A Novel Simple Methodology for Modeling of Radial Distribution Networks and using it for Calculating Reliabilities Parameters for Each Load in the Network[1]

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Abstract

In this paper, we present a simple and new methodology to identify branches and nodes found in the path which supplies the electrical power for each load connected to the network. The advantage of this method is that it doesn't need another numbering of branches and nodes other then the one determined in the input data, therefore this method has calculation and time of calculation, less than other methods (we mention for example the Inversely method for modeling distribution networks). This method is valid for all distribution systems with any number of branches and buses. The proposed method was investigated on a few examples 15, 33, 69, and 85 buses distribution system and desired results were obtained.

This paper includes identification of various modeling methods used in distribution systems; problem formulation and the proposed methodology. This method is applied on multi numerical examples for distribution networks. Finally, Results and discussion are presented; also the major conclusions of the paper are summarized in this paper.

In addition, a calculating program was prepared in MATLAB to study any electrical distribution system. This program is used for examples of the network.

Keywords: Radial distribution networks, modeling of distribution networks, Reliability of distribution networks

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