



RESEARCH ARTICLE

ARM MICRO-CONTROLLER BASED MULTI -FUNCTION SOLAR TRACKING SYSTEM

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Abstract

In remote areas the sun is a cheap source of electricity because instead of hydraulic generators it uses solar cells to produce electricity. While the output of solar cells depends on the intensity of sunlight and the angle of incidence. The solar panels must remain in front of sun during the whole day. But due to rotation of earth those panels can't maintain their position always in front of sun. This problem results in decrease of their efficiency. Thus to get a constant output, an automated system is required which should be capable to constantly rotate the solar panel. In this project we are implementing Automatic Sun tracking System on both sides. One side of automatic sun tracking system we have sensor network which track the position of sun and based on the position rotate the solar panel towards the direction where the intensity of sunlight is maximum and transmit the data to control remote system via wired or wireless medium. Based on the data received it gives the signal to stepper motor to rotate the large panel. The unique feature of this system is that instead of taking the earth as its reference, it takes the sun as a guiding source. The system can display the result on the LCD display. The primary objectives were compact design, efficient energy collection, and ability to monitor available battery charge status using ARM based Microcontroller and also provide to power supply for control system unit. In this project we are using ARM7TDMI based LPC2148 microcontroller to control the position of the solar panel ,which is having 64 pin capability ,512KB of Flash memory ,8 to 32KB of SRAM and many peripherals ,working with internal clock generation using PLLs up to 60 MHz . The application code will be developed in Embedded C language. Keil4 IDE software will be used to build the Hex file and flash magic is used to dump the GENERATED Hex file in to microcontroller.

Full Text: <http://www.ijcsmc.com/docs/papers/January2014/V3I1201401.pdf>