IEC 62271-211

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INTERNATIONAL STANDARD

High-voltage switchgear and controlgear – Part 211: Direct connection between power transformers and gas-insulated metal-enclosed switchgear for rated voltages above 52 kV

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FOREWORD

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IEC 62271-211 has been prepared by subcommittee 17C: Assemblies, of IEC technical committee 17: High-voltage switchgear and controlgear. It is an International Standard.

This second edition cancels and replaces the first edition of IEC 62271-211:2014. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) re-numbering of clauses according to IEC 62271-1:2017,
b) Clause 3: updating definition about bushing (3.1), updating some pressure definitions (3.6, 3.7, 3.8, 3.9), rewording definition about proctor density (3.11), new term very-fast-front overvoltage (3.12),

c) Clause 5 (former clause 4): add a subclause 5.1 General, according to IEC 62271-1:2017 and IEC 62271-203:2022,
   1) subclause 5.5: new first paragraph, rewording second paragraph,
   2) subclause 5.8: modify the term "Rated duration of thermal short-time current" of the bushing,
d) Clause 6 (former Clause 5): restructure and rewording of subclauses:
   1) 6.1 (former 5.3): requirements about gas and vacuum tightness of the transformer bushing
   2) 6.3 (former 5.2): harmonization with IEC 62271-203:2022 about typical maximum pressure in service for SF_6, other gases and gas mixtures,
   3) 6.4 (former 5.8), rewording
   4) 6.5 (former 5.1), some rewording and modification
   5) 6.6 (former 5.4), some rewording, updated references
   6) 6.7 (former 5.5), some rewording
   7) 6.8 (former 5.6), some rewording
   8) 6.9 (former 5.7), slight rewording,
e) Clause 7 (former clause 6) type tests: some rewording and clarifications about references,
f) Clause 8 (former clause 7) routine tests:
   1) 8.2 (former 7.2): add a paragraph about SF_6-mixtures and other gases than SF_6,
   2) 8.3 (former 7.3): update reference to relevant on-site test according to IEC 62271-203:2022,
g) Clause 9 Guide to the selection of switchgear and controlgear (new): informative, to have a reference to IEC 62271-203:2022,
h) Clause 11 (former 10): updated headline and updated reference according to IEC 62271-1:2017,
i) new Clauses 12 Safety and 13 Environmental aspects: Adding of references to safety and environmental aspects,
j) correction of errors in Corrigendum 1 of IEC 62271-211:2017,
k) modified orientation of Figure 1 to Figure 4 for easier reading of the tables,

The text of this International Standard is based on the following documents:

Draft	Report on voting
17C/935/FDIS	17C/945/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 62271 series, published under the general title *High-voltage switchgear and controlgear*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 211: Direct connection between power transformers and gas-insulated metal-enclosed switchgear for rated voltages above 52 kV

1 Scope

This part of IEC 62271 is applicable to single- and three-phase direct connections between gas-insulated metal-enclosed switchgear (GIS) for rated voltages above 52 kV and transformer arrangements to establish electrical and mechanical interchange ability and to determine the limits of supply for the transformer connection.

Direct connections are immersed on one end in the transformer oil or insulating gas and on the other end in the insulating gas of the switchgear.

Transformer arrangements are single-phase transformers with single-phase enclosed arrangement, three-phase transformers with three single-phase enclosed arrangements or three-phase transformers with a three-phase enclosed arrangement with three transformer bushings.

The connection satisfies the requirements of IEC 62271-203 for gas-insulated metal-enclosed switchgear, IEC 60076 for power transformer and IEC 60137 for completely immersed bushings.

For the purpose of this document the term “switchgear” is used for “gas-insulated metal-enclosed switchgear and the term “transformer” is used for “power transformer”.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60076 (all parts), *Power transformers*

IEC 60076-1:2011, *Power transformers – Part 1: General*

IEC 60137:2017, *Insulated bushings for alternating voltages above 1 000 V*

IEC 61936-1:2021, *Power installations exceeding 1 kV AC and 1,5 kV DC – Part 1: AC*

IEC 62271-1:2017, *High-voltage switchgear and controlgear – Part 1: Common specifications for alternating current switchgear and controlgear*
IEC 62271-1:2017/AMD1:*2021*

IEC 62271-203:2022, *High-voltage switchgear and controlgear – Part 203: Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV*

IEC 62271-207:2023, *High-voltage switchgear and controlgear – Part 207: Seismic qualification for gas-insulated switchgear assemblies, metal enclosed and solid-insulation enclosed switchgear for rated voltages above 1 kV*