

Switched Ultracapacitors for Maximizing Energy Supply

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Abstract : Supercapacitors (S.C.) are presently attracting attention for driving general purpose (12VDC to 220VAC) inverters in renewable energy systems. Unfortunately, when the voltage of the S.C supplying the inverter reaches the minimal threshold of 7-8VDC the inverter shuts down leaving the remaining 40% of the valuable energy stored inside the ultracapacitor unusable. In this work a power electronic circuit is proposed which switches 2 banks of supercapacitors from parallel connection when both are fully charged at 14VDC to serial connection when their voltages drop down to 7 volts, thus keeping the inverter working within its operating limits for a longer time and advantageously tapping almost 92% of the stored energy in the supercapacitors.

Keywords : ultra capacitor, switched ultracapacitors, inverter, supercapacitor, parallel connection, serial connection, battery limitation

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