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

GB/T 22382-2017

**Direct connection between power transformers and
gas-insulated metal-enclosed switchgear for rated voltages of
72.5 kV and above**

(English Translation)

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Foreword

This standard is drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 22382-2008 "Rated voltage 72.5kV and above Gas-insulated metal-enclosed switchgear and power transformer Direct connection between devices, "compared with GB/T 22382-2008, the main technical changes are as follows.

- the range of "three-phase direct connection" and "transformer";
- terms and definitions increase the "insulation connection" and "Platts density";
- rated "rated frequency f_r ", "rated heat short-time current I_{th} ", "rated dynamic current" and "rated duration" Between t_{th} ";
- "gas and vacuum seals" and "horizontal and vertical displacements" are added to the design and construction;
- "Standard size and special requirements" in the design and structure to "Standard size and tolerances";

--- type test to increase the "three-phase shell transformer connection insulation test" and "gas seal test";

- an increase in the "impact of products on the environment" chapter;

--- Table 1 adds the "rated voltage 800kV" role in the casing flange and the transformer torque and force on the relevant parameters;

- Table 2 adds the relevant parameters for the rated lightning impulse withstand voltage (peak) 800kV standard size.

This standard uses the re-drafting method to modify IEC 62271-211.:2014 "High Voltage Switchgear and Controlgear Part 211. Amount Fixed voltage above 52kV gas insulated metal-enclosed switch equipment and power transformer direct connection between the ".

The technical differences between this standard and IEC 62271-211.:2014 are as follows.

--- on the normative reference documents, this standard has made a technical differences in the adjustment to meet China's technical conditions, adjust the situation the situation is reflected in the 1.2 "normative reference document", the specific adjustments are as follows.

Replace IEC 60076 (see 6.1, A.1) with GB/T 1094 with an international standard;

Replace IEC 60050-471.:2007 (see 3.1/3.2) with GB/T 2900.8-2009 equivalent to the international standard;

- Replace the IEC 60137Ed.6.0 with the modified GB/T 4109-2008 with international standard (see Chapter 4, 5.4, 5.5, Chapter 9);

Replace IEC 62271-203 (see 4.3, 4.5, 5.2, 5.3) with GB/T 7674-2008 with an international standard;

- Replace IEC 62271-1.:2007 with GB/T 11022-2011 with international standard modification (see Chapter 2, Chapter 3, Chapter 4, Chapter 6, Chapter 7, Chapter 10, Chapter 11, Chapter 12);

Replace IEC 62271-2.:2003 (see 5.4) with GB 13540-2009 with international standard modification;

--- According to the actual situation of China's power grid, remove the IEC 62271-211.:2014 rated frequency of 60Hz of the relevant content (see 1.1);

--- Remove the rated voltage value independent of our grid, according to the voltage listed in GB/T 11022-2011. But right 1100kV of this connection device, because the relevant requirements are not yet clear, so this part of the standard temporary vacancy (see 4.2);

- "The values and characteristics of the non-linear resistor shall be determined by the switchgear manufacturer" in Chapter 5 of IEC 62271-211.:2014 to go because it can not be

determined unilaterally by the switchgear manufacturer;

--- IEC 62271-211.:2014 Figure 2 in the size, shape and position tolerance, the reference method according to China's mechanical drawing standards were modified.

In order to ensure the sealing performance, the surface roughness of the sealing surface in the figure is changed from Ra to

--- Based on IEC 62271-211.:2014, the contents of the table in Figure 2, according to China's relevant standards, the table of the rated lightning shock Withstand voltage (peak) specifically as follows. rated voltage 72.5kV when the 325kV, 380kV; rated voltage 126kV for the 550kV; rated voltage 252kV when the 1050kV; rated voltage 363kV when the 1175kV; rated voltage 550kV when the 1550kV; rated voltage 800kV 2100kV. And the size of the table according to our mechanical drawing the standard note was modified.

Compared with IEC 62271-211.:2014, this standard has been modified as follows.

- change the rated voltage in the heading IEC 62271-211.:2014 from "above 52kV" to "72.5kV and above";
- move the 5.1 "supplier boundary" of IEC 62271-211.:2014 to Appendix A of this standard;
- move the standard size and tolerances of Chapter 8 of IEC 62271-211.:2014 to 5.8 of this standard;

Figure 1 Split the cost of Figure 1 and Table A.1, Figure 2, Figure 3 and Figure 4 split the cost of the standard of IEC 62271-211.:2014

Figure 2, Figure 3 and Figure 4 and Table 2, Table 3 and Table 4.

1.1 Scope

This standard specifies the rated voltage of 72.5kV and above, rated frequency of 50Hz gas-insulated metal-enclosed switchgear and power the direct connection between the transformer using the conditions of use, rating, design and structure, test, with the inquiry, tender and order to provide information, shipped Transportation, storage, installation, operation and maintenance of the rules, the impact of the product on the environment, the supply side of the boundaries.

This standard applies to the rated voltage of 72.5kV and above the gas-insulated metal-enclosed switchgear (GIS) and the power transformer between the single Phase and three-phase direct connection, the purpose is to establish the transformer connection of electrical and mechanical interchangeability and supply boundaries.

One end of the direct connection is immersed in the transformer oil or insulating gas and the other end is immersed in the insulating gas of the switchgear.

Transformers can be divided into single-phase closed single-phase transformer, with three

transformer casing of the three single-phase closed or three-phase closed Arrangement of three-phase transformers.

This standard meets GB/T 7674-2008 gas insulated metal enclosed switchgear, GB 1094 series power transformer and GB/T 4109 fully submerged casing requirements.

In order to facilitate the use of this standard, the term "switchgear" means "gas insulated metal-enclosed switchgear".

1.2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document.

GB/T 1094 (all parts) Power transformers [IEC 60076 (all parts)] Electrotechnical terms Insulators (IEC 60050-471.:2007, IDT) GB/T 2900.8-2009 GB/T 4109-2008 Insulated bushings with AC voltages higher than 1000V (IEC 60137Ed.6.0, MOD) GB/T 7674-2008 Gas-insulated metal-enclosed switchgear with rated voltages up to and including 72.5 kV (IEC 62271-203.:2003, MOD) GB/T 11022-2011 Common technical requirements for high voltage switchgear and control equipment (IEC 62271-1.:2007, MOD) GB/T 13540-2009 Seismic requirements for high voltage switchgear and control equipment (IEC 62271-2.:2003, MOD) IEC 61936-1.:2007 Power units with alternating voltages above 1000V - Part 1. Generic rules (Powerinstallations exceeding1kVa.c.-Part 1. Commonrules

2 Normal and special conditions of use

Chapter 2 of GB/T 11022-2011 applies.

3 Terms and definitions

GB/T 2900.8-2009 and GB/T 11022-2011 and the following terms and definitions apply to this document. For the sake of convenience Use, the following repeated lists some terms and definitions.