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IoT Based Battery Monitoring Unit in Electric Vehicles

Mr. Gangadhar J[1], Mruthuynjaya[2], Rahul G[3], Mukul[4]
Assistant Professor, Electrical and Electronics Engineering[1]
Students, Electrical and Electronics Engineering[2-4]
Rao Bahadur Y. Mahabaleswarappa Engineering College, Ballari, India

Abstract: *Electricity theft, inefficient energy monitoring, and delayed billing are major challenges in conventional power distribution systems. This project presents an IoT and GSM based smart energy meter capable of real-time energy monitoring, overload detection, and theft identification. The system continuously measures electrical parameters such as voltage, current, and power using energy meter sensors and processes the data through a microcontroller. IoT connectivity enables remote monitoring through cloud platforms, while the GSM module provides instant alerts during abnormal conditions such as overload or unauthorized power usage. The proposed system reduces manual meter reading, improves billing accuracy, enhances consumer awareness, and ensures safe and efficient energy utilization.*

Keywords: IoT, GSM, Smart Energy Meter, Electricity Theft Detection, Overload Protection, Real-time Monitoring, Microcontroller, Cloud-based Energy Management

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