

Solar Axis Tracker

The tracker control box uses local longitude, latitude, and time data to automatically calculate the sun's path, determining both the azimuth and elevation angles. During operation, the system periodically adjusts the tracking angle by issuing commands to the electric motor, ensuring the photovoltaic module remains aligned with the sun. In the event of adverse weather, the communication system detects rain and sends commands to move the motor into a stow position, protecting the equipment. The entire process is fully automated, with no manual intervention needed.

Overview

The Solar Axis Tracker control box is an intelligent automation system designed to optimise solar energy capture by dynamically adjusting the position of photovoltaic (PV) modules. Utilising real-time local longitude, latitude, and time data, it precisely calculates the sun's azimuth and elevation to maintain optimal panel alignment throughout the day. The system periodically updates the tracking angle by controlling the electric motor, maximising solar exposure. In response to adverse weather conditions, such as rain, the built-in communication system automatically initiates a protective stow position for the modules. This fully automated solution enhances efficiency and equipment longevity without requiring manual intervention

Key Features

- Real-Time Weather and Cloud Coverage Imaging Simplifies plant-wide tracking thus improving overall solar to electrical energy conversion efficiency.
- Al-Based Predictive Maintenance Aids ground-level crews with diagnostics and pre-emptive maintenance/repairs to improve system availability.
- Edge-IoT and Cloud-Enabled Allows trackers to be fused into a network for centralised control and real-time learning from incoming tracker data.

Technology Benefits

• Enhanced Solar Farm Energy Harvest Large scale solar farms can harvest significantly more solar energy from the same land area by using solar tracking algorithms coupled with plant-wide coordinated tracking. • Vital Tracking Data and Predictive Maintenance A Smart PVMS enables a plant operator to collect vital tracking data for real-time AI-based learning, which subsequently improves tracking. It also empowers ground-level crew with operational information, allowing pre-emptive servicing through predictive maintenance.

Applications

- Large-Scale Solar Farms
- Remote Solar Installations
- Agri-voltaic Systems
- Commercial Rooftop Solar Arrays (Flat rooftop)



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