SLOVENSKI STANDARD
oSIST prEN IEC 63341-2:2024

01-maj-2024

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

Ta slovenski standard je istoveten z: **prEN IEC 63341-2:2024**

ICS:

27.070	Gorilne celice	Fuel cells
45.060.01	Železniška vozila na splošno	Railway rolling stock in general

oSIST prEN IEC 63341-2:2024 **en**

9/3050/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 63341-2 ED1**	
DATE OF CIRCULATION: **2024-03-08**	CLOSING DATE FOR VOTING: **2024-05-31**
SUPERSEDES DOCUMENTS: **9/2923/CD, 9/2963A/CC**	

IEC TC 9 : ELECTRICAL EQUIPMENT AND SYSTEMS FOR RAILWAYS

SECRETARIAT: France	SECRETARY: Mr Denis MIGLIANICO
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 105	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT 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.

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any relevant “In Some Countries” clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

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

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

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

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

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

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

IEC 63341 series consists of the following parts:

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

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

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

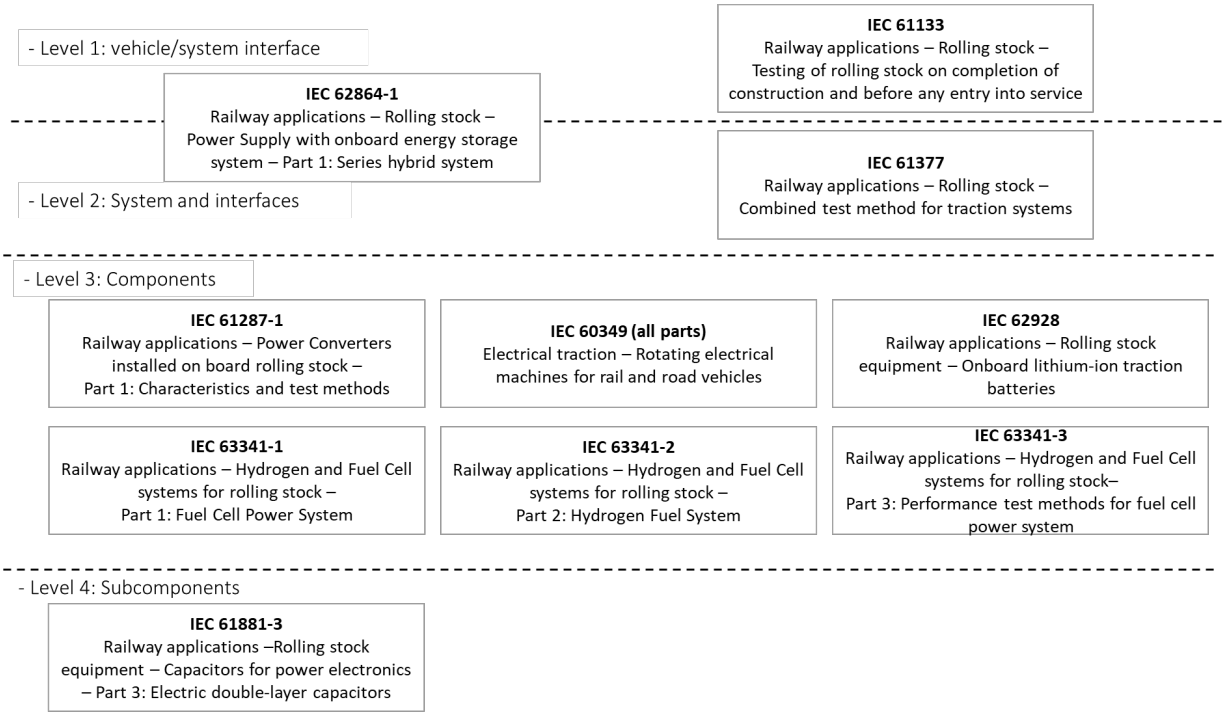

Figure 1 - Hierarchy of standards related to IEC 63341

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.

UN ECE R134, *Uniform provisions concerning the approval of motor vehicles and their components with regard to the safety related performance of hydrogen-fuelled vehicles (HFCV)*

GTR 13, *Global technical regulation on hydrogen and fuel cell vehicles*

IEC 60077-1*, Railway applications - Electric equipment for rolling stock - Part 1: General service conditions and general rules - Edition 2.0*

IEC 60571*, Railway applications - Electronic equipment used on rolling stock*

IEC 60529*, Degrees of Protection Provided by Enclosures (IP Code)*

IEC 61373*, Railway applications – Rolling stock equipment – Shock and vibration tests*

IEC 61375 series*, Electronic railway equipment - Train communication network (TCN)*

IEC 61991*, Railway applications – Rolling stock – Protective provisions relating to electrical hazards*

IEC 62236-3-2*, Railway applications – Electromagnetic compatibility – Part 3-2: Rolling stock – Apparatus*

IEC 61709*, Electric Components – Reliability – Reference conditions for failure rates and stress models for conversion*

IEC 62497 series*, Railway applications - Insulation coordination*

IEC 62498-1*, Railway applications - Environmental conditions for equipment - Part 1: Equipment on board rolling stock*

IEC/TR 62635*, Guidelines for end-of-life information provided by manufacturers and recyclers and for recyclability rate calculation of electrical and electronic equipment*

IEC 62847*, Railway applications – Rolling stock – Electrical connectors – Requirements and test methods*

IEC 62995*, Railway applications – Rolling stock – Rules for installation of cabling*

IEC 63341-1*, Railway applications – Rolling stock – Fuel cell systems for propulsion - Part 1: Fuel Cell System*

ISO 14687*, Hydrogen fuel quality – Product specification*

ISO/TR 15916*, Basic considerations for the safety of hydrogen systems*

ISO 17268 series*, Gaseous hydrogen land vehicle refuelling connection devices*

ISO 19881*, Gaseous hydrogen — Land vehicle fuel containers*

ISO 19882*, Gaseous hydrogen — Thermally activated pressure relief devices for compressed hydrogen vehicle fuel containers*

ISO 19887*, Gaseous Hydrogen — Fuel system components for hydrogen fuelled vehicles*