An Efficient Battery Management System Control Supported by a Remedial Action Scheme in Micro grid

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ABSTRACT-Battery management systems (BMS) is used in electric vehicle to monitor and control the charging and discharging of rechargeable batteries which makes the operation more economical.Battery management system keeps the battery safe, reliable and increases the senility without entering into damaging state. In order to maintain the state of the battery, voltage, current monitoring techniques are used.This paper addresses state of charge, state of health, and state of life and also maximum capacity of a battery.Due to the highly dynamic MGs, the contribution of the battery in each period is limited to a percentage of its capacity, avoiding deep discharges and the loss of premature energy provided by the battery. The control will apply a remedial action scheme to keep the frequency within the operating margins if the BMS cannot regulate the frequency. The system proposed here is evaluated using an MG system in an island operation. The results show the feasibility of the proposed system under different operating conditions and the compliance with the technical operational specifications of the BESS.

OBJECTIVE:
There are three main objectives common to all Battery Management Systems,

- Protect the cells or the battery from damage.
- Prolong the life of the battery.
- Maintain the battery in a state in which it can fulfil the functional requirements of the application for which it was specified.

I.INTRODUCTION

- Electric vehicles (EV) are playing a key role because of itszero-emission of harmful gases and use of efficient energy.
- Electric vehicles are equipped by a large number of battery cells which require a effective battery management system(BMS) while they are providing necessary power.
- The battery installed in a electric vehicle should not only providelong lasting energy but also provide high power.
- Lead-acid,Lithium-ion, -metal hydride are the most commonly usedtraction batteries, of all these tractionbatteries lithium-ion ismost commonly used because of its advantages and itsperformance.

II.EXISTING SYSTEM

- An overview of new and current developments in state of charge (SOC) estimating methods for battery is given where the focus lies upon mathematical principles and practical implementations.

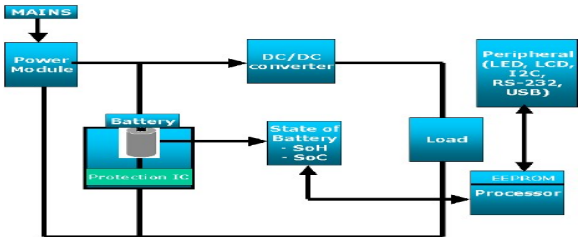
- As the battery SOC is an important parameter, which reflects the battery performance, so accurate estimation of SOC cannot only protect battery, prevent overcharge or discharge, and improve the battery life, but also let the application make rationally control strategies to achieve the purpose of saving energy.

- This paper gives a literature survey on the categories and mathematical methods of SOC estimation.

- Based on the assessment of SOC estimation methods, the future development directionSOC estimation is proposed.

BLOCK DIAGRAM:

FIG 1.1



DISADVANTAGES:

- The existing system having only one battery, so not reliable.

- There is no automatic charge controlling circuit, it will affect the battery life.

- For large power system consist of huge battery.

- At the time of only small load connection inverter power loss is high.

III.HIGHLIGHT OF THE PROJECT

- The various mathematical methods of estimation are classified according to methodology. The classification of these SOC estimation methods is different in the various literatures. However, some literatures allow a division into the following four categories.
- (i)Direct measurement: thismethod uses physical battery properties, such as the voltage and impedance of the battery.
- (ii)Book-keeping estimation: this method uses discharging current as the input and integrates the discharging current over time to calculate the SOC.

- (iii)Adaptive systems: the adaptive systems are self-designing and can automatically adjust the SOC for different discharging conditions. Various new adaptive systems for SOC estimation have been developed.

- (iv)Hybrid methods: the hybrid models benefit from the advantages of each SOC estimation method and allow a globally optimal estimation performance. The literature shows that the hybrid methods generally produce good estimation of SOC, compared to individual methods.

IV.PROPOSED SYSTEM

- This project is used wwhen a battery is fully charged, it can be said that the SOC of this battery is

100%. State of charge can be determined using controller.

- The voltage and current measurement circuit is used and the microcontroller reads the values through analog pin.

- The required components are installed and the charging and discharging state of battery is analyzed implemented in our system.The information which is displayed in the LCD display.

METHODOLOGY:

- Maintain the safety and the reliability of the battery.

- Battery sate monitoring and evaluation.

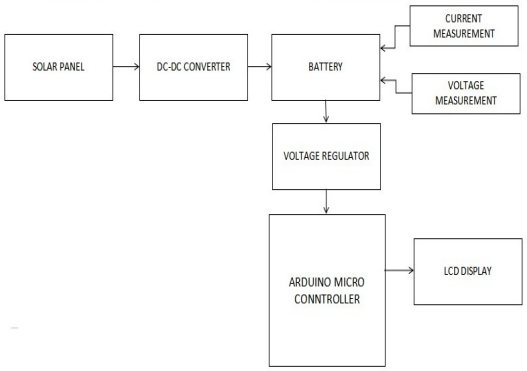
- To control the state of charge.

- For balancing cells and controlling the operatingtemperature.

- Management of regenerative energy.

PROPOSED SYSTEM BLOCK DIAGRAM

FIG 1.2



ADVANTAGES

- Our proposed system have a battery protection and management system, it will increase battery life time.

- Very less battery maintenance.

- Due to multi batteries high reliable operation.

- Overall efficiency increased.

- Mentoring of call voltage.

APPLICATIONS

- Micro power grid.
- Rural area power generation.
- Hill station of power system.
- Substation power system backup power unit.
- Battery management of EV.

V.CONCLUSION

- The Importance of Effective Monitoring of the Li-Ion Batteries are evolved.
- In This Project, A Monitoring System Prototype For Handling Multiple Li-ion Batteries Is Designed And Developed In Real Time Based On Microcontroller.
- The power control strategies for large scale renewable hybrid power systems taking into account the optimum capacity of SES and battery aging will be discussed.
- Proposed system is going to demonstrates that the control strategy can manage Segmented Energy Storagepower andCharge control within a specified target region**.**

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