

Title: Microgrid Clustering Technology

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What is a microgrid cluster?

A microgrid cluster can be identified as one of the layouts depicted in Fig. 4. Fig. 4. Layout architectures. The Parallel Connected Microgrids with an external grid (PCM) layout, represented in Fig. 4 (a), refers to a structure in which all microgrids are connected to the same external grid, where each microgrid has only one PCC.

Which concepts affect microgrid cluster performance?

Three main concepts that can potentially affect the microgrid cluster performance are identified and classified into (i) the layout, (ii) the line technology and (iii) the interconnection technology. Then, the possible architectures within these concepts are identified and defined.

What is the protection system for a cluster of microgrids?

In the present study, the protection system for the cluster of microgrids is studied and treated according to the three defined architecture levels, being the layout, the line technology and the interconnection technology.

4.3.1. Layout The layout defines how microgrids are interconnected.

How can interconnection technology benefit a cluster of microgrids?

The profitability of communication devices in a cluster of microgrids is clearly benefited from installing such flexible and controllable power electronics as interconnection technology.

Before implementing the microgrid cluster idea, there are obstacles to be addressed, despite the obvious advantages that microgrid clusters offer to both the electrical utility and its customers [6, 8]. ...

Accordingly, this paper examines the possible multi-microgrid architectures to form a grid of microgrids. For this purpose, the microgrid as a single entity and its possible interactions with external grids ...

Despite the evident benefits of microgrid clusters to the consumers and the electrical utility, there are challenges to overcome before adopting the microgrid cluster concept.

Environmental issues and increasing power demand are driving the development of microgrids (MGs), which can operate in AC, DC or mixed AC/DC technology. Although the development of MGs is ...

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With the rapid development of renewable energy, microgrid, as an efficient and flexible energy management system, has gradually been widely used in the world. This study examines the most effective ...

The study also explored the impact of clustering the microgrids by interconnecting the three individual systems and conducting a techno-economic analysis.

With the rapid development of distributed new energy, its penetration in the distribution network gradually increases, multiple microgrids in the same distribution network area need intergroup regulation and ...

In this regard, the microgrid (MG) concept has appeared as a solution for the management in a controlled manner of DG units, including beneficial special operating characteristics; however, bottlenecks within ...

A cluster of geographically close microgrids (MGs) can be interconnected to form networked microgrids (NMGs) that operate collaboratively to achieve win-win energy management under varying operating conditions. ...

Microgrid Clustering for Enhancing the Grid Resilience in Extreme Conditions Zhiyi Li, Xutao Han, Matin Farhoumandi, and Mohammad Shahidehpour

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