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IEEE Guide for Dissolved Gas Analysis in Transformer Load Tap Changers

IEEE Power and Energy Society

Sponsored by the
Transformers Committee

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USA

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Abstract: General types of load tap changer (LTC) mechanisms, breathing configurations, and electrical designs, described for reference for determining methods of testing and evaluating dissolved gases in mineral-based transformer oils in LTCs, are discussed and recommended in this guide. Measurements of dissolved gas concentrations in the LTC oil are required to implement this guide. This guide is not manufacturer specific, rather category specific.

Keywords: DGA, dissolved gas-in-oil, IEEE C57.139™, load tap changer, LTC

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Introduction

This introduction is not part of IEEE Std C57.139-2015, IEEE Guide for Dissolved Gas Analysis in Transformer Load Tap Changers.

This guide is a revision of the first issue of a document to assist the industry in the understanding and interpretation of dissolved gas analysis (DGA) in LTCs. It makes use of statistical tools to generate norms for fault gas levels and fault gas concentrations to facilitate this understanding. The guide also provides information on LTC classification schemes, result codes, and analytical tools to assist the user with LTC DGA interpretation.

Visit http://standards.ieee.org/downloads/C57/C57.139-2015/IEEE-Std-C57_139-2015-Calculator-D1.xls to download a sample spreadsheet tool.

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IEEE Guide for Dissolved Gas Analysis in Transformer Load Tap Changers

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 is not 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 an 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.