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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 puissance et de propulsion – Aéronefs sans pilote – Méthodes d'essai des performances

IEC 62282-4-202:2023(en-fr)

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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

FOREWORD

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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:

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.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- 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- withdrawn, or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

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-485 and the following apply.

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- ISO Online browsing platform: available at https://www.iso.org/obp