Solar energy automatic tracking system based on PLC control

What is a solar tracking system?
This is the true position of the sun as seen from an observer on the surface of the earth. From fig. A solar tracking system refers to a system which is able to track the movement of the sun throughout the day for maximum energy efficiency and have it at a perpendicular angle to the plane of the solar panel.

Why should you use Siemens plc for automatic solar tracking?
CPU and the programming tools allow users to design autonomous industrial processes and solve automation problems. Based on this specific application and its user-friendly programming tool and troubleshooting solutions,Siemens' PLC hardware and software were found to be the right fit for the automatic solar tracking application in this project.

How is the solar tracking process governed and controlled?
In this paper,the tracking process is governed and controlled by programmable logic controller (PLC)where two stepper motors are used to guide the motion of the solar panel in azimuth and elevation angle. The azimuth and solar altitude angles of sun were calculated at 24.3636ºN,88.6241ºE (Rajshahi,Bangladesh).

What is solar tracker control architecture?
SIMATIC S7-1200 Solar Tracker Control Architecture (Tang, 2014) This process is conducted through the solar tracking and the calculation of the alignment for single axis tracking libraries, depending on whether the system is single or dual axis. The Siemens SPA (Solar Position Algorithm) calculates the azimuth and zenith.

The Siemens S7-1214 DC/DC/DC PLC is used to control the dual axis solar tracking system rotation.

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Automatic solar tracking system using DELTA PLC January 2016 DOI: 10.1109/ICEPES.2016.7915899 Conference: 2016 International ...

Precision control of solar tracking systems ABB has developed solutions based on programmable logic controller (PLC) that enables collectors, mirrors and panels to capture ...

Betha Karthik et al. (2016) proposed automatic solar tracking system was implemented using Delta PLC which tracks the sun more effectively which tracks the sun more ...

A dual-axis solar tracking system with a novel and simple structure was designed and constructed, as documented in this paper. The photoelectric method was utilized to perform ...

The design uses a microcontroller-based control mechanism to maximize solar energy extraction. This is done by the design of a tracking system known as the PILOT and ...

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 ...

Abstract- The capability of photovoltaic (PV) panel to generate energy approximately follows the intensity of the sunlight on the panel. A dual-axis solar ...

Abstract-- Sun is a low cost source of electricity and instead of using the generators; solar panel can convert direct sun rays to electricity. Conventional solar panel, ...

The PLC-based control system provides a reliable and automated approach to solar tracking, offering benefits such as improved energy efficiency, reduced reliance on fixed-tilt ...

The objective of this paper is to develop an automatic solar tracking system where solar panels will keep aligned with the Sunlight in order to maximize in harvesting solar power. ...

Hence tilt angle is the important factor that affects the performance of a solar collector. This paper presents a new design of a Three-axis solar tracking system which is ...

An automatic light tracking system based on PLC is proposed to make photovoltaic panels track solar illumination in real time, so as to improve the energy generation ...

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