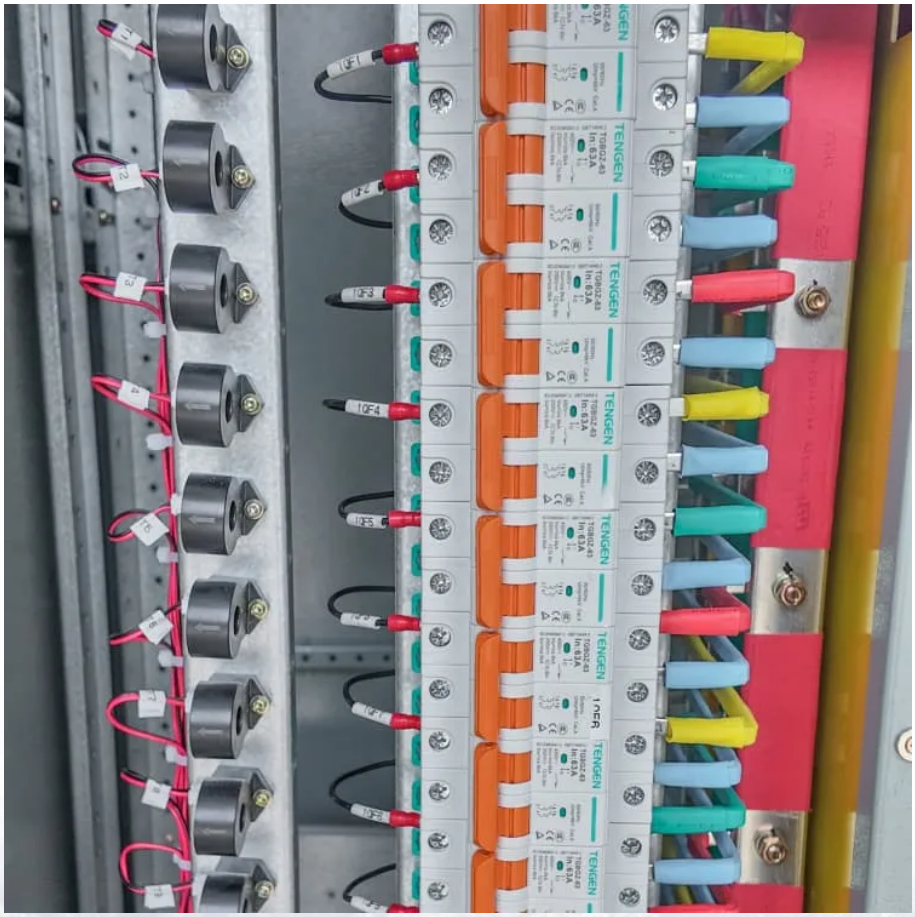
MODERNIZATION SOLAR

Frequency affects the charging and discharging of energy storage batteries



Overview

How can battery energy storage respond to system frequency changes?

The classical droop control and virtual inertia control are improved with battery charge as feedback. Also, the battery energy storage can respond to system frequency changes by adaptively selecting a frequency regulation strategy based on system frequency drop deviations.

Does battery energy storage participate in system frequency regulation?

Since the battery energy storage does not participate in the system frequency regulation directly, the task of frequency regulation of conventional thermal power units is aggravated, which weakens the ability of system frequency regulation.

What are the challenges associated with fast charging & discharging a battery?

One of the main challenges associated with fast charging and discharging is the degradation of the battery’s electrodes, resulting in decreased battery capacity and increased internal resistance. Rapid charge/discharge rates can also cause high heat generation, leading to thermal runaway and damage to the battery’s electrolyte and electrodes.

Can large-scale battery energy storage systems participate in system frequency regulation?

In the end, a control framework for large-scale battery energy storage systems jointly with thermal power units to participate in system frequency regulation is constructed, and the proposed frequency regulation strategy is studied and analyzed in the EPRI-36 node model.

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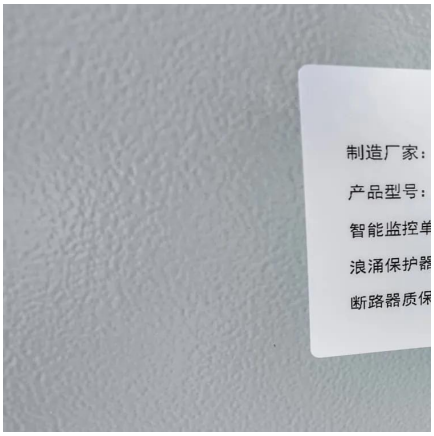

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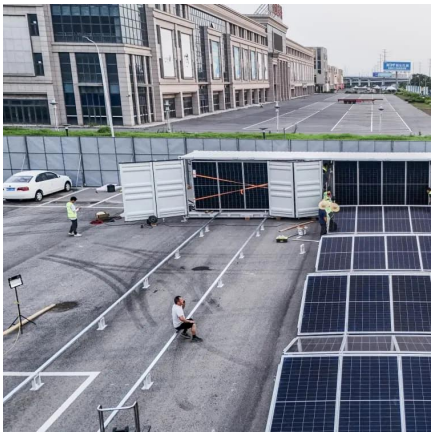

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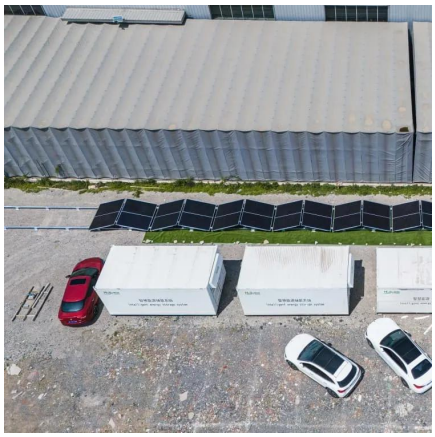

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