

INTERNATIONAL STANDARD

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**Rotating electrical machines –
Part 18-32: Functional evaluation of insulation systems (Type II) –
Electrical endurance qualification procedures for form-wound windings**

**Machines électriques tournantes –
Partie 18-32: Evaluation fonctionnelle des systèmes d'isolation (Type II) –
Procédures de qualification de l'endurance électrique pour enroulements
préformés**



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IEC Secretariat
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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CONTENTS

FOREWORD	4
INTRODUCTION	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	8
4 General considerations	9
4.1 Relationship to IEC 60034-18-1	9
4.2 Selection and designation of test procedures	9
4.3 Reference insulation system	9
4.4 Test procedures	9
4.4.1 General	9
4.4.2 Electrical ageing of the mainwall insulation	9
4.4.3 Electrical ageing of the stress control system	10
4.4.4 Electrical ageing of the turn insulation	10
4.5 Extent of tests	10
4.5.1 Full evaluation of the mainwall insulation	10
4.5.2 Reduced evaluation of the mainwall insulation	10
4.5.3 Evaluation of the stress control system	10
5 Test objects	10
5.1 Construction of test objects	10
5.2 Number of test specimens	11
5.3 Initial quality control tests	11
6 Electrical ageing	11
6.1 General	11
6.2 Voltage levels and intended test lives of the mainwall insulation	11
6.3 Test temperatures during electrical endurance testing of the mainwall insulation	11
6.3.1 Electrical ageing at room temperature	11
6.3.2 Electrical ageing at elevated temperature	12
6.3.3 Ageing procedure for the mainwall insulation	12
6.4 Maintenance of stress control coatings	12
7 Diagnostic sub-cycle	12
7.1 General	12
7.2 Voltage test of the mainwall insulation	12
7.3 Other diagnostic tests	13
8 Failures of the mainwall insulation	13
8.1 Failure location and verification	13
8.2 Failed specimen observations	13
9 Functional evaluation of the mainwall data	13
9.1 General	13
9.2 Full evaluation (same voltage level and same expected service life)	13
9.3 Reduced evaluation (same voltage level and same expected service life)	15
9.4 Recommended data to be recorded	16
9.5 Determining qualification for performances different to the reference system	17
9.5.1 Overview	17

9.5.2	Case B: Qualification for the same phase to phase voltage and a different expected service life	17
9.5.3	Case C: Qualification for different voltage level and same expected service life	18
9.5.4	Case D: Qualification for different voltage level and different expected service life	19
9.5.5	Non-linearity of regression lines.....	20
Annex A (normative) Reference life line for mainwall insulation in the absence of a manufacturer's reference life line		21
Annex B (informative)		22
B.1	Electrical ageing of the conductive slot coating	22
B.2	Electrical ageing of the stress control coating	22
B.3	Test objects	22
B.4	Evaluation of the stress control system	22
B.5	Ageing procedure for the conductive slot and stress control coating.....	23
B.5.1	General	23
B.5.2	Arrangement of temperature control by heater plates.....	23
B.5.3	Heating by means of an oven	23
B.5.4	Test parameter	23
B.6	Qualification of the stress control system	24
B.6.1	General	24
B.6.2	Test procedure	24
B.6.3	Test pass criteria	24
B.7	Examples of deterioration marks at the stress control system	25
Figure 1 – Comparison of ageing data from candidate (C) and reference (R) insulation systems showing qualification		14
Figure 2 – Comparison of ageing data from candidate and reference insulation systems showing failure to qualify		15
Figure 3 – Comparison of reduced evaluation test data from four separate candidate systems with that from the reference system.....		16
Figure 4 – Candidate system qualified for the same voltage level and different expected service life		18
Figure 5 – Candidate system qualified for a higher voltage level and the same expected service life		19
Figure 6 – Candidate system qualified for a different service life and different voltage level from the reference		20
Figure A.1 – Reference lifeline for mainwall insulation		21
Figure B.1 – Application of heater elements to a stator bar		23
Figure B.2 – Typical deterioration mark at the conductive slot coating		25
Table 1 – Conditions for qualification of candidate system		17
Table B.1 – Phase to ground test voltages and test temperatures		24

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Electrical endurance qualification procedures for form-wound windings****FOREWORD**

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IEC 60034-18-32 has been prepared by IEC technical committee 2: Rotating machinery. It is an International Standard.

This second edition cancels and replaces the first edition published in 2010. This edition constitutes a technical revision.

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

- a) Title modified.
- b) Simplification of clauses.
- c) Reduction in the number of test procedures.
- d) Inclusion of full bars and coils as test objects.
- e) A new clause dealing with failures and failure criteria.

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

Draft	Report on voting
2/2068/FDIS	2/2075/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.

A list of all parts in the IEC 60034 series, published under the general title *Rotating electrical machines*, can be found on the IEC website.

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/standardsdev/publications.

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INTRODUCTION

IEC 60034-18-1 presents general principles for the evaluation of insulation systems used in rotating electrical machines.

This document deals exclusively with insulation systems for form-wound windings (Type II) and concentrates on electrical functional evaluation.

In IEC 60034-18-42, tests are described for qualification of Type II insulation systems in voltage-source converter operation. These insulation systems are generally used in rotating machines which have form-wound windings, mostly rated above 700 V r.m.s. The two standards IEC 60034-18-41 and IEC 60034-18-42 separate the systems into those which are not expected to experience partial discharge activity within specified conditions in their service lives (Type I), and those which are expected to experience and withstand partial discharge activity in any part of the insulation system throughout their service lives (Type II).

ROTATING ELECTRICAL MACHINES –

Part 18-32: Functional evaluation of insulation systems (Type II) – Electrical endurance qualification procedures for form-wound windings

1 Scope

This part of IEC 60034-18 describes qualification procedures for the evaluation of electrical endurance of insulation systems for use in rotating electrical machines using form-wound windings energized with sinusoidal power frequency voltage. The test procedures for the main wall insulation are comparative in nature, such that the performance of a candidate insulation system is compared to that of a reference insulation system with proven service experience. If no reference system is available, the diagram in Annex A is available for use. The qualification procedures of inverter duty insulation system for form-wound windings can be found in IEC 60034-18-42 or IEC 60034-18-41. A new and informative test procedure for the stress control system is introduced and defined in Annex B.

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 60034-1, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60034-15:2009, *Rotating electrical machines – Part 15: Impulse voltage withstand levels of form-wound stator coils for rotating a.c. machines*

IEC 60034-18-1:2010, *Rotating electrical machines – Part 18-1: Functional evaluation of insulation systems – General guidelines*

IEC TS 60034-18-33:2010, *Rotating electrical machines – Part 18-33: Functional evaluation of insulation systems – Test procedures for form-wound windings – Multifactor evaluation by endurance under simultaneous thermal and electrical stresses*

IEC 60034-18-41, *Rotating electrical machines – Part 18-41: Partial discharge free electrical insulation systems (Type I) used in rotating electrical machines fed from voltage converters – Qualification and quality control tests*

IEC 60034-18-42:2017, *Rotating electrical machines – Part 18-42: Partial discharge resistant electrical insulation systems (Type II) used in rotating electrical machines fed from voltage converters – Qualification tests*

IEC 60034-18-42:2017/AMD1:2020

IEC 60034-27-1, *Rotating electrical machines – Part 27-1: Off-line partial discharge measurements on the winding insulation*

IEC 60034-27-3, *Rotating electrical machines – Part 27-3: Dielectric dissipation factor measurement on stator winding insulation of rotating electrical machines*

IEC 60216-4-1, *Electrical insulating materials – Thermal endurance properties – Part 4-1: Ageing ovens – Single-chamber ovens*