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BSI Standards Publication

Fuel cell technologies

Part 9-101: Evaluation methodology for the environmental performance of fuel cell power systems based on life cycle thinking — Streamlined life-cycle considered environmental performance characterization of stationary fuel cell combined heat and power systems for residential applications

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National foreword

This Published Document is the UK implementation of IEC TS 62282-9-101:2020.

The UK participation in its preparation was entrusted to Technical Committee GEL/105, Fuel cell technologies.

A list of organizations represented on this committee can be obtained on request to its committee manager.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Technical Specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 62282-9-101, which is a Technical Specification, has been prepared by IEC technical committee 105: Fuel cell technologies.

The text of this Technical Specification is based on the following documents:

Draft TS	Report on voting
105/787/DTS	105/799A/RVDTS

Full information on the voting for the approval of this Technical Specification 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.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://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- withdrawn,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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This part of IEC 62282 introduces a simplified evaluation method for assessing the life-cycle considered environmental performance of stationary fuel cell power systems for residential applications that can be complemented with a supplementary heat generator or a thermal storage system.

As a response to the aggravation of global environmental issues in recent years, corporate environmental management is increasingly required in order to enhance the environmental performance of products and communicate this information to consumers. For that purpose, when developing new or improved products, manufacturers should pursue environmentally conscious designs and evaluate their efforts by taking a life cycle perspective.

Past life cycle assessment (LCA) studies of stationary fuel cell power systems for residential applications have shown that two environmental aspects are important in their life cycle (so-called hot spots). One is greenhouse gas (GHG) emissions during operation and the other is the consumption of metals, minerals and fossil fuels (so-called abiotic resources) contributing to their depletion during manufacturing and operation.

This document provides guidance on how to perform a targeted life cycle considered evaluation of these predominant environmental impacts, specific to the characteristics of stationary fuel cell power systems for residential applications that can be complemented with a supplementary heat generator or a thermal storage system.

FUEL CELL TECHNOLOGIES –

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1 Scope

This part of IEC 62282 provides a streamlined methodology to assess major environmental impacts of stationary fuel cell power systems for residential applications. The fuel cell power systems can be complemented with a supplementary heat generator and/or a thermal storage system such as a hot water tank. The analysis can include the import of electricity from the grid or the export to the grid. The analysed systems are intended to meet the electricity and heat demand of a given household.

NOTE This document intends to provide a streamlined life-cycle approach. A more comprehensive life cycle assessment (LCA) for environmental product declaration (EPD) is described in IEC TS 62282-9-102[1].

This document provides a set of specific rules, requirements and guidelines based on life cycle thinking for the description of relevant environmental impacts of fuel cell power systems that can be complemented with a supplementary heat generator or a thermal storage system. This document also provides guidance on how to communicate these environmental impacts to consumers.

This document covers the following two environmental aspects:

– greenhouse gas (GHG) emissions in the use stage; and

– utilization of abiotic resources.

This document focuses on residential applications, but can also be used to assess systems in commercial applications such as small retailers or service shops.

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 62282-3-201:2017, *Fuel cell technologies – Part 3-201: Stationary fuel cell power systems – Performance test methods for small fuel cell power systems*

IEC 62282-3-400:2016, *Fuel cell technologies – Part 3-400: Stationary fuel cell power systems – Small stationary fuel cell power system with combined heat and power output*

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1 Under preparation. Stage at the time of publication IEC APUB 62282-9-102:2020.