Fuel cell technologies - Part 4-101: Fuel cell power systems for propulsion other than road vehicles and auxiliary power units (APU) - Safety of electrically powered industrial trucks

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NATIONAL FOREWORD

See Eesti standard EVS-EN 62282-4-101:2014 sisaldab Euroopa standardi EN 62282-4-101:2014 inglisekeelset teksti.	This Estonian standard EVS-EN 62282-4-101:2014 consists of the English text of the European standard EN 62282-4-101:2014.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 17.10.2014.	Date of Availability of the European standard is 17.10.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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Fuel cell technologies - Part 4-101: Fuel cell power systems for propulsion other than road vehicles and auxiliary power units (APU) - Safety of electrically powered industrial trucks (IEC 62282-4-101:2014)

Technologies des piles à combustible - Partie 4-101: Systèmes à piles à combustible pour la propulsion, autres que les véhicules routiers et groupes auxiliaires de puissance (GAP) - Sécurité pour chariots de manutention électriques
(CEI 62282-4-101:2014)

Brennstoffzellen-Technologien - Teil 4-101: Antriebe mit Brennstoffzellen-Energiesystemen (mit Ausnahme von Straßenfahrzeugen und Hilfsantrieben) - Elektrisch betriebene Flurförderfahrzeuge - Sicherheit
(IEC 62282-4-101:2014)

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

The text of document 105/506/FDIS, future edition 1 of IEC 6228-4-101, prepared by IEC/TC 105 "Fuel cell technologies" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62282-4-101:2014.

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)	2015-06-16
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2017-09-16

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62282-4-101:2014 was approved by CENELEC as a European Standard without any modification.

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

IEC 60034 Series	NOTE	Harmonised as EN 60034 Series.
IEC 60034-11	NOTE	Harmonised as EN 60034-11.
IEC 60079-20-1	NOTE	Harmonised as EN 60079-20-1.
IEC 60112	NOTE	Harmonised as EN 60112.
IEC 60243 Series	NOTE	Harmonised as EN 60243 Series.
IEC 60695-11-5	NOTE	Harmonised as EN 60695-11-5.
IEC 60812	NOTE	Harmonised as EN 60812.
IEC 62282-3-100	NOTE	Harmonised as EN 62282-3-100.
IEC 62282-5-1	NOTE	Harmonised as EN 62282-5-1.
ISO 16017-1	NOTE	Harmonised as EN ISO 16017-1.

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.

Publication	Year	Title	EN/HD	Year
IEC 60079-0	-	Explosive atmospheres Part 0: Equipment - General requirements	EN 60079-0	-
IEC 60079-10-1	-	Explosive atmospheres Part 10-1: Classification of areas - Explosive gas atmospheres	EN 60079-10-1	-
IEC 60079-29-1	-	Explosive atmospheres Part 29-1: Gas detectors - Performance requirements of detectors for flammable gases	EN 60079-29-1	-
IEC 60079-29-4	-	Explosive atmospheres Part 29-4: Gas detectors - Performance requirements of open path detectors for flammable gases	EN 60079-29-4	-
IEC 60204-1	-	Safety of machinery - Electrical equipment of machines Part 1: General requirements	EN 60204-1	-
IEC 60227-3	-	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V Part 3: Non-sheathed cables for fixed wiring	HD 21.3 S3[1)]	-
IEC 60227-5	-	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V Part 5: Flexible cables (cords)	-	-
IEC 60335-2-41	-	Household and similar electrical appliances – Safety Part 2-41: Particular requirements for pumps	EN 60335-2-41	-
IEC 60335-2-80	-	Safety of household and similar electrical appliances Part 2-80: Particular requirements for fans	EN 60335-2-80	-
IEC 60364-4-41 (mod)	2005	Low-voltage electrical installations Part 4-41: Protection for safety - Protection against electric shock	HD 60364-4-41 + corr. July	2007 2007
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	EN 60529	-

[1)] Superseded by EN 50525-2-31:2011.

Publication	Year	Title	EN/HD	Year
IEC 60584-1	-	Thermocouples Part 1: Reference tables	EN 60584-1	-
IEC 60664-1	-	Insulation coordination for equipment within low-voltage systems Part 1: Principles, requirements and tests	EN 60664-1	-
IEC 60695	Series	Fire hazard testing	EN 60695	Series
IEC 60695-1-30	-	Fire hazard testing Part 1-30: Guidance for assessing the fire hazard of electrotechnical products - Preselection testing process - General guidelines	EN 60695-1-30	-
IEC 60695-10-2	-	Fire hazard testing Part 10-2: Guidance and test methods for the minimization of the effects of abnormal heat on electrotechnical products involved in fires - Method for testing products made from non-metallic materials for resistance to heat using the ball pressure test	EN 60695-10-2	-
IEC 60695-11-4	-	Fire hazard testing Part 11-4: Test flames - 50 W flame - Apparatus and confirmational test method	EN 60695-11-4	-
IEC 60695-11-10	-	Fire hazard testing Part 11-10: Test flames - 50 W horizontal and vertical flame test methods	EN 60695-11-10	-
IEC 60730-1 (mod)	2013	Automatic electrical controls Part 1: General requirements	EN 60730-1[2)]	-
IEC 60730-2-17	-	Automatic electrical controls for household and similar use Part 2-17: Particular requirements for electrically operated gas valves, including mechanical requirements	-	-
IEC 60947-3	-	Low-voltage switchgear and controlgear Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units	EN 60947-3	-
IEC 60947-5-1	-	Low-voltage switchgear and controlgear Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices	EN 60947-5-1	-
IEC 60950-1 (mod)	2005	Information technology equipment - Safety Part 1: General requirements	EN 60950-1+ corr. October	2006 2011
IEC 61204-7	-	Low-voltage power supplies, d.c. output Part 7: Safety requirements	EN 61204-7	-

[2)] At draft stage.

Publication	Year	Title	EVS-EN 62282-4-101:2014	
IEC/TS 61430	-	Secondary cells and batteries - Test methods for checking the performance of devices designed for reducing explosion hazards - Lead-acid starter batteries	-	-
IEC 61558-1	-	Safety of power transformers, power supplies, reactors and similar products Part 1: General requirements and tests	EN 61558-1	-
IEC 62103	-	Electronic equipment for use in power installations	-	-
IEC 62133	-	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications	EN 62133	-
IEC 62282-2	-	Fuel cell technologies Part 2: Fuel cell modules	EN 62282-2	-
ISO 179	Series	Plastics - Determination of Charpy impact properties Part 1: Non-instrumented impact test	EN ISO 179	Series
ISO 180	-	Plastics - Determination of Izod impact strength	EN ISO 180	-
ISO 877	Series	Plastics - Methods of exposure to solar radiation Part 1: General guidance	EN ISO 877	Series
ISO 1419	-	Rubber- or plastics-coated fabrics - Accelerated-ageing tests	-	-
ISO 1421	-	Rubber- or plastics-coated fabrics - Determination of tensile strength and elongation at break	EN ISO 1421	-
ISO 1798	-	Flexible cellular polymeric materials - Determination of tensile strength and elongation at break	EN ISO 1798	-
ISO 2440	-	Flexible and rigid cellular polymeric materials - Accelerated ageing tests	EN ISO 2440	-
ISO 2626	-	Copper - Hydrogen embrittlement test	EN ISO 2626	-
ISO 3691-1	-	Industrial trucks - Safety requirements and verification Part 1: Self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier trucks	EN ISO 3691-1	-
ISO/TS 3691-7	-	Industrial trucks - Safety requirements and verification Part 7: Regional requirements for countries within the European Community	-	-
ISO/TS 3691-8	-	Industrial trucks - Safety requirements and verification Part 8: Regional requirements for countries outside the European Community	-	-

Publication	Year	Title	EN/HD	Year
ISO 3864-1	-	Graphical symbols - Safety colours and safety signs Part 1: Design principles for safety signs and safety markings	-	-
ISO 3996	-	Road vehicles - Brake hose assemblies for hydraulic braking systems used with non-petroleum-base brake fluid	-	-
ISO 4038	-	Road vehicles - Hydraulic braking systems -- Simple flare pipes, tapped holes, male fittings and hose end fittings		-
ISO 4080	-	Rubber and plastics hoses and hose assemblies - Determination of permeability to gas	EN ISO 4080	-
ISO 4675	-	Rubber- or plastics-coated fabrics; low-temperature bend test	-	-
ISO 7010	-	Graphical symbols - Safety colours and safety signs - Safety signs used in workplaces and public areas	-	-
ISO 7866	2012	Gas cylinders - Refillable seamless aluminium alloy gas cylinders - Design, construction and testing	EN ISO 7866	2012
ISO 9809-1	-	Gas cylinders - Refillable seamless steel gas cylinders - Design, construction and testing Part 1: Quenched and tempered steel cylinders with tensile strength less than 1100 MPa	EN ISO 9809-1	-
ISO 10380	-	Pipework - Corrugated metal hoses and hose assemblies	EN ISO 10380	-
ISO 10442	-	Petroleum, chemical and gas service industries - Packaged, integrally geared centrifugal air compressors	EN ISO 10442	-
ISO 10806	-	Pipework - Fittings for corrugated metal hoses	EN ISO 10806	-
ISO 11114-4	-	Transportable gas cylinders - Compatibility of cylinder and valve materials with gas contents Part 4: Test methods for selecting metallic materials resistant to hydrogen embrittlement	EN ISO 11114-4	-
ISO 13226	-	Rubber - Standard reference elastomers (SREs) for characterizing the effect of liquids on vulcanized rubbers	-	-
ISO 13849-1	-	Safety of machinery - Safety-related parts of control systems Part 1: General principles for design	EN ISO 13849-1	-
ISO 14113	-	Gas welding equipment - Rubber and plastics hose and hose assemblies for use with industrial gases up to 450 bar (45 MPa)	EN ISO 14113	-

Publication	Year	Title		
ISO/TS 14687-2	-	Hydrogen fuel - Product specification Part 2: Proton exchange membrane (PEM) fuel cell applications for road vehicles	-	-
ISO 15500-12	-	Road vehicles - Compressed natural gas (CNG) fuel system components Part 12: Pressure relief valve (PRV)	-	-
ISO 15649	-	Petroleum and natural gas industries - Piping	-	-
ISO/TS 15869	2009	Gaseous hydrogen and hydrogen blends - Land vehicle fuel tanks	-	-
ISO/TR 15916	-	Basic considerations for the safety of hydrogen systems	-	-
ISO 16010	-	Elastomeric seals - Material requirements for seals used in pipes and fittings carrying gaseous fuels and hydrocarbon fluids	-	-
ISO 16111	2008	Transportable gas storage devices - Hydrogen absorbed in reversible metal hydride	-	-
ISO 17268	-	Elastomeric seals - Material requirements for seals used in pipes and fittings carrying gaseous fuels and hydrocarbon fluids	-	-
ISO 21927-3	-	Smoke and heat control systems Part 3: Specification for powered smoke and heat exhaust ventilators	-	-
ISO 23551-1	-	Safety and control devices for gas burners and gas-burning appliances - Particular requirements Part 1: Automatic valves	-	-

CONTENTS

INTRODUCTION

IEC 62282-4 deals with categories such as safety, performance and interchangeability of fuel cell power systems for propulsion other than road vehicles and auxiliary power units (APU). Among the categories mentioned above, this standard, IEC 62282-4-101, focuses on safety of industrial electric trucks with fuel cell power systems because such an application is urgently demanded in the world. The future standards in the Part 4 series will deal with other applications related to onboard vehicles other than road vehicles and auxiliary power units (APU).