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IEEE Guide for Conducting Functional Life Tests on Switch Contacts Used in Insulating Liquid-Immersed Transformers

IEEE Power and Energy Society

Sponsored by the
Transformers Committee

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

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Abstract: This guide is intended for use in establishing a methodology to evaluate expected long-term performance of infrequently operated switch contacts used within insulating liquid–immersed transformers. These switch contacts are typically found in de-energized tapchangers, dual voltage switches, reversing switches, on-load tapchangers, and step-voltage regulators, but the test might possibly be used to evaluate any contact that is used in insulating liquids with similar operating characteristics and within similar environments.

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Introduction

This introduction is not part of IEEE Std C57.157-2015, IEEE Guide for Conducting Functional Life Tests on Switch Contacts Used in Insulating Liquid–Immersed Transformers.

This guide outlines a test method to simulate long-term life (minimum 30 years) of a de-energized tapchanger in a period of 30 test days by using a combination of elevated liquid temperatures in conjunction with cyclically elevated load currents. The test is performed on specific switch bodies with specific contact materials, geometries, contact pressures in liquid baths so as to closely parallel conditions found in actual operation. The variable that provides the accelerated life simulation is the switch contact temperatures. See Annex B for more background information.

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1. Overview

1.1 Scope

This guide is intended for use in establishing a methodology to evaluate expected long-term performance of infrequently operated switch contacts used within insulating liquid–immersed transformers. These switch contacts are typically found in de-energized tapchangers, dual voltage switches, reversing switches, on-load tapchangers, and step-voltage regulators, but the test might possibly be used to evaluate any contact that is used in insulating liquids with similar operating characteristics and within similar environments.

1.2 Purpose

This guide outlines a test method to simulate long-term life (minimum 30 years) of a de-energized tapchanger in a period of 30 test days by using a combination of elevated liquid temperatures in conjunction with cyclically elevated load currents. The test is performed on specific switch bodies with specific contact materials, geometries, and contact pressures in liquid baths so as to closely parallel conditions found in actual operation. The variable that provides the accelerated life simulation is the switch contact temperature.