In this paper, Artificial Neural Networks are used to solve a complex problem concerning to power transformers and characterized by non-linearity and hard dynamic modeling. The operation conditions and integrity of a power transformer can be detected by analysis of physical-chemical and chromatographic isolating oil, allowing establish procedures for operating and maintaining the equipment. However, while the costs of physical-chemical tests are smaller, the chromatographic analysis is more informative. This work presents an estimation study of the information that would be obtained in the chromatographic test from the physical-chemical analysis through Artificial Neural Networks. Thus, the power utilities can achieve greater reliability in the prediction of incipient failures at a lower cost. The results show this strategy to be a promising, with accuracy of 100% in best cases. The authors have estimated the dissolved gases in insulating mineral oil using proposed method for 185 transformers. As a result, appropriate maintenance scenario can be planned.
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**Index Terms**

Computer Science

Artificial Intelligence

**Keywords**

Aging  Artificial Neural Network (ann)  Incipient Fault  Uv/vis  Transformer Diagnosis