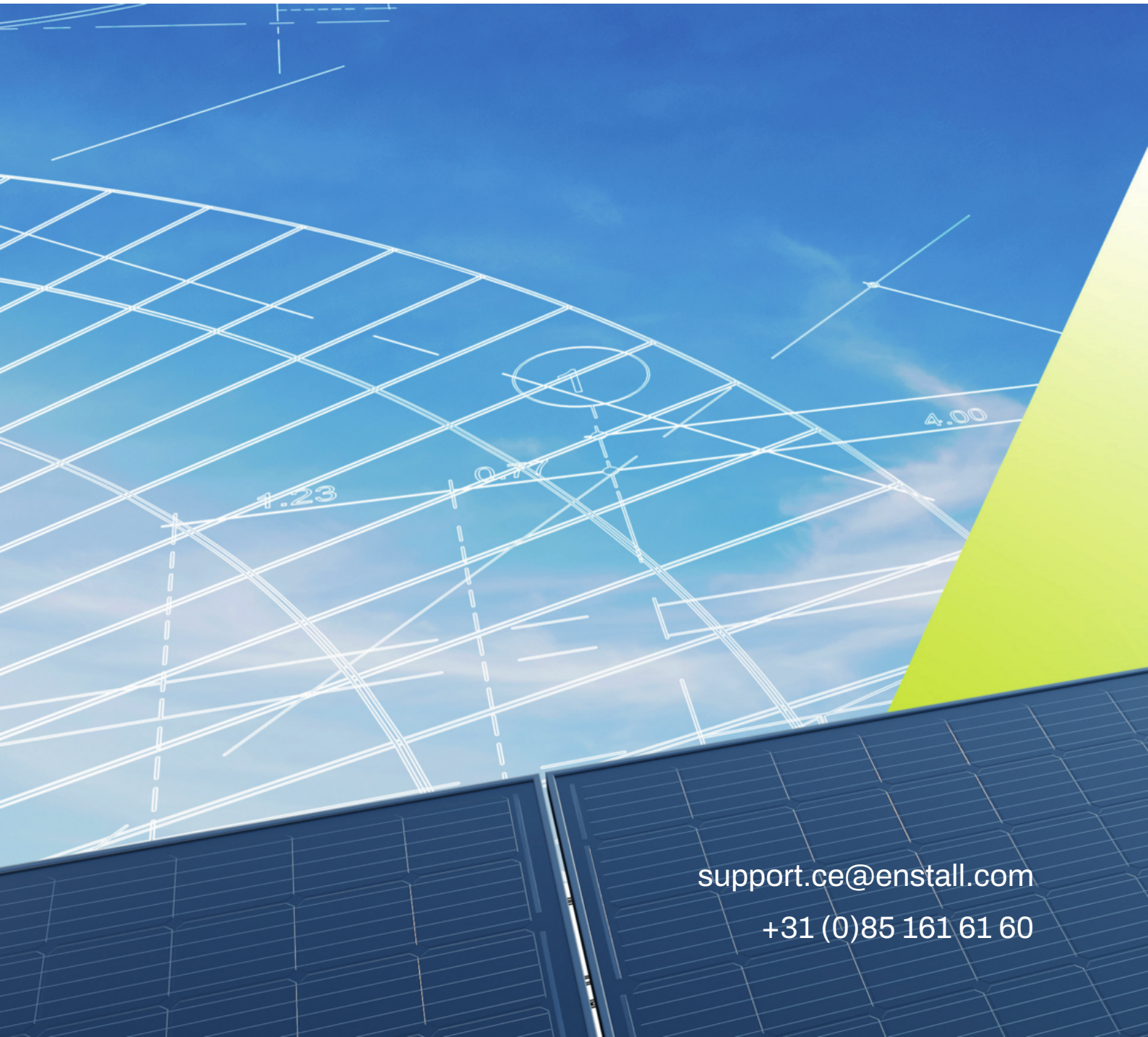

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