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

GB/T 34133-2023

Replacing GB/T 34133-2017

**Testing code for power conversion system of energy storage
system**

储能变流器检测技术规程

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1 Scope

This document specifies the detection methods for the appearance inspection and protection degree, basic functions, electrical performance, safety performance, electromagnetic compatibility, auxiliary systems, marking and packaging of electrochemical energy storage converters, as well as detection conditions, and detection instruments and equipment, etc.

This document is applicable to the design, manufacturing, testing, detection, operation, maintenance and overhaul of energy storage converters with electrochemical cells as the energy storage carrier, and AC port voltage of 35 kV and below.

2 Normative References

GB/T 2423.3

GB/T 2423.4

GB/T 2423.18

GB/T 2424.6

GB/T 4208

GB 4824

GB/T 4857.10

GB/T 6092

GB/T 9286

GB 9524.1

GB/T 9254.1

3.1 Terms and Definitions

The terms and definitions defined in GB/T 34120 and DL/T 2528 are applicable to this document.

3.2 Symbols

The following symbols are applicable to this document.

P_n. the rated power, expressed in kW or MW;

U_n. the AC port rated voltage, expressed in V or kV;

V_{dc_max}. the maximum DC voltage of energy storage converter, expressed in V or kV.

4 General Requirements

4.1 Before the detection of the energy storage converter, relevant technical data of the energy storage converter shall be collected, a detection scheme shall be prepared, and safety measures shall be formulated.

4.2 The detection instruments and meters shall be verified or calibrated, and within the validity period.

4.3 The detection content of the energy storage converter shall include appearance, protection

degree, basic functions, electrical performance, safety performance, electromagnetic compatibility, auxiliary systems, marking and packaging, etc.

4.4 During the detection, test data and environmental conditions shall be recorded. After the detection is completed, a detection report shall be issued. The detection report shall include detection conditions, detection equipment, detection basis, detection process and detection conclusions, etc.

5.1 Environmental Conditions

Unless otherwise specified, the detection environment shall satisfy the following requirements.

5.2 Electrical Conditions

When directly connected to the public power grid, the power quality of the grid shall satisfy the following requirements.

6.1 Detection Instruments

The accuracy levels of voltage / current sensors, thermometers and hygrometers, sound level meters and data acquisition devices shall at least satisfy the requirements of Table 1. The detection instruments and meters shall satisfy the following requirements.

6.2 Power Grid Simulation Device

The power grid simulation device shall satisfy the following requirements.

6.3.1 Low-voltage fault generation device

The low-voltage fault generation device should adopt a passive device. The device structure is shown in Figure 1. The device performance shall satisfy the following requirements.

6.3.2 High-voltage fault generation device

The high-voltage fault generation device should adopt a passive device. The device structure is shown in Figure 2. The device performance shall satisfy the following requirements.

6.3.3 Continuous fault generation device

The continuous fault generation device should adopt a passive device. The device structure is shown in Figure 3. The device performance shall satisfy the following requirements.

6.4 Battery Simulation Device

The battery simulation device shall satisfy the following requirements.

- a) The output voltage deviation value is less than 0.1% of the maximum DC voltage of

6.5 AC Load

The AC load shall satisfy the following requirements.

6.6 Temperature Detection Equipment

The temperature detection equipment shall satisfy the following requirements.

6.7 Signal Generation and Collection Device

The signal generation and collection device shall satisfy the following requirements.

6.8 Temperature / Humidity Test Chamber

The temperature / humidity test chamber shall satisfy the requirements of GB/T 2424.6

6.9 Salt Mist Detection Equipment

The salt mist detection equipment shall satisfy the requirements of GB/T 2423.18.

6.10 Adjustable Resistor

The adjustable resistor shall satisfy the following requirements.

6.11 Electromagnetic Compatibility Detection Equipment

The electromagnetic compatibility detection equipment shall satisfy the requirements of GB/T 17626.2, GB/T 17626.3, GB/T 17626.4, GB/T 17626.5, GB/T 17626.6, GB/T 17626.8 and GB 4824.

6.12 Other Instruments and Equipment

Other instruments and equipment shall include access probes, xenon arc lamps, carbon arc lamps, insulation strength testers and touch current testers, etc., and shall satisfy the following requirements.

7.1 Appearance Inspection

The appearance inspection of the energy storage converter includes the following contents.

7.2 Protection Degree

The protection degree detection is carried out in accordance with the method specified in GB/T 4208.

8.1 Start and Stop

The start and stop detection shall be carried out in accordance with the following steps.

8.2.1 Reverse polarity connection