
Tehnologija gorivnih celic - 8-201. del: Sistemi za shranjevanje energije, ki uporabljajo module gorivnih celic v obrnjeni smeri - Preskusni postopki za delovanje elektroenergetskih sistemov (IEC 62282-8-201:2020)

Fuel cell technologies - Part 8-201: Energy storage systems using fuel cell modules in reverse mode - Test procedures for the performance of power-to-power systems (IEC 62282-8-201:2020)

Brennstoffzellentechnologien – Teil 8-201: Energiespeichersysteme mit Brennstoffzellenmodulen im reversiblen Betrieb – Prüfverfahren zum Leistungsverhalten von Power-to-Power-Systemen (IEC 62282-8-201:2020)

Technologies des piles à combustible - Partie 8-201: Systèmes de stockage de l'énergie utilisant des modules à piles à combustible en mode inversé - Procédures d'essai pour la performance des systèmes électriques à électriques (IEC 62282-8-201:2020)

Ta slovenski standard je istoveten z: EN IEC 62282-8-201:2020

ICS:

27.070 Gorilne celice Fuel cells

SIST EN IEC 62282-8-201:2020 en

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EUROPEAN STANDARD

EN IEC 62282-8-201

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English Version

Fuel cell technologies - Part 8-201: Energy storage systems
using fuel cell modules in reverse mode - Test procedures for
the performance of power-to-power systems
(IEC 62282-8-201:2020)

Technologies des piles à combustible - Partie 8-201:
Systèmes de stockage de l'énergie utilisant des modules à
piles à combustible en mode inversé - Procédures d'essai
pour la performance des systèmes électriques à électriques
(IEC 62282-8-201:2020)

Brennstoffzellentechnologien – Teil 8-201:
Energiespeichersysteme mit Brennstoffzellenmodulen im
reversiblen Betrieb – Prüfverfahren zum Leistungsverhalten
von Power-to-Power-Systemen
(IEC 62282-8-201:2020)

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European Committee for Electrotechnical Standardization
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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 62282-8-201:2020 (E)**European foreword**

The text of document 105/764/FDIS, future edition 1 of IEC 62282-8-201, prepared by IEC/TC 105 "Fuel cell technologies" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62282-8-201:2020.

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) 2020-11-14
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-02-14

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60079-0	NOTE	Harmonized as EN IEC 60079-0
IEC 60079-10-1	NOTE	Harmonized as EN 60079-10-1
IEC 60079-29-2	NOTE	Harmonized as EN 60079-29-2
IEC 60364 series	NOTE	Harmonized as HD 60364 series
IEC 61000-4-7	NOTE	Harmonized as EN 61000-4-7
IEC 61000-4-13	NOTE	Harmonized as EN 61000-4-13
IEC 61960-3	NOTE	Harmonized as EN 61960-3
IEC 61987-1	NOTE	Harmonized as EN 61987-1
IEC 62282-2	NOTE	Harmonized as EN 62282-2
IEC 62282-3-100	NOTE	Harmonized as EN 62282-3-100
IEC 62282-3-300	NOTE	Harmonized as EN 62282-3-300
IEC 62933-1:2018	NOTE	Harmonized as EN IEC 62933-1:2018 (not modified)
ISO 15839	NOTE	Harmonized as EN ISO 15839

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.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61427-1	-	Secondary cells and batteries for renewable energy storage - General requirements and methods of test - Part 1: Photovoltaic off-grid application	EN 61427-1	-
IEC 61427-2	-	Secondary cells and batteries for renewable energy storage - General requirements and methods of test - Part 2: On-grid applications	EN 61427-2	-
IEC 62282-3-200	-	Fuel cell technologies - Part 3-200: Stationary fuel cell power systems - Performance test methods	EN 62282-3-200	-
IEC 62282-3-201	-	Fuel cell technologies - Part 3-201: Stationary fuel cell power systems - Performance test methods for small fuel cell power systems	EN 62282-3-201	-
IEC 62282-8-101	-	Fuel cell technologies - Part 8-101: Energy storage systems using fuel cell modules in reverse mode - Test procedures for the performance of solid oxide single cells and stacks, including reversible operation	-	-
IEC 62282-8-102	-	Fuel cell technologies - Part 8-102: Energy storage systems using fuel cell modules in reverse mode - Test procedures for the performance of single cells and stacks with proton exchange membrane, including reversible operation	EN IEC 62282-8-102 ¹	-
IEC 62933-2-1	2017	Electrical energy storage (EES) systems - Part 2-1: Unit parameters and testing methods - General specification	EN IEC 62933-2-1	2018

¹ To be published. Stage at the time of publication: prEN IEC 62282-8-102:2018.

EN IEC 62282-8-201:2020 (E)

ISO/IEC Guide 98-3	-	Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)	-	-
ISO 3746	-	Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane	EN ISO 3746	-
ISO 4064-1	-	Water meters for cold potable water and hot water - Part 1: Metrological and technical requirements	EN ISO 4064-1	-
ISO 4064-2	-	Water meters for cold potable water and hot water - Part 2: Test methods	EN ISO 4064-2	-
ISO 7888	-	Water quality - Determination of electrical conductivity	EN 27888	-
ISO 9614-1	-	Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 1: Measurement at discrete points	EN ISO 9614-1	-
ISO 11204	-	Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions applying accurate environmental corrections	EN ISO 11204	-
ISO 16111	-	Transportable gas storage devices - Hydrogen absorbed in reversible metal hydride	-	-
ISO 19880-1	-	Gaseous hydrogen - Fuelling stations - Part 1: General requirements	-	-
ISO 19881	-	Gaseous hydrogen - Land vehicle fuel containers	-	-
ISO 19882	-	Gaseous hydrogen - Thermally activated pressure relief devices for compressed hydrogen vehicle fuel containers	-	-
ISO 19884	-	Gaseous hydrogen - Cylinders and tubes for stationary storage	EN ISO 19884 ²	-
ISO 22734-1	-	Hydrogen generators using water electrolysis process - Part 1: Industrial and commercial applications	-	-
ISO 22734-2	-	Hydrogen generators using water electrolysis process - Part 2: Residential applications	-	-

² To be published. Stage at the time of publication: FprEN ISO 19884:2019.



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INTERNATIONAL STANDARD

NORME INTERNATIONALE



Fuel cell technologies –
Part 8-201: Energy storage systems using fuel cell modules in reverse mode –
Test procedures for the performance of power-to-power systems

Technologies des piles à combustible –
Partie 8-201: Systèmes de stockage de l'énergie utilisant des modules à piles à
combustible en mode inversé – Procédures d'essai pour la performance des
systèmes électriques à électriques

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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	8
3 Terms, definitions and symbols	9
3.1 Terms and definitions.....	9
3.2 Symbols.....	13
4 Measurement instruments and measurement methods.....	14
4.1 General.....	14
4.2 Instrument uncertainty	15
4.3 Measurement plan	15
4.4 Environmental conditions	16
4.5 Maximum permissible variation in test operating conditions	17
5 System parameters.....	17
5.1 General.....	17
5.2 Electric energy storage capacity	17
5.3 Rated electric power input	18
5.4 Rated net electric power output.....	18
5.5 Roundtrip electrical efficiency	18
5.6 System response (step response time and ramp rate).....	18
5.6.1 Step response time.....	18
5.6.2 Ramp rate	19
5.7 Minimum switchover time.....	20
5.8 Quiescent state loss rate	20
5.9 Heat input rate	20
5.10 Recovered heat output rate.....	20
5.11 Acoustic noise level	20
5.12 Total harmonic distortion.....	20
5.13 Discharge water quality.....	21
6 Test methods and procedures	21
6.1 General.....	21
6.2 Electric energy storage capacity test.....	21
6.3 Rated electric power input test.....	22
6.4 Rated net electric power output test.....	22
6.5 Roundtrip electrical efficiency test	23
6.6 Other system performance test	23
6.6.1 System response test, step response time and ramp rate	23
6.6.2 Minimum switchover time test.....	25
6.6.3 Quiescent state loss rate test	25
6.6.4 Heat input rate test	26
6.6.5 Recovered heat output rate test.....	26
6.6.6 Acoustic noise level test	26
6.6.7 Total harmonic distortion test.....	27
6.6.8 Discharge water quality test.....	27
6.7 Component performance test	27
6.7.1 Electrolyser performance test	27

6.7.2	Hydrogen storage performance test	28
6.7.3	Fuel cell performance test	28
6.7.4	Water management system performance test	29
6.7.5	Battery performance test	29
6.7.6	Oxygen storage performance test	29
7	Test reports	29
7.1	General	29
7.2	Report items	29
7.3	Tested system data description	30
7.4	Test condition description	30
7.5	Test data description	30
7.6	Uncertainty evaluation	30
	Bibliography	31
	Figure 1 – System configuration of electric energy storage system using hydrogen – Type with electrolyser and fuel cell	7
	Figure 2 – System configuration of electric energy storage system using hydrogen – Type with reversible cell	8
	Figure 3 – Typical sequence of phases during the system operation	16
	Figure 4 – Step response time and ramp rate of EES system	19
	Figure 5 – Step response test	24
	Figure 6 – Minimum switch over time test	25
	Table 1 – Symbols	14
	Table 2 – Required steps before executing the measurement	16
	Table 3 – Example of document format of roundtrip electrical efficiency	23
	Table 4 – Additional parameters measured on the electrolyser or the reversible cell module in electrolysis mode	27
	Table 5 – Additional parameters measured on the hydrogen storage component	28
	Table 6 – Additional parameters measured on the fuel cell or the reversible cell module in fuel cell mode	28

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FUEL CELL TECHNOLOGIES –

Part 8-201: Energy storage systems using fuel cell modules in reverse mode – Test procedures for the performance of power-to-power systems

FOREWORD

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International Standard IEC 62282-8-201 has been prepared by IEC technical committee 105: Fuel cell technologies.

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

FDIS	Report on voting
105/764/FDIS	105/777/RVD

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

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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 "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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INTRODUCTION

This part of IEC 62282 describes performance evaluation methods for electric energy storage systems using hydrogen that employ electrochemical reactions both for water/steam electrolysis and electric generation.

This document is intended for power to power systems which typically employ a set of electrolyser and fuel cell, or a reversible cell for devices of electric charge and discharge.

A typical targeting application of the electric energy storage systems using hydrogen is in the class of energy intensive electric energy storage. The systems are recognized as critically useful for the relatively long-term power storage operation, such as efficient storage and supply of the renewable power derived electric energy and grid stabilization.

IEC 62282-8 (all parts) aims to develop performance test methods for power storage and buffering systems based on electrochemical modules (combining electrolysis and fuel cells, in particular reversible cells), taking into consideration both options of re-electrification and substance (and heat) production for sustainable integration of renewable energy sources.

Under the general title *Energy storage systems using fuel cell modules in reverse mode*, the IEC 62282-8 series consists of the following parts:

- IEC 62282-8-101: *Test procedures for the performance of solid oxide single cells and stacks, including reversible operation*
- IEC 62282-8-102: *Test procedures for the performance of single cells and stacks with proton exchange membranes, including reversible operation*
- IEC 62282-8-103¹: *Alkaline single cell and stack performance including reversible operation*
- IEC 62282-8-201: *Test procedures for the performance of power-to-power systems*
- IEC 62282-8-202²: *Power-to-power systems – Safety*
- IEC 62282-8-300 (all parts)³: *Power-to-substance systems*

As a priority dictated by the emerging needs for industry and opportunities for technological development, IEC 62282-8-101, IEC 62282-8-102 and IEC 62282-8-201 have been initiated jointly and firstly. These parts are presented as a package to highlight the need for an integrated approach as regards the system's application (i.e. a solution for energy storage) and its fundamental constituent components (i.e. fuel cells operated in reverse or reversing mode).

IEC 62282-8-103, IEC 62282-8-202 and IEC 62282-8-300 (all parts) are suggested but are left for initiation at a later stage.

¹ Under consideration.

² Under consideration.

³ Under consideration.