

Single-Axis Solar Tracking System Referring to Date and Time

This article is about designing and building single-axis solar tracking system referring to the sun position database. The objectives are as follows: 1. To design and build solar tracking system 2. To compare the power produced from the solar tracking system with stationary solar panel. The angle of the solar panel from the built solar tracking system was positioned with constant altitude angle, 15 degrees, facing south, and the moving part was the azimuth, which follows the position of the sun. Latitude and longitude coordinates were identified by the Arduino UNO R3 microcontroller board for processing data, reading coordinates of the sun's angle degrees from the SD Card module, and commanding the servo motor to rotate in order to adjust the angle of the solar panel in a position perpendicular to the sun. The experimental results were collected in October 2020 from 9 AM to 4 PM. The system changed the angle degree every 30 minutes. It is found that the built solar tracking system can be easily created and controlled, and can also accurately follow the sun's position all day long. Moreover, it can produce more electric power than the stationary solar panel up to 15%. The built system is usable and can produce more electric power than other tracking systems, although the results were collected during the rainy season, and the weather was generally cloudy and rainy throughout the month.

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