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Battery Charging from Photovoltaic Generator Using Step-Down Converter

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Abstract

Photovoltaic (PV) generation systems are one of the most popular research areas in renewable energy. PV generation systems require rechargeable batteries for energy storage. PV generator may be considered as a direct current (DC) source. A step-down converter topology is used to regulate voltage and current of PV generator for battery charging. The main purpose of this study is to operate the designed PV generation system at a maximum power point (MPP) under different environmental conditions and to charge the battery effectively. Thereby, battery life cycle will be enhanced. To this aim, Soltech STH-215-P PV generator has been simulated with a step-down converter and lead-acid battery in the MATLAB/Simulink environment.

Keywords: Battery Charging, Photovoltaic Generator, Step-Down Converter