

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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**Rotating electrical machines –  
Part 2-1: Standard methods for determining losses and efficiency from tests  
(excluding machines for traction vehicles)**

**Machines électriques tournantes –  
Partie 2-1: Méthodes normalisées pour la détermination des pertes et du  
rendement à partir d'essais (à l'exclusion des machines pour véhicules de  
traction)**



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INTERNATIONAL  
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COMMISSION

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## CONTENTS

FOREWORD.....	5
1 Scope.....	7
2 Normative references .....	7
3 Terms and definitions .....	8
4 Symbols and abbreviated terms.....	13
4.1 Symbols.....	13
4.2 Additional subscripts.....	14
5 Basic requirements.....	15
5.1 Direct and indirect efficiency determination.....	15
5.2 Uncertainty .....	15
5.3 Preferred methods and methods for customer-specific acceptance tests, field-tests or routine-tests .....	15
5.4 Power supply .....	16
5.4.1 Voltage.....	16
5.4.2 Frequency .....	16
5.5 Instrumentation.....	16
5.5.1 General .....	16
5.5.2 Measuring instruments for electrical quantities .....	16
5.5.3 Torque measurement.....	16
5.5.4 Speed and frequency measurement.....	17
5.5.5 Temperature measurement.....	17
5.6 Units.....	17
5.7 Resistance.....	17
5.7.1 Test resistance.....	17
5.7.2 Winding temperature .....	18
5.7.3 Correction to reference coolant temperature .....	18
5.8 State of the machine under test and test categories.....	19
5.9 Excitation circuit measurements.....	20
5.10 Ambient temperature during testing .....	20
6 Test methods for the determination of the efficiency of induction machines .....	20
6.1 Preferred testing methods.....	20
6.1.1 General .....	20
6.1.2 Method 2-1-1A – Direct measurement of input and output.....	21
6.1.3 Method 2-1-1B – Summation of losses, additional load losses according to the method of residual loss .....	23
6.1.4 Method 2-1-1C – Summation of losses with additional load losses from assigned allowance .....	31
6.2 Testing methods for field or routine-testing .....	35
6.2.1 General .....	35
6.2.2 Method 2-1-1D – Dual supply back-to-back-test.....	36
6.2.3 Method 2-1-1E – Single supply back-to-back-test .....	37
6.2.4 Method 2-1-1F – Summation of losses with additional load losses determined by test with rotor removed and reverse rotation test .....	38
6.2.5 Method 2-1-1G – Summation of losses with additional load losses determined by Eh-star method .....	42
6.2.6 Method 2-1-1H – Determination of efficiency by use of the equivalent circuit parameters.....	46
7 Test methods for the determination of the efficiency of synchronous machines.....	52

7.1	Preferred testing methods .....	52
7.1.1	General .....	52
7.1.2	Method 2-1-2A – Direct measurement of input and output.....	53
7.1.3	Method 2-1-2B – Summation of separate losses with a rated load temperature test and a short circuit test.....	54
7.1.4	Method 2-1-2C – Summation of separate losses without a full load test .....	60
7.2	Testing methods for field or routine testing .....	62
7.2.1	General .....	62
7.2.2	Method 2-1-2D – Dual supply back-to-back-test.....	62
7.2.3	Method 2-1-2E – Single supply back-to-back-test .....	63
7.2.4	Method 2-1-2F – Zero power factor test with excitation current from Potier-, ASA- or Swedish-diagram .....	65
7.2.5	Method 2-1-2G – Summation of separate losses with a load test without consideration of additional load losses .....	69
8	Test methods for the determination of the efficiency of DC machines .....	70
8.1	Testing methods for field or routine testing .....	70
8.2	Method 2-1-3A – Direct measurement of input and output.....	71
8.2.1	General .....	71
8.2.2	Test procedure .....	72
8.2.3	Efficiency determination.....	72
8.3	Method 2-1-3B – Summation of losses with a load test and DC component of additional load losses from test.....	73
8.3.1	General .....	73
8.3.2	Test procedure .....	74
8.4	Method 2-1-3C – Summation of losses with a load test and DC component of additional load losses from assigned value .....	80
8.4.1	General .....	80
8.4.2	Test procedure .....	81
8.4.3	Efficiency determination.....	82
8.5	Method 2-1-3D – Summation of losses without a load test .....	83
8.5.1	General .....	83
8.5.2	Test procedure .....	84
8.5.3	Efficiency determination.....	85
8.6	Method 2-1-3E – Single supply back-to-back test.....	86
8.6.1	General .....	86
8.6.2	Test procedure .....	86
8.6.3	Efficiency determination.....	87
	Annex A (normative) Calculation of values for the Eh-star method .....	88
	Annex B (informative) Types of excitation systems .....	91
	Annex C (informative) Induction machine slip measurement.....	92
	Annex D (informative) Test report template for method 2-1-1B.....	94
	Bibliography.....	95
	Figure 1 – Torque measuring devices .....	17
	Figure 2 – Sketch for torque measurement test.....	21
	Figure 3 – Efficiency determination according to method 2-1-1A .....	22
	Figure 4 – Efficiency determination according to method 2-1-1B .....	24
	Figure 5 – Smoothing of the residual loss data.....	30

Figure 6 – Efficiency determination according to method 2-1-1C .....	32
Figure 7 – Vector diagram for obtaining current vector from reduced voltage test .....	33
Figure 8 – Assigned allowance for additional load losses $P_{LL}$ .....	34
Figure 9 – Efficiency determination according to method 2-1-1D .....	36
Figure 10 – Sketch for dual supply back-to-back test .....	36
Figure 11 – Efficiency determination according to method 2-1-1E .....	37
Figure 12 – Efficiency determination according to method 2-1-1F .....	39
Figure 13 – Efficiency determination according to method 2-1-1G .....	43
Figure 14 – Eh-star test circuit .....	44
Figure 15 – Induction machine, T-model with equivalent iron loss resistor .....	46
Figure 16 – Efficiency determination according to method 2-1-1H .....	47
Figure 17 – Induction machines, reduced model for calculation .....	50
Figure 18 – Sketch for torque measurement test .....	53
Figure 19 – Efficiency determination according to method 2-1-2A .....	53
Figure 20 – Efficiency determination according to method 2-1-2B .....	55
Figure 21 – Efficiency determination according to method 2-1-2C .....	61
Figure 22 – Efficiency determination according to method 2-1-2D .....	62
Figure 23 – Sketch for dual supply back-to-back test ( $I_M = I_G, f_M = f_G$ ) .....	63
Figure 24 – Efficiency determination according to method 2-1-2E .....	64
Figure 25 – Single supply back-to-back test for synchronous machines .....	64
Figure 26 – Efficiency determination according to method 2-1-2F .....	65
Figure 27 – Efficiency determination according to method 2-1-2G .....	70
Figure 28 – Sketch for torque measurement test .....	71
Figure 29 – Efficiency determination according to method 2-1-3A .....	72
Figure 30 – Efficiency determination according to method 2-1-3B .....	74
Figure 31 – Sketch for single supply back-to-back test for determination of DC component of additional load losses .....	78
Figure 32 – Efficiency determination according to method 2-1-3C .....	81
Figure 33 – Efficiency determination according to method 2-1-3D .....	84
Figure 34 – Efficiency determination according to method 2-1-3E .....	86
Figure 35 – Sketch for single supply back-to-back test .....	86
Figure C.1 – Slip measurement system block diagram .....	93
Table 1 – Reference temperature .....	18
Table 2 – Induction machines: preferred testing methods .....	21
Table 3 – Induction machines: other methods .....	36
Table 4 – Synchronous machines with electrical excitation: preferred testing methods .....	52
Table 5 – Synchronous machines with permanent magnets: preferred testing methods .....	52
Table 6 – Synchronous machines: other methods .....	62
Table 7 – DC machines: test methods .....	71
Table 8 – Multiplying factors for different speed ratios .....	82

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**ROTATING ELECTRICAL MACHINES –****Part 2-1: Standard methods for determining losses and efficiency  
from tests (excluding machines for traction vehicles)**

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

This third edition cancels and replaces the second edition of IEC 60034-2-1 published in 2014. This edition constitutes a technical revision.

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

Harmonization of layout and requirements with IEC 60034-2-2 and IEC 60034-2-3.

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

Draft	Report on voting
2/2165/FDIS	2/2177/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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://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.

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- reconfirmed,
- withdrawn, or
- revised.

## ROTATING ELECTRICAL MACHINES –

### Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)

#### 1 Scope

This part of IEC 60034 is intended to establish methods of determining efficiencies from tests, and also to specify methods of obtaining specific losses.

This document applies to DC machines and to AC synchronous and induction machines of all sizes within the scope of IEC 60034-1 rated for mains operation.

NOTE These methods may be applied to other types of machines such as rotary converters, AC commutator motors and single-phase induction motors.

#### 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 60027-1, *Letter symbols to be used in electrical technology – Part 1: General*

IEC 60034-1:2022, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60034-4-1:2018, *Rotating electrical machines – Part 4-1: Methods for determining electrically excited synchronous machine quantities from tests*

IEC 60034-19, *Rotating electrical machines – Part 19: Specific test methods for DC machines on conventional and rectifier-fed supplies*

IEC 60034-29, *Rotating electrical machines – Part 29: Equivalent loading and superposition techniques – Indirect testing to determine temperature rise*

IEC 60034-30-1, *Rotating electrical machines – Part 30-1: Efficiency classes of line operated AC motors (IE code)*

IEC 60051(all parts), *Direct acting indicating analogue electrical measuring instruments and their accessories*

IEC 60051-1, *Direct acting indicating analogue electrical measuring instruments and their accessories – Part 1: Definitions and general requirements common to all parts*