

DG Allocation to Reduce Production Cost by Reducing Losses in Radial Distribution Systems Using Fuzzy

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Abstract : Electrical energy is vital in every aspect of day-to-day life. Keen interest is taken on all possible sources of energy from which it can be generated and this led to the encouragement of generating electrical power using renewable energy resources such as solar, tidal waves and wind energy. Due to the increasing interest on renewable sources in recent times, the studies on integration of distributed generation to the power grid have rapidly increased. Distributed Generation (DG) is a promising solution to many power system problems such as voltage regulation, power loss and reduction in operational cost, etc. To reduce production cost, it is important to minimize the losses by determining the location and size of local generators to be placed in the radial distribution systems. In this paper, reduction of production cost by optimal size of DG unit operated at optimal power factor is dealt. The optimal size of the DG unit is calculated analytically using approximate reasoning suitable nodes and DG placement to minimize production cost with minimum loss is determined by fuzzy technique. Total Cost of Power generation is compared with and without DG unit for 1 year duration. The suggested method is programmed under MATLAB software and is tested on IEEE 33 bus system and the results are presented.

Keywords : distributed generation, operational cost, exact loss formula, optimum size, optimum location

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