Optimum dnr and dg sizing for power loss reduction using improved meta-heuristic methods

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Abstract

The main purpose of service restoration is to restore as many loads as possible by transferring loads in the out of service areas to other distribution feeders via changing the status of normally close and open switches which is known as Distribution Network Reconfiguration (DNR). In the event of any fault occurrence within the system, immediate restoration is indeed required in the particular area. Therefore, the distribution system must be equipped and planned in such a way that it will continuously supply the power without any interruption during the out-of-service condition. The primary idea in this work is to have the reconfiguration process embedded with Distributed Generation (DG) and being operated simultaneously to reduce power losses by using improved Meta-heuristics methods which is Evolutionary Particle Swarm Optimization (EPSO). A detail performance analysis is carried out in 33-bus systems demonstrate the effectiveness of the EPSO. The proposed method is adopted and its impacts on the network real power losses and voltage profiles are investigated as well as improving the voltage profile while fulfilling distribution constraints. ©2006-2016 Asian Research Publishing Network (ARPN).

Author keywords

Distributed generator; Distribution; Network reconfiguration; Power loss; PSO