

High-voltage switchgear and controlgear - Part 204:  
Rigid gas-insulated transmission lines for rated voltage  
above 52 kV

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

|   |  |
|---|--|
| See Eesti standard EVS-EN IEC 62271-204:2022 sisaldab Euroopa standardi EN IEC 62271-204:2022 ingliskeelset teksti. | This Estonian standard EVS-EN IEC 62271-204:2022 consists of the English text of the European standard EN IEC 62271-204:2022.                        |
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English Version

High-voltage switchgear and controlgear - Part 204: Rigid gas-insulated transmission lines for rated voltage above 52 kV  
(IEC 62271-204:2022)

Appareillage à haute tension - Partie 204: Lignes de transport rigides à isolation gazeuse de tension assignée supérieure à 52 kV  
(IEC 62271-204:2022)

Hochspannungs-Schaltgeräte und -Schaltanlagen - Teil 204: Starre gasisolierte Übertragungsleitungen für Bemessungsspannungen über 52 kV  
(IEC 62271-204:2022)

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

## European foreword

The text of document 17C/840/FDIS, future edition 2 of IEC 62271-204, prepared by SC 17C "Assemblies" of IEC/TC 17 "High-voltage switchgear and controlgear" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62271-204:2022.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2023-04-05 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2025-07-05 document have to be withdrawn

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|                   |   |
|-------------------|---|
| IEC 60071-1       | NOTE Harmonized as EN IEC 60071-1       |
| ISO 5817          | NOTE Harmonized as EN ISO 5817          |
| ISO 6520 (series) | NOTE Harmonized as EN ISO 6520 (series) |
| ISO 10042         | NOTE Harmonized as EN ISO 10042         |
| ISO 10675-1       | NOTE Harmonized as EN ISO 10675-1       |
| ISO 10675-2       | NOTE Harmonized as EN ISO 10675-2       |
| ISO 10893-8       | NOTE Harmonized as EN ISO 10893-8       |
| ISO 10893-9       | NOTE Harmonized as EN ISO 10893-9       |
| ISO 10893-10      | NOTE Harmonized as EN ISO 10893-10      |
| ISO 10893-11      | NOTE Harmonized as EN ISO 10893-11      |
| ISO 11666         | NOTE Harmonized as EN ISO 11666         |
| ISO 17640         | NOTE Harmonized as EN ISO 17640         |
| IEC 60270         | NOTE Harmonized as EN 60270             |
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# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**High-voltage switchgear and controlgear –  
Part 204: Rigid gas-insulated transmission lines for rated voltage above 52 kV**

**Appareillage à haute tension –  
Partie 204: Lignes de transport rigides à isolation gazeuse de tension assignée  
supérieure à 52 kV**



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# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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**High-voltage switchgear and controlgear –  
Part 204: Rigid gas-insulated transmission lines for rated voltage above 52 kV**

**Appareillage à haute tension –  
Partie 204: Lignes de transport rigides à isolation gazeuse de tension assignée  
supérieure à 52 kV**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –**Part 204: Rigid gas-insulated transmission lines  
for rated voltage above 52 kV**

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IEC 62271-204 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 published in 2011. This edition constitutes a technical revision.

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

- a) update to be in line with IEC 62271-1:2017 and alignment of the voltage ratings and the test voltages.
- b) addition of new information for welds on pressurized parts and gas tightness.

The text of this document is based on the following documents:

| Draft        | Report on voting |
|--------------|------------------|
| 17C/840/FDIS | 17C/846/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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

This document is to be read in conjunction with IEC 62271-1:2017 and IEC 62271-203:2022, to which it refers and which are applicable unless otherwise specified. In order to simplify the indication of corresponding requirements, the same numbering of clauses and subclauses is used as in IEC 62271-1:2017 and IEC 62271-203:2022. Amendments to these clauses and subclauses are given under the same numbering, whilst additional subclauses are numbered from 101.

A list of all parts of the IEC 62271 series can be found, under the general title *High-voltage switchgear and controlgear*, 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](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

- reconfirmed,
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- replaced by a revised edition, or
- amended.

## HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

### Part 204: Rigid gas-insulated transmission lines for rated voltage above 52 kV

#### 1 Scope

This part of IEC 62271 applies to rigid HV gas-insulated transmission lines (GIL) in which the insulation is obtained, at least partly, by an insulating gas or gas mixture other than air at atmospheric pressure, for alternating current of rated voltages above 52 kV, and for service frequencies up to and including 60 Hz.

This document is applicable where the provisions of IEC 62271-203 do not cover the application of GIL (see Note 3).

At each end of the HV gas-insulated transmission line, a specific element is used for the connection between the HV gas-insulated transmission line and other equipment like bushings, power transformers or reactors, cable boxes, metal-enclosed surge arresters, voltage transformers or GIS, covered by their own specification.

Unless otherwise specified, the HV gas-insulated transmission line is designed to be used under normal service conditions.

NOTE 1 In this document, the term "HV gas-insulated transmission line" is abbreviated to "GIL".

NOTE 2 In this document, the word "gas" means gas or gas mixture, as defined by the manufacturer.

NOTE 3 Examples of GIL applications:

- where all or part of the HV gas-insulated transmission line is directly buried;
- where the HV gas-insulated transmission line is located, wholly or partly, in an area accessible to public;
- where the HV gas-insulated transmission line is long (typically longer than 500 m) and the typical gas compartment length exceeds the common practice of GIS technology.

#### 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 60060-1:2010, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60068-1:2013, *Environmental testing – Part 1: General and guidance*

IEC 60229:2007, *Electric cables – Tests on extruded oversheaths with a special protective function*

IEC 60287-3-1:2017, *Electric cables – Calculation of the current rating – Part 3-1: Operating conditions – Site reference conditions*

IEC 60376, *Specification of technical grade sulfur hexafluoride (SF<sub>6</sub>) and complementary gases to be used in its mixtures for use in electrical equipment*

IEC 60480, *Specifications for the re-use of sulfur hexafluoride (SF<sub>6</sub>) and its mixtures in electrical equipment*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 60529:1989/AMD1:1999

IEC 60529:1989/AMD2:2013

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

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

IEC 62271-4:2013, *High-voltage switchgear and controlgear – Part 4: Handling procedures for sulphur hexafluoride (SF<sub>6</sub>) and its mixtures*

ISO 9606 (all parts), *Qualification test of welders – Fusion welding*

ISO 9712, *Non-destructive testing – Qualification and certification of NDT personnel*

ISO 14732, *Welding personnel – Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials*

ISO 15609 (all parts), *Specification and qualification of welding procedures for metallic materials – Welding procedure specification*

ISO 15614 (all parts), *Specification and qualification of welding procedures for metallic materials – Welding procedure test*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62271-1:2017 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 3.101

##### **area accessible to public**

area accessible without restriction to any person

Note 1 to entry: A GIL installed above the ground and outside a substation is considered to be "installed in an area accessible to public".

#### 3.102

##### **gas-insulated transmission lines**

##### **GIL**

metal-enclosed lines in which the insulation is obtained, at least partly, by an insulating gas other than air at atmospheric pressure, with the external enclosure intended to be earthed

#### 3.103

##### **GIL enclosure**

part of GIL retaining the insulating gas under the required conditions protecting the equipment against external influences and providing a high degree of protection to personnel