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SPICE Modeling for Evaluation of Distribution System Reliability Indices

Authors : G. N. Srinivas, K. Raju

Abstract : This paper presents Markov processes for determining the reliability indices of distribution system. The continuous Markov modeling is applied to a complex radial distribution system and electrical equivalent circuits are developed for the modeling. In general PSPICE is being used for electrical and electronic circuits and various applications of power system like fault analysis, transient analysis etc. In this paper, the SPICE modeling equivalent circuits which are developed are applied in a novel way to Distribution System reliability analysis. These circuits are simulated using PSPICE software to obtain the state probabilities, the basic and performance indices. Thus the basic indices and the performance indices obtained by this method are compared with those obtained by FMEA technique. The application of the concepts presented in this paper are illustrated and analyzed for IEEE-Roy Billinton Test System (RBTS).

Keywords : distribution system, Markov Model, reliability indices, spice simulation
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