Abstract

The objective of this paper is to propose a multi-input power converter for the hybrid system that interfaces two unidirectional ports for input power sources, a bidirectional port for a storage element, and a port for output load in a unified structure. The two input ports for simultaneously converting two different input power sources with low voltages to a stable output power with a high voltage. According to various situations, the operational states of the proposed converter can be divided into three states based on battery utilization. In order to ensure that the system operates with high efficiency, this paper proposes a power management control scheme, which controls the bidirectional converter operating under boost mode according to the operation condition of the PV/Fuel Cell, so that the battery can be charged or discharged. The integration of the hybrid renewable power system is implemented and simulated using MATLAB/SIMULINK.

References


Index Terms

Computer Science

Circuits And Systems

Keywords

Photovoltaic (PV)/Fuel Cell/Battery Sources  State Of Charge (SOC)  Bidirectional Power Flow
Boost DC-DC Converter
Power Converter