

Pöörlevad elektrimasinad. Osa 2-1: Standardmeetodid pöörlevate elektrimasinate kadude ja kasuteguri määramiseks katselisel teel (väljaarvatud veduksõidukite masinad)

Rotating electrical machines- Part 2-1: Methods for determining losses and efficiency from tests (excluding machines for traction vehicles)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 60034-2-1:2007 sisaldab Euroopa standardi EN 60034-2-1:2007 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 17.12.2007 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 14.11.2007.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 60034-2-1:2007 consists of the English text of the European standard EN 60034-2-1:2007.

This standard is ratified with the order of Estonian Centre for Standardisation dated 17.12.2007 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

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The standard is available from Estonian standardisation organisation.

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English version

**Rotating electrical machines -
Part 2-1: Standard methods for determining losses and efficiency
from tests (excluding machines for traction vehicles)
(IEC 60034-2-1:2007)**

Machines électriques tournantes -
Partie 2-1: Méthodes normalisées
pour la détermination des pertes
et du rendement à partir d'essais
(à l'exclusion des machines
pour véhicules de traction)
(CEI 60034-2-1:2007)

Drehende elektrische Maschinen -
Teil 2-1: Standardverfahren
zur Bestimmung der Verluste
und des Wirkungsgrades aus Prüfungen
(ausgenommen Maschinen
für Schienen- und Straßenfahrzeuge)
(IEC 60034-2-1:2007)

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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 document 2/1443/FDIS, future edition 1 of IEC 60034-2-1, prepared by IEC TC 2, Rotating machinery, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60034-2-1 on 2007-11-01.

This European Standard partly supersedes EN 60034-2:1996 + A1:1996 + A2:1996.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2008-08-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2010-11-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60034-2-1:2007 was approved by CENELEC as a European Standard without any modification.

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Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

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 60027-1	¹⁾	Letter symbols to be used in electrical technology - Part 1: General	EN 60027-1	2006 ²⁾
IEC 60034-1	- ¹⁾	Rotating electrical machines - Part 1: Rating and performance	EN 60034-1	2004 ²⁾
IEC 60034-2A	1974 ³⁾	Rotating electrical machines - Part 2: Methods for determining losses and efficiency of rotating electrical machinery from tests (excluding machines for traction vehicles) - First supplement: Measurement of losses by the calorimetric method	-	-
IEC 60034-4 (mod)	- ¹⁾	Rotating electrical machines - Part 4: Methods for determining synchronous machine quantities from tests	EN 60034-4	1995 ²⁾
IEC 60034-19	- ¹⁾	Rotating electrical machines - Part 19: Specific test methods for d.c. machines on conventional and rectifier-fed supplies	-	-
IEC 60044 (mod)	Series	Instrument transformers	EN 60044	Series
IEC 60051-1	- ¹⁾	Direct acting indicating analogue electrical measuring instruments and their accessories - Part 1: Definitions and general requirements common to all parts	EN 60051-1	1998 ²⁾
IEC 61986	- ¹⁾	Rotating electrical machines - Equivalent loading and super-position techniques - Indirect testing to determine temperature rise	EN 61986	2002 ⁴⁾

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

³⁾ IEC 60034-2A:1974, which is included in EN 60034-2:1996, is retained for the time being. It will be incorporated in the future IEC 60034-2-2.

⁴⁾ Valid edition at date of issue. A revision of IEC 61986 is under consideration for publication under reference IEC 60034-29; it is expected to be harmonized as EN 60034-29.

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Rotating electrical machines –
Part 2-1: Standard methods for determining losses and efficiency from tests
(excluding machines for traction vehicles)**

**Machines électriques tournantes –
Partie 2-1: Méthodes normalisées pour la détermination des pertes et du
rendement à partir d'essais (à l'exclusion des machines pour véhicules de
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INTERNATIONAL STANDARD

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ROTATING ELECTRICAL MACHINES –

**Part 2-1: Standard methods for determining losses
and efficiency from tests
(excluding machines for traction vehicles)**

FOREWORD

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International Standard IEC 60034-2-1 has been prepared by IEC technical committee 2: Rotating machinery.

This standard cancels and replaces IEC 60034-2 (1972), its amendment 1 (1995) and its amendment 2 (1996). IEC 60034-2A (1974) is retained for the time being.

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

FDIS	Report on voting
2/1443/FDIS	2/1460/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.

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

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

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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

During the revision phase for IEC 60034-2: 1972 and its amendments IEC 60034-2 A1: 1995 (defining IEC 60034-2A: 1974 as Clause 17) and IEC 60034-2 A2: 1996, WG 28 proposed and TC 2 agreed to separate the revised standard into three sections:

- the first part (IEC 60034-2-1) to cover machines within the scope of IEC 60034-1, which are normally tested under load;
- the second part (IEC 60034-2-2) to cover tests applicable mainly for large machines where the facility cost for other methods is not economical (especially the calibrated-machine test, the retardation test and the calorimetric method);
- the third part (IEC 60034-2-3) for tests on machines for converter supply..

To retain in IEC 60034-2-1 as normative the test methods that will eventually become IEC 60034-2-2, a temporary Annex D has been added. This annex contains elements from IEC 60034-2:1972 and its amendment 1:1995. It also makes reference to IEC 60034-2A:1974. Both will be incorporated in the future IEC 60034-2-2.

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ROTATING ELECTRICAL MACHINES –

Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)

1 Scope

This part of IEC 60034 is intended to establish methods of determining efficiencies from tests, and also to specify methods of obtaining specific losses.

This standard applies to d.c. machines and to a.c. synchronous and induction machines of all sizes within the scope of IEC 60034-1.

NOTE These methods may be applied to other types of machines such as rotary converters, a.c. commutator motors and single-phase induction motors.

2 Normative references

The following referenced documents are indispensable for the application 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 60027-1, *Letter symbols to be used in electrical technology – Part 1: General*

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

IEC 60034-2A, *Rotating electrical machines – Part 2: Methods for determining losses and efficiency of rotating electrical machinery from tests (excluding machines for traction vehicles) – First supplement: Measurement of losses by the calorimetric method*

IEC 60034-4, *Rotating electrical machines – Part 4: Methods for determining synchronous machine quantities from tests*

IEC 60034-19, *Rotating electrical machines – Part 19: Specific test methods for d.c. machines on conventional and rectifier-fed supplies*

IEC 60044 (all parts), *Instrument transformers*

IEC 60051-1, *Direct acting indicating analogue electrical measuring instruments and their accessories – Part 1: Definitions and general requirements common to all parts*

IEC 61986, *Rotating electrical machines – Equivalent loading and super-position techniques – Indirect testing to determine temperature rise*

NOTE A revision of IEC 61986 is under consideration; it will be published under reference IEC 60034-29.