

An American National Standard **IEEE Standard for Gas-Insulated, Metal- Enclosed Disconnecting, Interrupter, and Grounding Switches**

Sponsor
**Switchgear Committee
of the
IEEE Power Engineering Society**

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IEEE Standards Board

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Foreword

(This Foreword is not a part of ANSI/IEEE C37.38-1989, IEEE Standard for Gas-Insulated, Metal-Enclosed Disconnecting, Interrupter, and Grounding Switches.)

In 1970, the Transmission Substations Subcommittee of the Substations Committee of the IEEE Power Engineering Society was established to develop standards for gas-insulated substations and gas-insulated substation equipment. In 1973, IEEE Project Number P468 was assigned and work was begun on this project. This project was published as ANSI/IEEE C37.122-1983, and, based on its work, internal recommendations for new standards were made to other IEEE committees.

In May 1977, the Switchgear Committee authorized formation of a working group under the High-Voltage Switch Subcommittee to establish standards for disconnecting switches, interrupter switches, and grounding switches for use in gas-insulated substations. In June 1978, the C37 Power Switchgear Committee assigned the number C37.38 to this document, and in September 1978, the IEEE Standards Board approved this project and assigned it Project Number P760.

During the period in which this document was finalized, the chairman of the Switchgear Committee was G. N. Lester and the chairman of the High-Voltage Switch Subcommittee was L. V. Chabala. Members of the working group that prepared this document were:

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An American National Standard

IEEE Standard for Gas-Insulated, Metal-Enclosed Disconnecting, Interrupter, and Grounding Switches

1. Scope and References

1.1 Scope

This standard applies to switches rated 72.5 kV and above intended for use in metal-enclosed, gas-insulated substations, including disconnecting, interrupter, and grounding switches. These switches are characterized by grounded, leak-tight metal enclosures that are filled with a gas (most commonly sulfur hexa-fluoride, SF₆) at some pressure above atmospheric, with live parts contained within the housing and insulated therefrom by the gas and by suitable solid insulation that supports the live parts in their proper position. Gas-insulated switches are normally electrically connected to and structurally joined to other gas-insulated components such as buses, gas-to-air bushings, circuit breakers, instrument transformers, cable terminations, etc. Switches may be manually or power operated.

1.2 References

The following publications shall be used in conjunction with this standard. When standards in this document are referred to, the latest revision shall apply.

[1] ANSI C2-1990, National Electrical Safety Code.¹

[2] ANSI C37.33-1987, Switchgear—High-Voltage Air Switches—Rated Control Voltages and Their Ranges.

[3] ANSI C63.2-1987, American National Standard for Instrumentation—Electromagnetic Noise and Field Strength, 10 kHz to 40 GHz—Specifications.

[4] ANSI MC96.1-1982, Temperature Measurement Thermocouples.

¹ANSI publications are available from the Sales Department, American National Standards Institute, 1430 Broadway, New York, NY 10018.

- [5] ANSI/ASME 1989, Boiler and Pressure Vessel Code, Section VIII (Pressure Vessels), Division 1.²
- [6] ANSI/ASME B31.1-1986, Power Piping.
- [7] ANSI/IEEE C37.010-1979, IEEE Application Guide for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis.³
- [8] ANSI/IEEE C37.04-1979, IEEE Standard Rating Structure for AC High-Voltage Circuit Breakers Rated on Symmetrical Current Basis.
- [9] Draft ANSI/IEEE C37.24-1986, IEEE Guide for Evaluating the Effect of Solar Radiation on Outdoor Metal-Enclosed Switchgear.
- [10] ANSI/IEEE C37.30-1971 (R1977), American National Standard Definitions and Requirements for High-Voltage Air Switches, Insulators, and Bus Supports (includes Supplement C37.30a-1975).
- [11] ANSI/IEEE C37.34-1971 (R1977), American National Standard Test Code for High-Voltage Air Switches.
- [12] ANSI/IEEE C37.100-1981, IEEE Standard Definitions for Power Switchgear.
- [13] ANSI/IEEE C37.122-1983, IEEE Standard for Gas Insulated Substations.
- [14] ANSI/IEEE Std 4-1978, IEEE Standard Techniques for High-Voltage Testing.
- [15] ASTM D2472-1971 (R1980), Standard Specification for Sulfur Hexafluoride.⁴
- [16] IEEE Std 119-1974, IEEE Recommended Practice for General Principles of Temperature Measurement as Applied to Electrical Apparatus.⁵

2. Definitions

The definitions in this section establish the meanings of words in the context of their use in this document. Other terms shall be defined in accordance with ANSI/IEEE C37.100-1987 [12] and other ANSI standards referenced in the text

design pressure: The maximum gas pressure to which a gas-insulated substation enclosure will be subjected under normal operating conditions. This is the result of the nominal gas density at initial filling plus ambient and current loading effects.

enclosure: The grounded metal part surrounding the gas-insulated switch, used to retain the pressurized gas under the prescribed conditions necessary to maintain the insulation level safely. The enclosure prevents personnel from inadvertently approaching live or moving parts contained therein and protects the internal components of the equipment against external effects.

enclosure currents: Currents that result from the voltages induced in the metallic enclosure by effects of currents flowing in the enclosed conductors.

gas barrier insulator: An insulator specifically designed to prevent passage of gas from one side to its other.

²ANSI/ASME publications are available from ANSI or from the American Society of Mechanical Engineers, Order Department, 22 Law Drive, Fairfield, NJ 07007.

³ANSI/IEEE publications are available from the Institute of Electrical and Electronics Engineers, Inc., Service Center, 445 Hoes Lane, Piscataway, NJ 08854-4150, or from the Sales Department, American National Standards Institute, 1430 Broadway, New York, NY 10018.

⁴ASTM publications are available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

⁵IEEE publications are available from the IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854-4150.