

Ratchanegorn Boonruang 2007: Evaluation of Forecasting Models for Forced Outages under Specific Factors of PEA Overhead Distribution Feeders. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Assistant Professor Dulpichet Rerkpreedapong, Ph.D.
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This thesis develops forecasting models for forced outages under specific factors including trees, length and type of lines of 22 kV overhead distribution systems. The historical outage data and information of specific factors are obtained from Saraburi, Bangpakong and Rangsit offices of the Provincial Electrical Electricity Authority (PEA), Thailand. The forecasting models are developed from three techniques: linear multivariable regression, artificial neural network (ANN), and fuzzy logic.

In this research, analyses between specific factors and forced outages of PEA overhead distribution feeders are studied. The resulting models can forecast the expected forced outages of line feeders and sections. Results of the three models are compared and the features of each model are discussed. The artificial neural network based model has the forecasting performance better than the other models. However, a weakness of the artificial neural network model is that it does not explicitly express relationship between specific factors and forced outages.

The result of the model can be used to calculate the failure rate and system average interruption frequency index (SAIFI), which are used for planning and maintenance improvement to maintain good reliability of power distribution systems.



Student's signature



Thesis Advisor's signature

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