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| STN | Technológia palivových článkov Časť 4-202: Napájacie systémy na palivové články pre pohonné a pomocné napájacie jednotky Bezpilotné lietadlá Skúšobné metódy prevádzkových vlastností | STN EN IEC 62282-4-202 36 4512 |
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Fuel cell technologies - Part 4-202: Fuel cell power systems for propulsion and auxiliary power units - Unmanned aircrafts - Performance test methods

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 01/24

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EN IEC 62282-4-202

NORME EUROPÉENNE

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December 2023

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English Version

**Fuel cell technologies - Part 4-202: Fuel cell power systems for
propulsion and auxiliary power units - Unmanned aircrafts -
Performance test methods
(IEC 62282-4-202:2023)**

Technologies des piles à combustibles - Partie 4-202:
Systèmes à piles à combustible pour les groupes auxiliaires
de puissance et de propulsion - Aéronefs sans pilote -
Méthodes d'essai des performances
(IEC 62282-4-202:2023)

Brennstoffzellentechnologien - Teil 4-202: Brennstoffzellen-
Energiesysteme für Antriebs- und Hilfsaggregate -
Unbemannte Luftfahrzeugsysteme - Leistungsprüfverfahren
(IEC 62282-4-202:2023)

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 62282-4-202:2023 (E)**European foreword**

The text of document 105/998/FDIS, future edition 1 of IEC 62282-4-202, prepared by IEC/TC 105 "Fuel cell technologies" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62282-4-202:2023.

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IEC 62282-3-200:2015 NOTE Approved as EN 62282-3-200:2016 (not modified)

IEC 62282-3-201:2017 NOTE Approved as EN 62282-3-201:2017 (not modified)

IEC 62282-4-102:2022 NOTE Approved as EN IEC 62282-4-102:2023 (not modified)

IEC 62282-6-200:2016 NOTE Approved as EN 62282-6-200:2017 (not modified)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
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| IEC 60050-485 | - | International Electrotechnical Vocabulary (IEV) - Part 485: Fuel cell technologies | - | - |
| IEC 60529 | - | Degrees of protection provided by enclosures (IP Code) | EN 60529 | - |



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Edition 1.0 2023-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Fuel cell technologies –
Part 4-202: Fuel cell power systems for propulsion and auxiliary power units –
Unmanned aircrafts – Performance test methods**

**Technologies des piles à combustibles –
Partie 4-202: Systèmes à piles à combustible pour les groupes auxiliaires de
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INTERNATIONAL STANDARD

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FUEL CELL TECHNOLOGIES –

Part 4-202: Fuel cell power systems for propulsion and auxiliary power units – Unmanned aircrafts – Performance test methods

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IEC 62282-4-202 has been prepared by IEC technical committee 105: Fuel cell technologies. It is an International Standard.

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

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|--------------|------------------|
| Draft | Report on voting |
| 105/998/FDIS | 105/1009/RVD |

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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.

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- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

This part of IEC 62282-4 provides consistent and repeatable test methods for the electrical, thermal and environmental performance of fuel cell power systems for unmanned aircrafts.

The IEC 62282-4 series deals with the safety, performance, and interchangeability of fuel cell power systems for propulsion for categories of vehicles other than road vehicles and for auxiliary power units (APUs). Among the categories covered by the IEC 62282-4 series, this document focuses on fuel cell power systems for unmanned aircrafts because there is an urgent demand for such an application in the world.

This part of IEC 62282-4 describes type tests and their test methods only. No routine tests are required or identified, and no performance targets are set in this document.

The purpose of this document is to evaluate the fuel cell system in the various combinations of fuel cell and unmanned aircrafts. This document provides a framework for designing and evaluating a fuel cell system for use specifically in an unmanned aircraft.

This part of IEC 62282-4 can be used by manufacturers of fuel cell power systems used for unmanned aircrafts or those who evaluate the performance of their systems for certification purposes.

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

FUEL CELL TECHNOLOGIES –

Part 4-202: Fuel cell power systems for propulsion and auxiliary power units – Unmanned aircrafts – Performance test methods

1 Scope

This part of IEC 62282 covers performance test methods of fuel cell power systems intended to be used to power unmanned aircrafts, including general requirements, start-up, shutdown, power output, continuous running time, electric efficiency, data transmission, warning and monitoring, environmental compatibility, etc.

The scope of this document is limited to electrically powered unmanned aircrafts with a maximum take-off mass not exceeding 150 kg (i.e. level 5 or lower unmanned aircrafts (UAs)).

This document applies to fuel cell power systems with a rated output voltage not exceeding 220 V DC for outdoor use.

This document applies only to compressed gaseous hydrogen-fuelled fuel cell power systems.

This document does not apply to reformer-equipped fuel cell power systems.

2 Normative references

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.

IEC 60050-485, *International Electrotechnical Vocabulary (IEV) – Part 485: Fuel cell technologies*, available at <http://www.electropedia.org>

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