



Analysis of the Prospects for the Accelerated Development of Microgrids



Overview

Using peer-reviewed publications from 2013 to 2024 using the most commonly used reporting items for Systematic Reviews and Meta-Analyses approach, this study examines developments in MG planning and optimization for sustainable energy integration. Microgrids (MGs) have the potential to be self-sufficient, deregulated, and ecologically sustainable with the right management. Additionally, they reduce the load on the utility grid. However, given that they depend on unplanned environmental factors, these systems have an unstable generation. Change is driven by increasing adoption of renewable energy sources, rising concerns about climate change, and rapid technological advancements. Effective resource management within microgrids is essential for improving efficiency and reducing operational costs. This study employs bibliometric analysis to explore. Abstract: Microgrids are an emerging technology that offers many benefits compared with traditional power grids, including increased reliability, reduced energy costs, improved energy security, environmental benefits, and increased flexibility. However, several challenges are associated with. The development of the U. Department of Energy (DOE) Microgrid Program Strategy started around December 2020.



Article Content

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These 2025 trends reveal how microgrids can help reimagine energy management, driving efficiency, resilience, and sustainability while advancing grid modernization.

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Only articles, conference papers, and authoritative reports concentrating on MGs and related topics that have been peer-reviewed were considered for further analysis.

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Microgrids are power distribution systems that can operate either in a grid-connected configuration or in an islanded manner, depending on the availability of decentralized power ...

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