

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Fuel cell technologies –
Part 7-2: Test methods – Single cell and stack performance tests for solid oxide
fuel cells (SOFCs)**

**Technologies des piles à combustible –
Partie 7-2: Méthodes d'essai – Essais de performance de cellule élémentaire et
de pile pour les piles à combustible à oxyde solide (SOFC)**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FUEL CELL TECHNOLOGIES –

**Part 7-2: Test methods – Single cell and stack performance tests
for solid oxide fuel cells (SOFCs)**

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IEC 62282-7-2 has been prepared by IEC technical committee 105: Fuel cell technologies. It is an International Standard.

This second edition cancels and replaces the first edition published in 2021. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Table 1 has been revised to specify the units missing for some terms;
- b) bibliographical entries (ISO/TR 15916, SOCTESQA test modules and ISO/IEC Guide 98-6:2021) have been added to provide further information.

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

Draft	Report on voting
105/1093/FDIS	105/1099/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- withdrawn, or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

Solid oxide fuel cells (SOFCs) have a broad range of geometry and size. As such, in general, peripherals like current collectors and gas manifolds are unique to each cell or stack and are often incorporated into a cell or stack to form one integrated unit. In addition, they tend to have a significant effect on the power generation characteristics of the cell or stack. This document therefore introduces as its subject "cell/stack assembly units", which are defined as those units containing not only a cell or stack but also peripherals.

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FUEL CELL TECHNOLOGIES –

Part 7-2: Test methods – Single cell and stack performance tests for solid oxide fuel cells (SOFCs)

1 Scope

This part of IEC 62282 applies to SOFC cell/stack assembly units, testing systems, instruments and measuring methods, and specifies test methods to test the performance of SOFC cells and stacks.

This document is not applicable to small button cells that are designed for SOFC material testing and provide no practical means of fuel utilization measurement.

This document is used based on the recommendation of the entity that provides the cell performance specification or for acquiring data on a cell or stack in order to estimate the performance of a system based on it. Users of this document can selectively execute test items suitable for their purposes from those described in this document.

Users can substitute selected test methods of this document with equivalent test methods of IEC 62282-8-101 for solid oxide cell (SOC) operation for energy storage purposes, operated in reverse or reversible mode.

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 <https://www.electropedia.org>

IEC 60584-1, *Thermocouples – Part 1: EMF specifications and tolerances*

IEC 60584-3, *Thermocouples – Part 3: Extension and compensating cables – Tolerances and identification system*

IEC 61515, *Mineral insulated metal-sheathed thermocouple cables and thermocouples*

ISO 5167, *Measurement of fluid flow – Procedures for the evaluation of uncertainties*

ISO 5974 (all parts), *Natural gas – Determination of composition with defined uncertainty by gas chromatography*

ISO 7066-2, *Assessment of uncertainty in the calibration and use of flow measurement devices – Part 2: Non-linear calibration relationships*

ISO 8573-1, *Compressed air – Part 1: Contaminants and purity classes*

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