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## Patent Search

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**Abstract:**

Energy crisis is the most important issue in today's world. Conventional energy resources are not only limited but also the prime culprit for environmental pollution. Fossil energy resources are getting priorities in the whole world to lessen the dependency on conventional resources. Solar energy is rapidly gaining the focus as an important and expanding renewable energy uses. Solar cells those convert sun's energy into electrical energy are costly and inefficient. Different mechanisms are applied to increase efficiency of the solar cell to reduce the cost. Solar tracking system is the most appropriate technology to enhance the efficiency of the solar cells by tracking the sun. A microcontroller-based design methodology of an automatic solar tracker is presented in this paper. Light dependent resistors are used as the sensors of the solar tracking system. A small prototype of solar tracking system is also constructed to demonstrate the design methodology presented here.

**Complete Specification**

Description: Energy is the prime factor for the development of a nation. An enormous amount of energy is extracted, distributed, converted and consumed in the global society daily. 85% of energy production is dependent on fossil fuels. The resources of the fossil fuels are limited and their use results in global warming due to emission of greenhouse gases. To provide a sustainable power production and safe world to the future generation, there is a growing demand for energy from renewable sources such as solar, wind, geothermal and ocean tidal wave. The sun is the prime source of energy, directly or indirectly, which is also the fuel for most renewable systems. Amongst renewable systems, photovoltaic system is the one which has a great chance to replace the conventional energy resources. Solar panel directly converts solar radiation into electrical energy. Solar panel is mainly made from semiconductor materials. Silicon is used as the major component of solar panels, which is maximum 24.5% efficient. Until high efficient solar panels are invented, the only way to enhance the performance of a solar panel is to increase the intensity of light falling on it. Solar trackers are the most appropriate and proven technology to increase the efficiency of solar panels through keeping the panels aligned with the sun's position. Solar trackers get popularized around the world in recent days to harness solar energy in most efficient way. This is far more cost-effective solution than purchasing additional solar panels. In this paper the design methodology of a microcontroller-based simple and easily programmed automatic solar tracker is presented. A prototype of an automatic solar tracker ensures the feasibility of this design methodology.

**PHOTOVOLTAIC TECHNOLOGY:**

The most abundant and convenient source of renewable energy is solar energy, which can be harnessed by photovoltaic cells. Photovoltaic cells are the basic of the solar system. The word photovoltaic comes from "photo" means light and "voltaic" means producing electricity. Therefore, the photovoltaic process is "producing electricity directly from sunlight". The output power of a photovoltaic cell depends on the amount of light projected on the cell. Time of the day, season, panel position and

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