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IEEE Guide for Dissolved Gas Analysis in Transformer Load Tap Changers

IEEE Power & Energy Society

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Transformers Committee

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Approved 9 December 2010

IEEE-SA Standards Board

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Abstract: Methods of testing and evaluating dissolved gases in mineral based transformer oils found in Load Tap Changers (LTCs) are discussed and recommended in this guide. General types of LTC mechanisms, breathing configurations and electrical design are included as evaluation criteria for determining when mechanical damage or failure has occurred. Dissolved Gas of the LTC is required. This guide is not manufacturer specific, rather category specific.
Keywords: DGA, dissolved gas-in-oil, IEEE C57.139, load tap changer, LTC, on-load tap changer

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Introduction

This introduction is not part of IEEE Std C57.139-2010, IEEE Guide for Dissolved Gas Analysis in Transformer Load Tap Changers.

Initially the intent of this guide was to provide DGA levels for specific LTCs indicating faulted LTCs. However, since specific manufacturers cannot be mentioned in the guide, it was decided to move ahead with the development of appropriate statistical tools to generate norms for fault gas levels and fault gas concentration ratios.

Visit http://standards.ieee.org/downloads/C57/C57.139-2010/ to download a sample spreadsheet tool.

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1. Overview

1.1 Scope

This guide discusses and recommends methods of testing and evaluating dissolved gases in mineral based transformer oils found in Load Tap Changers (LTCs). General types of LTC mechanisms, breathing configurations, and electrical design will be included for evaluation criteria in determining when mechanical damage or failure has occurred. Dissolved Gas Analysis (DGA) of the oil in the LTC is required. This guide will not be manufacturer specific, rather category specific.

1.2 Purpose

The purpose of this guide is to assist the responsible parties who are in charge of the operation and maintenance decisions in evaluating the condition of a load tap changer (LTC) without the need to de-energize the transformer to inspect the LTC in question. Additionally, repairs to the LTC can be made in a timely fashion based on accurate interpretation of the gas analysis minimizing premature repairs or post failure rebuilds.

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