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(IEC 62282-3-100:2012, MOD)
National Standard of Canada
Norme nationale du Canada
(reaffirmed/confirmée en 2020)

CSA C22.2 No. 62282-3-100:15
Fuel cell technologies — Part 3-100: Stationary fuel cell power systems — Safety
(IEC 62282-3-100:2012, MOD)

CSA C22.2 nº 62282-3-100:15
Technologies des piles à combustible — Partie 3-100 : Systèmes d'alimentation de piles à combustible fixes — Sécurité
(IEC 62282-3-100:2012, MOD)

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Préface CSA

Ce document constitue la première édition de la CAN/CSA-C22.2 nº 62282-3-100, *Technologies des piles à combustible – Partie 3-100 : Systèmes d'alimentation de piles à combustible fixes — Sécurité*. Il s'agit de l'adoption, avec exigences propres au Canada, de la norme CEI (Commission Électrotechnique Internationale) 62282-3-100 (première édition, 2012-02), qui porte le même titre. Par souci de brièveté, tout au long de ce document, il sera appelé «CAN/CSA-C22.2 nº 62282-3-100».

L'objectif des exigences propres au Canada est de :
a) corriger les inexactitudes et les incohérences avec le *Code canadien de l'électricité, Première partie* ; et
b) remplacer les renvois aux normes de la CEI par les normes du Groupe CSA, le cas échéant.

Cette norme est jugée convenable à l'évaluation de la conformité selon le domaine d'application établi dans la norme.

Cette norme a été révisée en vue de son adoption au Canada par le Comité technique CSA harmonisé de la CEI/TC 105 sur les piles à combustible sous l'autorité du Comité directeur stratégique CSA sur l'équipement de chauffe et du Comité directeur stratégique CSA sur les exigences en matière de sécurité électricité, et a été officiellement approuvée par le Comité technique.

Cette norme a été élaborée conformément aux exigences du Conseil canadien des normes concernant les Normes nationales du Canada. Cette norme a été publiée en tant que Norme nationale du Canada par Groupe CSA.

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Edition 1.0 2012-02

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NORME INTERNATIONALE

Fuel cell technologies –
Part 3-100: Stationary fuel cell power systems – Safety

Technologies des piles à combustible –
Partie 3-100: Systèmes à piles à combustible stationnaires – Sécurité

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IEC 62282-3-100:2012(en-fr)

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FOREWORD

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International Standard IEC 62282-3-100 has been prepared by IEC technical committee 105: Fuel cell technologies.

This bilingual version (2015-01) corresponds to the English version, published in 2012-02.

IEC 62282-3-100 cancels and replaces IEC 62282-3-1 published in 2007. IEC 62282-3-100 constitutes a technical revision.

IEC 62282-3-100 includes the following significant technical changes with respect to IEC 62282-3-1:

a) general reorganization of the safety requirements;
b) major changes for addressing electrical safety requirements for internal components;
c) clarifications for numerous requirements and tests, particularly the pressure leakage and strength tests;

d) expanded wind tests;

e) additional tests for condensate discharge and ventilation leakage.

The text of this standard is based on the following documents:

FDIS	Report on voting
105/371/FDIS	105/384/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

The French version of this standard has not been voted upon.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts of the IEC 62282 series, under the general title *Fuel cell technologies*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

A typical stationary fuel cell power system is shown in Figure 1.

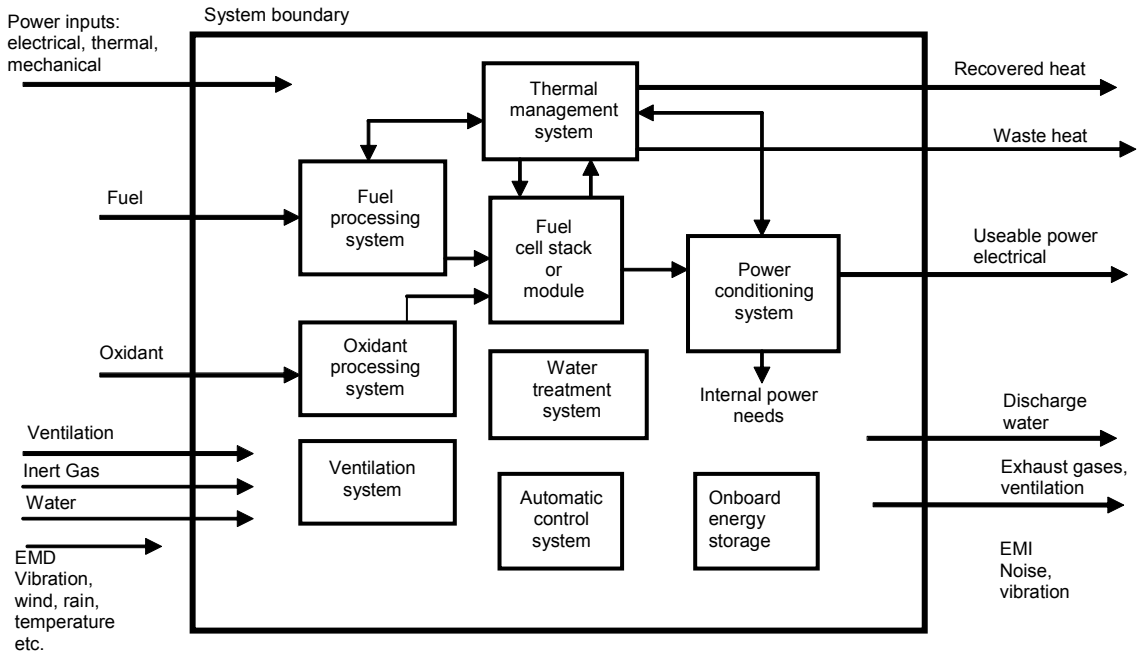

Figure 1 – Stationary fuel cell power systems

The overall design of the power system anticipated by this standard forms an assembly of integrated systems, as necessary, intended to perform designated functions, as follows.

– **Fuel processing system** – System of chemical and/or physical processing equipment plus associated heat exchanges and controls required to prepare, and if necessary, pressurize, the fuel for utilization within a fuel cell power system.

– **Oxidant processing system** – System that meters, conditions, processes and may pressurize the incoming supply for use within the fuel cell power system.

– **Thermal management system –** System that provides heating or cooling and heat rejection to maintain the fuel cell power system in the operating temperature range, and may provide for the recovery of excess heat and assist in heating the power train during start-up.

– **Water treatment system –** System that provides all the necessary purification treatment of the recovered or added water for use within the fuel cell power system.

– **Power conditioning system –** Equipment that is used to adapt the electrical energy produced by the fuel cell stack(s) to application requirements as specified by the manufacturer.

– **Automatic control system –** System(s) that is composed of sensors, actuators, valves, switches and logic components that maintain the fuel cell power system parameters within the manufacturer's specified limits including moving to safe states without manual intervention.

– **Ventilation system –** System that provides air through forced or natural means to the fuel cell power system's enclosure.

– **Fuel cell modules –** Equipment assembly of one or more fuel cell stacks which electrochemically converts chemical energy to electric energy and thermal energy intended to be integrated into a power generation system.

FUEL CELL TECHNOLOGIES –

Part 3-100: Stationary fuel cell power systems – Safety

1 Scope

This part of IEC 62282 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 standard applies to systems

– intended for electrical connection to mains direct, or with a transfer switch, or to a stand-alone 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, di-methyl ether, biodiesel;
  d) hydrogen, gaseous mixtures containing hydrogen gas, for example, synthesis gas, town gas.

This standard 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 standard 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