

عنوان مقاله:

A novel Approach for optimal reconfiguration of power distributed networks considering technical criteria and uncertainties of the network in the presence of distributed generations

محل انتشار:

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خلاصه مقاله:

Distribution network reconfiguration (DNR) is a common technique to satisfy different objectives in the distribution network by only altering its topology. The aim of this study is to utilize dynamic DNR for presenting a clear map for the distribution system operator (DSO), demonstrating what topology is most likely to satisfy the objective function in every hour of the day while considering the demand fluctuations and renewable resources. The main novelties of the present paper is consideration of the uncertainties and technical parameters of the network which are neglected in previous researches. In this regards the Particle swarm optimization algorithm was used to solve the dynamic DNR problem in several different scenarios which were created by the Monte Carlo method, resulting in a probability density function of the switches in every hour which was eventually accumulated in one diagram for the sake of a better comparison. The simulation is conducted on the IEEE ۳۳-bus test system in the presence of both PV units and wind turbines. These results indicate the minor changes that needs to be done by the DSO by showing the most probable switches that need to be selected from hour to hour and therefore, make it possible to simultaneously minimize the total loss hourly, maintaining the fault current threshold of the network, minimizing the voltage deviation and enhancing the voltage stability of the system while in the background, help enhancing the lifespan of the distribution systems switches as well.

کلمات کلیدی:

Dynamic Distribution Network Reconfiguration, Particle Swarm Optimization Algorithm, Monte Carlo, Voltage Stability, Fault Current Threshold

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