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Solar energy storage discharge optimization control

Overview

Can a selective input/output strategy improve the life of photovoltaic energy storage (PV-storage) synchronous generator?

In this paper, a selective input/output strategy is proposed for improving the life of photovoltaic energy storage (PV-storage) virtual synchronous generator (VSG) caused by random load interference, which can sharply reduce costs of storage device. The strategy consists of two operating modes and a power coordination control method for the VSGs.

Can droop-based load sharing be used in photovoltaic microgrid systems?

In this research, the authors combined an adaptive droop-based load sharing, maximum power point tracking, and energy management method for photovoltaic (PV)-based DC microgrid systems.

Does PV-storage VSG grid-connected system reduce energy storage throughput?

The simulation model of PV-storage VSG grid-connected system is established. The total throughput of energy storage is reduced by 37.82 %.

What is energy storage system (ESS)?

The power of PV power generation is characterized by randomness and volatility, so an energy storage system (ESS) is needed for smooth control of fluctuating power to improve the quality of electric energy and the stability of the system.

How to improve PV-storage VSG system life?

An innovative control strategy to improve PV-storage VSG system life is proposed. VSG will not be activated until a large disturbance is detected in the system. Exit VSG during the frequency recovery phase after a large disturbance. The simulation model of PV-storage VSG grid-connected system is established.

Do VSG control parameters affect energy storage cost?

Literature studies the influence of VSG control parameters on energy storage cost, and believes that the damping coefficient D, inertia constant J and FM coefficient K determine the VSG dynamic characteristics in the frequency modulation process, which affects the life of the energy storage.

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