SLOVENSKI STANDARD
SIST-TS CLC/TS 60034-17:2006

01-januar-2006

Električni rotacijski stroji - 17. del: Asinhronski motorji s kratkostično kletko, ki jih napajajo pretvorniki - Navodilo za uporabo (IEC/TS 60034-17:2002 + popravek 2002 in 2003)

Rotating electrical machines - Part 17: Cage induction motors when fed from converters - Application guide (IEC/TS 60034-17:2002 + popravek 2002 in 2003)

Drehende elektrische Maschinen - Teil 17: Umrichtergespeiste Induktionsmotoren mit Käfigläufern - Projektierungsleitfaden (IEC/TS 60034-17:2002 + popravek 2002 in 2003)

Machines électriques tournantes - Partie 17: Moteurs à induction à cage alimentés par convertisseurs - Guide d'application (CEI/TS 60034-17:2002 + popravek 2002 in 2003)

Ta slovenski standard je istoveten z: **CLC/TS 60034-17:2004**

ICS:

29.160.30 Motorji Motors

SIST-TS CLC/TS 60034-17:2006 **en**

TECHNICAL SPECIFICATION **CLC/TS 60034-17**

SPECIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION September 2004

ICS 29.160.30

English version

Rotating electrical machines
Part 17: Cage induction motors when fed from converters - Application guide
(IEC/TS 60034-17:2002 + corrigenda 2002 & 2003)

Machines électriques tournantes
Partie 17: Moteurs à induction à cage alimentés par convertisseurs - Guide d'application
(CEI/TS 60034-17:2002 + corrigenda 2002 & 2003)

Drehende elektrische Maschinen
Teil 17: Umrichtergespeiste Induktionsmotoren mit Käfigläufern - Projektierungsleitfaden
(IEC/TS 60034-17:2002 + Corrigenda 2002 & 2003)

This Technical Specification was approved by CENELEC on 2004-06-12.

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

Ref. No. CLC/TS 60034-17:2004 E

Foreword

The text of the Technical Specification IEC/TS 60034-17:2002 + corrigendum June 2002 + corrigendum April 2003, prepared by IEC TC 2, Rotating machinery, was submitted to the formal vote and was approved by CENELEC as CLC/TS 60034-17 on 2004-06-12 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) 2004-12-12

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the Technical Specification IEC/TS 60034-17:2002 + corrigendum June 2002 + corrigendum April 2003 was approved by CENELEC as a Technical Specification 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.

Publication	Year	Title	EN/HD	Year
IEC 60034-1 (mod)	1996	Rotating electrical machines	EN 60034-1	1998 [1)]
A1	1997	Part 1: Rating and performance	A1	1998
A2	1999		A2	1999
			+ A11	1999
IEC 60034-6	1991	Part 6: Methods of cooling (IC Code)	EN 60034-6	1993
IEC 60034-12 (mod)	1980	Part 12: Starting performance of single-		
+ A1	1992	speed three-phase cage induction motors	EN 60034-12	1995 [2)]
A2	1995	for voltages up to and including 690 V,	A2	1995
		50 Hz	+ A11	1999
IEC 60072	Series	Dimensions and output series for rotating electrical machines	-	-

[1)] EN 60034-1:1998 is superseded by EN 60034-1:2004, which is based on IEC 60034-1:2004.

[2)] EN 60034-2:1995 is superseded by EN 60034-12:2002, which is based on IEC 60034-12:2002.

SPÉCIFICATION TECHNIQUE

TECHNICAL SPECIFICATION

CEI
IEC

TS 60034-17

Quatrième édition
Fourth edition
2006-05

Machines électriques tournantes –

Partie 17: Moteurs à induction à cage alimentés par convertisseurs – Guide d'application

Rotating electrical machines –

Part 17: Cage induction motors when fed from converters – Application guide

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ROTATING ELECTRICAL MACHINES –

Part 17: Cage induction motors when fed from converters – Application guide

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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- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC 60034-17, which is a technical specification, has been prepared by IEC technical committee 2: Rotating machinery.

This fourth edition cancels and replaces the third edition published in 2002 and constitutes a technical revision.

The main changes with respect to the previous edition concern an adaptation of major parts to the latest developments of the technology. The relevant clauses are:

- Clause 4 with respect to different kinds of converters;
- Clause 5: improvement to cover the actual state of the art;
- Clause 7: inclusion of pulsating torques caused by ripples of the current in the intermediate circuit;
- Cause 8: complete revision;
- Clause 10: complete revision;
- Clause 11: totally new, installation was not covered by the previous editions.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
2/1348/DTS	2/1373/RVC

Full information on the voting for the approval of this technical specification 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.

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

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

The performance characteristics and operating data for drives with converter-fed cage induction motors are influenced by the complete drive system, comprising supply system, converter, induction motor, mechanical shafting and control equipment. Each of these components exists in numerous technical variations. Any values quoted in this technical specification are thus indicative only.

In view of the complex technical interrelations within the system and the variety of operating conditions, it is beyond the scope and object of this technical specification to specify numerical or limiting values for all the quantities which are of importance for the design of the drive.

To an increasing extent, it is practice that drives consist of components produced by different manufacturers. The object of this technical specification is to explain and quantify, as far as possible, the criteria for the selection of components and their influence on the performance characteristics of the drive.

The technical specification deals with motors within the scope of IEC 60034-12, i.e. low-voltage series-fabricated three-phase cage induction motors, which are designed originally for mains supply, covering the design N or design H requirements. Motors which are specifically designed for converter supply are covered by IEC 60034-25.

ROTATING ELECTRICAL MACHINES –

Part 17: Cage induction motors when fed from converters – Application guide

1 Scope

This technical specification deals with the steady-state operation of cage induction motors within the scope of IEC 60034-12, when fed from converters. It covers the operation over the whole speed setting range, but does not deal with starting or transient phenomena.

Only indirect type converters are dealt with. This type comprises converters with impressed direct current in the intermediate circuit (current source converters) and converters with impressed d.c. voltage (voltage source converters), either of the block type or the pulse controlled type, without restriction on pulse number, pulse width or switching frequency. For the purposes of this technical specification, a converter may include any type of electronic switching device, for example transistors (bipolar or MOSfet), IGBTs, thyristors, GTO-thyristors, etc. with analog or digital control electronics.

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

IEC 60034-12, *Rotating electrical machines – Part 12: Starting performance of single-speed three-phase cage induction motors*

IEC 60034-25, *Rotating electrical machines – Part 25: Guide for the design and performance of cage induction motors specifically designed for converter supply*

3 Characteristics of the motor

The output current of a current source converter passes through the stator winding of the motor during the commutating period. Therefore, a knowledge of the motor equivalent circuit is important for the design of the commutating circuits.

In the case of voltage source converters, a knowledge of the motor equivalent circuit is normally not important for the design of the commutating circuit, but the harmonic impedances of the motor greatly influence the losses caused by harmonics.