

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

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 62271-204:2011 sisaldab Euroopa standardi EN 62271-204:2011 ingliskeelset teksti.

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**High-voltage switchgear and controlgear -
Part 204: Rigid gas-insulated transmission lines
for rated voltage above 52 kV
(IEC 62271-204:2011)**

Appareillage à haute tension -
Part 204: Lignes de transport rigides à
isolation gazeuse de tension assignée
supérieure à 52 kV
(CEI 62271-204:2011)

Hochspannungs-Schaltgeräte und -
Schaltanlagen -
Teil 204: Starre gasisolierte
Übertragungsleitungen für
Bemessungsspannungen über 52 kV
(IEC 62271-204:2011)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 17C/510/FDIS, future edition 1 of IEC 62271-204, prepared by SC 17C, "High-voltage switchgear and controlgear assemblies", of IEC TC 17, "Switchgear and controlgear" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62271-204:2011.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2012-05-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2014-08-30

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Endorsement notice

The text of the International Standard IEC 62271-204:2011 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

- [1] IEC 60071-1 NOTE Harmonized as EN 60071-1.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|--------------------|--|-------------------------|--------------------|
| IEC 60050-151 | - | International Electrotechnical Vocabulary (IEV) - Part 151: Electrical and magnetic devices | - | - |
| IEC 60050-441 | 1984 | International Electrotechnical Vocabulary (IEV) - Chapter 441: Switchgear, controlgear and fuses | - | - |
| IEC 60060-1 | - | High-voltage test techniques - Part 1: General definitions and test requirements | EN 60060-1 | - |
| IEC 60068-1 | - | Environmental testing - Part 1: General and guidance | EN 60068-1 | - |
| IEC 60229 | 2007 | Tests on cable oversheaths which have a special protective function and are applied by extrusion | EN 60229 | 2008 |
| IEC 60270 | - | High-voltage test techniques - Partial discharge measurements | EN 60270 | - |
| IEC 60287-3-1 | 1995 | Electric cables - Calculation of the current rating - Part 3: Sections on operating conditions - Section 1: Reference operating conditions and selection of cable type | - | - |
| IEC 60376 | - | Specification of technical grade sulfur hexafluoride (SF ₆) for use in electrical equipment | EN 60376 | - |
| IEC 60480 | - | Guidelines for the checking and treatment of sulphur hexafluoride (SF ₆) taken from electrical equipment and specification for its re-use | EN 60480 | - |
| IEC 60529 | 1989 | Degrees of protection provided by enclosures (IP Code) | EN 60529 + corr. May | 1991 1993 |
| IEC 62271-1 | 2007 | High-voltage switchgear and controlgear - Part 1: Common specifications | EN 62271-1 | 2008 |
| IEC 62271-203 | 201X ¹⁾ | High-voltage switchgear and controlgear - Part 203: Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV | EN 62271-203 | 201X ¹⁾ |
| IEC/TR 62271-303 | - | High-voltage switchgear and controlgear - Part 303: Use and handling of sulphur hexafluoride (SF ₆) | CLC/TR 62271-303 | - |

¹⁾ To be published.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|---|--------------|-------------|
| ISO/IEC Guide 51 | - | Safety aspects - Guidelines for their inclusion - in standards | - | - |

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Figure B.1 – Example of earthing system together with active anti-corrosion system in the case of solid bonding of the enclosure at both ends 51

Table 1 – Second characteristic numeral of IP coding 16

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

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

1 General

1.1 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 a non-corrosive insulating gas, 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.

It is intended that this international standard be used 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 may be 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 international standard, the term "HV gas-insulated transmission line" is abbreviated to "GIL".

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

NOTE 3 Examples of GIL applications are given:

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

1.2 Normative references

The following referenced documents are indispensable for the application 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 60050-151, *International Electrotechnical Vocabulary (IEV) – Part 151: Electrical and magnetic devices*

IEC 60050-441:1984, *International Electrotechnical Vocabulary (IEV) – Chapter 441: Switchgear, controlgear and fuses*

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

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

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

IEC 60270, *High-voltage test techniques – Partial discharge measurements*

IEC 60287-3-1:1995, *Electric cables – Calculation of the current rating – Part 3-1: Sections on operating conditions – Reference operating conditions and selection of cable type*

IEC 60376, *Specification of technical grade sulfur hexafluoride (SF₆) for use in electrical equipment*

IEC 60480, *Guidelines for the checking and treatment of sulfur hexafluoride (SF₆) taken from electrical equipment and specification or its re-use*

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

IEC 62271-1:2007, *High-voltage switchgear and controlgear – Part 1: Common specifications*

IEC 62271-203:2011, *High-voltage switchgear and controlgear – Part 203: Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV²*

IEC 62271-303, *High-voltage switchgear and controlgear – Part 303: Use and handling of sulphur hexafluoride (SF₆)*

ISO/IEC Guide 51, *Safety aspects – Guidelines for their inclusion in standards*

2 Normal and special service conditions

Clause 2 of IEC 62271-1 is applicable with the following addition:

At any altitude the dielectric characteristics of the internal insulation are identical with those measured at sea-level. For this insulation, therefore, no requirements concerning the altitude are applicable.

The normal service conditions which apply to a GIL depending on the installation conditions are given in 2.101, 2.102 and 2.103. When more than one of these installation conditions apply, the relevant subclause shall apply to each section of the GIL.

2.101 Installation in open air

For determining the ratings of GIL for open air installation, the normal service conditions of IEC 62271-1 shall apply. Typical rating conditions are also valid for open trenches.

If the actual service conditions differ from the normal service conditions, the ratings shall be adapted accordingly.

Unless otherwise specified by the user, the special service conditions given in the IEC 62271-1 shall apply.

² To be published.