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Unidirectional high frequency inverter

Overview

Can unidirectional DC/AC converter supply active and reactive power?

Simulation results show that the proposed unidirectional DC/AC converter can supply active and reactive power in its allowable operating range. In the next step, to test the converter power factor boundaries, the converter is simulated in the islanded mode of operation and without any controller.

Which isolated converter is used for grid integration of DC resources?

One of the isolated converters used for the grid integration of DC resources is presented in Fig. 2a. This multi-stage converter is a cascade connection of an isolated full-bridge DC/DC buck converter and a DC/AC voltage source converter through a common capacitor on the intermediate DC link [5 - 7].

How does a DC/AC full-bridge inverter work?

The DC/AC full-bridge inverter converts the input DC voltage to an AC square wave voltage with a variable duty cycle at the switching frequency. The high-frequency transformer, which works at the switching frequency scales the square wave input voltage with respect to its turn ratio to a desirable level for the output-stage converter.

What is an isolated HFAC converter?

This isolated HFAC converter is composed of two voltage source converters in its input and output ports. The commutation process of these converters must be done such that never shorts the input port voltage and always produces a path for the output port current.

What is a DC/AC full-bridge square wave inverter?

A DC/AC full-bridge square wave inverter that converts the input DC voltage to a high-frequency square AC waveform with a variable duty cycle. A high-frequency transformer which works at the switching frequency, scales its input square waveform voltage to a desirable level for the output-stage converter.

What is a rectifier inverter system?

The second stage comprises a rectifier-inverter system which converts the high square wave voltage to the grid sinusoidal voltage. The two stages are linked together using a HFT. It also presents the whole control system that gives the switching signals to the system’s switches.

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