Characteristics of harmonic resonance in microgrid

Overview

This paper proposes to analyze the harmonic resonance characteristics in VSG using the state-space model. The analysis is based on a full-order state-space small-signal model that fully considers the dynamic of the inner loops and the VSG-based outer power control loop. Participation analysis is. In this paper, the frequency domain analysis method and the mode analysis method are combined to analyze the resonance characteristics of the medium-voltage microgrid cluster system under the action of two controllable series compensators, transformer-coupled series compensator (TCSC) and. ite a varied grid impedance. In order to improve the system robustness against parameters uncertainties and to avoid harmonic resonance,a LQR methodbased on optimal control theory is proposed for the grid-connected inverter called 'harmonic resonance. the impacts of voltage-controlled and current-controlled distributed generation (DG) units.

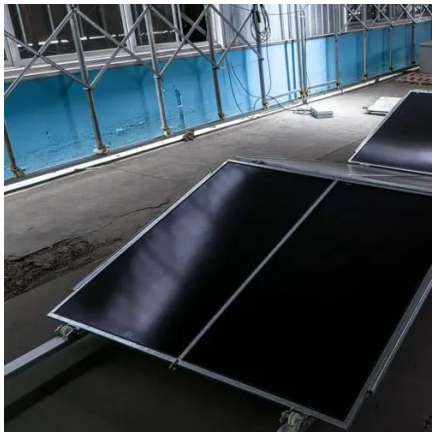
Characteristics of harmonic resonance in microgrid

[Modeling and analysis of harmonic resonance in microgrid and ...]

In the microgrid, the capacitive element such as compensation capacitor may resonance with the line inductance in harmonic frequency, furthermore serious harmon

[Harmonic Resonance Analysis and Impedance Remodeling ...]

In this paper, the harmonic current modeling of inverter and resonance analysis of a multi-inverter grid-connected system is carried out, and an impedance remodeling strategy is proposed for harmonic ...



[Harmonic characteristics and control strategies of grid-connected]

To investigate the harmonic characteristics of a photovoltaic (PV) system connected to the weak grid, a passive impedance network is constructed using the impedance model of a PV inverter ...

[Harmonic Mitigation Analysis of Distribution System in Grid ...]

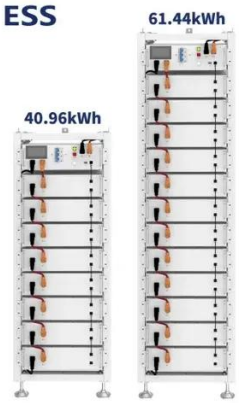
For the sake of simplicity, this paper only adopts a simple microgrid configuration to demonstrate how the microgrid power quality is affected by resonance propagation.

[Harmonic Analysis of Distribution System in Grid-Connected]

To achieve better operation of grid-connected and islanding microgrids, the paper considers a simple harmonic propagation model in which the microgrid is placed at the receiving end of the feeder.

[High frequency resonance mitigation of microgrid-connected PV units]

This case aims to demonstrate the occurrence of resonance between the PV system and the microgrid, when different compensation capacitors, i.e., 17 µF, 12 µF and 10 µF, are used.



Microgrid Harmonic Resonance

In the microgrid, the capacitive element such as compensation capacitor may resonance with the line inductance in harmonic frequency, furthermore serious harmonic resonance may

[Resonance Analysis of Medium Voltage Multi-Microgrids]

According to the principle of parallel resonance, a very small harmonic current in the resonant circuit is injected into the MMGs to produce a large harmonic voltage.

[Analysis of Harmonic Resonance Characteristics in Grid-Connected]

This paper proposes to analyze the harmonic resonance characteristics in VSG using the state-space model. The analysis is based on a full-order state-space small-signal model that fully ...

[(PDF) Active resonance damping and harmonics compensation in]

For this aim, an effective active resonance damping method is proposed to dampen out the undesired resonance amplifications. The proposed method uses a filter-based approach with ...

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