

## Abstract

Increase in demand for energy along with depletion of fossil fuels is raising worldwide a critical issue on meeting the future demands. The exploitation of renewable energy is one of the alternative options in this context. Among all the renewable energy sources, both solar and wind energy is gaining much more importance across the globe. However, both are unpredictable in nature and also they depend upon the geographic locations. This project is designed for meeting the load requirement in rural un-electrified areas. In our present study, a PIC microcontroller based solar wind hybrid system is designed for meeting the daily load requirement for 24 hours. Here, a boost type DC-DC converter from 11-12V I/P to 16V O/P is designed for efficient charging of the battery. We have also studied the characteristics of charging, discharging and overcharging of the battery voltages per cell by three different ways with the help of capacity models. We also calculate the whole system costs by help of annualized system costs (ACS). Through the PIC microcontroller based charge controller, the over voltage and over charging current of the battery are controlled and all the related parameters of this system are displayed on the LCD. The experimental result demonstrated efficient operation of the system and also efficient performance in the absence of any one of the energy sources selected.

Key word: Solar energy, Wind energy, battery, Charge controller, PIC microcontroller and EEPROM