IEC TR 62271-307

Edition 2.0 2024-12
REDLINE VERSION

TECHNICAL REPORT

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High- voltage switchgear and controlgear – Part 307: Guidance for the extension of validity of type tests of AC metal and solid-insulation enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 29.130.10

ISBN 978-2-8327-0085-3

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 307: Guidance for the extension of validity of type tests of AC metal and solid-insulation enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV

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IEC TR 62271-307 has been prepared by subcommittee 17C: Assemblies, of IEC technical committee 17: High-voltage switchgear and controlgear. It is a Technical Report.

This second edition cancels and replaces the first edition published in 2015. This edition constitutes a technical revision.

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

a) Structure of document updated.
b) Updated references to IEC 62271-200:2021 and IEC 62271-1:2017.
c) Addition of criteria for the extension of validity of type tests from functional unit(s) with a different insulating gas to the functional unit to be validated.
d) Figure 5 for the validation of a design modification was added.
e) Clause B.7 for the extension of validity of type test for a GIS with insulation gas A to insulation gas B was added.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
17C/939/DTR	17C/957/RVDTR

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 Technical Report 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.

This Technical Report is to be used in conjunction with IEC 62271-1:2017, IEC 62271-200:2021, and IEC 62271-201:2014 to which it refers and which are applicable unless otherwise specified.

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

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 307: Guidance for the extension of validity of type tests of AC metal and solid-insulation enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV

~~1 General~~

1 Scope

This part of IEC 62271, which is a Technical Report, refers to prefabricated metal-enclosed and solid-insulation enclosed (both hereinafter called enclosed) switchgear and controlgear assemblies for alternating current of rated voltages above 1 kV and up to and including 52 kV as specified in IEC 62271-200 and IEC 62271-201, and to other equipment included in the same enclosure with any possible mutual influence.

This document ~~may~~ can be used for the extension of the validity of type tests performed on one test object with a defined set of ratings to another switchgear and controlgear assembly of the same family with a different set of ratings or different arrangements of components or insulating fluids. It supports the selection of representative test objects composed of functional units of a family of switchgear and controlgear aimed at the optimization of type tests in order to perform a consistent conformity assessment.

The extension of validity, as this is the case for type tests, does not cover ageing, material compatibility, human health toxicity or impact on the environment, among others. It is the task of the manufacturer and the user to check those aspects are covered for the technical validation of an assembly design.

The extension of validity of type tests according to a component standard is outside the scope of this document.

This document utilises a combination of sound technical and physical principles, manufacturer and user experience, and calculations to establish guidance for the extension of validity of type tests, covering various design and rating aspects.

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 60050-151:2001, *International Electrotechnical Vocabulary (IEV) – Part 151: Electrical and magnetic devices*

IEC 60050-441:1984, *International Electrotechnical Vocabulary (IEV) – Part 441: Switchgear, controlgear and* fuses
IEC 60050-441:1984/AMD1:2000

IEC 62271-1:~~2007~~2017, *High-voltage switchgear and controlgear – Part 1: Common specifications for alternating current switchgear and controlgear*
IEC 62271-1:~~2007~~2017/AMD1:~~2011~~2021

IEC 62271-200:~~2011~~2021, *High-voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*

IEC 62271-201:2014, *High-voltage switchgear and controlgear – Part 201: AC solid-insulation enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*

IEC TR 62271-307

Edition 2.0 2024-12

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d) Figure 5 for the validation of a design modification was added.

e) Clause B.7 for the extension of validity of type test for a GIS with insulation gas A to insulation gas B was added.

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Part 307: Guidance for the extension of validity of type tests of AC metal and solid-insulation enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV

1 Scope

This part of IEC 62271, which is a Technical Report, refers to prefabricated metal-enclosed and solid-insulation enclosed (both hereinafter called enclosed) switchgear and controlgear assemblies for alternating current of rated voltages above 1 kV and up to and including 52 kV as specified in IEC 62271-200 and IEC 62271-201, and to other equipment included in the same enclosure with any possible mutual influence.

This document can be used for the extension of the validity of type tests performed on one test object with a defined set of ratings to another switchgear and controlgear assembly of the same family with a different set of ratings or different arrangements of components or insulating fluids. It supports the selection of representative test objects composed of functional units of a family of switchgear and controlgear aimed at the optimization of type tests in order to perform a consistent conformity assessment.

The extension of validity, as this is the case for type tests, does not cover ageing, material compatibility, human health toxicity or impact on the environment, among others. It is the task of the manufacturer and the user to check those aspects are covered for the technical validation of an assembly design.

The extension of validity of type tests according to a component standard is outside the scope of this document.

This document utilises a combination of sound technical and physical principles, manufacturer and user experience, and calculations to establish guidance for the extension of validity of type tests, covering various design and rating aspects.

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 60050-151:2001, *International Electrotechnical Vocabulary (IEV) – Part 151: Electrical and magnetic devices*

IEC 60050-441:1984, *International Electrotechnical Vocabulary (IEV) – Part 441: Switchgear, controlgear and* fuses
IEC 60050-441:1984/AMD1:2000

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 62271-200:2021, *High-voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*

IEC 62271-201:2014, *High-voltage switchgear and controlgear – Part 201: AC solid-insulation enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*