

Energy Management of Hybrid Energy Source Composed of a Fuel Cell and Supercapacitor for an Electric Vehicle

Authors : Mejri Achref

Abstract : This paper proposes an energy management strategy for an electrical hybrid vehicle which is composed of a Proton Exchange Membrane (PEM) fuel cell and a supercapacitor storage device. In this paper, the mathematical model for the proposed power train, comprising the PEM Fuel Cell, supercapacitor, boost converter, inverter, and vehicular structure, was modeled in MATLAB/Simulink. The proposed algorithm is evaluated for the Highway Fuel Economy Test (HWFET) driving cycle. The obtained results demonstrate the effectiveness of the proposed energy management strategy in reduction of hydrogen consumption.

Keywords : proton exchange membrane fuel cell, hybrid vehicle, hydrogen consumption, energy management strategy

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