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Distributed MPC flywheel energy storage



Overview

Can flywheel energy storage system reduce frequency fluctuations in microgrids?

The flywheel energy storage system (FESS) can mitigate the power imbalance and suppress frequency fluctuations. In this paper, an adaptive frequency control scheme for FESS based on model predictive control (MPC) is proposed to suppress the frequency fluctuation in microgrids.

What is a flywheel energy storage system (fess)?

Frequency fluctuations are brought on by power imbalances between sources and loads in microgrid systems. The flywheel energy storage system (FESS) can mitigate the power imbalance and suppress frequency fluctuations.

What is a magnetically suspended flywheel energy storage system (MS-fess)?

The magnetically suspended flywheel energy storage system (MS-FESS) is an energy storage equipment that accomplishes the bidirectional transfer between electric energy and kinetic energy, and it is widely used as the power conversion unit in the uninterrupted power supply (UPS) system.

What is Adaptive Frequency Control based on MPC?

Based on the shortcomings of above control, an adaptive frequency control scheme based on MPC is proposed in this paper. The key objectives are as follows. (1) Adaptive frequency control is achieved by considering the energy of the FESS and the magnitude of frequency fluctuations.

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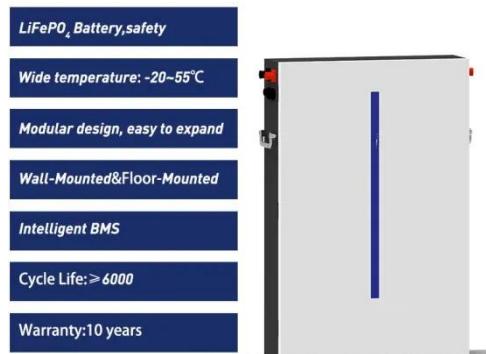
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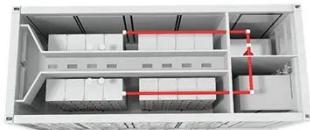
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