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IEEE Guide for Application of Power Apparatus Bushings

IEEE Power and Energy Society

Sponsored by the
Transformers Committee

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Abstract: Guidance on the use of outdoor power apparatus bushings is provided. The bushings are limited to those built in accordance with IEEE Std C57.19.00™-1991. General information and recommendations for the application of power apparatus bushings when incorporated as part of power transformers, power circuit breakers, and isolated-phase bus are provided.

Keywords: circuit breakers, IEEE C57.19.100™, isolated-phase bus, power apparatus bushings, transformers

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Introduction

This introduction is not part of IEEE Std C57.19.100-2012, IEEE Guide for Application of Power Apparatus Bushings.

In August 1968, the ANSI C76 committee decided to separate ANSI C76.1 into three parts: The first (C76.1, currently IEEE Std C57.19.00-1991[a]) part was to cover the general requirements and test procedures; the second (C76.2, currently IEEE Std C57.19.01™-1991) was to cover explicit ratings and dimensions; and the third (C76.3) was to be an application guide. This document, IEEE Std C57.19.100-2012, is the application guide.

When the ANSI C76 committee was developing the first draft of the application guide, it was decided that the loading guide portion of the guide should be published for trial use before completion of the application guide. This would allow experience with its use and possible modifications prior to publication within the application guide. The trial-use loading guide was approved but not published before the disbanding of the ANSI C76 committee.

The Working Group on Bushing Application Guide was established by the Bushing Subcommittee of the IEEE Transformers Committee to take over the development and completion of the application guide so that it could be submitted for IEEE Standards Board approval and publication. IEEE published the trial-use loading guide in July 1989 as IEEE Std C57.19.101-1989. It was upgraded to a full-use guide on June 18, 1992, and it was designated as IEEE Std C57.19.101-1992. The current guide, IEEE Std C57.19.100-2012, is the application guide in its entirety, which includes the loading guide (Clause 4), and hence, it supersedes IEEE Std C57.19.101-1992. This revision is intended to provide additional information to clarify the previous standard and include newer technologies for manufacture and operation of bushings currently in use.

In the latest revision of this guide, the document was updated to current IEEE styles, references were updated, and general revisions were made. In addition, information on draw-lead and draw-rod bushings, the application of outdoor bushings indoors, bushing monitors, bushing repair, and additional guidance on power factor and capacitance testing were also added.

[a] Information about references can be found in Clause 2.

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IEEE Guide for Application of Power Apparatus Bushings

1. Overview

1.1 Scope

Guidance on the use of outdoor power apparatus bushings is provided in this document. The bushings are limited to those built in accordance with IEEE Std C57.19.00™-1991 (not the latest revision).[1] The latest revision, IEEE Std C57.19.00™-2004, does not address the use of condenser bushings in oil circuit breakers and several voltage classes were dropped that are still in use.

1.2 Purpose

The purpose of this guide is to present general information and recommendations for the application of power apparatus bushings when incorporated as part of power transformers, power circuit breakers, and isolated-phase bus. The loading model developed in this guide is based on oil-impregnated, paper-insulated, capacitance-graded bushings. Similar loading models could be developed for other bushing constructions.

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