

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Fuel cell technologies –  
Part 3-202: Stationary fuel cell power systems – Performance test methods for  
small fuel cell power systems for multiple units operation**

**Technologies des piles à combustible –  
Partie 3-202: Systèmes à piles à combustible stationnaires – Méthodes d'essai  
des performances pour petits systèmes à piles à combustible destinés à  
l'exploitation d'unités multiples**



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### Fuel cell technologies –

**Part 3-202: Stationary fuel cell power systems – Performance test methods for small fuel cell power systems for multiple units operation**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## FUEL CELL TECHNOLOGIES –

**Part 3-202: Stationary fuel cell power systems – Performance test methods for small fuel cell power systems for multiple units operation**

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IEC 62282-3-202 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
105/1094/FDIS	105/1101/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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://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](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

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## INTRODUCTION

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

This document limits its scope to small stationary fuel cell power systems (electric power output below 10 kW) and provides test methods specifically designed for them in detail. It is based on IEC 62282-3-201.

For multiple units operation, each electric power output of the unit is limited to below 10 kW.

This document is intended for manufacturers of small stationary fuel cell power systems or those who evaluate the performance of their systems for certification purposes.

Users of this document can 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.

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

## FUEL CELL TECHNOLOGIES –

### Part 3-202: Stationary fuel cell power systems – Performance test methods for small fuel cell power systems for multiple units operation

#### 1 Scope

This part of IEC 62282 provides performance test methods specialized for the thermal and electrical characteristics of an energy management system to effectively share the heat and power of networked small stationary fuel cell power systems. These test methods are applied for each small stationary fuel cell power system. This document covers small stationary fuel cell power systems which can be complemented with a supplementary heat generator or a thermal storage system, or both, such as:

- output: rated electric power output of less than 10 kW for each system;
- output mode: grid-connected or independent operation or stand-alone operation with alternating current (AC) output not exceeding 240 V or direct current (DC) output;
- operating pressure: maximum allowable working pressure of less than 0,1 MPa (G) for the fuel and oxidant passages;
- fuel: gaseous fuel (natural gas, liquefied petroleum gas, propane, butane, hydrogen) or liquid fuel (kerosene, methanol);
- oxidant: air.

This document does not apply to small stationary fuel cell power systems with electricity storage other than (small scale) back-up power for safety, monitoring and control.

NOTE Regarding data linkage for conducting the performance tests specified in this document with operating management systems (energy management system) or multiple fuel cell power systems (mFCPS), an appropriate IEC standard can be selected and implemented. The related standards are IEC 61850-7-420, IEC TR 61850-90-27, IEC 62394, IEC 62746-10-1, IEC 62746-10-3, etc. The data linkage and implementation for realizing the functions of the system that monitors mFCPS and performance differ depending on the vendor of the mFCPS control system, so the methods for data linkage and implementation are not specified in this document.

#### 2 Normative references

There are no normative references in this document.

#### 3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

##### 3.1

##### **cold state**

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

[SOURCE: IEC 60050-485:2020, 485-21-01, modified – "ready for start-up" added.]