TECHNICAL SPECIFICATION

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Rotating electrical machines –

Part 25: Guidance for the design and performance of a.c. motors specifically designed for converter supply

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ROTATING ELECTRICAL MACHINES –

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FOREWORD

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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 60034-25, which is a technical specification, has been prepared by IEC technical committee 2: Rotating machinery.

This second edition cancels and replaces the first edition published in 2004.

This second edition contains the following significant technical changes with respect to the previous edition:

a) replacement of the original introduction by a shorter introduction;
b) extension of the scope to include all converter-fed motors, not just LV-induction motors;
c) minor changes throughout Clauses 4 to 9;
d) addition of subclauses 4.3.4, 4.3.5, 5.4, 6.2.1, 8.6.3, 8.7 and 8.8, and Figure 7;
e) inclusion of subclauses 4.4 and 4.5 in Annex A;
f) expansion of original Annex A which becomes Annex B;
g) re-drafting of Clause 5;
h) upgrading of 6.1.4 to 6.3;
i) removal of noise limits from normative text;
j) addition of reference to IEC 60034-9;
k) addition of Annex C.

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

Enquiry draft	Report on voting
2/1406/DTS	2/1420A/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- withdrawn,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.

A bilingual version of this technical specification may be issued at a later date.

INTRODUCTION

The performance characteristics and operating data for *converter*-fed motors are influenced by the complete drive system, comprising supply system, *converter*, cabling, motor, mechanical shafting and control equipment. Each of these components exists in numerous technical variants. 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 system.

To an increasing extent, it is practice that drive systems consist of components produced by different manufacturers. The object of this technical specification is to explain, as far as possible, the influence of these components on the design of the motor and its performance characteristics.

This technical specification deals with a.c. motors which are specifically designed for *converter* supply. *Converter*-fed motors within the scope of IEC 60034-12, which are designed originally for mains supply, are covered by IEC 60034-17.

Clauses 5 to 9 of this technical specification consider mainly the requirements for low voltage induction motors fed from voltage-source *converters* (U-*converters)*. Clauses 10 to 16 provide additional information for other configurations.

ROTATING ELECTRICAL MACHINES –

Part 25: Guidance for the design and performance of a.c. motors specifically designed for converter supply

1 Scope

This part of IEC 60034 describes the design features and performance characteristics of a.c. motors specifically designed for use on *converter* supplies. It also specifies the interface parameters and interactions between the motor and the *converter* including installation guidance as part of a *power drive system*.

The general requirements of relevant parts of the IEC 60034 series of standards also apply to motors within the scope of this technical specification.

NOTE 1 For motors operating in potentially explosive atmospheres, additional requirements as described in the IEC 60079 series apply.

NOTE 2 This technical specification is not primarily concerned with safety. However, some of its recommendations may have implications for safety, which should be considered as necessary.

NOTE 3 Where a *converter* manufacturer provides specific installation recommendations, they should take precedence over the recommendations of this technical specification.

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 60034-2, *Rotating electrical machines – Part 2: Methods for determining losses and efficiency of rotating electrical machinery from tests (excluding machines for traction vehicles)*

IEC 60034-6, *Rotating electrical machines – Part 6: Methods of cooling (IC Code)*

IEC 60034-9, *Rotating electrical machines – Part 9: Noise limits*

IEC 60034-14, *Rotating electrical machines – Part 14: Mechanical vibration of certain machines with shaft heights 56 mm and higher – Measurement, evaluation and limits of vibration severity*

IEC 60034-17:2006, *Rotating electrical machines – Part 17: Cage induction motors when fed from converters – Application guide*

IEC 61000-5-1, *Electromagnetic compatibility (EMC) – Part 5: Installation and mitigation guidelines – Section 1: General considerations – Basic EMC publication*

IEC 61000-5-2, *Electromagnetic compatibility (EMC) – Part 5: Installation and mitigation guidelines – Section 2: Earthing and cabling*

IEC 61800-2, *Adjustable speed electrical power drive systems – Part 2: General requirements – Rating specifications for low voltage adjustable frequency a.c. power drive systems*

IEC 61800-3, *Adjustable speed electrical power drive systems – Part 3: EMC product standard including specific test methods*

IEC 61800-5-1, *Adjustable speed electrical power drive systems – Part 5-1: Safety requirements – Electrical, thermal and energy*

IEC 61800-5-2, *Adjustable speed electrical power drive systems – Part 5-2: Safety requirements – Functional*[1]

[1] To be published.