

Rotating electrical machines —

**Part 18-34: Functional evaluation of
insulation systems — Test procedures
for form-wound windings — Evaluation
of thermomechanical endurance of
insulation systems**

ICS 29.080.01

National foreword

This Draft for Development is the official English language version of CLC/TS 60034-18-34:2004.

This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature. It should be applied on this provisional basis, so that information and experience of its practical application may be obtained.

A review of this Draft for Development will be carried out not later than 2 years after its publication. Notification of the start of the review period, with a request for the submission of comments from users of this Draft for Development, will be made in an announcement in the appropriate issue of *Update Standards*.

According to the replies received, the responsible BSI Committee will judge whether the Draft for Development can be converted into a British Standard or what other action should be taken. Observations which it is felt should receive attention before the official call for comments will be welcomed. These should be sent to the Secretary of BSI Technical Committee PEL/2 at British Standards House, 389 Chiswick High Road, London W4 4AL.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Summary of pages

This document comprises a front cover, an inside front cover, the CLC/TS title page, the CLC/TS foreword page, the IEC TS title page, pages 2 to 16, an inside back cover and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments
16621	29 September 2006	Renumbers BS IEC TS 60034-18-34:2000 as DD CLC/TS 60034-18-34:2004

This Draft for Development was prepared under the direction of the Standards Policy and Strategy Committee.

© BSI 2006

ISBN 0 580 36503 4

Rotating electrical machines
Part 18-34: Functional evaluation of insulation systems -
Test procedures for form-wound windings -
Evaluation of thermomechanical endurance of insulation systems
(IEC/TS 60034-18-34:2000)

Machines électriques tournantes
Partie 18-34: Evaluation fonctionnelle
des systèmes d'isolation -
Procédures d'essai
pour enroulements préformés -
Evaluation de l'endurance
thermomécanique
des systèmes d'isolation
(CEI/TS 60034-18-34:2000)

Drehende elektrische Maschinen -
Funktionelle Bewertung von
Isoliersystemen
Teil 18-34: Prüfverfahren für Wicklungen
mit vorgeformten Elementen -
Bewertung der thermomechanischen
Belastbarkeit
(IEC/TS 60034-18-34:2000)

This Technical Specification was approved by CENELEC on 2004-07-03.

CENELEC members are required to announce the existence of this TS in the same way as for an EN and to make the TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of the Technical Specification IEC/TS 60034-18-34:2000, prepared by IEC TC 2, Rotating machinery, was submitted to the formal vote and was approved by CENELEC as CLC/TS 60034-18-34 on 2004-07-03 without any modification.

The following date was fixed:

- latest date by which the existence of the CLC/TS
has to be announced at national level (doa) 2005-01-03

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the Technical Specification IEC/TS 60034-18-34:2000 was approved by CENELEC as a Technical Specification without any modification.

SPÉCIFICATION
TECHNIQUE

CEI
IEC

TECHNICAL
SPECIFICATION

TS 60034-18-34

Première édition
First edition
2000-01

Machines électriques tournantes –

**Partie 18-34:
Evaluation fonctionnelle des systèmes
d'isolation –
Procédures d'essai pour enroulements
préformés –
Evaluation de l'endurance thermomécanique
des systèmes d'isolation**

Rotating electrical machines –

**Part 18-34:
Functional evaluation of insulation systems –
Test procedures for form-wound windings –
Evaluation of thermomechanical endurance
of insulation systems**



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия



Documents
Document Sharing Hub

CONTENTS

	Page
INTRODUCTION	3
Clause	
1 Scope	4
2 Normative references	4
3 General considerations.....	5
3.1 Relationship to IEC 60034-18-1	5
3.2 Thermomechanical ageing process.....	5
3.3 Designation of test procedure	5
3.4 Reference insulation system.....	5
4 Test specimens and test objects	6
4.1 Construction.....	6
4.2 Number of test specimens	6
5 Heating and cooling cycles	6
5.1 Temperature and length of heating and cooling cycles	6
5.2 Number of cycles.....	7
6 Test procedure 1 for bars/coils in model slots	7
6.1 Model slot	7
6.2 Support for end parts of test objects	7
6.3 Methods of heating	7
6.4 Methods of cooling	8
6.5 Initial quality assurance and diagnostic tests	8
6.6 Diagnostic tests during cycling.....	9
6.6.1 Recommended frequency of diagnostic tests.....	9
6.6.2 Suggested diagnostic tests of individual bars/coils	9
6.7 Final diagnostic tests.....	9
7 Test procedure 2 for unrestrained bars/coils	10
7.1 Positioning the bars/coils for test	10
7.2 Method of heating.....	10
7.3 Method of cooling	10
7.4 Initial quality assurance and diagnostic tests	10
7.5 Diagnostic tests during cycling.....	11
7.5.1 Frequency of tests	11
7.5.2 Type of suggested tests	11
7.6 Final diagnostic tests.....	11
8 Analysing and reporting.....	11
Annex ZA (normative) Normative references to international publications with their corresponding European publications	16
Figure 1 – Details of test procedure	13
Figure 2 – Heating and cooling cycle schedule.....	14
Figure 3 – Example of the model slot with two bars	15

INTRODUCTION

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

This part deals with thermal cycling evaluation of insulation systems for form-wound windings. This kind of endurance is of special importance for long rotating machines (especially indirectly cooled) and machines that are exposed to a very large number of considerable load changes during normal operation.