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A series regeneration converter technique for voltage balancing of energy storage devices (Article)

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Abstract

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A single series resonant converter has been designed to balance the voltage level of a storage battery for electric vehicles. The proposed design has been simulated and verified by using two 100F supercapacitors instead of the conventional rechargeable battery. A voltage monitoring circuit detects the voltage condition of the individual capacitor and sends the voltage status to the control circuit for action. A technique has been developed to control a set of switches to transfer the current between the capacitor to balance the voltage level. The MATLAB simulated result shows the balancing circuit decreases the voltage difference between the two supercapacitors from 200 mV to 0V in 140 seconds, which is less than the existing methods. This fast voltage balancing technique can be used in the battery management system or electric vehicles for long lasting the battery life. © 2017 Institute of Advanced Engineering and Science. All rights reserved.

Author keywords

[Battery](#) [Electric vehicles](#) [Series resonant converter](#) [Supercapacitor](#) [Voltage balancing](#)

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