

EFFICIENCY ENHANCEMENT OF THE MONO CRYSTALLINE SOLAR PHOTOVOLTAIC PANEL USING SMART DUAL AXIS TRACKING SYSTEM

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Solar energy is based on photovoltaic effect; it is one of the methods of converting the light radiations into direct current. The demand of solar energy has been increased in recent years. The PV systems can be used either as a stand-alone system or as a large solar system that is connected to the electricity grids. Sun emits 3×10^{24} joule of energy on every moment and energy reaches to earth is 1.7×10^{17} joule, here we are trying to consume more energy from the sun using solar panel. In order to increase the efficiency of generated electrical energy from solar panels, the solar panels have to be placed perpendicular to the sun. Thus the tracking of the sun position and positioning of the PV systems are important. The main aim of our project is to design such a system which automatically rotates or moves with sun's position. The dual axis tracking system will move the solar panel in either axis i.e. X-axis or Y-axis so that on every moment the solar panel is perpendicular to the sun to increase the efficiency of solar panels. Photo voltaic systems are modern technology of electricity generation from the sun it can be use anywhere specially in low horizon areas and shade free areas these areas basically are the remote areas, generation of electricity basically increase with these type of area so, they required a remote monitoring system for PV plants to improve their efficiency and productivity. The monitoring system is so designed that it measures the solar panel parameters like voltage, current, power and temperature for a solar panel array. The data collected at the PV plant is send to microcontroller and then to GSM module for monitoring purpose.

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