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Energy Regeneration and Simultaneous Battery Charging of EV and BMS

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Abstract: *This paper investigates an advanced energy management system for electric vehicles (EVs) that integrates energy regeneration, wireless charging through road-embedded coils, and solar-powered charging stations equipped with Battery Management Systems (BMS). By using transmitting (Tx) coils under road surfaces and receiving (Rx) coils in EVs, the system enables wireless charging while driving, reducing downtime and extending range. Additionally, solar-powered charging stations with BMS optimize energy storage and distribution, ensuring sustainable and efficient operation. This study highlights the combined benefits of energy regeneration, on-the-move wireless charging, and BMS in supporting a high-performance, eco-friendly EV infrastructure.*

Keywords: Energy regeneration, wireless charging, Battery Management System (BMS), solar-powered stations, sustainable transportation

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