



# SLOVENSKI STANDARD

## SIST EN 61377:2016

01-julij-2016

Nadomešča:

SIST EN 61377-1:2006

SIST EN 61377-2:2003

SIST EN 61377-3:2003

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**Železniške naprave - Vozna sredstva - Kombinirano preskušanje motorjev in njihovega krmiljenja**

Railway applications - Rolling stock - Combined-testing of motors and their control system

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**ICS:**

29.160.30	Motorji	Motors
45.060.01	Železniška vozila na splošno	Railway rolling stock in general

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EUROPEAN STANDARD

**EN 61377**

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2016

ICS 45.060

Supersedes EN 61377-1:2006, EN 61377-2:2002,  
EN 61377-3:2002

English Version

## Railway applications - Rolling stock - Combined test method for traction Systems (IEC 61377:2016)

Applications ferroviaires - Matériel roulant - Méthode  
d'essais combinés pour systèmes de traction  
(IEC 61377:2016)

Bahnanwendungen - Bahnfahrzeuge - Kombiniertes  
Prüfverfahren für Traktionssysteme  
(IEC 61377:2016)

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[SIST EN 61377:2016](#)

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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

**EN 61377:2016****European foreword**

The text of document 9/2078/FDIS, future edition 2 of IEC 61377, prepared by IEC/TC 9 "Electrical equipment and systems for railways" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61377:2016.

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) 2016-11-23
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2019-02-23

This document supersedes EN 61377-1:2006, EN 61377-2:2002 and EN 61377-3:2002.

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60077-3	NOTE	Harmonized as EN 60077-3.
IEC 60077-4	NOTE	Harmonized as EN 60077-4.
IEC 60310	NOTE	Harmonized as EN 60310.
IEC 60322	NOTE	Harmonized as EN 60322.
ISO 14253-2	NOTE	Harmonized as EN ISO 14253-2.
ISO/IEC 17025	NOTE	Harmonized as EN ISO/IEC 17025.

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When 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.cenelec.eu](http://www.cenelec.eu)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050	Series	International Electrotechnical Vocabulary	-	-
IEC 60349-1	-	Electric traction - Rotating electrical machines for rail and road vehicles - Part 1: Machines other than electronic converter-fed alternating current motors	EN 60349-1	-
IEC 60349-2	-	Electric traction - Rotating electrical machines for rail and road vehicles - Part 2: Electronic converter-fed alternating current motors	EN 60349-2	-
IEC/TS 60349-3	-	Electric traction - Rotating electrical machines for rail and road vehicles - Part 3: Determination of the total losses of converter-fed alternating current motors by summation of the component losses	-	-
IEC 60349-4	-	Electric traction - Rotating electrical machines for rail and road vehicles - Part 4: Permanent magnet synchronous electrical machines connected to an electronic converter	EN 60349-4	-
IEC 60850	-	Railway applications - Supply voltages of traction systems	-	-
IEC 61133	-	Railway applications - Rolling stock - Testing of rolling stock on completion of construction and before entry into service	-	-
IEC 61287-1	-	Railway applications - Power converters installed on board rolling stock - Part 1: Characteristics and test methods	EN 61287-1	-
IEC 62313	-	Railway applications - Power supply and rolling stock - Technical criteria for the coordination between power supply (substation) and rolling stock	-	-

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IEC 61377

Edition 2.0 2016-01

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Railway applications – Rolling stock – Combined test method for traction systems**

(standards.iteh.ai)

**Applications ferroviaires – Matériel roulant – Méthode d'essais combinés pour systèmes de traction**

INTERNATIONAL  
ELECTROTECHNICAL  
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## CONTENTS

FOREWORD .....	6
1 Scope .....	8
2 Normative references .....	10
3 Terms and definitions .....	10
4 Traction system characteristics .....	12
5 General test requirements .....	13
6 General test conditions .....	14
6.1 Test setup .....	14
6.1.1 Setup of traction system under test .....	14
6.1.2 Test bench architecture .....	15
6.2 Cooling during the test .....	17
6.3 Mechanical output measurement .....	18
6.3.1 General .....	18
6.3.2 Summation of losses method .....	18
6.3.3 Comparison of power method .....	19
6.3.4 Comparison of current method .....	20
6.3.5 Back to back method .....	21
6.4 Tolerances and measuring accuracy .....	21
6.5 Environmental conditions .....	21
7 Torque characteristic test .....	22
7.1 General .....	22
7.2 Torque characteristics test at motor hot .....	22
7.2.1 Test objective .....	22
7.2.2 Test conditions .....	22
7.2.3 Test procedure .....	23
7.2.4 Acceptance criteria .....	23
7.3 Torque characteristics test at motor cold .....	23
7.3.1 Test objective .....	23
7.3.2 Test conditions .....	23
7.3.3 Test procedure .....	24
7.3.4 Acceptance criteria .....	24
7.4 Starting torque at zero speed .....	24
7.4.1 Test objective .....	24
7.4.2 Test conditions .....	24
7.4.3 Test procedure .....	24
7.4.4 Acceptance criteria .....	24
8 Efficiency and energy consumption test .....	24
8.1 General .....	24
8.2 Efficiency characteristics .....	25
8.2.1 Test objective .....	25
8.2.2 Test conditions .....	25
8.2.3 Test procedure .....	25
8.2.4 Acceptance criteria .....	25
8.3 Energy consumption on route profile .....	26
8.3.1 Test objective .....	26



8.3.2	Test conditions .....	26
8.3.3	Test procedure .....	26
8.3.4	Acceptance criteria .....	26
9	Temperature rise test .....	27
9.1	General.....	27
9.2	Temperature rise test at constant load .....	27
9.2.1	Test objective .....	27
9.2.2	Test conditions .....	27
9.2.3	Test procedure .....	27
9.2.4	Acceptance criteria .....	28
9.3	Temperature rise on route profile .....	28
9.3.1	Test objective .....	28
9.3.2	Test conditions .....	28
9.3.3	Test procedure .....	28
9.3.4	Acceptance criteria .....	28
9.4	Test with wheel diameter differences for paralleled asynchronous motors .....	29
9.4.1	General .....	29
9.4.2	Test objective .....	29
9.4.3	Test conditions .....	29
9.4.4	Test procedure .....	30
10	System function test .....	31
10.1	Start from backward/reverse motion .....	31
10.1.1	Test objective .....	31
10.1.2	Test conditions .....	31
10.1.3	Test procedure .....	31
10.1.4	Acceptance criteria .....	31
10.2	Motoring-braking transition.....	31
10.2.1	Test objective .....	31
10.2.2	Test conditions .....	31
10.2.3	Test procedure .....	32
10.2.4	Acceptance criteria .....	32
11	Variation of line voltage .....	32
11.1	Test objective .....	32
11.2	Test conditions .....	32
11.3	Test procedure.....	33
11.4	Acceptance criteria .....	34
12	System protection test .....	34
12.1	General.....	34
12.2	Rapid voltage changes test.....	34
12.2.1	Test objective .....	34
12.2.2	Test conditions .....	34
12.2.3	Test procedure .....	35
12.2.4	Acceptance criteria .....	36
12.3	Traction supply voltage interruption .....	36
12.3.1	Test objective .....	36
12.3.2	Test conditions .....	36
12.3.3	Test procedure .....	36
12.3.4	Acceptance criteria .....	36

12.4	Traction supply contact loss .....	36
12.4.1	Test objective .....	36
12.4.2	Test conditions .....	36
12.4.3	Test procedure .....	37
12.4.4	Acceptance criteria .....	37
12.5	Sudden loss of regeneration capability .....	37
12.5.1	Test objective .....	37
12.5.2	Test conditions .....	37
12.5.3	Test procedure .....	38
12.5.4	Acceptance criteria .....	38
12.6	Traction inverter stop .....	38
12.6.1	Test objective .....	38
12.6.2	Test conditions .....	38
12.6.3	Test procedure .....	38
12.6.4	Acceptance criteria .....	38
12.7	Temperature calculation functions .....	39
12.7.1	General .....	39
12.7.2	Test objective .....	39
12.7.3	Test conditions .....	39
12.7.4	Test procedure .....	39
12.7.5	Acceptance criteria .....	39
12.8	Over-current and over-voltage protection .....	39
12.9	Control battery supply interruption .....	39
12.9.1	Test objective .....	39
12.9.2	Test conditions .....	39
12.9.3	Test procedure .....	39
12.9.4	Acceptance criteria .....	40
13	Fault management test .....	40
13.1	General .....	40
13.2	Loss of sensor function .....	40
13.3	Loss of command and feedback signals .....	40
13.4	Fault in cooling systems .....	40
13.5	Earth and short-circuit faults .....	41
Annex A	(normative) List of combined tests .....	42
Annex B	(informative) List of clauses with agreements between the user and manufacturer .....	43
Annex C	(normative) Special test items and conditions for DC motors .....	44
C.1	General .....	44
C.2	Test bench architecture .....	44
C.2.1	Test setup .....	44
C.2.2	Load system .....	44
C.3	Commutation test .....	45
Bibliography	.....	46
Figure 1	– Overview of traction system architecture .....	8
Figure 2	– Example of relationship between the “traction system under test” and the “traction system” .....	9
Figure 3	– Traction system – relationship between user, suppliers and manufacturer .....	11

Figure 4 – Example of peak temperatures on route profile .....	13
Figure 5 – Example of test bench architecture with speed controlled load system .....	15
Figure 6 – Example of test bench architecture with back to back method .....	16
Figure 7 – Examples of simulating auxiliary load and traction load power supply .....	17
Figure 8 – Example of measurement using summation of losses method .....	18
Figure 9 – Example of measurement using comparison of power method.....	20
Figure 10 – Example of measurement using comparison of current method .....	21
Figure 11 – Example of measurement using back to back method.....	21
Figure 12 – Torque characteristics of a traction system .....	23
Figure 13 – Effect of wheel diameter mismatch on the torque characteristic of asynchronous motor .....	29
Figure 14 – Test conditions for motoring-braking transition .....	32
Figure 15 – Test conditions in traction system range of voltage .....	33
Figure 16 – Test conditions for variation of the voltage .....	33
Figure 17 – Rapid voltage change with DC line voltage.....	35
Figure 18 – Rapid voltage change with AC line voltage.....	35
Figure 19 – Example of method to create a rapid voltage change .....	36
Figure 20 – Example of method to simulate the traction supply contact loss.....	37
Figure 21 – Example of method to create loss of regenerative capability.....	38
Figure C.1 – Example of braking configuration for a traction system under test with separately excited DC motor .....	44
Figure C.2 – Test bench arrangement for back to back test of the traction system under test with a DC motor .....	45
Table A.1 – List of combined tests .....	42
Table B.1 – List of subclauses including agreements between the user and manufacturer .....	43

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**RAILWAY APPLICATIONS – ROLLING STOCK –  
COMBINED TEST METHOD FOR TRACTION SYSTEMS****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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International Standard IEC 61377 has been prepared by IEC technical committee 9: Electrical equipment and systems for railways.

This edition cancels and replaces IEC 61377-1 (2006), IEC 61377-2 (2002) and IEC 61377-3 (2002). It constitutes a technical revision.

This edition includes the following main technical changes with regard to the previous editions: it includes updates as necessary in order to meet the current technical state of the art, to improve clarity and to create an edition that considers all types of motors part of a traction system.

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

FDIS	Report on voting
9/2078/FDIS	9/2113/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.

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 stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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## RAILWAY APPLICATIONS – ROLLING STOCK – COMBINED TEST METHOD FOR TRACTION SYSTEMS

### 1 Scope

This International Standard applies to the traction system consisting (when it applies) of traction motor(s), converter(s), traction control equipment including software, transformer, input filters, brake resistors, main circuit-breaker, cooling equipment, transducers, contactors, etc.

Figure 1 is just an overview and is not representative of all traction system architectures.

Current collector, mechanical braking systems and gearbox are not in the scope of this standard.

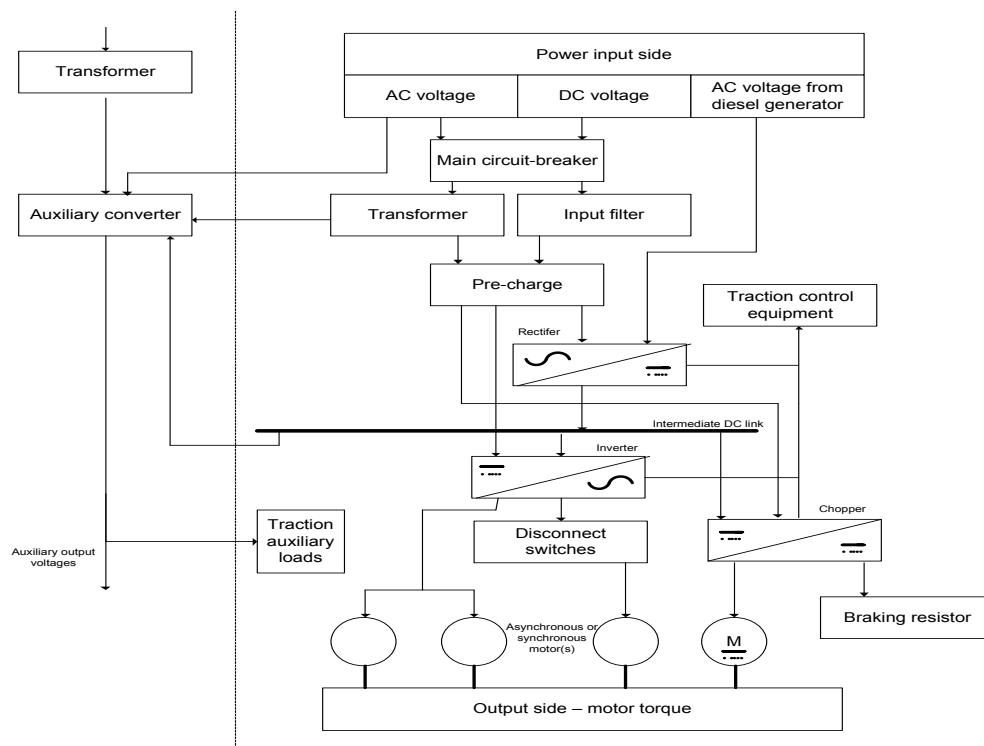
Types of motors applicable in this standard are asynchronous, or synchronous including permanent magnet (PMM), or direct current (DC).

The auxiliary converter(s) is (are) part of the scope when the auxiliary converter is enclosed within the traction converter. Otherwise, when the traction system feeds an auxiliary system outside the traction converter, the auxiliary system can be replaced by an equivalent load.

NOTE 1 Energy storage system is not considered in this standard since there is no specific type test standard for energy storage system.

NOTE 2 Auxiliary loads validation is not part of this standard.  
<https://standards.iteh.ai/catalog/standards/sist/ce74e3fd-d122-484a-bda4-t3208f51b/iec-61377-2016>

NOTE 3 The gearbox can be part of test set-up, but it is not a part of traction system.



IEC

Figure 1 – Overview of traction system architecture

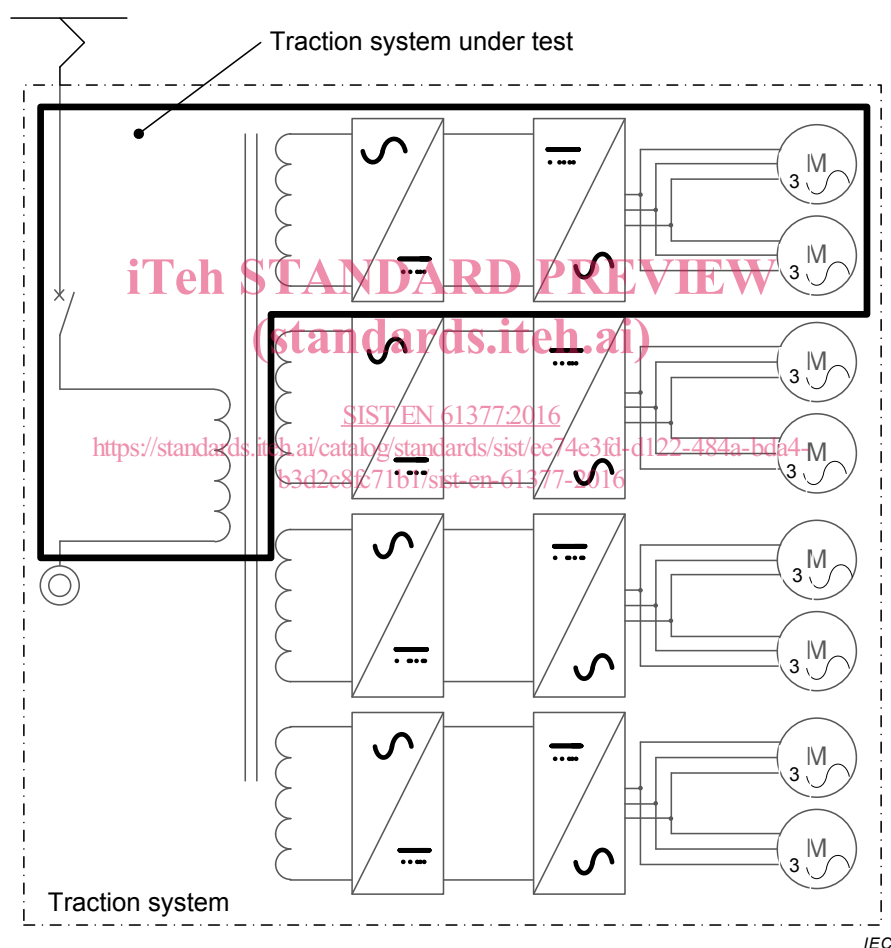
The objective of this standard is to specify the type test of a traction system, mainly comprising of:

- test of performance characteristics;
- test methods of verifying these performance characteristics.

This standard does not specify the type test of each individual component.

The traction system under test incorporates at least one complete traction conversion line (at least one traction converter and its related loads, one transformer in the case of AC supply or input filter in the case of DC supply). The representativeness of the traction system under test versus the actual traction system is agreed between the user and manufacturer.

Figure 2 gives one example of the relationship between the traction system under test and the whole traction system.



**Figure 2 – Example of relationship between the “traction system under test” and the “traction system”**

The traction system under test is equipped with components that are representative of the production series.

Deviations may be permitted by agreement between user and manufacturer, and are justified from an impact stand point in advance of the test. Using equivalent components or parts is permitted if no significant influence on the test result is expected.