ABSTRACT

ANALYSIS OF VIBRATION MEASUREMENT SYSTEM ON SUBSTATION TRANSFORMER MODEL

Master Degree Graduate Thesis

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Before 2006, PT. PLN (Persero) P3B Jawa-Bali used time-based maintenance in taking care of their power transformers. This method was not very efficient from cost and human resource point of view. This motivated PT. PLN (Persero) P3B Jawa-Bali to develop another method of maintenance, condition-based maintenance (CBM). In 2006, a system was developed based on transformer's temperature. The system was named *thermal monitoring system* (TMS)

Alongside temperature, another factor that affect the condition of a transformer is its core vibration. Vibration happens because an electro-mechanical phenomenon called magnetostriction. Based on data available, vibration is a major factor in transformer failure. Hence, another CBM system based on transformer vibration was developed in 2011 to support existing system, called *vibration monitoring system* (VMS).

In this thesis, we did an analysis and evaluation to vibration measurement system on transformer model of a substation which is a part of VMS. The system consists of accelerometers, master board module, and data processing software. There are two methods analyzed and evaluated in this thesis, time difference of arrival and amplitude method for estimating vibration source location on the transformer model.

Keywords: vibration, condition-based maintenance, accelerometer