

BUILT TOUGH FOR RELIABLE RETURNS

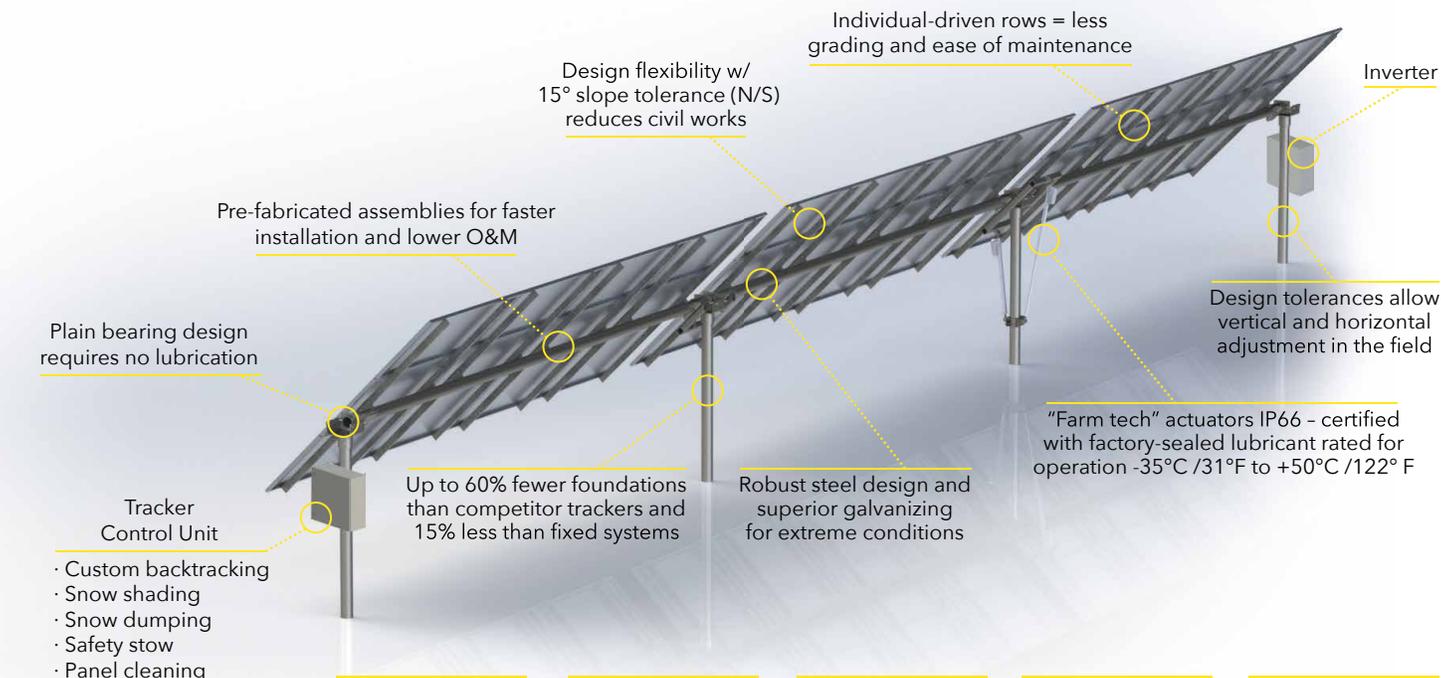
PHLEGON® SINGLE-AXIS TRACKER SOLUTIONS

Designed for northern climates, challenging terrains, and remote locations, the PHLEGON® tracker ensures the highest reliability on any site. Pre-engineered with built-in flexibility, PHLEGON® enables more efficient land use and higher system yields. Our integrated tracker and foundation packages combine expert EPC and O&M services to deliver the lowest cost per kilowatt hour, reducing risks and increasing returns for PV projects anywhere.



DESIGNED FOR ALL PROJECTS

The PHLEGON® Tracker ensures reliability and flexibility for any projects, including the most challenging. Whether contending with high wind, snow loads, corrosive environments, land constraints or varying terrain, PHLEGON® design features and industrial-grade materials offer unique advantages. Unmatched in the industry, our foundation options bring cost-effective tracking to landfills, rocky terrains, or soils with freeze/thaw conditions.



Plain bearing design requires no lubrication

Tracker Control Unit

- Custom backtracking
- Snow shading
- Snow dumping
- Safety stow
- Panel cleaning

Pre-fabricated assemblies for faster installation and lower O&M

Design flexibility w/ 15° slope tolerance (N/S) reduces civil works

Individual-driven rows = less grading and ease of maintenance

Inverter

Design tolerances allow vertical and horizontal adjustment in the field

"Farm tech" actuators IP66 - certified with factory-sealed lubricant rated for operation -35°C /31°F to +50°C /122° F

Up to 60% fewer foundations than competitor trackers and 15% less than fixed systems

Robust steel design and superior galvanizing for extreme conditions

FOUNDATION OPTIONS

Helical Soft soil / clay freeze / thaw cycles	Ground Screw Dense soils Sites w/ cobble	Ballasted Landfill or hazardous conditions	Micro Piles Concrete footings boulders or bedrock	Driven I-Beam Locations with no freeze / thaw cycles

General	
Land Area	5-8 acres / MWdc (depending on row spacing)
Warranty	5-year controls & actuators 10-year structural 20-year design
Operating Temperature	-35°C 31°F to +50°C 122°F
Snow & Wind Capacity	2.5-2.8 KPA snow 0.6-0.7 KPA wind
Structural and Mechanical Specifications	
Operating Range	Up to -45° to +45°
Tracking Accuracy	+/- 1°
Module Configuration	72 cell - 3x4L (1500V) - 26-28M / string 60 cell - 3x5L (1500V) - 29-32M / string
Piles per MW	250 to 300 units
Row Configuration	Non-tied / linked rows for full maintenance access
Slope Tolerance	Up to 15° (North-South)
DC Wiring Management	Integrated wire management
Materials	Hot dip galvanized welded assemblies Pre-galvanized HSLA module rails

Controller Actuator Specifications	
Solar Tracking Method	Proprietary astronomical algorithm
Modules per Drive Unit	60-84 (72C) 75-105 (60C)
Drive Type	DC linear electrical actuator (LINAK)
Actuator Capacity (allowable)	Dynamic - 10 kN Push Pull Static - 13 kN Push Pull
Operating Voltage	36V DC
Enclosures	NEMA 4 IP 66 certified
Communication	RS485 or fiber; Remote visualization access
Backtracking	Automatic; Optional row-by-row customization
Weather Functions	Snow shading/dumping, module washing safety stow
Power Consumption	2.2 - 3 MWh / yr / MWdc (dependent on annual hours of active tracking / sunlight)



WHY PHLEGON®?



Built Tough for Superior Reliability

Designed for high loads and extreme temperatures, our robust design is warranted for 20 years and validated through third-party testing. Fewer moving parts and anti-corrosive materials minimize operation failure points.



System Flexibility for Greater Power Density

No linked rows and independent tables mean flexible configuration and greater land-use for any given layout and topography. Our system maximizes ground coverage for optimal power density on any site.



Fewer Parts / Faster to Install / Lower Cost

Prefabricated racking and up to 60% less piles than competitors result in faster installation and lower labor and material costs. This means minimizing risks and lowering operational and capital expenditures.



Reduced Pre-Construction Civil Work

Unique land adaptability minimizes soil disturbances and storm water management, eliminating costly grading, cutting, fill, and compaction.



Less O&M / More Power Generation

Maintenance-free components, low fastener count and few moving parts means reduced O&M, better uptime and increased system profitability. Independently driven rows allows for easy access for land and system maintenance.

INTEGRATED SOLUTIONS FOR EVERY PROJECT

Whether you are an EPC or electrical contractor needing only supply and installation of our mechanical products or a developer/project owner seeking an integrated package, we customize our solution to match your objectives (yield, timing, cost, warranty). Our PHLEGON® package includes mechanical installation, and complete electrical BOS supply, streamlining project execution. We can also wrap the PHLEGON® Solution as part of our turnkey EPC services. In all cases, our integrated packages simplify project execution, reduce timelines and risks while delivering the lowest cost per kWh with industry-leading warranty.



Base Installation Package

- Geotechnical, foundation, structural & electrical engineering
- Foundation design, testing & supply
- Foundation, racking and module installation
- QC, commissioning & training

- ◉ QUICK LEAD TIME
- ◉ FAST INSTALLATION
- ◉ PROJECT MANAGEMENT-FREE

Electrical / BOS Package

- Power & Controls Design Integration Support
- Power cabling
- UPS back-up system
- Communication cabling
- System service transformer

- ◉ PRE-ENGINEERED
- ◉ PROVEN COMPONENTS
- ◉ SIMPLIFIED PURCHASING

Turnkey EPC Package

- Expert support with local AHJ & utility
- Civil, mechanical & electrical engineering
- Major equipment procurement (modules, inverters, transformers, BOS, etc.)
- Full installation, commissioning & interconnection
- O&M services (optional)
- Dedicated project management

- ◉ LOWER PROJECT COST / KWH
- ◉ SIMPLIFIED PROJECT MANAGEMENT
- ◉ FEWEST RISKS
- ◉ INCREASED PROFITABILITY

OUR COMMITMENT

Deliver the lowest total cost of energy with tracking technology.

Because we develop and own projects just like yours, we understand the need to manage risks and ensure system returns. That's why we've designed our tracker from the ground up to deliver the most integrated solution on the market.

GP JOULE offers more than 15 years of experience bringing high-performing renewable systems online globally. With roots in industrial-scale agriculture, GP JOULE combines a deep commitment to clean energy with a keen sense of productivity and profitability.

GP JOULE got its start deploying solar plants in Germany in 2003. Since then, the company has added wind and biomass to its clean-energy portfolio and has invested in storage and EV charging technologies.

With more than 550 MWs of solar PV installed and 600 MWs of assets under management, GP JOULE's footprint extends across Germany, France, Italy, Canada, and the United States. As your global renewable energy partner, we bring an extensive track record developing, engineering, constructing, operating, and financing commercial and utility-scale ground mount installations.

Join the investors, developers and contractors who have trusted GP JOULE for reliable and bankable PV. Visit www.gp-joule.com to see how you can apply our skillful execution and dedicated project management to your solar project today.



| USA | WEBSTER, MN | 2018



| CANADA | MILTON, ON | 2016



| GERMANY | SCHELKINGEN | 2010



| USA | HAIKU, HI | 2016



| CANADA | COLBORNE, ON | 2016



| CANADA | ORANGEVILLE, ON | 2018



| CANADA | GRAFTON, ON | 2016



| USA | NEW GERMANY, MN | 2018



| GERMANY | ANSBACH | 2012

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