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**NATIONAL STANDARD OF THE
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**Energy storage systems using fuel cell modules in reverse
mode - Part 3: Test procedures for the performance of energy
storage systems**

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document is Part 3 of GB/T 42847 "Reversible Mode Fuel Cell Modules for Energy Storage Systems". GB/T 42847 has been released

The following sections are included.

---Part 2. Performance testing methods for reversible mode proton exchange membrane cells and stacks;

---Part 3. Electrical energy storage system performance test methods.

This document is equivalent to IEC 62282-8-201.2020 "Fuel cell technology Part 8-201. Using reversible mode fuel cell models"

Block Energy Storage System Electric Energy Storage System Performance Test Method.

This document has made the following minimal editorial changes.

---In order to coordinate with existing standards, the name of the standard is modified to "Reversible mode fuel cell modules for energy storage systems - Part 3. Electric energy storage

Storage system performance testing method.

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

Introduction

Energy storage systems using reversible mode can effectively utilize excess electric energy and promote power regulation and renewable energy utilization.

GB/T 42847 focuses on the performance of energy storage systems based on electrochemical modules (a combination of fuel cells and electrolytic cells, or reversible fuel cells).

Ability to test methods.

GB/T 42847 aims to establish performance testing methods for energy storage systems based on reversible mode fuel cell modules. It is planned to be composed of the following departments

Composition.

---Part 1. Reversible mode solid oxide cell and stack performance test methods. The purpose is to give the solid oxide single cell and

Test systems, instruments and measurement methods and tests for performance testing of stacks in fuel cell mode, electrolysis and/or reversible mode method.

---Part 2. Reversible mode proton exchange membrane single cell and stack performance testing methods. The purpose is to give the proton exchange membrane single cell and

Test systems, instruments and measurement methods and tests for performance testing of stacks in fuel cell mode, electrolysis and/or reversible mode method.

---Part 3. Electrical energy storage system performance test methods. The purpose is to give performance tests of hydrogen-based electrical energy storage systems method.

Reversible mode fuel cell module for energy storage system

Part 3. Electrical energy storage system performance testing methods

1 Scope

This document specifies typical performance evaluation methods for hydrogen-based electrical energy storage systems. This document is applicable to devices with electrolysis and power generation functions

Electrochemical reaction device. This document applies to systems designed, applied and operated for fixed (indoor and outdoor) scenarios.

The conceptual configuration of a hydrogen-based electric energy storage system is shown in Figures 1 and 2. Figure 1 is independently equipped with an electrolytic cell module and an

A system with a fuel cell module; Figure 2 shows a system equipped with a reversible battery module. Its essential components include electrolytic cells, hydrogen storage, fuel fuel battery, or reversible battery, oxygen storage and integrated management system (which may include pressure management). Its optional components include batteries, oxygen storage,

Thermal management system (can include heat storage) and water management system (can include water tank). Its performance test is in the thick solid line square (system boundary) in the figure

performed outside the scope.

Note. In this document, the term "reversible" does not refer to the thermodynamic sense of an ideal process. In the field of fuel cells, it is usually divided into fuel cell mode and electrolysis mode.

Battery operating modes that alternate between modes are called "reversible".

This document is intended for commercial data exchange between system manufacturers and customers. Users of this document may

, choose to perform appropriate test projects in this article.

Figure 1 Hydrogen-based electrical energy storage system configuration-electrolytic cell and fuel cell types