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Rotating electrical machines - Part 15: Impulse voltage withstand levels of form-wound stator coils for rotating a.c. machines

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ICS 29.160.01

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EUROPÄISCHE NORM

EN IEC 60034-15

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Rotating electrical machines - Part 15: Impulse voltage withstand levels of form-wound stator coils for rotating a.c. machines (IEC 60034-15:2025)

Machines électriques tournantes - Partie 15: Niveaux de tenue au choc électrique des bobines de stator des machines à courant alternatif (IEC 60034-15:2025)

Drehende elektrische Maschinen - Teil 15: Steh-Stoßspannungspegel von Formspulen für Ständerwicklungen drehender Wechselstrommaschinen (IEC 60034-15:2025)

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The text of document 2/2234/FDIS, future edition 4 of IEC 60034-15, prepared by TC 2 "Rotating machinery" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60034-15:2025.

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IEC 60071-1	NOTE	Approved as EN IEC 60071-1
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Machines électriques tournantes – Partie 15: Niveaux de tenue au choc électrique des bobines de stator des machines à courant alternatif

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ROTATING ELECTRICAL MACHINES –

Part 15: Impulse voltage withstand levels of stator coils for rotating AC machines

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IEC 60034-15 has been prepared by IEC technical committee 2: Rotating machinery. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2009. This edition constitutes a technical revision.

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

- harmonize the standard test levels with IEEE Std 522™ [2];
- introduce an enhanced surge impulse voltage withstand level;
- introduce the option to test up to the point of electrical breakdown;
- improve the evaluation of the recorded impulses in case of oscillations and overshoot;

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- indicate that converter fed machines are excluded from the scope;
- provide guidance on the execution of impulse tests.

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

Draft	Report on voting
2/2234/FDIS	2/2247/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.

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INTRODUCTION

IEC 60071-1 [1][1] specifies general requirements for the phase-to-earth insulation, phase-to-phase and the longitudinal insulation of equipment in three phase AC systems and states that each apparatus committee is responsible for specifying the insulation levels and test procedures for its equipment, taking into consideration the recommendations of IEC 60071-1 [1].

The object of this document is to specify these requirements for rotating electrical AC machines. Experience has shown that the values given in this document meet the insulation requirements for the essential stresses in service. An explanation of the principles adopted in preparing these requirements is given in Annex A. This document is not intended for electronic converter-fed machines.

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1 Numbers in square brackets refer to the Bibliography.

ROTATING ELECTRICAL MACHINES –

Part 15: Impulse voltage withstand levels of stator coils for rotating AC machines

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1 Scope

This part of IEC 60034 relates to AC machines incorporating form-wound stator coils that are intended to be connected to a standard grid supply. It specifies the test procedures and voltages to be applied to sample coils, as well as routine tests performed on coils mounted in the stator core.

The purpose of this document is to show the ability of a stator winding to resist voltage transients originating from the grid the machine is connected to. Annex A gives further information.

The stator windings and coils for converter-fed machines are excluded from the scope of this document.

This document is not intended for use on complete windings since it is difficult to determine when the turn insulation has failed due to the test.

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*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

3.1
sample test
test carried out on (sample) coils in new condition which adequately represent the configuration of the finished item to be used in the machine for the purpose of evaluating the manufacturing procedures and processes incorporated in the insulation system

3.2
routine test
test carried out on coils during manufacture