ScorpiusTrackers

Single Axis Tracker

Bearings, controller & software

Technology differentiators

One stop shop

An end-to-end tracking solution that comprises hardware, tracker controller and structure designs.

Go wireless!

WiFi enabled communication, powered by a localized source, circumvents the need for cost-intensive data and power cabling.

Electronics

Tested for operating range from -10°C to +60°C. All boards have a conformal coating and are designed to resist damage due to condensation.

Control Algorithms

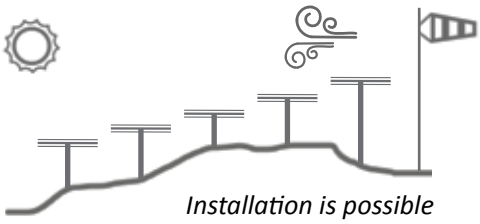
PID algorithms ensure the system runs smoothly, without excessively stressing the mechanical structure or causing any overshoot. The algorithm also adjusts the tracker tilt depending on time of the day and azimuth of the Sun, preventing shading of rows of PV modules.

No lubrication required

Frictionless pivots and composite material bearings ensure that no lubrication or mechanical maintenance is required for the lifetime of the solar plant.

Stowing at wind speeds

The tracker reduces its presented cross section in case of increase in wind speed beyond a preset limit, reducing the force on the mechanical structure.



Installation is possible on undulated land slopes

Lowest power consumption

Typically less than 0.02% of the energy generated by a plant.

Reduced O&M expertise

Service positions are programmed.

Electronics & software

- ARM 32-bit Cortex M3 Microcontroller with MPU.
- CAN Bus connection between tracker and tilt sensor.
- Embedded system having an advanced PID controller.
- MEMS based solid state high resolution tilt sensor for feedback on the module angle, for tracking.
- Ephemeris based Solar Positioning Algorithm.
- IP66 enclosure for actuator and motor.
- On board GPS with auto configuration of location.
- Lowest power consumption for tracking : <0.02% of total power generated.
- Integrated battery (12v 65Ah) charge controller.
- Online cloud-based performance monitoring; predictive maintenance features.

Structure & moving mechanism

- Frictionless pivots / composite material bearings.
- Proprietary surface treatment for the mechanical parts.
- Customised structure designs.

< 3.0	years payback on tracker investment
> 3%	IRR increase of overall project
>10%	reduction of LCoE power generation cost

January 2015

ScorpiusTrackers

Electronics & software

Solar tracking method	Ephemeris based algorithms, on board GPS
Power consumption per MW	300 kWh per MW per year / <0.02% (estimated)
Controller base	ARM 32-bit Cortex M3 Microcontroller
Backtracking	Yes. Handles field slope in E-W direction
Azimuth Correction (for Backtracking)	Yes
Auto stow at night	Yes
Auto stow during high winds	Yes, Anemometer and wind vane provided
Tracking Accuracy	Limited to +/-1deg (default)
Data exchange between sensors	CAN bus (WiFi between controllers)
Logging Server Communication	Ethernet, GPRS, WiFi
Power backup for tracking	Yes, 12V/65Ah battery with 5 days power backup
Single block power source (in terms of modules)	300w module for 300kW block

Pivoting technology & structure design

Tracking Type	Single Axis Automatic
Pivoting Technology #	Vader-xFP Frictionless Pivots / Composite Polymer Bearings
Mechanical Pivot Maintenance	No
Tilt Angle	+/- 45 degrees from Zenith
Block size in kW per motor/drive/controller set	200kW / 250kW / 350kW / 500kW or more
Motors per MW	2-5, depending on configuration
Single Block dimensions	Site and module specific
Tracker Height	1 mts above ground (can be changed per specific requirements)
Maximum wind load	150 kmph standard design. Higher on request
Modules compatible	Most makes and technologies
Modules mounting	Landscape and portrait options, as required

General specifications, installation, maintenance & others

Welding during installation	None required (0%)
On site fabrication	None required
Installation supervision and Training	Yes, included in scope
Linear Actuators and drives	Lubrication once a year
Energy gain	Upto 25% depending on site conditions
Land required per MW	5-7 acres / MW (design and location dependent)
Warranty	5 years (extendable upto 10 years)
Performance monitoring	Cloud-based predictive maintenance

 # Global product & design patents

About Scorpius Trackers

Scorpius Trackers Pvt Ltd is promoted by the team at Chroma Systems and Chroma Energy. Since its establishment in 2012, the company has installed over 300 trackers and structure designs for solar pumping, roof top and other distributed system applications. Several MW class installations are currently under operation in **India, Africa and USA.**

Contact

Scorpius Trackers Pvt Ltd, 397/6-7, Senapati Bapat Road, Near Gokhale Nagar Signal, Pune - 411016, Maharashtra, India.
T: +91 20 2565 9413, F: +91 20 2565 0564, E: info@scorpiustrackers.com

January 2015