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

GB/T 30423-2025

Replacing GB/T 30423-2013

High-voltage direct current (HVDC) installations - System tests

高压直流设施 系统试验

(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 replaces GB/T 30423-2013 "System Testing of High Voltage Direct Current Facilities". Compared with GB/T 30423-2013, except for the structure...

Aside from adjustments and editorial changes, the main technical changes are as follows.

---The term "field test" has been added (see 3.1.4);

---The suspended section in section 3.2 has been deleted. "In a DC system, there are five operating states. grounded, out of service/isolated, standby, blocked, and deactivated." Lock. (See 3.2 in the 2013 edition);

---Added description of acceptance testing (see 4.1);

---A description of unipolar/bipolar DC systems has been added (see 4.2);

---Figure 2 has been modified (see 4.2, 2013 version 4.2);

---The description of charging phenomena of AC filters and converter transformers has been deleted. Some requirements for acceptance testing during the on-site commissioning phase have been removed (see...).

(4.4 of the 2013 edition)

---Added functional descriptions for off-site simulation software and real-time simulators (see 4.6.1);

---Acceptance testing requirements have been added (see 4.7);

---Change "charging" to "charged" (see Chapter 5, Chapter 5 of the 2013 edition);

---The requirements for applying voltage when the voltage is applied to a low-voltage energized system have been changed (see 5.2.3.1, 2013 version 5.2.3.1);

---Added some objectives and requirements for open-circuit testing (see 5.7.1);

---The test procedure for the DC field open-circuit test has been modified (see 5.7.3.1, 2013 version 5.7.3.1);

---The order of the test procedures for DC transmission circuit testing has been changed (see 5.7.3.2, 2013 version 5.7.3.2);

---Figure 5 has been modified (see 6.1.1.1, 2013 version 6.1.1.1);

---The start-up and shutdown sequence at minimum power and the pre-test conditions for steady-state operation have been modified (see 6.1.2.3, 2013 version of 6.1.2.3);

---The test procedure for changing the protection interlocking and tripping sequence has been revised (see 6.1.3.4, 2013 version of 6.1.3.4);

---The test procedure for tap changer control has been modified (see 6.1.5.4, 2013 version 6.1.5.4);

---The test criteria for tap changer control tests have been modified (see 6.1.5.5, 2013 version 6.1.5.5);

---The test procedure for control function switching has been modified (see 6.2.3.4, 2013 version 6.2.3.4);

---The description of the test objective for reactive power control mode switching has been revised (see 6.2.4.2, 2013 version 6.2.4.2);

---The test procedure for reactive power control mode switching has been modified (see 6.2.4.4, 2013 version 6.2.4.4);

---The test procedures for rated to buck conversion operation have been modified (see 6.2.5.4, 2013 version of 6.2.5.4);

---The statement "This test is only applicable to two-end systems and back-to-back HVDC

systems" has been removed (see 6.4.1.1 in the 2013 version).

---The pre-test conditions for switching on the main circuit equipment have been changed (see 6.4.1.2, 2013 version of 6.4.1.2);

---The test procedure for the inverter current controller has been modified (see 6.5.2.4.5, the 2013 version of 6.5.2.4.5);

---The experimental objectives for the interaction/control of AC systems have been changed (see 6.5.5.2, 2013 version 6.5.5.2);

---Change "full load" to "load agreed upon with the utility company" (see 6.7.2.4, 2013 version of 6.7.2.4);

---The test acceptance criteria for trial operation have been changed (see 7.5, 2013 version 7.5);

---The "deviation report" has been modified and moved to the "system test results file" (see 8.7.3, 8.8 in the 2013 version).

This document adopts IEC 61975:2022 "Testing of high voltage direct current facilities systems".

The following minimal editorial changes have been made to this document.

---Added "Note" (see 3.1.1, 3.1.2, 4.6.2, 5.1.3, 5.6.4.2, 5.6.4.3, 5.7.2.1, 6.6.1.5.2) and "Note 2" (see 3.2.1~) 3.2.5);

---The "Note" under section 3.2 and the "Out of Service Status" in the "Note" of section 3.2.4 have been removed;

---Since both are bipolar topologies, the wiring method in Figure 4 is changed to be the same as that in Figure 2 to maintain consistency;

---Change the clauses to list items (see 5.5.2, 6.4.1.2, 6.4.4.4 and 6.6.1.4.4);

---The description of the test procedure for the inverter current controller test has been corrected (see 6.5.2.4.5);

---The test procedure for the inverter current controller has been corrected (see 6.5.2.4.5);

---The heading "Test Objective" is corrected to "Acceptance Criteria" (see 6.8.1.3).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

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 Power Electronic Systems and Equipment (SAC/TC60).