



SLOVENSKI STANDARD
oSIST prEN IEC 63341-2:2024
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**Železniške naprave - Vozna sredstva - Sistemi gorivnih celic za vozna sredstva - 2.
del: Sistem za shranjevanje vodika**

Railway applications - Rolling stock - Fuel cell systems for propulsion - Part 2: Hydrogen storage system

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SECRETARIAT: France	SECRETARY: Mr Denis MIGLIANICO
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 105	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
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<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING

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TITLE:

Railway applications – Hydrogen and fuel cell systems for rolling stock – Part 2: Hydrogen fuel system

PROPOSED STABILITY DATE: 2028

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CONTENTS

FOREWORD.....	7
INTRODUCTION.....	9
1 Scope.....	11
2 Normative references	11
3 Terms, definitions and abbreviated terms	14
3.1 Terms and definitions.....	14
3.2 Abbreviations.....	21
4 Hydrogen fuel system description	23
4.1 Overview.....	23
4.2 Compressed hydrogen storage system module (CHSS module)	24
4.3 Hydrogen handling system (HHS)	24
4.4 On-board refuelling interface.....	25
4.5 Fuel, purge and vent lines.....	25
4.6 Monitoring and Control System (MCS)	25
4.7 Safety monitoring devices (optional)	26
5 Environmental requirements	26
5.1 General.....	26
5.2 Ambient air temperature.....	26
5.3 Humidity	26
5.4 Altitude	26
5.5 Air movement, rain, snow, hail and solar radiation	27
5.6 Atmosphere corrosivity & pollution degree	27
5.7 Other constraints from the environment	27
6 Interface requirements.....	27
6.1 General.....	27
6.2 Fluidic hydrogen interfaces	27
6.2.1 Hydrogen supply from HHS to FCPS.....	27
6.2.2 Fluidic interface with refilling station	28
6.2.3 Purging fluidic interfaces	28
6.2.4 Discharge of hydrogen to the atmosphere in case of fire.....	29
6.2.5 Discharge of hydrogen to the atmosphere in case of overpressure	30
6.3 Electrical hardwire interfaces	30
6.4 Communication interfaces.....	30
6.4.1 Interface with other on-board controllers.....	30
6.4.2 Interface with refilling Station (optional).....	31
6.4.3 Interface with maintenance tools (optional).....	31
7 Performance requirements of the HFS	32
8 Design requirements for hydrogen fuel system	33
8.1 General.....	33
8.2 Hydrogen quality.....	33
8.3 Pressure ranges	33
8.3.1 High-pressure section.....	33
8.3.2 Medium pressure section.....	34
8.4 Hydrogen flow rate.....	36
8.5 Hydrogen temperature	36
8.6 Hydrogen compatibility of materials.....	36

8.7	Electrical & network	36
8.7.1	General	36
8.7.2	General electrical principles.....	36
8.8	Mechanical	37
8.8.1	Mechanical integration of the HFS	37
8.8.2	Structural design	38
8.8.3	Bolted assemblies	38
8.8.4	Lifting points.....	38
8.8.5	Degree of protection	38
8.8.6	Shock & vibration.....	38
8.9	Fire protection	38
8.10	Lifetime and refilling & duty cycles	39
8.11	Eco-design.....	39
8.12	Storage and transportation.....	40
9	Design requirements for specific HFS sub-assemblies and components	40
9.1	Introduction.....	40
9.2	Methodology	40
9.3	Compressed hydrogen storage system (CHSS).....	41
9.3.1	Hydrogen containers.....	41
9.3.2	Mandatory fuel components	41
9.3.3	Optional fuel components	41
9.3.4	Structural frame of CHSS module	42
9.4	Hydrogen handling system	43
9.4.1	Introduction	43
9.4.2	Mandatory fuel components	43
9.4.3	Optional fuel components	43
9.5	Rigid and flexible fuel and vent lines	43
9.6	Hydrogen Refuelling Interface	44
9.6.1	On-board hydrogen receptacle	44
9.6.2	Optional refuelling components	44
9.6.3	Refuelling communication devices (optional)	44
9.7	General electrical principles	45
9.7.1	Electronic devices	45
9.7.2	Cabling & connectors.....	45
9.7.3	EMC requirements	45
9.8	Monitoring and Control System (MCS)	45
9.8.1	Hardware.....	45
9.8.2	Software	45
9.9	Monitoring devices (optional)	46
10	Control and monitoring requirements	46
11	RAMS requirements.....	46
11.1	Reliability & availability	46
11.2	Safety	47
11.2.1	Methodology.....	47
11.2.2	Hazard identification	48
11.2.3	Explosive atmosphere management.....	48
11.2.4	Safety of refuelling process	50
11.3	Maintenance	51
11.3.1	Maintenance requirements.....	51

11.3.2	Maintenance documentation	51
11.3.3	Flushing & inertizing processes	52
11.3.4	Leak testing	53
12	Marking and labelling	54
12.1	Safety signs	54
12.2	Nameplate on sub-assemblies of HFS	55
13	Testing	55
13.1	Introduction	55
13.2	Validation file content	55
13.3	Test categories	56
13.4	Type tests	56
13.5	Routine tests	56
13.6	Investigation tests	56
13.7	List of type and routine tests	57
13.8	Acceptance criteria	57
13.9	Reference test conditions	58
13.9.1	Laboratory conditions	58
13.9.2	Installation and operating conditions of the system	58
13.9.3	Quality of hydrogen	58
13.10	Tests at HFS system level	58
13.10.1	Mechanical tests	58
13.10.2	Electrical tests	59
13.10.3	Gas tests	59
13.10.4	Control and monitoring tests	60
13.10.5	Communication tests between on-board systems	60
13.10.6	Interface tests with the refilling station	60
13.10.7	Shock and vibration tests	60
13.10.8	Electromagnetic compatibility	61
13.10.9	Fire test at CHSS module level (Optional)	61
Annex A (Informative)	Recognized referentials and minimal essential subjects to be considered for container design and validation	62
A.1	Recognized referentials	62
A.2	Minimal essential subjects to be considered for component design and validation	62
A.2.1	Cycling tests (Ambient and extreme temperature)	62
A.2.2	Environmental test	62
A.2.3	Hydrostatic burst strength	63
A.2.4	Flaw tolerance test	63
A.2.5	Drop test	63
A.2.6	Fire test	63
A.2.7	High temperature static test	63
A.2.8	Strain rate impact test	63
A.2.9	Permeation test	63
A.2.10	Boss torque	63
A.2.11	Hydrogen gas cycling test	64
A.2.12	Vibration resistance – Railway life specific	64
A.2.13	Pre-cooled hydrogen exposure	64
A.2.14	Hydrogen compatibility	64

Annex B (Informative) Recognized referentials and minimal essential subjects to be considered for fuel component design and validation	65
B.1 Recognized referentials	65
B.2 Minimal essential subjects to be considered for component design and validation	65
B.2.1 Hydrostatic strength.....	65
B.2.2 Leakage	65
B.2.3 Excess torque resistance.....	65
B.2.4 Continuous operation – Railway life specific	66
B.2.5 Corrosion resistance – Railway life specific	66
B.2.6 Ultraviolet resistance	66
B.2.7 Atmospheric exposure	66
B.2.8 Chemical exposure – Railway life specific.....	66
B.2.9 Vibration resistance – Railway life specific.....	66
B.2.10 Stress corrosion cracking	67
B.2.11 Pre-cooled hydrogen exposure	67
B.2.12 Electromagnetic compatibility - Railway life specific.....	67
B.2.13 Hydrogen compatibility	67
B.2.14 Fit – Refitment repetitions (optional)	67
Annex C (Informative) H35VHF - Very High Flow hydrogen receptacle for heavy duty applications	68
Annex D (Informative) Standards, laws and regulations applicable in specific countries or regions	69
D.1 Fire protection	69
D.1.1 Europe.....	69
D.1.2 China.....	69
D.1.3 Japan	69
D.2 Mechanical requirements	69
D.2.1 Europe.....	69
D.2.2 China.....	69
D.3 Dimensions for rigid fuel lines	70
D.3.1 Europe.....	70
D.3.2 NAM	70
D.4 Labelling and signs	70
D.4.1 Germany.....	70
D.4.2 France	70
D.4.3 China.....	70
D.5 Leak tests	70
D.5.1 Europe.....	70
D.5.2 China.....	70
D.6 Preferred refuelling receptacle	70
D.6.1 China.....	70
Annex E (Informative) Recommendations for Fire protection of the HFS	71
E.1 General.....	71
E.2 Fire detection.....	71
E.3 Fire barriers	71
Annex F (Informative) Recommendations for minimum maintenance checks and tasks	72
Bibliography.....	73

Figure 1 - Hierarchy of standards related to IEC 63341	10
Figure 2 - Scope of the hydrogen fuel system for railway applications.....	24
Figure 3 – Hydrogen discharge location and flow orientation for CHSS	29
Figure 4 – Pressures of high pressure section	33
Figure 5 – Pressures of medium pressure section.....	35
Figure 6 – Difference between duty and Filling cycles.....	39
Figure 7- Flow chart demonstrating qualification of containers and components.....	41
Figure 8 – Excess Flow Valve activation principle	42
Figure 9 – Scheme of Flushing <-> inertizing process	52
Figure 10 - H35VHF receptacle.....	68
Table 1 – Overview of tests for the HFS.....	57

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**RAILWAY APPLICATIONS –
HYDROGEN AND FUEL CELL SYSTEMS FOR ROLLING STOCK –**

Part 2: Hydrogen Fuel System

FOREWORD

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International Standard **IEC 63341-2** has been prepared by IEC technical committee 9: Electrical equipment and systems for railways.

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

FDIS	Report on voting
9/XX/FDIS	9/XX/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

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

This document is to be used in conjunction with the other parts of the standard along with other related IEC and ISO standards for hydrogen fuel systems used for railway and road vehicle applications.

The National Committees are requested to note that for this document the stability date is 20XX.

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

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1

INTRODUCTION

2 This document considers general requirements for gaseous Hydrogen Fuel System installed
3 onboard rolling stock for railway applications.

4 ISO/TC 197 'Hydrogen technologies', ISO/TC 22/SC 37 'Electrically propelled vehicles' and
5 SAE 'Fuel Cell Standards Committee' carry out normalization activities on hydrogen storage
6 technologies such as:

- 7 • ISO 17268 Gaseous hydrogen land vehicle refuelling connection devices
- 8 • ISO 19881 Gaseous hydrogen — Land vehicle fuel containers
- 9 • ISO 19882 Gaseous hydrogen — Thermally activated pressure relief devices for
10 compressed hydrogen vehicle fuel containers
- 11 • ISO 19887 Gaseous Hydrogen — Fuel system components for hydrogen fuelled vehicles
- 12 • ISO 23273 Fuel cell road vehicles — Safety specifications — Protection against
13 hydrogen hazards for vehicles fuelled with compressed hydrogen

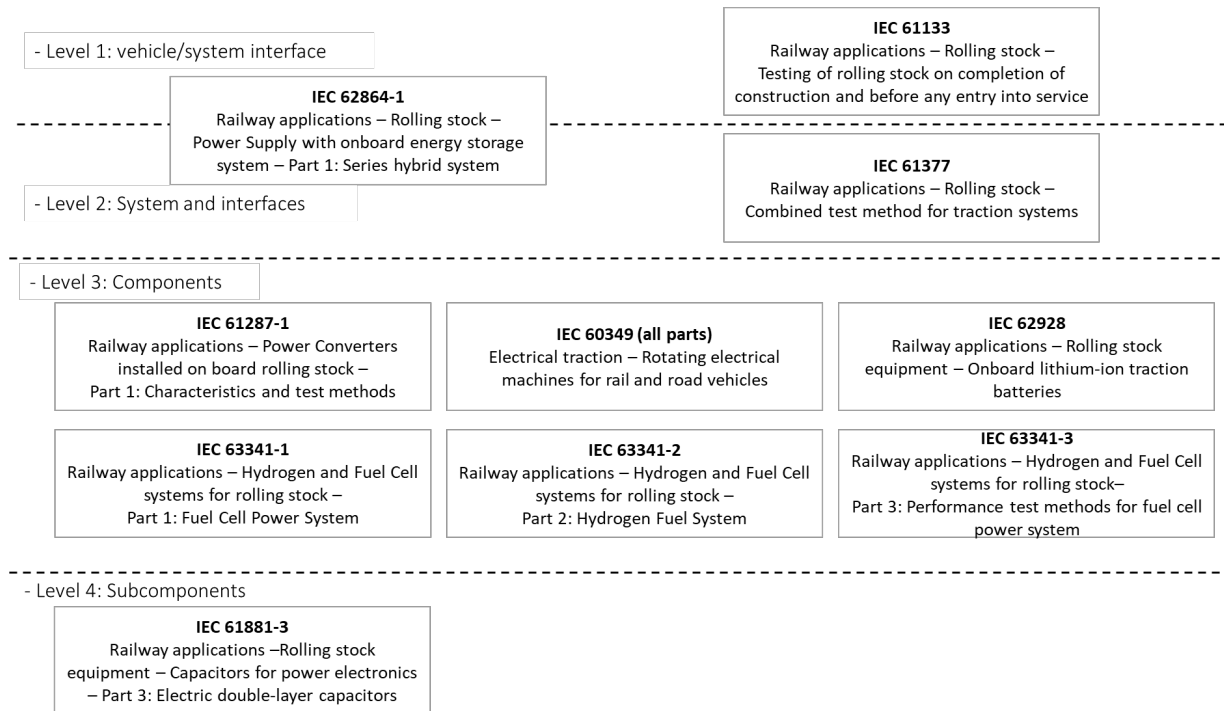
14 These documents are mainly oriented to road vehicle applications. Therefore, the present
15 document is intended to augment them by adding specific requirements for the railway
16 applications.

17 IEC 63341 series consists of the following parts:

- 18 • Part 1: Fuel cell power system
- 19 • Part 2: Hydrogen fuel system
- 20 • Part 3: Performance test methods for fuel cell power system

21 This document is developed by IEC/TC 9 'Electrical equipment and systems for railways' in the
22 frame of the standards related to rolling stock with on-board energy storage systems.

23 The hierarchy of standards is shown in Figure 1 (non-exhaustive list).



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Figure 1 - Hierarchy of standards related to IEC 63341

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RAILWAY APPLICATIONS – HYDROGEN AND FUEL CELL SYSTEMS FOR ROLLING STOCK –

Part 2: Hydrogen fuel system

1 Scope

This document applies to hydrogen fuel systems (HFS) installed onboard rolling stock for railway applications and used to supply the fuel cells for the traction power and the auxiliaries supply of railway vehicles such as hybrid vehicles as defined in IEC 62864-1.

NOTE This document can also be used as informative recommendations for applications with hydrogen internal combustion engines.

This document applies to hydrogen storage in gaseous form, being the primary technology currently used for land transport vehicles. Other means of storage (such as liquid, liquid cryo-compressed, metal hydrides), are not treated in the present revision of the standard.

This document applies to any rolling stock type (e.g. light rail vehicles, tramways, streetcars, metros, commuter trains, regional trains, high speed trains, locomotives).

This document addresses the mechanical, fluidic and electrical interfaces between the on-board hydrogen fuel system and refilling station. The refilling station, refuelling protocol and communication for the refuelling protocol are not in the scope of this document.

For design, performance requirements & test methods for fuel cell power systems see IEC 63341-1 and IEC 63341-3 respectively.

This document focuses on:

- the scope of supply of hydrogen fuel system and the description of the interfaces with sub-systems internal and external to the rolling stock such as fuel cell power system, refilling station systems,
- the environmental constraints,
- the design requirements to support HFS compliance with railway applications,
- the safety and reliability requirements to design and install the HFS for railway applications,
- the marking and labelling requirements,
- the requirements related to storage, transportation, installation and maintenance,
- the validation (type, routine and investigation tests) requirements.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitute 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.

- 68 UN ECE R134, *Uniform provisions concerning the approval of motor vehicles and their components*
69 *with regard to the safety related performance of hydrogen-fuelled vehicles (HFCV)*
- 70 GTR 13, *Global technical regulation on hydrogen and fuel cell vehicles*
- 71 IEC 60077-1, *Railway applications - Electric equipment for rolling stock - Part 1: General service*
72 *conditions and general rules - Edition 2.0*
- 73 IEC 60571, *Railway applications - Electronic equipment used on rolling stock*
- 74 IEC 60529, *Degrees of Protection Provided by Enclosures (IP Code)*
- 75 IEC 61373, *Railway applications – Rolling stock equipment – Shock and vibration tests*
- 76 IEC 61375 series, *Electronic railway equipment - Train communication network (TCN)*
- 77 IEC 61991, *Railway applications – Rolling stock – Protective provisions relating to electrical hazards*
- 78 IEC 62236-3-2, *Railway applications – Electromagnetic compatibility – Part 3-2: Rolling stock –*
79 *Apparatus*
- 80 IEC 61709, *Electric Components – Reliability – Reference conditions for failure rates and stress*
81 *models for conversion*
- 82 IEC 62497 series, *Railway applications - Insulation coordination*
- 83 IEC 62498-1, *Railway applications - Environmental conditions for equipment - Part 1: Equipment on*
84 *board rolling stock*
- 85 IEC/TR 62635, *Guidelines for end-of-life information provided by manufacturers and recyclers and for*
86 *recyclability rate calculation of electrical and electronic equipment*
- 87 IEC 62847, *Railway applications – Rolling stock – Electrical connectors – Requirements and test*
88 *methods*
- 89 IEC 62995, *Railway applications – Rolling stock – Rules for installation of cabling*
- 90 IEC 63341-1, *Railway applications – Rolling stock – Fuel cell systems for propulsion - Part 1: Fuel Cell*
91 *System*
- 92 ISO 14687, *Hydrogen fuel quality – Product specification*
- 93 ISO/TR 15916, *Basic considerations for the safety of hydrogen systems*
- 94 ISO 17268 series, *Gaseous hydrogen land vehicle refuelling connection devices*
- 95 ISO 19881, *Gaseous hydrogen — Land vehicle fuel containers*
- 96 ISO 19882, *Gaseous hydrogen — Thermally activated pressure relief devices for compressed*
97 *hydrogen vehicle fuel containers*
- 98 ISO 19887, *Gaseous Hydrogen — Fuel system components for hydrogen fuelled vehicles*