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IEEE Guide for the Detection, Location and Interpretation of Sources of Acoustic Emissions from Electrical Discharges in Power Transformers and Power Reactors

IEEE Power and Energy Society

Sponsored by the
Transformers Committee

IEEE
3 Park Avenue
New York, NY 10016-5997
USA

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(Revision of IEEE Std C57.127-2007)

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Abstract: The detection and location of acoustic emissions (AEs) from partial discharges (PDs) and other sources in liquid-insulated power transformers and reactors are covered in this guide. A means of associating the relative magnitude and position of PDs and other sources with the acoustic signals obtained by strategically located transducers is provided.

Keywords: acoustic emission (AE), attenuation, burst, gas-in-oil analysis, IEEE C57.127™, low-amplitude discharges, partial discharge (PD), power transformers, reactors

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Introduction

This introduction is not part of IEEE Std C57.127-2018, IEEE Guide for the Detection, Location and Interpretation of Sources of Acoustic Emissions from Electrical Discharges in Power Transformers and Power Reactors.

This guide is an expansion of IEEE Std C57.127™-2007. It has been expanded to add a detailed background theory, to better describe the different techniques available, and to add new applications of acoustic location. Documented case studies have also been added to highlight specific situations. Active workers in the field are constantly trying to improve their methods. More effective methods may appear in the future.

Contents

List of Figures

List of Tables

IEEE Guide for the Detection, Location and Interpretation of Sources of Acoustic Emissions from Electrical Discharges in Power Transformers and Power Reactors

1. Overview

1.1 Scope

This guide is applicable to the detection and location of sources of acoustic emissions (AEs) from partial discharges (PDs) and other sources in power transformers and power reactors. There are descriptions of acoustic instrumentation, test procedures, and interpretation of results.

1.2 Purpose

This guide is intended to provide information that may be helpful in planning, installing, and operating acoustic measuring equipment and in meaningful interpretation of resulting data.

1.3 Safety warning

The safety warnings in this subclause apply only to work done on transformers installed in the field, not to factory testing. Refer to factory test codes for safety warnings for these situations. Partial discharge (PD)