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

DL/T 2002-2019

**Operation specification for converter transformer
(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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1 Scope

This standard specifies the terms and definitions of converter transformers (hereinafter referred to as converter transformers), basic requirements for operation, operating conditions, operation and maintenance, and Requirements for normal operation and treatment, as well as maintenance and testing.

This standard applies to converter transformers with voltage levels of ± 800 kV and below for DC transmission.

2 Normative references

The following documents are indispensable for the application of this standard. For dated reference documents, only the dated version applies to this standard.

For undated reference documents, the latest version (including all amendments) is applicable to this standard.

GB 1094.5-2008 Power Transformer Part 5: Ability to withstand short circuit GB/T 1094.7 Power Transformer Part 7: Load Guidelines for Oil-immersed Power Transformer GB/T 6451-2015 Oil-immersed power transformer technical parameters and requirements GB/T 18494.2-2007 Converter Transformer Part 2 Converter Transformer for HVDC Transmission GB/T 20838-2007 Technical parameters and requirements of oil-immersed converter transformers for HVDC transmission GB 50148 Code for construction and acceptance of

power transformers, oil-immersed reactors, and transformers for electrical installation engineering DL/T 393 Power transmission and transformation equipment condition inspection and repair test procedure DL/T 572-2010 Power Transformer Operation Regulations DL/T 573 Power Transformer Maintenance Guide DL/T 574 Operation and maintenance guidelines for transformer tap changers DL/T 722-2014 Guidelines for the analysis and judgment of dissolved gases in transformer oil

3 Terms and definitions

The following terms and definitions given in GB/T 2900.95-2015 and GB/T 2900.33-2004 apply to this standard.

Converter transformer Used to connect the AC grid and 6/12 pulse converter valve for energy exchange equipment.

Gas relay

A protection device used in the body of an oil-immersed transformer. It will act when a large amount of gas or oil flow is impulsive due to a fault in the transformer.

Pass the designated control loop and send out alarm and trip signals.

[GB/T 2900.95-2015 definition 5.1.3] **3.3 on-load tap-changer** A device suitable for changing the winding tap connection position under transformer excitation or load.

[GB/T 2900.95-2015 definition 5.6.1] **3.4 Pressure relief device** A protection device that releases the excessive pressure generated when the internal failure of the fuel tank occurs. When the pressure exceeds the predetermined setting value, the release device opens and Discharge a large amount of gas and oil out of the fuel tank in time to reduce the internal pressure of the fuel tank.

[GB/T 2900.95-2015 definition 5.1.10] **3.5 Quick action oil-pressure relay** when the converter transformer fails during operation, the pressure rise speed in the fuel tank reaches the set value, and the relay acts to make the control circuit send out a signal or make A protection device for the converter transformer to exit operation.

Note: Rewrite GB/T 2900.95-2015 definition 5.1.20.

4.1 Protection device

4.1.1

The converter transformer shall be equipped with protection devices in accordance with relevant standards such as GB 20838 and manufacturer's regulations.

4.1.2

The safety protection device and oil protection device of the converter transformer shall

meet the requirements of the corresponding standards.

4.1.3

When installing the gas relay of the converter transformer, the oil pipe should have a rising slope of 1% to 1.5% along the oil flow direction of the gas relay (the manufacturer has regulations According to the manufacturer's regulations). The gas relay of the transformer should be equipped with a rain cover of corrosion-resistant and anti-aging material. The secondary cable should be installed before entering the gas relay.

Set drip bends to prevent the contact from moving by damp.

4.1.4

The commutation transformer should be equipped with a shock-proof gas relay.

4.1.5

The gas relay should not adopt a cantilever beam installation structure.

4.1.6

When two or more on-load tap-changers are used in parallel in the converter transformer and one on-load tap-changer conservator is shared, each on-load tap-changer Oil flow relay or pressure relay should be installed respectively as the main protection trip. The oil flow relay of the on-load tap changer should be connected to the connected branch oil pipe has a 1% to 3% rising slope along the oil flow direction of the oil flow relay (the manufacturer has regulations according to the manufacturer's regulations).

4.1.7

The protection trip function of the converter transformer should adopt three out of two logic.

4.1.8

When the actual short-circuit apparent capacity of the system where the converter transformer is located is greater than the value specified in Table 2 of GB 1094.5-2008, the system shall be the manufacturer makes a request. Measures should be taken to limit the short-circuit current of the converter transformer during operation. The protection action time of the converter transformer should be less than withstand short circuit heat resistance the duration of the ability.

4.1.9

The installation of the pressure release device should ensure that the accidental fuel injection is unblocked, avoid spraying into the cable trench, bus bar and other equipment, and should be covered if necessary.

The accident drain valve should be installed in the lower part of the converter transformer with the drain port facing downward.