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PEOPLE'S REPUBLIC OF CHINA**

GB/T 27748.4-2017

**Stationary fuel cell power systems -- Part 4: Performance test
methods for small fuel cell power systems**

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Foreword

GB/T 27748 "Stationary fuel cell power system" 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 4 of GB/T 27748.

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

This Part uses translation method to identically adopts IEC 62282-3-201.2013

"Fuel cell technologies - Part 3-201.Stationary fuel cell power systems - Performance test methods for small fuel cell power systems".

The Chinese documents which have consistency with the international normative reference in this Part are as follows.

- GB/T 1859-2000, Reciprocating internal combustion engines - Measurement of emitted airborne noise - Engineering method and survey method (ISO 6798.1995, IDT)
- GB/T 3785.1-2010, Electroacoustics - Sound level meters - Part 1. Specifications (IEC 61672-1.2002, IDT)
- GB/T 7488-1987, Water quality - Determination of biochemical oxygen demand after 5 days (BOD₅); Dilution and seeding method (ISO

5815.1983, NEQ)

- GB/T 19000-2008, Quality management systems - Fundamentals and vocabulary (ISO 9000.2005, IDT)

- GB/T 22592-2008, Water treatment reagent - General rules for the determination of pH (ISO 10523.1994, NEQ)

- GB/T 27748.2-2013, Stationary fuel cell power systems - Part 2.

Performance test methods (IEC 62282-3-200.2011, IDT)

This Part made the following editorial modifications.

- made editorial correction to the symbols in equation (21), equation (22), equation (32), equation (33), equation (35), equation (36), equation (37) in IEC 62282-3-201.2013.

This Part was proposed by China Electrical Equipment Industry Association.

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

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Stationary fuel cell power systems - Part 4.

Performance test methods for small fuel cell power
systems

1 Scope

This Part of GB/T 27748 provides test methods for the electric/thermal and environmental performance of small stationary fuel cell power systems that meet the following criteria.

2 Normative references

The following referenced documents are indispensable for the application 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 61672-1, Electroacoustics - Sound level meters - Part 1.Specifications

IEC 62282-3-200, Fuel cell technologies - Part 3-200.Stationary fuel cell
power systems - Performance test methods

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.
condition of a fuel cell power system at ambient temperature with no power
input or output, ready for start-up

4 Symbols

The symbols and their meanings used in this Part are given in Table 1 for electric/thermal performance and Table 2 for environmental performance, with the appropriate units.

5 Configuration of small stationary fuel cell power system and test boundary

Figure 2 illustrates the general configuration of small stationary fuel cell power

systems subject to this standard and shows the test boundary and physical quantities entering and leaving the fuel cell system.

6 Reference conditions

The reference conditions are specified as follows.

7 Heating value base

The heating value of fuel is based on the lower heating value (LHV) in principle. In cases where LHV is applied for the calculation of energy efficiency, it is not necessary to add the symbol "LHV", as shown below.

8 Test preparation

An uncertainty analysis shall be performed on the three test items below to indicate the reliability of the test results and to comply with customer requests. The following test results shall be analysed to determine the absolute and relative uncertainty. A test shall be planned so that the reliability of the results can be evaluated for the following.

9 Test set-up

Figure 3 illustrates an example of the test set-up that is required to conduct small stationary fuel cell power system testing with gaseous fuel described in this standard. An electric load and a thermal load are connected to a fuel cell power system.

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