

# SLOVENSKI STANDARD

## SIST EN 60034-18-31:2012

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**Električni rotacijski stroji - 18-31. del: Funkcionalno vrednotenje izolacijskih sistemov - Preskusni postopki za predhodno oblikovana navitja - Toplotno vrednotenje in klasificiranje izolacijskih sistemov, ki se uporabljajo pri rotacijskih strojih (IEC 60034-18-31:2012)**

Rotating electrical machines - Part 18-31: Functional evaluation of insulation systems - Test procedures for form-wound windings - Thermal evaluation and classification of insulation systems used in rotating machines (IEC 60034-18-31:2012)

Machines électriques tournantes - Partie 18-31: Evaluation fonctionnelle des systèmes d'isolation - Procédures d'essai pour enroulements préformés - Evaluation thermique et classification des systèmes d'isolation utilisés dans les machines tournantes (IEC 60034-18-31:2012)

Machines électriques tournantes - Partie 18-31: Evaluation fonctionnelle des systèmes d'isolation - Procédures d'essai pour enroulements préformés - Evaluation thermique et classification des systèmes d'isolation utilisés dans les machines tournantes (CEI 60034-18-31:2012)

**Ta slovenski standard je istoveten z: EN 60034-18-31:2012**

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**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 60034-18-31**

August 2012

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Supersedes EN 60034-18-31:1994 + A1:1996

English version

**Rotating electrical machines -  
Part 18-31: Functional evaluation of insulation systems -  
Test procedures for form-wound windings -  
Thermal evaluation and classification of insulation systems used in  
rotating machines  
(IEC 60034-18-31:2012)**

Machines électriques tournantes -  
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systèmes d'isolation -  
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préformés -  
Evaluation thermique et classification des  
systèmes d'isolation utilisés dans les  
machines tournantes  
(CEI 60034-18-31:2012)

Drehende elektrische Maschinen -  
Teil 18-31: Funktionelle Bewertung von  
Isoliersystemen -  
Prüfverfahren für Wicklungen mit  
vorgeformten Elementen -  
Thermische Bewertung und  
Klassifizierung von Isoliersystemen für  
drehende Maschinen  
(IEC 60034-18-31:2012)

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 2/1662/FDIS, future edition 2 of IEC 60034-18-31, prepared by IEC/TC 2 "Rotating machinery" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60034-18-31:2012.

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) 2013-04-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2015-07-30

This document supersedes EN 60034-18-31:1994 + A1:1996.

EN 60034-18-31:2012 includes the following significant technical changes with respect to EN 60034-18-31:1994 + A1:1996:

- Definition of the test method and sub-cycles required to establish a consistent standardized platform for thermal ageing of insulation systems for form-wound windings.
- Recommendations for establishing a thermal life curve based on confidence intervals.
- Comparison of candidate and reference system performance for specific requirements of thermal class, within feasible limits.

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## Endorsement notice

The text of the International Standard IEC 60034-18-31:2012 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:

IEC 60034-1                      NOTE Harmonized as EN 60034-1.

**Annex ZA**  
(normative)  
**Normative references to international publications**  
**with their corresponding European publications**

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.

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 60034-15	2009	Rotating electrical machines - Part 15: Impulse voltage withstand levels of form-wound stator coils for rotating a.c. machines	EN 60034-15	2009
IEC 60034-18-1	2010	Rotating electrical machines - Part 18-1: Functional evaluation of insulation systems - General guidelines	EN 60034-18-1	2010
IEC/TS 60034-18-42 -		Rotating electrical machines - Part 18-42: Qualification and acceptance tests for partial discharge resistant electrical insulation systems (Type II) used in rotating electrical machines fed from voltage converters	CLC/TS 60034-18-42	-
IEC 60060-1	-	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	-
IEC 60085	-	Electrical insulation - Thermal evaluation and designation	EN 60085	-
IEC 60216-1	-	Electrical insulating materials - Thermal endurance properties - Part 1: Ageing procedures and evaluation of test results	EN 60216-1	-
IEC 60216-4-1	-	Electrical insulating materials - Thermal endurance properties - Part 4-1: Ageing ovens - Single-chamber ovens	EN 60216-4-1	-
IEC 60216-5	-	Electrical insulating materials - Thermal endurance properties - Part 5: Determination of relative thermal endurance index (RTE) of an insulating material	EN 60216-5	-
IEC 60505	-	Evaluation and qualification of electrical insulation systems	EN 60505	-

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IEC 60034-18-31

Edition 2.0 2012-06

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Rotating electrical machines –  
Part 18-31: Functional evaluation of insulation systems – Test procedures for  
form-wound windings – Thermal evaluation and classification of insulation  
systems used in rotating machines**

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**Machines électriques tournantes –  
Partie 18-31: Evaluation fonctionnelle des systèmes d'isolation – Procédures  
d'essai pour enroulements préformés – Evaluation thermique et classification  
des systèmes d'isolation utilisés dans les machines tournantes**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## ROTATING ELECTRICAL MACHINES –

**Part 18-31: Functional evaluation of insulation systems –  
Test procedures for form-wound windings –  
Thermal evaluation and classification of insulation  
systems used in rotating machines**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60034-18-31 has been prepared by IEC technical committee 2: Rotating machinery.

This second edition cancels and replaces the first edition published in 1992, and its amendment 1 (1996), of which it constitutes a technical revision.

The main technical changes with regard to the previous edition include:

- Definition of the test method and sub-cycles required to establish a consistent standardized platform for thermal ageing of insulation systems for form-wound windings.
- Recommendations for establishing a thermal life curve based on confidence intervals.
- Comparison of candidate and reference system performance for specific requirements of thermal class, within feasible limits.

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

FDIS	Report on voting
2/1662/FDIS	2/1671/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.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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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 electrical machines. IEC 60034-18-1 provides general guidelines for such procedures and qualification principles. The subsequent parts IEC 60034-18-21, IEC 60034-18-31, IEC 60034-18-32, 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.

IEC 60034-18-31 describes thermal evaluation and classification of insulation systems for form-wound windings. It provides standard thermal ageing techniques and diagnostic test procedures.

Parts relevant to this document are:

- IEC 60034-18-1: General guidelines
- IEC 60034-18-21: Test procedures for wire-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) electrical insulation systems used in rotating electrical machines fed from voltage converters

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