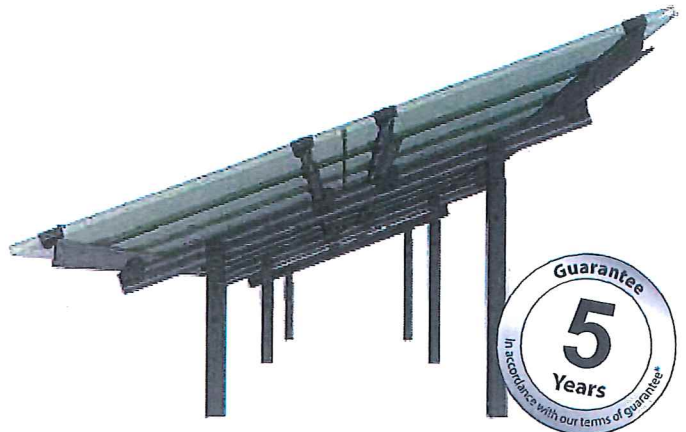


FS Duo

The two-support system made of steel

- No soil sealing
- Extremely short assembly time
- Maximum level of pre-assembly
- Perfectly synchronized system components
- High economic efficiency



The right substructure made by Schletter safeguards structural safety, maximum economic efficiency and long durability of ground-mounted solar plants. The FS ground-mounted system has proven itself for many years in countless projects almost all over the world. Two-support systems are first choice when it comes to big multi-rowed module arrangements. If big module racks with low inclinations are to be installed on even terrain, FS Duo is the best choice.

We have successfully lowered the costs

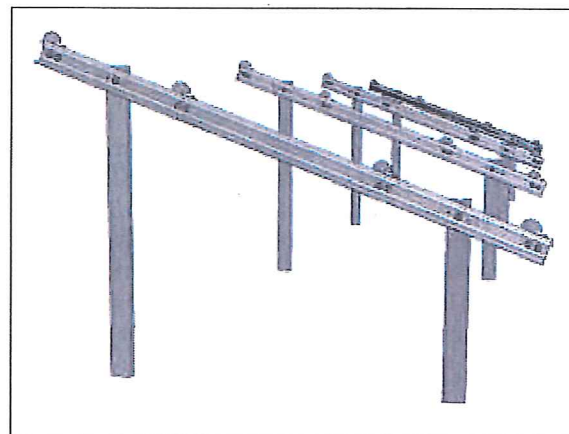
Economic efficiency is getting ever more important for ground-mounted solar plant projects because there is increasing cost pressure. In many cases we could considerably reduce the overall cost for big solar plants by using pile-driven foundations. In most cases, this type of foundation makes concrete foundations redundant. This of course saves material and labour costs.

Everything from one source

We manufacture all components ourselves in our factory. Thus, we can avoid shortages and can reliably offer you high quality products. We offer modular systems for any kind of foundation, any subsoil and any type of mounting.

Structural safety first

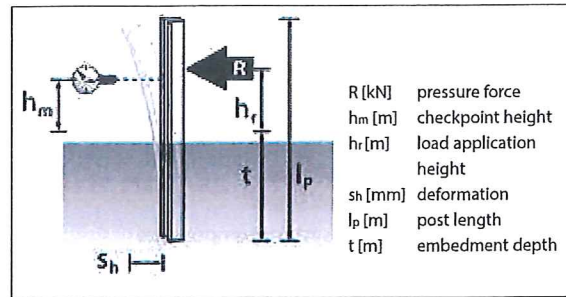
Two pile-driven foundations as one support unit combined with our load-optimized Z-purlins are a structurally safe substructure for solar module areas with wide spans. As the material is galvanized, the area of application is rather wide. FG and SRF profiles made by Schletter can be used as pile-driven foundations. Both designs allow an individual project planning with maximum economic efficiency.



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

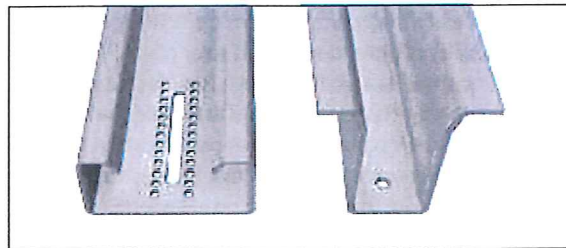


Mechanical background of inclined pull-out tests

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.

Well-prepared for wind and snow loads

Hot-dip galvanized foundation posts in different size categories are used for the foundation so that the anchoring forces can be transmitted as far as the upper connection point, thus ensuring optimal structural safety of the plant against wind and snow loads. The profiles for pile-driving (FG and SRF) we developed safeguard optimum anchoring in the ground and maximum bending stiffness at the same time.



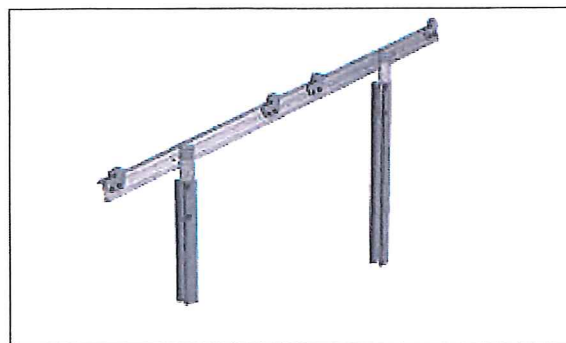
Slope, rocky subsoil? No problem!

Special terrain-friendly hydraulic pile-drivers are used for the pile-driving of the foundation posts 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 posts per day. If the subsoil is rocky, the hydraulic pile-driver can be equipped with a boring unit.



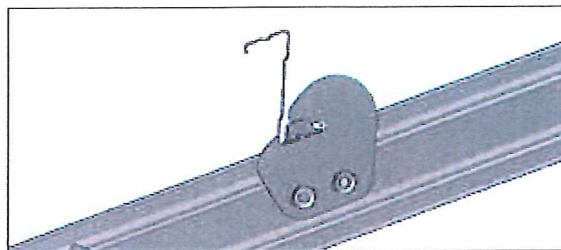
A clear plus for the two-support system

The support geometry is the skeletal structure of each FS plant. As two pile-driven foundations form one support unit, FS Duo can take bigger loads than FS Uno. This allows wider support distances and bigger module areas. The reduced number of components as well as the almost 100% prefabrication of the girder assembly groups in our factory reduce the assembly time to a minimum. As the material is galvanized, FS Duo is rather versatile.

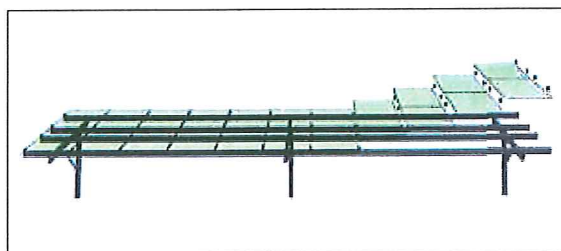


Mounting claws for a firm seat

The module-bearing rail always has a profile geometry that is aligned to the flow of forces. Thus, the required structural characteristics are achieved with minimum utilization of materials. The module-bearing rails are fastened to the support units with special mounting claws. They are connected to a firmly seated unit by means of clamping devices.



According to customer requirements, the modules are mounted quickly and cost-efficiently 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. As a standard, steel clamps are available for this purpose. With an adapter, also Standard or Rapid clamps by Schletter can be used.



Technical data

Material	<ul style="list-style-type: none"> • Pile-driven foundation posts: Steel, hot-dip galvanized • Rails: Steel, hot-dip galvanized • Fastening elements, screws/bolts: Steel, hot-dip galvanized or high-grade steel
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 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
Logistics	<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 verification 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