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**Testing code for grid performance of inverter in photovoltaic
power station based on hardware-in-the-loop simulation**

光伏电站逆变器并网性能硬件在环测试规程

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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 is required.

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 is proposed and coordinated by the China Electricity Council.

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Photovoltaic power station inverter grid-connected performance hardware In-the-Loop Test Procedure

1 Scope

This document specifies the hardware-in-the-loop simulation test platform, simulation test preparation, active power simulation test, reactive power simulation test, etc.

Requirements for power simulation test, fault ride-through simulation test, operation adaptability simulation test, etc.

This document is applicable to the simulation and verification of the control strategy of the inverter of the photovoltaic power station.

2 Normative references

GB/T 37408

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Real-time digital simulator

A general term for computer hardware and software with real-time digital simulation capabilities.

[Source: GB/T 40601-2021, 3.1, modified]

3.2 real time signal interface

Interaction interface between real-time digital simulation device and photovoltaic inverter controller.

Note. Physical signal interfaces such as analog input/output channels, digital input/output channels, communication interfaces, etc.

[Source: GB/T 40601-2021, 3.4, modified]

3.3 Benchmark photovoltaic inverter

An inverter that is consistent with the model of the PV inverter being tested and has passed the type test.

3.4 Benchmark controller

Controller for benchmark PV inverters.

4 General requirements

4.1 Before the hardware-in-the-loop simulation test, the PV inverter data should be collected, the test plan should be prepared, and the simulation test platform should be built.

4.2 Before the hardware-in-the-loop simulation test, the model parameters in the simulation test platform should be adjusted using the type test data of the benchmark PV inverter.

Calibration shall be carried out and the calibration method shall comply with the provisions of Appendix A.

4.3 Hardware-in-the-loop simulation testing should be carried out on the controller under test and the reference controller. The simulation test items should include active power simulation testing, Reactive power simulation test, fault ride-through simulation test, operation adaptability simulation test, etc. The simulation test results shall be carried out in accordance with the requirements of Appendix B.