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Abstract
This research presents a development and implementation of a microcontroller-based maximum power point tracker (MPPT) for PV system using microcontroller. The system consists of a PV module via a MPPT charging a battery or supplying a dc motor that drives an air fan. The research uses the LabviewU+AE software and DC electronic load to measure the PV panel at different weather changes to determine voltage, current and maximum power at these conditions. After that the data will be stored in the microcontroller Atmega8.
The control algorithm is developed by comparing the data of voltages which was stored in the microcontroller in advanced and the data measured from the PV systems to detect the optimal operating point under different operating conditions. After that the control action gives the driving signal to the buck converter. A microcontroller is used for data storage, reading the voltage from the PV panel and running the control.
The PV system with MPPT always tracks the peak power point of the PV module under various operating conditions. The MPPT transmits about 92% of the actual maximum power generated by the PV module. The MPPT will increases the power from the PV module to the load and maintains longer operating periods for the PV system.
The load in this research is a battery. It can be use in rural area where the electrical system of nation is not available. The program stored in the microcontroller can be adjusted to meet the demand of different PV panel.
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