SLOVENSKI STANDARD
SIST EN 62282-3-201:2014

01-maj-2014

Tehnologije gorivnih celic - 3-201. del: Nepremični elektroenergetski sistemi z gorivnimi celicami - Metode za preskušanje zmogljivosti (IEC 62282-3-201:2013)

Fuel cell technologies - Part 3-201: Stationary fuel cell power systems - Performance test methods for small fuel cell power systems

Brennstoffzellentechnologien - Teil 3-201: Stationäre Brennstoffzellen-Energiesysteme - Leistungskennwerteprüfverfahren

Technologies des piles à combustible - Partie 3-201: Systèmes à pile à combustible stationnaires - Méthodes d'essai des performances pour petits systèmes à pile à combustible

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Fuel cell technologies - Part 3-201: Stationary fuel cell power systems - Performance test methods for small fuel cell power systems

(IEC 62282-3-201:2013)

Technologies des piles à combustible - Partie 3-201: Systèmes à piles à combustible stationnaires - Méthodes d'essai des performances pour petits systèmes à piles à combustible (CEI 62282-3-201:2013)

Brennstoffzellentechnologien - Teil 3-201: Stationäre Brennstoffzellen-Energiesysteme - Leistungskennwerteprüfverfahren (IEC 62282-3-201:2013)

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CENELEC

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels

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Foreword

The text of document 105/444/FDIS, future edition 1 of IEC 62282-3-201, prepared by IEC TC 105 "Fuel cell technologies" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62282-3-201:2013.

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)	2014-05-15
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-08-15

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Endorsement notice

The text of the International Standard IEC 62282-3-201:2013 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 61672-2	NOTE	Harmonised as EN 61672-2.
ISO 6326 Series	NOTE	Harmonised in EN ISO 6326 series.
ISO 6974 Series	NOTE	Harmonised in EN ISO 6974 series.
ISO 6975	NOTE	Harmonised as EN ISO 6975.
ISO 6976	NOTE	Harmonised as EN ISO 6976.
ISO 7941	NOTE	Harmonised as EN 27941.
ISO 11541	NOTE	Harmonised as EN ISO 11541.

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.

Publication	Year	Title	EN/HD	Year
IEC 61672-1	-	Electroacoustics - Sound level meters - Part 1: Specifications	EN 61672-1	-
IEC 62282-3-200	-	Fuel cell technologies - Part 3-200: Stationary fuel cell power systems - Performance test methods	EN 62282-3-200	-
ISO 5815	Series	Water quality - Determination of biochemical oxygen demand after n days (BODn)	-	-
ISO 6060	-	Water quality - Determination of the chemical oxygen demand	-	-
ISO 6798	-	Reciprocating internal combustion engines - Measurement of emitted airborne noise - Engineering method and survey method	-	-
ISO 9000	-	Quality management systems - Fundamentals and vocabulary	EN ISO 9000	-
ISO 10523	-	Water quality - Determination of pH	EN ISO 10523	-
ASTM F2602	-	Standard Test Method for Determining the Molar Mass of Chitosan and Chitosan Salts by Size Exclusion Chromatography with Multi-angle Light Scattering Detection (SEC-MALS)	-	-

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INTERNATIONAL STANDARD

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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 62282-3-201 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
105/444/FDIS	105/454/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 parts of the IEC 62282 series, under the general title *Fuel cell technologies*, can be found on the IEC website.

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

This part of IEC 62282 provides consistent and repeatable test methods for the electric/thermal and environmental performance of small stationary fuel cell power systems.

This international standard limits its scope to small (below 10 kW electric power output) stationary fuel cell power systems and provides test methods specifically designed for them in detail. It is based on IEC 62282-3-200, that generally describes performance test methods that are common to all types of fuel cells.

This standard describes type tests and their test methods only. No routine tests are required or identified, and no performance targets are set in this standard.

This standard is to be used by manufacturers of small stationary fuel cell power systems and/or those who evaluate the performance of their systems for certification purposes.

Users of this standard may selectively execute test items that are suitable for their purposes from those described in this standard. This standard is not intended to exclude any other methods.

FUEL CELL TECHNOLOGIES –

Part 3-201: Stationary fuel cell power systems – Performance test methods for small fuel cell power systems

1 Scope

This part of IEC 62282 provides test methods for the electric/thermal and environmental performance of small stationary fuel cell power systems that meet the following criteria:

- output: nominal electric power output of less than 10 kW;
- output mode: grid-connected/independent operation or stand-alone operation with single-phase AC output or 3-phase AC output not exceeding 1 000 V, or DC output not exceeding 1 500 V;

  NOTE The limit to 1 000 V comes from the definition for "low voltage" given in IEV 601-01-26.
- operating pressure: maximum allowable working pressure of less than 0,1 MPa (gauge) for the fuel and oxidant passages;
- fuel: gaseous fuel (natural gas, liquefied petroleum gas, propane, butane, hydrogen, etc.) or liquid fuel (kerosene, methanol, etc.);
- oxidant: air.

This standard covers fuel cell power systems whose primary purpose is the production of electric power and whose secondary purpose may be the utilization of by-product heat. Accordingly, fuel cell power systems for which the use of heat is primary and the use of by-product electric power is secondary are outside the scope of this standard.

All systems with integrated batteries are covered by this standard. This includes systems where batteries are recharged internally or recharged from an external source.

This standard does not cover additional auxiliary heat generators that produce thermal energy.

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 61672-1, *Electroacoustics – Sound level meters – Part 1: Specifications*

IEC 62282-3-200, *Fuel cell technologies – Part 3-200: Stationary fuel cell power systems – Performance test methods*

ISO 5815 (all parts), *Water quality – Determination of biochemical oxygen demand after n days (BODn)*

ISO 6060, *Water quality – Determination of the chemical oxygen demand*

ISO 6798, *Reciprocating internal combustion engines – Measurement of emitted airborne noise – Engineering method and survey method*

ISO 9000, *Quality management systems – Fundamentals and vocabulary*

ISO 10523, *Water quality – Determination of pH*

ASTM F2602, *Standard Test Method for Determining the Molar Mass of Chitosan and Chitosan Salts by Size Exclusion Chromatography with Multi-angle Light Scattering Detection (SEC MALS)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
noise level
sound pressure level produced by the fuel cell power system measured at a specified distance in all operation modes

Note 1 to entry: Expressed as decibels (dB) and measured as described in 15.2.

3.2
background noise level
sound pressure level of ambient noise at the measurement point

Note 1 to entry: This measurement is taken as described in 15.2 with the fuel cell power system in the cold state.

3.3
battery
electrochemical energy storage device that provides energy input to support parasitic loads and/or provides electric energy output

Note 1 to entry: Back-up batteries for control software memory and similar applications are not included.

3.4
cold state

condition of a fuel cell power system at ambient temperature with no power input or output, ready for start-up

[SOURCE: IEC/TS 62282-1:2010, definition 3.110.1, modified – addition of "ready for start-up"]

3.5
discharge rate
mass of discharged exhaust gas component per unit of time

3.6
discharge water
water that is discharged from the fuel cell power system

Note 1 to entry: Discharge water does not constitute part of a thermal recovery system.

3.7
electric efficiency
ratio of the average net electric power output of a fuel cell power system at a given duration to the average fuel power fed to the same fuel cell power system at the same duration

[SOURCE: IEC/TS 62282-1:2010, definition 3.30.1 modified – original definition has been modified and the NOTE dropped]