PLC-based solar tracking system

How does a solar tracking system work?

The designed tracking system consists of four sensors (LDR) and a programmable logic controller (PLC) which controls two DC servomotors with control software designed for this purpose to move the system panel according to the information from the input sensors, keeping the panel always perpendicular to sun rays.

Can a PLC measure solar energy?

A PLC type s7-200 from Siemens, a Human Machine Interface (HMI), an analog extension module (EM) , a temperature sensor type Pt100 and an inexpensive system for measuring solar radiation and applications of solar energy [8, 9,10] were used in this simulation. ...

How accurate is solar tracking?

When in range,the system has a tracking accuracy of ±1°. Data analysis from research shows that even a single axis three-position system can increase efficiency and make solar tracking a worthwhile endeavour. Automated tracking,Linear motors,PLC,Solar tracking,Solar panels. Figure 1.

What is Siemens SIMATIC s7-1200 solar tracker?

Siemens SIMATIC S7-1200 is one of the PLC lines which provides solar tracking for the end user. Fig. 2 shows the SIMATIC S7-1200 solar tracker control architecture for dual axis tracking. As it can be seen in the figure the zenith and azimuth drive the motor movement in the dual axis system. Figure 2.

How does Siemens s7-1214 solar tracking system work?

The Siemens S7-1214 DC/DC/DC PLC controls the rotation of the dual axis solar tracking system. Four LDRs are used to detect the sun position in the skyand make the tracking system follow it,ensuring that the solar radiation is perpendicular on the photovoltaic panel surface. The proposed approach is compared to a fixed panel system.

Can a single axis three-position system improve solar tracking efficiency?

Data analysis from research shows that even a single axis three-position system can increase efficiencyand make solar tracking a worthwhile endeavour. Automated tracking,Linear motors,PLC,Solar tracking,Solar panels. Figure 1. Sun vector components in a diurnal circle course of the sun (Prinsloo &

SUNRACKER® is a solar tracking system designed and built by RCM. ... The panel control system is based on a TCP/IP (wired or wireless) protocol. Each controller controls 12 to 16 ...

algorithm and necessary calculations. PLC system is used as main control unit. It collects input and gives output to execute drive mechanism. 3. Drive mechanism: Tracking system moves ...

Fig.2. Algorithm of Solar Tracking System. B. COMPONENT a) Programmable Logic Controller: For solar

panel controlling PLC is used as main controller in closed loop. A PLC is a ...

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Three-axis solar tracking system which will be based on Programmable Logic Controller (PLC). The automatic tracking system of solar radiation will be done on the basis of tilt angle. In the ...

This project deals with the design and execution of a solar tracker system dedicated to the PV conversion panels. ... PLC Based Energy Management and Control Design for an Alternative ...

An accurate control system had been used to control the rotation of dual axis solar tracking system depends on the LDR sensors input. The control system used is PLC based

This paper proposes a novel design of a dual-axis solar tracking PV system which utilizes the feedback control theory along with a four-quadrant light dependent resistor (LDR) sensor and...

PV panel Length, l=0.1651m Width, a=0.1397m Thickness, t=0.0089m Programmable Logic Controller (PLC) is a special computer device used in industrial control ...

Aiming at low density of solar energy, intermittent of solar ray, changing light intensity and direction with time, the paper studies maximum power point of photovoltaic ...

The power generation using solar energy has been used widely many years ago due to fuel shortage and its low cost. In this paper, a design and implement of dual axis solar tracking ...

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