

ABSTRACT The concept of microgrids (MGs) as compact power systems, incorporating distributed energy resources, generating units, storage systems, and loads, is widely acknowledged ...

Our study demonstrates the transformative potential of AI-driven optimization in enhancing the efficiency, sustainability, and cost-effectiveness of microgrid systems.

Technological advancements in microgrid components and control systems have significantly improved efficiency and adaptability. However, challenges such as regulatory hurdles, technological ...

Microgrids have emerged as a key interface for tying the power generated by localized generators based on renewable energy sources to the power grid. The conventional power grids are ...

Depending on the complexity, microgrids can have high upfront capital costs. Microgrids are complex systems that require specialized skills to operate and maintain. Microgrids include controls and ...

Microgrids play a crucial role in modern energy systems by integrating diverse energy sources and enhancing grid resilience. This study addresses the optimization of microgrids through ...

This systematic review, following the PRISMA 2020 methodology, analyzed 66 studies focused on advanced energy storage systems, intelligent control strategies, and optimization ...

Advanced control systems enable industrial microgrids to balance generation and load in real time, reducing inefficiencies. The reliance on conventional power grids can leave industrial companies ...

--This paper presents the optimization of the performance of hybrid energy system (HES) integrating PV systems, hydrogen fuel cells, batteries, and supercapacitors for improved ...

Advanced microgrids enable local power generation assets--including traditional generators, renewables, and storage--to keep the local grid running even when the larger grid ...

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