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Abstract
The subject is in design and implementation of newly developed bi-direction power operation system base on PIC18F8720 single-chip microprocessor as a control center, to be able to work as photovoltaic conversion system, which less cost than traditional design, and it is high efficiency in the energy consummation of the quality. ◦

This new development photovoltaic conversion system has the following function:

(1) convert dc power generated by photovoltaic cell in to AC power to support in some area where has no power supply, such as mountain, country house, farm, some Island"s traffic light or park lighting etc

(2) When the power is normally supplied, this system can also do the battery charge while the power is operated. It is because of the system has been designed to be power factor correction to adjusting the charge current wave to meet unit power factor.

(3) Due to the renewable energy has becomes popular, therefore to know how to use solar power instead of AC power, and also knows how to maintaining the battery last long, it has become the main subject of this presentation.

The subjected presentation have been tested by a actual bi-direction energy conversion system draft form of 1500VA/220V, and it has confirmed the work ability according the test report.

keywords：photovoltaic conversion system, Power factor correction, Renewable energy, Inverter.
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