

DC microgrid switching frequency



Overview

In this paper, three-step switching frequency selection criteria (SFSC) are proposed. A generalized CLLC-type DCT (GCLLC-DCT) model is extracted to make the proposed approach available for the LLC-, CLL-, symmetric CLLC- and asymmetric CLLC-type topologies. Abstract—For hybrid AC/DC microgrids, the widely applied high frequency DC transformer (DCT) is usually scheduled to operate at resonant frequency with 50% duty-cycle based semi-regulated control (DCSR) to ensure the power transmission (PT), improve its power-density and simplify the system-level. In order to reduce the economic costs, enhance the efficiency, and improve the structural stability of microgrids, this paper proposes a novel AC/DC hybrid microgrid structure. However, controlling DC MGs is a complex duty, where voltage control and power management are particularly challenging tasks.

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Control strategy of frequency and DC voltage for interfacing converter

This paper provides control techniques for the AC frequency and the DC voltage for an isolated/islanded hybrid AC/DC MG using intelligent virtual synchronous generators (VSGs) and intelligent ...

DC-based microgrid: Topologies, control schemes, and implementations

DC microgrid has an advantage in terms of compatibility with renewable energy systems (RESs), energy storage, modern electrical appliances, high efficiency, and reliability. However, the integration of ...



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Advanced control scheme for harmonic mitigation and performance

Key contributions include enhanced harmonic compensation, frequency instability mitigation, and faster response times, highlighting the practical effectiveness of the system in real-time hybrid

Three-Step Switching Frequency Selection Criteria for the Generalized

In this paper, three-step switching frequency selection criteria (SFSC) are proposed. A generalized CLLC-type DCT (GCLLC-DCT) model is extracted to make the proposed approach available for ...



Three-Step Switching Frequency Selection Criteria for the

Three-step switching frequency selection criteria have been proposed for the GCLLC-DCT to ensure the power transmission (PT) ability for cooperating with the BIC in the hybrid AC/DC microgrid application.

Cost-effective soft-switching ultra-high step-up DC-DC converter with

High-gain DC-DC converters are crucial for elevating voltages from low-voltage DC sources like solar panels and wind turbines in DC microgrids. This paper introduces a non-isolated DC-DC converter designed to achieve ...



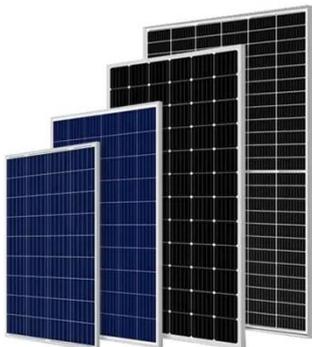
Improved Power Management of Standalone DC Microgrid With Hybrid ...



This paper presents a fixed switching frequency model predictive control (FSF-MPC) along with a modified rule-based power management algorithm (PMA) proposed for small-scale photovoltaic (PV) DC MG with ...

Research on a Novel AC/DC Hybrid Microgrid Based on Silicon

Finally, this paper compares the proposed structure with traditional microgrid structures in terms of economics, system efficiency, and structural stability, and analyzes the impact of this structure on the ...



Exploring DC microgrid: Advanced applications and their control

With a focus on their technological advantages, possible uses and control mechanisms, this review evaluates the emerging role of DC microgrids as a viable substitute for conventional AC systems.

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