

FS Uno

The ground-mounted system made of steel

- No soil sealing
- Extremely short assembly times
- Maximum level of pre-assembly
- Perfectly synchronized system components
- High economic efficiency
- Optimum accessibility for terrain maintenance (central support)



Ground-mounted plants are an economically efficient alternative to solar plants on roofs. The right substructure made by Schletter safeguards structural safety, maximum economic efficiency and long durability of ground-mounted solar plants.

In use all over the world

The FS ground-mounted system has proven itself for many years in countless projects almost all over the world. The FS Uno substructure made of steel has been designed as an alternative to the FS aluminium design. It has all the advantages of the FS System (aluminium), but is an even more price-efficient design due to the use of steel. A module clamp adapter allows both vertical module mounting and horizontal module alignment.

An economically efficient solution for big projects

The module-bearing structure is made of strip-galvanised steel and is available in different designs. It has been made sure that the substructure is suitable for almost any terrain. Efficient material utilization and support distances that are adapted to the terrain make the design even more attractive for large ground-mounted solar projects.

In order to reduce the costs to the customer, the system is already largely pre-assembled when it is delivered to the site. As the material is galvanized, FS Uno is rather versatile.

In most cases, the pile-driven foundations are used instead of concrete foundations. This saves both material and labour costs. The system stands for optimum accessibility and there is no soil sealing.



Everything from one source

We manufacture 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 type of mounting.

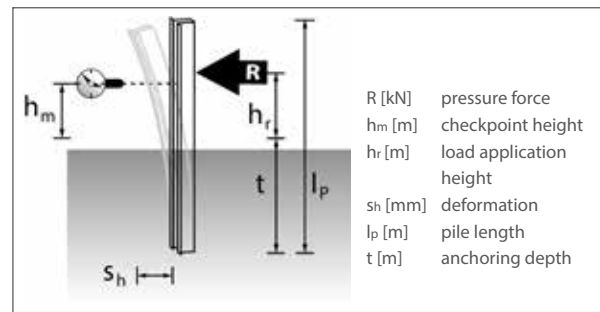


*The terms of guarantee can be referenced at www.schletter.de/AGB_en.

Structural safety first

The detailed and individual project planning on the basis of currently valid standards safeguards the structural safety of the solar plant for many years, but of course that is not all. A geological survey of the building ground is created on location. The load-bearing capacity of the soil is determined by means of load tests.

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



Mechanical background of inclined pull-out tests

The idea behind inclined pull-out tests is that the wind does not act in an isolated manner in vertical or horizontal direction, but 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 bigger 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.

Extremely stable

In order to make sure that the anchoring forces can be transferred up to the upper connection point to achieve maximum structural safety against wind and snow loads, hot-dip galvanized pile-driven foundations of different sizes are used. The pile-driving techniques (FG and SRF) we developed safeguard optimum anchoring in the ground and maximum bending stiffness at the same time.



Technical solutions for slopes and rocky subsoil

Special terrain-friendly hydraulic pile-drivers are used for the pile-driving of the profiles into the soil. This pile-driving technique is very suitable for ground-mounted solar plants. Depending on the condition of the soil, one pile-driver can pile-drive up to 250 profiles (piles) a day. If the subsoil is rocky, the machine can be equipped with a boring unit. Mounting on steep slopes is also possible.



The pile-driven supports are stable - individually and combined

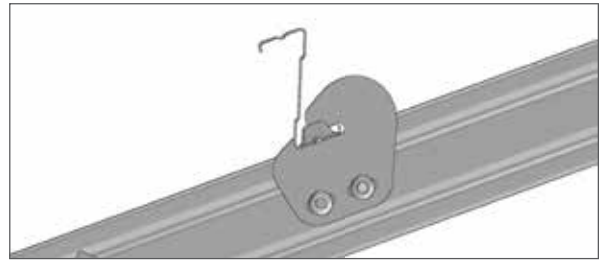
The support geometry is the skeletal structure of each FS plant. After all, the individual support base is the crucial factor because it must optimally utilize the structural characteristics of the ground anchoring and the good load-bearing capacity under moment loading. As the profile is continuous to the attachment head, additional joints (with the associated mechanical effort and / or risk of corrosion) is avoided.

FS Uno stands for quick and economic solar plant construction of big solar farms with any desired type of solar module. Pile-driven steel profiles with optimized geometry are the foundations of all systems of this series. This safeguards long durability, optimum anchoring in the soil, as little soil sealing as possible and convenient access maintenance operations.



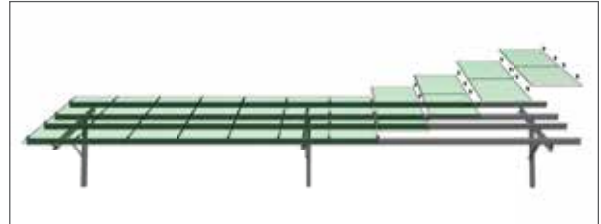
Perfect fit

The module-bearing rail always presents a profile geometry that is aligned to the flow of forces. Thus, the required structural characteristics are achieved with minimum utilization of materials. Fastening grooves are incorporated into all profiles to facilitate assembly. The module-bearing rails are fastened to the supporting units by means of special mounting claws.



According to customer requirements, the modules are mounted quickly and cost-efficiently from the ground or to the rack using suitable tools.

The arrangement of the modules is project-specific. The modules are fastened vertically, horizontally or with the combined clamping system by Schletter.



Technical data

Material	<ul style="list-style-type: none"> • Pile-driven foundation posts: Steel, hot-dip galvanized • Profiles (rails): Steel, hot-dip galvanized • Fastening elements, screws/bolts: High-grade steel 1.4301
Construction	<ul style="list-style-type: none"> • Fine adjustment option to align the pile after pile-driving. • Cost-optimized complete construction due to structural optimization • Components designed for extra quick and easy mounting
Module clamping¹	<ul style="list-style-type: none"> • Framed and unframed modules • Combined module clamping possible • With steel clamps, standard clamps or Rapid 2+ clamps
Accessories¹	<ul style="list-style-type: none"> • Cable channels, cable ducts, cable ties • Components for internal potential equalization
Logistical details	<ul style="list-style-type: none"> • Highest level of pre-assembly • Quick transport to the installation site
Delivery and services	<ul style="list-style-type: none"> • Site-specific structural analysis based on local loading data • Delivery of the complete mounting material • Optional: Soil examination and soil statics • Optional: Pile-driving of the foundations, rack and/or module mounting
Design calculations	<ul style="list-style-type: none"> • Structural analysis of the respective terrain based upon a geological survey • Individual system statics based on regional load values • Load assumptions according to DIN EN 1990 (Eurocode 0), DIN EN 1991 (Eurocode 1), DIN EN 1993 (Eurocode 3), DIN EN 1999 (Eurocode 9) and further respectively corresponding country-specific technical standards • Profile geometries with highly efficient material utilization • Structural analysis of all construction components based on FEM-calculation • Optional: Wind load vibration simulation • Optional: Earthquake simulation
Terrain maintenance	<ul style="list-style-type: none"> • A central support allows optimum terrain maintenance • Sheep grazing

¹ module clamps and accessories are listed in our component overview. You will also find them in the download area of our website at: <http://www.schletter.eu>