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Passive Lossless Clamped Converter for Hybrid Electric Vehicle

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Abstract : This paper presents a comparative analysis of Passive Lossless Clamped (PLC) Converter for Hybrid Electric Vehicle using Renewable Energy. The proposed converter is devised for boosting the voltage generated from the fuel cell through three winding coupled output inductor and voltage doublers circuit. The proposed converter achieves high step-up voltage gain without large duty cycle. The passive lossless clamped technology not only recycles leakage energy to improve efficiency but also alleviates large voltage spike to limit the voltage stress. The proposed converter is simulated in open and closed loop using PID and FUZZY controller. The simulation results are verified experimentally and the output of the proposed converter is free from ripples and has regulated output voltage.

Keywords : Passive Lossless Clamped (PLC) Converter, Three winding coupled output inductor, High step-up voltage gain, Fuzzy controller, Hybrid electric vehicle.