Abstract

The impending deregulated environment facing the electric utilities in the twenty first century is both a challenge and an opportunity for a variety of technologies and operating scenarios. Changing regulatory and economic scenarios, energy savings and environmental impacts are providing impetus to the development of an Active Distribution Networks (ADN), which is
Optimal Planning of Distributed Generation for Improved Voltage Stability and Loss Reduction

predicated to play an increasing role in the electric power system in the near future. Connecting Distributed Generator (DG) to a passive distribution network becomes an active distribution network. Distributed Generators effectively reduce the real power losses and improve the voltage profile in Radial Distribution Networks (RDN). In this paper planning and operation of active distribution networks, with respect to placement and sizing of Distributed Generators are discussed with the help of a new methodology. DG unit placement and sizing were calculated using fuzzy logic and new analytical method respectively. A detailed performance analysis was carried out on 12-bus, 33-bus and 69-bus radial distribution networks to demonstrate the effectiveness of the proposed methodology. The obtained results are presented in graphical manner.

Reference

Power Deliver 5; 391-396.

**Index Terms**

Computer Science  
Power Systems

**Key words**

- distributed generation  
- radial distribution network  
- sizing  
- placement  
- fuzzy  
- voltage stability