

PROJECT PLAN

External API project, 38971715/04
/2024 10:48:33

Calculation date: 15-04-2024

FLATFIX

FUSION

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Scan the code for the
product manual.

OVERVIEW

Location

Country	EUROCODE
Fundamental value of basic wind speed	22.0 m/s
Terrain category	I
Wind pressure	721.93 N/m²
Consequence class	CC1
Reference period	15 Year(s)
Calculation date	15-04-2024

Roof specification

Roof height	10.0 m
Parapet height	0 mm
Edge zone depth	2.0 m
Roof pitch	0.0°
Roofing material	Bitumen insulated
Roof orientation from north	-

System specification

Panel model	Provided panel
Panel dimensions	1762 mm x 1134 mm x 30 mm
Panel weight	22.0 kg
Panel count	88
Configuration	Single
Orientation	Landscape
Row distance	1,637 mm
Grounding/bonding option	OFF
Segment count	2
Panel power	440 Wp
Total power	38.720 kWp

COMPLETE LIST OF MATERIALS

Total roof bill of materials

Article number	Description	Amount
1000612	Mounting screw M6 x 12mm	208
1000655	Mounting screw M6 x 55mm	208
1003022	Universal mid clamp with bonding	144
1004330	FlatFix end clamp 30mm	64
1007011	FlatFix Fusion base plate bracket	19
1007012	FlatFix Fusion base plate	304
1007022	FlatFix Fusion - Low base	104
1007031	FlatFix Fusion high base	104
1007041*	FlatFix Fusion cable clip optimizer ready	88
1007155	FlatFix Fusion base profile 550mm	86
1007196	FlatFix Fusion base profile 1077mm	104
1007209	FlatFix Fusion wind deflector rear 1700	88
1007210	FlatFix Fusion ballast container 1700	65
1007226	FlatFix Fusion wind deflector left (base profile 1030mm - 1077mm)	16
1007227	FlatFix Fusion wind deflector right (base profile 1030mm - 1077mm)	16
1008085	Self-tapping sheet metal screw 6,0x25 mm SW10 HEX/T30	102

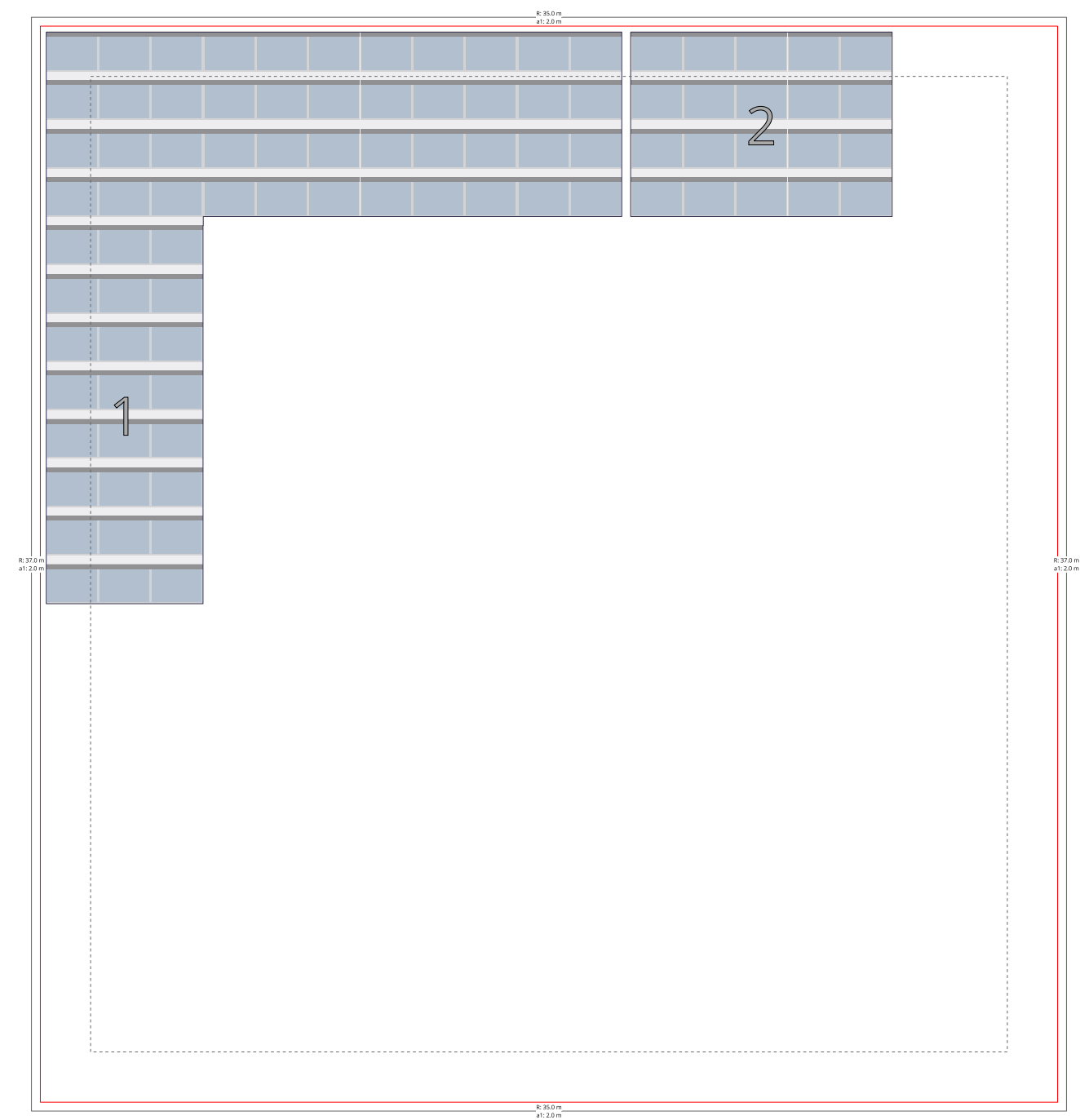
* Optional article

Number of ballast units

Number of bricks (210 mm x 105 mm x 80 mm, 4.0 kg/pc)	822
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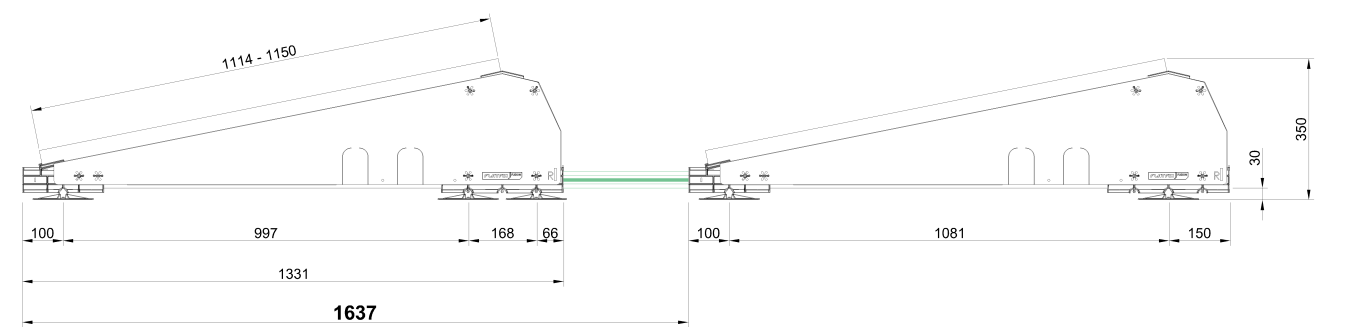
ASSEMBLY

Roof overview

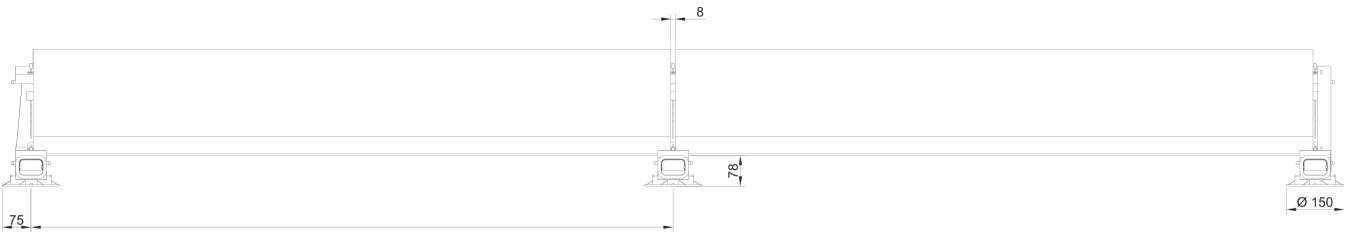


R: XXm	Length of outer roof side
a1: XXm	Edge zone width from roof edge
No-Go zone width (30cm)	

Single landscape configuration with row distance of 1,637 mm

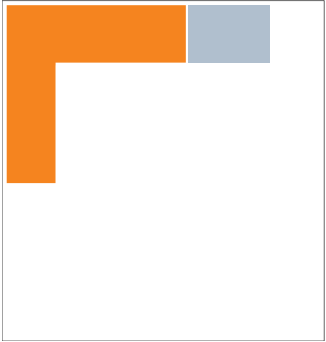


Rear view



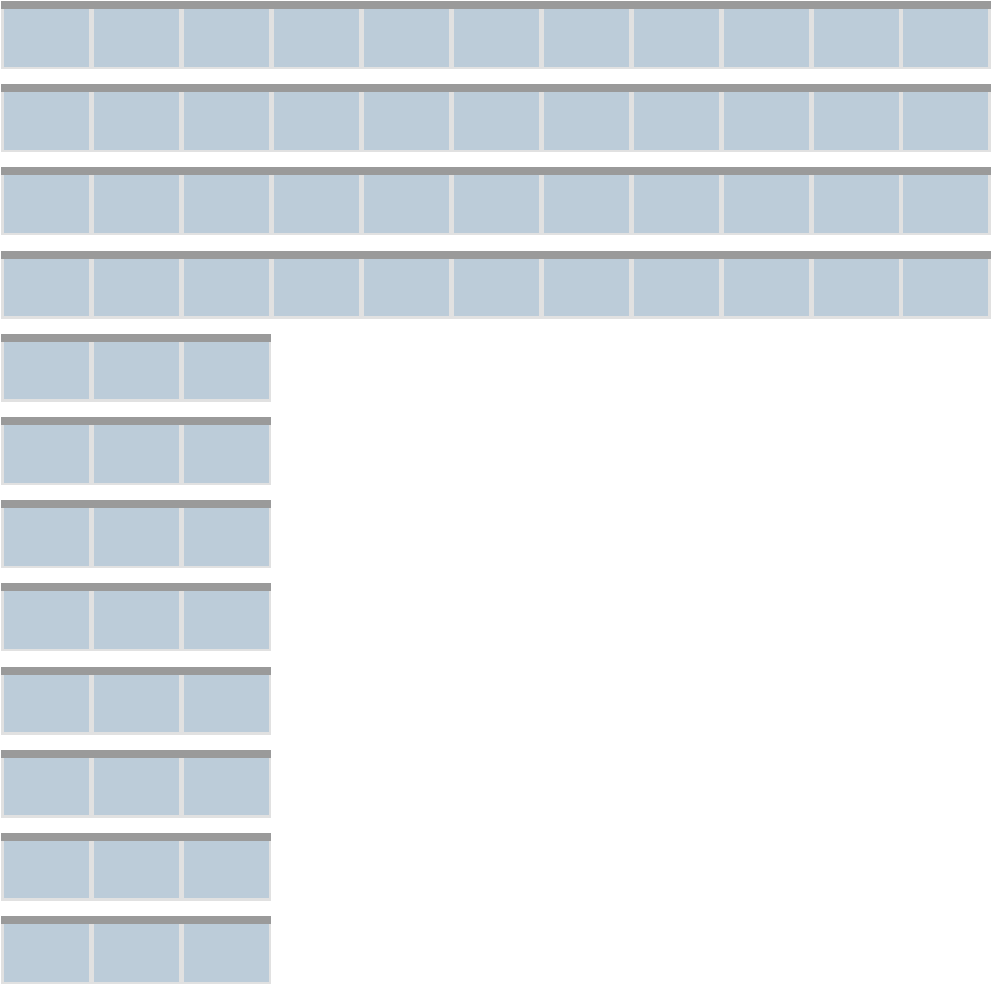
SEGMENT 1

Panel count	68
Total power	29.920 kWp
Configuration	Single
Orientation	Landscape
Row distance	1,637 mm
Grounding/bonding option	OFF

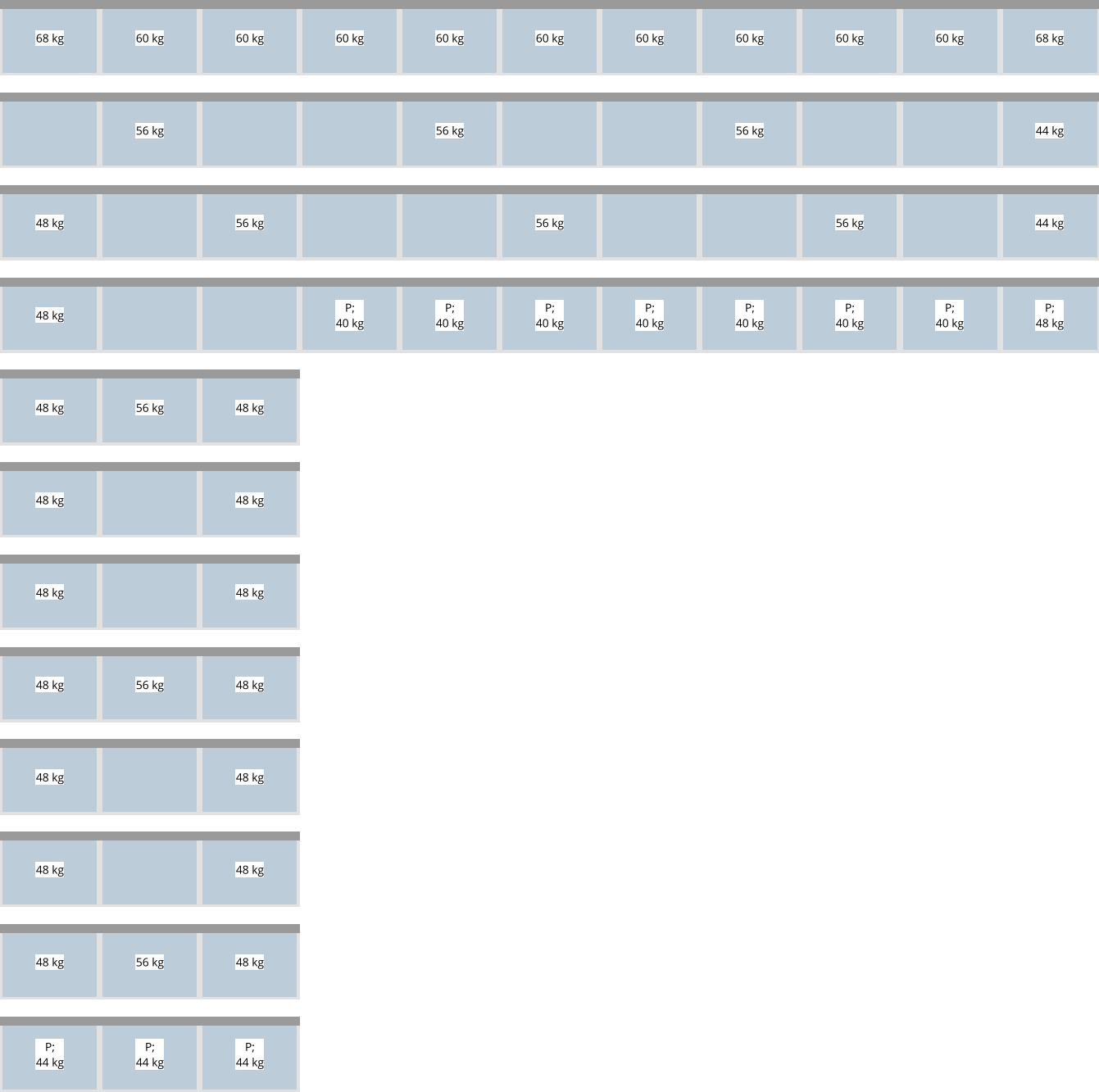


 This assembly plan is applicable for the highlighted segments

Assembly plan



Ballast



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

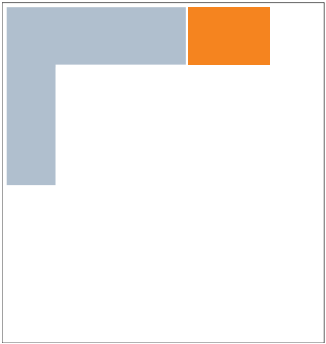
Number of ballasted panels	49
Weight per ballast unit	4.0 kg
Number of ballast units	624

Materials

Article number	Description	Amount
1000612	Mounting screw M6 x 12mm	160
1000655	Mounting screw M6 x 55mm	160
1003022	Universal mid clamp with bonding	112
1004330	FlatFix end clamp 30mm	48
1007011	FlatFix Fusion base plate bracket	13
1007012	FlatFix Fusion base plate	233
1007022	FlatFix Fusion - Low base	80
1007031	FlatFix Fusion high base	80
1007041	FlatFix Fusion cable clip optimizer ready	68
1007155	FlatFix Fusion base profile 550mm	68
1007196	FlatFix Fusion base profile 1077mm	80
1007209	FlatFix Fusion wind deflector rear 1700	68
1007210	FlatFix Fusion ballast container 1700	49
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	74

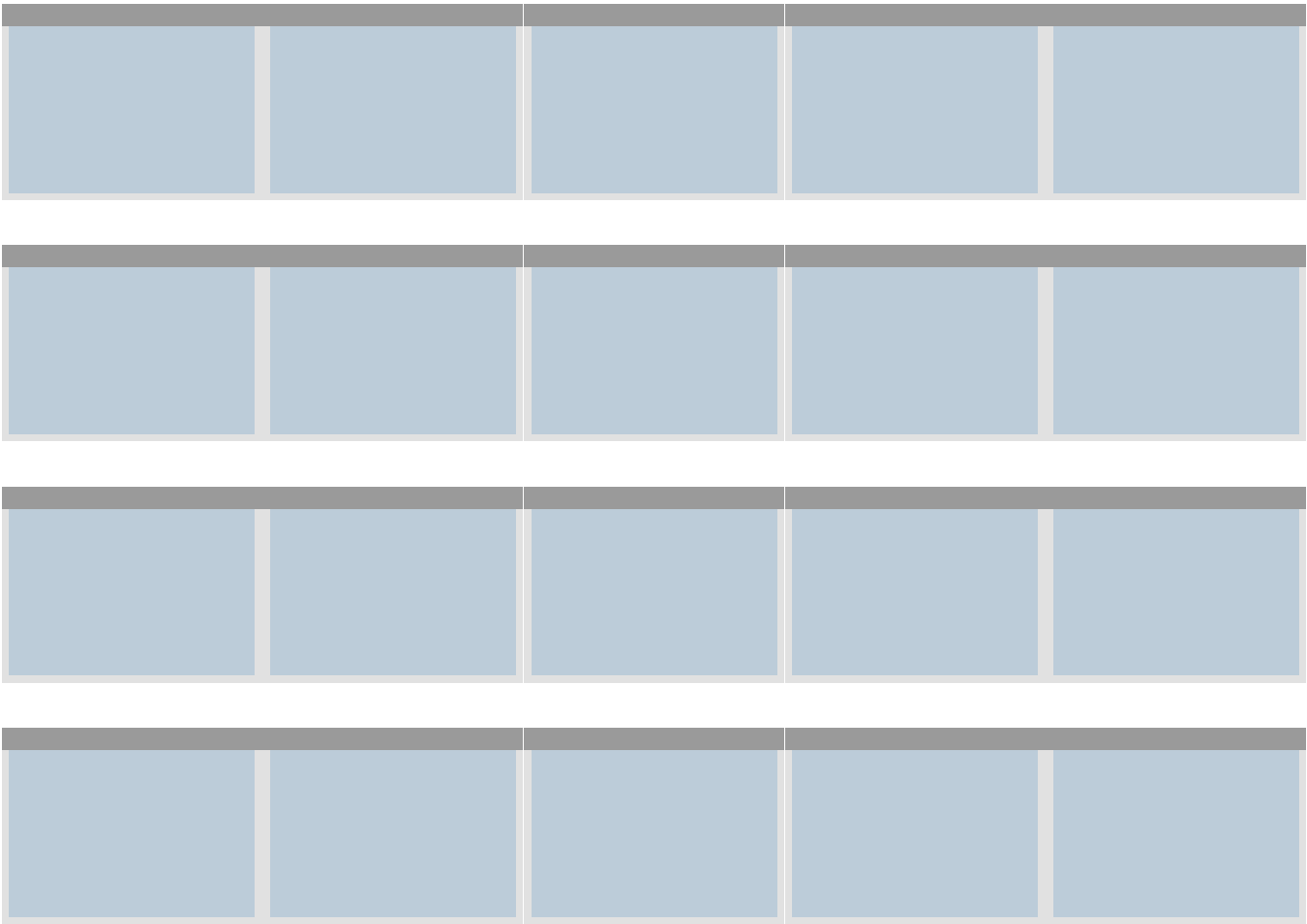
SEGMENT 2

Panel count	20
Total power	8.800 kWp
Configuration	Single
Orientation	Landscape
Row distance	1,637 mm
Grounding/bonding option	OFF

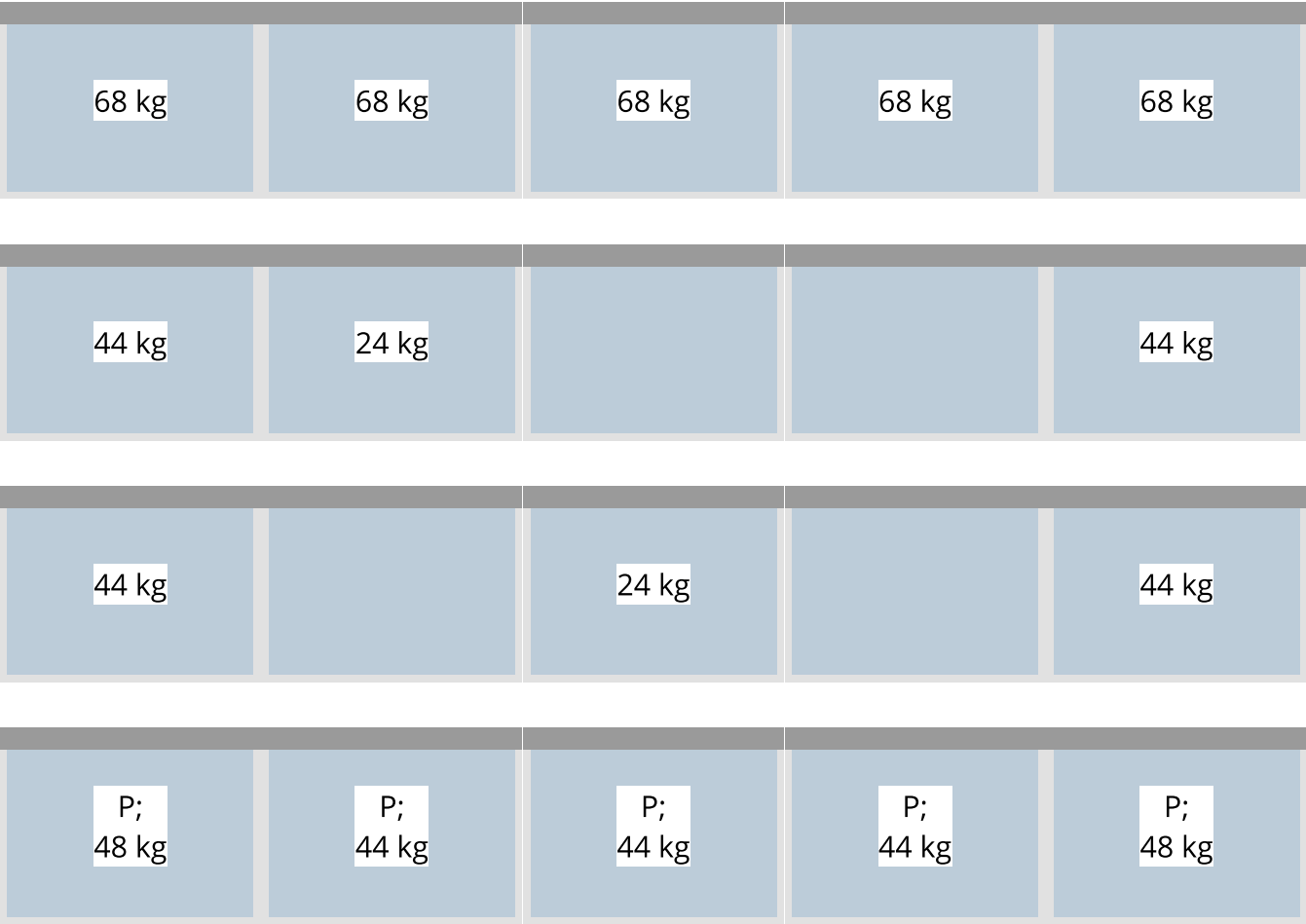


This assembly plan is applicable for the highlighted segments

Assembly plan



Ballast



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

Number of ballasted panels	16
Weight per ballast unit	4.0 kg
Number of ballast units	198

Materials

Article number	Description	Amount
1000612	Mounting screw M6 x 12mm	48
1000655	Mounting screw M6 x 55mm	48
1003022	Universal mid clamp with bonding	32
1004330	FlatFix end clamp 30mm	16
1007011	FlatFix Fusion base plate bracket	6
1007012	FlatFix Fusion base plate	71
1007022	FlatFix Fusion - Low base	24
1007031	FlatFix Fusion high base	24
1007041	FlatFix Fusion cable clip optimizer ready	20
1007155	FlatFix Fusion base profile 550mm	18
1007196	FlatFix Fusion base profile 1077mm	24
1007209	FlatFix Fusion wind deflector rear 1700	20
1007210	FlatFix Fusion ballast container 1700	16
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	28

CALCULATIONS

Input

Country	EUROCODE
Fundamental value of basic wind speed	22.0 m/s
Terrain category	I
Air density	1.25 kg/m ³
Wind exposure factor (c_e)	2.77
Orography factor	1.0
Wind pressure	721.93 N/m ²
Consequence class	CC1
Reference period	15 Year(s)
Roof height	10.0 m
Parapet height	0 mm
Edge zone depth	2.0 m
Roof pitch	0.0°
Roof area	1,295.0 m ²
Roofing material	Bitumen insulated (0.7)
High building safety factor	1.0
Panel model	Provided panel
Panel dimensions	1762 mm x 1134 mm x 30 mm
Panel weight	22.0 kg
Panel count	88
Configuration	Single
Orientation	Landscape
Row distance	1,637 mm
Grounding/bonding option	OFF
Segment count	2
Panel power	440 Wp
Total power	38.720 kWp

Esdec's FlatFix Fusion calculation is certified by Peutz. The certificate show that Esdec 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 Esdec 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.

PEUTZ

Roof loads

Total weight	5,952.43 kg
Total ballast weight	3,288.0 kg
Number of ballast units (210mm x 105mm x 80mm)	822
Roof area (gross)	1,295.0 m²
System area (projected area)	247.89 m²
Average load over roof area	4.6 kg/m²
Average load over system area	24.01 kg/m²
Max static point load (at base plate)	18.37 kPa*

* Irregularities in the roof can cause deviating point pressures

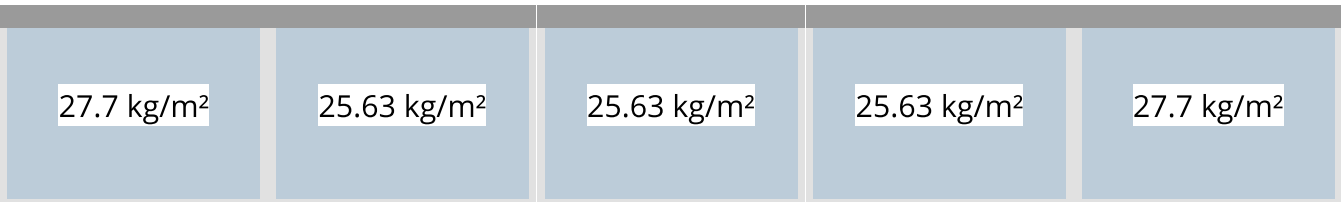
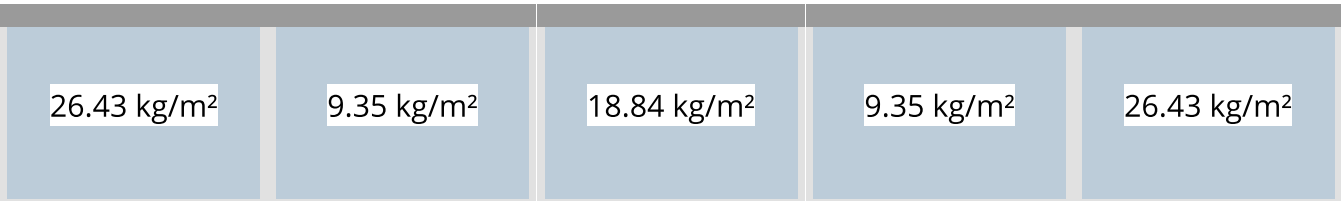
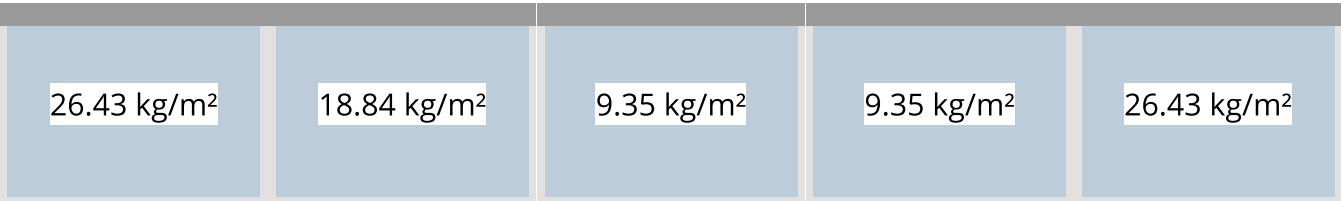
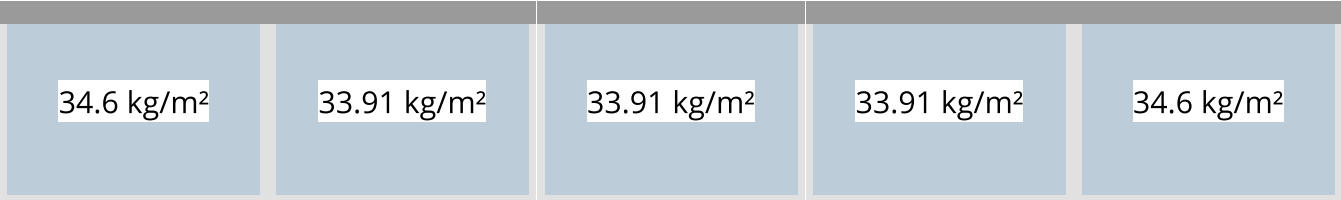
Roof loads for segment 1

Weight panels	1,496.0 kg
Weight system	557.4 kg
Weight ballast	2,496.0 kg
Total weight	4,549.4 kg
System Area	192.26 m²
Average roof load over system area	23.66 kg/m²
Max static point load (at base plate)	17.63 kPa, 31.753 kg/base plate

34.6 kg/m²	31.15 kg/m²	31.15 kg/m²	31.15 kg/m²	31.15 kg/m²	31.15 kg/m²	31.15 kg/m²	31.15 kg/m²	31.15 kg/m²	31.15 kg/m²	34.6 kg/m²
10.04 kg/m²	29.89 kg/m²	9.35 kg/m²	9.35 kg/m²	29.89 kg/m²	9.35 kg/m²	9.35 kg/m²	29.89 kg/m²	9.35 kg/m²	9.35 kg/m²	26.43 kg/m²
27.81 kg/m²	9.35 kg/m²	29.89 kg/m²	9.35 kg/m²	9.35 kg/m²	29.89 kg/m²	9.35 kg/m²	9.35 kg/m²	29.89 kg/m²	9.35 kg/m²	26.43 kg/m²
27.81 kg/m²	9.35 kg/m²	9.35 kg/m²	24.25 kg/m²	24.25 kg/m²	24.25 kg/m²	24.25 kg/m²	24.25 kg/m²	24.25 kg/m²	24.25 kg/m²	27.7 kg/m²
27.81 kg/m²	29.89 kg/m²	27.81 kg/m²								
27.81 kg/m²	9.35 kg/m²	27.81 kg/m²								
27.81 kg/m²	9.35 kg/m²	27.81 kg/m²								
27.81 kg/m²	29.89 kg/m²	27.81 kg/m²								
27.81 kg/m²	9.35 kg/m²	27.81 kg/m²								
27.81 kg/m²	9.35 kg/m²	27.81 kg/m²								
27.81 kg/m²	29.89 kg/m²	27.81 kg/m²								
26.32 kg/m²	25.63 kg/m²	26.32 kg/m²								

Roof loads for segment 2

Weight panels	440.0 kg
Weight system	171.03 kg
Weight ballast	792.0 kg
Total weight	1,403.03 kg
System Area	55.63 m²
Average roof load over system area	25.22 kg/m²
Max static point load (at base plate)	18.37 kPa, 33.086 kg/base plate



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 Esdec B.V. ("Esdec") at www.esdec.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 Esdec's products, if such third party products, components or materials have not been provided for such use by or on behalf of Esdec or the use of which has not been expressly authorized by Esdec. Reference to a third party product in the Calculator should not be deemed an express or implied authorization by Esdec. Esdec's products should always be used in accordance with instructions set out in the most recent version of the applicable manual, available via www.esdec.com.

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BUILDING VALUE⁺ FOR SOLAR PROFESSIONALS

Esdec

Londenstraat 16
7418 EE Deventer
The Netherlands

☎ +31 850 702 000

✉ info@esdec.com