

Single-phase inverter repetitive control





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.

How to improve the performance of off-grid inverters?

Voltage control technologies is the key to improve the performance of off-grid inverters. The resonance control, repetitive control, deadbeat control, and model predictive control are widely used in the voltage waveform control of inverters , , .

Can high-order repetitive control reduce net current harmonics in a single-phase inverter?

The stability and performance analysis are all given for the proposed two control strategies. Finally, comparative simulations are conducted in a circuit-level inverter model to show that the high-order repetitive control can obtain better steady-state and dynamic features of the single-phase inverter system and reduce the net current harmonics.

Can PI control be combined with repetitive control in a grid-connected inverter?

Conclusion In this paper, a novel control method combining PI control and repetitive control is proposed for a single-phase grid-connected inverter. After introducing the single-phase inverter type and modelling, a first-order repetitive control and a high-order repetitive control are developed for the grid-connected inverter, respectively.



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

Mar 1, 2018 · 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 ...

First-Order and High-Order Repetitive ...

Aug 12, 2020 · The modelling of a single-phase inverter is first introduced; then a first-order repetitive control is developed for the proposed grid ...

Design of Composite Repetitive Controller for Single ...

By analyzing the characteristics of the out-put signal of the repetitive controller, this paper proposes a composite repetitive controller com-bined with an inverse system for the output ...

First-Order and High-Order Repetitive Control for Single-Phase ...

Aug 12, 2020 · The modelling of a single-phase inverter is first introduced; then a first-order repetitive control is developed for the proposed grid-connected inverter.

First-Order and High-Order Repetitive Control for ...

Apr 3, 2024 · Finally, e s e dinalinverterltoshowthate high-orderrepetitivelnobtainbettersteady-state dcfeaturesofesingle-phaseinvertersystemd reduceettharmonics. *e r s of this r e e ...

State Feedback Repetitive Control for Single-Phase Inverters

Jul 19, 2019 · In order to improve stability of output voltage of single-phase inverter, state feedback control strategy combined with repetitive control is proposed. Firstly, state space ...

First-Order and High-Order Repetitive Control for Single-Phase ...

Aug 12, 2020 · The modelling of a single-phase inverter is first introduced; then a first-order repetitive control is developed for the proposed grid-connected inverter. Moreover, a high ...

Feedforward Dual-Mode Repetitive Control for Single-Phase ...

May 12, 2025 · Vehicle-to-grid (V2G) technology enhances the utilization of renewable energy by enabling electric vehicles (EVs) to inject stored renewable power into the grid. However, in ...

LADRC-based grid-connected control strategy for single-phase ...

Different control strategies and filter topologies have become the focus of research to achieve high-quality output current from the inverter. Currently, some commonly employed control ...

Phase-Based Fractional-Order Repetitive Control for Single-Phase ...

Sep 26, 2025 · A novel fractional-order repetitive control based on phase angle information interpolation is proposed for single-phase LCL-type inverters in this paper. Conventional ...



Composite control of single-phase inverter based on SRFPI ...

Apr 1, 2023 · Periodic and non-periodic disturbances will result in excessive harmonic distortion in the output voltage and reduce the performance of single-phase inverters. The linear active ...

First-Order and High-Order Repetitive ...

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