



SLOVENSKI STANDARD
SIST EN IEC 60034-2-2:2024

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Električni rotacijski stroji - 2-2. del: Posebne metode za ugotavljanje posameznih izgub pri velikih strojev s preskušanjem - Dodatek k IEC 60034-2-1 (IEC 60034-2-2:2024)

Rotating electrical machines - Part 2-2: Specific methods for determining separate losses of large machines from tests - Supplement to IEC 60034-2-1 (IEC 60034-2-2:2024)

Drehende elektrische Maschinen - Teil 2-2: Besondere Verfahren zur Bestimmung der Einzelverluste großer elektrischer Maschinen aus Prüfungen - Ergänzung zu IEC 60034-2-1 (IEC 60034-2-2:2024)

Machines électriques tournantes - Partie 2-2: Méthodes spécifiques pour déterminer les pertes séparées des machines de grande taille à partir d'essais - Complément à l'IEC 60034-2-1 (IEC 60034-2-2:2024)

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29.160.01 Rotacijski stroji na splošno Rotating machinery in general

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Rotating electrical machines - Part 2-2: Specific methods for
determining separate losses of large machines from tests -
Supplement to IEC 60034-2-1
(IEC 60034-2-2:2024)

Machines électriques tournantes - Partie 2-2: Méthodes
spécifiques pour déterminer les pertes séparées des
machines de grande taille à partir d'essais - Complément à
l'IEC 60034-2-1
(IEC 60034-2-2:2024)

Drehende elektrische Maschinen - Teil 2-2: Besondere
Verfahren zur Bestimmung der Einzelverluste großer
elektrischer Maschinen aus Prüfungen - Ergänzung zu IEC
60034-2-1
(IEC 60034-2-2:2024)

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

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EN IEC 60034-2-2:2024 (E)

European foreword

The text of document 2/2157/FDIS, future edition 2 of IEC 60034-2-2, prepared by IEC/TC 2 "Rotating machinery" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60034-2-2:2024.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2025-01-16
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2027-04-16

This document supersedes EN 60034-2-2:2010 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

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In the official version, for Bibliography, the following note has to be added for the standard indicated:

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IEC 60034-4-1:2018 NOTE Approved as EN IEC 60034-4-1:2018 (not modified)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|--|--------------|-------------|
| IEC 60034-1 | - | Rotating electrical machines - Part 1: Rating and performance | EN 60034-1 | - |
| IEC 60034-2-1 | - | Rotating electrical machines - Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles) | EN 60034-2-1 | - |

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IEC 60034-2-2

Edition 2.0 2024-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Rotating electrical machines –
Part 2-2: Specific methods for determining separate losses of large machines
from tests – Supplement to IEC 60034-2-1**

**Machines électriques tournantes –
Partie 2-2: Méthodes spécifiques pour déterminer les pertes séparées des
machines de grande taille à partir d'essais – Complément à l'IEC 60034-2-1**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ROTATING ELECTRICAL MACHINES –**Part 2-2: Specific methods for determining
separate losses of large machines from tests –
Supplement to IEC 60034-2-1**

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

This second edition cancels and replaces the first edition published in 2010. This edition constitutes a technical revision.

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

- a) Layout and procedures aligned with IEC 60034-2-1 and IEC 60034-2-3.
- b) Annex A added: an informative procedure for the summation of losses for large permanent-magnet excited synchronous machines.

The text of this International Standard is based on the following documents:

| Draft | Report on voting |
|-------------|------------------|
| 2/2157/FDIS | 2/2178/RVD |

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

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ROTATING ELECTRICAL MACHINES –

Part 2-2: Specific methods for determining separate losses of large machines from tests – Supplement to IEC 60034-2-1

1 Scope

This part of IEC 60034 applies to large rotating electrical machines and establishes additional methods of determining separate losses and to define an efficiency supplementing IEC 60034-2-1. These methods apply when full-load testing is not practical and results in a greater uncertainty.

NOTE In situ testing according to the calorimetric method for full-load conditions is recognized.

The specific methods described are:

- Calibrated-machine method.
- Retardation method.
- Calorimetric method.
- Summation of losses for permanent magnet excited synchronous machines.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60034-2-1, *Rotating electrical machines – Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60034-1 and IEC 60034-2-1 apply, as well as the following.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

calibrated machine

machine whose mechanical power input/output is determined, with low uncertainty, using measured electrical output/input values according to a defined test procedure