



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 27748.1-2017

Stationary fuel cell power systems -- Part 1: Safety

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Foreword

GB/T 27748 "Stationary fuel cell power systems" is divided into the following 4 parts:

- Part 1: Safety;
- Part 2: Performance test methods;
- Part 3: Installation;
- Part 4: Performance test methods for small fuel cell power systems.

This Part is Part 1 of GB/T 27748.

This Part is drafted in accordance with the rules given in GB/T 1.1-2009.

This Part replaces GB/T 27748.1-2011 "Stationary fuel cell power system - Part 1: Safety". Compared with GB/T 27748.1-2011, the main technical changes are as follows:

- On the whole, reorganize the safety requirements part;
- The main modification is to put forward electrical safety requirements for internal components;
- Clarify a large number of requirements and test methods, especially pressure leakage and strength tests;

- Expand the wind tests part;
- ADD condensate discharge and air leakage tests.

This Part, using translation method, is identical to IEC 62282-3-100:2012 "Fuel cell technologies - Part 3-100: Stationary fuel cell power systems - Safety".

China's documents which have a consistent correspondence with the international documents normatively referenced in this Part are given in Annex NA.

This Part was proposed by China Electrical Equipment Industry Association.

This Part shall be under the jurisdiction of National Technical Committee 342 on Fuel Cell and Flow Battery of Standardization Administration of China (SAC/TC 342).

Drafting organizations of this Part: Suzhou UL-CCIC Co., Ltd.; Machinery Stationary fuel cell power systems - Part 1: Safety

1 Scope

This Part of GB/T 27748 is the product safety standard. It applies to stationary packaged, self-contained fuel cell power systems or fuel cell power systems comprised of factory matched packages of integrated systems which generate electricity through electrochemical reactions.

This Part applies to systems

- intended for electrical connection to mains direct, or with a transfer switch, or to a standalone power distribution system;
- intended to provide AC or DC power;
- with or without the ability to recover useful heat;
- intended for operation on the following input fuels
 - a) natural gas and other methane rich gases derived from renewable (biomass) or fossil fuel sources, for example, landfill gas, digester gas, coal mine gas;
 - b) fuels derived from oil refining, for example, diesel, gasoline, kerosene,

liquefied petroleum gases such as propane and butane;

c) alcohols, esters, ethers, aldehydes, ketones, Fischer-Tropsch liquids and other suitable hydrogen-rich organic compounds derived from renewable (biomass) or fossil fuel sources, for example, methanol, ethanol, dimethyl ether, biodiesel;

d) hydrogen, gaseous mixtures containing hydrogen gas, for example, synthesis gas, town gas.

This Part does not cover:

- micro fuel cell power systems;
- portable fuel cell power systems;
- propulsion fuel cell power systems.

Note: For special application such as "marine auxiliary power", additional requirements may be given by the relevant marine ship register standard.

This Part is applicable to stationary fuel cell power systems intended for indoor and outdoor commercial, industrial and residential use in non-hazardous (unclassified) areas.

This standard contemplates all significant hazards, hazardous situations and events, with the exception of those associated with environmental compatibility (installation conditions), relevant to fuel cell power systems, when they are used as intended and under the conditions foreseen by the manufacturer.

This standard deals with conditions that can yield hazards on the one hand to persons, and on the other to damage outside the fuel cell system only.

Protection against damage to the fuel cell system internals is not addressed in this standard, provided it does not lead to hazards outside the fuel cell system.

The requirements of this standard are not intended to constrain innovation.

When considering fuels, materials, designs or constructions not specifically dealt with in this standard, these alternatives shall be evaluated as to their ability to yield levels of safety and performance equivalent to those prescribed

by this standard.

2 Normative references

The following documents are indispensable for the application of this document.

For the dated references, only the editions with the dates indicated are applicable to this document. For the undated references, the latest edition (including all the amendments) are applicable to this document.

GB/T 4208-1993 Degrees of protection provided by enclosure (IP code) (IEC 60529:1989, IDT)

IEC 60079-0 Explosive atmospheres - Part 0: Equipment - General requirements

IEC 60079-2 Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure "p"

IEC 60079-10 Explosive atmospheres - Part 10: Classification of areas

IEC 60079-29-1 Explosive atmospheres - Part 29-1: Gas detectors - Performance requirements of detectors for flammable gases

IEC 60079-30-1 Explosive atmospheres - Part 30-1: Electrical resistance trace heating - General and testing requirements

IEC 60204-1 Safety of machinery - Electrical equipment of machines - Part 1: General requirements

IEC 60335-1:2010 Household and similar electrical appliances - Safety - Part 1: General requirements

IEC 60335-2-51 Household and similar electrical appliances - Safety - Part 2-51: Particular requirements for stationary circulation pumps for heating and service water installations

IEC 60417 Graphical symbols for use on equipment

IEC 60730-1 Automatic electrical controls for household and similar use - Part 1: General requirements

IEC 60730-2-5 Automatic electrical controls for household and similar use -