

GMS[®] MAX



Max flexibility – Max power



- / Maximum standardised components
- / Maximum utilisation of ground area
- / Maximum set-up speed with ASSEMBLY 2.0
- / Maximum value

GMS® MAX

In order to reduce system costs, planners are using larger constructions with 4 to 6 module rows horizontally or 3 to 4 rows vertically and tight row spacing. We have developed the GMS® MAX mounting system for these requirements. Horizontal and vertical carriers, fixed on two posts: no more is required to obtain a stable and cost-effective substructure. Our special heads together with various clamps guarantee the necessary flexibility for designing the project-specific GMS® MAX installation.

Due to our expertise gained by numerous projects, we have developed a revolutionary mounting process for the GMS® MAX system: with the patented ASSEMBLY 2.0 process, solar modules are mounted at one end of the row and then – step by step – pushed to their destination by using rolling supports. This system allows closer row spaces and reduces the logistical effort and the assembly time remarkably. As a sustainable side effect, soil and turf are protected even better, which minimizes erosion.

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THE BENEFITS AT A GLANCE

/ Standardised components

Maximum standardised: 4 main components of the GMS® MAX system combine simplicity and flexibility, which enables a price-performance-ratio that could not be better.

/ ASSEMBLY 2.0

The GMS® MAX system can be installed by using the revolutionary mounting process ASSEMBLY 2.0, which further increases the economic efficiency of the system: max installation speed, max utilization of ground area, max soil conservation – in short: max efficiency.

/ Maximum use of space

Thanks to ASSEMBLY 2.0, the GMS® MAX system requires just minimal row spacing. Temporary losses from self shading are reduced due to flatter angles of inclination. GMS® MAX enables almost uninterrupted use of space – a factor which is (in view of increasing property prices) growing in importance.

/ Safe height adjustment

The head of the GMS® MAX system is able to compensate height differences of the posts. Reliable gearing prevents the system from slipping. The component is very simple to handle which saves valuable assembly time on site.

/ Open cable installation

The lines are fixed by using clips or clamps and get bundled in our "cable channel light". Supply lines from the ground are installed inside of the open posts to ensure they are well protected. This lightweight installation solution is highly cost-effective and enables the lines to be checked later without any effort.

/ Adaptation to the terrain

Our flexible adjustment rocker allows lateral inclination of the system in order to adapt it to the ground profile – simply and quickly on site and without any extra preparation work during production.

/ Suitable for any ground type

GMS® MAX supports solutions for any ground type. Installation on landfill sites is possible without any problems, thanks to foundation depths of 40–80 cm and consideration of ground settlements (compare: page 5).

/ Durable corrosion protection

GMS® MAX uses high-quality materials: steel parts are batch galvanised, long beams and module carriers are made of aluminium, for screw connections only stainless steel is used.

/ Secure static

Project-specific calculation according to the respective norms, ensures static safety.

/ Rapid commissioning

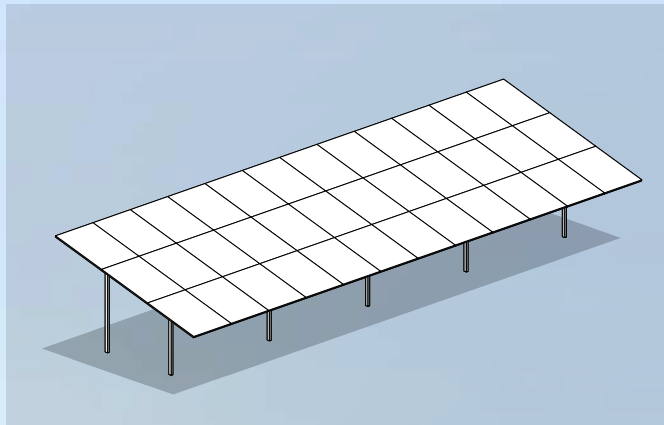
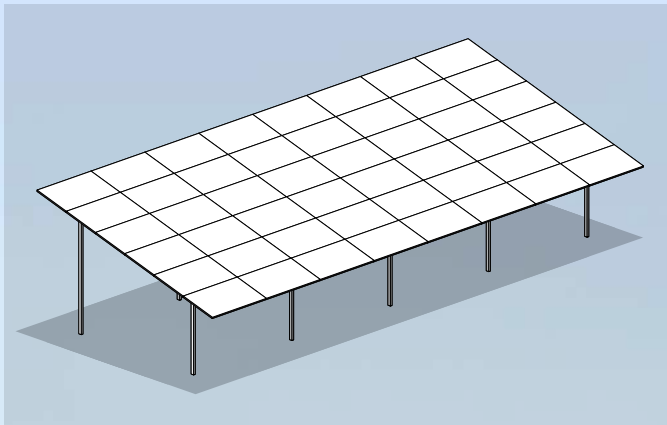
Quickest delivery times, low weight, the use of just 4 main components, fast assembly, especially combined with ASSEMBLY 2.0: we have optimised GMS® MAX to achieve the shortest possible project durations.

/ Best value

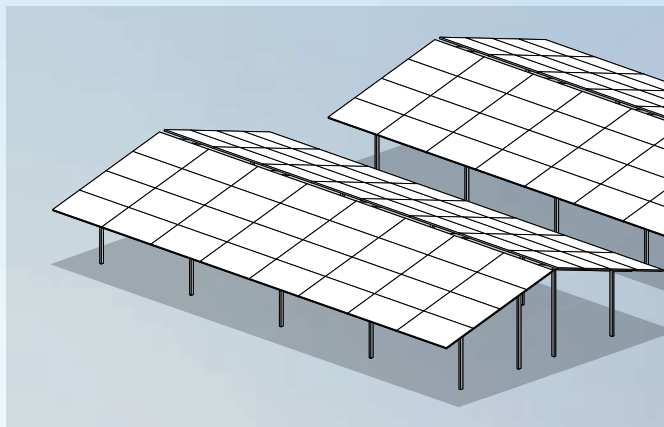
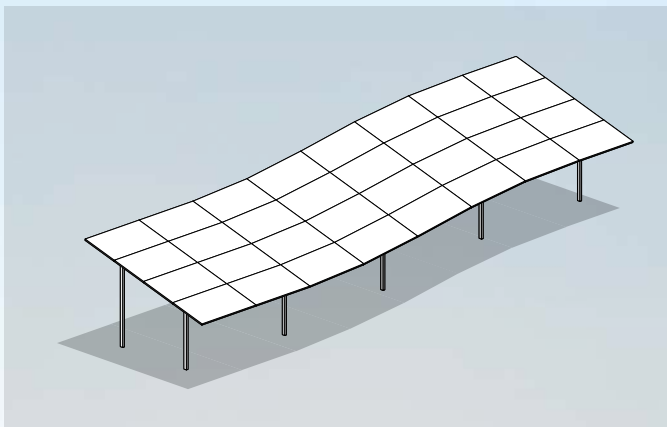
By focusing on only 4 main components we can offer attractive unit costs.

APPLICATIONS

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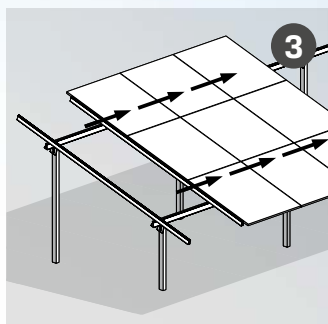
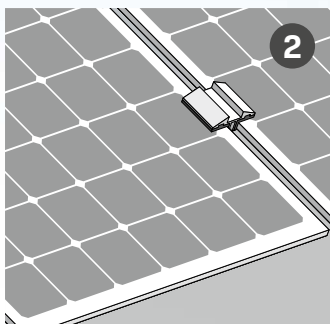
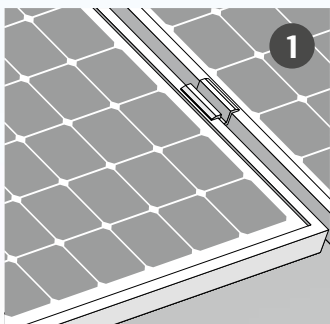


South orientated systems with 2 post rows, 4-6 horizontal module rows or 2-4 vertical rows

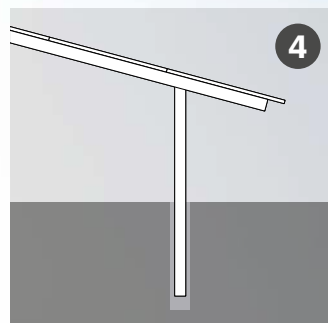
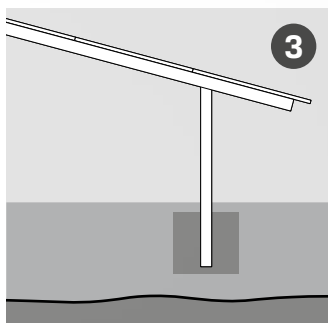
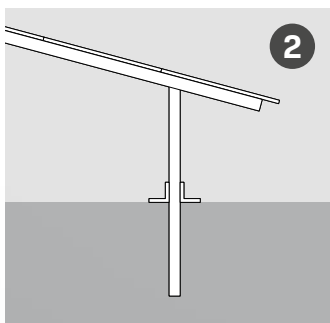
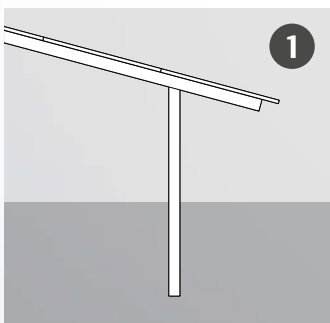


Adaptation to the ground profile (adjustment rocker)

East-west systems (horizontal / vertical)

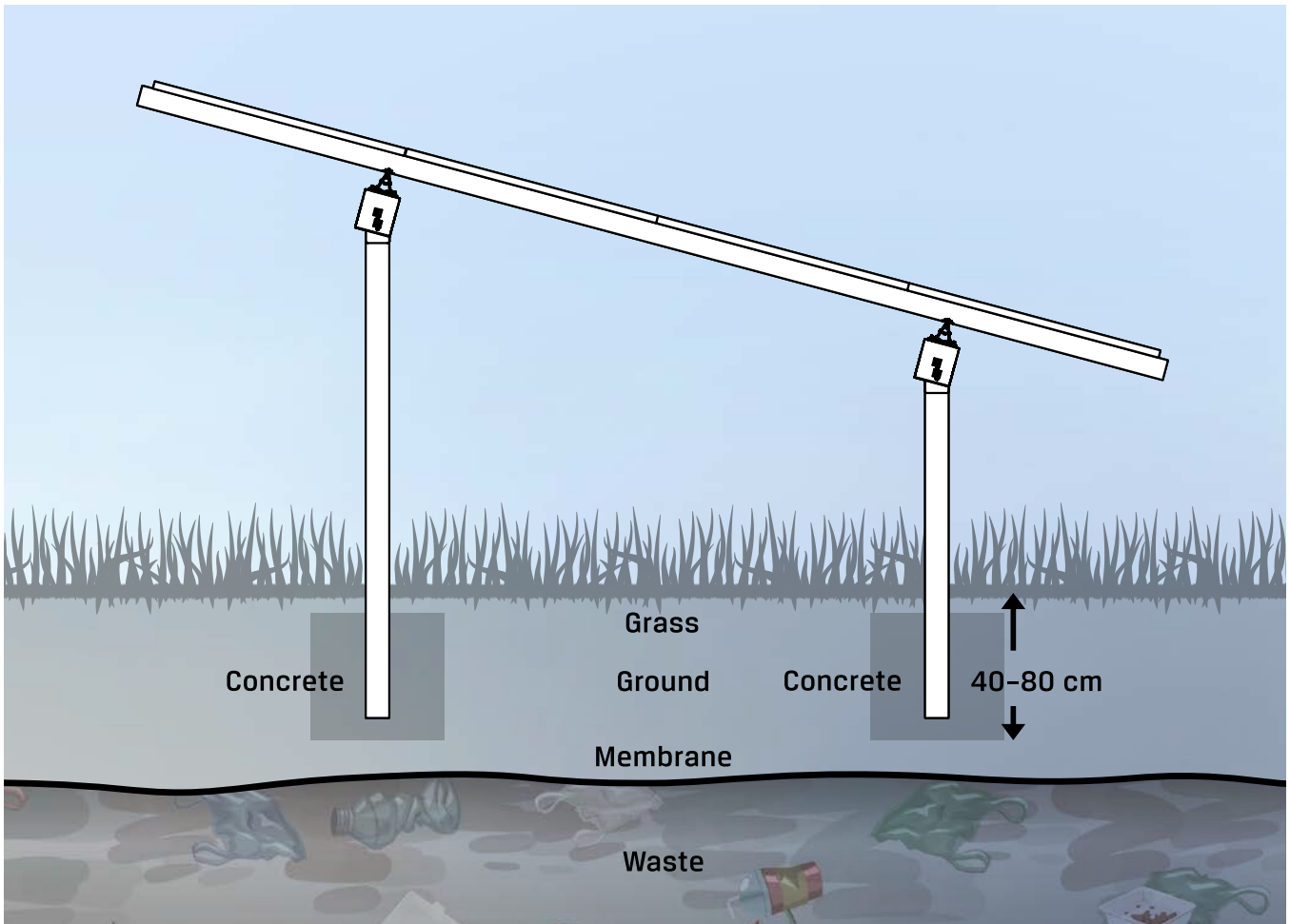


Mounting types: ① framed / ② unframed modules; ③ innovative patented ASSEMBLY 2.0 process



Suitable for any ground conditions with various foundation types: ① ram foundation (also with ② load distribution plates), ③ concrete foundation (e.g. for landfill sites), ④ drill-holes (in rocky ground)

LANDFILL SITES



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Landfill sites can additionally be used with solar parks. The problem is the limited depth of the top layer – and the sensitive sealing membrane underneath, which needs to be protected under any circumstances.

With GMS® MAX, MKG Göbel provides the perfect mounting system and has already installed a whole number of solar parks on landfills.

GMS® MAX advantages

- Low foundation depth: standard embedment depth of 80 cm, in exceptional cases even less is possible
- Slope parallel construction is possible, even with varying terrain inclinations
- Side inclinations up to 15° can be realized
- Above-ground cable routing is possible
- ASSEMBLY 2.0 procedure protects the turf
- Erosion protection: erosion insensitive foundation, controlled water distribution
- Foundation can be made with split posts optionally to compensate ground settlements afterwards



Example projects (from above): solar park landfill Lochem (NL), solar park stone quarry Nitzenhausen (D)

MAIN VARIANTS

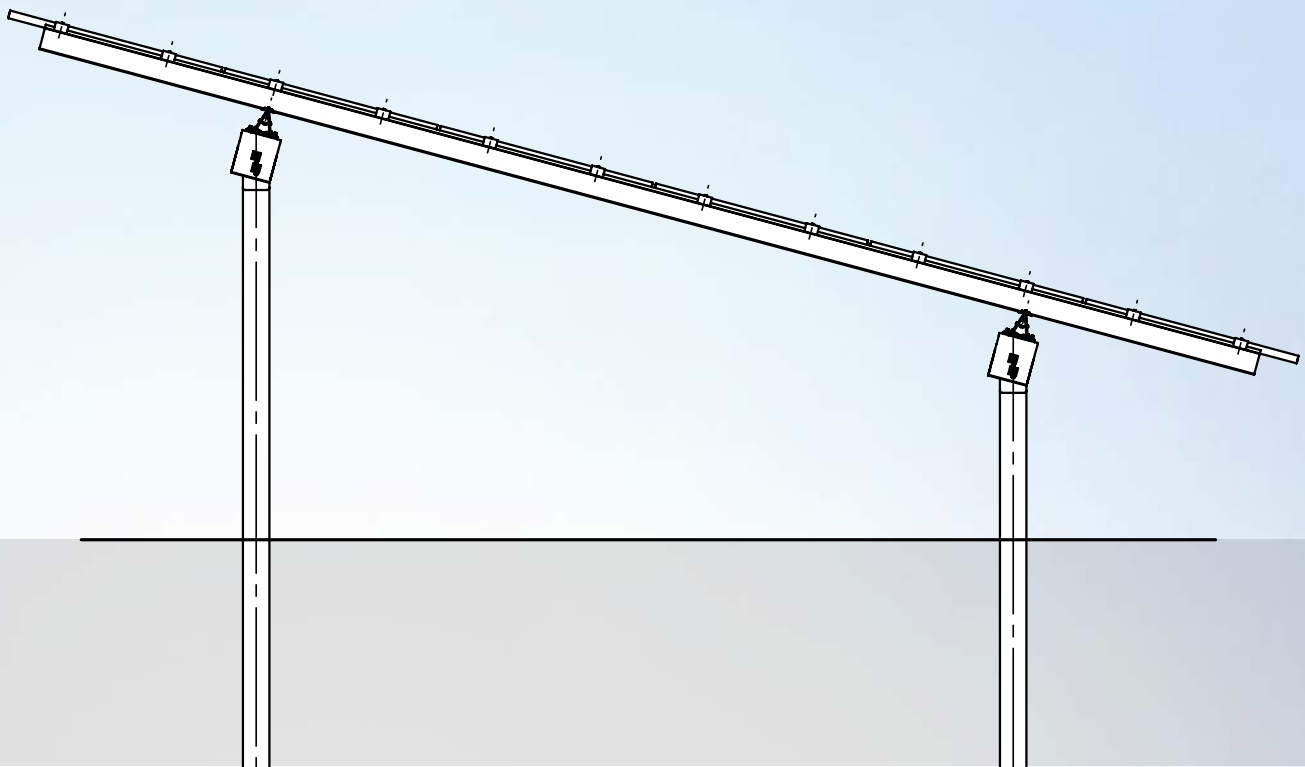
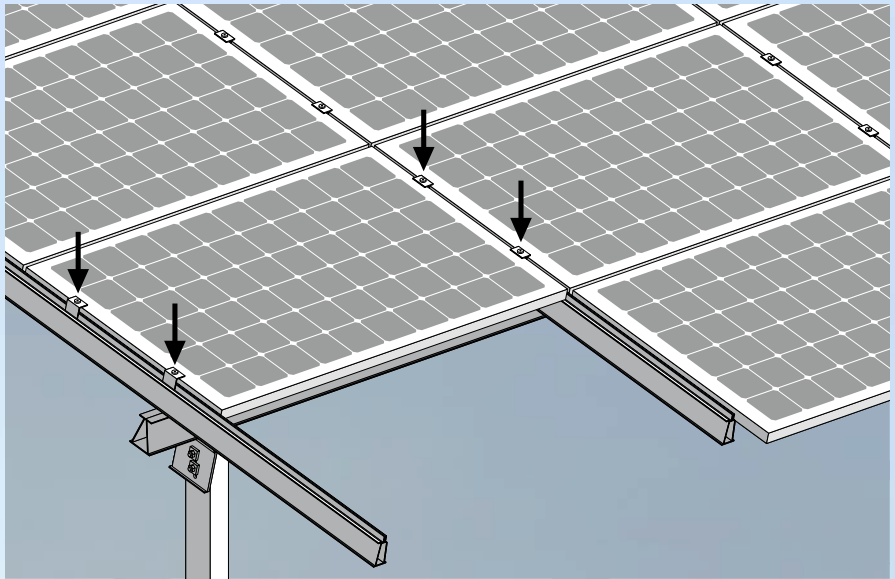
S version: for lower loads

The modules are supported on the left and right by special carriers. They are fixed on the short module side („S") by using clamps.

Due to low material costs, this is the most competitive version. However, its application depends on several factors:

- Local wind and snow loads
- Specifications of module manufacturer
- Sufficient cable length (see below)

Our planning team would be delighted to assist you with your system design.



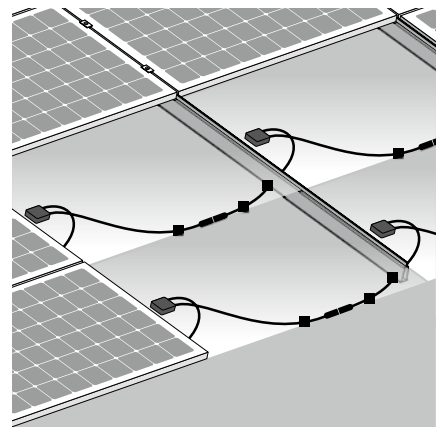
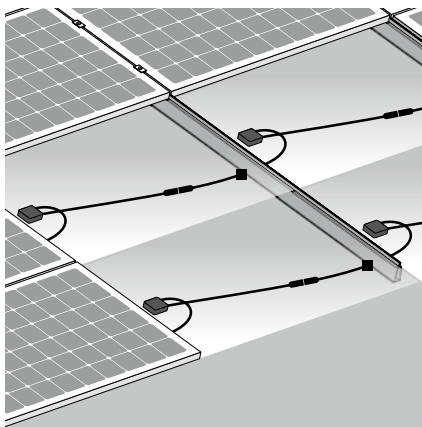
Cable fixation

left

Exposed cable with 1 fixation point on the module carriers (cable clamps, see page 10/11). Required cable length: with a module length of 170 cm (60 cells) at least 100 cm; with 200 cm (72 cells) at least 120 cm.

right

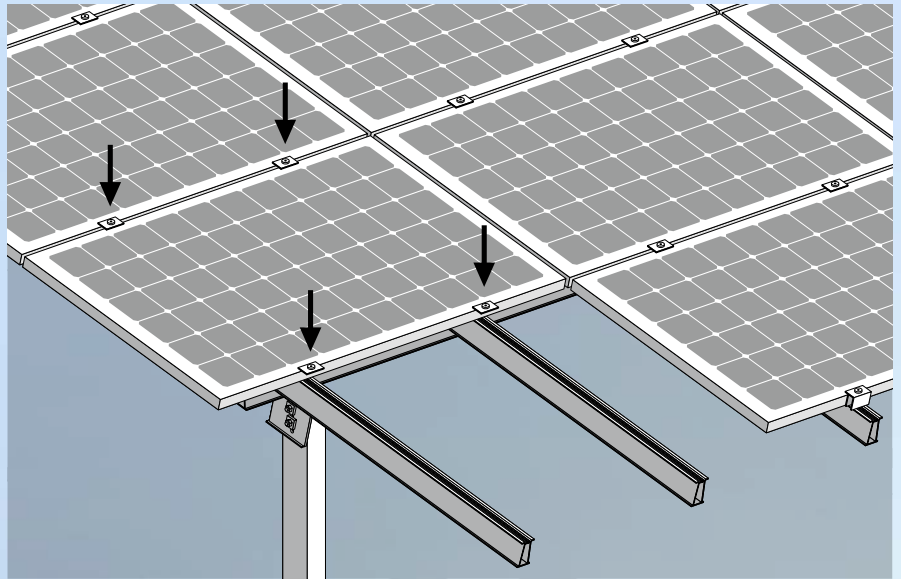
2 or 3 fixation points on the module frames (edge clips, see page 11). Required cable length: with a module length of 170 cm (60 cells) at least 120 cm; with 200 cm (72 cells) at least 135 cm.



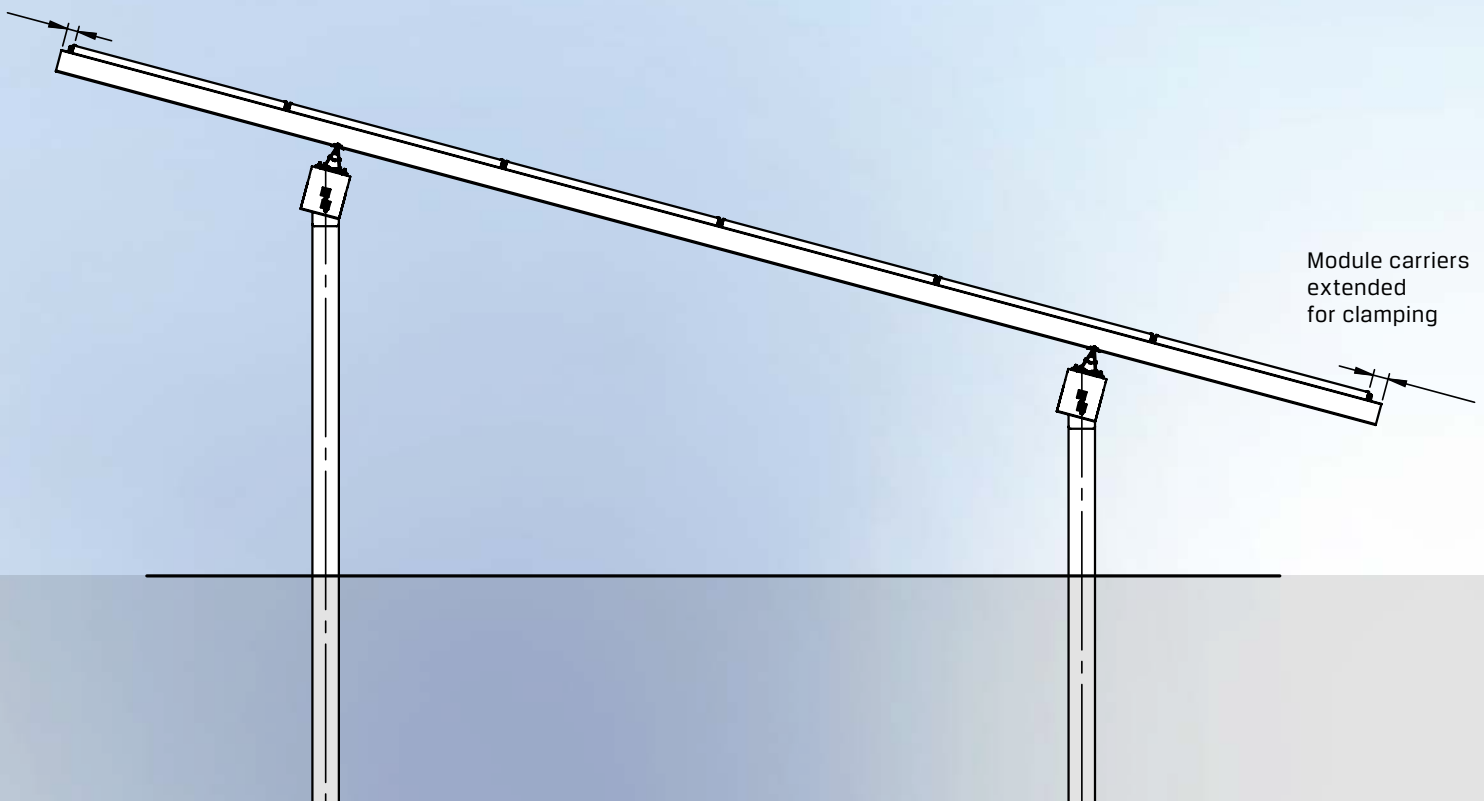
L version: for higher loads

The modules are supported by two carriers. They are fixed on the long module side („L") by using clamps.

This version optimally absorbs module loads and offers better adaptation to the terrain. Therefore it is normally used for loads above 2400 Pa and for hilly terrain.

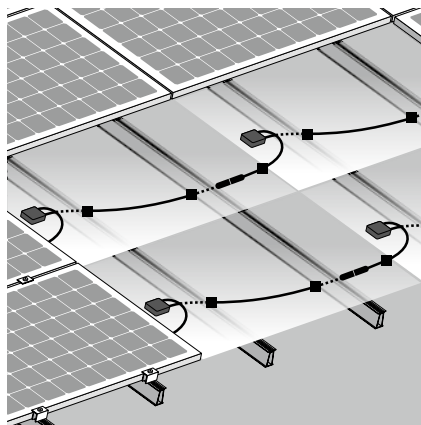


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Cable fixation

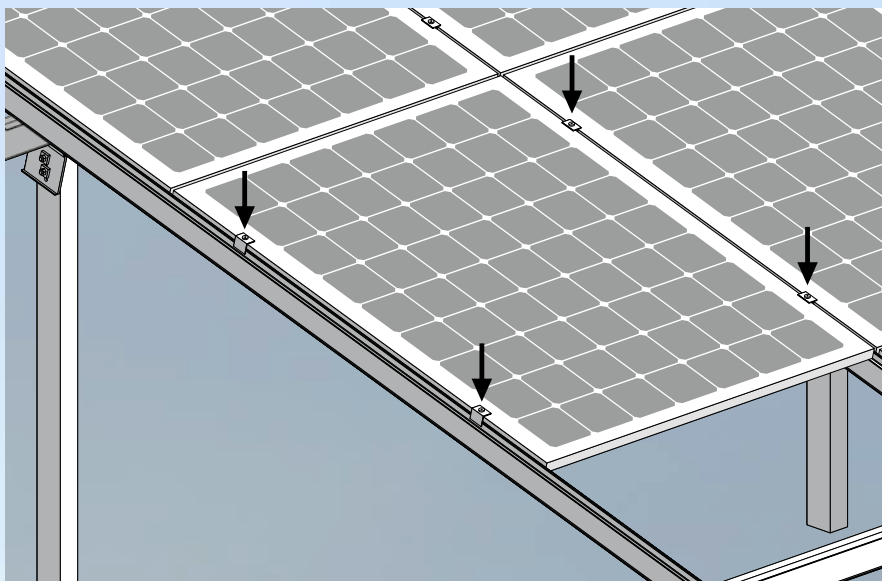
The L version offers two fixation points on the module carriers (cable clamps, see page 10/11). Required cable length: with a module length of 170 cm (60 cells) at least 100 cm; with a module length of 200 cm (72 cells) at least 120 cm.



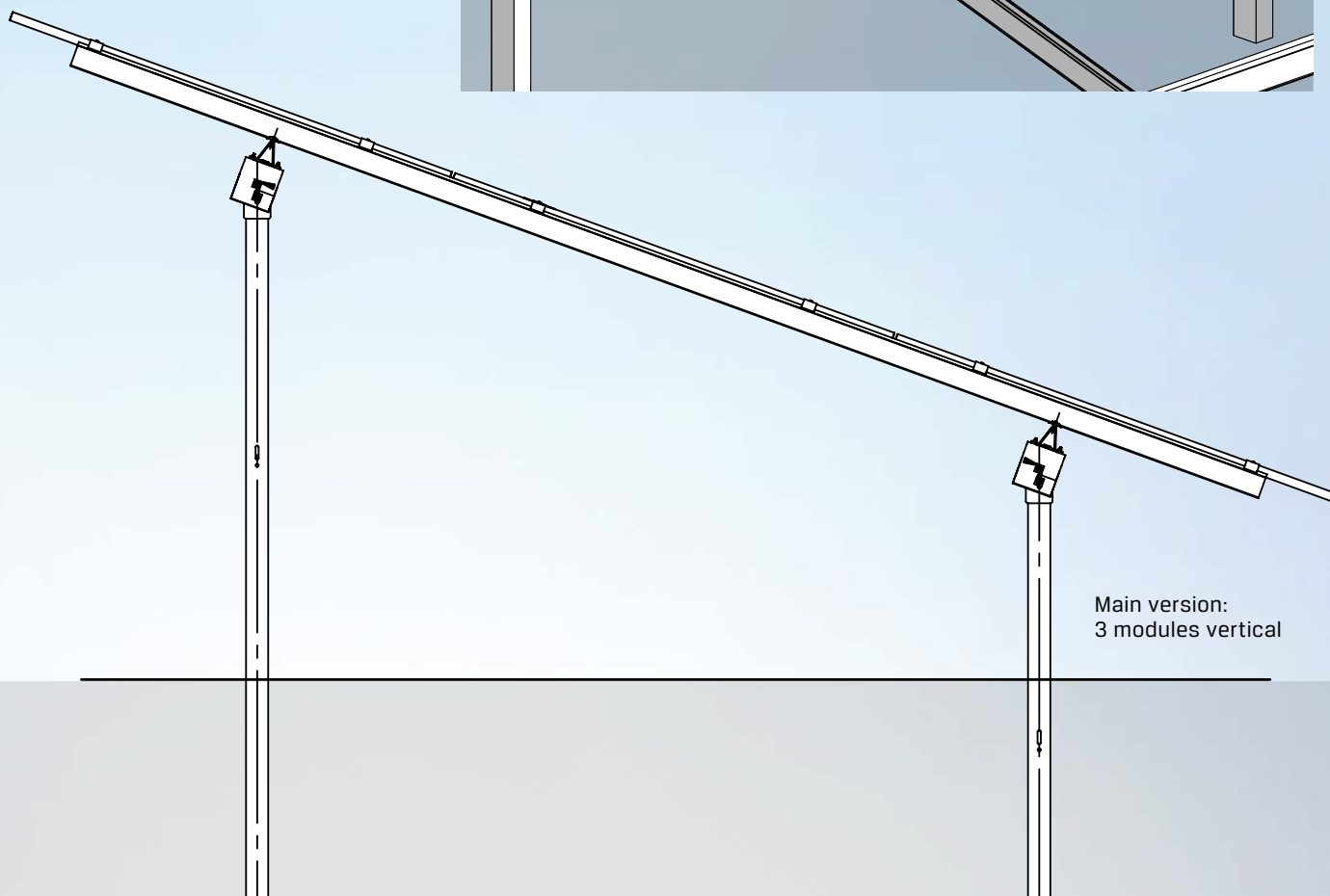
Vertical version

The modules are supported on the left and right by special carriers. They are fixed on the long module side by using clamps.

This construction optimally absorbs module loads and allows adaptation to the terrain. Therefore it is normally used for loads above 2400 Pa and for hilly terrain.

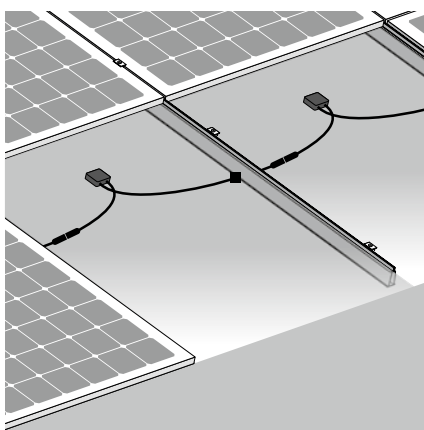


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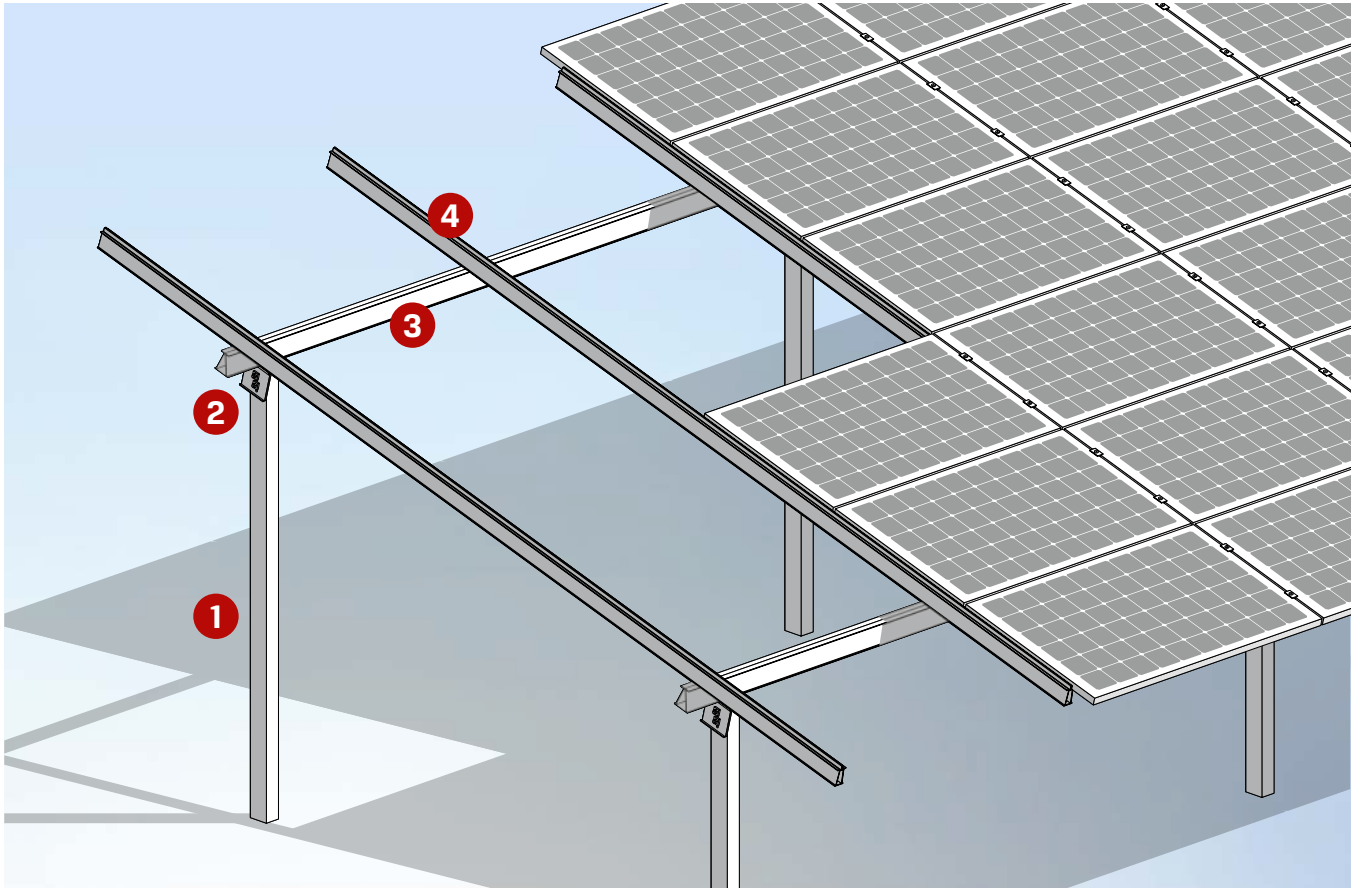


Cable fixation

left
Exposed cable with fixation point
on the module carriers (cable clamps,
see page 10/11)



SYSTEM COMPONENTS



Main components

1 Post

2 Head

3 Long beam

4 Module carrier; different profiles for S and L versions

left

The ribbed structure of the special head used in the GMS® MAX system enables variable and safe height adjustment of approx. 50 mm.



right

Aluminium module carrier for the S version, with bearing areas on the left and the right side as well as integrated drainage for the solar modules.



left

Outer edge of the module and end clamps for S assembly. The end clamps adapt flexibly to module thicknesses ranging from 30 to 40 mm.



right

Smart cable guiding solution and transition into the combiner boxes



ACCESSORIES

left
Adjustment rocker for compensating lateral inclinations



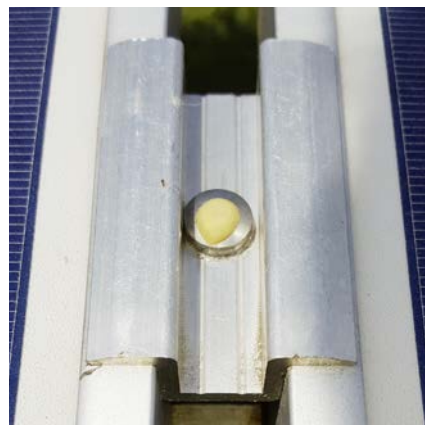
right
Cable fixation: cable trays along the long beam for clipping ("cable channel light"); cable clamps for module cables



10 left
Middle clamp with earthing pins; bridging strap for potential equalisation / lightning protection



right
Theft prevention: screw head protection with dual-component adhesive



left
Standardised mounting materials for combiner boxes and inverters



right
Bite protection cage



left
Inverter bank with roofing



right
End caps for long beams and module carriers



TECHNICAL DATA

System	GMS® MAX
Foundation	<ul style="list-style-type: none">• Rammed posts• Rammed posts with load distribution plates• Concrete foundation (e.g. for landfills)• Drill holes (in rocky ground)
Construction	Modular system with just 4 main components
Material	<ul style="list-style-type: none">• Posts: hot-galvanised steel (batch galvanised – EN ISO 1461)• Heads, long beams, module carriers: aluminium EN AW 6063 T66• Fastening elements: stainless steel 1.4301
Static calculation	Project specific, complies with Eurocode DIN EN 1991, DIN EN 1993, DIN EN 1999, wind tunnel test
Type of modules	60, 72, 120 and 144 cells, framed and unframed
Module orientation	Horizontally 4 to 8 module rows, vertically 2 to 4 modules
Module inclination	Flexible angle of inclination Standard: 5° to 20° (other angles on request)
Terrain adaption	North/South-inclination: up to $\pm 45^\circ$ East/West-inclination: up to $\pm 8^\circ$
Accessories	<ul style="list-style-type: none">• Adjustment rockers• End caps for long beams and module carriers• Cable channels light / edge clips / cable clamps• Middle clamps with earthing pins, bridging straps• Theft preventions• Mounting brackets for inverter• Inverter roofings• Cable protections for posts and DC/AC combiner boxes

Technical data subject to change without notice

MKG SERVICES

- Test ramming with geological report
- Geological on-site studies, chemical analysis of the ground
- 3D measuring (with drones, if necessary)
- 3D planning by our design team
- Project specific static calculation
- Preparation of assembly plans
- Pile driving, foundation works
- Earthworks as part of cable laying in trenches
- Assembly of substructure incl. mechanical mounting of modules
- DC installation

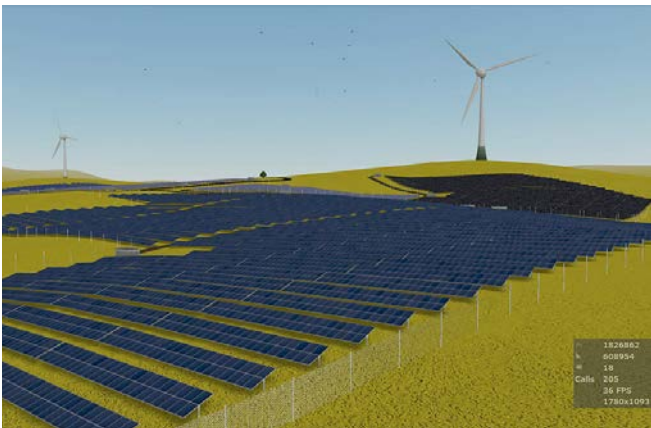
We also offer many more services and individual solutions. Our experienced team would be glad to support you at any time. We're looking forward to your inquiry!



Test ramming



Drone for 3D surveys



3D planning from our engineering team



Post foundation with our own machinery

MKG GÖBEL

MKG GÖBEL Solutions GmbH

Pfaffenmühlweg 86
74613 Öhringen, Germany
Phone: +49 (0) 79 41-6 49 20-0
Telefax: +49 (0) 79 41-6 49 20-20
E-mail: info@mkg-goebel.de

www.mkg-goebel.de

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