IEC 62282-4-101

Edition 2.0 2022-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Fuel cell technologies –
Part 4-101: Fuel cell power systems for electrically powered industrial trucks – Safety

Technologies des piles à combustible –
Partie 4-101: Systèmes à pile à combustible pour chariots de manutention électriques – Sécurité

IEC 62282-4-101:2022 (en-fr)

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FUEL CELL TECHNOLOGIES –

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FOREWORD

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International Standard IEC 62282-4-101 has been prepared by IEC technical committee 105: Fuel cell technologies.

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

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

a) revision of the title of this document;
b) revision of reference standards;
c) addition of new subclauses (4.3, 4.14.5, 4.15.3, 4.15.4, 4.16, 5.6, and 5.23);
d) previous 4.15 was revised as "4.16 Risk assessment and risk reduction";
e) revision of 4.6 3), access to the manual shutoff valve;
f) revision of requirements for battery terminals that are threaded (4.14.10.1);

g) revision of requirements for double layer capacitors (4.14.10.2);

h) revision of external leakage test (5.5) and ultimate strength test (5.7);

i) revision of temperature limits on capacitors depending on the temperature rating of the material (Table 3);

j) revision of markings that are not relevant (Clause 7);

k) added “Significant hazards, hazardous situations and events dealt with in this document” as a new informative annex (Annex B).

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

Draft	Report on voting
105/912/FDIS	105/922/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/standardsdev/publications.

A list of all parts of 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,
- replaced by a revised edition, or
- amended.

INTRODUCTION

The IEC 62282-4 series deals with categories such as safety, performance and interchangeability of fuel cell power systems for propulsion other than road vehicles and auxiliary power units (APU). Among the categories mentioned above, this document, IEC 62282-4-101, focuses on safety of electrically powered industrial trucks with fuel cell power systems because such applications are urgently demanded in the world. Future documents in this part of IEC 62282-4 will deal with other applications related to onboard vehicles other than road vehicles and auxiliary power units (APU).

FUEL CELL TECHNOLOGIES –

Part 4-101: Fuel cell power systems for electrically powered industrial trucks – Safety

1 Scope

This document deals with safety of fuel cell power systems for propulsion other than road vehicles and auxiliary power units (APU).

This part of IEC 62282 covers safety requirements for fuel cell power systems intended to be used in electrically powered industrial trucks as defined in ISO 5053-1, except for:

– rough-terrain trucks;
– non-stacking low-lift straddle carriers;
– stacking high-lift straddle carriers;
– rough-terrain variable-reach trucks;
– slewing rough-terrain variable-reach trucks;
– variable-reach container handlers;
– pedestrian propelled trucks.

This document applies to gaseous hydrogen-fuelled fuel cell power systems and direct methanol fuel cell power systems for electrically powered industrial trucks.

The following fuels are considered within the scope of this document:

– gaseous hydrogen;
– methanol.

This document covers the fuel cell power system as defined in 3.8 and Figure 1.

This document applies to PEC type fuel cell power systems, with a rated output voltage not exceeding 150 V DC for indoor and outdoor use.

This document covers fuel cell power systems whose fuel source container is permanently attached to either the industrial truck or the fuel cell power system.

In accordance with IEC Guide 116, significant hazards, hazardous situations and events dealt with in this document are shown in Annex B.

The following are not included in the scope of this document:

– detachable type fuel source containers;
– hybrid trucks that include an internal combustion engine;
– reformer-equipped fuel cell power systems;
– fuel cell power systems intended for operation in potentially explosive atmospheres;
– fuel storage systems using liquid hydrogen.