

PerfectTrack 1P

Follow the Sun. Redefining Energy

Independent Single Axis Solar Trackers

Next Generation Tracking For Maximum Solar Efficiency



Scan the QR Code
to explore more

For more enquiries, please call: +91 8587870233
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Plot No. 10, & 32A, 32(A) (P), 33, 34, 35, 36, 37, 38, 39, 40, 41, 42,
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www.perfectrack.in

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.

PerfectTrack 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.

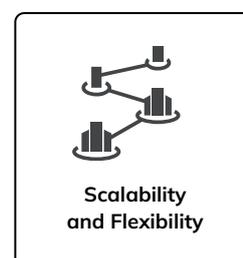
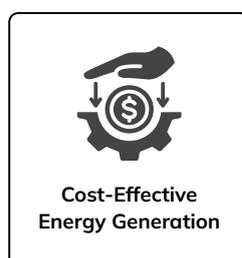
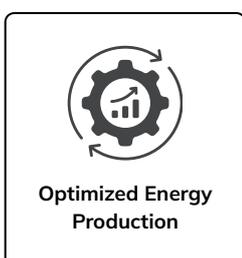
Independent Single-Axis Solar Tracker with One-in-Portrait Design

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)



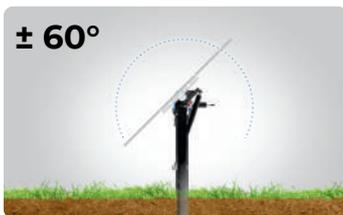
Key Features

Optimized for Perfection

PerfectTrack 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 $\pm 60^\circ$ to maximize solar efficiency throughout the day.

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

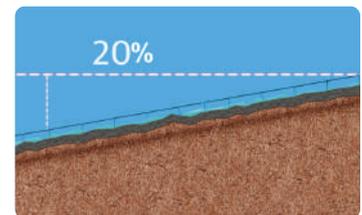
Its galvanized steel structure is compatible with all foundation types and built for quick installation across diverse terrains and ground conditions - making it a perfect partner in driving a sustainable energy future.



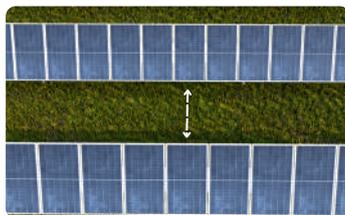
Intelligent Tracking System with up to $\pm 60^\circ$ Tilt Range



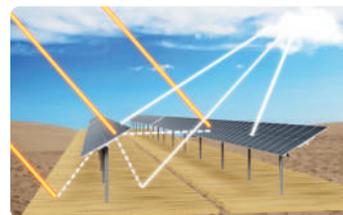
Real-time adaptive tracking with advanced sensing



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 | $\pm 60^\circ$ |
| Row Size / Row Length | 121m. |
| Modules / Panels per row | Up to 90 Pcs. |
| Terrain Slope Tolerance | Up to 20% (N-S) |

Mechanical Configuration & Components



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



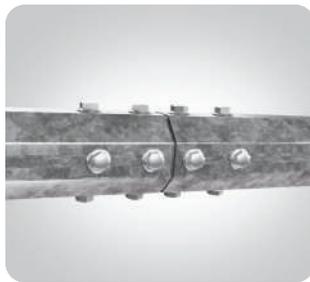
Height-adjustable post for precise tilt and east-west control.



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.

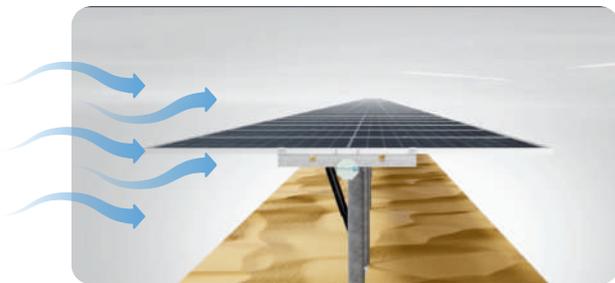
Technical Specifications

| 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 |

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 (\approx 40 mph), PerfectTrack-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, PerfectTrack-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 Response

| 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 |

Tracker Control System Overview



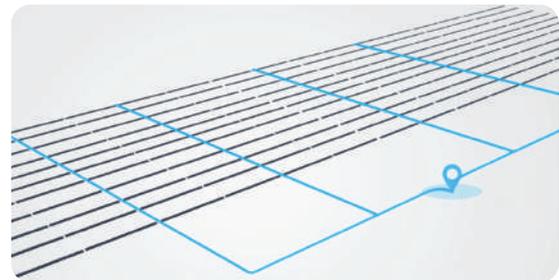
UL & CE-Certified Tracker Control Unit (TCU)

At the heart of PerfectTrack-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 PerfectTrack-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, PerfectTrack-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

| Category | Specification |
|-------------------------------------------|--------------------------------------------------------------------------------------------------|
| Tracker controller | PV Tracker Intelligent communication Box |
| Controller Certification | UL + CE Certified |
| Solar tracking method / Control Algorithm | 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 |

Design Validation through Wind Tunnel Testing by Global Authorities

PerfectTrack-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 stands among the world's leading wind tunnel laboratories, recognized for their expert assessment capabilities. They rigorously tested the PerfectTrack 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. PerfectTrack 1P holds CE and UL certifications, with its advanced Tracker Controller Unit (TCU) certified under both standards.



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 PerfectTrack - and welcomes global partners to join this journey toward smarter solar energy.



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