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IEEE Standard for High Voltage Gas-Insulated Substations Rated Above 52 kV

IEEE Power & Energy Society

Sponsored by the
Substations and Switchgear Committees

IEEE
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(Revision of
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Approved 30 September 2010

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Abstract: The technical requirements for the design, fabrication, testing, and installation of a gas-insulated substations are covered. The parameters to be supplied by the purchaser are set, and the technical requirements for the design, fabrication, testing, and installation details to be furnished by the manufacturer are established.
Keywords: IEEE C37.122, gas-insulated metal enclosed switchgear, gas-insulated substation, gas-insulated switchgear, GIS, GIS design, GIS equipment, GIS installation, GIS testing, SF_6, sulfur hexafluoride

IEC 60517: Subclause: 6.108.

IEC 62271-1: Subclauses: 5.6, 5.17, 5.101, 5.102, 6.2.3, 6.2.4, 6.2.5, 6.10.6, and 7.2.

IEC 62271-102: Subclauses: 6.103, Annexes A, B, C, D, E, and F.

IEC 62271-203: Subclauses: 5.3.101, 5.3.102, 5.3.104, 6.2.9.101, 6.2.9.103, 6.6.1, 6.6.101, 6.6.102, 6.8, 6.101, 6.102, 6.103, 6.104, 6.105, 7.1, 7.101, 7.102, 7.103, 7.104, 10.2, and Annex A.

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Introduction

This introduction is not part of IEEE Std C37.122-2010, IEEE Standard for High Voltage Gas-Insulated Substations Rated Above 52 kV .

IEEE Std C37.122-1983 was initiated in the early 1970s when the first gas-insulated substations were introduced. The reliability of gas-insulated substations has improved greatly since the first installation in the late 1960s. Utilities have taken advantage of the greater flexibility offered by gas-insulated substations to locate substations closer to load centers with considerable savings in sub-transmission systems costs and reduced system losses. In addition, gas-insulated substations typically offer 25 to 30 years or more of operation before major overhaul is required. To address IEEE policy that IEEE standards should be harmonized with international standards whenever possible a study was conducted by a joint task force of the Substations Committee and IEC. This included a comparison of IEEE and IEC gas-insulated switchgear standards. The recommendations of that task force and joint working group were a series of recommendations to modify both IEEE and IEC gas-insulated switchgear standards to move toward harmonization. This document is a step in that process.

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Contents

IEEE Standard for High Voltage Gas-Insulated Substations Rated Above 52 kV

1. Overview

1.1 Scope

This standard establishes ratings and requirements for planning, design, testing, installation, and operation of gas-insulated substations for alternating-current applications above 52 kV. Typical installations are assemblies of specialized devices such as circuit breakers, switches, bushings, buses, instrument transformers, cable terminations, instrumentation and controls, and the gas-insulating system. It does not include certain items that may be directly connected to gas-insulated substations, such as power transformers and protective relaying. This standard does not apply to gas-insulated transmission lines.

1.2 Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

ANSI/ASME Boiler and Pressure Vessel Code, Section VIII: Pressure Vessels, Division 1. [1] [2]

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