GermanSolarZA

Dual closed-loop control grid-connected inverter

Overview

Is there a dual closed-loop repetitive control strategy for single-phase grid-connected inverters?

In this paper, a novel dual closed-loop repetitive control strategy based on grid current feedback is proposed for single-phase grid-connected inverters with LCL filters. The proportional-integral inner loop is stabilized by using an inherent one-beat delay achieved by digital controller.

What is the circuit topology of a single-phase grid-connected inverter?

The main circuit topology is a single-phase grid-connected inverter with LCL filter. The repetitive dual-loop control method is adopted. The outer loop is controlled by the RC, which makes the grid-connected current ig track the sinusoidal reference iref without a steady-state error.

What is a grid connected inverter?

The grid-connected inverter, which is essentially a voltage-source inverter (VSI) with voltage input and current output, is the core of grid-connected power systems. The most important indexes for measuring the grid-connected inverter are total harmonic distortion (THD) of the grid current and the grid power factor (PF) [5, 6].

Why do grid-connected inverters need LCL filters?

Grid-connected inverters with LCL filters need high steady-state control accuracy, fast dynamic response performance, and strong robustness to guarantee the power quality.

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Parameter Design of Current Double Closed Loop for T-Type ...

Abstract To reduce current harmonics caused by switching frequency, T-type grid-connected inverter topology with LCL filter is adopted. In view of the disadvantages of the slow ...

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Dual-loop Control Strategy for Grid ...

As to the concrete topology of three-phase LCL type grid-connected inverter with damping resistance, mathematical model was deduced in detail, using method of equivalent transformation to the

A novel dual closed-loop control scheme based on repetitive control ...

A novel repetitive dual-loop control scheme of a grid-connected inverter with an LCL filter is proposed in this paper to realize precise control of grid-connected inverters.

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Parameter Design of Current Double Closed ...

Abstract To reduce current harmonics caused by switching frequency, T-type grid-connected inverter topology with LCL filter is adopted. In view of the disadvantages of the slow response speed of the traditional ...

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A Novel Inverter Control Strategy with Power ...

A. Grid Integration Modelling When considering stability, traditional methods are insuffi- cient. Fig.1illustrates the system's primary circuit, which in- cludes coordinate ...

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Design and Simulation of Dual-Closed-Loop Control System ...

As the core device of the new energy production system, the grid-connected inverter plays a crucial role in transforming new energy into electrical energy. Regarding the ...

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Dual-loop Control Strategy for Grid-connected Inverter with LCL Filter

As to the concrete topology of three-phase LCL type grid-connected inverter with damping resistance, mathematical model was deduced in detail, using method of equivalent ...

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Dual-loop Control Strategy for Grid-connected Inverter ...

The dual-loop control strategy for grid-connected in-verter with LCL filter in this paper can be used to control the currents of three phase grid-connected inverter, and it will let ...

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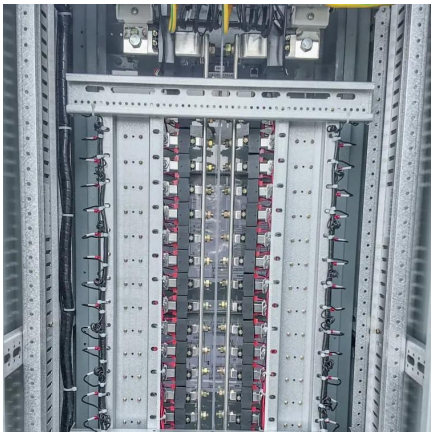

Dual-loop Control Strategy for Grid-connected Inverter with ...

Discover a groundbreaking method for improving efficiency and power supply quality in LCL type grid-connected inverters. Explore the mathematical model, decoupling ...

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Research on the SVPWM Grid-connected System with Double Closed-loop

NPC three-level inverter is a new type of inverter topology. In order to improve the stability and power quality of two-level inverters when connected to the grid, an NPC three ...

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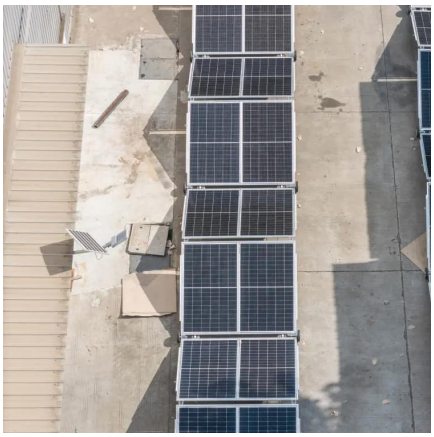

Research on Dual-Closed-Loop Control Strategy for LCL ...

A dual closed-loop feedforward control strategy is proposed for the current inner loop and voltage outer loop in the rotating coordinate system. The correctness of the inverter ...

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Research on the control strategy of LCL-type PV grid-connected inverter

This paper examines a three-phase grid-connected photovoltaic inverter using LCL technology. Circuit for a full-bridge inverter with three phases and a filter of type LCL are used, ...

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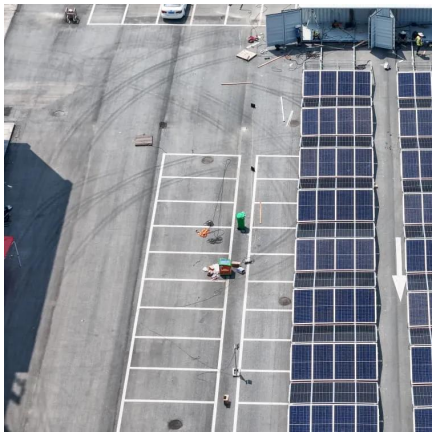

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