

Accepted Manuscript

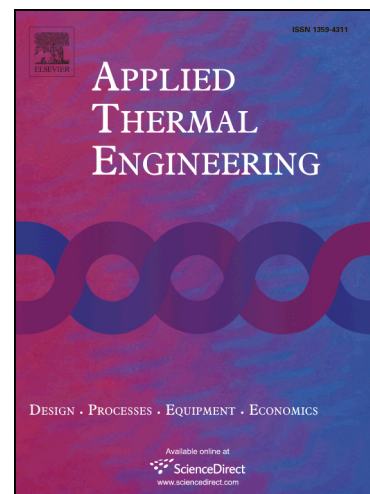
Improving Thermal Model for Oil Temperature Estimation in Power Distribution Transformers

Sami Najar, Jean-Francois Tissier, Sebastien Cauet, Erik Etien

PII: S1359-4311(17)31701-5
DOI: <http://dx.doi.org/10.1016/j.applthermaleng.2017.03.061>
Reference: ATE 10065

To appear in: *Applied Thermal Engineering*

Received Date: 8 January 2016
Accepted Date: 13 March 2017



Please cite this article as: S. Najar, J-F. Tissier, S. Cauet, E. Etien, Improving Thermal Model for Oil Temperature Estimation in Power Distribution Transformers, *Applied Thermal Engineering* (2017), doi: <http://dx.doi.org/10.1016/j.applthermaleng.2017.03.061>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Improving Thermal Model for Oil Temperature Estimation in Power Distribution Transformers

Sami NAJAR^{a,b,*}, Jean-Francois TISSIER^b, Sebastien CAUET^a, Erik ETIEN^a,

^a*LIAS laboratory, University of Poitiers, LIAS-ENSIP, B25, TSA 41105 86073 Poitiers cedex 9, France*

^b*ITRON, 1 Avenue des Temps Modernes, 86360 Chasseneuil-du-Poitou, France*

Abstract

This paper presents a method estimating the oil temperature for ONAN distribution transformers. A Levenberg-Marquardt algorithm improving the reliability of standard IEC 60076-7 thermal model is developed. An oil temperature model, based on standard parameters is compared with that given by the proposed identification procedure. The improvement of temperature estimation is highlighted and validated on three distribution transformers from 160 kVA to 800 kVA.

Keywords: Oil temperature soft sensor, Thermal model, Distribution transformer, Parameters identification.

1. Introduction

Distribution transformers are essential in controlling the service continuity of electrical networks. In order to reduce the number of replacements, it is important to develop monitoring methods [1, 2, 3]. Among the most known methods, thermal monitoring is one of the most powerful and provides efficient informations about ageing and overload capacity [4, 5]. In this field, the hot spot temperature is a very important parameter in terms

*Corresponding author Tel:+337 62 54 76 90

Email addresses: samy.najjar@gmail.com (Sami NAJAR),
jean-francois.tissier@itron.com (Jean-Francois TISSIER),
sebastien.cauet@univ-poitiers.fr (Sebastien CAUET),
erik.etien@univ-poitiers.fr (Erik ETIEN)

Download English Version:

<https://daneshyari.com/en/article/4991269>

Download Persian Version:

<https://daneshyari.com/article/4991269>

[Daneshyari.com](https://daneshyari.com)