SLOVENSKI STANDARD
SIST EN IEC 62282-6-101:2024

01-junij-2024

Tehnologije gorivnih celic - 6-101. del: Elektroenergetski sistemi z mikro gorivnimi celicami - Varnost - Splošne zahteve (IEC 62282-6-101:2024)

Fuel cell technologies - Part 6-101: Micro fuel cell power systems - Safety - General requirements (IEC 62282-6-101:2024)

Brennstoffzellentechnologien - Teil 6-101: Mikrobrennstoffzellen-Energiesysteme - Sicherheit - Allgemeine Anforderungen (IEC 62282-6-101:2024)

Technologies des piles à combustible - Partie 6-101: Systèmes à micropiles à combustible - Sécurité - Exigences générales (IEC 62282-6-101:2024)

Ta slovenski standard je istoveten z: **EN IEC 62282-6-101:2024**

ICS:

27.070	Gorilne celice	Fuel cells

SIST EN IEC 62282-6-101:2024 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62282-6-101

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English Version

Fuel cell technologies - Part 6-101: Micro fuel cell power systems - Safety - General requirements (IEC 62282-6-101:2024)

Technologies des piles à combustible - Partie 6-101: Systèmes à micropiles à combustible - Sécurité - Exigences générales (IEC 62282-6-101:2024)

Brennstoffzellentechnologien - Teil 6-101: Mikrobrennstoffzellen-Energiesysteme - Sicherheit - Allgemeine Anforderungen (IEC 62282-6-101:2024)

This European Standard was approved by CENELEC on 2024-03-22. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 105/1010/FDIS, future edition 1 of IEC 62282-6-101, prepared by IEC/TC 105 "Fuel cell technologies" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62282-6-101:2024.

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) 2024-12-22
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2027-03-22

This document partially supersedes EN 62282-6-100:2010 and all of its amendments and corrigenda (if any).

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

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62282-6-101:2024 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 standard indicated:

IEC 31010	NOTE Approved as EN IEC 31010
IEC 60335-1:2020	NOTE Approved as EN IEC 60335-1:2023 (not modified)
IEC 60812	NOTE Approved as EN IEC 60812
IEC 61025	NOTE Approved as EN 61025
IEC 61508 (series)	NOTE Approved as EN 61508 (series)
IEC 62061	NOTE Approved as EN IEC 62061
IEC 62282-5-100	NOTE Approved as EN IEC 62282-5-100
ISO 11114-1	NOTE Approved as EN ISO 11114-1
ISO 11114-2	NOTE Approved as EN ISO 11114-2
ISO 12100	NOTE Approved as EN ISO 12100
ISO 13849-1	NOTE Approved as EN ISO 13849-1

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where 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.cencenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60086-4	-	Primary batteries - Part 4: Safety of lithium batteries	EN IEC 60086-4	-
IEC 60086-5	-	Primary batteries - Part 5: Safety of batteries with aqueous electrolyte	EN IEC 60086-5	-
IEC 60730-1	2022	Automatic electrical controls - Part 1: General requirements	EN IEC 60730-1	2024
IEC 61032	1997	Protection of persons and equipment by enclosures - Probes for verification	EN 61032	1998
IEC 62133	series	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary lithium cells, and for batteries made from them, for use in portable applications	EN 62133	series
IEC 62281	-	Safety of primary and secondary lithium cells and batteries during transport	EN IEC 62281	-
IEC 62282-6-300	2012	Fuel cell technologies - Part 6-300: Micro fuel cell power systems - Fuel cartridge interchangeability	EN 62282-6-300	2013
IEC 62368-1	2023	Audio/video, information and communication technology equipment - Part 1: Safety requirements	EN IEC 62368-1	—[1]
ISO 175	-	Plastics - Methods of test for the determination of the effects of immersion in liquid chemicals	EN ISO 175	-
ISO 188	-	Rubber, vulcanized or thermoplastic - Accelerated ageing and heat resistance tests	-	-

[1] To be published: Stage at time of publication: FprEN IEC 62368-1:2023.

ISO 1817	-	Rubber, vulcanized or thermoplastic - Determination of the effect of liquids	-	-
ISO 7010	2019	Graphical symbols - Safety colours and safety signs - Registered safety signs	EN ISO 7010	2020
ISO 11114-4	-	Transportable gas cylinders - Compatibility of cylinder and valve materials with gas contents - Part 4: Test methods for selecting steels resistant to hydrogen embrittlement	EN ISO 11114-4	-
ISO 16000-3	-	Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds in indoor and test chamber air - Active sampling method	-	-
ISO 16000-6	-	Indoor air - Part 6: Determination of organic compounds (VVOC, VOC, SVOC) in indoor and test chamber air by active sampling on sorbent tubes, thermal desorption and gas chromatography using MS or MS FID	-	-
ISO 16017-1	-	Indoor, ambiant and workplace air - Sampling and analysis of volatile organic compounds by sorbent tube/thermal desorption/capillary gas chromatography - Part 1: Pumped sampling	EN ISO 16017-1	-
		United Nations Recommendations on the Transport of Dangerous Goods: Model Regulations Twentieth revised edition, Manual of Tests and Criteria: Seventh revised edition, available at https://unece.org/fileadmin/DAM/trans/danger/publi/manual/Rev7/Manual_Rev7_E.pdf		

IEC 62282-6-101

Edition 1.0 2024-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Fuel cell technologies –
Part 6-101: Micro fuel cell power systems – Safety – General requirements

Technologies des piles à combustible –
Partie 6-101: Systèmes à micropiles à combustible – Sécurité – Exigences générales

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FUEL CELL TECHNOLOGIES –

Part 6-101: Micro fuel cell power systems – Safety – General requirements

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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8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 62282-6-101 has been prepared by IEC technical committee 105: Fuel cell technologies. It is an International Standard.

This first edition, together with the other parts of the IEC 62282-6-1XX series, cancels and replaces IEC 62282-6-100:2010 and IEC 62282-6-100:2010/AMD1:2012.

This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC 62282-6-100:2010 and IEC 62282-6-100:2010/AMD1:2012:

a) A new structure has been set up: IEC 62282-6-101 covers the general safety requirements common to all fuel types whereas IEC 62282-6-102 and subsequent parts of the IEC 62282-6-1XX series cover particular requirements for specific fuel types based on the requirements given in IEC 62282-6-101.

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

Draft	Report on voting
105/1010/FDIS	105/1023/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. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 62282 series, published under the general title *Fuel cell technologies*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn, or
- revised.

NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months from the date of publication.

INTRODUCTION

IEC 62282-6-100 has been restructured to make it more user friendly.

The new IEC 62282-6-1XX series consists of IEC 62282-6-101 and subsequent parts of the IEC 62282-6-1XX series which will replace IEC 62282-100 on a case-by-case basis. Until subsequent specific parts of the IEC 62282-6-1XX series are completed, a suitable transition period will apply.

IEC 62282-6-101 covers general safety requirements common to all fuel types.

IEC 62282-6-102 and subsequent parts in the IEC 62282-6-1XX series will cover detailed requirements for specific fuel cartridges based on the requirements of IEC 62282-6-101, as shown in Table 1: Technology specific parts.

FUEL CELL TECHNOLOGIES –

Part 6-101: Micro fuel cell power systems – Safety – General requirements

1 Scope

1.1 General

a) This part of IEC 62282 covers micro fuel cell power systems and fuel cartridges that are wearable or easily carried by hand, providing direct current outputs that do not exceed 60 V DC and power outputs that do not exceed 240 VA. Portable fuel cell power systems that provide output levels that exceed these electrical limits are covered by IEC 62282-5-100.

b) Externally accessible circuitry is therefore considered to be ES1 energy source as defined in IEC 62368-1, and as limited power source if further compliance with IEC 62368-1:2023, Annex Q is demonstrated. Micro fuel cell power systems that have internal circuitry exceeding 60 V DC or 240 VA are addressed with the separate criteria of IEC 62368-1.

c) This document covers micro fuel cell power systems and fuel cartridges. This document establishes the requirements for micro fuel cell power systems and fuel cartridges to ensure a reasonable degree of safety for normal use, reasonably foreseeable misuse, and cargo and consumer transportation and storage of such items. Fuel cartridges refilled by the manufacturer or by trained technicians are covered by this document. The fuel cartridges covered by this document are not intended to be refilled by the consumer.

d) Micro fuel cell power systems and fuel cartridges that are covered by this document are not intended for use in hazardous areas as defined by IEV 426-03-01.

1.2 Fuels and technologies covered

a) A micro fuel cell power system block diagram is shown in Figure 1.

b) This document, including all annexes, apply to micro fuel cell power systems and fuel cartridges as defined in 1.1 above.

c) Clause 4 to Clause 8 cover the general safety requirements for all micro fuel cell power systems. IEC 62282-6-101 together with the appropriate technology specific parts shown in Table 1 cover the requirements for the specific technologies in the IEC 62282-6-1XX series.

Table 1 – Technology specific parts

Specific technology supplement standard	Title
IEC 62282-6-106	Fuel cell technologies – Part 6-106: Micro fuel cell power systems – Safety – Indirect Class 8 (corrosive) compounds
IEC 62282-6-107	Fuel cell technologies – Part 6-107: Micro fuel cell power systems – Safety – Indirect water reactive (Division 4.3) compounds