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IEEE Guide for Transformer Loss Measurement

IEEE Power & Energy Society

Sponsored by the
Transformers Committee

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IEEE Power & Energy Society

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Abstract: Information and general recommendations of instrumentation, circuitry, calibration, and measurement techniques of no-load losses (excluding auxiliary losses), excitation current, and load losses of power and distribution transformers are provided. The guide is intended as a complement to the test code procedures given in Clause 8 and Clause 9 of IEEE Std C57.12.90™.
Keywords: calibration, load loss, no-load loss, testing, transformers

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Introduction

This introduction is not part of IEEE Std C57.123-2010, IEEE Guide for Transformer Loss Measurement.

During an earlier revision of Clause 8 and Clause 9 of IEEE Std C57.12.90™, IEEE Standard Test Code for Liquid-Immersed Distribution, Power and Regulating Transformers, which describe the measurement of no load and load loss, respectively, it was realized that there was a need for a guide that would explain in more detail the accuracy requirements, test code procedures, various test methods available, methods to diagnose test anomalies, and the procedures for calibration and safety.

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[a] Information on references can be found in Annex A.

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IEEE Guide for Transformer Loss Measurement

1. Overview

1.1 Scope

This guide provides background information and general recommendations of instrumentation, circuitry, calibration, and measurement techniques of no-load losses (excluding auxiliary losses), excitation current, and load losses of power and distribution transformers. The test codes, namely, IEEE Std C57.12.90™, IEEE Std C57.12.91™, and the test code section of IEEE Std C57.15™, provide specifications and requirements for conducting these tests.[1] This guide has been written to provide supplemental information for each test. More technical details of the measuring instruments and techniques presented in this guide can be found in the document developed by So [B16].[2] This guide applies to liquid-immersed-power and distribution transformers, dry-type transformers, and step-voltage regulators. Additionally, it applies to both single- and three-phase transformers.

[1] Information on references can be found in Clause 2.

[2] The numbers in brackets correspond to those of the bibliography in Annex A.