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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 41134.3-2026

**Fuel cell power systems for industrial electric trucks - Part 3:
Fuel cell/battery hybrid systems performance test methods for
excavators**

电驱动工业车辆用燃料电池发电系统 第3部分：挖掘机用燃料电池/电池混合系统
性能试验方法

(English Translation)

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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 41134 "Fuel Cell Power Generation Systems for Electric Driven Industrial Vehicles". GB/T 41134 has been issued.

The following parts were laid out.

---Part 1: Security;

---Part 2: Performance Test Methods;

---Part 3: Performance test methods for fuel cell/battery hybrid systems for excavators.

This document is modified to adopt IEC 62282-4-600:2022 "Fuel cell technology - Part 4-600. Fuel cell systems, except for road vehicles and auxiliary power units".

Performance test method for fuel cell/battery hybrid power generation system for excavators other than fuel cell power generation system (APU).

Compared with IEC 62282-4-600:2022, this document has undergone the following structural adjustments.

---Adjusting the abbreviations in section 3.2 of IEC 62282-4-600:2022 to Chapter 4, merging them with the original Chapter 4 of the international standard into "Symbols and Symbols".

"Abbreviations". (See 3.2 of IEC 62282-4-600:2022, and Chapter 4 of this document);

---Removed sections 9.1 to 9.4 from Chapter 9 of IEC 62282-4-600:2022 (see sections 9.1 to 9.4 in IEC 62282-4-600:2022);

---Reference standards for fuel molar mass measurement (section 13.2.1.3.2) and fuel calorific value (section 13.2.2.3) have been removed from IEC 62282-4-600:2022.

Measurement reference standard;

---Adjustments to International Standard 3.1 Terms and Definitions are made to Chapter 3;

The technical differences between this document and IEC 62282-4-600:2022, and the reasons therefor, are as follows.

---The scope of "liquid hydrogen" in IEC 62282-4-600:2022 has been removed (see Chapter 1) to facilitate the use of the standard;

--- Added normative reference to GB/T 14412-2005 (see 15.5.1) for ease of use of the standard;

---The abbreviations "BMS, FID, EMS, FMS" in Chapter 4 of IEC 62282-4-600:2022 have been removed (see section 4.1 of this document);

---The configuration and structure of the fuel cell/battery hybrid system (see Figures 2 and 3) have been modified to facilitate standardization.

Approved for use;

---The overview, measuring instruments, measuring points, and minimum measurement

parameters of Chapter 9 "Instruments and Methods of Measurement" in IEC 62282-4-600:2022 have been removed.

The measurement system uncertainty should be replaced with "the minimum requirement for the measurement system uncertainty" (see IEC 62282-4-600:2022, section 9.1~).

9.4 (see Chapter 9) to facilitate the use of the standard;

---Some test duration options have been modified (see 13.2.1.5, 13.3.2, 13.4.1.2, 13.4.3.3, Table A.1) to facilitate standardization.

use;

---Added simulation condition testing requirements and recommendations (see 15.5.1) to facilitate the use of the standard.

The following editorial changes have been made to this document.

---The standard title has been changed to "Fuel Cell Power Generation Systems for Electric Industrial Vehicles - Part 3: Fuel Cells/Battery Hybrids for Excavators" "System Performance Test Method";

---The error was corrected; 0.5 in the acceleration spectral density diagram of the random vibration test should be 0.05.

This document was proposed by the China Electrical Equipment Industry Association.

This document is under the jurisdiction of the National Technical Committee on Standardization of Fuel Cells and Flow Batteries (SAC/TC342).

Introduction

GB/T 41134 covers factors such as the safety, performance, and interchangeability of fuel cell power generation systems for electrically driven industrial vehicles. Considering...

Given the urgent need for electric-driven industrial vehicles both domestically and internationally, this document is primarily applicable to electric-driven industrial vehicles equipped with fuel cell power generation systems.

vehicle.

Fuel cell power generation systems for electrically driven industrial vehicles can operate in hybrid and multi-mode configurations. This document breaks down their different...

It establishes a model and provides a clear design and testing framework for fuel cell systems used in electrically driven industrial vehicles. This framework is used to evaluate fuel cell systems for electrically driven industrial vehicles.

Performance of different fuel cell combination modes in a fuel cell power generation system.

Users of this document may selectively perform the experimental projects described herein that are suitable for their purposes. This document does not exclude other...

The experimental method.

GB/T 41134 is proposed to consist of the following three parts.

---Part 1: Safety. The purpose is to provide information on the structure, circuitry, and fuel safety of fuel cell power generation systems for electrically driven industrial vehicles.

Full requirements and test methods.

---Part 2: Performance Testing Methods. The aim is to provide electrical, thermal, and environmental testing methods for fuel cell power generation systems used in electrically driven industrial vehicles.

A unified and repeatable test method for performance-related aspects.

---Part 3: Performance Test Methods for Fuel Cell/Battery Hybrid Systems for Excavators. The aim is to provide test methods for electric drive industrial vehicles...

Testing methods for fuel cell/battery hybrid systems on excavators.

Fuel cell power generation system for electric industrial vehicles Part 3: Fuel Cells/Batteries for Excavators Hybrid System Performance Test Methods

1 Scope

This document describes the performance testing methods for fuel cell/battery hybrid systems used in electric excavators.

This document provides test methods for the electrical performance and vibration of fuel cell/battery hybrid systems, as well as test methods for fuel cell/battery hybrid systems.

Vibration and other characteristics of the Booster Operating System (BOP) in heavy-duty electric excavator applications.

This document applies to hybrid systems consisting of hydrogen fuel cells and batteries, and direct methanol fuel cells and batteries.

The following fuels are within the scope of this document.

---Gaseous hydrogen;

---Methanol.

This document does not apply to fuel cell/battery hybrid systems with reforming devices, nor to plug-in hybrid systems.

This document applies to fuel cell power generation systems used as either a drive or auxiliary power unit (APU). When used as an auxiliary power unit...