Abstract

Transformers are one of the most critical and essential components of electricity transmission and distribution. The life of a transformer is determined by the life of its paper insulation and transformer oil. To maximize the lifetime and efficiency of transformers, it is essential to be aware of possible faults that may occur and to know how to prevent them. One of the major faults in transformer is thermal degradation of the oil and paper insulation in the transformer. The degradation of paper insulation evolves a furan compounds. Furan compounds will reduce the life of transformers. In this paper, a prediction of furan content in transformer oil has been proposed. First, stepwise regressions are made through curve fitter tool based on the relation
between transformer oil parameters and furan. Then prediction is performed using linear layer design neural networks through transformer oil quality parameters and dissolved gas as inputs. In order to optimize large solid insulation assessments costs and estimate the life of the transformer.

References

- Khaled Shaban, Ayman El-Hag, and Andrei Matveev, 'A Cascade of Artificial Neural Networks to Predict Transformers Oil Parameters', IEEE Transactions on Dielectrics and Electrical Insulation Vol. 16, No. 2, 2009.
- Analysis of Gases Dissolved in Electrical Insulating Oil by Gas Chromatography, ASTM D 3612-02.
- Kachler K J and Hhlein I, 'Aging of Cellulose at Transformer Service Temperatures. Part 1: Influence of Type of Oil and Air on the Degree of Polymerization of

Index Terms
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Keywords
Transformer Oil  Furan Content  Stepwise Regression  Linear Layer.