



Modeling, Control and Simulation of a High-Current DC-DC Converter for Fuel Cell Applications

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Abstract. In this paper, a high-current two-stage DC-DC converter fed by a Proton Exchange Membrane Fuel Cell (PEMFC) is studied. The converter consists of two three-phase full-bridge inverters connected through three AC coupled inductors. The mathematical models of both converter and PEMFC are first presented, and a control scheme that ensures a high power factor at the AC stage and a regulated voltage at the DC load is then implemented. The performance of the proposed control system is verified through digital simulations.

Key words

DC-DC converter, three-phase inverters, six-switch rectifiers, fuel cells, high currents, modeling, control.

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