

Smart Battery Management System Using a Shunt Regulator With IOT

These system focuses on the smart battery management system using a shunt regulator with IOT. The life expectancy of a battery drastically reduces when it gets discharged below the minimum recommended battery level i.e battery voltage. Load must be disconnected before total discharging gets completed. Otherwise, it can damage the battery or shorten its life. The disconnect function requires a battery voltage monitor with considerable hysteresis to prevent chattering in the disconnect switch. Chattering occurs as the battery voltage drops below threshold and then bounces back on load removal.

A battery management system (BMS) is an essential component of any consists of a number electric des ice. It of electrical and electronic circuits (including converter and inverter circuits) that have been programmed to monitor and extract the maximum output from a battery system. The chemical reactions are what determine the hatter)'s performance. The performance of a battery degrades as chemicals decay. As a result, these features of a battery must be regularly monitored. Despite the fact that these batteries have a lot of power for their size, they are quite unstable. It is critical that these batteries are never overcharged or discharged, requiring the use of voltage and current regulators. IOT senses the overcharging and over discharging of battery. The BMS indicates relay thus stops the battery from overcharging and over discharging.

Main Objectives:

- Continuous monitoring of battery voltage.
- Display the battery voltage on LCD.
- Automatic battery charging/disconnecting system.
- Relay based switching mechanism.
- To charge the battery sing solar energy.
- Design a battery management system to protect the battery from over charging and discharging.

Components used:

- Solar panel.
- Charging circuit.
- Battery.
- Voltage sensor.
- PIC microcontroller.
- LCD display.
- ESP8266 WI-FI module.

Software's used:

- ▶ PIC-C compiler for Embedded C programming.
- ▶ PIC kit 2 programmer for dumping code into Micro controller.
- ▶ Express SCH for Circuit design.

Block Diagram:

BLOCK DIAGRAM

