

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



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**Fuel cell technologies –  
Part 2-100: Fuel cell modules – Safety**

**Technologies des piles à combustible –  
Partie 2-100: Modules à piles à combustible – Sécurité**



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Part 2-100: Fuel cell modules – Safety**

**Technologies des piles à combustible –  
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ELECTROTECHNICAL  
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Part 2-100: Fuel cell modules – Safety****FOREWORD**

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International Standard IEC 62282-2-100 has been prepared by IEC technical committee 105: Fuel cell technologies.

This first edition cancels and replaces IEC 62282-2, published in 2012.

This edition includes the following significant technical changes with respect to IEC 62282-2:2012:

- references to IEC 60050-485<sup>1</sup> instead of IEC TS 62282-1;
- update of normative references;
- update of definitions, in particular **fuel cell module for normal operation**;
- leakage values under normal and abnormal operation have been addressed;
- a delayed ignition test has been included;
- protective measures to limit gas leakage have been included;

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<sup>1</sup> Under preparation. Stage at the time of publication IEC BPUB 60050-485:2019.

- the requirements for insulation between live parts and **SELV** have been updated;
- the general safety strategy has been modified to reflect the needs for different application standards; the modifications are in line with similar modifications made to IEC 62282-3-100;
- the electrical components clause has been modified to reflect the needs for different application standards; the modifications are in line with similar modifications made to IEC 62282-3-100;
- protective earthing as part of the module or bonding as a measure within the installation has been introduced;
- a dielectric strength test has been completely updated by referring to IEC 62744-1 for voltages up to 1 000 V AC/1 500 V DC;
- a new “pressure drop method” leakage test method has been included;
- terms such as normal/abnormal e.g. in conjunction with operating conditions are used in a more consistent way;
- inclusion of definitions for **hazards** and **hazardous situations** based on the IEC 60079 series;
- the marking and instructions have been enlarged to provide the system integrator with the necessary information;
- a new Annex A addressing significant **hazards**, **hazardous situations** and events dealt with in this document, and linked to 4.1 (General safety strategy) has been added.

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

FDIS	Report on voting
105/782/FDIS	105/793/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.

NOTE In this document, the following print type is used:

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The reader's attention is drawn to the fact that Annex C lists all of the “in-some-country” clauses on differing practices of a less permanent nature relating to the subject of this document.

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## FUEL CELL TECHNOLOGIES – Part 2-100: Fuel cell modules – Safety

### 1 Scope

This part of IEC 62282 provides safety related requirements for construction, operation under normal and abnormal conditions and the testing of **fuel cell modules**. It applies to **fuel cell modules** with the following electrolyte chemistry:

- alkaline;
- polymer electrolyte (including direct methanol **fuel cells**)<sup>2</sup>;
- phosphoric acid;
- molten carbonate;
- solid oxide;
- aqueous solution of salts.

**Fuel cell modules** can be provided with or without an enclosure and can be operated at significant pressurization levels or close to ambient pressure.

This document deals with conditions that can yield **hazards** to persons and cause damage outside the **fuel cell modules**. Protection against damage inside the **fuel cell modules** is not addressed in this document, provided it does not lead to **hazards** outside the module.

These requirements can be superseded by other standards for equipment containing **fuel cell modules** as required for particular applications.

This document does not cover **fuel cell** road vehicle applications.

This document is not intended to limit or inhibit technological advancement. An appliance employing materials or having forms of construction differing from those detailed in the requirements of this document can be examined and tested according to the purpose of these requirements and, if found to be substantially equivalent, can be considered to comply with this document.

The **fuel cell modules** are components of final products. These products require evaluation according to appropriate end-product safety requirements.

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<sup>2</sup> Also known as proton exchange membrane fuel cell.