

Flywheel hybrid energy storage





Overview

Do flywheel-storage hybrid energy storage power allocation strategies smooth wind power fluctuations?

In summary, this paper proposes a flywheel-storage hybrid energy storage power allocation strategy based on successive variational modal decomposition (SVMD) [13] to smooth wind power active power fluctuations.

How a hybrid energy storage system works?

First, a self-tuning sliding average filtering method is applied to smooth the wind power output, obtaining grid-connected power that meets grid standards and calculating the fluctuating power that needs to be compensated by the energy storage system. Then, the hybrid energy storage power is decomposed using the SVMD algorithm.

Can a hybrid energy storage-based power allocation strategy smooth wind power fluctuations?

To address this issue, this paper proposes a hybrid energy storage-based power allocation strategy that combines flywheel and battery storage systems to smooth wind power fluctuations and enhance grid acceptance. First, the self-adjusting sliding average filtering method is applied to smooth the wind power for grid integration.

Which components are allocated to flywheel storage?

Therefore, an allocation can be determined: high-frequency components (IMF7-IMF10) are assigned to flywheel storage, leveraging its rapid response for sub-second wind power fluctuations. Low-frequency components (IMF1-IMF6) are allocated to battery storage, capitalizing on its energy density for sustained power variations.



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