

Does frequency-adaptive dual-mode repetitive control address harmonic compensation degradation in grid-tied inverters?

This paper proposes a frequency-adaptive dual-mode repetitive control (FA-DMRC) strategy for grid-tied inverters to address harmonic compensation degradation in conventional DMRC caused by non-integer delays during grid frequency variations.

Can a grid-connected PWM inverter output high-quality grid current?

This demonstrates that the proposed control strategy enables the grid-connected PWM inverter to output high-quality grid current that complies with the requirements. Figure 13 illustrates the grid current $i_{g,a}$ can quickly track the reference $i_{r,a}$ when the setpoint magnitude (I_r^*) is switched suddenly between 5A and 10A.

Can grid-connected inverters generate high-quality current?

An FA-DMRC scheme is proposed to enable grid-connected inverters to generate high-quality current even if there are grid frequency variations.

What is the amplitude of grid-tied inverter a?

The test rig of three-phase PWM grid-tied inverter A. Fixed Grid Frequency of 50 Hz Figure. 10 illustrates when solely employing the DB controller, the amplitude of the output grid current $i_{g,a}$ is around ≈ 4.00 A, which is notably less than the target value of 5A.

A novel parallel dual-frequency single-phase grid-connected inverter (PDF inverter) is proposed to improve the quality of the output current and reduce the loss of the grid-connected ...

Using a low pulse ratio, the electromagnetic interference and switching loss of an inverter can be effectively reduced, particularly in high-power applications. However, due to variations in grid ...

Abstract This paper proposes a frequency-adaptive dual-mode repetitive control (FA-DMRC) strategy for grid-tied inverters to address harmonic compensation degradation in ...

Summary To simplify the inverter topology and suppress the leakage current more effectively, a novel transformerless dual-frequency grid-connected inverter with a common direct ...

Integrating filters into inverters to improve the power quality is essential. This study examines a three-phase dual-frequency grid-connected inverter designed to minimize switching ...

The proposed inverter has good stability in a weak grid, and the efficiency of the proposed inverter is 95.98% at rated current, which is 0.81% higher than the traditional GCI, effectively ...

However, due to variations in grid impedance, it is a challenging task to achieve stable operation of an LCL-type grid-connected inverter (GCI) using the active damping method with low ...

Expanding the control bandwidth and avoiding frequency band overlap are shown to enhance system stability. Finally, simulation and experimental results are provided to validate the theoretical analysis, ...

Droop-Based GFMI: Mimics the droop characteristics of synchronous generators by adjusting frequency and voltage in response to active and reactive power imbalances. This approach ...

Abstract: To increase the efficiency of the grid-connected inverter, this study proposes an L + LCL-filtered dual-frequency single-phase grid-connected inverter. The proposed inverter consists ...

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