AluGrid

The flat roof system with optimized superimposed load

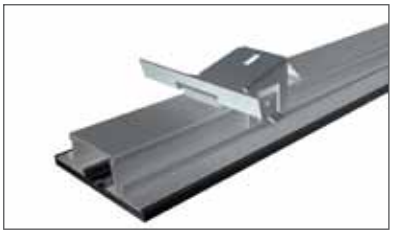
- quick, simple and mainly tool-free mounting
- reduced number of components
- economically efficient
- system structural analysis based on the latest research on wind dynamics

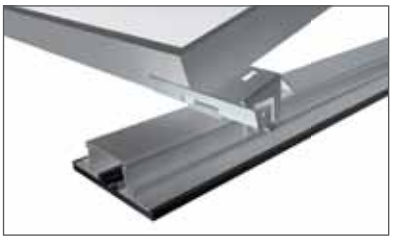
On many flat roofs, the area that can be used for photovoltaic installations can be enlarged by using load-optimized systems. Besides the systems that have been proven for years like CompactVario, SolRack, Windsafe, SolTube, etc., the **AluLight** system is a further system that can be used for the fastening of modules on flat roofs with minimum superimposed loads in completely closed rows and a fixed elevation angle of 10 or degrees. AluGrid can only be used if the snow loads do not exceed 2.4 kN/m².

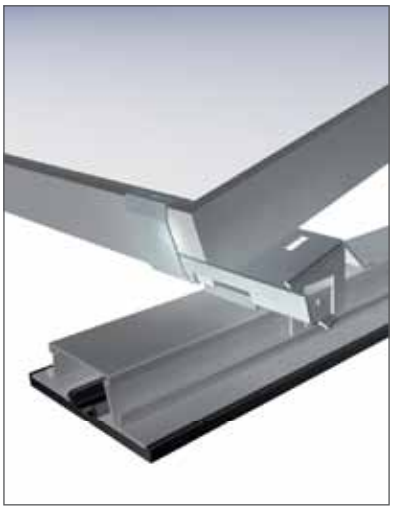
The components are connected using our well-proven Klick-system. The mounting of the modules to the substructure is carried out using screw-less module clamps (spring clamps).

The loading can be optimized (reduced) individually according to the to the structural requirements and be put into the tubs that are attached to the rear wall.

By using approved aluminum materials, both a virtually unlimited duration even with high UV-irradiations and certain acceptance in structural expertises is safeguarded.







Loading: Concrete stones (for example curb stones, paving stones), gravel, etc. A special structural analysis regarding the superimposed load has to be carried out in order to determine the required loading. This structural analysis is available on our website or in combination with a shade distance calculation and the row distances that have to be maintained within the framework of an offer calculation.

Module clamping: Module spring clamps are available for module heights from 30-51. Depending on the module sizes, there is a range of Windsafe metal sheets that can be chosen from for all module sizes that are available on the market. The modules are clamped in the edge areas of the longitudinal sides. The customer has to check whether the clamping area determined by the module producer is maintained. A pair of special pliers is required for the mounting of the modules. Please find more information about this matter in the AluGrid mounting instruction.

Support rubber: We recommend to install the support rubber (6 mm rolled material 166003-001) as a building protection element between the AluGrid continuous beam and the roof cladding of the flat roof. We recommend to lay the rubber without interruptions. The rubber can be attached to the profiles. A drainage system on the roof has to be provided, too. The ideal flow direction is parallel to the continuous beams. If the flow direction is not parallel, the rubber can be interrupted. We recommend a support length of 300 mm and gaps of 100 mm. The openings that are created like that allow a draining off of the water horizontally to the cross beams. The customer has to check, if the quantity of the water that can drain of is sufficient.

The support rubber is made of high-value EPDM material. Damage to the EPDM profile by touching materials that are usually used on roofs can largely be ruled out. The compatibility with Bitumen roofing membranes is excellent and all plastic roofing membranes do not harm the EPDM-profile in any way. For some roofing membranes, we have been given the approval for the application of the EPDM-profile on their roofing membranes. As there are so many different roofing membranes on the market, it is not possible to verify this for all types of roof membranes. With roof membranes by other manufacturers, the customer has to check the compatibility of material with the manufacturer. A potential incompatibility of materials with PVC roofing membrane due to plasticizer migration is a known fact.

Compatibility of AluGrid support rubbers with roofing membranes.

Manufacturer	Product information	Material compatibility
Alwitra	Evalon white	conditional approval*
	Evalon grey	conditional approval*
	Evalon colored	conditional approval*
	Evalastic „R“ grey	conditional approval*
Bauder	Bitumen roof sheetings	approval granted
	Thermofol (PVC roof sheeting)	not compatible**
	Thermoplan (FPO roof sheeting)	approval granted
	Termofin (FPO roof sheeting)	approval granted
FDT	Rhenofol	compatibility only with additional measures***
	Rhepanol HG	compatibility only with additional measures***
Soprema	Bitumen roof sheetings	approval granted
Hirler	VAEplan white	approval granted
	VAEplan grey	approval granted
	VAEplan colored	approval granted
Polyfin	Polyfin 1020 bright grey	no objections
	O.C.-Plan 3020 black	no objections
Sika	Sikaplan S15 light gray	not compatible**
	Sikaplan S15 anthracite	not compatible**
	Sikaplan SgmA 15 beige	not compatible**
	Sika Sarnafil T66-15 D beige	not compatible**

* In the course of time, discolorizations and/or other imprints in the roof membrane surface may arise. But according to our long-term practical experience, this does not lead to any deterioration.

** Application is only possible with special safety measures, for example separation layers according to manufacturer´s instructions

*** Additional measure: Plastic fleece made of polyester, polypropylen or a combination of both with 180g/qm

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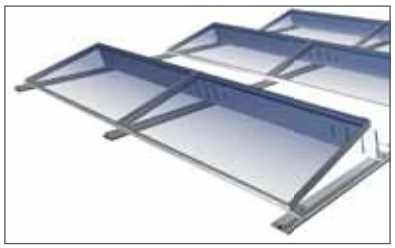
Dimensioning: Conveniently with our auto-calculator (Schletter creates a structural analysis regarding the superimposed loads).

Layout: The components are delivered to the site as single parts and are assembled on location in just a few simple work steps.

System variants

AluGrid

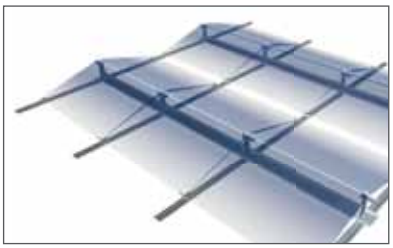


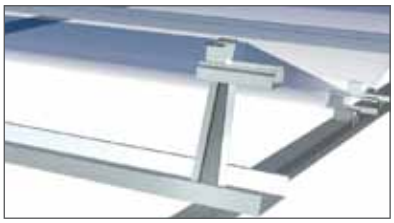
Basic design of the flat roof system with optimized (reduced) load.

AluGrid+ (available starting from the first quarter of 2012)

With AluGrid+, extra rails are delivered for the lower module edge that are fastened to the continuous beams using special fastening clamps. Thus, the spring clamps can be fastened both to the upper and the lower module edge at the fastening points determined by the manufacturer.

AluGrid100 (scheduled for 2012)





With this special AluGrid design, the modules are aligned in east/west direction as a standard. Thus, virtually the whole roof area can be used for module laying.

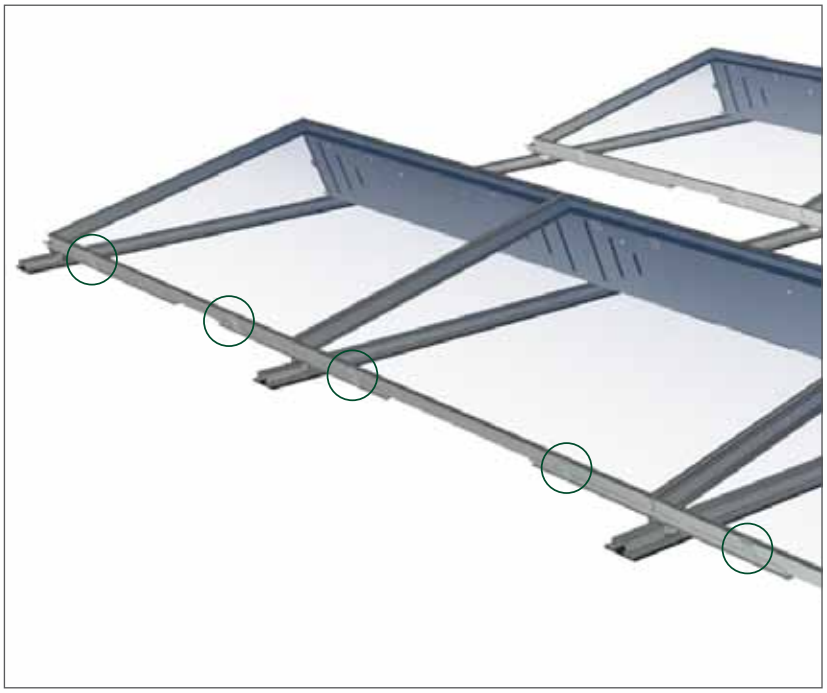
System variant AluGrid+

With variable module clamping points

With the AluGrid system, maximum economic efficiency was reached by consistent material reduction. The best and most economic solution is possible with modules that can be clamped at the outer edges and have an accordant approval. In this context it has to be taken into account that there must not always be a general approval for all loading conditions according to IEC 61215. In individual cases, an approval for the respective project can be sufficient, as the relevant regional wind and snow loads can be considered individually. But if the module cannot be clamped at the outer edges, the AluGrid+ system must be used as an alternative.

With AluGrid+, extra rails are delivered for the lower module edge that are fastened to the continuous beams using special fastening clamps. The length of these rail pieces are determined in such a manner that the AluGrid module clamp can be mounted at the fastening spots determined by the manufacturer up to 25% away from the module edge. Moreover, the upper fastening to the Windsafe metal sheet can be carried out at the fastening points specified by the manufacturer. Due to the constructional height of the lower rail, the module inclination is reduced by 1° compared to the basic AluGrid design.

With AluGrid+, an optimum system price can be achieved even with modules that do not have a general clamping approval. Determined by the system, this price is slightly higher than the price of the basic AluGrid design.



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Component overview

Continuous beam

166501-006	Continuous beam 6m
166501-004	Continuous beam 4m
166501-001	Continuous beam customized cut
169005-001	Insertion connector kit

Bearing rubber as a protection of the building surface

166003-001	Bearing rubber for continuous beams 6mm rolled material

Windsafe metal sheets (rear wall metal sheet)

for module inclination of about 15°, select the item number from the chart:

Module length (mm)	Module width (mm)		
	780-859	940-1019	1020-1100
1300-1360		**169007-116***	**169007-117**
1381-1439			**169007-137**
1440-1500		**169007-146***	**169007-147**
1501-1559			
1560-1620	**169007-164***		**169007-167**
1621-1680	**169007-174***	**169007-176***	**169007-177**
1681-1740		**169007-186***	
1940-2000		**169007-236***	

*in stock for 15° module inclination, all other sizes are produced on request

for module inclinations of about 10° (for Italy), select the item number from the chart:

Module length (mm)	Module width (mm)		
	780-859	940-1019	1020-1100
1300-1360		**169009-116***	**169009-117**
1381-1439			**169009-137**
1440-1500		**169009-146***	**169009-147**
1501-1559			
1560-1620	**169009-164***		**169009-167**
1621-1680	**169009-174***	**169009-176***	**169009-177**
1681-1740		**169009-186***	
1940-2000		**169009-236***	

*in stock for 10° module inclination, all other sizes are produced on request

End caps for Windsafe metal sheets

169006-001	End cap for Windsafe, module width B780-859 (“B” stands for “width”)
169006-002	End cap for Windsafe, module width B940-1019
169006-005	End cap for Windsafe, module width B1020-1100
169006-004	End cap for Windsafe 10°, module width B780-859
169006-003	End cap for Windsafe 10°, module width B940-1019
169006-006	End cap for Windsafe 10°, module width B1020-1100

Accessories

166002-001	Fastening clamp
166002-002	Lower module bearing
166002-003	Lower module bearing 10°
166004-001	Cable covering clip ①
166502-006	Cable covering 6m ②

AluGrid module clamps

166001-050	Module clamp for module thickness 50/51 mm
166001-048	Module clamp for module thickness 48/49 mm
166001-046	Module clamp for module thickness 46/47 mm
166001-044	Module clamp for module thickness 44/45 mm
166001-042	Module clamp for module thickness 42/43 mm
166001-040	Module clamp for module thickness 40/41 mm
166001-039	Module clamp for module thickness 39 mm
166001-038	Module clamp for module thickness 38 mm
166001-037	Module clamp for module thickness 37 mm
166001-036	Module clamp for module thickness 36 mm
166001-035	Module clamp for module thickness 35 mm
166001-034	Module clamp for module thickness 34 mm
166001-033	Module clamp for module thickness 33 mm
166001-032	Module clamp for module thickness 32 mm
166001-031	Module clamp for module thickness 31 mm
166001-030	Module clamp for module thickness 30 mm

AluGrid+

For a fastening according to the specifications by the manufacturer up to 25% away from the module edge Determined by the system, the inclination of the module is about 1° lower than compared to the basic design.

166503-00950	AluGrid FK lower module-bearing profile 14 degrees	950 mm for module lengths from 1300-1740 mm
166503-01100	AluGrid FK lower module-bearing profile 14 degrees	1100 mm for module-bearing profile from 1741-2000 mm
166504-00950	AluGrid FK lower module-bearing profile 9 degrees	950 mm for module lengths from 1300-1740 mm
166504-01100	AluGrid FK lower module-bearing profile 9 degrees	1100 mm for module bearing profiles from 1741-2000 mm
166002-004	AluGrid fastening clamp for module-bearing profile	

Potential connection: All connections within the AluGrid system are conductive and designed with cross sections that are sufficient for an earthing (grounding) according to the accordant technical standards. Thus, the internal potential connection of the rack is fully safeguarded. In contrast to other systems with common middle clamps, the module frame is also conductively integrated into the rack by the utilization of toothed high-grade steel clamps. Thus, there is a complete potential connection within the system. Thus, it is sufficient for the integration of the rack into the potential equalization to connect the rack at one point with an earth conductor that has a sufficient cross section and to connect this ground conductor to the main earthing terminal of the building.

Lightning ampacity: The lightning protection of a solar plant respectively the building below the solar plant generally has to be planned by the system supplier. The expression “lightning ampacity” is used for connections, clamps etc. that actively have to deduct lightning current **within the framework of a lightning protection system**. Each of these components has to be tested and certified within the framework of a special test.

The **lightning ampacity of a rack system** is usually not relevant for this problem, as the load-bearing system is not used as a conductor or as a lightning rod as part of the external lightning protection. The lightning protection usually has to be planned completely independent from the solar plant.
Usually, a defined separation distance between the solar plant and the lightning protection plant has to be maintained.

In certain cases, it is also admissible to connect the rack system to the lightning protection system, but in this case the coupling of partial lightning currents has to be reckoned with. In this case it is relevant that the internal connections of the rack are connected with an accordant low impedance and at the same time with a sufficient cross section. This is the case with the AluGrid system.

Technical data

Material	Windsafe metal sheet and end cap: AlMg3; continuous beam: Alu ENAW6063; profile rubber: EPDM; Lower module support 1.4301; Fastening clamps and module clamps: 1.4310; Lower bearing profile and cable covering: ENAW6063; Fastening clamp module-bearing profile: 1.4301
Structural analysis	Structural analysis in accordance with current national standards (in Germany DIN1055 and EC1). Structural analysis attachment on the dimensioning of the number of the required fastening spots. By all means, observe the structural analysis information.

The dimensioning is carried out by the company Schletter, for this purpose, we need a completed check list for an inquiry regarding an elevated PV plant.
Further information and declaration of warranty at www.schletter.eu

Subject to technical modifications.