PHOTOVOLTAIC

GSE IN-ROOF SYSTEM™

Total integration system for traditional photovoltaic panels

Installation manual

V 11.0

GSE Integration

EUROPEAN LEADER IN PHOTOVOLTAIC INTEGRATION SYSTEMS






Contents

1. Kit presentation

1.1 GSE In-Roof System™

GSE In-Roof System™ enables modules installation **on every type of roof covering (curved tiles, interlocking, flat, slates)**, on new buildings or buildings being renovated.

The system may be installed in **portrait or landscape** format, with a specific mounting plate for each format, on both small installations (less than 3 kWp) and large roofs (ie specific manual).

GSE In-Roof System™ may be installed on wooden frameworks and mounted on a batten adapted to climatic conditions and framework structure. It can be mounted on slopes between **12° and 50°**.

GSE In-Roof System™ is **guaranteed for 10 years by the ten-year manufacturer's warranty from SMABTP.** The system does not require much maintenance, except regular cleaning of the solar panels to guarantee an optimum production.

Complementary manuals available :

- **v.ATEC In-Roof GSE INTEGRATION Kit.**
- **Large Roof In-Roof GSE INTEGRATION Kit.**
- **Roof-Windows In-Roof GSE INTEGRATION Kit.**

1.2 Contents of the kit

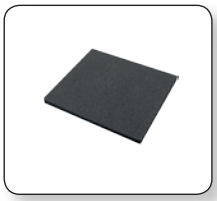
MOUNTING PLATES


Portrait GSE Plate


Landscape GSE Plate

MOUNTING BRACKETS


Wood self-drilling screw 6,5 x 60


Cellular EPDM square seal

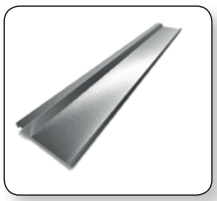

Simple fixing brackets


Double fixing brackets

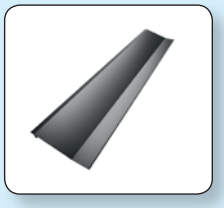

Installation's edge wedges (L/R)

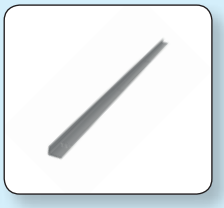
FLASHINGS


Flashing hook

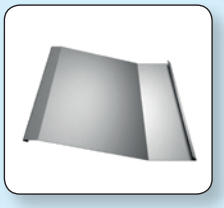

Side flashing

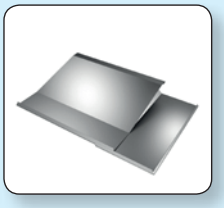
OPTION 1


Central flashing


Attach angle


Aluminium pop rivet


Ridge junction


Angle flashing


Sheet of zinc

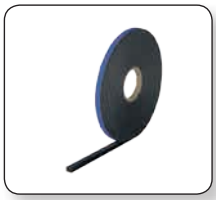
OPTION 2

WATERPROOFING


GSE Rooflex™ or eq.

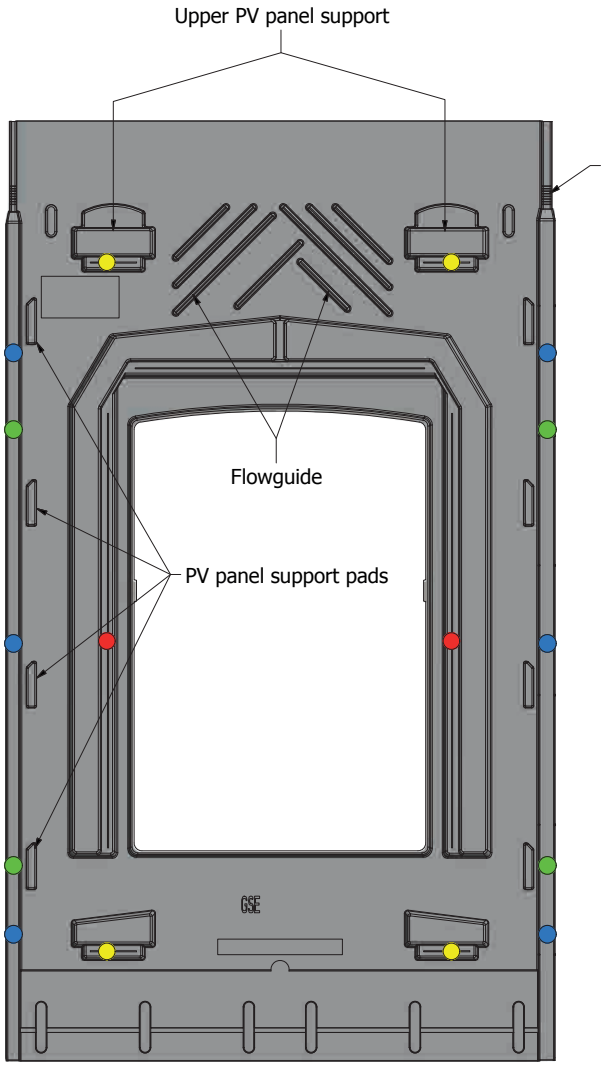

Sheet of zinc


Lead tape


Precompressed seal

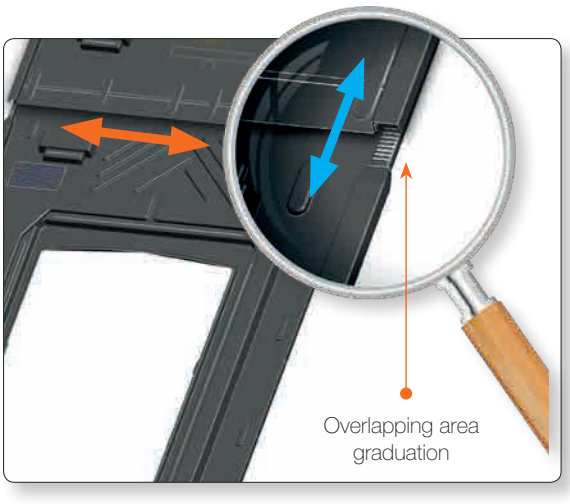

HPV roof underlayment

1.3 PORTRAIT GSE Plate



- Plate fixation point **(without pre-drilling)**
- Plate fixation point **(pre-drilling 10mm)**
- Bracket fixation point (6 brackets) **(pre-drilling 10mm)**
- Bracket fixation point (4 brackets) **(pre-drilling 10mm)**

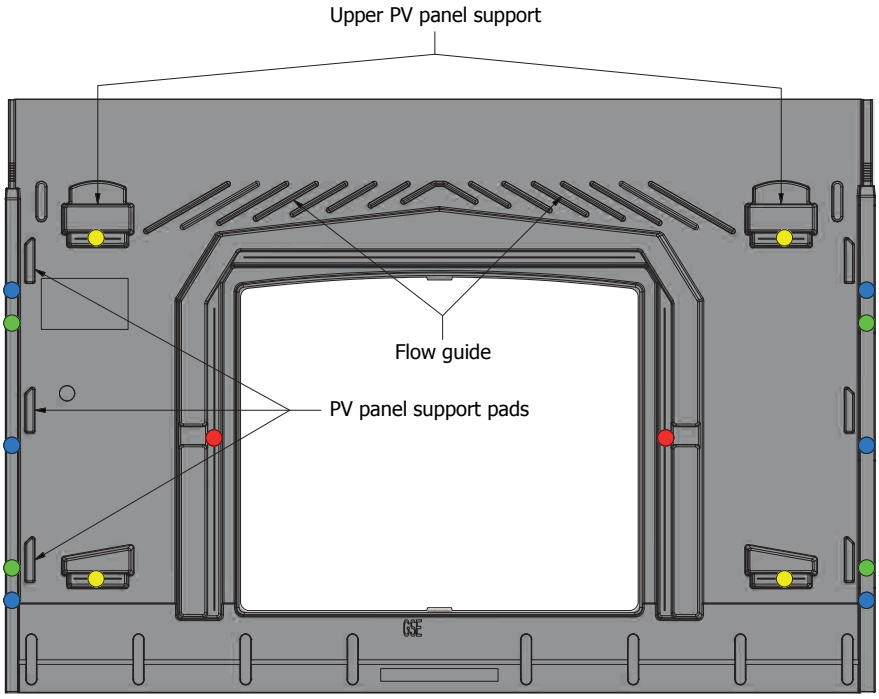
Portrait plate references – Module sizes



	PV PANELS TOLERANCE	
REF.	HEIGHT (mm)	WIDTH (mm)
1559 / 1046	1535-1615	1037-1047
1575 / 1053	1535-1615	1044-1054
1575 / 1082	1535-1615	1073-1083
1580 / 808	1540-1620	798-809
1640 / 992	1600-1680	983-993
1640 / 1001	1600-1680	992-1002
1686 / 1016	1646-1726	1007-1017

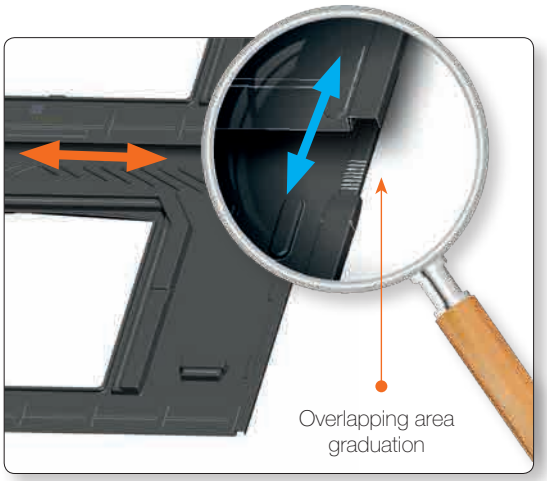
Height tolerance Width tolerance

1.4 LANDSCAPE GSE Plate



- Plate fixation point **(without pre-drilling)**
- Plate fixation point **(pre-drilling 10mm)**
- Bracket fixation point (6 brackets) **(pre-drilling 10mm)**
- Bracket fixation point (4 brackets) **(pre-drilling 10mm)**

Landscape plate references – Module sizes



	PV PANELS TOLERANCE	
REF.	HEIGHT (mm)	WIDTH (mm)
1640 / 992	952-1032	1632-1641
1650 / 992	952-1032	1642-1651
1660 / 992	952-1032	1652-1661
1670 / 992	952-1032	1662-1671
1675 / 992	952-1032	1667-1676
1680 / 992	952-1032	1672-1681
1559 / 1046	1042-1122	1551-1560
1575 / 1082	1042-1122	1567-1576
1580 / 808	768-848	1572-1581
1686 / 1016	976-1056	1677-1687
1700 / 1016	976-1056	1691-1701

Height tolerance Width tolerance

1.5 Tools required

◆ CHALK LINE REEL

◆ HAMMER

◆ SCREWDRIVER

Adjustable torque necessary

◆ PLATE SHEAR

◆ DRILL BITS

- WOOD AND METAL DRILL BIT Ø 10MM

- HEX BIT Ø 8MM

◆ POP RIVET PLIER

◆ MEASURING TAPE

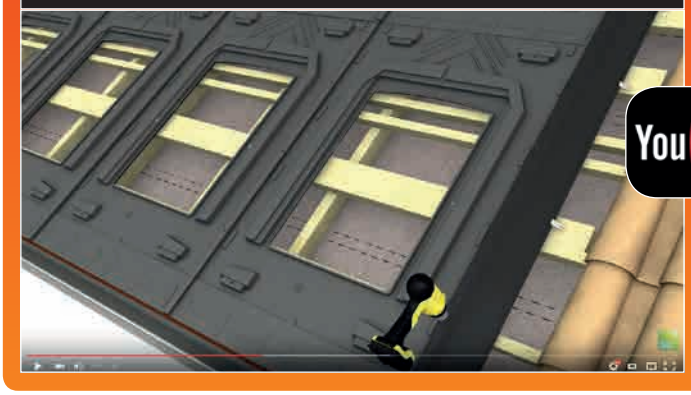
◆ WHITE MARKER

◆ PENCIL

◆ ASSEMBLY VIDEO

PLEASE FIND ALL OUR ASSEMBLY VIDEOS ON YOUTUBE :

GSE IN-ROOF SYSTEM



GSE AIR'SYSTEM

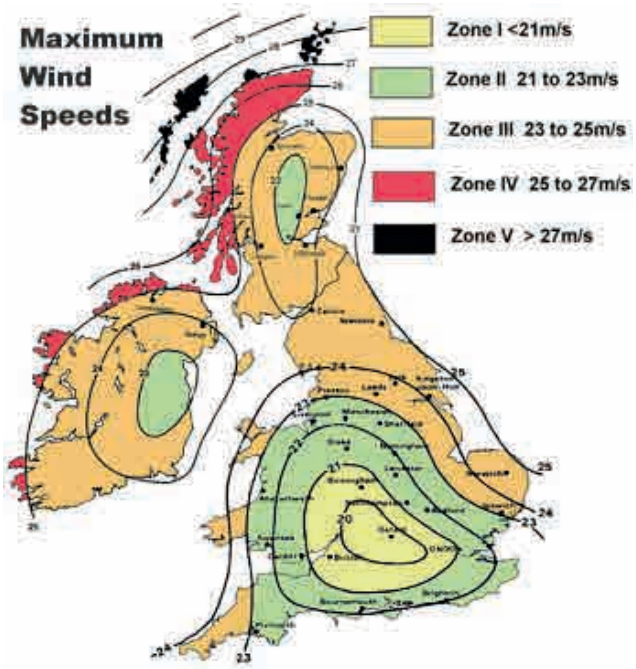
The installing technician must proceed to a measurement work beforehand, which will enable him to guarantee the durability and performance of the PV field installed. He must take into account the climate impact on the project site (ie. wind and snow[1]) and the PV field settings according to current regulations (Eurocodes and règles NV65).

These data will help **determine the number of brackets and appropriate lathing** (figures in sections 2.3 and 2.4 are given as example). The chosen thickness must be adapted to the roof battens one to guarantee the PV field edges flashings' waterproofing.

2.1 Climat Impact

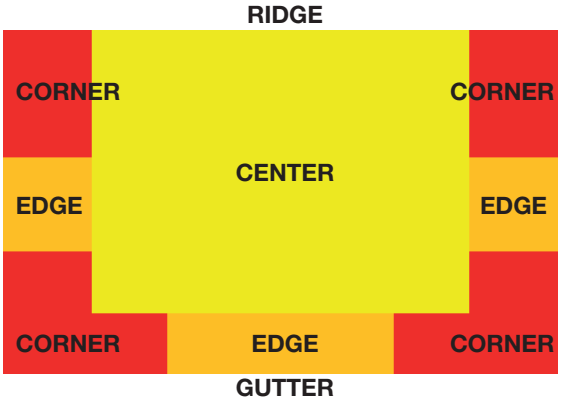
Maps of the wind zones in the UK:

◆ **WIND**

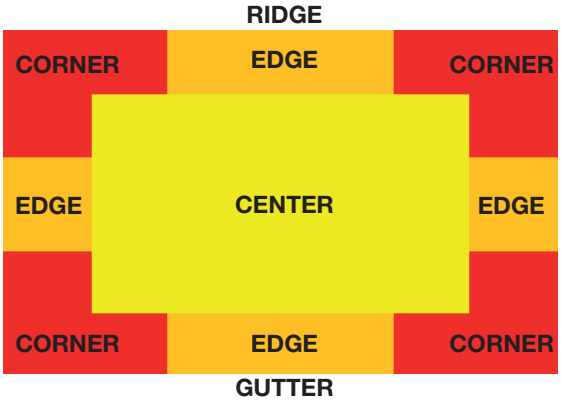


2.2 Photovoltaic field setting up

The PV field integration is impacting on the wind load value whether it is in the center, on the edge or the corner. The most adverse setting-up should be taken into account.



Two-sloped roof



One –sloped roof

[1] The earthquake resistance of the GSE In-Roof System being validated on the whole European territory, this criterion is not to be taken into account.

2.3 Portrait mounting

2.3.1 Choosing the number of brackets

Height (m)	Location	Cp	Zone 1 Normal	Zone 1 Exposed	Zone 2 Normal	Zone 2 Exposed	Zone 3 Normal	Zone 3 Exposed	Zone 4 Normal	Zone 4 Exposed
10	Current	1	500	675	600	780	750	938	900	1080
	Edges	1,7	850	1148	1020	1326	1275	1594	1530	1836
	Corners	2,4	1200	1620	1440	1872	1800	2250	2160	2592
15	Current	1	550	743	660	858	825	1031	990	1188
	Edges	1,7	935	1262	1122	1459	1403	1753	1683	2020
	Corners	2,4	1320	1782	1584	2059	1980	2475	2376	2851
20	Current	1	594	802	713	926	891	1113	1069	1283
	Edges	1,7	1009	1363	1211	1575	1514	1893	1817	2180
	Corners	2,4	1425	1924	1710	2223	2138	2672	2565	3078

	4 brackets	6 brackets
Admissible pressure :	1067	1981

2.3.2 Lathing section (two-sloped roof – Slopes : 12 à 50° - Terrain category : IIIa)

	Framework structure	Most adverse setting-up	Minimal section of the mounting battens (mm) Zone 1 (Snow : A2 ; Alt. ≤ 290m) Thickness	Zone 1 Width	Zone 2 (Snow : B2 ; Alt. ≤ 260m) Thickness	Zone 2 Width	Zone 3 (Snow : B2 ; Alt. ≤ 120m) Thickness	Zone 3 Width	Zone 4 (Snow : A2 ; Alt. ≤ 450m) Thickness	Zone 4 Width
4 Brackets	Center distance ≤ 600 (Rafters or trusses)	Center	22	100	22 or 27	150 or 100	22 27	150 100	22 27	150 100
		Edge	22 or 27	150 or 100			27	100	27 or 32	150 or 100
		Corner								
	Center distance ≤ 900 (Rafters or trusses)	Center	22 or 27	150 or 100	22 27	150 100	22 27	150 100	22 27	150 100
		Edge			27	100	27 or 32	150 or 100	27 or 32	150 or 100
		Corner			27 32	150 100				
	Center distance ≤ 1500 (Metal trusses)	Center	27	150	27 32	150 100	27 32	150 100	32 38	150 100
		Edge			32 or 38	150 or 100	32 or 40	150 or 100	38	150
		Corner								
6 Brackets	Center distance ≤ 600 (Rafters or trusses)	Center	15 18	150 100	18 22	150 100	18 22	150 100	18 22	150 100
		Edge	18 or 22	150 or 100	22	100	22 or 27	150 or 100	22 or 27	150 or 100
		Corner								
	Center distance ≤ 900 (Rafters or trusses)	Center	18 22	150 100	18 22	150 100	18 22	150 100	22	100
		Edge	22	100	22 or 27	150 or 100	22 or 27	150 or 100	27	100
		Corner								
	Center distance ≤ 1500 (Metal trusses)	Center	22 27	150 100	22 27	150 100	22 27	150 100	27 32	150 100
		Edge	27	100	27 or 32	150 or 100	27 or 32	150 or 100	32 or 38	150 or 100
		Corner								

2.4 Landscape mounting

2.4.1 Choosing the number of brackets

Height (m)	Location	Cp	Zone 1 Normal	Zone 1 Exposed	Zone 2 Normal	Zone 2 Exposed	Zone 3 Normal	Zone 3 Exposed	Zone 4 Normal	Zone 4 Exposed
10	Current	1	500	675	600	780	750	938	900	1080
	Edges	1,7	850	1148	1020	1326	1275	1594	1530	1836
	Corners	2,4	1200	1620	1440	1872	1800	2250	2160	2592
15	Current	1	550	743	660	858	825	1031	990	1188
	Edges	1,7	935	1262	1122	1459	1403	1753	1683	2020
	Corners	2,4	1320	1782	1584	2059	1980	2475	2376	2851
20	Current	1	594	802	713	926	891	1113	1069	1283
	Edges	1,7	1009	1363	1211	1575	1514	1893	1817	2180
	Corners	2,4	1425	1924	1710	2223	2138	2672	2565	3078

	4 brackets	6 brackets
Admissible pressure :	914	1371

2.4.2 Lathing section (two-sloped roof – Slopes : 12 à 50° - Terrain category : IIIa)

	Framework structure	Most adverse setting-up	Minimal section of the mounting battens (mm) Zone 1 (Snow: A2 ; Alt. ≤ 290m) Thickness	Zone 1 Width	Zone 2 (Snow : B2 ; Alt. ≤ 260m) Thickness	Zone 2 Width	Zone 3 (Snow : B2 ; Alt. ≤ 120m) Thickness	Zone 3 Width	Zone 4 (Snow : A2 ; Alt. ≤ 450m) Thickness	Zone 4 Width
4 Brackets	Center distance ≤ 600 (Rafters or trusses)	Center	22	100	22 or 27	150 or 100	22 27	150 100	22 27	150 100
		Edge	22 or 27	150 or 100			27	100	27 or 32	150 or 100
		Corner								
	Center distance ≤ 900 (Rafters or trusses)	Center	22 27	150 100	27	100	27	100	27 32	150 100
		Edge	27 or 32	150 or 100	27 or 32	150 or 100	27 or 38	150 or 100	32 or 38	150 or 100
		Corner								
	Center distance ≤ 1500 (Metal trusses)	Center	27 or 32	150 or 100	27 32	150 100	27 32	150 100	32 38	150 100
		Edge			32 or 38	150 or 100	32 38	150 100	38	150
		Corner					32 40	150 100		
6 Brackets	Center distance ≤ 600 (Rafters or trusses)	Center	18 or 22	150 or 100	18 22	150 100	18 22	150 100	18 22	150 100
		Edge			22	100	22 or 27	150 or 100	22 or 27	150 or 100
		Corner								
	Center distance ≤ 900 (Rafters or trusses)	Center	22	100	22 or 27	150 or 100	22 27	150 100	22 27	150 100
		Edge	22 or 27	150 or 100			27	100	27 or 32	150 or 100
		Corner								
	Center distance ≤ 1500 (Metal trusses)	Center	22 27	150 100	22 27	150 100	22 27	150 100	27	100
		Edge	27	100	27 or 32	150 or 100	27 or 32	150 or 100	27 32	150 100
		Corner							32 38	150 100

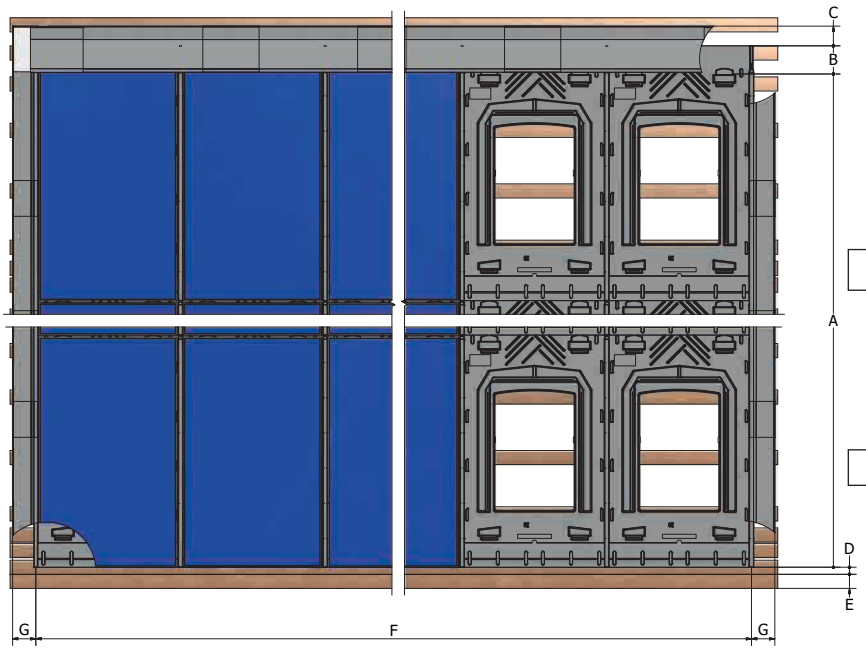
3. Implementation

3.1 Preparation of the roof covering

3.1.1 PV field size calculation

INFO: Download our layout calculator on the « Download & Media » area of our website www.gseintegration.com to determine your PV field measurements.

The PV field size can be calculated using the GSE Plate reference (see sections 1.3 and 1.4 to determine the GSE Plate compatible with the module):



Field height (mm) =

((Height Ref. +0 to 35+10) x Nb. lines)+160+150+50+100 [2]

A	+	B	+	C	+	D	+	E

Field width (mm) =

((Width Ref. + 36.5) x Nb. columns) + (2 x 165)

F	+	2	x	G

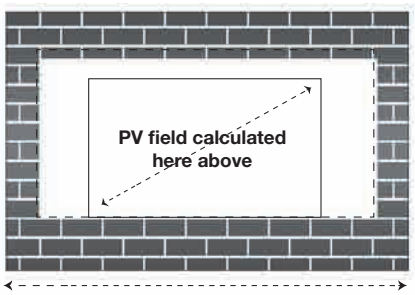
[2] If integrated in the roof center, add a board to equalise with the tile curve height (ie. 3.3)

GSE PORTRAIT PLATES							
Height Ref.	1640	1640	1580	1575	1575	1575	1686
Width Ref.	1001	992	808	1046	1053	1082	1016

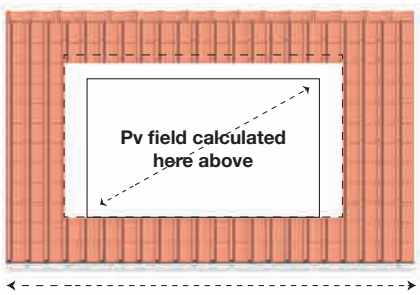
GSE LANDSCAPE PLATES											
Height Ref.	1082	1082	808	992	992	992	992	992	992	1016	1016
Width Ref.	1559	1575	1580	1640	1650	1660	1670	1675	1680	1686	1700

3.1.2 Roof cover installation

Uncover the roof following the PV field dimensions calculated beforehand, by removing 1 or 2 extra tiles lines (slate or flat tile cover) on the sides and top of the field.



slates roof :
2 extra lines removed



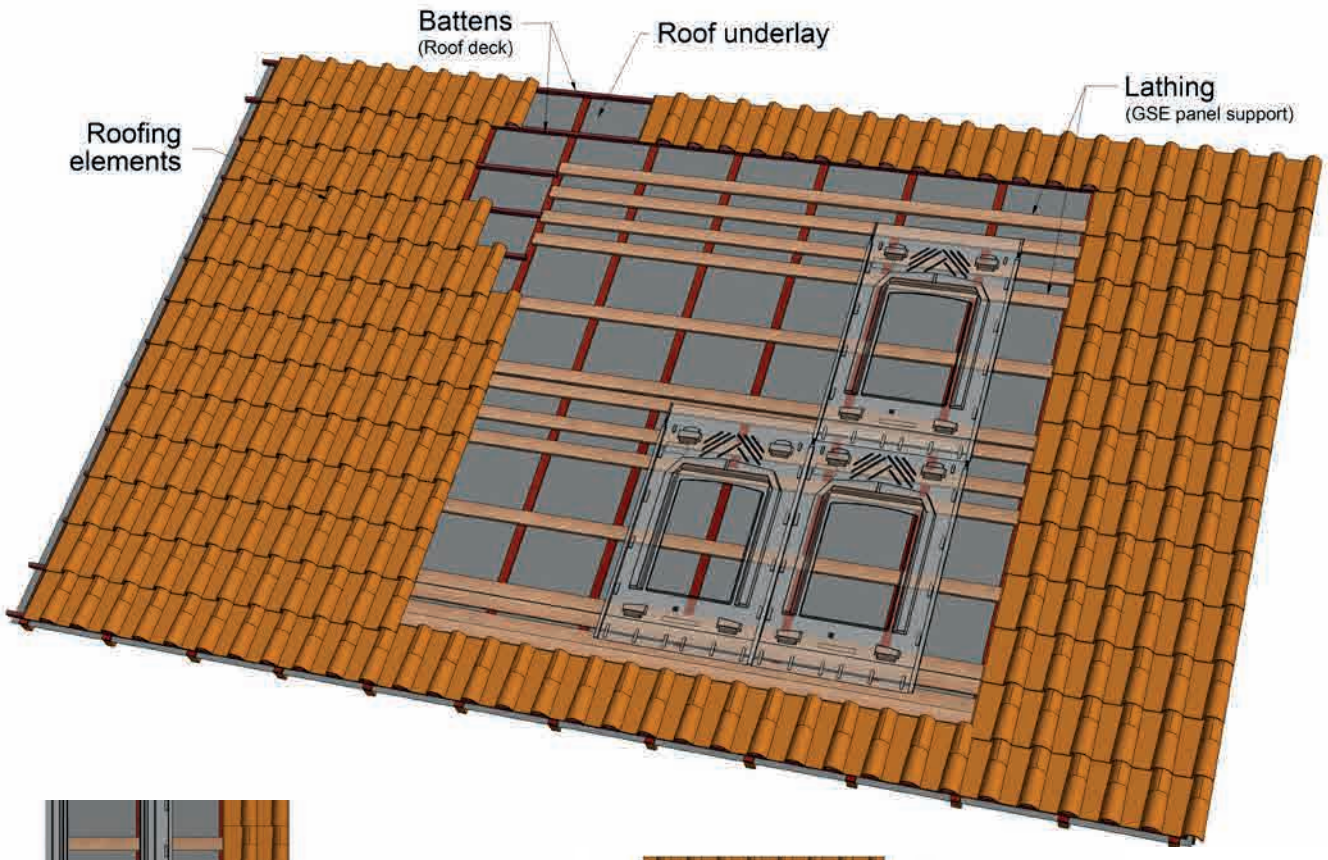
tiles roof :
1 extra line removed

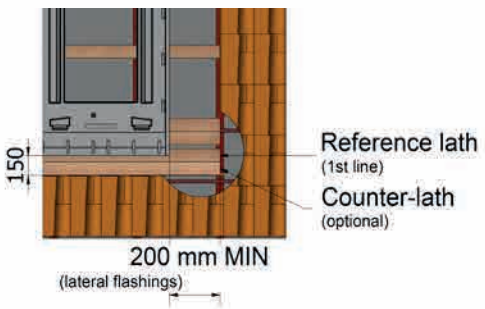
3.2 Positioning of the mounting battens

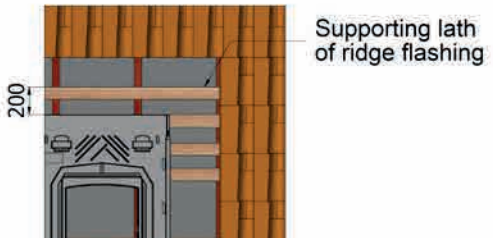
ATTENTION: PRIOR TO STARTING ANY WORK, THE INSTALLER MUST ENSURE THAT THE FRAMEWORK IS FLAT AND THERE MUST BE A ROOF UNDERLAY OR, IF THERE ARE NONE, INSTALL ONE IN THE CONDITIONS DESCRIBED IN DTU 40.29. THIS UNDERLAY MUST BE "CSTB-CERTIFIED" OR HAVE "QB CERTIFICATION".

1.Determine beforehand the number of fixing brackets and the sufficient lathing section (see section 2).
2.Arrange the wooden lath under all the following locations:

- Attachment points of fixing brackets
- Attachment points of panels
- Panel ends and overlaps[3]
- Flat base of the sealing strip[3]
- Mounting bracket of ridgve flashings[3]







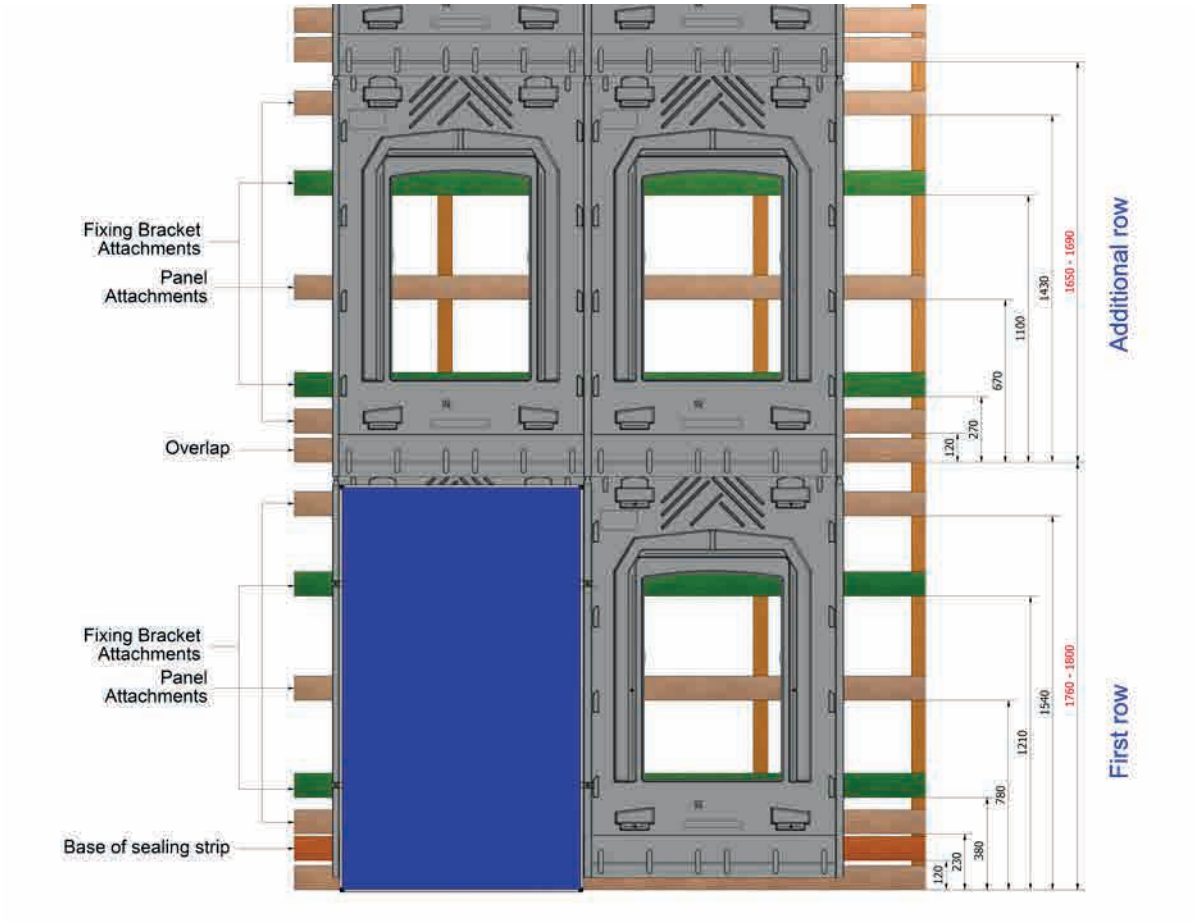
ATTENTION: THE POSITIONING OF THE FIXING BRACKETS AND THEIR SUPPORTING LATHS MUST FIRST AND FOREMOST COMPLY WITH MODULE MANUFACTURER REQUIREMENTS.

[3] Since these elements play no role in the mechanical system strength, the width of the timber could be different from that calculated for the fixing brackets. Only the thickness should be identical.

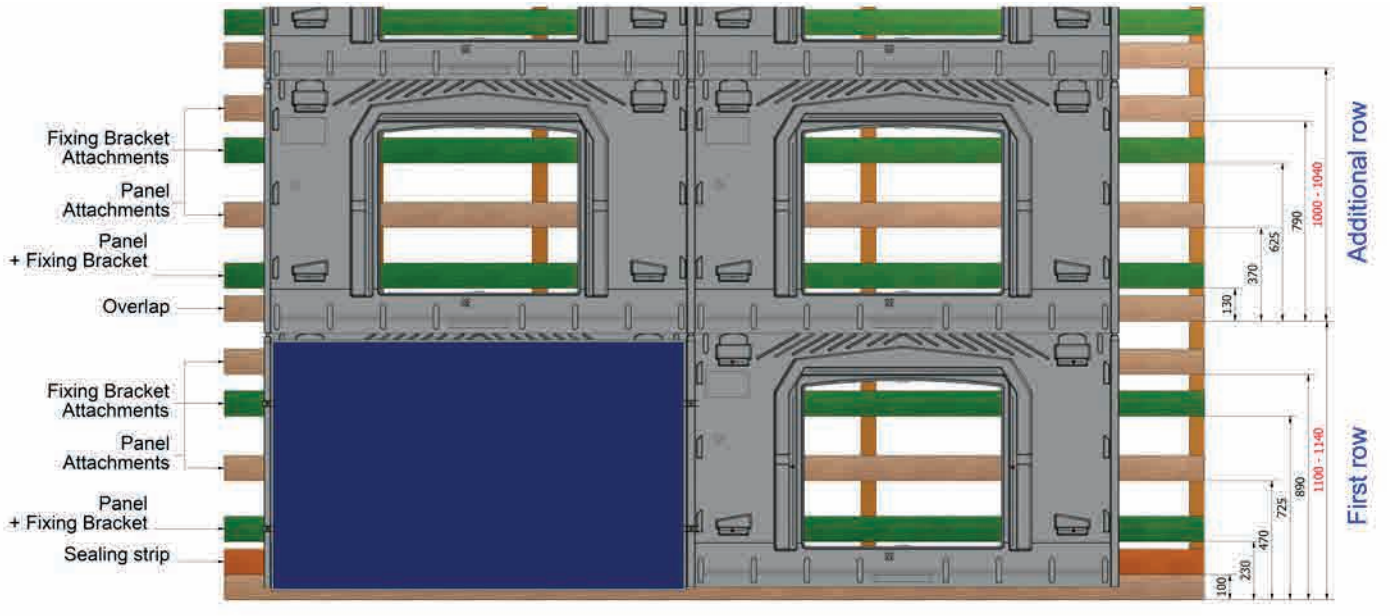
3. Implementation

All of our lathing designs in PORTRAIT and LANDSCAPE configuration are available on our site www.gseintegration.com

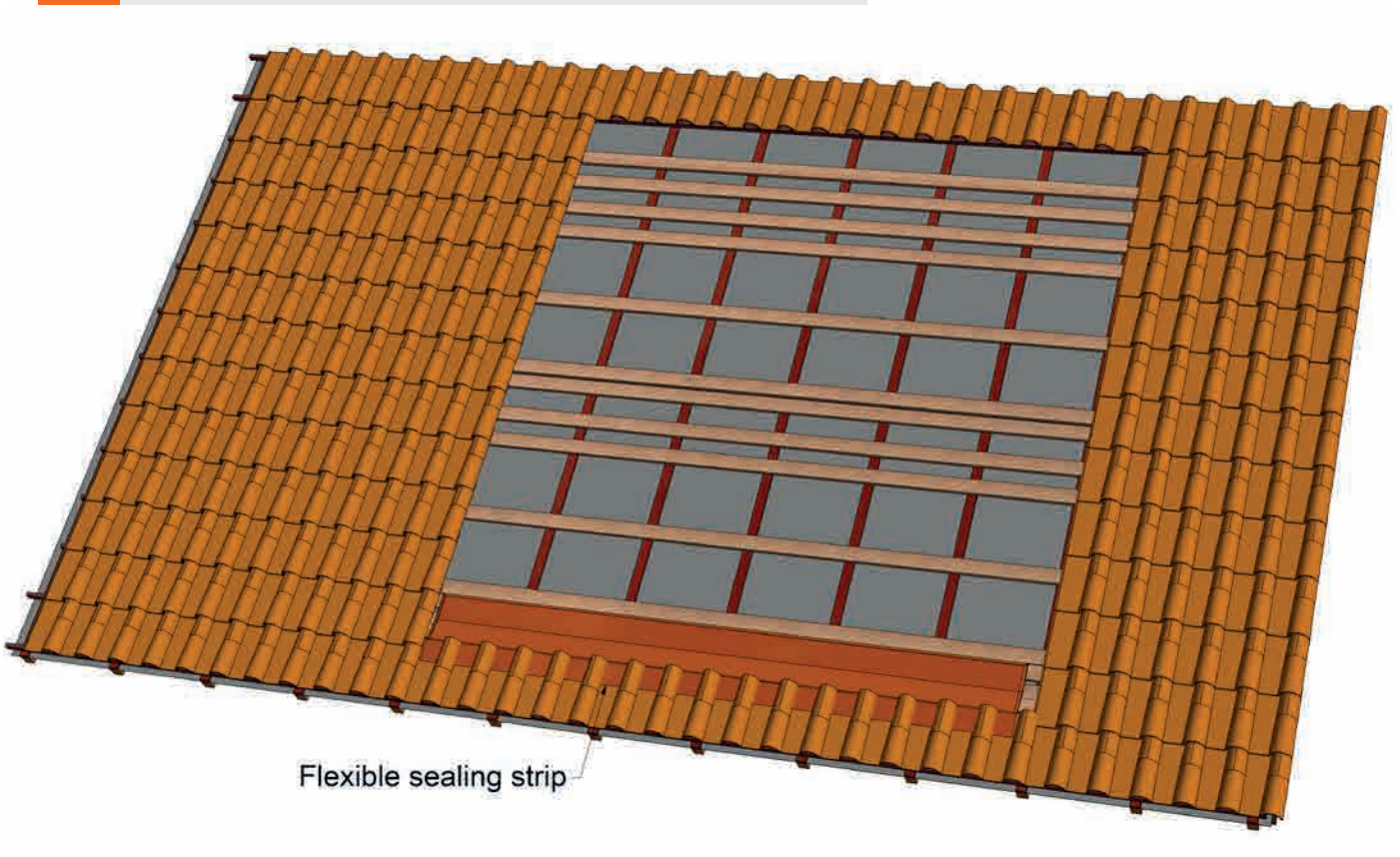
Example of lathing design for PORTRAIT panels with a reference height of 1,640 mm and 4 fixing brackets:



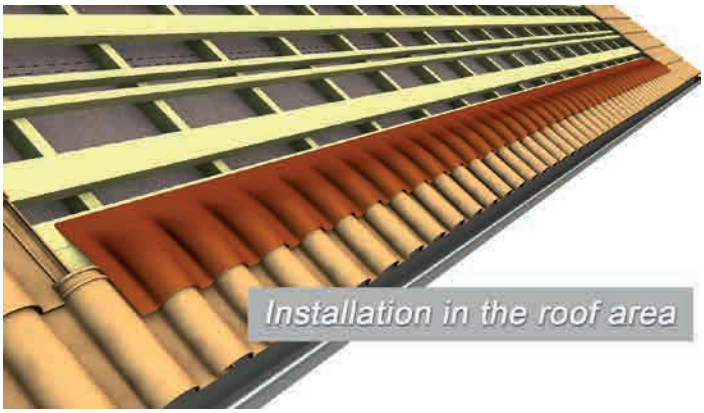
Example of lathing design for LANDSCAPE panels with a reference height of 992 mm and 4 fixing brackets:

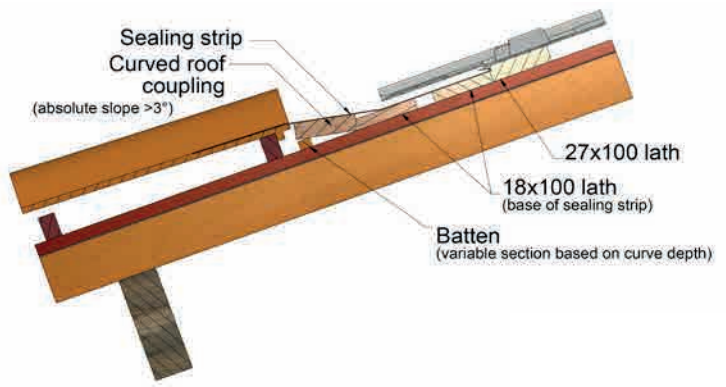


3.3 Low sealing strip installation



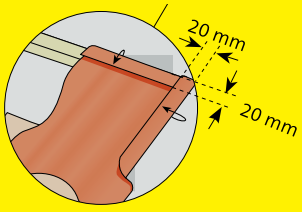
The sealing strip is laid out to link up with the bottom part of the roofing (PV field in the middle of the roofing).





"Cant strip" lathing is placed to adjust for the curving contour of the roof tile and provide a flat base for the sealing strip.

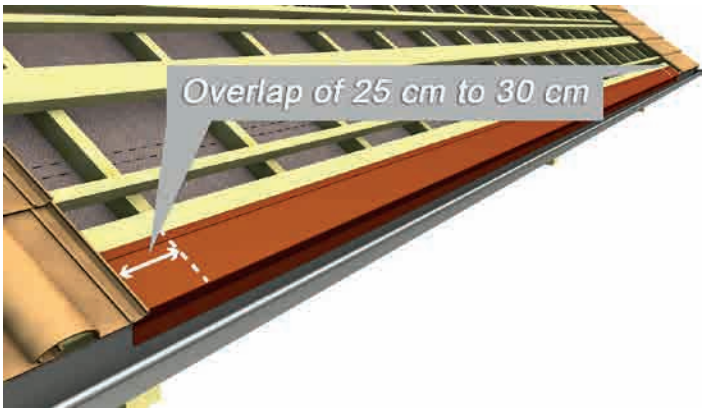
ATTENTION:
ALWAYS MAINTAIN A MINIMUM SLOPE OF 3°



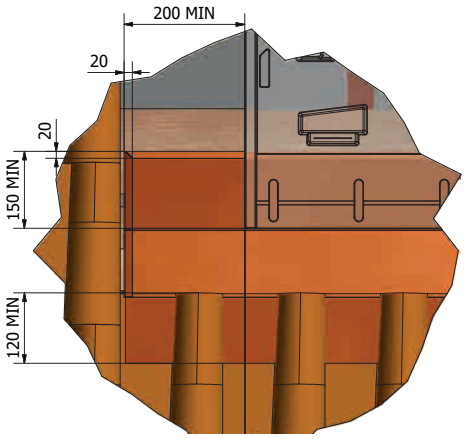
When installing the sealing strip on tiles with relief, make sure to press it down well so that it follows the roof tile's shape correctly. Make a 20-mm dart in the top part and sides to prevent water upwelling.

3. Implementation

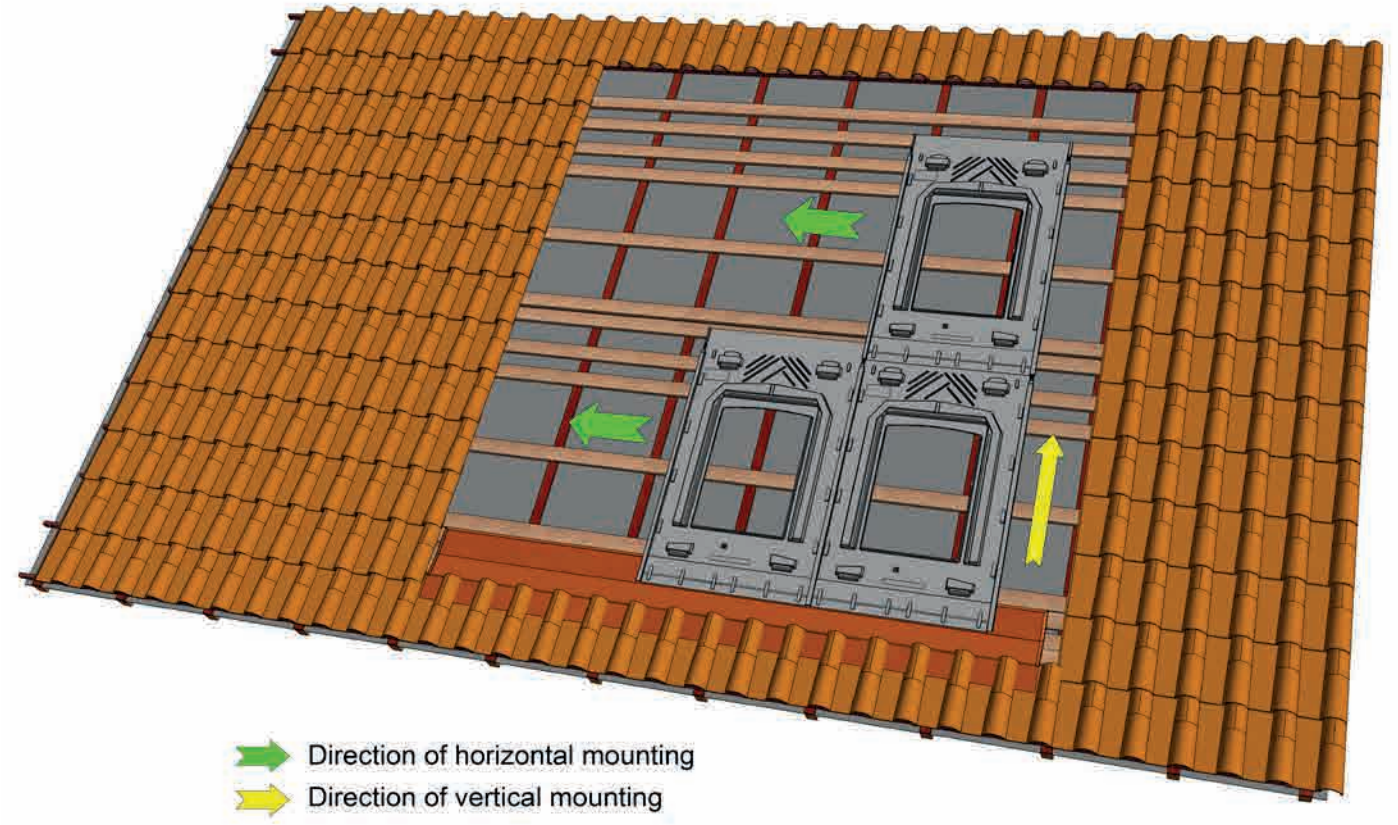
When installing all the way to the low edge, the sealing strip is laid out in such a way as to connect directly to the gutter.



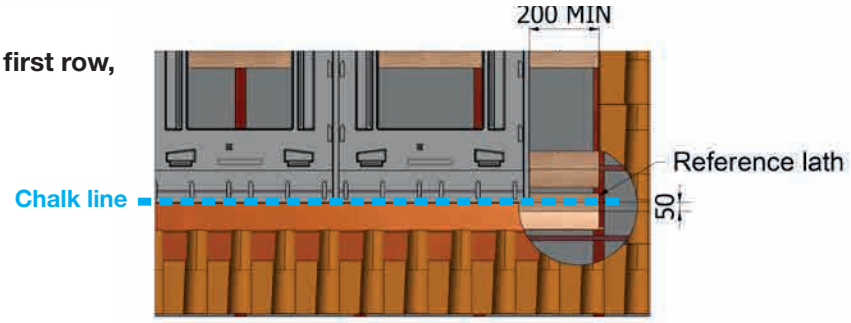
At any rate, the length and the width of the strip should be enough so that the following overlap dimensions are adhered to:



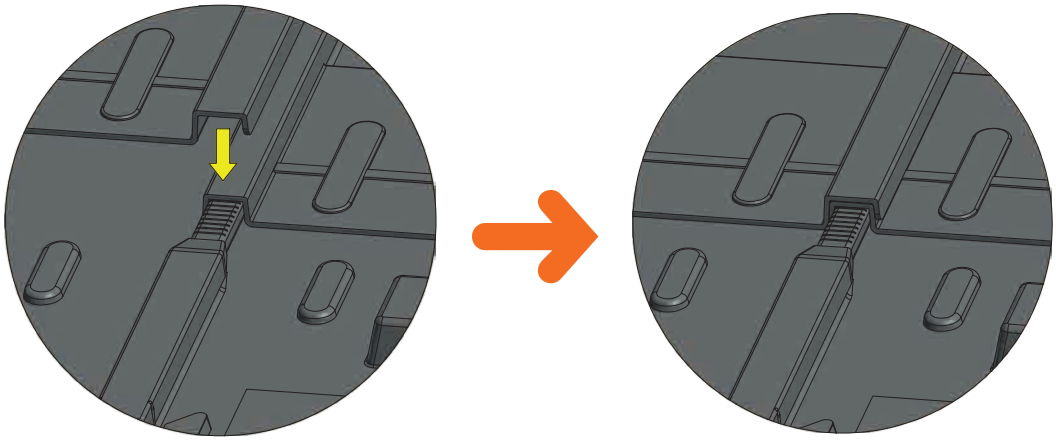
3.4 GSE Plates installation



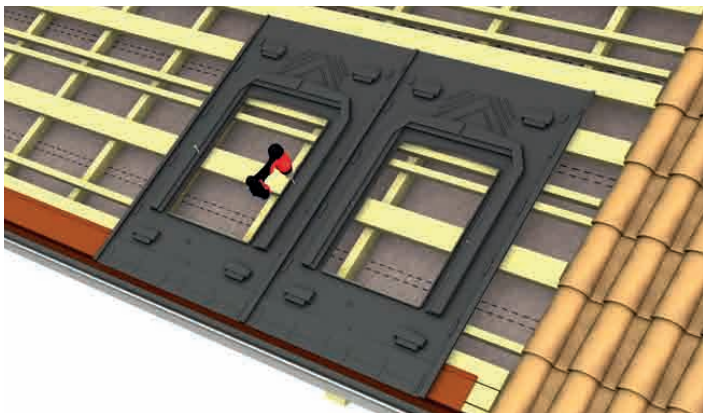
Draw a chalk line along the bottom of the first row, in the middle of the reference lath



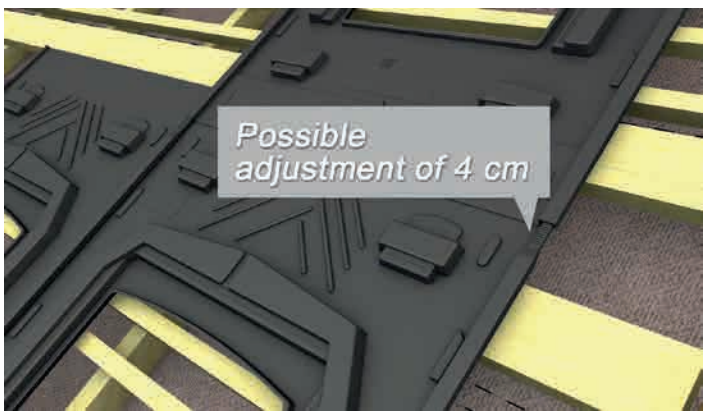
Nest the right panel over the left panel with the corrugations overlapping (left over right is possible – verify the nesting).



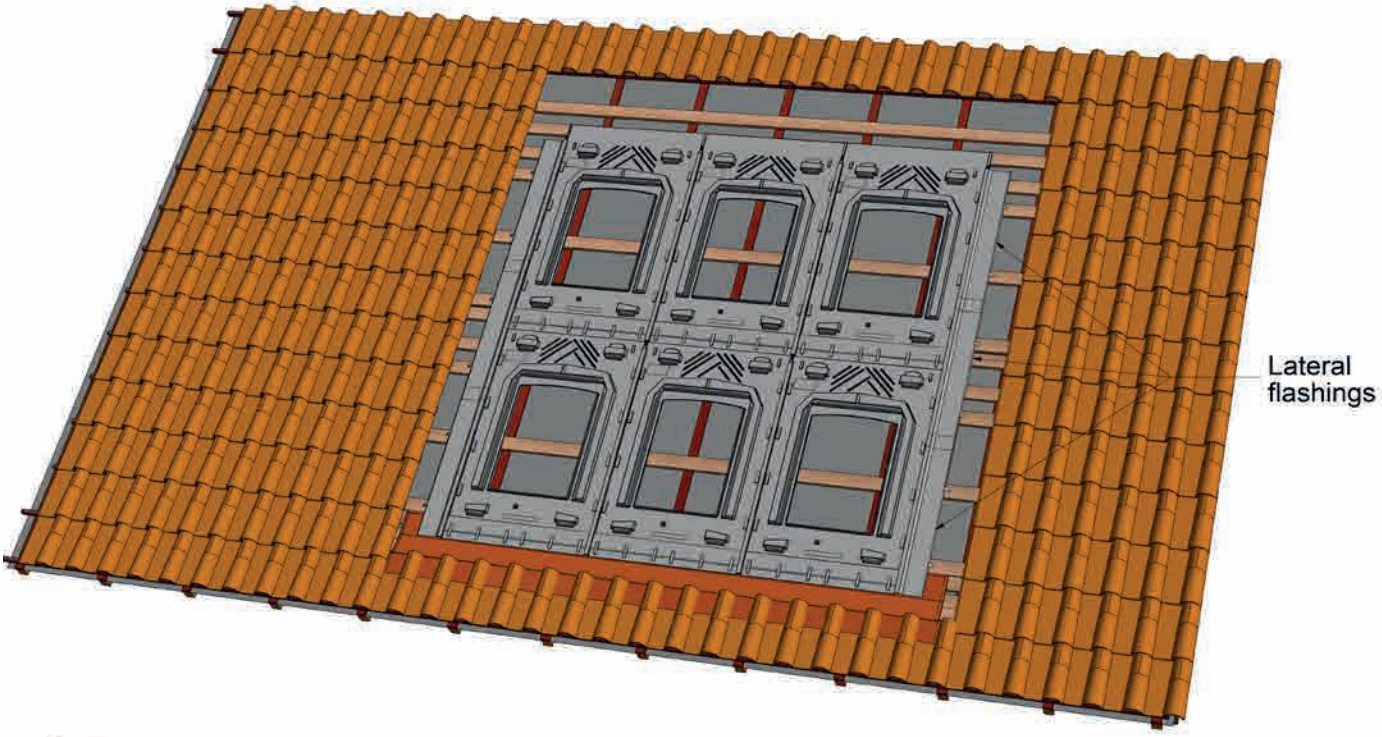
When installing all the way to the low edge, the sealing strip is laid out in such a way as to connect directly to the gutter.
Attach the panels only by the reference points.

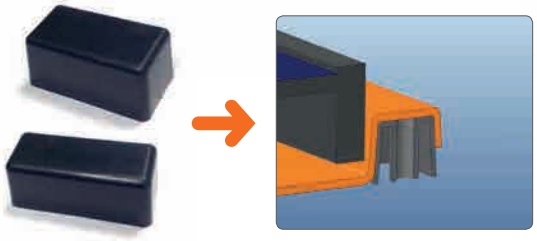


ATTENTION: WHEN INSTALLING THE SUBSEQUENT ROWS, ADJUST HOW ONE ROW COVERS THE OTHER USING THE SCALE BASED ON THE LENGTH OF THE MODULE (CF DEVICE)

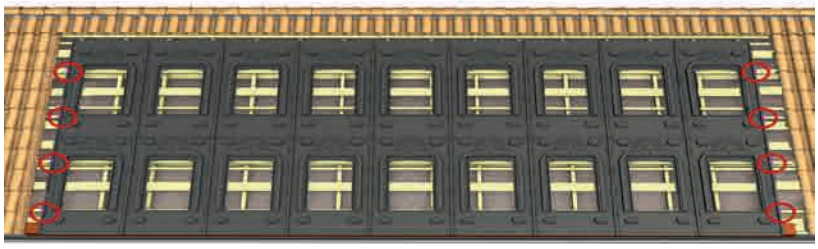


3.5 Side flashings installation



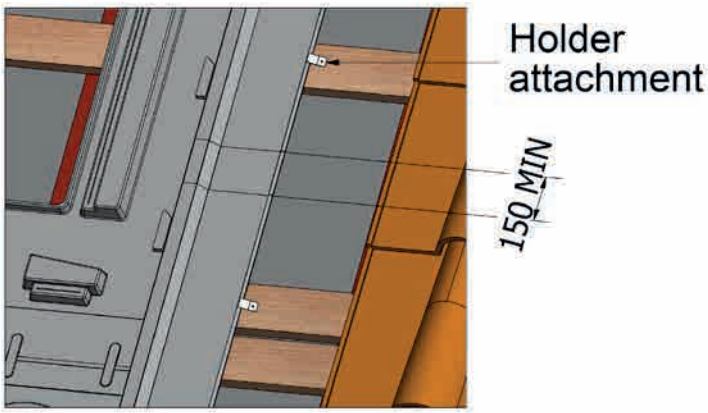


ATTENTION:
BEFORE INSTALLING THE LATERAL FLASHINGS, MAKE SURE TO PLACE THE PP BRACING BLOCKS AT THE FIELD ENDS, UNDER THE CORRUGATIONS, WHERE THE SINGLE BRACKETS ARE LOCATED.



TIPP:
Mark their position on the inner surface of the panel to identify them after positioning the lateral flashings.

• Place the lateral flashings of the low end of the first row of panel, up to 120 mm of the upper edge of the last row. The overlap between two parts of the lateral flashing will be at least 150 mm. Each will be held in place by at least 2 attachment hooks.



• **Carry out the pre-drilling using a wooden 10 mm drill bit on the 4 remaining attachment points of the GSE panel.**

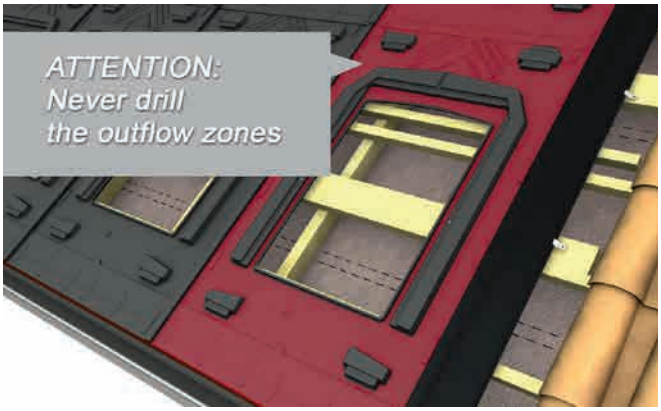
Tip: It is possible to pre-drill the expanding points of the panel before assembly on the roof. The plates are drilled individually (do not drill several panels at the same time).

Pre-drilling of supports: 4 attachment points

• **Screw the 4 attachment points of the panel**

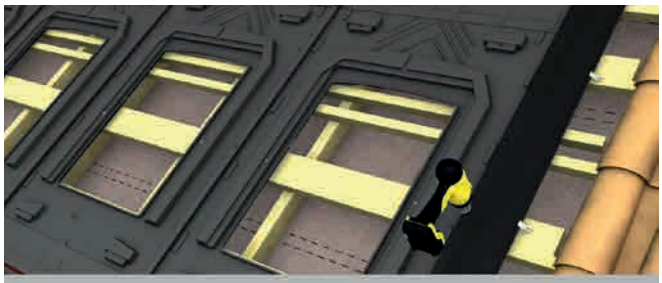
Screwing of GSE supports

Remember:
It is prohibited to drill in the outflow zones and at the high points of the GSE panel at the risk of compromising the integrity of the photovoltaic system and its impermeability.

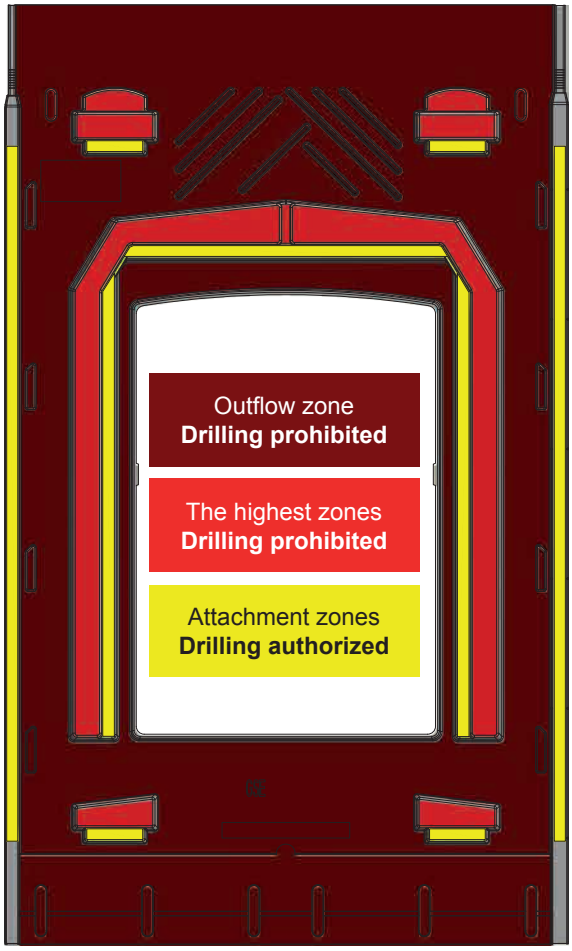


• **Then, pre-drill the attachment points of the fixing brackets.**

• **For single fixing brackets, pre-drill through the flashing, the panel's corrugation and the PP block.**



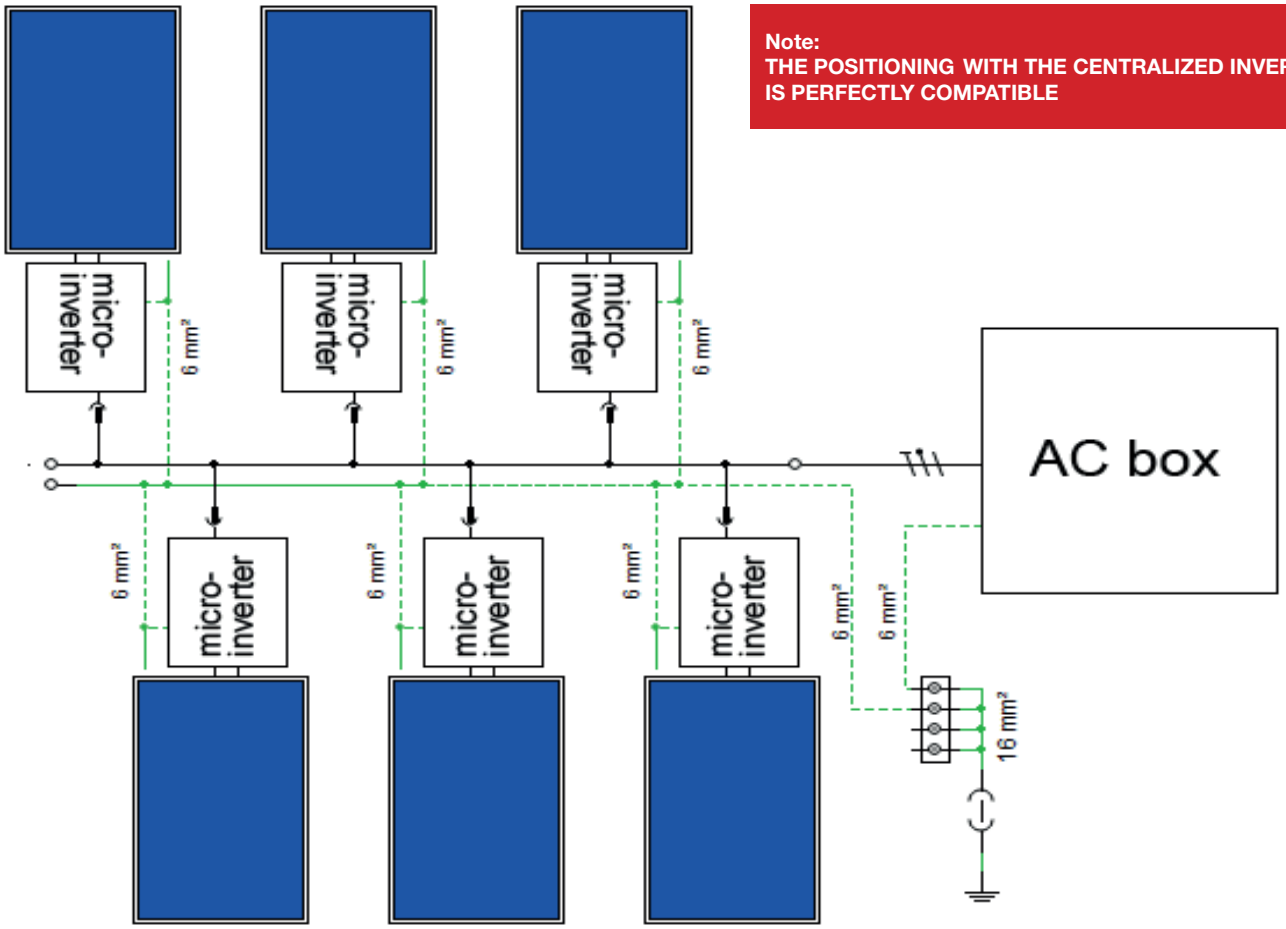
Pre-drilling of GSE supports + flashings + reinforcement shims



3.6 PV modules installation

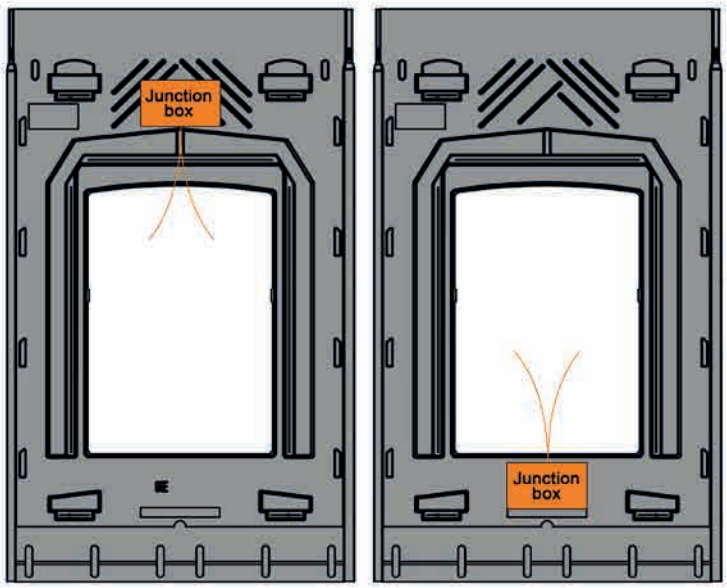
3.6.1 Cabling preparation

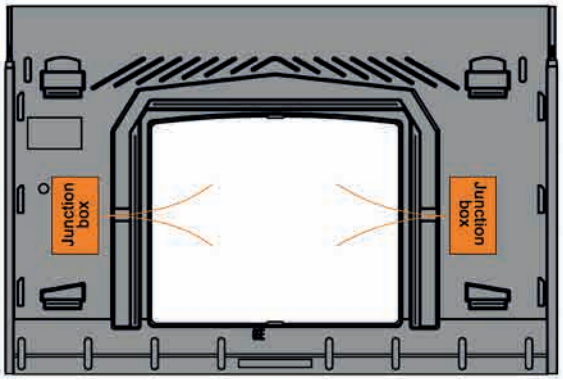
Example of wiring diagram with installation of ENPHASE micro-inverters:



Note:
THE POSITIONING WITH THE CENTRALIZED INVERTER IS PERFECTLY COMPATIBLE

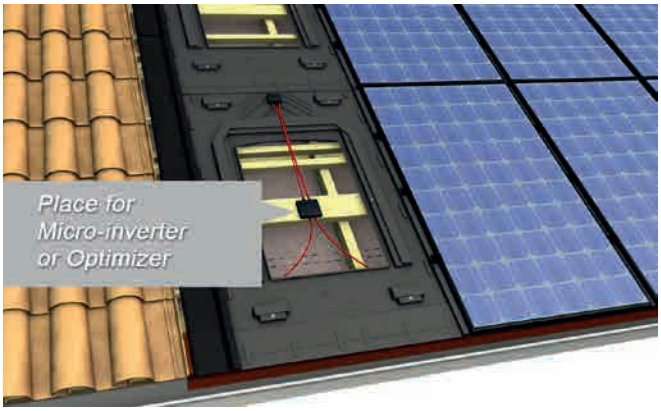
Position the module in such a way that the cables of the junction box pass through the designated space.





TIP:
Some module manufacturers allow portrait-type positioning with the junction box going downwards. Please refer to the label instructions.

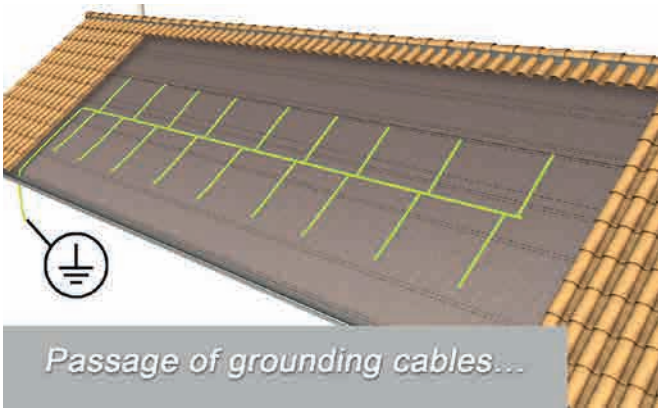
When using micro-inverters, attach them to a lath at the level of the GSE panel's central hole.



Authenticated compatibility for:

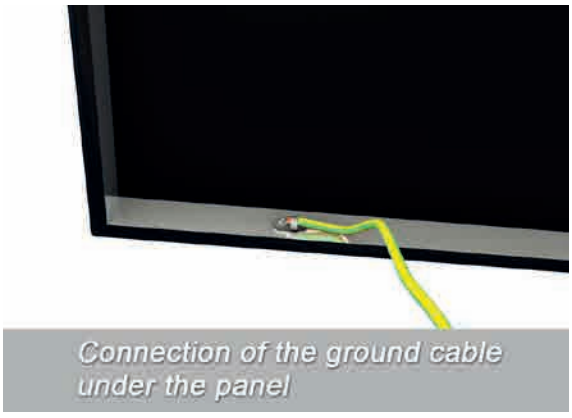
ENPHASE solaredge Tyco Electronics APsystems ALTENERGY POWER

Passage of grounding cables:



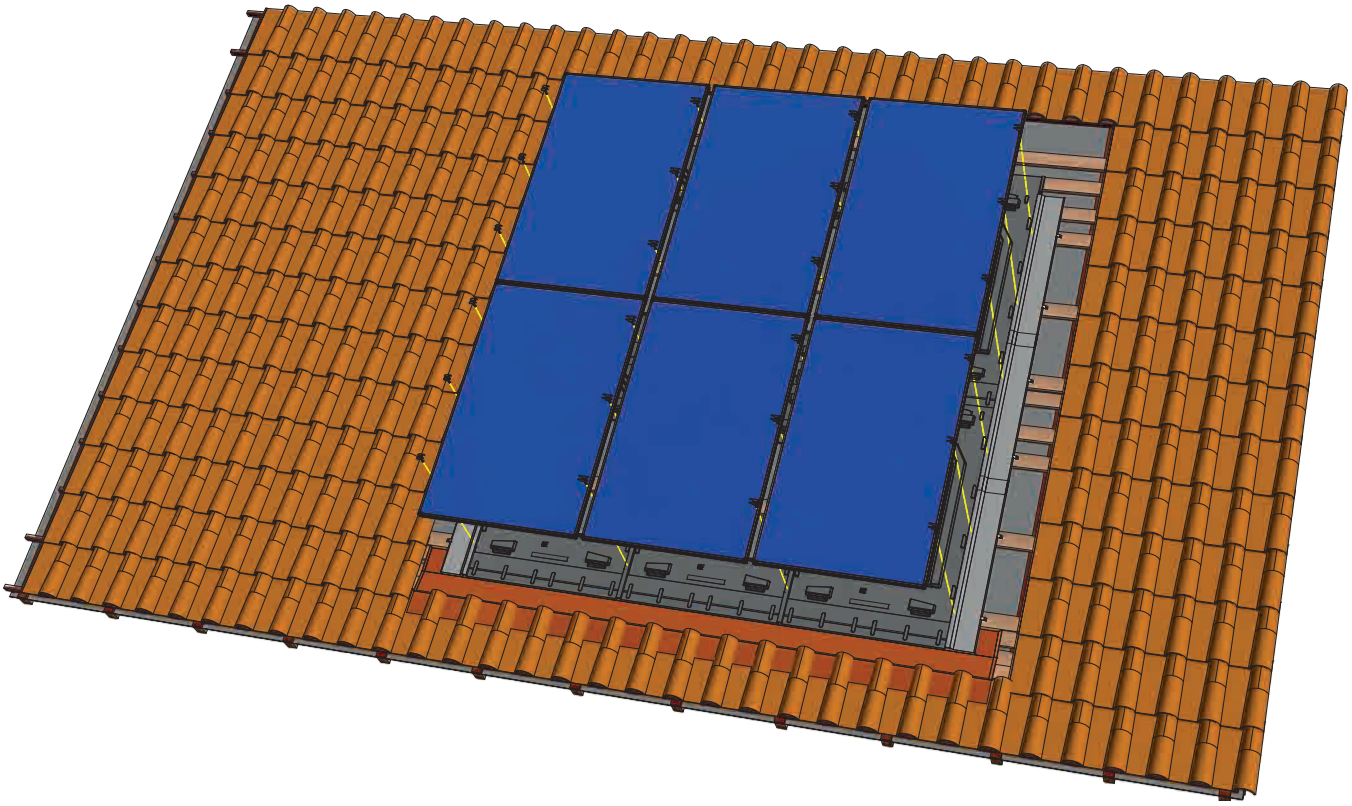
ATTENTION:
WHEN SETTING UP THE CABLES, MAKE SURE YOU DO NOT CREATE ANY INDUCTION LOOP, IN ACCORDANCE WITH UTE GUIDES C15-712

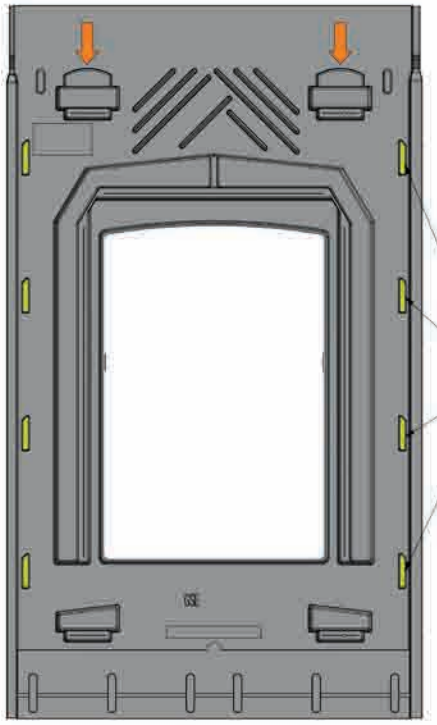
Grounding of the frame of the modules and of the micro-inverter (please refer to the implementation requirements of manufacturers):



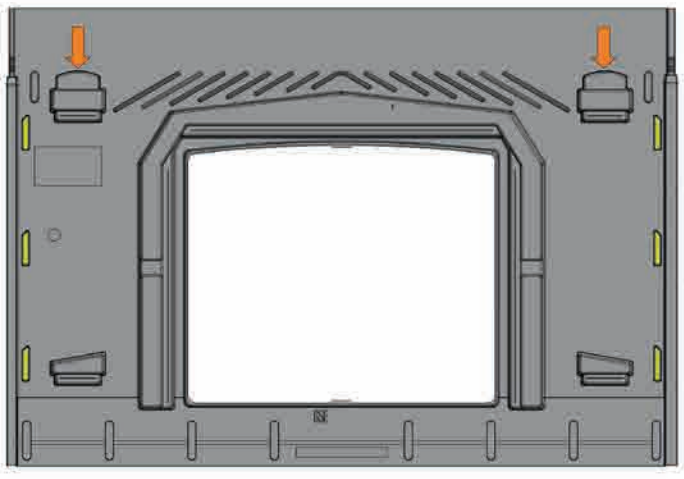
ATTENTION:
MAKE SURE THAT ALL CABLE PASSAGES ARE KEPT ON THE FRAME USING CABLE CLAMPS.

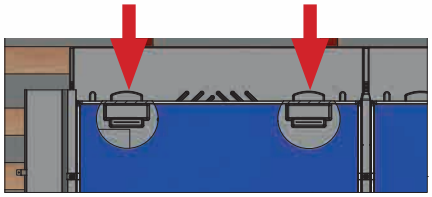
3.6.2 Modules attachment





Position the modules in such a way that they are resting on the support pads (yellow) and abut against the upper pads (orange arrows).





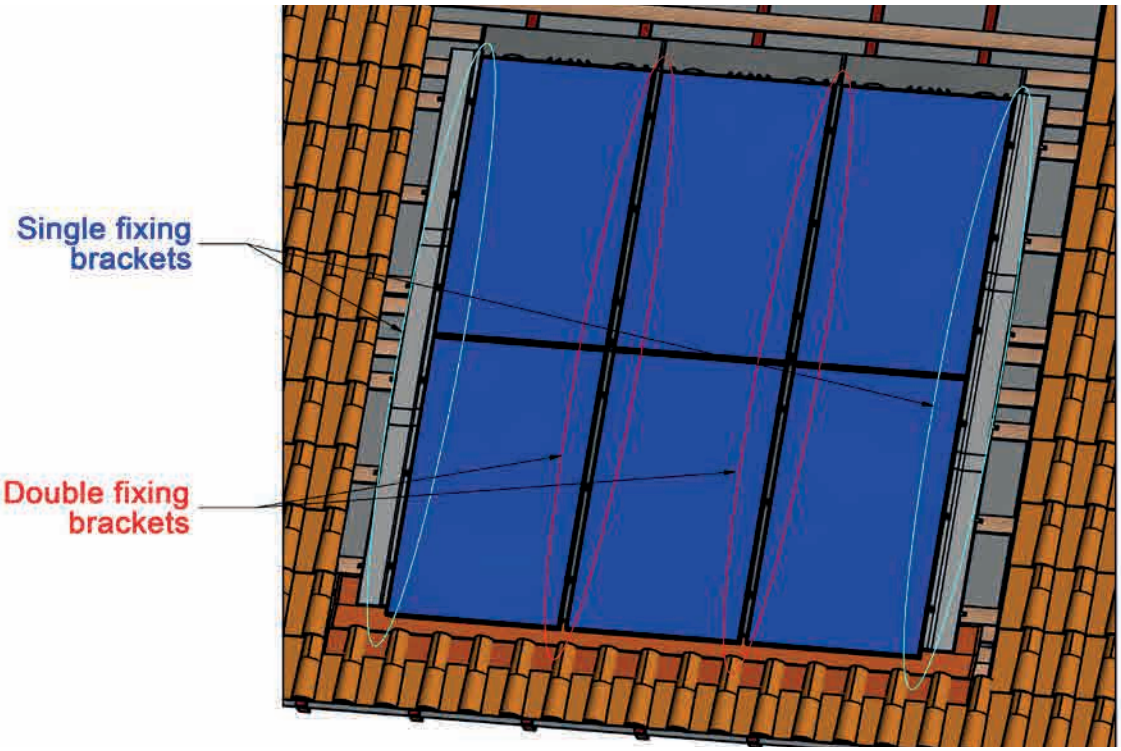
ATTENTION:
SEE TO IT THAT THE MODULES ARE WELL CENTERED IN RELATION TO THE PANEL SO THAT THE GRIP OF THE FIXING BRACKETS IS THE SAME ON BOTH SIDES.
THE MODULE FRAME MUST ABUT AGAINST THE UPPER PADS OF THE PANEL TO PREVENT SHIFTING.

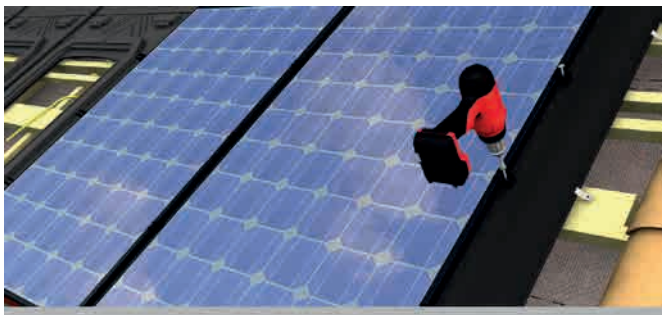
Affix the EPDM foam gasket under the fixing brackets and pre-drill them, tightening and loosening the GSE screw to remove material.

ATTENTION:
SEE TO IT THAT THE UNDERFACE OF THE FIXING BRACKET IS VERY DRY AND HAS NO DIRT TO ENSURE OPTIMAL BONDING OF THE JOINT.

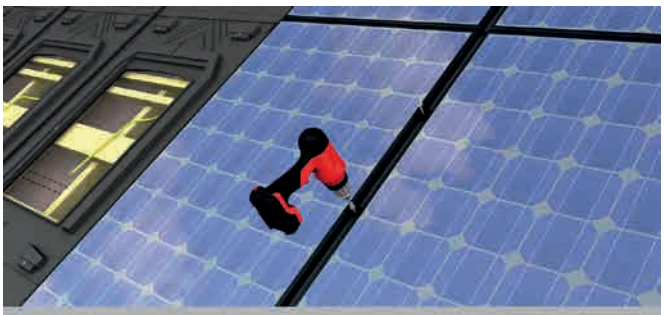
Bonding of the EPDM joint under the fixing bracket

Attach the modules by tightening the fixing brackets at the designated positions.



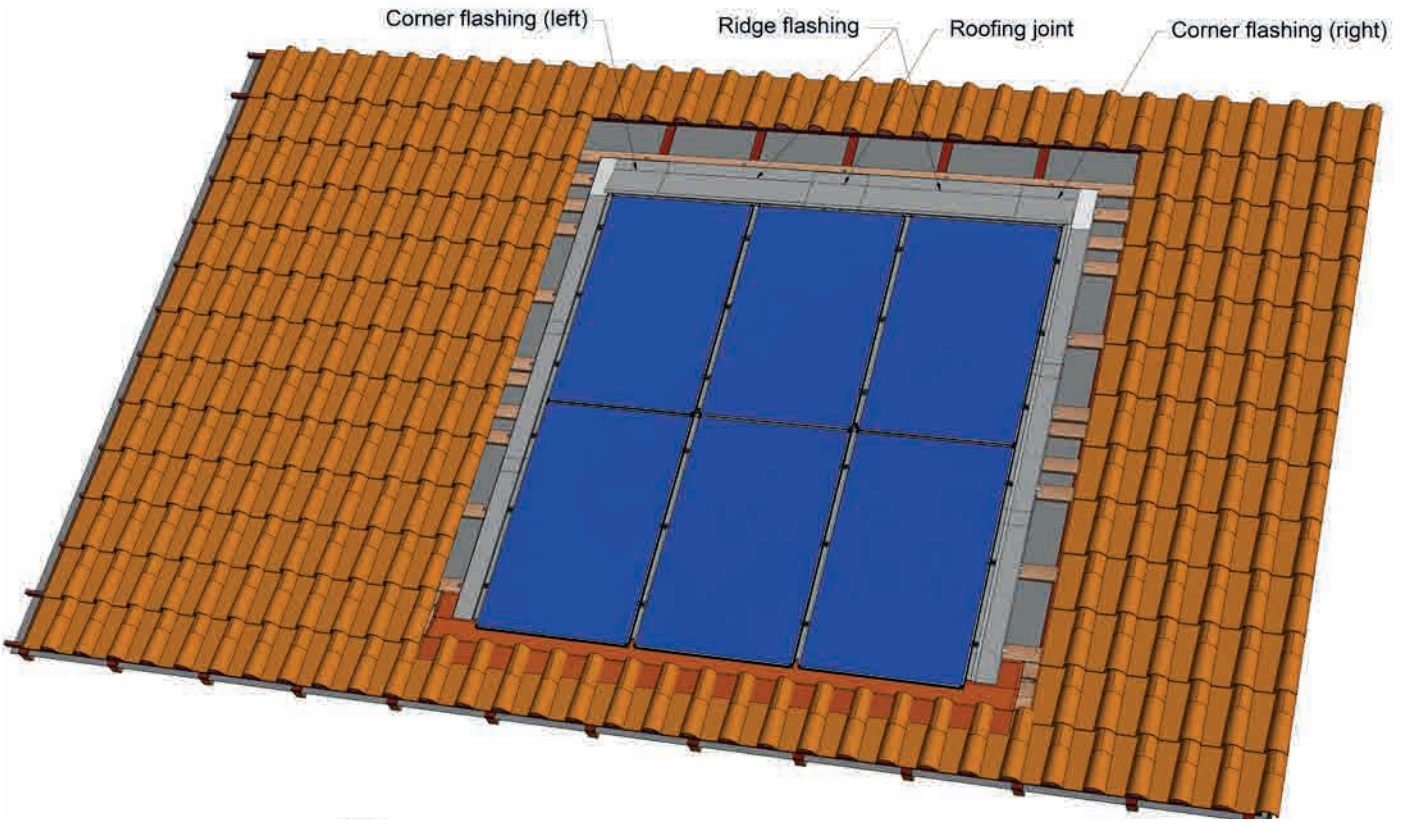


Installation of the single fixing brackets



Installation of the double fixing brackets

3.7 Ridge flashings installation



ATTENTION:
THE RIDGE FLASHING PIECE IS DESIGNED WITH A SLOPE OF 14° TO ALLOW WATER FLOW ABOVE THE LAST ROW OF MODULES. IT IS THEREFORE, ESSENTIAL FOR THE INSTALLER TO ENSURE THAT THE ROOF SLOPE IS SUFFICIENT TO PREVENT WATER STAGNATION ACCORDING TO THE ROOFING DTU.

IN BORDERLINE CASES, WE RECOMMEND THAT YOU EITHER USE A THICKER SUPPORT BOARD TO DECREASE THE COUNTER-SLOPE OR TO REPLACE THE RIDGE FLASHINGS WITH A FLEXIBLE FLASHING STRIP (SEE BELOW).

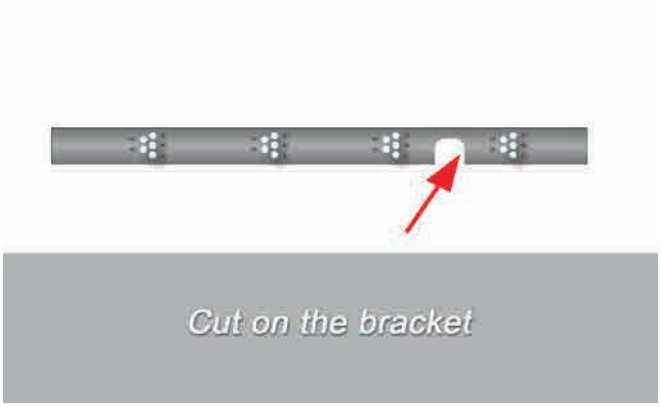
Join the ridge flashings and the edge brackets using pop rivets, taking care that you adjust the module frame thickness.


Pop riveting

Position the assembly so that the module frame thickness fits between the edge bracket and the ridge flashing. The gap between the ridge flashings should not exceed 160 mm.

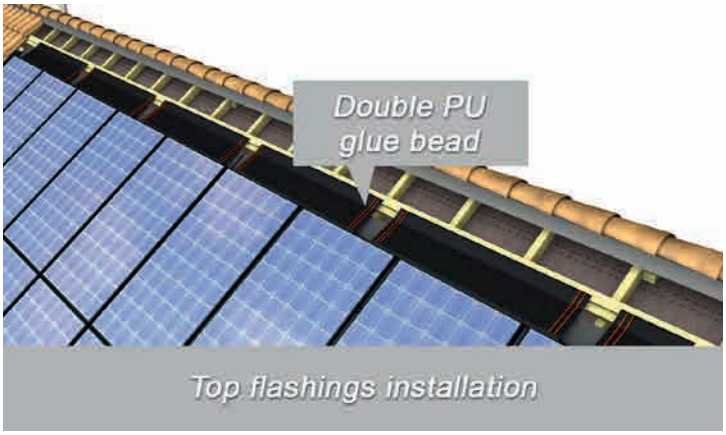
Perfect adjustment of the assembly

Make cuts on the edge bracket at the position of the GSE panel corrugations.

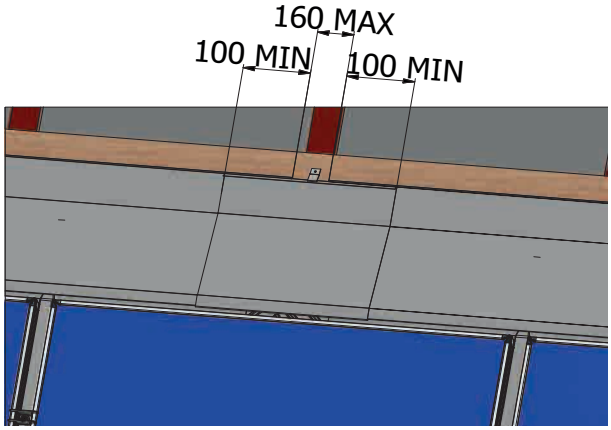


Cut on the bracket

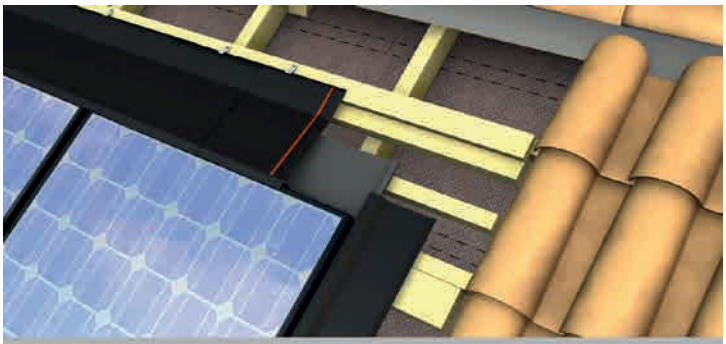
Place the roofing connecting pieces, having created beforehand two PU glue joints on the covered ridge flashing area. The connecting piece must overlap with the ridge flashing for at least 100 mm.



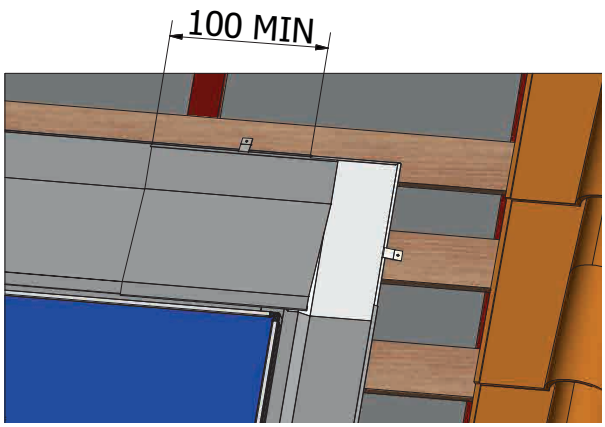
Top flashings installation



Place the roofing connecting pieces, having created beforehand two PU glue joints on the covered ridge flashing area. The connecting piece must overlap with the ridge flashing for at least 100 mm.

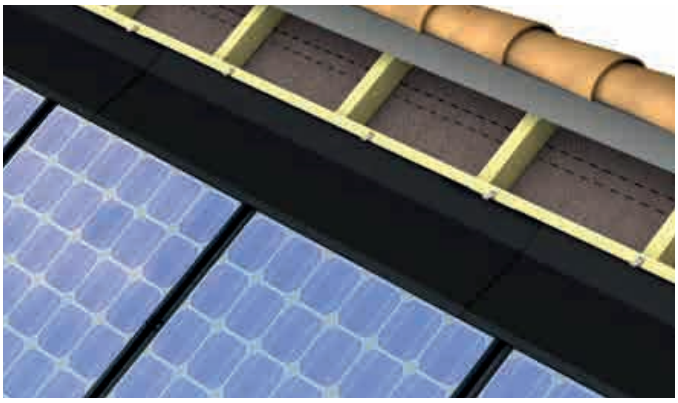


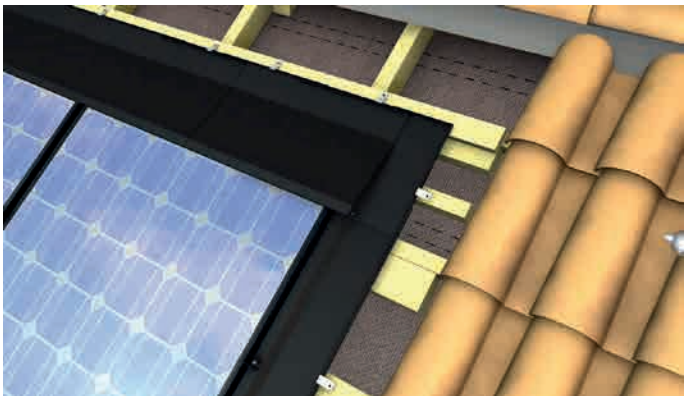
Flashing brackets installation



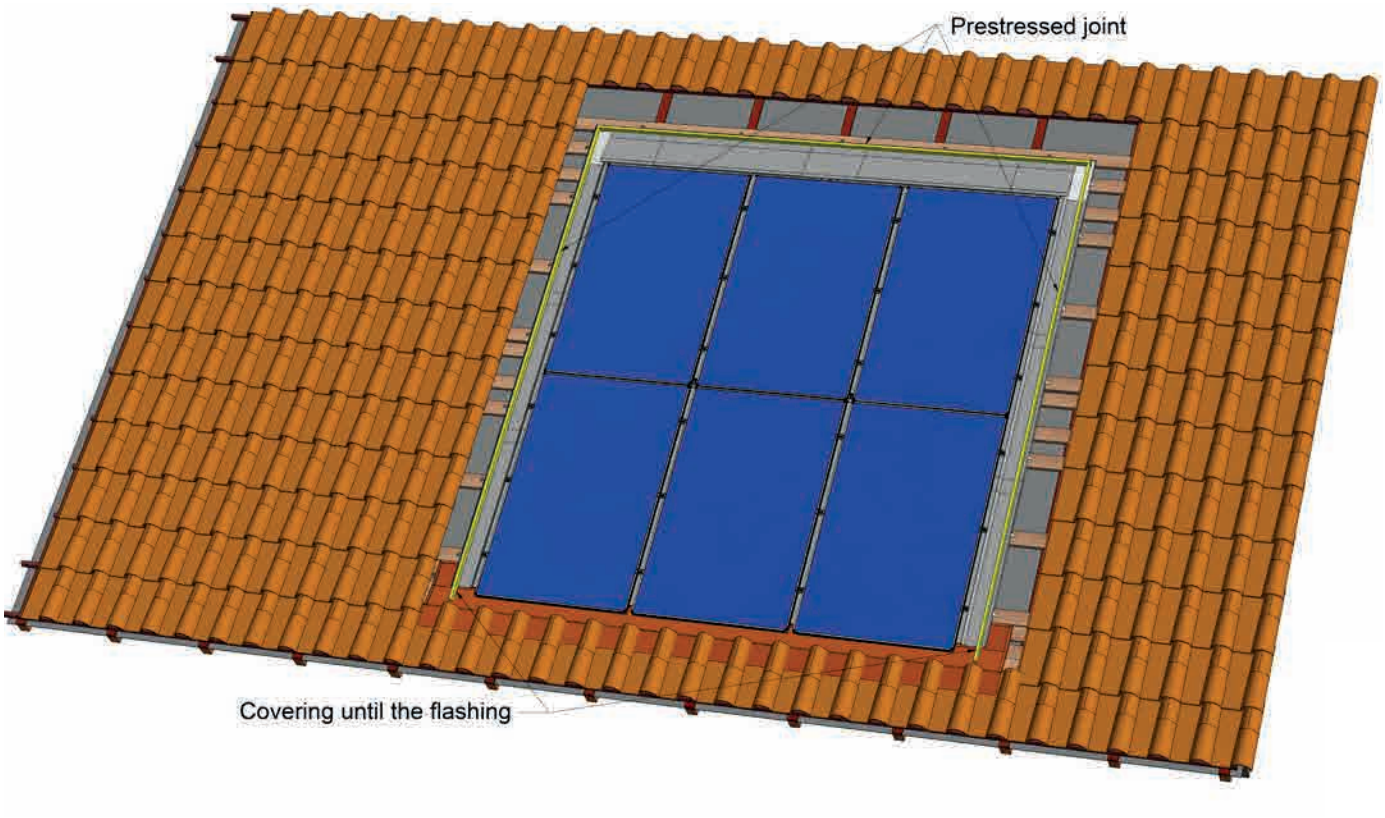
3. Implementation

Attach all flashings to the frame using attachment hooks (at least 2 per piece).

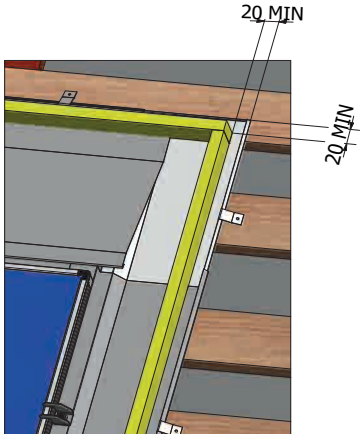




Place the prestressed joint on the flashings around the area on the lateral and upper parts.

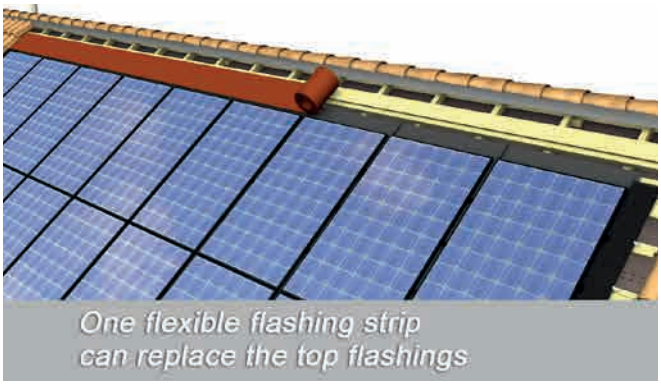


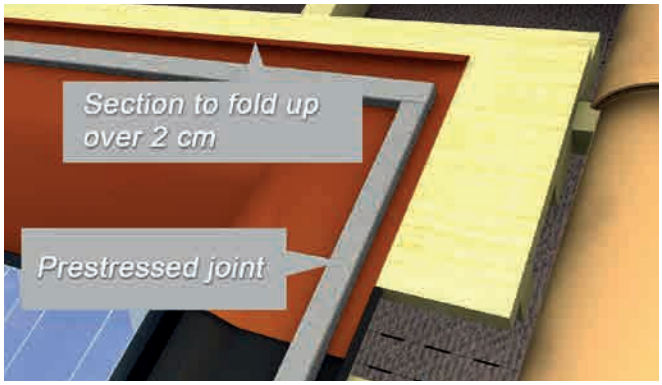
The joint must reach the bottom of the flexible flashing strip to prevent any potential infiltration of water or solid particles.



OPTION: REPLACING RIDGE FLASHINGS WITH A FLEXIBLE STRIP

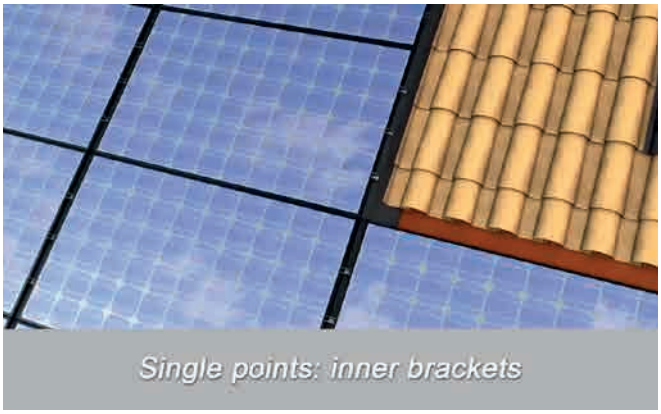
It is possible to install a flexible flashing strip or the like to establish the connection with the upper section of the roofing. Fashion a 2-cm dart in the upper and lateral parts of the strip to prevent any water upwelling.

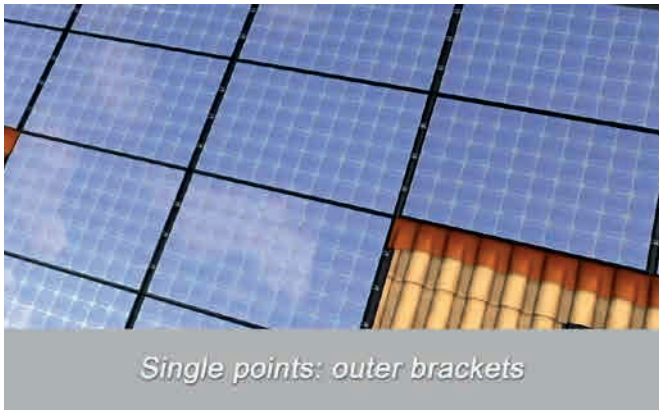

One flexible flashing strip can replace the top flashings

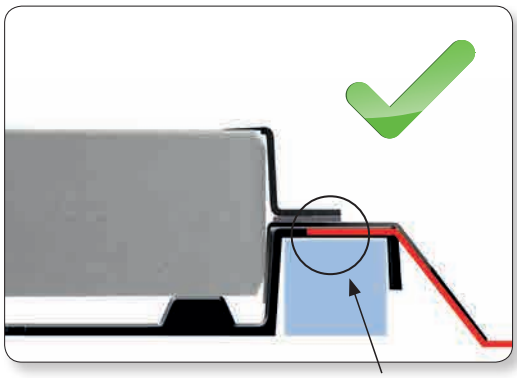


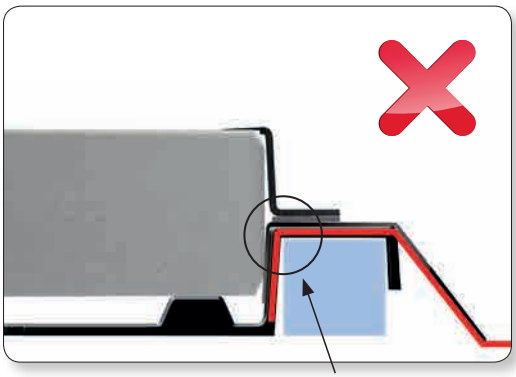
3.8 Specific case : PV field with inner/outer brackets

In the case of non-rectangular PV fields, inner and outer brackets must be connected to the roofing using a flexible flashing strip compliant with the DTU.


Single points: inner brackets


Single points: outer brackets

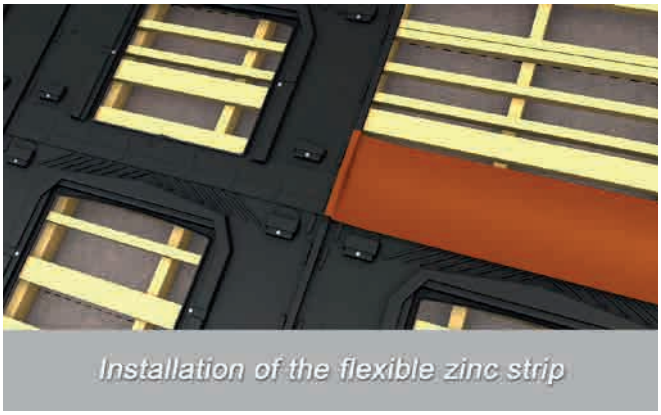

Discontinue the flashing strip on top of the corrugation

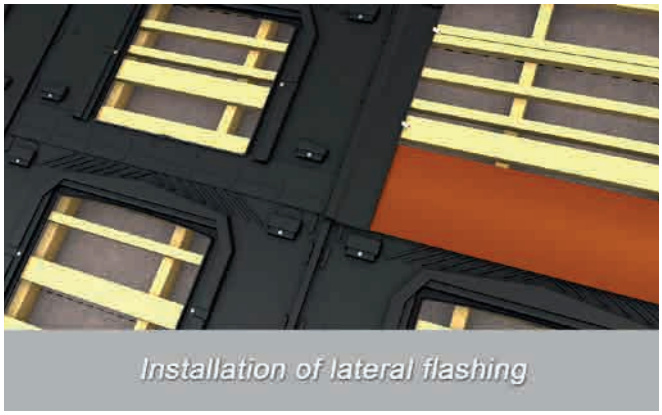

Risk of tearing

ATTENTION: IN THE TWO CASES, THE FLEXIBLE STRIP CAUGHT BETWEEN THE FLASHING AND THE CORRUGATION OF THE GSE PANEL MUST BE POSITIONED ON TOP OF THE CORRUGATION TO PREVENT THE RISK OF TEARING.

3.8.1 Inner Bracket (L-Shaped)

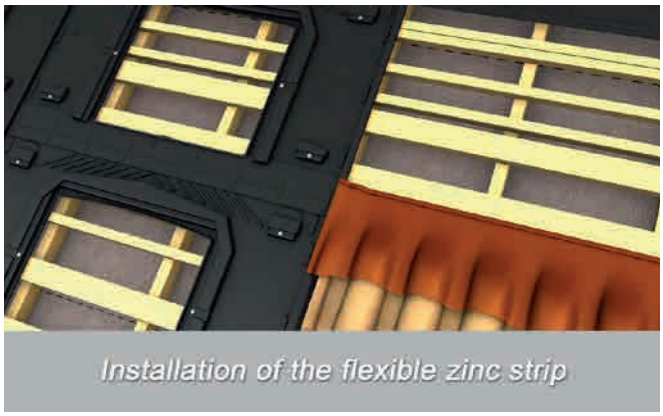
Place the flashing strip by covering the lower-row panels up to the corrugation of the adjoining panel, then cover the strip with the lateral flashing.


Installation of the flexible zinc strip

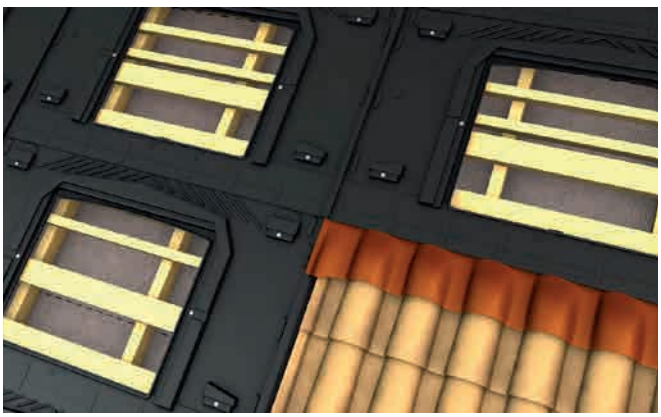

Installation of lateral flashing

3.8.2 Outer Bracket (T-Shaped)

Place the lateral flashing on the lower-row panel. Reposition the adjoining tile column to cover the lateral flashing, then place the flashing strip so that it overlaps with the last row of tiles, ensuring that there is a 2-cm dart in the upper section.


Installation of the flexible zinc strip

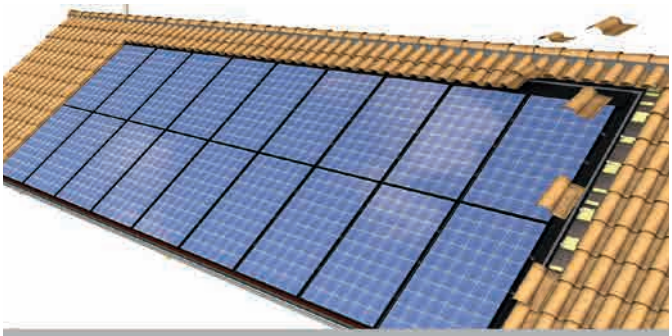
Then, position the GSE panel so that it is overlapping with the flashing strip.



ATTENTION:
FOR THE OVERLAP, FOLLOW ROOFING DTU RULES AS WELL AS THE REQUIREMENTS IN SECTIONS 3.3 AND 3.7 OF THIS DOCUMENT.

3.9 Connection to the roof covering

Reposition the lateral and upper sections of the roofing elements to establish the connection with the current portion of the roof.



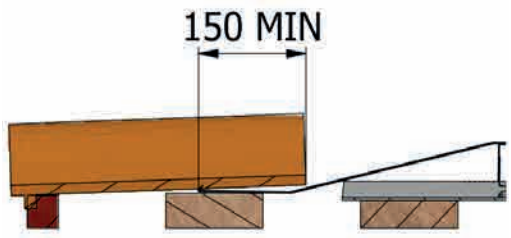
Installation of the post-cut tiles

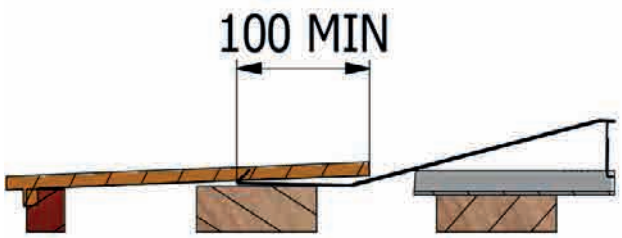
It may be necessary to recut the tiles to ensure an effective overlap compliant with DTU rules. These elements must be attached mechanically, as described in the roofing DTUs.

Cutting of left flashing tiles

Cutting of top flashing tiles

TIP:
YOU CAN USE DOUBLE TILES OR HALF TILES FOR THE LATERAL SECTION CONNECTION.





The upper part of the roof tile must rest on the ridge flashing with enough overlap to meet the requirements of the roofing DTUs.

4. Maintenance and servicing

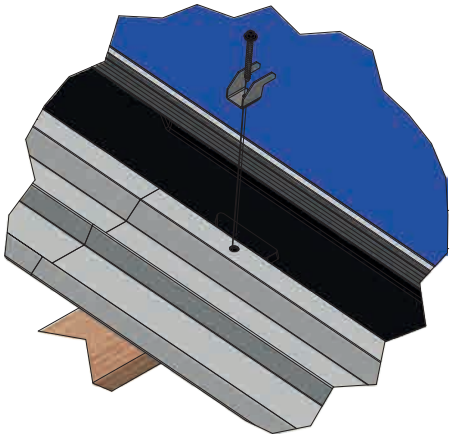
4.1 Verification

It is important to check once a year whether sheets and/or other elements have gone under the photovoltaic system or between the panels. You can use compressed air bellows to remove elements that have gone under the photovoltaic system. Do not use solvents to clean the polypropylene supports.

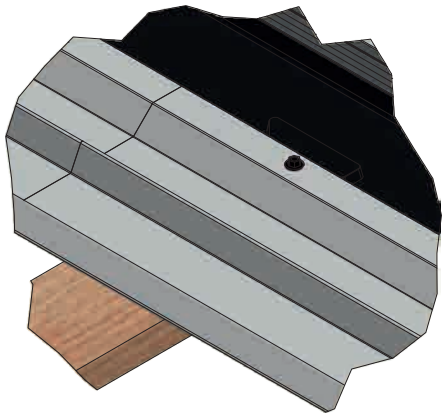
We recommend a maintenance contract that includes one annual visit to check: production, electrical part, panels, panel supports, attachments, prestressed joints, sealing strip.

4.2 Module replacement

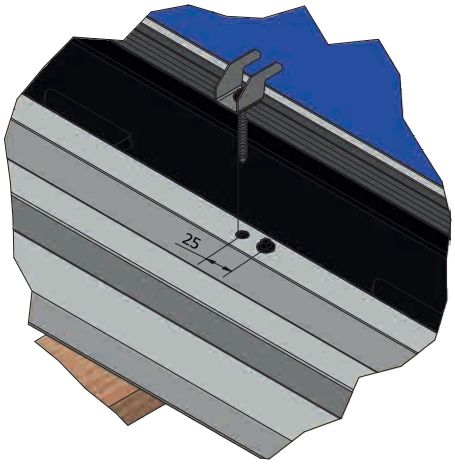
De-energize the PV field from the AC box and proceed as follows:



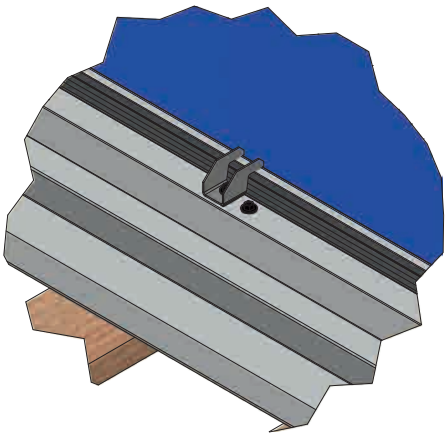
1• Unscrew the fixing bracket, remove the module and remove the underlying shim.



2• Screw one CAPINOX screw at the location of old hole, having placed beforehand a new polypropylene shim under the corrugation if this involves a field edge.



3• Make a new 10 mm pre-drilled hole offset by 25 mm above the old position.



4• Place the module and attach the new assemblies (fixing bracket + EPDM joint + CAPINOX screw).

5. Assistance and contact

5.1 Training session

The GSE Integration team recommends technical training on the product which can include practice on demonstration models upon your request, provided there are enough participants.

For information, please contact your sales manager or your distributor.

5.2 Technical Assistance

TECHNICAL SUPPORT IS AVAILABLE TO YOU FROM MONDAY TO FRIDAY FROM 8 A.M. TO 6 P.M.

GSE Intégration

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93400 SAINT OUEN (France)
Tel.: +33(0)1.70.32.08.00
E-Mail: **contact@gseintegration.com**

6. Certifications and warranties

6.1 Technical assessments

ETN n°BT130003 ✓ ALPES CONTROLES

Avis Technique n°21-16/57 ✓ CC FAT AVIS TECHNIQUE

MCS 012 – BBA 0156 BBA CERTIFICATE BBA 0156

6.2 Fire Test

BRoof T1 ✓ Exova

BRoof T3 ✓

BRoof T4 ✓

GSE IN-ROOF SYSTEM is a patented development project
of GROUPE SOLUTION ÉNERGIE

GSE Intégration

Your distributor:

www.gseintegration.com