عنوان مقاله:

Resiliency and self-refurbishment of the electricity distribution network with an approach based on the rearrangement and optimal design of reservation feeders for a real network

محل انتشار:

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خلاصه مقاله:

Resilience of electricity distribution networks as a major supplier of power system subscribers to natural disasters is a major issue in their operation and planning. The purpose of this article is to present a solution based on self-healing of the distribution network to enhance network resilience against disasters and disasters. The idea of network rearrangement is used to self-regulate the network against natural disasters. In this way, the self-repair problem was modeled as a nonlinear optimization problem. The objective function is to reduce the cost of implementation of the plan, such as reducing the number of breakpoints for rearrangement and reducing switching times, improving losses, and improving the reliability of the distribution network, such as reducing the unsecured energy of network subscribers as a result of natural disasters. The set of network technical constraints is also included in the problem formulation. The particle swarm optimization algorithm was used to solve the problem. To study the effectiveness of the proposed solution, part of a real distribution network has been studied and its four main power stations have been modeled and used in the planning of the distribution network self-repair. The results show the high efficiency of the proposed solution in self-healing the network and improving the resilience of the distribution network.

کلمات کلیدی:

crisis management, optimization, resilience, self-healing