SLOVENSKI STANDARD
SIST EN 60034-1:2003/A2:2003

01-december-2003

Rotating electrical machines - Part 1: Rating and performance - Amendment A2 (IEC 60034-1:1996/A2:1999)

Rotating electrical machines -- Part 1: Rating and performance

Drehende elektrische Maschinen -- Teil 1: Bemessung und Betriebsverhalten

Machines électriques tournantes -- Partie 1: Caractéristiques assignées et caractéristiques de fonctionnement

Ta slovenski standard je istoveten z: **EN 60034-1:1998/A2:1999**

ICS:

29.160.01	Rotacijski stroji na splošno	Rotating machinery in general

SIST EN 60034-1:2003/A2:2003 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60034-1/A2

August 1999

ICS 29.160.01

English version

Rotating electrical machines
Part 1: Rating and performance
(IEC 60034-1:1996/A2:1999)

Machines électriques tournantes
Partie 1: Caractéristiques assignées
et caractéristiques de fonctionnement
(CEI 60034-1:1996/A2:1999)

Drehende elektrische Maschinen
Teil 1: Bemessung und Betriebsverhalten
(IEC 60034-1:1996/A2:1999)

This amendment A2 modifies the European Standard EN 60034-1:1998; it was approved by CENELEC on 1999-08-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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

Ref. No. EN 60034-1:1998/A2:1999 E

Foreword

The texts of documents 2/1031/FDIS, 2/1055/FDIS and 2/1056/FDIS, future amendment 2 to IEC 60034-1, prepared by IEC TC 2, Rotating machinery, were submitted to the IEC-CENELEC parallel vote and were approved by CENELEC as amendment A2 to EN 60034-1:1998 on 1999-08-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2000-05-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2002-08-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of amendment 2:1999 to the International Standard IEC 60034-1:1996 was approved by CENELEC as an amendment to the European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

Addition:

Publication	Year	Title	EN/HD	Year
IEC 60060-1 + corr. March	1989 1990	High-voltage test techniques Part 1: General definitions and test requirements	HD 588.1 S1	1991
IEC 61293	1994	Marking of electrical equipment with ratings related to electrical supply - Safety requirements	EN 61293	1994

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
60034-1

1996

AMENDEMENT 2
AMENDMENT 2
1999-05

Amendement 2

Machines électriques tournantes –

Partie 1: Caractéristiques assignées et caractéristiques de fonctionnement

Amendment 2

Rotating electrical machines –

Part 1: Rating and performance

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International Electrotechnical Commission
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CODE PRIX
PRICE CODE S

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FOREWORD

This amendment has been prepared by IEC technical committee 2: Rotating machinery.

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

FDIS	Reports on voting
2/1031/FDIS 2/1055/FDIS 2/1056/FDIS	2/1058/RVD 2/1070/RVD 2/1071/RVD

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

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Page 5

Replace the title of clause 8.1 by the following new title:

8.1 Withstand voltage test

Page 13

1.2 Normative references

Insert in the existing list the title of the following standards:

IEC 60060, *High-voltage test techniques*

IEC 60060-1:1989, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 61293:1994, *Marking of electrical equipment with ratings related to electrical supply – Safety requirements*

Page 15

2.1 rated value

Add the following note:

NOTE – The rated voltage or voltage range is the rated voltage or voltage range between lines at the terminals.

Page 19

2.25 thermal equilibrium

Add the following note:

NOTE – Thermal equilibrium may be determined from the time-temperature rise plot when the straight lines between points at the beginning and end of two successive reasonable intervals each have a gradient of less than 2 K per hour.

Page 21

3.2 Duty types

Delete the paragraph under this heading.

Page 27

4.1 Assignment of rating

Replace the second paragraph of this clause with the following new paragraph:

When accessory components (such as reactors, capacitors, etc.) are connected by the manufacturer as part of the machine, the rated values shall refer to the supply terminals of the whole arrangement.

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4.2.3 Rating for periodic duty

Replace the third paragraph of this subclause with the following new paragraph:

Unless otherwise specified, the duration of a duty cycle shall be 10 min and the cyclic duration factor shall be one of the following values:

15 %, 25 %, 40 %, 60 %.

Page 31

4.2.6 Rating for equivalent loading

Replace the text of this subclause with the following new text:

A rating, for test purposes, at which the machine may be operated at constant load until thermal equilibrium is reached and which results in the same stator winding temperature rise as at the end of the test on the specified duty type.

NOTE – The determination of an equivalent rating should take account of the varying load, speed and cooling of the duty cycle.

This class of rating, if applied, is designated 'equ'.

4.5.2 AC generators

Replace the second paragraph of this subclause with the following new paragraph:

The rated power factor for synchronous generators shall be 0,8 lagging (over-excited), unless otherwise specified by the purchaser.

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4.6 Rated voltage

4.6.1 General

Delete this subclause and renumber subclauses 4.6.2 and 4.6.3 as 4.6.1 and 4.6.2, respectively.

Page 37

6.1 Electrical supply

Delete the first paragraph.

Replace the second paragraph and note with the following new paragraph and note:

For three-phase a.c. machines, 50 Hz or 60 Hz, intended to be directly connected to distribution or utilisation systems, the rated voltages shall be derived from the nominal voltages given in IEC 60038.

NOTE – For large high-voltage a.c. machines, the voltages may be selected for optimum performance.

Page 41

6.2.4 DC motors supplied from static power converters

Delete the note of this subclause on page 43.

Page 45

6.4 Three-phase a.c. machines operating on unearthed systems

Replace the existing clause with the following new clause:

Three-phase a.c. machines shall be suitable for continuous operation with the neutral at or near earth potential. They shall also be suitable for operation on unearthed systems with one line at earth potential for infrequent periods of short duration, for example as required for normal fault clearance. If it is intended to run the machine continuously or for prolonged periods in this condition, a machine with a level of insulation suitable for this condition will be required.

If the winding does not have the same insulation at the line and neutral ends, this shall be stated by the manufacturer.

NOTE – The earthing or interconnection of the machine's neutral points should not be undertaken without consulting the machine manufacturer because of the danger of zero-sequence components of currents of all frequencies under some operating conditions and the risk of mechanical damage to the windings under line-to-neutral fault conditions.

Page 51

7.4 Temperature rise of a part of a machine

Replace the second and third paragraphs of this clause with the following text:

For comparison with the limits of temperature rise (see table 6 or 7) or of temperature (see table 11), when possible, the temperature shall be measured immediately before the machine is shut down at the end of the thermal test, as described in clause 7.7.

When this is not possible, e.g. when using the direct measurement of resistance method, see 7.6.2.3.

7.5.3 Thermometer method

Replace the existing subclause with the following new subclause:

The temperature is determined by thermometers applied to accessible surfaces of the completed machine. The term 'thermometer' includes not only bulb-thermometers, but also non-embedded thermocouples and resistance thermometers. When bulb-thermometers are used in places where there is a strong varying or moving magnetic field, alcohol thermometers shall be used in preference to mercury thermometers.

Page 53

7.6.1 Choice of method

Delete indent d) from the enumeration in the sixth paragraph.

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7.6.4 Determination by the thermometer method

Replace the existing subclause with the following new subclause:

When a non-embedded thermocouple or a resistance thermometer is used, it shall not be placed at a point inaccessible to a bulb thermometer.

All reasonable efforts, consistent with safety, shall be made to place thermometers at the point, or points where the highest temperatures are likely to occur (e.g. in the end windings close to the core iron) in such a manner that they are effectively protected against contact with the primary coolant and are in good thermal contact with the winding or other part of the machine.