عنوان مقاله:

Improving Voltage Profile and Reduction of Power Losses in the Electric Power Distribution Systems Considering Distributed Generations using GA and PSO Algorithms

محل انتشار:

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خلاصه مقاله:

DGs are predicted to be a major component of future power system with all the benefits that come with them. If placed properly, they will improve the system in various ways, and of course reduce power loss and voltage drop. Power losses and voltage drop are always major concerns to electricity utility. Study about the methods to reduce power loss and improve voltage profile has been carried for many years. This paper presents a method for the optimal sitting and sizing of Element in a global distribution system for improving voltage profile and reducing loss in network Genetic Algorithm , PSO was used as the solving tool, which referring two determined aim; the problem is defined and objective function is introduced. Considering to fitness values sensitivity in genetic algorithm process, there is needed to apply load flow for decision-making. Load flow algorithm is combined appropriately with PSO and GA, till access to acceptable results of this operation. We used MATPOWER package for load flow algorithm and composed it with our Genetic Algorithm. The suggested method is programmed under MATLAB software and applied ETAP software for evaluating of results correctness. Nowadays, the interest in distributed generation around the world is sharply increasing. So, it becomes essential to place them in such a way that all parties associated with them will be benefited.In this study, the author would like to present the methodology to improve the utility grid in term of power loss and voltage drop. The method will find out the optimal DG and capacitor banks in distribution system. There are two parts in this study. The first one finds the optimal DG size and the location to minimize real power loss in the system. Different DG types ,namely DG supplying real or reactive power only, DG supplying real power but consuming proportionate reactive power, are considered to solve the optimal DG placement problem. In the second part, the capacitor banks are optimally placed.The methodology will be carried out with the primaryfeeders of one substation in the bus 45 distribution network Power Company.

کلمات کلیدی:

Distributed Generation, Allocation, Capacitor Banks, Voltage Profile, Loss, Genetic Algorithm, Particle Swarm Optimization

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