



NSAI
Standards

Irish Standard
I.S. EN 62282-2:2012

Fuel cell technologies -- Part 2: Fuel cell modules (IEC 62282-2:2012 (EQV))

I.S. EN 62282-2:2012

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English version

**Fuel cell technologies -
Part 2: Fuel cell modules
(IEC 62282-2:2012)**

Technologies des piles à combustible -
Partie 2: Modules à piles à combustible
(CEI 62282-2:2012)

Brennstoffzellentechnologien -
Teil 2: Brennstoffzellenmodule
(IEC 62282-2:2012)

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CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 105/378/FDIS, future edition 2 of IEC 62282-2, prepared by IEC/TC 105 "Fuel cell technologies" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62282-2:2012.

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) 2013-02-10
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2015-04-30

This document supersedes EN 62282-2:2004 + A1:2007.

EN 62282-2:2012 includes the following significant technical changes with respect to EN 62282-2:2004:

- inclusion of definitions for hazards and hazardous locations based on the EN 60079 series;
- the general safety strategy is modified to reflect the needs for different application standards. The modifications are in line with similar modifications made to EN 62282-3-100;
- the electrical components clause is modified to reflect the needs for different application standards. The modifications are in line with similar modifications made to EN 62282-3-100;
- the marking and instructions have been enlarged to provide the system integrator with the necessary information.

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 62282-2:2012 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 60812	NOTE	Harmonised as EN 60812.
IEC 61025	NOTE	Harmonised as EN 61025.
IEC 60079-20-1	NOTE	Harmonised as EN 60079-20-1.
IEC 62282-3-100	NOTE	Harmonised as EN 62282-3-100.
ISO 1307:2006	NOTE	Harmonised as EN ISO 1307:2006 (not modified).
ISO 1402:2009	NOTE	Harmonised as EN ISO 1402:2009 (not modified).

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 When 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	Explosive atmospheres	EN 60079	Series
IEC 60079-10	Series	Explosive atmospheres - Part 10: Classification of areas	EN 60079-10	Series
IEC 60204-1	-	Safety of machinery - Electrical equipment of EN 60204-1 machines - Part 1: General requirements		-
IEC 60335-1	-	Household and similar electrical appliances - Safety - Part 1: General requirements	EN 60335-1	-
IEC 60352	Series	Solderless connections	EN 60352	Series
IEC 60512-15	Series	Connectors for electronic equipment - Tests and measurements - Part 15: Connector tests (mechanical)	EN 60512-15	Series
IEC 60512-16	Series	Connectors for electronic equipment - Tests and measurements - Part 16: Mechanical tests on contacts and terminations	EN 60512-16	Series
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	EN 60529	-
IEC 60617		Graphical symbols for diagrams	-	-
IEC 60695	Series	Fire hazard testing	EN 60695	Series
IEC 60730-1	-	Automatic electrical controls for household and similar use - Part 1: General requirements	EN 60730-1	-
IEC 60950-1	-	Information technology equipment - Safety - Part 1: General requirements	EN 60950-1	-
IEC 61508	Series	Functional safety of electrical/electronic/programmable electronic safety-related systems	EN 61508-1	Series
IEC 62040-1	-	Uninterruptible Power Systems (UPS) - Part 1: General and safety requirements for UPS	EN 62040-1	-
IEC 62061	-	Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems	EN 62061	-
ISO 13849-1	-	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design	EN ISO 13849-1	-

I.S. EN 62282-2:2012

- 4 -

EN 62282-2:2012

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 23550	-	Safety and control devices for gas burners and gas-burning appliances - General requirements	-	-
		Electronic equipment for use in power installations	EN 50178	-

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	8
3 Terms and definitions	9
4 Requirements	12
4.1 General safety strategy	12
4.2 Design requirements	14
4.2.1 General	14
4.2.2 Behaviour at normal and abnormal operating conditions	14
4.2.3 Leakage	14
4.2.4 Pressurized operation.....	14
4.2.5 Fire and ignition.....	15
4.2.6 Safeguarding	16
4.2.7 Piping and fittings.....	16
4.2.8 Electrical components	17
4.2.9 Terminals and electrical connections	17
4.2.10 Live parts	18
4.2.11 Insulating materials, dielectric strength.....	18
4.2.12 Bonding.....	18
4.2.13 Shock and vibration	18
5 Type tests	19
5.1 General.....	19
5.2 Shock and vibration test	19
5.3 Gas leakage test	19
5.4 Normal operation.....	20
5.5 Allowable working pressure test	21
5.6 Pressure withstanding test of cooling system	21
5.7 Continuous and short-time electrical rating.....	21
5.8 Overpressure test.....	21
5.9 Dielectric strength test.....	22
5.10 Differential pressure test	23
5.11 Gas leakage test (repeat).....	24
5.12 Normal operation (repeat)	24
5.13 Flammable concentration test.....	24
5.14 Tests of abnormal conditions	24
5.14.1 General	24
5.14.2 Fuel starvation test.....	25
5.14.3 Oxygen/oxidant starvation test.....	25
5.14.4 Short-circuit test	25
5.14.5 Lack of cooling/impaired cooling test	25
5.14.6 Crossover monitoring system test.....	26
5.14.7 Freeze/thaw cycle tests	26
6 Routine tests	26
6.1 General.....	26
6.2 Gas-tightness test.....	26

6.3	Dielectric strength withstand test	27
7	Markings and instructions	27
7.1	Nameplate	27
7.2	Marking	27
7.3	Warning label	27
7.4	Documentation	27
7.4.1	General	27
7.4.2	Installation manual	29
7.4.3	Installation diagram	29
7.4.4	Operation manual	30
7.4.5	Maintenance manual	30
7.4.6	Parts list	30
Annex A (informative)	Additional information for the performance and evaluation of the tests	32
Annex B (informative)	List of notes concerning particular conditions in certain countries	38
Bibliography	39
Figure 1	– Fuel cell system components and scope of standard	8
Table 1	– Dielectric strength test voltages (derived from EN 50178)	23
Table A.1	– Viscosity of gases at one atmosphere	35

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FUEL CELL TECHNOLOGIES –

Part 2: Fuel cell modules

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

This second edition cancels and replaces the first edition, published in 2004, its amendment 1 (2007) and constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- inclusion of definitions for hazards and hazardous locations based on the IEC 60079 series;
- the general safety strategy is modified to reflect the needs for different application standards. The modifications are in line with similar modifications made to IEC 62282-3-100;
- the electrical components clause is modified to reflect the needs for different application standards. The modifications are in line with similar modifications made to IEC 62282-3-100;

I.S. EN 62282-2:2012

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– 5 –

- the marking and instructions have been enlarged to provide the system integrator with the necessary information.

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

FDIS	Report on voting
105/378/FDIS	105/389/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.

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

The reader's attention is drawn to the fact that Annex B lists all of the “in-some-country” clauses on differing practices of a less permanent nature relating to the subject of this standard.

The committee has decided that the contents of this publication will remain unchanged until the stability 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.

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

Fuel cell modules 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.

Fuel cell modules are sub-assemblies that are integrated into end-use products incorporating one or more fuel cell stacks and, if applicable, additional components.

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 and applies to fuel cell modules with the following electrolyte chemistry:

- alkaline;
- polymer electrolyte (including direct methanol fuel cells)¹;
- phosphoric acid;
- molten carbonate;
- solid oxide;
- aqueous solution of salts.

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

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

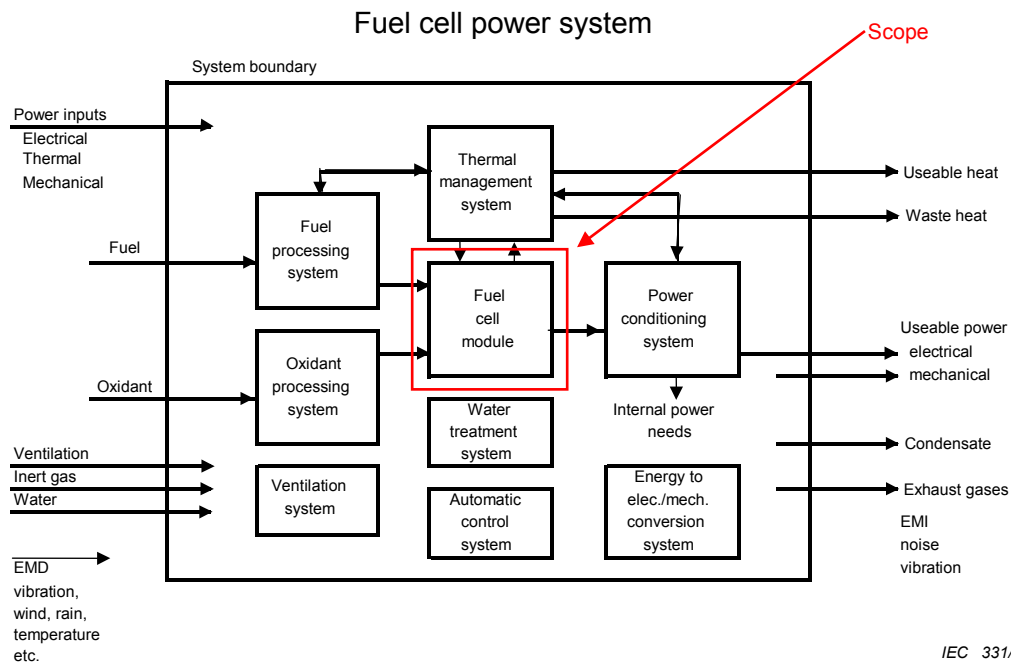
These requirements may be superseded by other standards for equipment containing fuel cell modules as required for particular applications.

This standard does not cover 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 purpose of these requirements and, if found to be substantially equivalent, may be considered to comply with this standard.

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

¹ Also known as proton exchange membrane fuel cell.

**Key**

EMD electromagnetic disturbance
EMI electromagnetic interference

Figure 1 – Fuel cell system components

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 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.

IEC 60079 (all parts), *Explosive atmospheres*

IEC 60079-10 (all Parts 10), *Explosive atmospheres – Part 10: Classification of areas*

IEC 60204-1, *Safety of machinery – Electrical equipment of machines – Part 1: General requirements*

IEC 60335-1, *Household and similar electrical appliances – Safety – Part 1: General requirements*

IEC 60352 (all parts), *Solderless connections*

IEC 60512-15 (all parts), *Connectors for electronic equipment – Tests and measurements – Part 15: Connector tests (mechanical)*

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