

This paper begins by briefly introducing the principle of the virtual synchronous generator (VSG). Then, the output current of the voltage source inverter is analyzed to elucidate the mechanism of harmonic ...

By providing virtual inertia and damping, it improves frequency regulation and grid response to disturbances. It is particularly beneficial for weak grids and high-renewable penetration, ...

INVERTER-BASED acing fossil-fuel-based synchronous power plants to de-carbonize the power grid []. The majority of currently operational IBRs are grid-following inverters (GFLIs). However, grid-forming inverters ...

For this purpose, a strategy of grid-connected control of VSG with virtual impedance is proposed. Firstly, the VSG mathematical model is established and virtual impedance is introduced into the VSG ...

The virtual synchronous generator (VSG) control is employed to control the grid-connected inverter to provide the grid-forming characteristics, thus facilitating a grid-friendly integration of renewable ...

This article proposes a virtual synchronous generator control strategy for grid-connected inverter based on sliding mode control and virtual adaptive inductance.

Abstract: In this study, an improved control method of the grid-connected inverter is presented to enhance the harmonic suppression. The capacitor-current-feedback-based active damping is applied to the LCL-type grid ...

To ensure a smooth grid connection, a synchronization control strategy based on virtual power has been designed. An experimental validation platform was built and the experimental results verify the correctness ...

A novel Adaptive Predictive Virtual Synchronous Generator (AP-VSG) control strategy is proposed for enhanced grid stability and seamless renewable energy integration.

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