SLOVENSKI STANDARD
SIST EN 62282-2:2005/A1:2007

01-oktober-2007

Tehnologije gorivnih celic – 2. del: Moduli gorivnih celic (IEC 62282-2:2004/A1:2007)

Fuel cell technologies -- Part 2: Fuel cell modules

Brennstoffzellentechnologien - Teil 2: Brennstoffzellen-Module

Technologies des piles à combustible - Partie 2: Modules à piles à combustible

Ta slovenski standard je istoveten z: **EN 62282-2:2004/A1:2007**

ICS:

27.070 Gorilne celice Fuel cells

SIST EN 62282-2:2005/A1:2007 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62282-2/A1

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English version

Fuel cell technologies - Part 2: Fuel cell modules
(IEC 62282-2:2004/A1:2007)

Technologies des piles à combustible - Partie 2: Modules à piles à combustible (CEI 62282-2:2004/A1:2007)

Brennstoffzellentechnologien - Teil 2: Brennstoffzellen-Module (IEC 62282-2:2004/A1:2007)

This amendment A1 modifies the European Standard EN 62282-2:2004; it was approved by CENELEC on 2007-04-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 Central Secretariat or to any CENELEC member.

This amendment 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 Central Secretariat has the same status as the official versions.

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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

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Foreword

The text of document 105/111/CDV, future amendment 1 to IEC 62282-2:2004, prepared by IEC TC 105, Fuel cell technologies, was submitted to the IEC-CENELEC parallel Unique Acceptance Procedure and was approved by CENELEC as amendment A1 to EN 62282-2:2004 on 2007-04-01.

The following dates were fixed:

– latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2008-01-01
– latest date by which the national standards conflicting with the amendment have to be withdrawn	(dow)	2010-04-01

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Endorsement notice

The text of amendment 1:2007 to the International Standard IEC 62282-2:2004 was approved by CENELEC as an amendment to the European Standard without any modification.

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NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
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2004

AMENDEMENT 1
AMENDMENT 1
2007-02

Amendement 1

Technologies des piles à combustible –

Partie 2:
Modules à piles à combustible

Amendment 1

Fuel cell technologies –

Part 2:
Fuel cell modules

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FOREWORD

This amendment has been prepared by IEC technical committee 105: Fuel cell technologies.

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

CDV	Report on voting
105/111/CDV	105/134/RVC

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base 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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4.2.6 Piping and fittings

Replace the existing subclause by the following new subclause.

The piping shall comply dimensionally with the technical requirements, and the materials shall be compatible with the intended fluids and process parameters.

Threaded portions shall only be allowed in cases where a leakage does not create a hazard, for example, air supply, cooling circuits. All other joints shall be welded, or at least have fitting connections with a defined sealing area as specified by the manufacturer. Unions, when used in fuel gas or oxygen lines, shall be of the ground-joint type or the flanged-joint type or the compression-joint type having packing resistant to the action of fuel gases.

The internal surfaces of piping shall be thoroughly cleaned to remove loose particles, and the ends of piping shall be carefully reamed to remove obstructions and burrs.

Flexible piping and associated fittings, when used for conveying gas, shall be suitable for the application. Special consideration shall be applied for hydrogen pipes.

NOTE Information on compliance with various requirements can be found in the following standards: ISO 1307, ISO 37, ISO 188, ISO 4672, ISO 1402, ISO 1436.

4.2.6.1 Non-metallic piping systems

Replace the existing subclause by the following new subclause.

Polymeric and elastomeric piping, tubing and components shall be permitted under the following conditions.

Materials shall be demonstrated to be suitable for the combined maximum operating temperatures and pressures and compatible with other materials and chemicals they will come in contact within service and during maintenance. Adequate mechanical strength shall be demonstrated according to 5.3 and 5.4.

Plastic or elastomeric components shall be protected from mechanical damage within the fuel cell module. Shielding may be used as appropriate to protect components against failure of rotating equipment or other mechanical devices housed within the unit.

Any compartment enclosing plastic or elastomeric components used to convey flammable gases shall be protected against the possibility of overheating. A control system shall be provided to terminate fuel flow before temperatures reach a point of minimum 10 K below the lowest heat deflection temperature of the materials used in the fuel conveying components.

Plastic or elastomeric materials used in a hazardous location shall be electrically conductive or otherwise designed to avoid static charge build-up. Plastic or elastomeric materials with insufficient electrical conductivity shall only be used in non-hazardous locations.

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4.2.6.2 Metallic piping systems

Replace the existing subclause by the following new subclause.

Metallic piping systems shall be suitable for the combined maximum operating temperatures and pressures and shall be compatible with other materials and chemicals they will come in contact within service and during maintenance. Metallic piping systems shall be of sufficient mechanical integrity. Adequate mechanical strength shall be demonstrated according to 5.3 and 5.4.

Metallic piping systems shall be compliant with the leakage requirement according to 5.1.

Formed piping bends shall not promote failure caused by the forming process and shall comply with the following.

– Bends shall be made only with bending equipment and procedures intended for that purpose.
– All bends shall be smooth and free from buckling, cracks, or other evidence of mechanical damage.
– The longitudinal weld of the pipe shall be near the neutral axis of the bend.
– The inside radius of a bend shall be not less than the minimum radius specified by the pipe manufacturer.

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4.2.11 Bonding

Replace the existing subclause by the following new subclause.

Accessible non-current-carrying metal parts that are likely to become energized through electrical fault, and that can lead to an electric shock, or electrical energy hazard, shall be bonded to a common point.

To ensure good electrical contact, these connections shall be protected against corrosion. They shall also be designed so that the conductors are secured against loosening and twisting and that contact pressure is maintained.

There shall be no electrochemical corrosion between metallic parts, which form a bonding under the expected conditions of use, storage, and transportation. Resistance against electrochemical corrosion may be achieved through appropriate plating or coating processes.

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5.7 Dielectric strength test

Replace the existing subclause by the following new subclause.

Fuel cell modules may be manufactured according to two different designs:

a) stack earthed/grounded;

b) stack floating.

For design a) no dielectric withstand test can be applied, only the open-circuit voltage appears.

For design b), the dielectric strength test shall be applied at operating temperature, and with cooling media applied. In case the fuel cell module cannot be maintained at operating temperature, the dielectric strength test shall be carried out at the maximum admissible temperature, and the temperature shall be recorded.

If the dielectric strength test is applicable, it shall be performed on the fully assembled fuel cell module disconnected from the fuel supply and purged with purging gas. The test voltage shall be applied between live parts and non-current-carrying metal parts. The test shall be performed either with a DC or an AC voltage of substantially sinusoidal waveform at a frequency between 48 Hz and 62 Hz. The voltage shall be increased steadily to the specified value and then maintained for at least 5 s. The results are acceptable if there is no breakdown of the insulation. The leakage current shall not exceed 1 mA multiplied by the ratio of the test voltage to the open circuit voltage. If this value cannot be met, the data of this test shall be provided to the systems integrator. All consequential hazards shall be mitigated by the systems integrator.

NOTE Dependent on the final application a test duration over 5 s might be required.

The test voltages shall be as mentioned in Table 1.