Solargik Agri PV Tracker
Technical Data Sheet

Solargik

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CHALLENGE

Agricultural settings are increasingly becoming a viable solution for large-scale PV projects. However, Agri-PV is unique as it must balance sunlight used for electricity generation with sunlight needed by crops. Agri-PV can only thrive with a joint focus on agricultural outcomes and energy production. It must adhere to the following:

- Agricultural yields: crops must get the sunlight they need, so PV has to share!
- Agricultural access: Agri-PV structures must allow agricultural machinery to access crops easily. However, the increased wind exposure requires more reinforcement, and complicates panel cleaning, impacting CAPEX.
- Competitive LCOE: AgriPV must maintain competitive LCOE relative to other forms of energy generation.

LIGHTWEIGHT

Solargik's PV trackers use less steel, weigh 20-40% less than standard trackers, and have lower LCOE. These features enable structures to be built up to 5m high, that use lighter piles with a lower driven depth. Simple installation with no complex machinery minimizes the impact on agricultural environment.

SMART

Solargik's Orchestration Master Application (SOMA) is an all-in-one SCADA system for centrally optimized control of solar arrays with cloud-based monitoring capabilities. SOMA adopts a holistic approach to balance the dynamic sunlight needs of crops with energy production, integrating crop models, tracker and inverter data, and agricultural sensors. Together with its proprietary tracking algorithms, and weather forecasting, SOMA is the backbone of a Agri-PV installation.

VERSATILE

Our short tracker table size ranges from 8-24 panels, allowing installation flexibility on slopes and around obstacles while preserving easy access to crops. The cost-effective motion unit actually reduces overall CAPEX. The short tracker allows multiple tracker angles within each row, so our smart algorithms can optimize the shading and sunlight needs of specific crops. The tracker can flip upside down for simple panel cleaning from below. These features enable highly tailored Agri-PV designs that boost project profitability and harness the synergies between agriculture and solar energy.

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GENERAL

Tracking Range	120° (-60° to +90°)
Tracking System	Single axis
Panel Orientation	2-Landscape
2L Benefits	Higher bifacial gains, optimized shading, rotation around center of gravity
Tracker Size	Tracker length ranges between 8-24 modules
Ground Coverage Ratio	GCR 30-65%
Modules Supported	All available modules
Energy Gain vs. Fixed Tilt	Up to 25%, site specific
Tracker Output	Up to 13 kW DC
Slope Tolerance	N-S: up to 30% E-W: any slope
String Voltage	Compatible with any string size

TRACKER CONTROL / HARDWARE AND INSTRUMENTATION

Drive Unit	Three gear cascade - planetary, worm, chain		
	Overall reduction ratio ~13,000:1		
	Drive system - stepper motor		
	Proprietary controller		
Tracker Control Unit (TCU)	**Option 1:** Self-powered tracker 20-50V, li-on 11.1V 40Wh battery Battery protection		**Option 2:** Grid version, 20-30V
Tracker Power Consumption	Idle: 1.5W	Standard motion: 5W	Maximum: ~15W
	~14kWh/year/tracker		
Control Electronics	One MCU (Master Control Unit) per cluster and one TCU (Tracker Control Unit) per tracker		
Drive Unit	Weight: 8 kg (17.6 lbs.)		

TRACKER CONTROL / SOFTWARE AND ALGORITHMS

Tracking and Algorithms	Backtracking Smart Backtracking Diffuse Optimization Intermittency Mitigation Dirt Minimization Algorithm
Tracking Accuracy	± 2°

TRACKER CONTROL / SOFTWARE AND ALGORITHMS (Continued)

Agricultural Control Monitoring	SCADA integration with crop models
Stow	Nightime stow: configurable, prevents dust accumulation Dynamic stowing based on weather conditions
Communication Architecture / SCADA	MODBUS over Ethernet or wired RS485 to third-party SCADA **SolarGik proprietary SCADA solution - optional**
Monitoring	Portal interface displaying tracker status and generation, performance, weather and irradiance data
Tracker Control Unit (TCU)	WiFi 2.4 GHz or WiFi Mesh 2.4 GHz

TRACKER CONTROL / SENSORS

Agricultural Systems	Plant-level sensors
Weather System	Irradiance: GHI (default) GTI, RH, BM, temperature (optional)
	Wind speed (default) Wind direction (optional)
	Snow sensor (site dependent)
Camera System	Fish-eye cloud camera (optional) HD & IR camera (optional)

STRUCTURAL

Total Length	Between 14.5-28.4m (47.5-93.2 ft)
Tracker Weight	25-30 kg/kW
Axis Height	Site specific
Tracker Body	Standard profile
	2 support beams per module
Tracker Mounting	I shape
	4-7 poles per tracker 300-450 poles per MW (typical)
Materials	Galvanized steel

ENVIRONMENTAL

Design Wind Speed	ASCE 7-22 Standard operating wind load 145-185 kmh (90-115 mph) Special design 240 kmh (150 mph)

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ENVIRONMENTAL (Continued)

Temperature Range	Operation: -25°C to 50°C (-13°F to 122°F) Survival: -40°C to 60°C (-40°F to 140°)
Snow Load	Tailored to site requirement

STANDARDS AND CERTIFICATIONS

Standards and Certifications	ANSI, NEMA, NFPA, IEC, UL, CE

INSTALLATION, SERVICES, MAINTENANCE & WARRANTY

Maintenance	Zero maintenance design (regular maintenance not required)
Installation Requirements	No fabrication required
Warranty	10-year Structural 5-year Drive Unit

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