

A Methodology for Operational Fault Diagnosis in Electrical Power Transformer: Practical Application

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Abstract. Electrical power transformer is critical equipment in power plant and electrical power transmission and distribution. To facilitate the fault diagnosis of this electrical transformer a Bayesian network was developed and used for information fusion. 7 transformer elements were examined. 22 faults were taken care of in this study. 14 information's mainly taken from existing test and measurement equipment have been used and the main lines of their interpretations have been formulated. The main result of this contribution was a useful fault diagnosis manual for handling real problems in electrical power transformer maintenance. This contribution can help and serve as an expert decision support system for maintenance engineer. By detecting, diagnosing and decision making, the availability of electrical power transformer was improved.

Keywords: Fault diagnosis, power transformer, Bayesian network, decision making, electrical measurement.

1 Introduction

Electrical power transformers are highly critical devices that require prognostics and health management. Therefore, increasing the availability of these devices is one of the main concerns of maintenance managers. However, any predictive maintenance procedure goes through three essential steps: monitoring, diagnosis, decision-making [1].

Electrical measurement analysis is a condition-based maintenance technique for monitoring electrical transformers. It is widely used to assess the state of health of this vital and strategic equipment. The various electrical, thermal, mechanical and environmental constraints that electrical transformers are subjected to cause deviations in