

**DEPARTMENT OF ELECTRICAL ENGINEERING
DELHI TECHNOLOGICAL UNIVERSITY
BAWANA ROAD, DELHI**



CERTIFICATE

This is to certify that the work entitled, “OPTIMAL DG PLACEMENT FOR MAXIMUM LOSS REDUCTION IN RADIAL DISTRIBUTION NETWORK” has been submitted for the fulfillment of the requirements for the award of Degree of M.Tech in Electrical Engineering (Power System), carried out by Mr. Rajesh Kumar Meena under my supervision, at Delhi Technological University.

To the best of my knowledge, the matter embodied in the dissertation has not been submitted to any other University/Institute for the award of any Degree or Diploma.

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CANDIDATE’S DECLARATION

I hereby certify that the work which is being presented in this dissertation entitled “OPTIMAL DG PLACEMENT FOR MAXIMUM LOSS REDUCTION IN RADIAL DISTRIBUTION NETWORK” by Rajesh Kumar Meena in the partial fulfillment of requirements for the award of Master of technology in Electrical Engineering (Power System), submitted to the Department of Electrical Engineering, Delhi Technological University, Delhi, is an authentic record of my own work carried out during a period of August 2012 to June 2013, under the supervision of Dr. M. Rizwan, Assistant Professor, Delhi Technological University. The matter presented in this dissertation has not been submitted to any other University/Institute for the award of M.Tech or any other Degree/Diploma.

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This is to certify that the above statement made by the candidate is correct to the best of my knowledge and belief. He has completed all the requirements (attendance, no dues, dissertation fee of the university) to appear in the university examination.

Signature of Supervisor

ABSTRACT

Distributed Generation is a promising solution to many power system problems such as voltage regulation, power loss, etc. The appropriate location of Distributed Generation is very important for loss reduction in a radial distribution system.

Normally, a constant power (real and reactive) load model is assumed in most of the studies made in the literature. It is shown that load models can significantly affect the optimal location and sizing of Distributed Generation (DG) resources in distribution systems. In this dissertation two methodologies Heuristic Techniques and Fuzzy Logic Based are used for find out most critical node, named sensitive node, for installing DG system. The placement of DG in the radial distribution systems to reduce the real power losses and to improve the voltage profile. The studies have been carried out on 33-bus distribution systems. It is shown that the load models can significantly affect the optimal location and size of the resources of the DG in distribution systems function. The proposed approach also considers a wide range of technical issues such as the loss of active and reactive power system, the voltage profile, the line loading, and the Mega Volt Ampere (MVA) intake by the grid. An analysis of the continuation power flow to determine the effect of DG units on the most sensitive buses to voltage collapse is carried out. The proposed algorithm is tested using a 33-bus radial system.

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