

# Battery Management System of Electric Vehicles

Amisha A. Lonagre, Anuksha N. Raut, Arpita P. Ingle, Dhanshree D. Bhise,

Manjusha K. Ingle, Pooja S. Sharma

Department of Electrical Engineering

Shri Sant Gajanan Maharaj College of Engineering, Shegaon, Maharashtra, India

**Abstract:** *Electric cars have developed a game-changing technology in earlier years. A Battery Management System (BMS) is the most important feature of an Electric Vehicle (EV). Lithium-ion batteries have a large capacity to store energy. The BMS controls the battery packs in electric vehicles. The major function of the BMS is to monitor the battery's position accurately, which assures proper operation and extends the battery performance. The BMS' measure job is to keep check up on operational parameters, evaluate and balance the battery pack's cells. The major aim of this work is to keep track of battery characteristics, calculate SOC using Coulomb Counting method, and balance cells. Current is used as an input parameter to apply the coulomb counting method. Together with SOC calculation Terminal Voltage of the battery is also estimated with the help of relationship between OCV and SOC. In difference with current and temperature, the charging and discharging resistances is bear in mind to calculate the Terminal Voltage. Results of all the algorithms will be approximately analysed. MATLAB R2020a software is used for the simulation of different algorithms and SOC estimation. Two phases of BMS are considered which are discharging phase and the Charging phase. After SOC Estimation, Cell balancing is also performed over 3 cells of the battery pack.*

**Keywords:** Electric Vehicles, Lithium-ion batteries, BMS, SOC, Cell balancing

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