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Direct Power Control Inverter

Overview

What is direct Power Control (DPC)?

The third technique is direct power control (DPC) [8]. It is based on the instantaneous control of the active and reactive powers exchanged with the grid.

Can artificial intelligence improve direct power control in a photovoltaic generation system?

Volume 9, article number 37, (2024) This paper introduces a novel control algorithm leveraging artificial intelligence to address the key defects of Direct Power Control (DPC) via Grid Voltage Modulation (GVM) strategy enhanced by Neural Network Control (NNC) for a three-phase inverter in a photovoltaic generation system.

What is a dynamic switching table for a 3L NPC inverter?

In [13], a DPC algorithm has been developed for a 3L-NPC inverter with the aim to achieve a fast dynamic control of the power flow on a transmission line. In [14], a dynamic switching table for a grid-connected NPC inverter has been proposed with the aim to enhance its robustness against grid faults.

How to design a grid-connected multilevel inverter controller?

The design of an appropriate controller for grid-connected multilevel inverters should take into consideration the constraints required by gird codes such as IEEE1547 and VDE-0126-1-1.The main performance criteria are the quality of the power injected into the grid, the dynamic response, leakage current amplitude etc.

What is DPC-GVM VSI inverter?

In a robust and simple effective design of (DPC-GVM) was achieved to control the instantaneous active and reactive powers, to attain a good performance of VSI inverter in the convergence rate in the steady state.

How does DC link voltage affect active power reference?

The sudden fluctuation in DC link voltage influences the active power reference, due to the direct relationship between the DC link voltage, and the active power reference. On the other hand, grid conditions have direct effects on overall system control.

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This study proposes a simplified super-twisting algorithm (SSTA) control strategy for improving the power quality of grid-connected photovoltaic (PV) power systems.

This article proposes a new dipolar pulse width modulation (PWM) algorithm for direct power control of each dc source of a dual-input three-level inverter.

Abstract-- This paper develops an adaptive direct power control scheme for grid-interactive inverters while the control parameters are adaptively adjusted as the grid and filter parameters ...

Unlike traditional Field-Oriented Control (FOC) or Direct Torque Control (DTC), DPC offers high dynamic performance with reduced complexity, making it highly suitable for ...

This paper proposes three new direct power control (DPC) algorithms which minimise the variation of the common mode voltage (CMV) provided by a transformerless grid ...

Abstract: This study proposes a direct power control (DPC) scheme for grid-connected voltage source inverter (VSI) in a virtual synchronous reference frame during frequency variations and ...

ABSTRACT In this paper, a direct power control (DPC) approach is proposed for grid-tied AC MG's photovoltaic (PV) voltage source inverter (VSI) to regulate directly active and reactive ...

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We propose a grid voltage modulated (GVM) direct power control (DPC) strategy for a grid-connected voltage source inverter (VSI) to control the instantaneous ac

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