IEC 60034-18-21

Edition 2.0 2012-09

INTERNATIONAL STANDARD

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Rotating electrical machines – Part 18-21: Functional evaluation of insulation systems – Test procedures for wire-wound windings – Thermal evaluation and classification

Machines électriques tournantes – Partie 18-21: Evaluation fonctionnelle des systèmes d'isolation – Procédures d'essai pour enroulements à fils – Evaluation thermique et classification



IEC 60034-18-21:2012

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

PRICE CODE
CODE PRIX

X

ICS 29.160

ISBN 978-2-83220-337-8

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ROTATING ELECTRICAL MACHINES –

Part 18-21: Functional evaluation of insulation systems – Test procedures for wire-wound windings – Thermal evaluation and classification

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International Standard IEC 60034-18-21 has been prepared by IEC technical committee 2: Rotating machinery.

This second edition cancels and replaces the first edition published in 1992, and its amendments 1 (1994) and 2 (1996), and constitutes a technical revision.

The main technical changes with regard to the previous edition can be seen in the introduction of some basic statistical methods in the evaluation of comparative data. Moreover, the standard states a simpler use of different test procedures.

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

FDIS	Report on voting
2/1672/FDIS	2/1682/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

NOTE A table of cross-references of all IEC TC 2 publications can be found on the IEC TC 2 dashboard on the IEC website.

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INTRODUCTION

IEC 60034-18 comprises several parts, dealing with different types of functional evaluation and special kinds of test procedures for insulation systems of rotating electrial machines. Part IEC 60034-18-1 provides general guidelines for such procedures and qualification principles. The subsequent parts IEC 60034-18-21, IEC 60034-18-22, IEC 60034-18-31, IEC 60034-18-33, IEC 60034-18-34, IEC 60034-18-41 and IEC 60034-18-42 give detailed procedures for the various types of windings.

This part IEC 60034-18-21 deals with the thermal evaluation and classification of insulation systems for wire-wound (usually random wound) windings.

Parts relevant to this document are:

– IEC 60034-18-1: General guidelines
– IEC 60034-18-31: Test procedures for form-wound windings
– IEC 60034-18-41: Qualification and type tests for Type I electrical insulation systems used in rotating electrical machines fed from voltage converters
– IEC 60034-18-42: Qualification and acceptance tests for partial discharge resistant electrical insulation systems (Type II) used in rotating electrical machines fed from voltage converters

ROTATING ELECTRICAL MACHINES –

Part 18-21: Functional evaluation of insulation systems – Test procedures for wire-wound windings – Thermal evaluation and classification

1 Scope

This part of IEC 60034 gives test procedures for the thermal evaluation and classification of insulation systems used or proposed for use in wire-wound alternating current (a.c.) or direct current (d.c.) rotating electrical machines.

The test performance of a candidate insulation system is compared to the test performance of a reference insulation system with proven service experience.

IEC 60034-18-1 describes general testing principles applicable to thermal endurance testing of insulation systems used in rotating electrical machines. The principles of IEC 60034-18-1 are followed unless otherwise stated in IEC 60034-18-21.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 60034-18-1:2010, *Rotating electrical machines – Part 18-1: Functional evaluation of insulation systems – General guidelines*

IEC 60085, *Electrical insulation – Thermal evaluation and designation*

IEC 60216-1, *Electrical insulating materials – Properties of thermal endurance – Part 1: Ageing procedures and evaluation of test results*

IEC 60216-5, *Electrical insulating materials – Thermal endurance properties – Part 5: Determination of relative thermal endurance index (RTE) of an insulating material*

IEC 60455 (all parts), *Resin based reactive compounds used for electrical insulation*

IEC 60464 (all parts), *Varnishes used for electrical insulation*

IEC 60505, *Evaluation and qualification of electrical insulation systems*

3 General considerations

3.1 Reference insulation system

A reference insulation system shall be tested using the same test procedure as for the candidate system. See 4.3 of IEC 60034-18-1.