Automatic Solar Tracker

Guided by Prof. Santosh Kedari

Group ID- B4

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I. Introduction

Energy crisis is the biggest crisis we are facing today and the biggest hinderence to development of our country With the increasing demand for energy our only solution is to go green with renewable sources like solar energy. However people are sceptical about solar energy because of its limitations such as it's efficiency. Hence we have come up with a solution which will increase the efficiency of solar panels.

II. Methodology/Experimental

A. Materials/Components/Flowchart/Block Diagram/Theory

Arduino UNO Board
SG90 Servo motor
Solar plate
Two 10kilo-ohm resistor
Two LDR's
One 9v battery
Wires

B. Synthesis/Algorithm/Design/Method

Our project will detect the direction from where the sun rays are arriving. This will be done by using a combination of light and heat detectors. Once this information is obtained ,it will be fed to the motor's which will rotate the solar panels through a certain angle so that the solar panel recieves optimum amount of energy. Hence the solar panels will recieve more amount of solar energy thereby increasing it's efficiency

C. Characterization/Pseudo Code/ Testing

The automatic solar panel has been tested using human sources of light such as torches and LEDS for accurate analysis and results

III. Results and Discussions

The automatic solar tracker is capable of detecting the direction of maximum intensity of light and align itself in a direction that maximizes the energy input. Based on the results we can confirm that the efficiency of the solar panel has increased as indicated by the increase in output energy

IV. Limitations

Since it consisits of moving parts as well as sensors it is More expensive than stationary solar cell. Also since it consisits of sophisticated microchips and moving parts it Needs more frequent maintenance compared to standard solar sell
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V. Future Scope

the scope for this project in the future is to not only change the direction but also the position of the solar cell by some extent. Also the increasing the amount of energy used that is input by decreasing loss due to reflection is to be worked on.

Conclusion
in conclusion we have successfully developed a solar tracker that is fully automatic . This solar tracker increases the energy output by the solar panels hence increasing its efficiency .

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