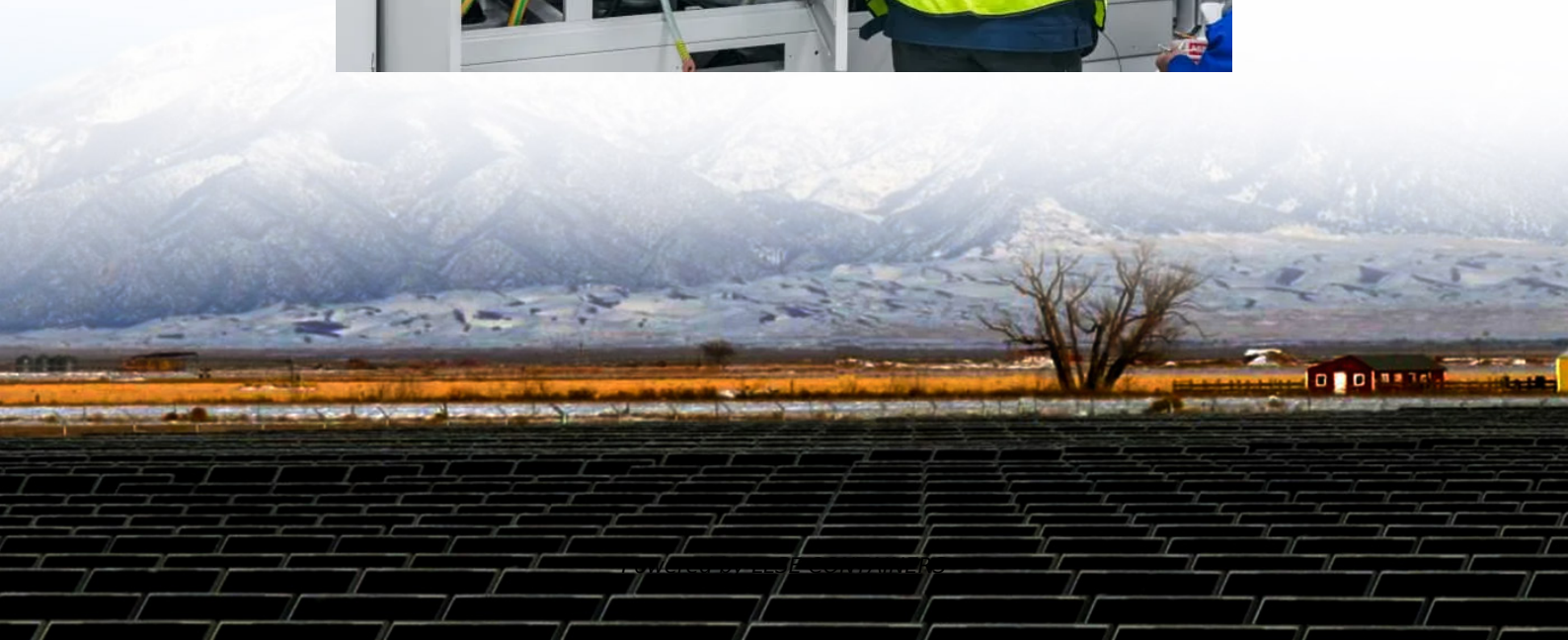


# **Dual-axis solar tracking power generation system**





## Overview

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For a solar panel to produce as much electricity as possible, an effective sun-tracking system is required. The produced solar tracker system in this study, which was created utilizing the SIMULINK platform, consists of an electrical and mechanical system. The suggested dual-axis STS is illustrated with a mechanical prototype that illustrates how it.

Photovoltaic (PV) systems are rapidly increasing worldwide but are often installed as fixed flat-plate systems with predefined angles. This paper focuses on constructing a closed-loop solar tracking system (STS) to accurately measure the sun's location in real time, enabling solar panels to collect maximum solar radiation. A sensor-based feedback c.

Photovoltaic (PV) Fixed flat-plate system Dual axis system Solar tracking system (STS) Azimuthal tracking Elevated tracking.

PV cells are used in solar photovoltaic (SPV) technology, a type of renewable energy, to turn sunlight directly into electrical energy. Because it can provide clean and sustainable energy, this technology has grown in popularity recently. Solar energy, unlike traditional fossil fuels, is renewable and emits no harmful emissions, making it an appealing choice for decreasing carbon emissions and addressing climate change [1]. The panel's energy production will be diminished if it is not facing the sun straight [2]. Sun Tracking Systems (STS) have been developed to address this issue. These systems employ sensors and motors to follow the sun's course across the sky and modify the placement of the solar panels.

Many studies have been conducted to increase the effectiveness of SPV systems [8]. The annual solar radiation on PV modules installed on STS across Europe was estimated using a map-based technique by Huld et al. In comparison to static systems at an ideal angle, their findings for Munich showed a 24% increase in annual sun irradiation utilizing the azimuth tracking system [9]. With a dual-axis sun tracker, several studies have shown improvements of up to 40% [10]. The use of parabolic reflectors to concentrate sunlight was recommended by Hall et al. to increase the irradiance value; nevertheless, the primary disadvantage of focused light is that it raises cell temperature and causes panel power losses [11]. However, a [12] establish



tha.

What is a dual axis solar tracking system?

Abstract: Dual-axis smart solar tracking system which is to optimize photovoltaic (PV) panel orientation for maximum energy generation on a global scale. The system seamlessly integrates components, including a microcontroller, a Global Positioning System (GPS), an automated compass, and a gyro orientation sensor.

What is dual axis solar photovoltaic tracking (daspt)?

Dual-axis solar photovoltaic tracking (DASPT) represents a fundamental technology in optimizing solar energy capture by dynamically adjusting the orientation of PV systems to follow the sun's trajectory throughout the day. This paper provides an in-depth review of the development, implementation, and performance of DASPT.

Can dual-axis solar tracking systems revolutionize solar energy generation?

By evaluating the latest research findings, this paper underscores the potential of dual-axis solar tracking systems to revolutionize solar energy generation, making a compelling case for their widespread adoption in the renewable energy sector. Discover the latest articles, books and news in related subjects, suggested using machine learning.

Is there a dual axis sun tracking program?

There is no dual-axis sun tracking in any of these programs . Therefore, the solar radiation hitting on the panel will be at its maximum intensity whenever the angle of incidence on the panel is 00, which denotes that the panel is orthogonal to the sun's rays .



## Dual-axis solar tracking power generation system

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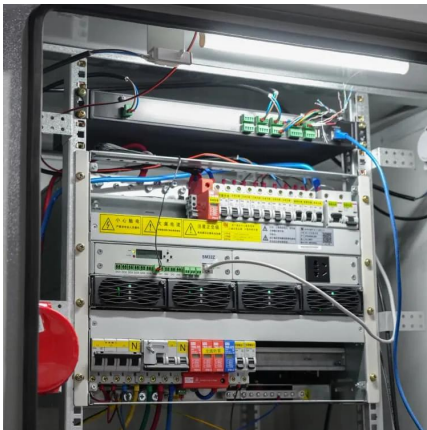
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