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GB/T 28817-2022

Single cell test methods for polymer electrolyte fuel cell (PEFC)

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Foreword

This document is drafted in accordance with GB/T 1.1-2020 "Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents".

This document replaces GB/T 28817-2012 "Single cell test methods for polymer electrolyte fuel cell (PEFC)". Compared with GB/T 28817-2012, the main technical changes are as follows:

- Add the terms and definitions of "Catalyst layer" and "Electrolyte" (see 3.4 and 3.9);
- Delete the content of gas diffusion layer (GDL) in the cell composition (see 5.3 of the 2012 edition);
- Modify the requirements for hydrogen purity (see 9.1.1; 9.1.1 of the 2012 edition);
- Delete limiting current test, diffusion gain test, gas stoichiometry test, temperature effect test, pressure effect test, humidity effect test, fuel composition test, start/stop cycling test, load cycling test, overload test, and impurity influence test (see 11.4~11.11 and 11.13~11.15 of the 2012 edition);
- Add "Applied performance test methods" (see Clause 12);
- Add "Applied performance tests", "Polarization curves in heliox", and "Test report for subzero start test" (see Annexes H, J, and K).

This document is identical to IEC/TS 62282-7-1:2017 "Fuel cell technologies - Part 7-1: Test methods - Single cell performance tests for polymer electrolyte fuel cells (PEFC)". The document type is adjusted from ISO technical specification to China's national standard.

The following editorial changes have been made to this document:

- Change the standard name to "Single cell test methods for polymer electrolyte fuel cell (PEFC)";
- To facilitate the use of the standard, add notes to Clause 1 "Scope";
- To facilitate the use of the standard, change Annex C's name "Leak test" to "Gas

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tightness test".

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The issuing authority of this document shall not be held responsible for identifying any or all such patent rights.

Single cell test methods for polymer electrolyte fuel cell

(PEFC)

1 Scope

This document covers assemblies, test station setup, measuring instruments and measuring methods, performance test methods, and test reports for PEFC single cells.

Note: The polymer electrolyte fuel cell single cell fuel specified in this document is gaseous hydrogen.

This document is used for evaluating the following three items:

a) the performance of membrane electrode assemblies (MEAs) for PEFCs;

b) materials or structures of other components of PEFCs;

c) the influence of impurities in fuel and in air on the cell performance.

Note: This document is only applicable to proton exchange membrane fuel cells. Other polymer

electrolyte fuel cells can refer to the test content of this document.

2 Normative references

The contents of the following documents, through normative references in this text, constitute indispensable provisions of this document. Among them, for dated references, only the edition corresponding to that date applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

ISO/TS 14687-2 Hydrogen fuel - Product specification - Part 2: Proton exchange membrane (PEM) fuel cell applications for road vehicles

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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