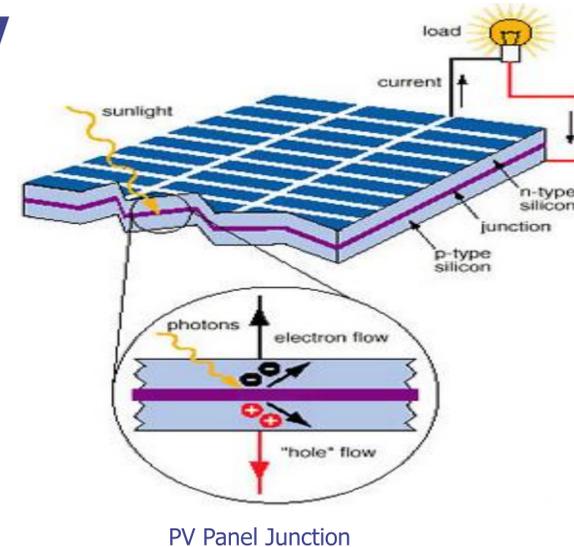


OBJECTIVES

- Charge a car's battery using renewable energy source; that is Solar Energy
- Design and implement a solar tracking system to get maximum possible efficiency of a photovoltaic panel during the course of the day
- Design the system such away it can be mounted on car's roof as a backup charging source

PV PANEL WORKING MECHANISM

- Electromagnetic energy coming from the sun hits the solar panel
- Photon energy breaks the silicon electron-hole pairs
- The generated electric field pushes the electrons to one side and the photons to another
- Conductors attached to the edges of the junction carries the generated current to a load

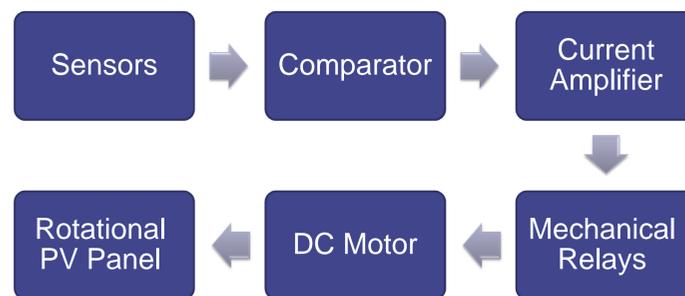


COMPONENTS

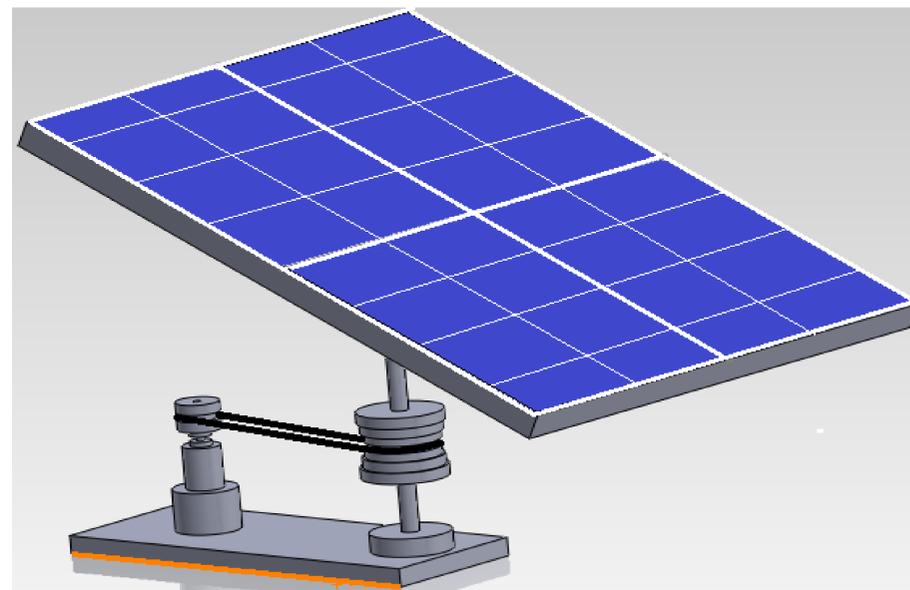
- Light Sensor
- Electronics Components
- Swishing Elements
- Motor
- Mechanical Components
- 40 Wh Photovoltaic Panel
- 12V Car's Battery



BLOCK DIAGRAM



SCHEMATIC



APPLICATIONS

Different areas for PV panel applications:

- Power plants
- Residential and Industrial buildings
- Transportation; Solar charged vehicles
- Roadways
- Stand alone devices such as:
 - Water pump
 - Parking meter
 - Temporary traffic signs

CONCLUSION

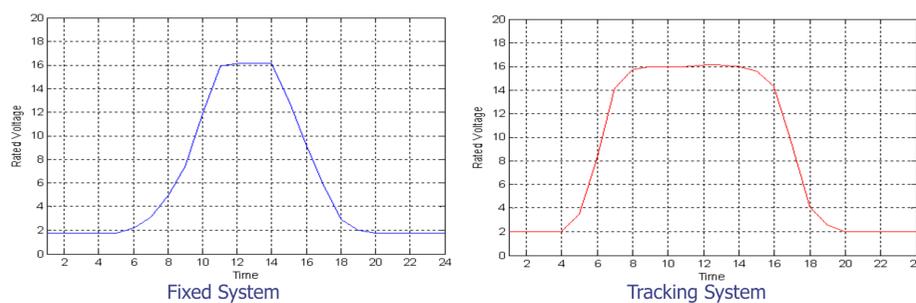
- The designed system tracked the sun successfully with ability to rotate across the vertical axis 360°
- Maximum power was gotten during the day time and delivered to a car's battery to be charged
- Charging process by PV panel using the tracking system needed less time to charge the battery compared with the one that do not track the sun

FUTURE WORK

- Modify the system such that it tracks the sun in a Two-Dimensional fashion
- Add flaps to the edges of the panel in order to reduce air resistance when the car is travelling in high speed
- Provide AC source from the solar panel using special components to be used in more applications
- Use a larger PV panel in order to reduce the battery's charging time

RESULTS

These graphs indicate the output voltage of the panel for two cases



The right graph indicate the charging process of half filled car's battery

