Solar Panel With Automatic Sun Position Tracking System.

About This Project:

The designed & Construct project aims at tracking the sun to achieve the maximum sun light incident on the solar panel during anytime of the day. The project is useful during cloudy days. The system requires a solar panel coupled with a Servo motor to keep tracking the sun and moving according to the maximum sun light received. An Arduino family is used that generates PWM signal pulses periodically to rotate the panel through Servo motor. In this project a dual axis solar tracking system has been developed by which more energy from the sun can be harnessed. In this project, an Arduino which is an Atmel microcontroller-based board, has been used as the main controlling unit. To detect the position of the sun on the sky, two LDRs have been used and to rotate the orientation of the Solar PV panel a servo motor has been used. The sensors and servo motor have properly been interfaced with the Arduino board. The servo motor has been mechanically coupled with the PV panel. The driving program has been written using the Arduino IDE. The whole system has been assembled together and its performance has been tested. This tracker changes the direction of the solar panel based on the direction of the sun facing to the panel successfully.

Block Diagram:

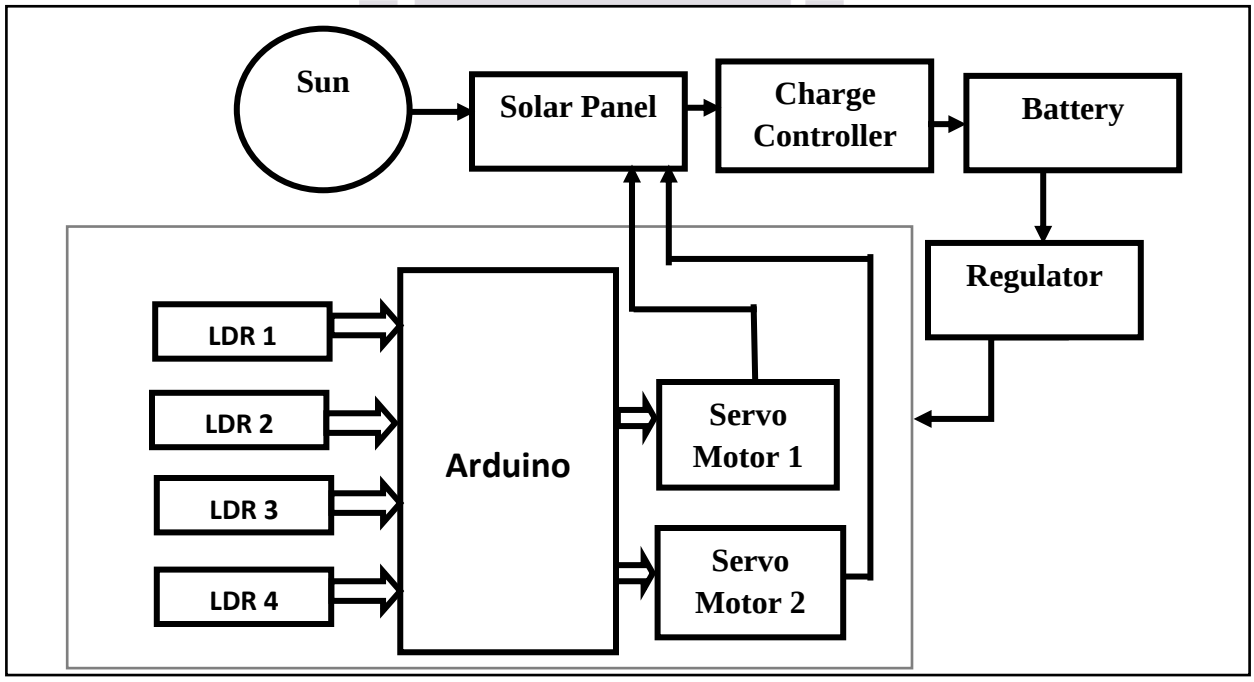

Figure: Block Diagram of Solar Panel with Automatic Sun Position Tracking System.

Required Instrument:

1. Arduino.
2. LDR.
3. Servo Motor.
4. Solar Panel.
5. Battery.
6. Transistor.
7. LM317 IC.
8. Diode.
9. Resistor.
10. Capacitor.

Advantages:

- The solar energy can be reused as it is non-renewable resource.
- This also saves money as there is no need to pay for energy used (excluding the initial setup cost)
- Helps in maximizing the solar energy absorption by continuously tracking the sun.

Applications:

- These panels can be used to power the traffic lights and streetlights
- These can be used in home to power the appliances using solar power.
- These can be used in industries as more energy can be saved by rotating the panel.

N.B: *Any modification of this project can be done as per your requirement. We will make the project according to your needs. Contact us with your any innovative engineering projects idea. We will help you to implement your project.*