

ICS 27.180
CCS F19



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

GB/T 44111-2024

**Code of maintenance test for electrochemical energy storage
station**

电化学储能电站检修试验规程

Issued on: May 28, 2024

Implemented on: December 1, 2024

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	2
4 General Requirements	2
5 Test equipment	2
6 Battery Test	3
7 Energy storage converter test	22
8 Monitoring system test	28
31 Appendix A (Informative) Test Report	42

Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting: Please note that some of the contents of this document may involve patents: The issuing organization of this document does not assume the responsibility for identifying patents: This document was proposed by the China Electricity Council: This document is under the jurisdiction of the National Electric Energy Storage Standardization Technical Committee (SAC/TC550): This document was drafted by: State Grid Henan Electric Power Company, State Grid Jiangsu Electric Power Company Zhenjiang Power Supply Branch, China Southern Power Grid Energy Storage Co., Ltd., State Grid Henan Electric Power Company Xuchang Power Supply Company, Guangzhou Zhiguang Energy Storage Technology Co., Ltd., State Grid Gansu Electric Power Company Electric Power Research Institute, Electric Power Research Institute of Yunnan Power Grid Co., Ltd., Pinggao Group Energy Storage Technology Co., Ltd., Dalian Rongke Energy Storage Technology Development Co., Ltd., Shanghai University of Electric Power, State Grid Henan Electric Power Company Electric Power Research Institute, State Grid Jibei Electric Power Co., Ltd: Science Research Institute, Beijing Haibosichuang Co., Ltd., Contemporary Amperex Technology Co., Ltd., State Power Investment Group Hydrogen Energy Technology Development Co., Ltd., State Grid Jibei Electric Power Co., Ltd: Economic and Technological Research Institute, Zhejiang Nandu Energy Technology Co., Ltd., Jiangsu Zhongtian Technology Co., Ltd: Co., Ltd: and Beijing Herui Energy Storage Technology Co., Ltd: The main drafters of this document are: Zhang Jingchao, Shi Leimin, Hui Jie, Zhen Wenxi, Wang Nannan, Wang Xuanxuan, Liu Lekang, Song Naichao, Li Xiaoguang, Dong Yan, Zhang Xing, Li Juan, Zheng Xin, Li Yongqi, Chen Xitao, Hu Zhenkai, Chen Hao, Wang

Xiaoli, Zuo Guangke, Wei Xiaofeng, Wang Yuming, Yang Shiyin, Dong Kaisong, Liu Lu, Zhao Guangjin, Jiang Enyu, Zhao Peng, Zheng Zhimin, Ge Di, Song Ke, Chen Man, Li Jing, Wang Manshang, Ma Xiping, Kong Xuhui, Yang Meng, Zhang Liuli, Yang Zhenhua, Tan Qingwu, Tan Jianguo, Wu Linlin, Huang Xianmiao, Xiong Sijiang, Zheng Xin:
Electrochemical energy storage power station maintenance test procedures

1 Scope

GB/T 44111-2024 is the Chinese code of maintenance testing for electrochemical energy storage stations. China has installed grid storage faster than any country and the first large cohort of stations is now several years old, which turns the question from how to build them into how to know they are still safe and still able to deliver what they were paid to deliver. The standard sets the maintenance test regime: the classification and intervals of the tests, the preparation and the safety measures required for work on a live battery installation, and then the tests themselves for each part of the station, the battery modules, racks and their connections, including capacity, internal resistance and insulation testing, the battery management system and its measurement accuracy and protection functions, the power conversion system, the transformer and switchgear, the auxiliary systems of cooling, fire detection and suppression, and the plant control and communication, together with the acceptance criteria, the handling of defects and the records. It takes effect on 1 December 2024.

This document specifies the items and methods of maintenance tests for electrochemical energy storage power station batteries, energy storage inverters, monitoring systems, and the entire station: This document applies to lithium-ion batteries, sodium-ion batteries, lead-acid (carbon) batteries, flow batteries, water electrolysis hydrogen production/fuel cells as energy storage Maintenance test of electrochemical energy storage power station based on carrier:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document:

GB/T 629 Chemical reagent sodium hydroxide

GB/T 6682 Specifications and test methods for water used in analytical laboratories

GB/T 6904 Determination of pH in industrial circulating cooling water and boiler water

GB/T 6908 Analysis methods for boiler water and cooling water - Determination of electrical conductivity

GB/T 9721 General rules for molecular absorption spectrophotometry of chemical reagents (ultraviolet and visible light)

GB/T 9740 General method for determination of evaporation residue of chemical reagents

GB/T 11901 Water quality - Determination of suspended solids - Gravimetric method

GB/T 12149 Determination of silicon in industrial circulating cooling water and boiler water

GB/T 12325 Power quality supply voltage deviation

GB/T 12326 Power quality voltage fluctuation and flicker

GB/T 14549 Power quality - Harmonics in public power grids

GB/T 14636 Determination of calcium and magnesium in industrial circulating cooling water and scale - Atomic absorption spectrometry

GB/T 14637 Determination of copper, iron and zinc in industrial circulating cooling water and scale - Atomic absorption spectrometry