

## Documents

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**An interleaved dc charging solar system for electric vehicle**

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**Abstract**

This paper investigates the performance of conventional boost converter, 2-phase interleaved boost converter and 3-phase interleaved boost converter for renewable energy applications especially for solar-powered energy. The advantages of using coupled inductors in interleaved boost converters include increased system efficiency, reduced core size, and also reduced overall current and voltage ripples which increases the lifetime of renewable energy resources. In this paper, the uses of boost converters have been focused explicitly on the interleaved DC-DC charging from a solar-powered battery into electric vehicle (EV) battery storage. Hence, this paper aims to investigate a suitable charging process mechanism from a photovoltaic (PV) battery storage system into EV powered battery system. Using the application of a boost converter with reduced ripple current and ripple voltage decreases switching losses and increases conversion efficiency. The simulation is carried out by using Simulink/MATLAB to evaluate the performance of each boost converter. The results successfully demonstrate the ability of the proposed charging system with an energy efficiency of 90%. © 2021, Institute of Advanced Engineering and Science. All rights reserved.

**Author Keywords**

Boost converter; Electric vehicle; Interleaved technique; MATLAB; Solar energy

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