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ULTRABATTERY, FUEL CELL AND SUPERCAPACITOR BASED HEV A COMPARATIVE STDY OF PERFORMANCE

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Abstract

Recently a growing interest on utilizing renewable and green energy has been motivated by rapidly increasing oil prices, limited fossil fuel reserves and growing environmental green awareness. Since the energy density of supercapacitor is less but power density is thousand time more than that of battery, ultrabattery is a hybrid energy-storage device, which combines the best of asymmetric supercapacitor and battery in a unit cell without any extra electronic controls. Fuel cell can also be used as an electric source. This paper deals with model of HEVs run by hybrid power sources in which a supercapacitor bank, ultrabattery and fuel cell are used as main source, a dc link and supercapacitors as transient power source, the comperative analysis of performance of models of HEV is simulated with the help of MATLABSIMULINK software. comparative performance of HEV is discussed in detail. This sutudy in fact gives an idea to construct supercapacitor pack of appropriate power and energy density for HEV and minimize the dependence on battery.

Keyword: Supercapacitor; Ultrabattery; Fuel cell, DC/DC converter; HEV