
Tehnologije gorivnih celic – 2. del: Moduli gorivnih celic

Fuel cell technologies – Part 2: Fuel cell modules

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EUROPEAN STANDARD

EN 62282-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2004

ICS 27.070

English version

Fuel cell technologies
Part 2: Fuel cell modules
(IEC 62282-2:2004)

Technologies des piles à combustible
Partie 2: Modules à piles à combustible
(CEI 62282-2:2004)

Brennstoffzellentechnologien
Teil 2: Brennstoffzellen-Module
(IEC 62282-2:2004)

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CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 105/73/FDIS, future edition 1 of IEC 62282-2, prepared by IEC TC 105, Fuel cell technologies, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62282-2 on 2004-10-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2005-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2007-10-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62282-2:2004 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 60664-1	NOTE	Harmonized as EN 60664-1:2003 (not modified). https://standards.iteh.ai/catalog/standards/sist/bc613d71-50e9-438d-bcf2-01408c1e1631/sist-62282-2-2005
IEC 60112	NOTE	Harmonized as EN 60112:2003 (not modified).
IEC 60730	NOTE	Harmonized in EN 60730 series (not modified).
ISO 228-1	NOTE	Harmonized as EN ISO 228-1:2003 (not modified).
ISO 228-2	NOTE	Harmonized as EN ISO 228-2:2003 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60079	Series	Electrical apparatus for explosive gas atmospheres	EN 50014 & related ENs EN 60079	Series Series
IEC 60079-10	- ¹⁾	Part 10: Classification of hazardous areas	EN 60079-10	2003 ²⁾
IEC 60352	Series	Solderless connections	EN 60352	Series
IEC 60512-8	- ¹⁾	Electromechanical components for electronic equipment; basic testing procedures and measuring methods Part 8: Connector tests (mechanical) and mechanical tests on contacts and terminations	-	-
IEC 60529	- ¹⁾	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 ²⁾ 1993
IEC 60617	database	Graphical symbols for diagrams	-	-
IEC 60695	Series	Fire hazard testing	EN 60695	Series
IEC 60812	- ¹⁾	Analysis techniques for system reliability - Procedure for failure mode and effects analysis (FMEA)	HD 485 S1	1987 ²⁾
IEC 61025	- ¹⁾	Fault tree analysis (FTA)	HD 617 S1	1992 ²⁾
IEC 61508	Series	Functional safety of electrical/electronic/programmable electronic safety-related systems	EN 61508	Series
IEC 61508-1	- ¹⁾	Functional safety of electrical/electronic/programmable electronic safety-related systems Part 1: General requirements	EN 61508-1	2001 ²⁾

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 37	1994	Rubber, vulcanized or thermoplastic - Determination of tensile stress-strain properties	-	-
ISO 188	1998	Rubber, vulcanized or thermoplastic - Accelerated ageing and heat-resistance tests	-	-
ISO 1307	1992	Rubber and plastics hoses for general-purpose industrial applications - Bore diameters and tolerances, and tolerances on length	EN ISO 1307	1995
ISO 1402	1994	Rubber and plastics hoses and hose assemblies - Hydrostatic testing	EN ISO 1402	1996
ISO 1436-1	2001	Rubber hoses and hose assemblies - Wire-braid-reinforced hydraulic types - Specification Part 1: Oil-based fluid applications	-	-
ISO 4672	1997	Rubber and plastics hoses - Sub-ambient temperature flexibility tests	EN ISO 4672	1999
		Electronic equipment for use in power installations	EN 50178	1997

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NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC

62282-2

Première édition
First edition
2004-07

Technologies des piles à combustible –

**Partie 2:
Modules à piles à combustible**

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Fuel cell technologies –
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**Part 2:
Fuel cell modules**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FUEL CELL TECHNOLOGIES –**Part 2: Fuel cell modules****FOREWORD**

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International Standard IEC 62282-2 has been prepared by IEC technical committee 105: Fuel cell technologies.

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

FDIS	Report on voting
105/73/FDIS	105/77/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.

IEC 62282 consists of the following parts under the general title *Fuel cell technologies*:

- Part 1: Terminology¹
- Part 2: Fuel cell modules
- Part 3-1: Stationary fuel cell power plants – Safety¹
- Part 3-2: Stationary fuel cell power plants – Test methods for the performance¹
- Part 3-3: Stationary fuel cell power plants – Installation¹
- Part 5: Portable fuel cell appliances – Safety requirements¹
- Part 6-1: Micro fuel cell power systems – Safety¹
- Part 6-2: Micro fuel cell power systems – Performance¹
- Part 6-3: Micro fuel cell power systems – Interchangeability¹

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site 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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¹ Under consideration.

INTRODUCTION

Fuel cell modules, as defined later, are electrochemical devices which convert continuously supplied fuel, such as hydrogen or hydrogen rich gases, alcohols, hydrocarbons, and oxidants to d.c. power, heat, water and other by-products.

NOTE The term fuel cell module describes a subassembly that could comprise slightly more than a stack, for example, sensors, enclosure. This assembly is intended to be integrated into an end product by a systems integrator.

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FUEL CELL TECHNOLOGIES –

Part 2: Fuel cell modules

1 Scope

This part of IEC 62282 provides the minimum requirements for safety and performance of fuel cell modules. This standard applies to fuel cell modules with the following electrolyte chemistry:

- alkaline;
- proton exchange membrane (including direct methanol fuel cells);
- phosphoric acid;
- molten carbonate;
- solid oxide fuel cell modules.

Fuel cell modules might be provided either with or without an enclosure and might be operated at significant pressurization levels or close to ambient pressure.

This standard deals with conditions that can yield hazards to persons and damage outside the fuel cell modules only. Protection against damage to the fuel cell modules internals is not addressed in this standard, provided it does not lead to hazards outside the module.

These requirements may be superseded by other standards for equipment containing fuel cell modules as required for particular applications. This part of IEC 62282 is not applicable for road vehicle applications.

This standard is not intended to limit or inhibit technological advancement. An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of these requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

The fuel cell modules are components of final products. These products require evaluation to appropriate end-product safety requirements.

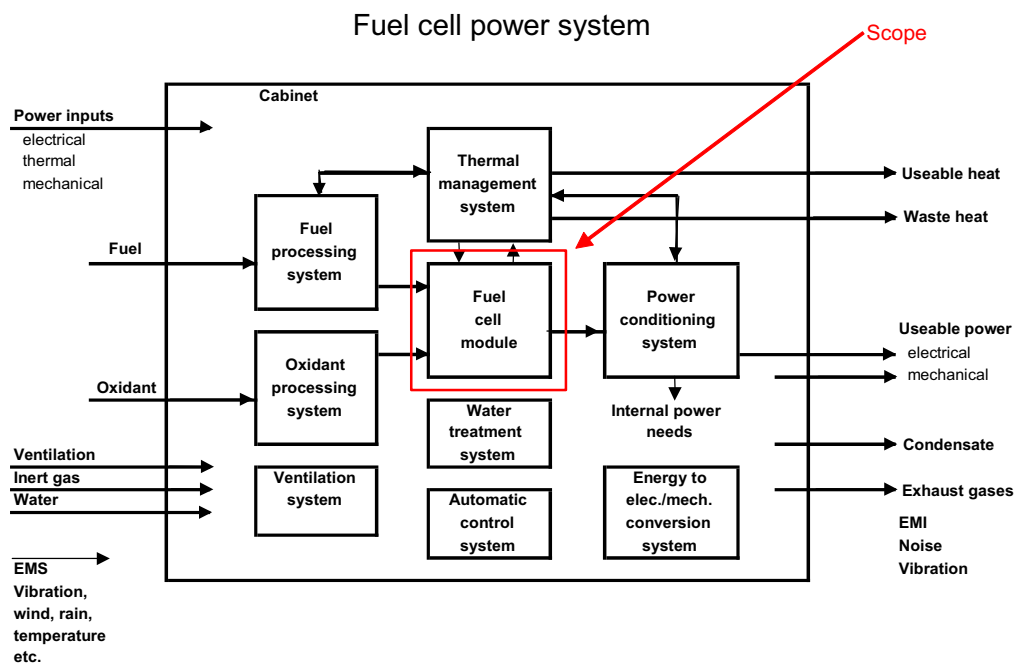


Figure 1 – Fuel cell system components and scope of standard

Unless otherwise specified, the (fuel cell module) must be capable of operating under the following ambient conditions:

- a) altitude up to 1 000 m;
- b) air containing approximately 21% ± 1% oxygen by volume.

This standard covers only up to the d.c. output of the fuel cell module.

This standard does not apply to peripheral devices as illustrated in Figure 1.

This standard does not cover the storage and delivery of fuel and oxidant to the fuel cell module.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 60079 (all parts), *Electrical apparatus for explosive gas atmospheres*

IEC 60079-10, *Electrical apparatus for explosive gas atmospheres – Classification of hazardous areas*

IEC 60352 (all parts), *Solderless connections*

IEC 60512-8, *Electromechanical components for electronic equipment; basic testing procedures and measuring methods – Part 8: Connector test (mechanical) and mechanical test on contacts and terminations*