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PEOPLE'S REPUBLIC OF CHINA**

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**Field test method for power transformer, closed combination
electric appliance and power cable composite connection
(English Translation)**

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Foreword

This standard is compiled in accordance with the rules of GB/T 1.1-2009 "Guidelines for Standardization Part 1: Standard Structure and Compilation".

This standard was proposed by the China Electricity Council.

This standard is under the jurisdiction of the Power Transformer Standardization Technical Committee (DL/T C 02) of the power industry.

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Ren company, Guangzhou Power Supply Bureau Electric Power Test Research Institute, Xi'an Xidian Transformer Co., Ltd., Datang Shandong Electric Power Company Limited.

1 Scope

This standard specifies power transformers, enclosed combined electrical appliances, power cables (hereinafter referred to as transformers, combined Terms and definitions, test items, test methods and requirements, test report compilation for field test of composite connection (electrical appliances, cables) Write etc.

This standard is applicable to the field test after the composite connection of transformers, combined electrical appliances and cables with voltage levels of 35kV~750kV.

Test.

2 Normative references

The following documents are indispensable for the application of this standard. For dated reference documents, only the dated version is suitable Used in this standard. For undated reference documents, the latest version (including all amendments) is applicable to this standard.

GB/T 2900.10-2013 Electrical terminology cable GB/T 2900.20-1994 Electrical terminology high-voltage switchgear GB/T 2900.95-2015 Electrotechnical terminology transformers, voltage regulators and reactors GB/T 5832.1 Determination of trace moisture in gas Part 1: Electrolysis method GB/T 5832.2 Determination of trace moisture in gas Part 2: Dew point method GB/T 8905 Guidelines for Gas Management and Detection in Electrical Equipment of Sulfur Hexafluoride GB 50150 Electrical equipment installation engineering electrical equipment handover test standard DL/T 474.4 Implementation guidelines for on-site insulation test AC withstand voltage test DL/T 506 Insulating gas humidity measurement method in sulphur hexafluoride electrical equipment DL/T 911 Frequency Response Analysis Method of Power Transformer Winding Deformation DL/T 1205 Test method for decomposition products of sulfur hexafluoride electrical equipment DL/T 1093 The guideline for detecting and judging power transformer winding deformation by reactance method DL/T 5293 Unified format of electrical equipment handover test report for electrical installation engineering JB/T 501 Power Transformer Test Guide

3 Terms and definitions

The following terms and definitions established in GB/T 2900.20, GB/T 2900.95 and GB/T 2900.10 apply to this standard quasi.

Power transformer

A static power converter that transfers power without changing the frequency of its AC power source.

[GB/T 2900.95-2015, terms and definitions 3.1.1] 3.2 Combination electrical gas insulated

metal-enclosed switchgear (GIS) at least part of the metal-enclosed switchgear that uses gas above atmospheric pressure as the insulating medium.

[GB/T 2900.20-1994, terms and definitions 3.12] 3.3 Insulated cable an assembly consisting of.

- One or more insulated cores;
- Respective coating (if any);
- Cable core protective layer (if any);
- Outer protective layer (if any);

There can be additional non-insulated conductors in the cable;

[GB/T 2900.10-2013, terms and definitions 2.2.1] 3.4 Complex combination of transformer, GIS and cable (CC-TGC) Transformers, combined electrical appliances and cables adopt oil and gas bushings, gas and gas bushings, oil and oil bushings, plug-in cable terminals, etc.

Realize the combination form of transformer and combined electrical appliance connection, combined electrical appliance and cable connection, transformer and cable connection.

4 General

4.1

This standard specifies the test items and test methods that should be carried out after the handover and operation of CC-TGC.

The assessment of the installation quality of the composite connection parts and the assessment of whether the CC-TGC meets the operating conditions after it is put into operation.

4.2

During the handover test, the initial value is the factory test data; when the routine test or preventive test is put into operation, the initial value is After CC-TGC is connected, test data will be transferred.

5.1 Before putting into operation

The on-site handover test items that should be carried out before the transformer, combined electrical appliances, and cables are put into operation after composite connection are as follows.

- a) The air chamber tightness test of the composite connection part of the combined electrical appliance, transformer and cable;

- b) Water content measurement of SF₆ gas in the gas chamber at the composite connection part of the combined electrical appliance, transformer and cable;
- c) Measurement of decomposition products in the air chamber at the composite connection part of the combined electrical appliance, transformer and cable;
- d) DC resistance measurement of the winding and bushing on the composite connection side of the transformer;
- e) Measurement of insulation resistance, absorption ratio or polarization index of the winding and bushing on the composite connection side of the transformer;
- f) Measurement of the dielectric loss factor $\tan\delta$ of the winding on the composite connection side of the transformer and the bushing;
- g) AC withstand voltage test of the connecting parts of transformers and combined electrical appliances;
- h) AC withstand voltage test of the connection part of the combined electrical appliance and cable;
- i) AC withstand voltage test of transformer and cable connection parts;
- j) Deformation test of the winding on the composite connection side of the transformer.

5.2 After putting into operation

After the combined connection of transformers, combined electrical appliances, and cables are put into operation, the on-site routine test items include.

- a) The air chamber tightness test of the composite connection part of the combined electrical appliance, transformer and cable;
- b) Water content measurement of SF₆ gas in the gas chamber at the composite connection part of the combined electrical appliance, transformer and cable;
- c) Measurement of decomposition products in the air chamber at the composite connection part of the combined electrical appliance, transformer and cable;
- d) DC resistance measurement of the winding and bushing on the composite connection side of the transformer;
- e) Measurement of insulation resistance, absorption ratio or polarization index of the winding and bushing on the composite connection side of the transformer;
- f) Measurement of the dielectric loss factor $\tan\delta$ of the winding on the composite connection side of the transformer and the bushing;