Top Quality and Service - Worldwide

Schletter
ground-mounted solar systems

- Long service life due to optimal combinations of materials
- Perfectly synchronized system components
- Quick and economically efficient assembly
- Pre-assembled as far as possible
- Individual project planning

SCHLETTER

Your reliable partner for projects of any size

Ground-mounted solar plants

Manufacturing capacity 6 MW per day

15 GW in 15 years

This proves that our customers are satisfied with our quality, our performance and our prices. And we make any effort to ensure that this will not change in the future. Schletter ground-mounted systems stand for quick and easy mounting, durability and high economic efficiency. Only components of highest quality and durability are used. State-of-the-art production procedures safeguard efficient manufacturing of standard components as well as quick and flexible realization of special designs.

Everything from one source!
We manufacture almost all components ourselves in our factory. Thus, we can avoid shortages and can offer you high quality products at the same time. We supply modular systems for any kind of foundation, any subsoil and any kind of mounting.

Whether it be systems made of aluminium or steel, inexpensive pile-driving systems, fastening solutions with two-disc screw foundations or concrete foundations, whether it be alignment to the south or tight arrangement with east/west racks or a tracking solution, Schletter provides customers with the appropriate mounting system - all from one source.

Maximum In-house production

Due to our 100% in-house production, we can safeguard constant high quality and availability of the products, even customized solutions. All components are compatible with each other and have been developed from practical experience. **We have sufficient production capacities to produce fastening systems for solar modules with total power of 6 MW per day.** With our in-house aluminium profile extrusion plant and our roll forming plant, you benefit from new solution approaches. Besides, you are not affected by market fluctuations.

Quick decisions, quick reactions

You can always rely on your Schletter contact person. Thus, we can react quickly to your requests. **We also have production and mounting capacities for large-scale projects of any size and will be happy to assist you in the realization of your project.**

Site-specific structural calculations

Based on project data provided by the customer, country-specific standards and guidelines, we calculate the complete structural analysis and create an end-to-end project plan already when we submit the customer our offer. This safeguards reliable structural safety and a maximum failure safety of the ground-mounted solar plant.

Vibration and resonance simulation

Not only structural calculations are made for each individual system, but also dynamic calculations. The dynamic system dimensioning avoids material fatigue and failure.

Tested and certified quality and safety

TÜV-certified quality monitoring, ISO-certified quality management as well as sophisticated in-house laboratory tests and practical experiments safeguard that you will receive a mounting system that meets the highest standards.

Experience in international projects, subsidiaries in 16 countries

Schletter maintains supply relationships with over 60 countries and has a well established international sales and distribution network.

The Schletter GmbH is an experienced, globally successful, regionally rooted family business run in the second generation with a wide range of products and services.

Our video will give you an insight into our production facilities.

Your reliable partner for projects of any size

Ground-mounted solar plants

Worldwide mounting, logistics and production possibilities.

- Geological survey on location as an option
- Own machinery with about 30 large machines (pile drivers, etc.).
- Almost any assembly schedule can be arranged
- 6 MW / per week are absolutely feasible with big projects and in normal logistical conditions.
- GPS-guided pile-driving technology
- Mounting service as an option
- The optional rail production "profiling on site" saves production costs, shipping volume and transportation costs and allows almost any project-specific rail length.

An overview of your benefits

Competence in technology

- Foundations for all types of soil
- Site-specific structural analysis
- High level of pre-fabrication by pre-assembled assembly groups
- Maximum in-house production
- Special projects, constructions and profiles
- Certified high quality standard
- 80 µm long-life coating thickness on all components of the steel system

International project competence

- Supply relations with more than 60 countries
- Well-organized international distribution system
- Staff members who know the regional structures, the language and the culture area.
- Local content according to the country-specific regulations and technical approvals.
- Structural calculation according to the country-specific regulations, technical approvals and labor-law related permissions.

Flexibility

- All main components manufactured by Schletter
- Wide range of products
- Quick decision-making
- Local Supply Chain (supply network)
- Due to their quality, Schletter products quickly get country-specific certifications.

Be one step ahead with Schletter

International tenders mostly require numerous reference projects as well as the specification of efficient partners. As we have reference projects on nearly every continent in the world. With Schletter as their partner, our customers qualify for almost any tender.

Take a look at our state-of-the art logistics center.

… your reliable warrantor also in the future

As a family-run middle-sized company, we think and act responsibly, always focussing on future generations. The Schletter GmbH already has been steadily on the solar market for 15 years now. Apart from solar mounting systems, the company is also doing business in other sectors. Electric mobility, traffic engineering and environmental technology. Thus, we can also stay on the market in difficult times.

Our modular systems can be extended as desired.

The Schletter PV mounting system is a unit construction system with universal usable high-quality components (aluminium/high-grade steel). It allows the installer to mount any module in practically any mounting situation.

Guarantee information

We provide a voluntary guarantee on our systems as far and to the extent mentioned in the respective product information. Please look up the details on the internet at www.schletter.de/AGB_en.

Everything from one source! "Made in Germany"

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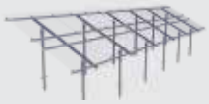
FS system designs at a glance

Soil	Type of foundation	System	Module mounting
• *Soft soils* • *Landfill sites with a low anchoring depth of 0.8 m (not stony)*	Earth screw foundation	 TerraGrid / TerraGrid Steel	For all soils and systems, the following types of module mounting are possible: ***Aluminium:*** • horizontal • vertical • combined clamping • lay-in mounting ***Steel:*** • horizontal • vertical • combined clamping ***FS Track-2:*** • horizontal • vertical
• *Near-surface bedrock* • *Block-like alteration zone*	Pile-driving with pre-drilling	 FS system FS steel system FS Track-2	
• *Bedrock* • *Soils with little load-bearing capacity* • *Landfill with very shallow anchoring depth* • *Landfill sites with stone cover* • *Industrial wasteland with reinforced surface areas*	Pre-cast concrete blocks Cast-in-place concrete	 PvMax3 / PvMax-S PvCombi	
• *Soils with little load-bearing capacity*	Pile-driving with concrete collar	 FS system FS steel system	
• *Soils that are suitable for pile-driving (grown, filled)*	Pile-driving (ramming)	 FS system FS steel system FS Track-2	
• *Concrete-covered land conversion areas*	Concrete anchors on concrete surfaces	 FS Con	

FS systems
From planning to completion

Check list
In order to be able to be able to prepare a ground-mounted solar plant project in the best possible way, we provide our customers product-specific check lists on the internet at www.schletter.eu. This first step is decisive for the further procedure an enables us to create an individual offer for your project site and your project parameters.

FS systems
Project planning

The Schletter ground-mounted system has been designed in order to provide an economic and convenient mounting solution that allows the installation of solar plants in almost any landscape situation.

In many cases, Schletter has reduced the total costs for big solar plants by using pile-driven metal foundations. These metal supports that are pile-driven into the ground make the utilization of concrete foundations redundant and thus save both work and material costs.

The measurements and the design of the system depend on the exact and detailed analysis of each specific area in order to determine the load-bearing behaviour regarding the specific wind and snow loads. Thus, we build solar plants with verified and durable structural safety at fair prices!

Alternatively, the PvMax3 system allows the mounting of ground-mounted solar plants onto concrete foundations in cases in which the FS system is not economic due to the size of the plant or is not feasible because of the soil structure. The PvMax3 system is mainly used with plant sizes up to about 100 kW. For solar plants bigger than 100 kW, we recommend pile-driven foundations.

State-of-the-art production procedures grant efficient manufacturing of standard components as well as quick and flexible realization of special constructions on customers' request. The quality supervision is carried out according out DIN ISO 9001:2008.

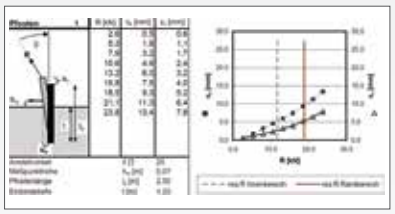
Project flow

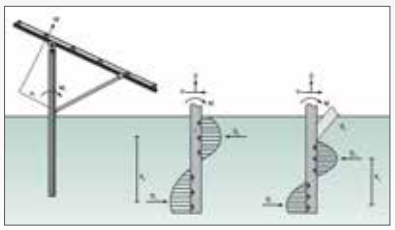
1) Fill in the project list and send it back with all relevant information (incl. module layout plan) to the Schletter GmbH.	***1-3 days***
2) Selection of the optimum dimensioning and creation of a guide price	
3) Geological analysis and creation of a soil survey	***2-3 weeks***
4) Planning and offer of the most economic rack size	
5) Final offer and scheduling of the mounting	
6) Material delivery on the basis of a time schedule	
7) Customized production of the system components	***2-4 weeks***
8) Material deliveries of the complete system to the installation site	***Individual***
9) Mounting of the plant at the stipulated installation level	

System characteristics

With a ground-mounted solar plant with driven piles, the subsoil must be regarded as part of the structure, as the effective forces of the plant are transmitted by the soil. In order to safeguard the structural safety of the plant, a foundation ground expertise is compulsory. Thus, load tests on the piles were carried out. The piles that are driven into the ground and pulled out afterwards provide samples for the determination of the likeliness of corrosion in the soil.

- Inclined traction tests
- Horizontal pressure tests
- Creation of soil profiles
- Chemical analysis in a laboratory





The position of the test points depends on the respective terrain and special geological situations like wet areas. According to the inclination of the modules, the load at the pile is assumed. With stepwise increase of the load, the deformation behaviour of the pile is documented.

Chemical examination

If steel or galvanized steel are inserted into the soil, the soil must be tested regarding its corrosive behaviour. For this purpose, a representative soil sample is taken out of the driven pile. Due to the procedure in the laboratory, the analysis of these samples takes at least 7 days. The evaluation of the results allows an exact conclusion regarding the expectable durability of the steel foundations in the ground (usually much longer than 50 years).

Evaluation

The results of these tests are compiled and displayed in a report. The company Schletter can offer the report in 10 different languages. If required, the customer can get the report in several languages.

Inclined pull tests
The basic idea of inclined pull tests is that the wind impacts the inclined module area almost vertically. Thus, a surface pressure is created from the application of the bending moment in the form of a pair of forces. With inclinations higher than 15°, the frictional resistance between the pile and the surrounding ground is generally higher than the jacket friction which results in a greater pull resistance.

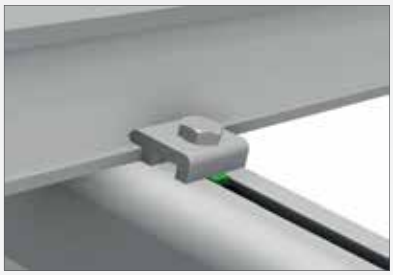
Here you can see a demonstration of GPS pile-driving.

Single-support systems

Optimal anchoring in the soil - minimal sealing of the soil surface

System FS Gen6

The FS system is the ideal basis for a quick and economically efficient realization of large solar projects with any type of module in horizontal or vertical module alignment. Pile-driven steel profiles with a special profile shape are the basis of all systems of this series. This central support safeguards the best possible anchoring in the soil, minimum soil sealing as well as optimum accessibility and usability of the terrain for agricultural purposes.



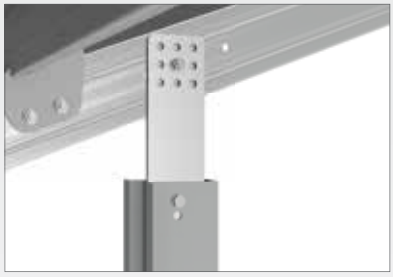
The aluminium module-bearing structure is pre-fabricated to almost 100% and is delivered just in time in any desired quantity to the installation site. With only a few work steps, the pre-assembled girder assembly groups are fastened to the pile-driven foundations: Unfold it - position it - tighten the bolts - that´s it! The mounting of the foundations, the load-bearing structure or also the fastening of the modules can be carried out by Schletter on customer request. A complete machinerywith hydraulic pile drivers and our experienced staff safeguard short mounting times - even with big projects.

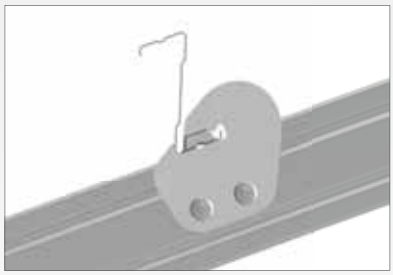
The benefits of the FS Gen6 system

- No ground sealing
- Pre-assembled as far as possible.
- Long service life due to exemplary combinations of materials
- Extremely short assembly times
- Considerably reduced planning and mounting effort due the use of GPS technology
- Perfectly synchronized system components
- Optimum accessibility for terrain maintenance (central support)
- 10-year guarantee*

Just take a look how easy terrain maintenance can be.

*The terms of guarantee can be looked up at www.schletter.de/AGB_en.
Subject to changes and/or technical modifications.





FS Uno

A substructure made of steel has been designed as a counterpart to the aluminium design. It has all the advantages of the FS System (aluminium), but is a more price-efficient design due to the use of steel. A well-engineered module clamp adapter allows both vertical and horizontal module mounting on the FS Steel system.

The module-bearing structure is made of strip-galvanised steel and is available in different designs. Just like with the FS System (aluminium) we have made sure that there are suitable substructures for almost any terrain formation. An efficient material utilization and support distancesthat are adapted to the terrain make the design even more attractive for large ground-mounted solar projects with big module arrays.
The system is already largely pre-assembled when it is delivered to the installation site and can be assembled with just a few bolted connections. Thus, no mounting time is wasted.

Benefits of FS Uno

- Efficient material utilization
- Extremely short assembly times
- Wider support distances modified to the terrain are possible
- Strip-galvanized sheet metal edges
  Average galvanization layer thickness up to 80 µm
- Optimum accessibility for terrain maintenance (central support)
- 5-year guarantee*

An animation will show you how the FS Uno system is assembled.

*The terms of guarantee can be looked up at www.schletter.de/AGB_en.
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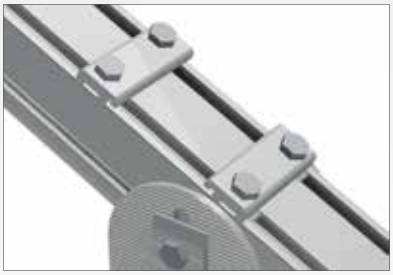
Twin-support systems

For big multi-rowed module arrangements



FS II

FS II is the enlarged design of the FS Gen6 System for two-support substructures for solar plants. For the set-up of big module racks on even terrains with low inclination, the "two-support design" FS II is the ideal solution. With low inclination angles for the purpose of reducing the shade distances between the modules, the terrain can be used even more efficiently for the generation of solar power.

The high-value material aluminium is the basis of all FS systems for ground-mounted solar plants with stable and reliable substructures. As the FS II system used two pile-driven supports, bigger loads can be transferred into the soil. As there is no need for any additional struts, the mounting of the system is both simple and time-saving. The well-proven head attachments of the FS system are fastened to the pile-driven foundations, the girder assembly groups are bolted to the attachment heads.

Benefits of the FS II

- Pre-assembled as far as possible.
- No ground sealing
- Quick and easy assembly
- Perfectly synchronized system components
- Long service life due to optimal combination of materials
- Efficient use of materials
- 10-year guarantee*

*The terms of guarantee can be referenced at www.schletter.de/AGB_en.
Subject to changes and/or technical modifications.

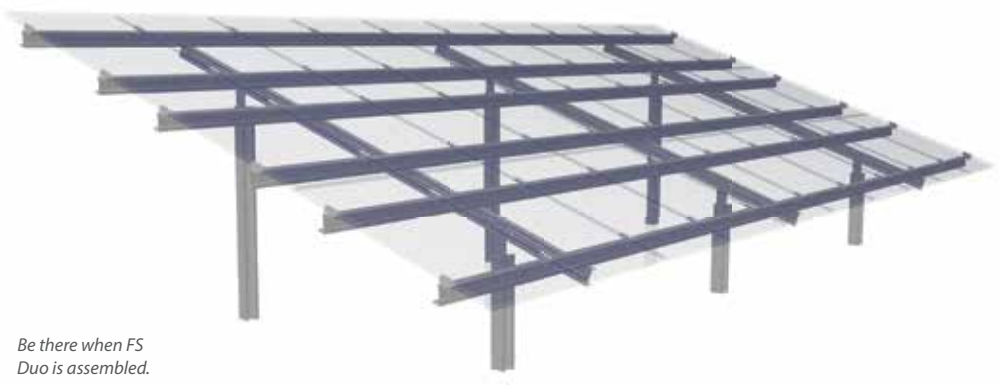
FS Duo

Schletter also provides "two-support designs" made of steel. Two pile-driven foundations as one support unit combined with our load-optimized Z-purlins are a structurally safe substructure for solar module areas with wide spans. The Schletter profilesFG and SRF or alternatively the U-profile are available. Both designs allow an individual project planning with maximum economic efficiency.

In contrast to the FS system (aluminium) for ground-mounted solar plants, the module beams are not fastened to the girder assembly groups with mounting claws. Special connector hooks are pre-assembled in the girder assembly group. These connector hooks are inserted into the module-bearing rail. For the fastening of the module-bearing rails, fastening devices are driven in with a plastic tip hammer.

The benefits of FS Duo

- Pre-assembled as far as possible.
- No ground sealing
- Quick and easy assembly
- Maximum structural safety
- Perfectly synchronized system components
- High economic efficiency
- Efficient material utilization
- Wider support distances modified to the terrain are possible
- Galvanized sheet metal edges made of strip galvanised material
- Interlocking connections
- 5-year guarantee*



Be there when FS Duo is assembled.

*The terms of guarantee can be referenced at www.schletter.de/AGB_en.
Subject to changes and/or technical modifications.

Lay-inlay systems

Assembly without clamping

FS In

The big advantage of lay-in mounting is the shortening of the module mounting time. As the modules only have to be laid in the module-bearing profiles that have been designed especially for this purpose, a considerable amount of time can be saved.

The FS In system has been especially developed for modules that have an extra certification for lay-in mounting in ground-mounted solar plants. Framed modules with thicknesses from 40 - 50 mm can be used. Projects with modules that have other frame thicknesses can also be realized, as far as the respective module producer approves this kind of mounting. For projects with a total power of 5 MW or more, an individual project planning for any approved frame thickness is possible. In order to secure the laid-in module, special spring-borne distance pieces are inserted. This also serves as a theft prevention. Suitable end plates that are fastened with grooved nails to the ends of the rails complete the overall view.

The advantages of FS In

- Simple, quick and screwless module mounting
- Pre-assembled as far as possible
- Theft prevention with spacers and end plates
- Only few and perfectly harmonized system components
- Long service life due to ideal combinations of materials
- 10-year guarantee*

*The terms of guarantee can be looked up at www.schletter.de/AGB_en.
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East-west systems

Improved area utilization

FS Uno100 / FS Duo100

More and more investors prefer an east-west arrangement of the solar modules as a the roof area can be utilized to a much bigger extent because only very short shade distances are required. The Schletter east-west racks FS Uno100 and FS Duo100 combine economic efficiency with optimum material and area utilization.

For the east-west utilization, we offer two different types of system: FS Uno100 as a one-support design and FS Duo as a three-support design. FS Duo has been designed for heavier loads respectively bigger module surfaces. Nowadays, solar modules are getting cheaper, but at the same time the expenses for lease as well as additional costs keep increasing. Thus, the terrain must be used in the most efficient way. We at Schletter are very well aware of these changes and we permanently develop new and more efficient systems in order to increase the energy yield respectively to enable you to use difficult subsoils for your solar project. All the experience gained in the last 15 years is integrated in new developments. The creative and innovative constructions are suitable for many landscapes and terrain categories.

The benefits of FS Uno100 and FS Duo100

- Only short shade distances required
- Maximum area utilization
- Balanced energy yield all day long
- Efficient material utilization
- Very wide module span widths are possible.
- Wider support distances modified to the terrain are possible
- Galvanized sheet metal edges made of strip galvanised material
- 5-year guarantee*

Watch the FS Uno/ Duo100 mounting animation.

*The terms of guarantee can be looked up at www.schletter.de/AGB_en.
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Solutions for landfill sites and land conversion areas

Modular systems

TerraGrid / TerraGrid Light / TerraGrid Steel

When solar plants are set up on landfill sites, the functionality of the sealing membrane must not be affected. This especially applies to the plastic sealing membrane that impedes any emission of harmful substances The distance of the foundation to this sealing is regulated by law and varies depending on the the type of landfill site and the soil sealing from 0.5 to 0.2 m.

With such low anchoring depths, TerraGrid is an ideal alternative to flat foundations because it is price-efficient and can easily be adapted to local conditions: Tracked vehicles are used to keep the compaction of the top layer as low as possible; The weight of the soil rests on the thread surfaces of the screw foundation and increases the resistance of the soil. The screw foundations can be equipped with adjustable extensions in order to level ground unevenness.

But also on very soft soils with a high ground water level likes TerraGrid can be recommended for the following reasons: The permanently present ground water considerably reduces the frictional resistance of the soil. Due to the self-weight of the soil-water mix resting on the thread surfaces increases the pull-out resistance.

TerraGrid Light is most suitable for plain areas with little load transmission.

Benefits of TerraGrid / TerraGrid Light / TerraGrid Steel

- Low anchoring depth due to screw foundation
- Maximum structural safety and durability
- Especially for solar plants on landfill sites
- simple deconstruction
- 5 respectively 10 years durability guarantee*

*The terms of guarantee can be looked up at www.schletter.de/AGB_en.
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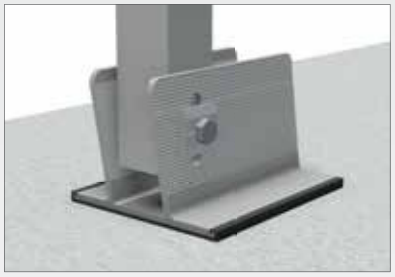
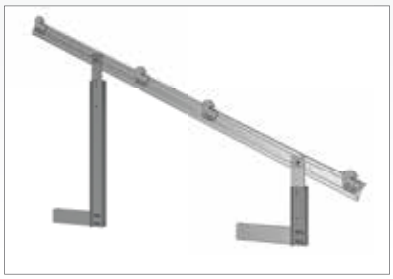


PvMax3 supports



PvMax-S support

PvMax3 / PvMax-S

In many cases a foundation with driven piles is not possible due to the soil conditions (soil is too soft or too stony, landfill site, etc.). For such cases, we have developed the systems PvMax3 and PvMax-S. On landfill sites, it must be considered that the maximum permissible soil pressing is not exceeding. Please consider this and inform us accordingly when sending us your inquiry. As the substructure is mounted on pre-cast concrete foundations, valuable mounting time and costs can be saved. This system is also ideal for small solar plants! As there are only as few bolted connections as absolutely required and the support kits can be mounted easily and quickly on the installation site.

This universal unit assembly system has been developed further on the basis of its predecessor PvMax2 and the 1000-time proven profiles from the IsoTop program. The load-bearing characteristics have been improved significantly and the assembly effort as well as the rack price could be reduced significantly. The soil surface area remains accessible in an optimum manner, and can be used for sheep grazing, for example.

The benefits of PvMax3 / PvMax-S

- No perforation of the subsoil
- Quick and cost-effective project planning, also with special projects
- Complete structural analysis incl. foundation calculation with concrete anchor recommendation
- Quick and simple mounting (partially pre-assembled support kits)
- 5 respectively 10 years durability guarantee*

Here, the assembly of the PvMax3 is shown.

*The terms of guarantee can be looked up at www.schletter.de/AGB_en.
Subject to changes and/or technical modifications.

Solutions for landfill sites and land conversion areas

Customized solutions

PvCombi

The combination of the proven PvMax3 unit assembly system and minimum superimposed loads make PvCombi an ideal solution for landfill sites. Due to individual planning, this system allows customized solutions for your projects.

Pile-driven foundations often cannot be used on landfill sites because they might perforate the geomembrane in the soil. It may also easily happen that concrete foundations cannot be used because they put too much pressure on the soil. PvCombi has been designed especially for such purposes. By interconnecting the rows, the loads that are transferred into the ground are optimally distributed. Due to the extended base contact area and thereby smaller moment of tilt, structural safety can be safeguarded with less weight loads.

Usually, pre-fabricated concrete elements or cast-in-place concrete elements are used as foundations. What type of foundation is chosen depends on the conditions on location.

Benefits of PvCombi

- Minimal weight loads due to a multi-row construction
- Designed especially for applications on landfill sites
- The well-proven unit assembly system based on PvMax2 / PvMax3
- 10-year guarantee*

*The terms of guarantee can be looked up at www.schletter.de/AGB_en.
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FS Con

The FS Con system was designed especially for the mounting of PV plants on completely or partially concreted land conversion areas. According to the German federal soil protection law, conversion areas are building grounds that cannot be used for urban development, that are affected by environmental burdens, for example the presence of warfare material, soil sealing that impede the draining of water or areas that have been used for opencast mining.

In many cases, pile-driven foundations cannot be used on conversion areas, like for example former military airports with concreted landing strips. These areas represent a huge potential for the generation of solar power. Thus, such areas areas are subsidized with special feed-in tariffs in Germany. In combination with the pile-driven base system FS, the inclined systems are directly screwed to the concrete foundations which gives them the best possible structural safety in any weather condition.

The benefits of FS Con

- This system has been developed especially for conversion areas
- Ideal supplement to the pile-driven system FS
- Pre-assembled as far as possible.
- Long service life due to exemplary combinations of materials
- 10-year guarantee*

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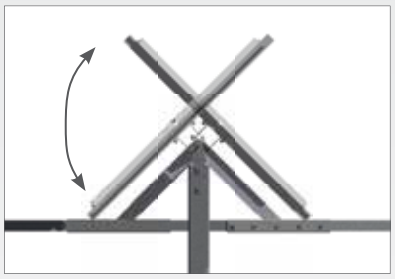
Tracking systems

The logical next step



FS Track-2 (Solar tracker)

As big solar systems are getting ever more popular, a reliable market for solar tracking systems has established itself. Especially in view of the increasing use of self-generated solar power, east-west oriented tracking systems are a good possibility to increase yields and profitability.

Schletter provides suitable solutions for these markets. Depending on project size, terrain, country, etc., there is a range of different system compilations available in order to meet the customer´s requirements in the best possible way. In several countries, Schletter cooperates with cooperation partners who have good local connections. FS Track has a swing range of +/- 45° around the North-South axis.

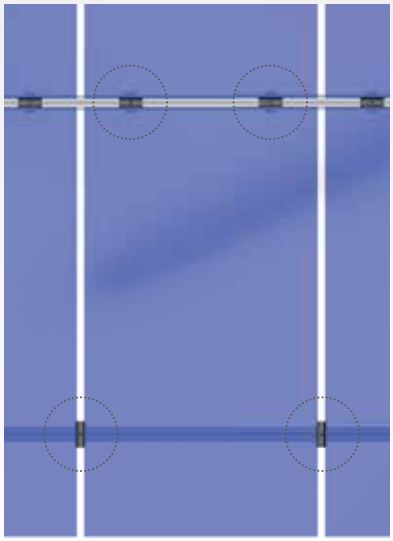
On request, systems can also be set up without mechanical coupling between several rows. This increases the stability on uneven terrain.

Advantages of FS Track-2

- Single axis horizontal tracker
- Maximum level of pre-fabrication (no welding or adaptation works required on the building site)
- Adjustable bearings allow for high ramming tolerances
- Cost-efficient and quickly to be installed using pile-driven foundations
- Cost-efficient bloc arrangement with just a few drive units for large even module surfaces.
- Adaptation to any terrain formation due to small individually customized and dimensioned block units
- Remote maintenance and remote diagnostics due to fully networked control structure

Systems with combined module clamping

Individually applicable



Clamping points

Schletter Kombi system

With standard clamping, the modules are fastened at the clamping points specified by the module manufacturer. In contrast to that, the new Schletter Kombi system allows two ways of clamping on the same rack. This makes it possible to save at least one module-bearing profile per rack.

This combined clamping can reduce the need for material considerably, especially with big projects. Of course, this does not affect the solar plant´s quality or structural safety. This extra economic design for ground-mounted solar systems allows the fastening of many different kinds of modules. Possible clamping combinations are determined individually by our technical advisers for your project.

Please remember: For the planning of the Schletter Kombi system, an individual module approval by the module manufacturer is required.

Benefits of the Schletter Kombi system

- Less material needed - lower costs
- Can be planned individually in combination with the FS system or the FS steel system (one or two supports)
- 5 or 10 years durability guarantee*

*The terms of guarantee can be looked up at www.schletter.de/AGB_en.
Subject to changes and/or technical modifications.

Auxiliary equipment / accessories

Individual enhancements

Lightning protection

Cable duct

SecuFix

Cable clip for purlin

Cable clip for girder

Pipe clamp for foundation

Cable tray for AC-cabling

Optional accessories

Be on the safe side! We provide special accessories for "worst case scenarios" like lightning strikes of theft. The utilization of cable ducts and cable clips also facilitate a long service life of your solar plant. Insulations damaged by wind or mechanical loads can do serious harm to the modules, for example by light arcs.

Lightning protection

On request, the complete plant can be equipped with exterior lightning protection by means of only a few additional components. The Schletter GmbH provides a special planning program for that.

Cable routing

The following accessories can improve the guidance of your cables.

- Cable duct
- Cable clip for purlin
- Cable clip for girder
- Pipe clamp for foundation
- Cable tray for AC-cabling

SecuFix/SecuFix2

The Schletter SecuFix is an extended anti-theft device for your valuable modules:

- can be refitted any time
- almost unbreakable
- unrivalled value for money

On request, we can deliver you quality steel balls with the exact diameter for the standard socket head screws you order from us. After the putting into operation of the solar plant, secure all bolts by hammering in the SecuFix ball – that´s it!

SecuFix2 is an ideal completion for SecuFix and makes any unauthorized disassembly of solar modules much more difficult. The first module of each row is fastened from below using a special extra kit. Thus, we can give your solar plant extra protection!

Please scan this QR code to get further information about the individual components.

References

Ground-mounted systems

Customer projects

With a delivered quantity of fastening components corresponding to about 5MW/ day, Schletter is your partner with experience in safe and cost-efficient system dimensioning!

Schletter fastening systems for ground-mounted solar plants stand for short mounting times, a long service life and high economic efficiency. Based on project data provided - country-specific standards and guidelines, we calculate the complete structural analysis and create an end-to-end project plan, already when we submit you our offer. This safeguards reliable structural safety and maximum failure safety of the ground-mounted solar plant. We will be happy to show you a few projects of our satisfied customers!

Do you want more! Scan the QR code to see more reference projects.

FS 2V Duo

Project: Stockenboi Kärnten
Plant size: 1.3 MWp
Customer: S-Tech

FS 2V - *South-Africa*

Plant size: 96 MWp
Customer: Iberdrola/Group 5

FS 5H - *Eckendorf*

Plant size: 1.6 MWp
Customer: Eckendorf solar farm

FS 4H - *Kumamoto*

Plant size: 1 MWp
Customer: juwi Shizen Energy Inc.

References

Ground-mounted systems

FS 4H

Project: Konkoonsies
Plant size: 10 MWp
Customer: Juwi

FS 3V - *Töging*

Plant size: 5 MWp
Customer: Elektro Kaiser

FS 4H - *Sarigua (Panama)*

Plant size: 2.4 MWp
Customer: Aktor

FS 2H - *Salmanskirchen*

Plant size: 30 kWp
Customer: Gautzsch Großhandel Bayern GmbH

FS 3V - *Fujimi*

Plant size: 735 kWp
Customer: Nakajimadensou

FS 5H - *De Aar*

Plant size: 50 MWp
Customer: Siemens

FS 2V - *Cazaubon*

Plant size: 3.5 MWp
Customer: Amorgreen

FS 2V

Project: Karditsa
Plant size: 2 MWp
Customer: TEMEK AE

FS 2V - *Penhale Farm*

Plant size: 3 MWp
Customer: Wirsol UK

FS Duo 3V - *Stowbridge*

Plant size: 24.5 MWp
Customer: Hanwha Q CELLS GmbH

FS 4H - *Tsuyama*

Plant size: 1.6 MWp
Customer: Asahi Techno

FS 3V - *Hitachinaka*

Plant size: 2.5 MWp
Customer: Isuzu

FS 2V Steel - *Ucuquer*

Plant size: 410 kWp
Customer: SolarEPC

FS 6H - *Mizil*

Plant size: 5.8 MWp
Customer: REC Solar

References

Ground-mounted systems

Watch the set-up of the solar plant in Alfonsine from pile-driving to completion.

Together with San Alberto a Total power 70MW!

FS 2V

Project: Alfonsine 1
Plant size: 36 MWp
Customer: TRE Tozzi

FS 2V - *Alfonsine 2*

Plant size: 37 MWp
Customer: TRE-Tozzi Renewable Energy

FS 2V - *Bovera*

Plant size: 1.1 MWp
Customer: Wirsol

FS 5H - *El Cura*

Plant size: 2 MWp
Customer: JUWI

FS 5H - *Ehekirchen*

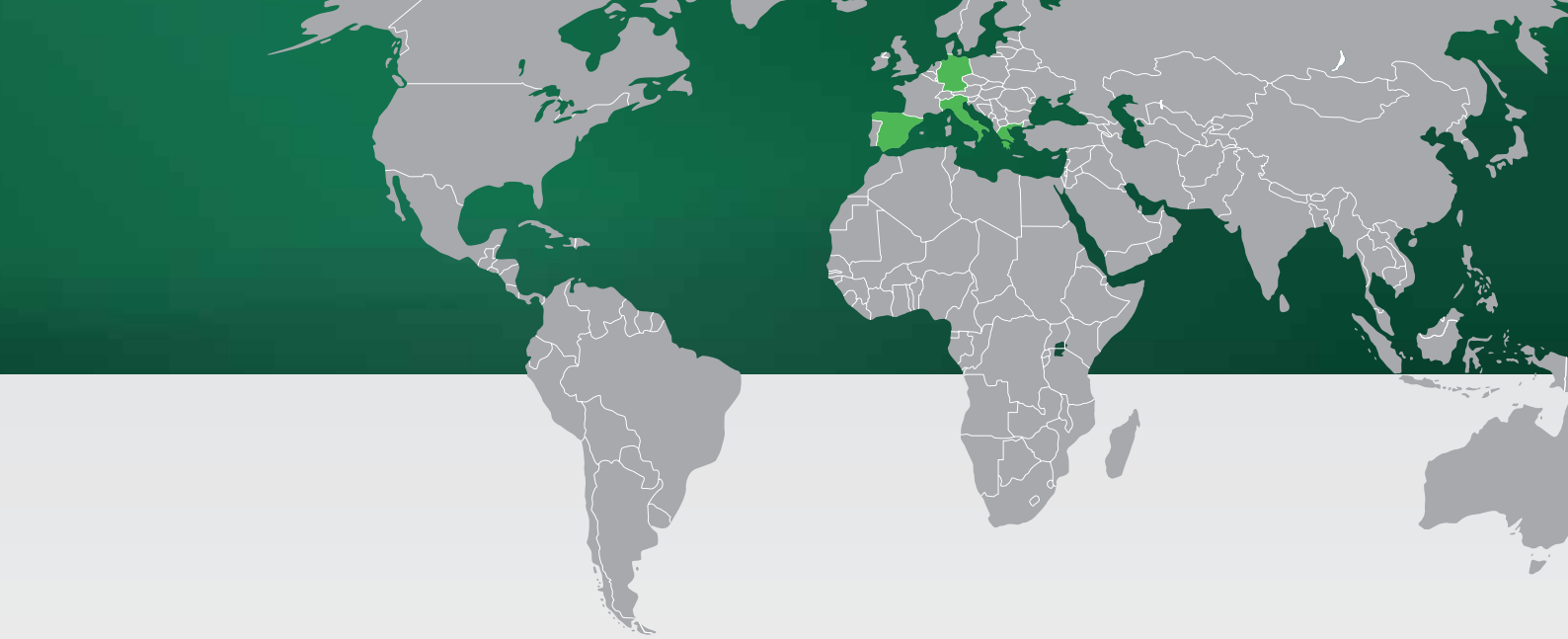
Plant size: 1.2 MWp
Customer: JUWI

FS 2V - *Sierra de Yeguas*

Plant size: 2.2 MWp
Customer: ESA

FS 2V - *Kastl*

Plant size: 1.3 MWp
Customer: BayWa Niederaichbach



FS 2V

Project: Rotthalmünster
Plant size: 1.5 MWp
Customer: EEPro

FS 2V lay-in system - *Porto Cristo*

Plant size: 1.6 MWp
Customer: Wirsol Energia

FS 2V lay-in system - *Casabermeja*

Plant size: 2.08 MWp
Customer: Ansasol

FS 2V lay-in system - *Felantix*

Plant size: 1.1 MWp
Customer: Wirsol Energia

FS 2V - *Jaen*

Plant size: 4.1 MWp
Customer: Würth Solar

FS 2V - *CS Piadina*

Plant size: 6 MWp
Customer: Phönix Solar AG

FS 2V - *Agrosika - Pella*

Plant size: 400 kWp
Customer: SUNSET Energietechnik GmbH

References

Ground-mounted systems

FS 4H

Project: Aries
Plant size: 10 MWp
Customer: Juwi

FS 3V - *FS Tractebel Tubarao*

Plant size: 3.1 MWp
Customer: Wirsol Solar AG

FS 2V - *Ploiesti*

Plant size: 8 MWp
Customer: A+F GmbH

FS 5H - *Brandis*

Plant size: 40 MWp
Customer: JUWI

FS 2V Uno - *Oldenburg Wine Farm*

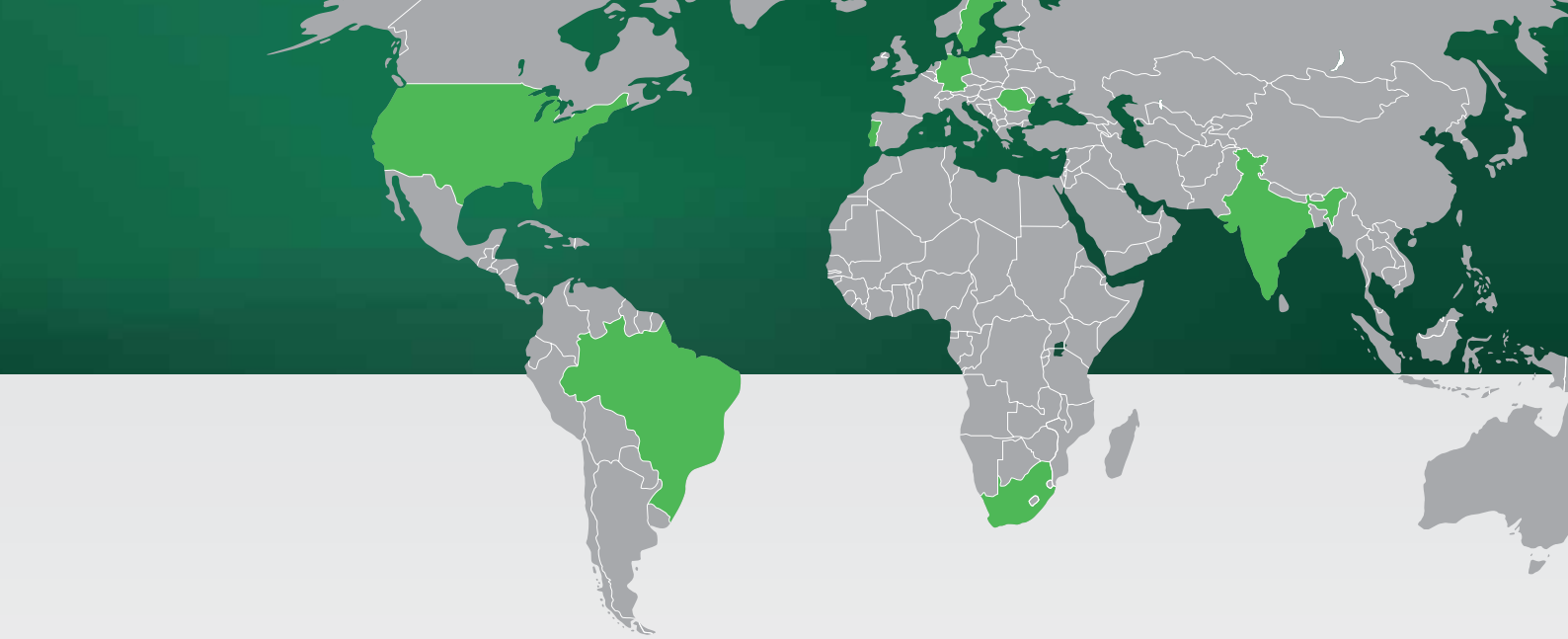
Plant size: 44.64 MWp
Customer: Soventix

FS 2V Lay-in system - *Krakow am See*

Plant size: 1.5 MWp
Customer: Wirsol Solar AG

FS 2V Uno - *Canha*

Plant size: 13.6 MWp
Customer: Hanwha Q CELLS GmbH



Total power of the solar plant: 80 MW

FS 2V

Project: Cupertino
Plant size: 40 MWp
Customer: Cupertino Electric

FS 2V Lay-in system - *Els Pujols*

Plant size: 1.08 MWp
Customer: Wirsol Energia

FS 2V - *Lobosillo*

Plant size: 2.6 MWp
Customer: Ecostream

FS 4H - *Jalgaon*

Plant size: 7.9 MWp
Customer: Jain Irrigation

FS 2V Lay-in system - *Jännersdorf*

Plant size: 25.34 MWp
Customer: Parabel AG

FS 2V - *Simris*

Plant size: 442 kWp
Customer: SOLECT POWER

FS 5H - Droogfontein

Plant size: 50 MWp
Customer: Siemens

Our service

High quality, stable value and safety

Easy to assemble and certified quality

"We do not get any discount on wind and snow loads" (Dr. Cedrik Zapfe; structural engineer, Dr. Zapfe GmbH). *Inevitable cost reductions (due to decreasing feed-in-tariffs) can be achieved by simplifying and speeding up the assembly of solar plants. Especially in the area of ground-mounted solar plants, structures are completely pre-assembled in the production plant and delivered to the site according to an exact "just in time" delivery and assembly schedule.*

Schletter has been setting up ground-mounted solar plants already since 2005. Since then, there have been no retrofitting actions due to insufficient system dimensioning. So please rely on our long-term experience!

Vibrations and resonance

Particularly one-support fastening systems for ground-mounted solar plants are prone to vibrations. Strong vibrations can result in material fatigue and material failure. Thus, not only structural calculations but also dynamic calculations are carried out.

Each vibration frequency is determined and compared to the frequency of excitation caused by gusts. Due to a sufficient stiffness and the vibration frequency of about 10 Hz, a sufficient distance to the wind exitation frequencies (about 0.5 Hz) is created. Thus, any resonance is impeded, vibrations are minimized.

Comparison of girders made of steel and aluminium

The price fluctuations for steel and aluminium are very different, which of course has an effect on the comparison of prices. Generally, aluminium is more valuable (no corrosion, stable value, etc.) but may be a bit more expensive.
Structures made ofhot-dip galvanized steel are of similar high quality, but usually as expensive as aluminium designs. Hot-dip galvanizing requires a certain minimum wall thickness of the steel profiles. Otherwise, the profile (rail) will be deformed. Thus, fastening structures are often made of thin rolled sheet metal profiles. These profiles are only electro-galvanized (limited durability with exterior use) and sometimes only strip-galvanized (with uncoated cutting edges)!

Our vision for the future

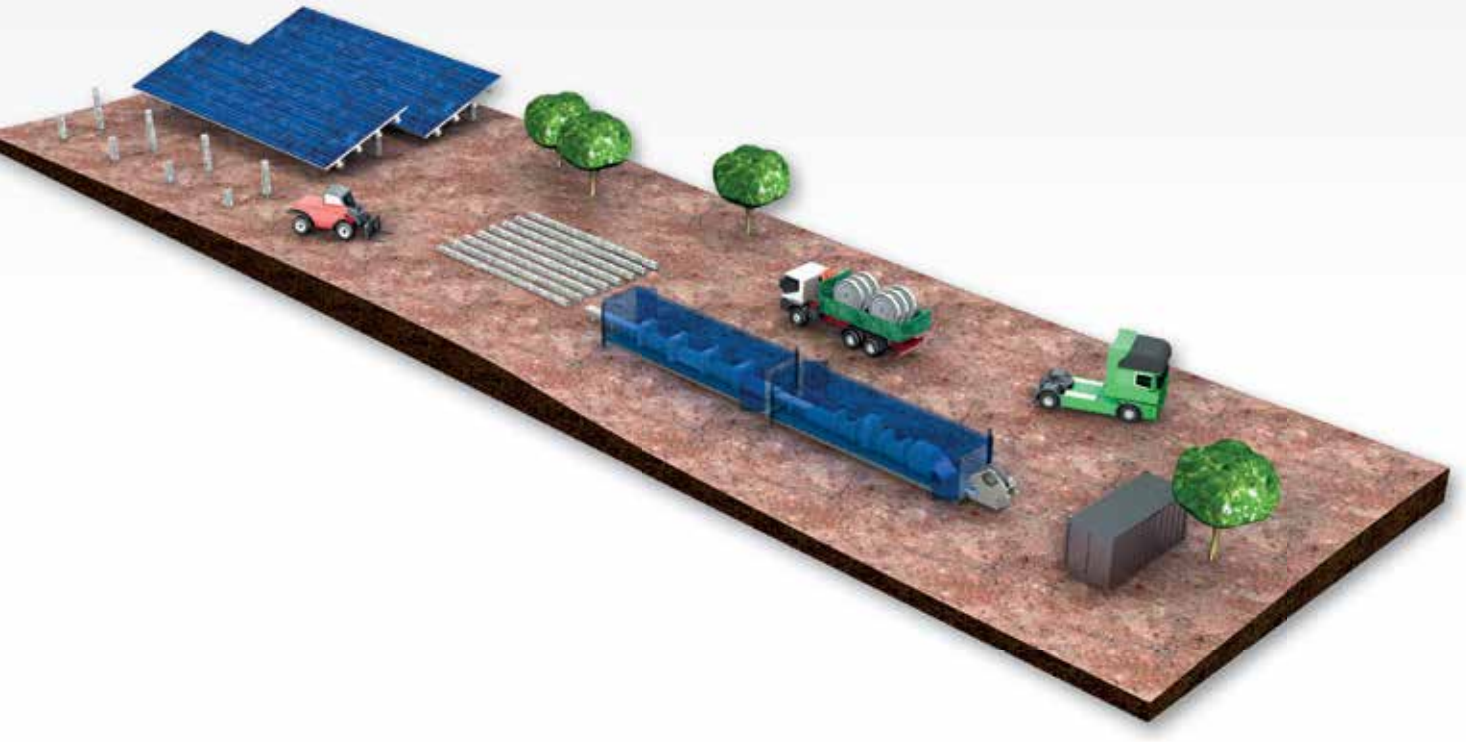
Mobile roll forming

Local content and LCM

We offer our customers all over the world local content according to country-specific national directives and approvals. We are preparing the LCM (Local Content Mobile), a just-in-time production with production containers installed right on the building site. The optional rail production "profiling on site" saves production costs, shipping volume and transportation costs and allows almost any project-specific rail length.

Also in areas outside Germany, our customers can benefit from the proven "Schletter service" they are used to and from our high-quality and at the same time economic mounting systems.

Country-specific standards and high local content requirements often represent unexpected challenges. Our sales representatives know the regional structures, the national language and the respective culture area. We cooperate with mounting teams and partners with knowledge of the country-specific regulations, technical approvals and labour-law related permissions.



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Our members of staff are available from Monday to Friday from 7 am to 5 pm to provide comprehensive and competent technical advice for the planning of your solar plant and to answer questions regarding logistics and order processing.

SCHLETTER

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