

What are microgrid-based resilience enhancement approaches in distribution systems?

The objective of this paper is to present an updated comprehensive review of the literature on two main categories of microgrid-based resilience enhancement approaches in distribution systems: 1) optimal microgrid formation and 2) optimal microgrid scheduling and energy management.

Can microgrids improve resilience of power systems?

In recent years, much research has been conducted on utilizing microgrids (MGs) to enhance the resilience of power systems, especially for distribution systems. MGs are regarded as localized small power systems, which have two operational modes: grid-connected mode and islanded mode .

How resilient are microgrids in post-disturbance recovery?

In the post-disturbance recovery phase, microgrids are dynamically dispatched through grid reconfiguration to ensure power to critical loads while minimizing load shedding. Based on this, resilience metrics are defined to quantitatively analyze the resilience of MMG systems.

How a multi-microgrid system can improve system resilience?

With the continuous development of microgrid technology, the MMG (Multi-Microgrid) system , which consists of multiple microgrids, can reasonably empty the resources in the system through interconnection and mutual aid, and how to effectively manage the MMG system in order to improve the system resilience is a research hotspot today.

What is a microgrid resilience assessment?

A microgrid's resilience assessment begins with listing all relevant threats to a system,inclusive of severe weather events (i.e. thunderstorms),natural disasters (i.e. earthquakes),and human factors (i.e. terrorism). Threat likelihoods are parameterized as described above and assigned a level of importance.

What is a microgrid control system?

Typical hierarchical structure of microgrid control system. The control systems typically have to manage power source from the main grid and distributed energy resources (DER). Along with managing generation-load balance to ensure power quality and stability. 2.1. Linear control system approach

This book offers a wide-ranging overview of advancements, techniques, and challenges related to the design, control, and operation of microgrids and their role in smart grid infrastructure. It ...

Resilient cooperative control for optimal current sharing and voltage regulation of microgrid-based distribution network under FDI attacks ... C., Guo, F., Wen, C., Yue, D., and Wang, Y. (2022). Distributed resilient ...

Semantic Scholar extracted view of "An optimal stochastic energy management system for resilient microgrids"; by J&#233;sica Alice A. Silva et al. ... The proposed ...

approach for resilient optimal defensive strategy of inter-connected micro-grids. Due to FDI uncertainty of system load, TSK based deep deterministic policy gradient (DDPG) is proposed ...

Due to the vigorous development of renewable energy in recent years, DC microgrids (DCMGs) [], as a feasible and efficient renewable energy grid-connected solution, have been received ...

This article presents a distributed periodic event-triggered (PET) optimal control scheme to achieve generation cost minimization and average bus voltage regulation in DC microgrids. In ...

The optimal frequency control of autonomous microgrids (MGs), i.e., to achieve fast frequency recovery and dynamic power adjustment of the distributed generators in proportion to ...

As climate changes intensify the frequency of severe outages, the resilience of electricity supply systems becomes a major concern. In order to simultaneously combat the climate problems and ensure electricity supply in ...

a collaborative role of systems of microgrids during cyber attacks. The performance of the proposed cyber-resilient AGC is tested in a system of two networked microgrids. Index ...

Aiming at the large-scale fault of microgrid caused by natural disasters, a resilience optimal control strategy based on electric spring is proposed to ensure the ability to ...

4. Simulations and results4.1. Basic data. In order to verify the ability of the control strategy proposed in this paper to improve the resilience of microgrid and reduce operation cost, this ...

