



BUHLE POWER

Supercapacitor models in substations





Overview

Supercapacitors (SCs) have high power density and exceptional durability. Progress has been made in their materials and chemistries, while extensive research has been carried out to address challenges.

Can a supercapacitor model be used for energy storage?

The simulation results have verified that the proposed model can be applied to simulate the behaviour of the supercapacitor in most energy and power applications for a short time of energy storage. A supercapacitor test circuit is given to test the charge and discharge of supercapacitor modules.

What is supercapacitor technology?

This article provides a brief overview of supercapacitor technology and presents a systematic review of five equivalent circuit models of supercapacitors. Download data is not yet available. Supercapacitors are a promising technology for addressing the challenges faced by power systems with an increasing share of inverter-based resources.

Can I use Simscape electrical blocks instead of a supercapacitor?

Use the Simscape™ Electrical™ blocks and functions instead. For more information on updating your models, see Upgrade Specialized Power System Models to use Simscape Electrical Blocks. The Supercapacitor block implements a generic supercapacitor model. This figure shows the equivalent circuit of the supercapacitor.:

Can a simplified electrical circuit model be used for a supercapacitor?

A simplified electrical circuit model for a supercapacitor (SC) based on the voltage-current equation is proposed in this paper to address this issue. This model doesn't need an intensive test for accuracy.



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The supercapacitor supplies or absorbs the large current pulses that occur during engine starting or regenerative braking, improving the transient response and efficiency of the battery supply. ...



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Supercapacitor

The Supercapacitor block implements a generic supercapacitor model. The Specialized Power Systems library will be removed in R2026a. Use the Simscape™ Electrical™ blocks and ...



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