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Enhanced Mileage and Efficiency in Lightweight EVs Through Innovative Regenerative Braking and Speed Control with Solar-PV Integration

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Abstract: *This study introduces a novel way to regenerative braking based on a Brushless DC (BLDC) motor. The preferred way for braking is to use a variable Stator voltage from a multi-cell battery system DC-DC buck converter. The proposed brake system's performance was evaluated using a simulation. According to simulation results, the proposed regenerative braking system is both practical and effective. Furthermore, this study introduces the most essential technique for regenerative braking, which employs a BLDC motor to increase the mileage of lightweight electric vehicles.*

Keywords: Solar PV, Electric Vehicle, Regenerative Braking, Zeta Converter, P&O - MPPT, Battery & PMBLDC.

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