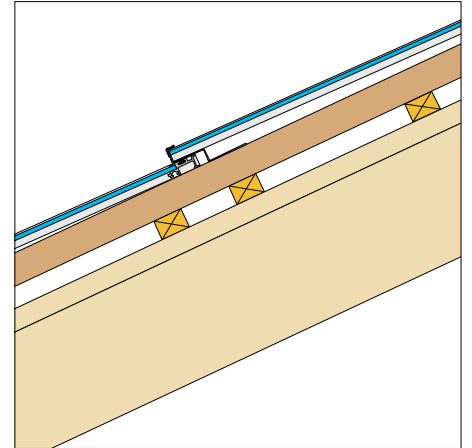
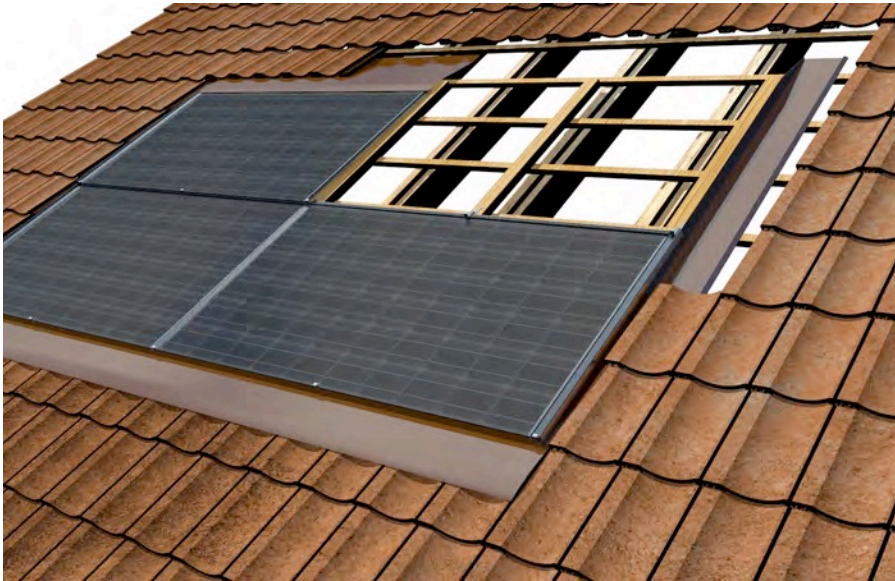


MODULES SOLAIRES PV

Système de montage
Modules intégrés en toiture



Solrif

Les modules photovoltaïques cadrés solrif permettent de remplacer la couverture traditionnelle de façon esthétique et en toute harmonie avec le reste de la toiture,

Le système s'adapte aussi bien aux nouvelles constructions que lors de travaux de rénovations.



Intégré

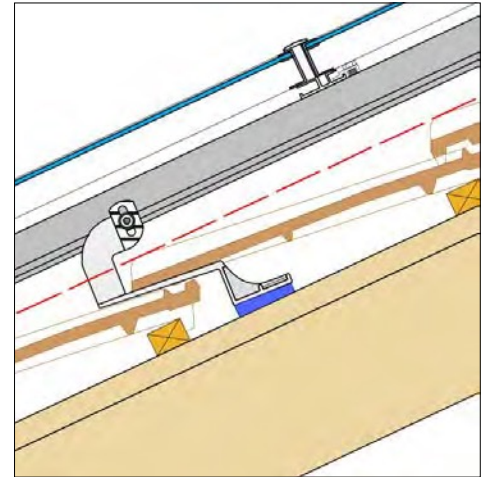
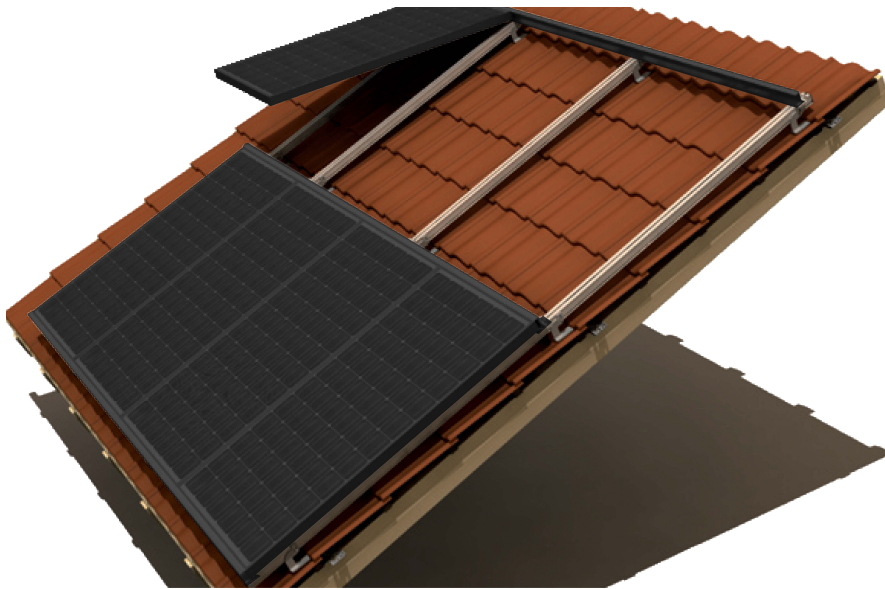


Oriente-
portrait



MODULES SOLAIRES PV

Système de montage rail H
Modules posés sur toiture



Rail H

Le système ayant fait ses preuves depuis plus de 10 ans. Les géométries de profilés exactement adaptées à toutes les hauteurs courantes de cadre de panneau et les accessoires nécessaires permettent un montage simple et rapide sur presque tous les toits et sur les façades. La technique d'insertion rend l'ajustage et le vissage des panneaux superflue. Le résultat est une surface d'installation toujours homogène et séduisante sur le plan esthétique, et ce, même en cas de constructions de toit inégales. Le montage des panneaux sans déformation évite les dommages au niveau du verre et facilite les travaux de maintenance.



Un-roof



Orientation
portrait



Orientation
landscape



POSSIBILITÉS D'APPLICATION



pour panneaux photovoltaïques encadrés courants des fabricants et des technologies les plus divers

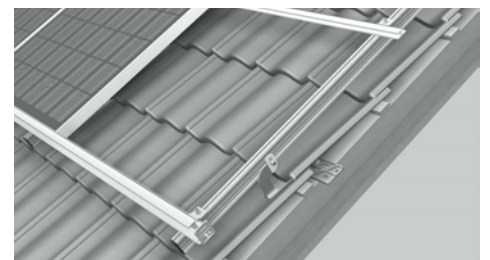


sur toits en pente et toits terrasse et sur façade pour les portées typiques de 1,20 à 1,70 m



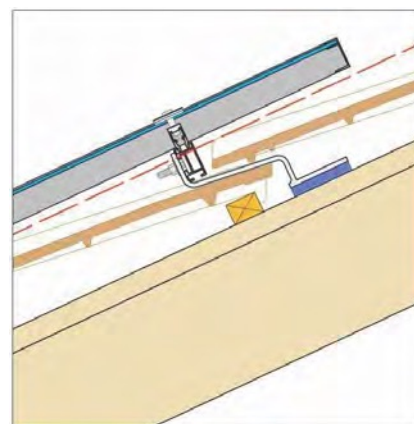
en assemblage en croix stable (pour la plupart des types de toit en pente) ou en construction économique à couche simple (toits en tôle)

avec une conception statique sûre pour des conditions de charge selon DIN (jusqu'à la zone de charge de neige 3, jusqu'à la zone de charge de vent 4, jusqu'à une hauteur de bâtiment de 25 m)



MODULES SOLAIRES PV

Système de montage Alpha+ Modules posés sur toiture



Alpha+

The Alpha+ system is a robust mounting system designed and optimized for exceptionally fast and easy installation of PV modules on pitched roofs. Mounting Systems' patented Clickstone technology, internal and external splices, multiple rail options, and extensive pre-assembly speed installation while enhancing system safety and reliability.

Unlimited flexibility

Multiple rail options meet the demands for any project with the 5/40, 10/48, and 13/52 rails. Depending on project specifications, the 10/48 and 13/52 rails are compatible in either Shared Rail or Standard Rail configurations for ultimate design flexibility whereas the lightweight 5/40 rail allows for easy transportation and installation onto the roof. Bond rails using the traditional external splice or the new tool-free, internal structural splice for easy bonding and a simplified installation.

Significant savings

Alpha+ has been specifically designed to minimize installation times. Labor is decreased by click, set, and done Clickstone technology on all module clamps. Shared rail configurations can drastically increase savings by reducing roof penetrations and material use.

Aesthetically Pleasing

The Alpha+'s improved design provides vertical adjustability to help compensate for roof irregularities and to make leveling the PV array easier. Black painted rails as well as an optional wind skirt are also available for enhanced aesthetic appeal. Mounting Systems' Flashing provides discrete and watertight connection to the roof structure.

Structural reliability

Alpha+ is ETL listed as a Class A Fire Rated system with Type 1 and 2 modules. Fully integrated, ETL listed UL 2703 system bonding eliminates third-party components and further speeds installation. For a PE-stamped, project-specific structural analysis, Mounting Systems' Design Tool can calculate any specific configuration within minutes, along with verification to the appropriate building codes and national standards.

Maximum service life

All components are made of extruded aluminum and stainless steel. This guarantees both full recyclability and maximum service life due to high resistance to corrosion.



On-roof



Framed module



Frameless module



Orientation portrait



Orientation landscape



Double Roman Tiles



Slate



Plain Tiles



Corrugated metal



Comp shingle



Shared rail

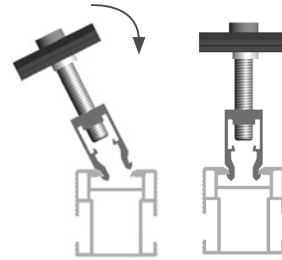


10
year
Warranty



**mounting
systems**

Application	<i>Pitched roof – on-roof</i>
Roof types	<i>Suitable for most types of roof cladding</i>
Roof slope	<i>Up to 60° ¹</i>
Building height	<i>Up to 65 ft • 20 m ¹</i>
PV modules	<i>Framed or frameless</i>
Module orientation	<i>Landscape, portrait</i>
Size of module array	<i>Any size possible ²</i>
Position of the module array	<i>No special requirements</i>
Distance between roof attachment points	<i>Up to 10 ft / 3 m ¹</i>
Standards	<i>IBC 2009 IBC 2012 ASCE 7-05 ASCE/SEI 7-10 CBC 2013 UL 2703 ULC ORD C1703 ANSI/AISC 360-05 ACI 318-08 Aluminum Design Manual 2010 Eurocode 1-DIN EN 191-1-1 – Actions on structures Eurocode 9 – Design of aluminum structures</i>
Supporting profiles	<i>Extruded Aluminum (EN AW 6063 T66)</i>
Rail Options	<i>13/52 Rail 10/48 Rail 5/40 Rail</i>
Hooks, small parts	<i>Stainless steel (V2A)</i>
Color	<i>Mill finish or black paint</i>
Warranty	<i>10 years ³</i>



Clickstone clamp installation



13/52 Rail

10/48 Rail

5/40 Rail



Internal Splice



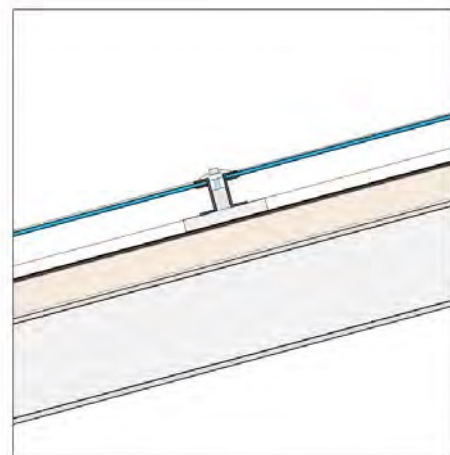
Internal Splice and Rail Installation



¹ Different maximum values may apply, depending on site, building, choice of roof attachments and module type.
² The Mounting Systems QuickConfigurator can be used to verify the structural adequacy of each specific project quickly and easily.
³ For details, please consult Mounting Systems, Inc. full warranty document, available upon request.

MODULES SOLAIRES PV

Système de montage Tau+
Modules posés sur toiture en tôle



Tau+

Variable application

Framed modules can quite easily be installed with the trapezoidal sheet system onto nearly all commercially available trapezoidal sheet metal¹ roofs. The intelligent holding devices fit the most diverse trapezoidal shapes and load situations, even a levelling out is possible.

Free arrangement

Either the complete roof surface or part of it can be covered with the modules. The standard components allow for module installation in portrait and landscape.

Fast assembly

The Tau+ was especially developed for an easy and quick installation. The simple clip-in principle of the rail fixation as well as the high standards of Mounting Systems with regard to pre-assembly and customised confectioning, guarantee a quick assembly.

Little planning requirement, high safety

With the design software at Mounting Systems, the material for a standard application can be designed in minutes, including specific static verification and parts list with all necessary components.

Considerable cost saving

The Tau+ is an overall cost effective fixing solution. The required quantity of rails and fixing points can be optimised due to a project specific static calculation. The flexibly useable components being on stock, as well as short planning and installation phases further reduce the overall cost of this particular system.

Maximum life span

All components are made from aluminium and stainless steel. The high resistance to corrosion guarantees a maximum life span. In addition, all parts can be recycled.



#n-roof



#orientation
portrait



#orientation
landscape



Trapezoidal sheet



Landscape installation, direct installation
of short rail pieces on high beads

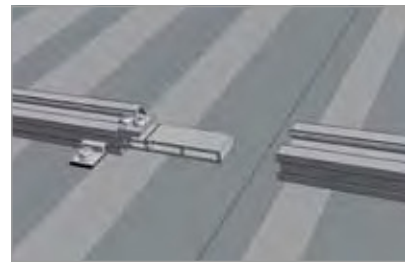


¹ The Tau+ can be used on nearly all available trapezoidal coverings with a material thickness of at least 0.4 mm (Steel). Please contact us for more detailed information ahead of your planning.

Application	<i>Pitched roof – on-roof</i>
Roof cladding	<i>Trapezoidal sheet metal¹</i>
Min. sheet thickness	<i>Steel: 0.4 mm² Aluminium: 0.8 mm</i>
Min. bead height	<i>Free³</i>
Roof slope	<i>Up to 20°²</i>
Building height	<i>Up to 20 m²</i>
PV-Modules	<i>Framed</i>
Module orientation	<i>Portrait, landscape</i>
Size of module array	<i>Any size possible⁴</i>
Position of the module	<i>No special requirements</i>
Possible height compensation	<i>Up to 5 mm</i>
Distance between rail fixations	<i>Depending on load situation (automatic verification per design software)</i>
Standards	<i>Eurocode 1 – Action on structures Eurocode 9 – Design of aluminium structures</i>
Supporting profiles	<i>Extruded aluminium profiles (EN AW 6063 T66)</i>
Rail fixations	<i>Side fixing clip: Aluminium (EN AW 5754) Top fixing clip: Aluminium (EN AW 6063 T66)</i>
Small parts	<i>Stainless steel (V2A)</i>
Colour	<i>Aluminium: plate finish</i>
Warranty	<i>10 years⁵</i>



Detail side fixing clip and module clamp





Detail top fixing clip and splice



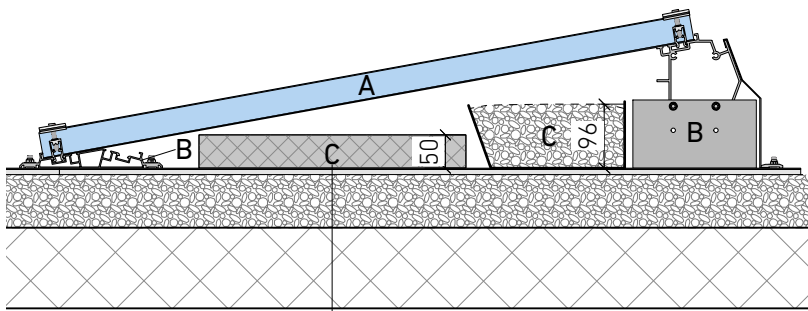
Detail Clickstone

- 1 The screws which are provided for the system Tau+ are suitable for mounting on trapezoidal sheet metal roofs made of steel or aluminum. In case of an installation on sandwich elements, the customer must clarify and ensure that the deployed sandwich element can withstand the fastening forces and loads resulting from the PV installation. Mounting Systems recommends the installation of the Tau+-system on single-layer trapezoidal sheet metal roofs. Mounting Systems cannot guarantee a sufficient long-term load capacity of the sandwich element after the installation of the Tau+-system.
- 2 Depending on the site situation, the building, the selected fixing devices and the type of module, other values may apply. With the Tau+-Design tool you can easily calculate the permissible maximum values for each plant.
- 3 The bead height is flexible. In case of a very low bead height (below 20 mm) a holder can be screwed on top of the trapezoidal sheet alternative to the standard holder, which is fixed laterally. The installation must be in accordance with local regulations for roof covering.
- 4 Based on the expected thermal expansion due to temperature and the thus occurring tension within the rails, we recommend a maximum length of 12 m per module row.
- 5 The exact details are to be found in the warranty conditions of Mounting Systems GmbH.

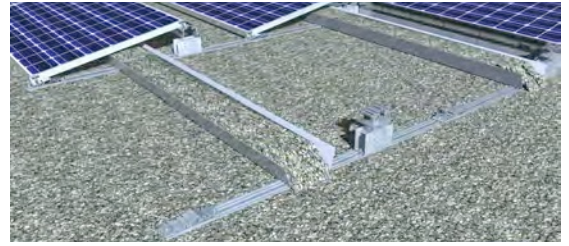
For further information: www.mounting-systems.com
Subject to technical changes.
2013 © Mounting Systems GmbH

LLS++	INSTALLATION SOLAIRE PHOTOVOLTAÏQUE	 l'énergie du soleil CH-1510 Moudon 021 905 26 56 agena@agena-energies.ch	
01.03.2019	Coupe toiture - toit plat - Structure 5°/10°/15°		
mm	Modules photovoltaïques sur structure MS "SUD"	Fiche technique	

Gravier existant

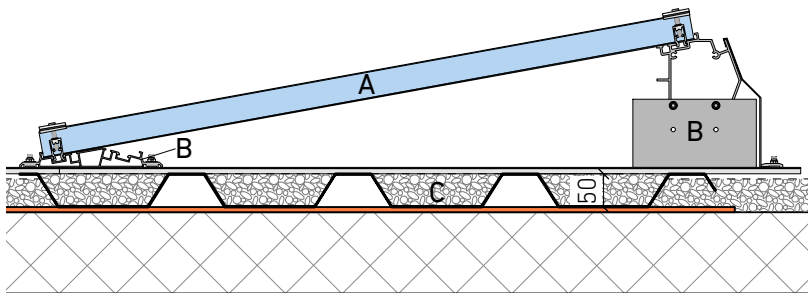


variante lestage dallettes béton



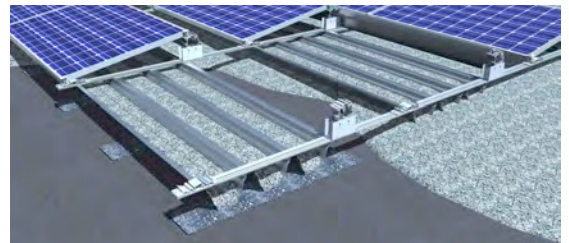
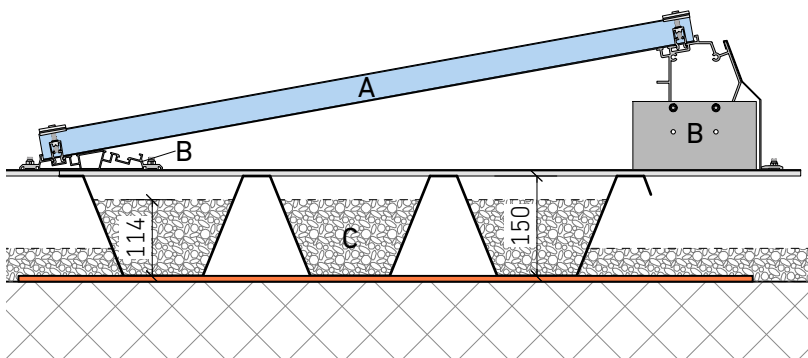
Poids kg	par module			par m ²		
	5°	10°	15°	5°	10°	15°
Inclinaison	5°	10°	15°	5°	10°	15°
A Module	20	20	20	10	8	7
B Structure	1	2	3	1	1	1
C Lestage	50	50	50	24	21	18
TOTAL	71	72	73	35	30	26

Gravier à poser



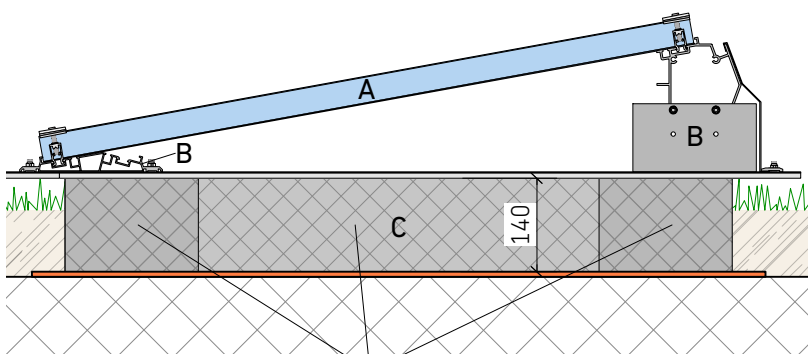
Poids kg	par module			par m ²		
	5°	10°	15°	5°	10°	15°
Inclinaison	5°	10°	15°	5°	10°	15°
A Module	20	20	20	10	8	7
B Structure	1	2	3	1	1	1
C Lestage	80	80	80	39	33	28
TOTAL	101	102	103	50	42	36

Gravier à poser



Poids kg	par module			par m ²		
	5°	10°	15°	5°	10°	15°
Inclinaison	5°	10°	15°	5°	10°	15°
A Module	20	20	20	10	8	7
B Structure	1	2	3	1	1	1
C Lestage	140	140	140	68	53	49
TOTAL	161	162	163	79	62	57



Gravier ou végétal existant ou neuf



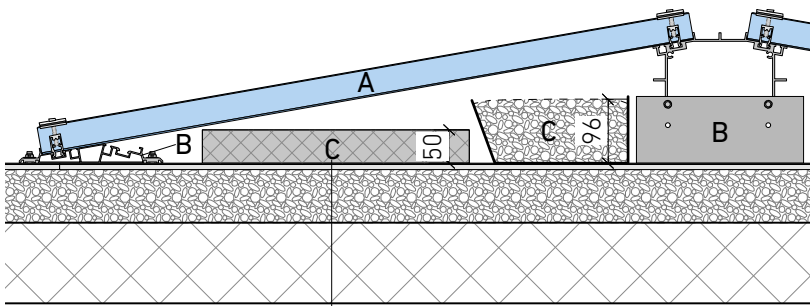
différentes variantes de modèle de lest béton



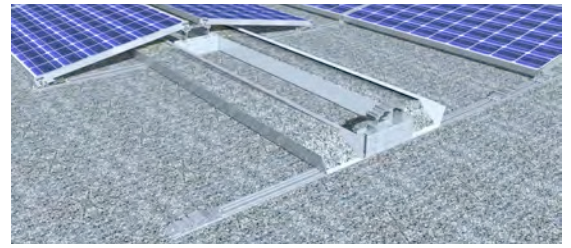
Poids kg	par module			par m ²		
	5°	10°	15°	5°	10°	15°
Inclinaison	5°	10°	15°	5°	10°	15°
A Module	20	20	20	10	8	7
B Structure	1	2	3	1	1	1
C Lestage	50	50	50	24	21	17
TOTAL	71	72	73	35	30	25

EW++	INSTALLATION SOLAIRE PHOTOVOLTAÏQUE	 CH-1510 Moudon 021 905 26 56 agena@agena-energies.ch	
01.03.2019	Coupe toiture - toit plat - Structure 10° et 15°		
mm	Modules photovoltaïques sur structure MS "EST-OUEST"	Fiche technique	

Gravier existant

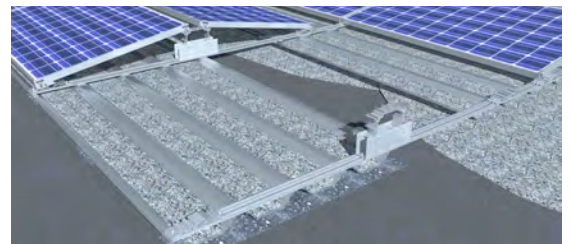
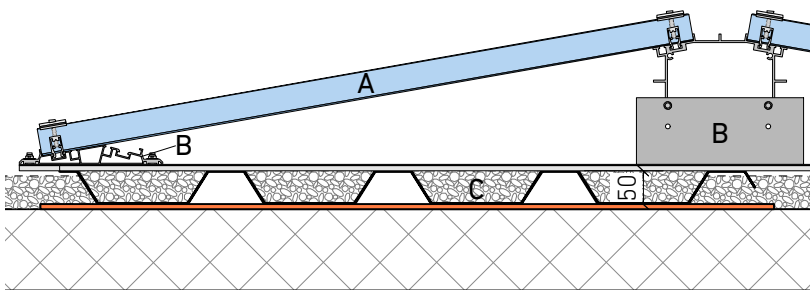


variante lestage dallettes béton



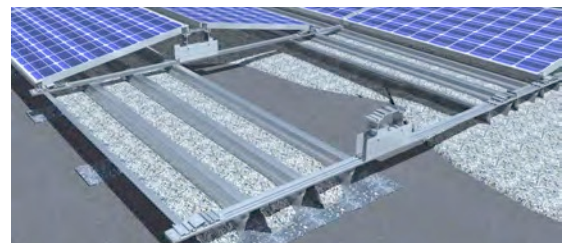
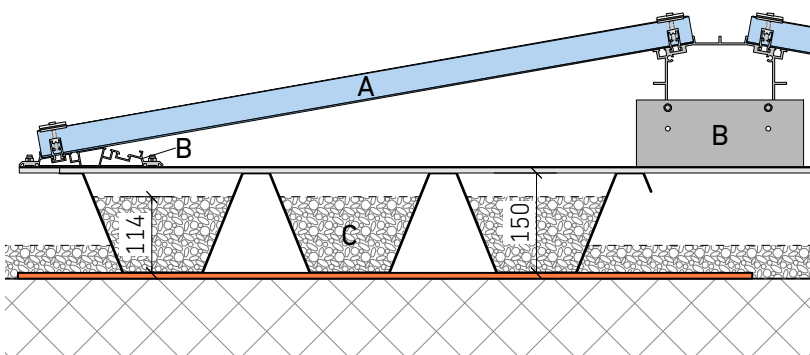
Poids kg	par module		par m ²	
	10°	15°	10°	15°
Inclinaison	10°	15°	10°	15°
A Module	20	20	10	10
B Structure	1	2	1	1
C Lestage	50	50	26	27
TOTAL	71	72	37	38

Gravier à poser



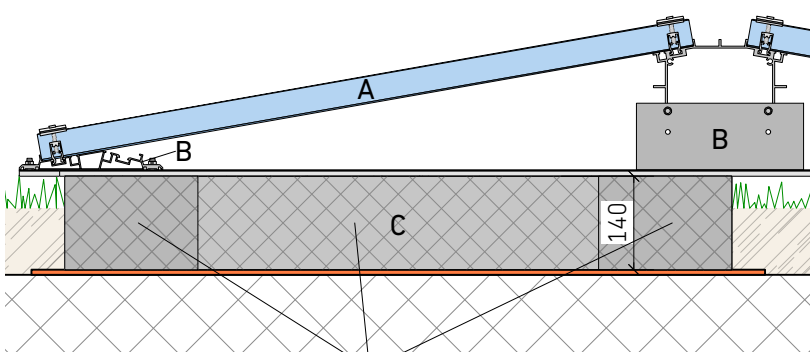
Poids kg	par module		par m ²	
	10°	15°	10°	15°
Inclinaison	10°	15°	10°	15°
A Module	20	20	10	10
B Structure	1	2	1	1
C Lestage	60	60	31	32
TOTAL	81	82	42	43

Gravier à poser

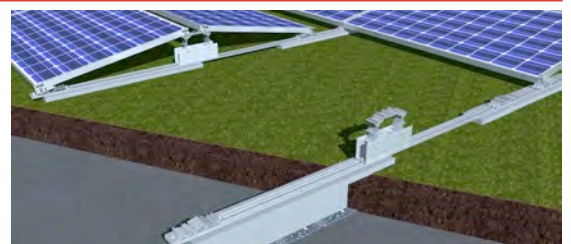


Poids kg	par module		par m ²	
	10°	15°	10°	15°
Inclinaison	10°	15°	10°	15°
A Module	20	20	10	10
B Structure	1	2	1	1
C Lestage	105	105	54	55
TOTAL	126	127	65	66

Gravier ou végétal existant ou neuf



différentes variantes de modèle de lest béton



Poids kg	par module		par m ²	
	10°	15°	10°	15°
Inclinaison	10°	15°	10°	15°
A Module	20	20	10	10
B Structure	1	2	1	1
C Lestage	38	38	19	20
TOTAL	59	60	30	31