PEG® EW Ballast System

JURCHEN TECHNOLOGY

A unique simplified high-density ground mount solution with the use of recycled materials

PATENTED

DNV·GL Bankability report available

IFI Institut für Industrieaerodynamik Aerodynamically approved

Intertek Solar racking system conforms to UL Std. 2703

worldwide installed in 40+ countries

500+ MW installed

180+ plants installed worldwide

185+ mph

On sites where it is not allowed to penetrate the ground (e.g. archaeological sites, munitions in the ground or landfills), **we recommend to use the ballasted PEG system!** Plastic tubs or high density plastic plant pots, one per rod, are filled with recycling material or other existing local filling materials as a cost effective ballast solution for the PEG System.

Note: the advantages of using recycled material are the 90% lower costs and the immense CO2 savings compared to concrete.

The plastic tubs are available in different shapes and sizes, e.g. round and rectangular, which should be evaluated based on the required amount of filled material and the required gaps between the tubs for access under the PEG for O&M activities.

The tubs have a hole at the center of its bottom surface for placing it over the rod, as well as other holes for water drainage.

The maximum possible ballast material with different tub sizes is listed below, assuming filler material with 1700 kg/m^3 density. Optionally, the system can also be installed with ground penetration up to the allowed depth. The size of the plastic trays and the amount of filling material is based on the site-specific loads.

-78% less steel

720 working hours*
per MWp
(2.2 kWp* per working hour)

Low visual impact
average: only 3.3 ft (1 m) heigh

811 kWp*
per acre
(2,0 MWp per hectare)

Key data

Design

- Extremely light substructure, 78% less steel vs. a conventional system
- Maximum DC area density
- Patented, innovative, minimalist, simple design
- Robust & certified for tropical weather, high winds (185+ mph, 298+ kmh) and high snow loads (50+ psf)
- Low visual impact, typically up to 3.3 ft (1 m) high

Procurement

- Significant CAPEX reduction of both supply and delivery
- 2.2 MW of substructure per 40 ft container

Installation

- Safe installation, working height 3.3 ft (1 m)
- No heavy machines
- No DC cable trenching
- No concrete foundations
- Simpler H&S procedures
- Low-skilled labor
- 430 working hours* per MWp with 580 watt modules - applies to PEG EW standard

Operation

- Optimized energy generation, higher during the morning and afternoon
- Low ecological footprint – Carbon footprint is 72 % (61 tons CO2/MWp) less versus a conventional fixed-tilt system.
- Proven design with over 500+ MWp in operation in all continents
- 811 kWp DC per acre (2,0 MWp* DC per hectare)
- Produces ~225% more yield per Hectare (or acre) versus trackers and fixed tilt systems
- Hot-dip galvanised steel offers high resistance to demanding corrosion classes (e.g. also near the sea)

Technical data

Orientation PV array	Patented 8° East-West, fixed-tilt, aerodynamic.
BOM (Bill of material)	~1.1 rods and ~2.2 clips per module.
Large volume scalability	From 10s kWp to GW+ scale.
Durability	Hot dip galvanized steel rods and plates.
Wind loads	The wind loads are based on the max. fill values of the tubs. Compliance by local engineering. Values may vary depending on the structural code.
Seismic loads	Flexible design allows high tolerances for seismic activity.
Certifications	- PEG specific clamping approval from module manufacturers - Wind load certificate by German IFI Institute with local wind codes (ASCE). - The PEG® substructure is UL 2703 certified. - PE Stamped Drawings - Design loads according to local building codes: ASCE 7, NBC, Eurocode, AS1170, IS875, and SANS10160, etc. Values may vary depending on the structural code.

ETL LISTED us UL Std. 2703
Intertek

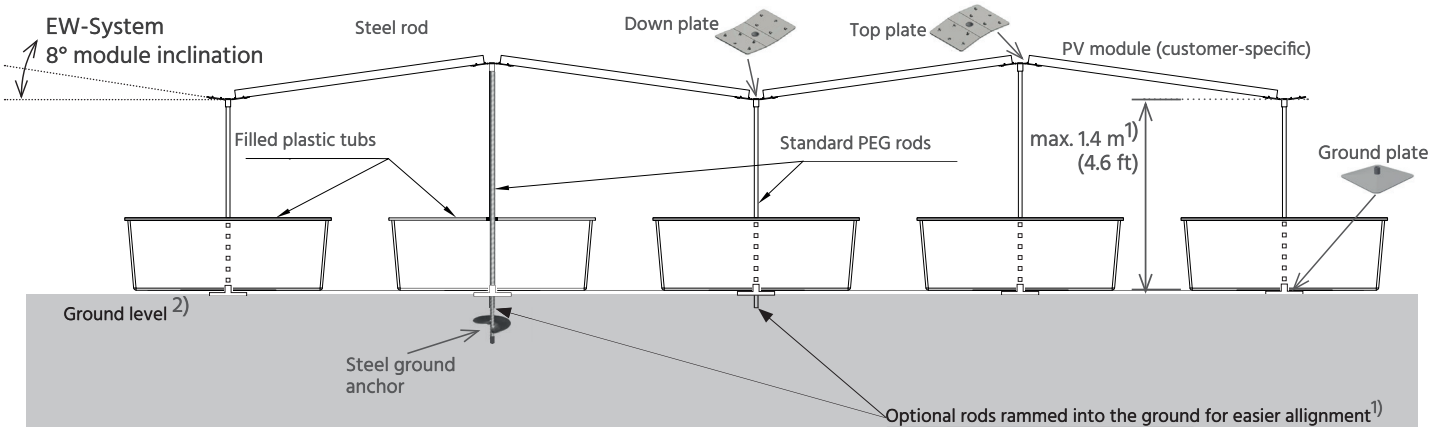
Requirements

Land soil condition	When ground penetration is not allowed. Not suitable in extreme frost heavy locations.
Upper soil layer	Suitable for fully ballasted solution or partial ballast depending on local permitting.
Site slopes	Max. 2° to 4° (up to 7%) for sites without snow, subject to site conditions and system design. At locations with snow, the maximum inclination changes according to the snow load.

PEG® EW PV ballasted system in Eisenach, GER

Detail of the PEG® EW PV ballasted system in Eisenach, GER

Different filler materials for the plastic mortar tubs are allowed, as long as they follow the required specifications: The grain sizes should be within the range of 8 – 60 mm. Smaller grain sizes might be allowed, subject to approval by Jurchen Technology, however the higher risk of wash out must be considered. Materials available locally should be evaluated while considering its average density and the use of small and therefore cheaper plastic tubs. The customer should order the filler material locally. The specification of the material must be shared with Jurchen for approval. High-density polyurethane tubs that are UV resistance can be used based on local availability.



1) subject to the site conditions and system design

2) When using landfill sites, the soil must have settled over several years. There is a tolerance of max. 1 cm for soil settlement with PEG. If the ground settles more than 1 cm, there is a risk that modules could break.

✱ Explanation of key figures on page 1:

MWp/ha: Referring to the complete DC area, including the gaps between the DC blocks/tables
kWp/working hour: Time for complete DC installations including inverter stations
MWp/container: Only the substructure
Machine costs: All machines required for the DC installation
Labor costs: Labor for complete DC installations including inverter stations
Logistic costs: Including machinery and labor, to the site and onsite

All figures assume suitable ground conditions, a min. 5MWp PEG® system with 580W modules and may differ regionally.

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Pictures: Jurchen Technology GmbH,
All data may subject to alterations and errors.

JURCHEN TECHNOLOGY

Jurchen Technology GmbH
Prinz-Ludwig-Str. 5
97264 Helmstadt

Phone: +49 9369 98229-6600
E-Mail: info@jurchen-technology.com
www.jurchen-technology.com