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Power Transformer Risk-Based Maintenance by Optimization of Transformer Condition and Transformer Importance

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Abstract : This paper presents a risk-based maintenance strategy of a power transformer in order to optimize operating and maintenance costs. The methodology involves the study and preparation of a database for the collection the technical data and test data of a power transformer. An evaluation of the overall condition of each transformer is performed by a program developed as a result of the measured results; in addition, the calculation of the main equipment separation to the overall condition of the transformer (% HI) and the criteria for evaluating the importance (% ImI) of each location where the transformer is installed. The condition assessment is performed by analysis test data such as electrical test, insulating oil test and visual inspection. The condition of the power transformer will be classified from very poor to very good condition. The importance is evaluated from load criticality, importance of load and failure consequence. The risk matrix is developed for evaluating the risk of each power transformer. The high risk power transformer will be focused firstly. The computerized program is developed for practical use, and the maintenance strategy of a power transformer can be effectively managed.

Keywords : asset management, risk-based maintenance, power transformer, health index
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