

Allocation and Sizing of Distributed Generation Units for Minimizing Distribution Network Losses Using Genetic Algorithms

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Abstract

This paper addresses the optimization problem of integration of Distributed Generation (DG) in distribution networks. Three Genetic Algorithms (GAs) have been developed to minimize the power losses of the system. The First GA enables the optimal sizing of the DG units given their locations. Alternatively, the second GA determines the optimal locations of the DG units assuming equal sizes of the units. The third GA enables the determination of both optimal sizes, on discrete values, and optimal locations. The results prove the effectiveness of the developed genetic algorithms in finding the optimal penetration level and optimal locations and sizes of the DG units to yield minimum losses of the system.

Int. Journal on Power System Optimization 2012, June