

MULTI LOAD LEVEL OPTIMAL PLACEMENT AND TAP SETTING OF VOLTAGE REGULATOR USING PSO IN RADIAL DISTRIBUTION SYSTEM WITH DISTRIBUTED GENERATION

SUNANDA GHANEGAONKAR¹ AND VIJAY PANDE²

^{1,2} Associate Professor,
Department of Electrical Engineering,
College of Engineering, Pune,
Pune Maharashtra, India

Abstract

The ever rising demand of electrical energy consumption has led to increased use of distributed generation (DG) sources. The integration of DG units in power distribution networks has been an important aspect in recent years. This paper proposes a Particle Swarm Optimization based algorithm for optimally determining the location and tap setting of voltage regulator (VR) in presence of distributed generation. An optimization problem of allocation of VR in radial distribution system (RDS) without and with DG aims at minimization of power loss. An algorithm is developed to solve this optimization problem at various load levels. The objective function is evaluated using Newton based power flow solution method for RDS. Results obtained on a standard 33 bus radial distribution system demonstrate the impact of DG on tap setting of VR.

Keywords: Distributed Generation, Voltage Regulator, Radial Distribution System, Particle Swarm Optimization etc.