Shah Power (P) Ltd

the winds of change...

PerfecTrack 1P

Follow the Sun. Redefining Energy

Independent Single Axis Solar Trackers

Next Generation Tracking
For Maximum Solar Efficiency

Scan the QR Code to Watch the Tracker Features Video

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www.perfectrack.in

PerfecTrack 1P
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Built on Experience
Designed for Perfection

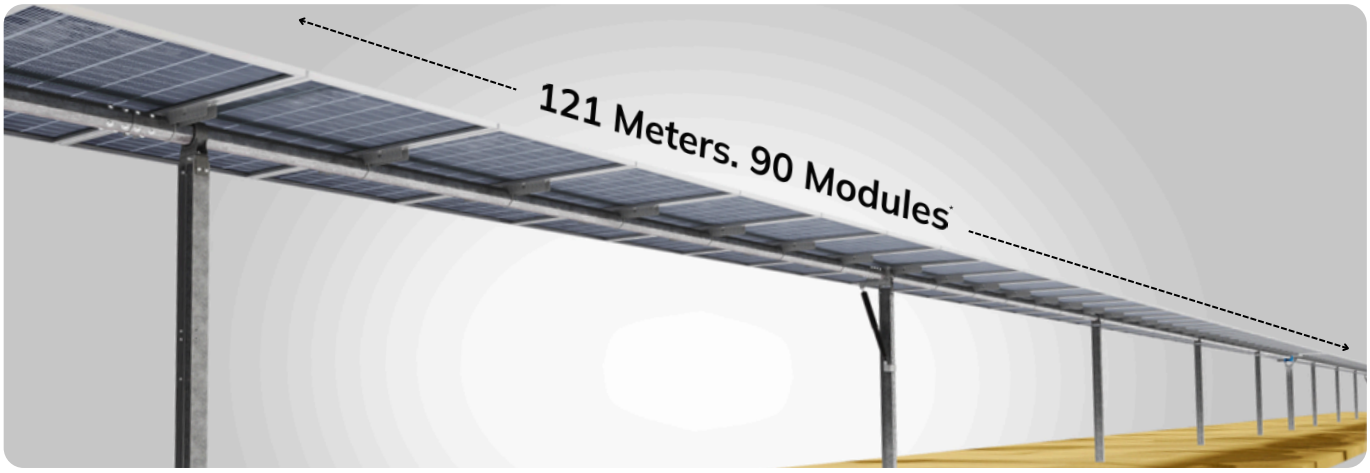
With decades of engineering excellence in infrastructure - from telecom towers and transmission lines to solar structures, hybrid wind turbine systems, and large-scale EPC projects - Shah Power Pvt. Ltd. [Formerly Shah Infra Towers Pvt. Ltd.] has built a legacy of perfect reliability and engineering excellence.

PerfecTrack represents the next chapter of our engineering journey - a next-generation solar tracking solution born from decades of industry expertise, rigorous and perfectly engineered design excellence, and proven real-world validation.

Independent Single-Axis Solar Tracker
with One-in-Portrait Design

Independent Single Axis Trackers are designed to enhance the efficiency of solar power systems by optimizing the angle of solar panels throughout the day. These trackers use precise tracking and perfectly calibrated tracking algorithms to follow the sun's movement, ensuring that panels are positioned at the most optimal angle for maximum energy absorption.

With robust design features that can withstand varying environmental conditions, SAT Solar Trackers offer excellent durability and reliability. Their energy-boosting capabilities make them a perfect solution for large-scale solar farms and commercial installations, ensuring higher energy yields compared to fixed-tilt systems.



The Key Benefits of
Single Axis Trackers (SAT)

- **Optimized Energy Production**
- **Cost-Effective Energy Generation**
- **Minimal Maintenance Requirements**
- **Scalability and Flexibility**
- **Simplified Installation**

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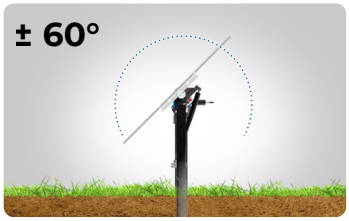
Key Features
Optimized for Perfection

PerfecTrack 1P is a state-of-the-art single-axis solar tracker with a one-in-portrait configuration, engineered for utility-scale deployment and optimized energy yield. Each independent row spans up to 121 meters, accommodating up to 90 high-wattage modules and offering a tracking range of ±60° to maximize solar efficiency throughout the day.

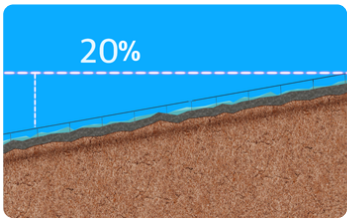
Designed to deliver up to 20% higher and perfectly improved energy generation than fixed-tilt systems, PerfecTrack 1P ensures enhanced performance, faster return on investment, and lasting reliability.

Its galvanized steel structure is compatible with all foundation types and built for quick installation across diverse terrains and ground conditions - making it a perfect partner in driving a sustainable energy future.

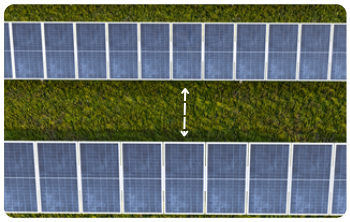


Intelligent Tracking System with up to ±60° Tilt Range

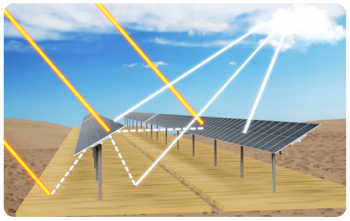
Real-time adaptive tracking with advanced sensing



Excellent terrain adaptability for N-S slopes Up to 20%



Optimized row spacing for maximum land use efficiency



Fully compatible with bifacial panels for enhanced performance

Performance Specifications

Parameter	Value
Architecture / Type	Independent Horizontal Single Axis Tracker
Configuration	1x module in portrait
Tracking range	±60°
Row Size / Row Length	121m.
Modules / Panels per row	Up to 90 Pcs.
Terrain Slope Tolerance	Up to 20% (N-S)

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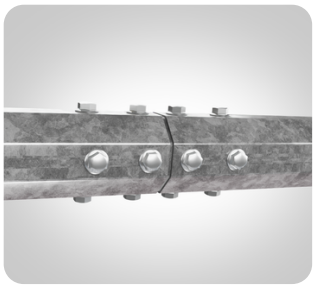
Mechanical
Configuration & Components

Features a maintenance-free slew drive with high-performance DC motor

Height-adjustable post for precise tilt and east-west control.

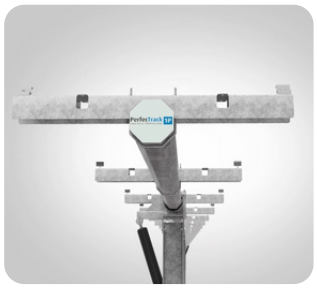
Advanced bearing seat design with slotted base holes for quick on-site adjustments.

Bearings are built with self-lubricating, UV-resistant, UL-certified materials



Features an octagonal torque tube with a unique coupler for enhanced stability.

Four dampers per row absorb wind shocks for reliable performance.



Precision mounting rail reduces gravity torque and stress, ensuring smooth slew drive operation.

Technical Specifications

Category	Specifications
Foundations	Concrete type (Pile inserted into ground)
Structure Material	Hot dip galvanized steel / Pre galvanized steel
Structural connections	Octogon coupler design to improve stability of tracker.
Modules / Panels supported	1303 x 2384 x 35 mm（700w）
Power of Panels	63Kw.
Bifacial optimization	High-rise mounting rails,
Torque tube type	Octogon torque tube
Bearing Type	UV resistance Sliding Bearing, with self lubricated (UL Approved Raw material)
Multi-Point Driving System	Slew drive + DC motor
Power Consumption	Typical 0.02 Kwh per day
Daily Energy Consumption	Powered By PV Strings, Back-up Li-ion battery

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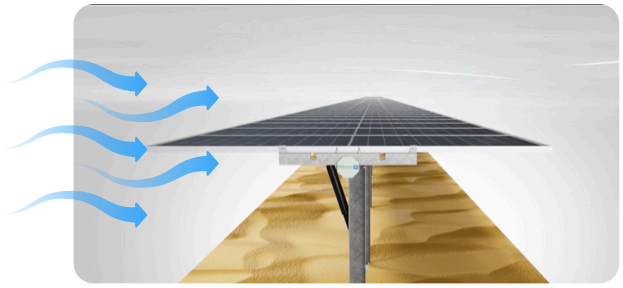
Environmental Resilience
& Safety Features

Intelligent Backtracking for Maximum Yield

The integrated backtracking algorithm dynamically adjusts each row's tilt in response to slope variations, sunlight intensity, and module orientation. This ensures minimal row-to-row shading and maximum energy capture throughout the day.



Wind Stow Mode for Structural Protection

When wind speeds exceed 18 m/s (≈40 mph), PerfecTrack–1P automatically enters Wind Stow Mode, positioning the solar modules at a 0° angle to minimize wind load and structural stress. This proactive safety mechanism ensures system stability and long-term durability during extreme weather events.

Smart Snow Shedding Function

In Heavy Snow Mode, PerfecTrack–1P automatically tilts the modules up to 60°, allowing accumulated snow to slide off easily. This feature maintains surface cleanliness, prevents energy loss, and ensures consistent performance in cold-weather conditions.

Smart Environmental Responce

Mode	Function / Specs
Operating temp. range	-30°C ~ +80°C (Slew Drive)
Standard design wind speed	120mph (54m/s) per ASCE7-10, Higher wind load available
Wind Stow	0° position at >18 m/s wind
Wind protection	Programmed through NCU controller
Snow Mode (Optional)	Up to 60° tilt for snow dump
Backtracking	Shadow-avoidance on slopes

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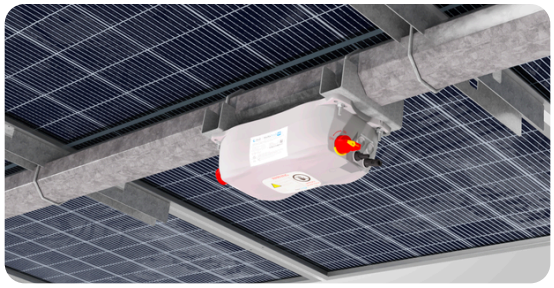
Tracker Control
System Overview



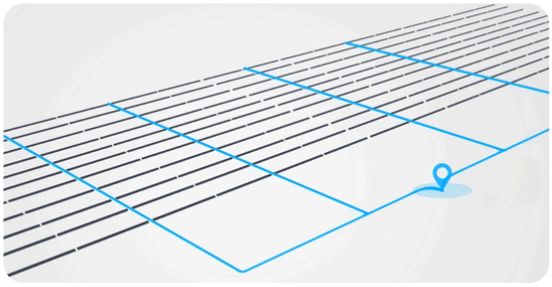
UL & CE-Certified Tracker Control Unit (TCU)

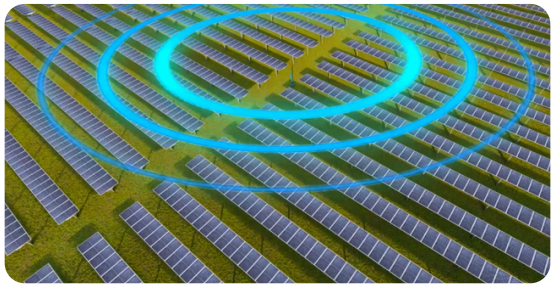
At the heart of PerfecTrack–1P lies a UL and CE-certified Tracker Controller Unit using perfectly advanced astronomical algorithm to deliver precise solar tracking every moment of the day.

The TCU combines built-in wind protection, intelligent motor control, and lithium-ion backup power with robust LoRa-based wireless communication — ensuring uninterrupted, reliable performance in every environment.

Centralized Intelligent Control

A single Network Control Unit (NCU) seamlessly manages up to 120 Tracker Control Units (TCUs), enabling synchronized operation across the solar field. Each PerfecTrack–1P tracker intelligently adapts to real-time weather conditions, optimizing performance and ensuring reliable, coordinated motion control.





Seamless SCADA Integration

With built-in Ethernet connectivity, PerfecTrack–1P enables effortless integration with SCADA systems, providing centralized, real-time monitoring and control for enhanced operational efficiency and visibility across the solar plant.

Tracker Controller Specifications

Catagory	Specification
Tracker controller	PV Tracker Intelligent communication Box
Controller Certification	UL + CE Certified
Solar tracking method / Control Algarithm	Astronomical algorithm + Intelligent Algorithm
Tracking Accuracy	≤ 0.5°
Ingress Protection	IP65
Power supply	SELF POWERED: Standalone smart solar power AC POWERED: Customer-provided, 120-277 VAC circuit
Power Backup	Li –ion battery
Communications	LoRa wireless with Zigbee,
Operator / Tracker interface	RS485 and LAN Interface

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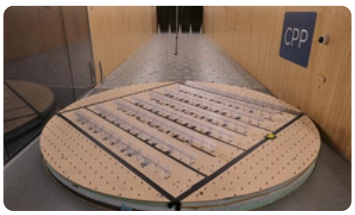
Design Validation through
Wind Tunnel Testing by Global Authorities

PerfecTrack–1P has undergone rigorous wind tunnel database studies, advanced dynamic analysis, and comprehensive damping assessment in collaboration with CPP Sydney, Australia.



CPP WIND ENGINEERING CONSULTANTS

CPP Wind Engineering Consultants stands among the world's leading wind tunnel laboratories, recognized for their expert assessment capabilities. They rigorously tested the PerfecTrack 1P's structural durability by simulating multiple tilt angles and a variety of wind speeds to ensure its reliability under diverse conditions.

The system's IEC 62817 and UL 3703 certifications with **TÜV Rheinland** are currently underway - reinforcing our unwavering commitment to international safety and performance standards.

Proven Standards.
Trusted Certifications

The state-of-the-art manufacturing facility of Shah Power Pvt. Ltd. is ISO-certified, ensuring quality and consistency at every stage of production. PerfecTrack 1P holds CE and UL certifications, with its advanced Tracker Controller Unit (TCU) certified under both standards.

ISO 9001:2015 · ISO 14001:2015 · ISO 45001:2018 · UL CERTIFIED · CE

We are open for Global Business...

Building on its proven expertise in delivering globally recognized infrastructure for telecom and transmission networks, Shah Power Pvt. Ltd. brings the same commitment to quality and engineering excellence to PerfecTrack - and welcomes global partners to join this journey toward smarter solar energy.

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