

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Rotating electrical machines –  
Part 1: Rating and performance**

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



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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

ICS 29.160.01

ISBN 978-2-8322-4210-0

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## ROTATING ELECTRICAL MACHINES –

## Part 1: Rating and performance

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

This thirteenth edition cancels and replaces the twelfth edition published in 2010. It constitutes a technical revision.

The main technical changes with regard to the previous edition are as follows:

Clause or subclause	Change
3.25	Shorter time to thermal equilibrium
5.5.2	Note on P-Q capability diagram for synchronous generators
6.4	Clarification added that other conditions can be agreed on
6.6	Clarification added that standstill is explicitly included; note added
7.1	Clarification on bus transfer or fast reclosing
	Capability to withstand impulse voltages in case of machines connected to a U converter
7.2.4	New Table 3 for identification code
7.3	Table 4 corrected to reflect current scope of IEC 60034-3
7.5	Voltage withstand level for machines connected to a converter
8.3.4	Measurement of ambient air temperature in case of open machines
8.6.3.4	Notes on ETD in the end windings of high voltage machines and on ETD use to monitor strand blockage in case of directly liquid cooled windings
8.10	Clarification on temperature limit
	Clarification on temperature difference between method R and method ETD
	Clarification that temperature limit acc. to method R must always be kept
	Note on measured temperature limits between methods R and ETD
	Table 8 and Table 11 extended incorporating thermal class 200 (N)
	Line 4c) of Table 8 restricted to field windings of DC machines
	Temperature limits in Table 8 changed according to 2/1737/DC and the comments received on this document
	Physically correct formula in Table 10, item 1b
9.1	Clarification on machines that are subject to routine testing
9.2	Separate withstand voltage testing of phases
	Clarification on frequency and time instant for withstand voltage test
	Note on leakage current during withstand voltage test
	Note referring to IEC 60027
10.2	Information on IVIC on rating plate or in documentation
	Clarification added to item f
	IC code and design letter for locked-rotor apparent power on rating plate
11.1	Clarification on cross-sectional area of earthing conductor for generators
	Note on grounding for small machines added
12.2	Tolerance on field current of synchronous machines added
	Tolerance on power factor applies also for PM synchronous machines operated directly at the lines
	Contradiction between tolerances on efficiency and on losses clarified
13.1	Changed as proposed by ACEC
	Note for large generators added
13.3	Changed as proposed by ACEC
13.5	Changed as proposed by ACEC
Annex B	DC power supply added

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

FDIS	Report on voting
2/1857/FDIS	2/1863/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.

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