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Trough type solar tracking system

Overview

In order to improve the solar energy utilization rate and output power of the solar power generation device,this paper takes the parabolic trough thermoelectric generation device as the research object,it proposes a new type of solar power generation device,which uses PLC as the controller and MCGS touch screen as the configuration interface.Through the feedback information of the illumination sensor,the step motor controls the concentrator,so that the condenser rotates around the north,south,east and west sides to track the sun’s height angle and azimuth angle,so as to improve the photoelectric conversion efficiency of the solar power generation device.In order to verify the feasibility of the tracking control system of the trough type solar thermal power generation device,the power generation capacity of the device was measured.The test results showed that the device supplied power to the load of the solar greenhouse for 10consecutive days,the total power generation time was 52.01h,and the total power generation was 2.74kW·h,which could meet the daily power consumption of the solar greenhouse seedlings.The structure of the device is flexible,and the power generation of the device can be further improved by increasing the number of series parallel hybrid connected thermoelectric generators.Does a parabolic trough concentrating collector receive direct solar radiation?

Therefore, for the purpose of optimizing the tracking mode of the parabolic trough concentrating collectors, the current work applied Hottel’s clear-day radiation model with an aim to study the amount of direct solar radiation received by the parabolic mirror within a year under different tracking modes in Shanghai.

What are the tracking modes of parabolic trough concentrating collectors?

Depending on the number of tracking axes, the tracking modes of parabolic trough concentrating collectors can be classified as dual-axis and single-axis solar tracking modes.

What are the latest developments in solar tracker systems?

Recent developments in solar tracker systems include exploring different

module geometries, materials, and tracking mechanisms to boost efficiency. Single-axis and dual-axis tracking systems are widely used, with dual-axis systems offering greater efficiency and accuracy.

How do solar trackers work?

Sensors detect the sun's angle, and feedback signals drive the tracker via a microprocessor. Open-loop solar trackers, on the other hand, rely entirely on current data inputs and the system's algorithm, making them easier and less expensive to construct. Fig. 2. Schematic representation of tilt moments in PV systems. Fig. 3. Solar tracker systems.

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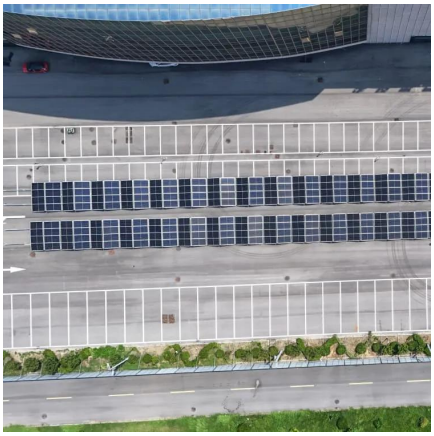

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Tracking Solar Collector

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Parabolic Trough Solar Collector

Parabolic trough collector is usually aligned North-South axis and the concentrator tracks the sun East-West direction to focus the solar radiation on to the receiver. The parabolic trough ...

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10.2. Parabolic Trough Collector Systems , EME 811: Solar ...

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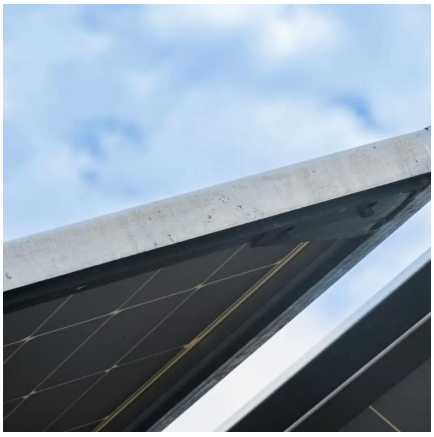

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