Performance Optimization and Health Monitoring of Electric Vehicle Batteries using IoT

Shraddha Bhagwan Patil[1], Vaishnavi Sheshrao Nimbone[2], Yogita Eknath Kahandal[3]
Mahesh Chanrabhan Darade[4], Prof. N. I. Bhopale[5]
Students, Department of Electronics & Telecommunication Engineering[1,2,3,4]
Guide, Department of Electronics & Telecommunication Engineering[5]
SRES College of Engineering, Kopargaon, Maharashtra, India

Abstract: *Electric vehicle (EV) manufacturers are using Lithium-ion [Li-ion] batteries as a part of the vehicle's rechargeable energy storage system. Li-ion is a low-maintenance battery, but it is fragile and requires a protection circuit to maintain safe operation. The protection circuit limits the peak voltage of each cell during charge and prevents the cell voltage from dropping too low on discharge. Also, the performance of lithium-ion batteries can be optimized by monitoring different battery parameters. The cell temperature is monitored to prevent temperature extremes. The maximum charge and discharge currents can be limited, with these precautions in place, the possibility of metallic lithium plating occurring due to overcharge and overheating is virtually eliminated. It also measures the input and output voltage and current parameters and Monitoring of battery cell status (to check cell is weak). The proposed system deals with overcharge and over-discharge problems of Li-ion batteries and also proposed system protects the battery from over-temperature damage of the battery.*

Keywords: IOT, Arduino UNO, ESP, Sensors, Battery

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