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

GB/T 17948.5-2016

Replacing GB/T 17948.5-2007

**Rotating electrical machines -- Functional evaluation of insulation systems -- Test
procedures for form-wound windings -- Multifactor evaluation by endurance
under simultaneous thermal and electrical stresses**

(English Translation)

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Foreword

"Rotary motor insulation structure functional assessment" is divided into seven parts.

Scatter - winding test procedure - Thermal evaluation and classification (GB/T 17948.1);

- Scattered winding test procedure changes and classification of insulation components replacement (GB/T 17948.2);

- Test rules for forming windings - Thermal evaluation and classification (GB/T 17948.3);

- Specification for voltage durability of forming winding test procedures (GB/T 17948.4);

- Code of test for forming windings - Multi - factor assessment of thermal and electrical stress durability (GB/T 17948.5);

Test procedure for forming winding - Thermo - mechanical durability (GB/T 17948.6).

--- General (GB/T 17948.7);

This part is GB/T 17948.5.

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

This part uses the translation method equivalent to the use of IEC/T S60034-18-33..2010

"Rotary motor insulation structure functional assessment molding Winding test procedures for thermal and electrical comprehensive stress and durability of multi - factor assessment "(English version).

This part of the replacement GB/T 17948.5-2007 "Rotary motor insulation structure functional evaluation Molding winding test procedures Multi-factor work Energy assessment

50MVA, 15kV and below the electrical insulation structure of thermal, electrical comprehensive stress and durability ", compared with GB/T 17948.5-2007, in addition to editorial changes, the main technical changes are as follows.

- modified the standard name;
- modified the scope of the standard (see Chapter 1, Chapter 1 of the 2007 edition);
- increased processing and diagnostic sub-cycles (see 3.4.3);
- Deletion of Table 1 aging sub-cycle identification (see Table 1 of 2007 edition);
- modified the heating method (see 3.5.1, 2007 version 3.6.1);
- to modify the duration of the aging sub-cycle (see 3.8, 3.8 of 2007);
- Added baseline processing factors (see 3.8.2);
- modified the acceleration factor (see 5.1.2, 2007 version 5.1.1);
- Amend Table 1 (see Table 1 in Table 1, 2007);
- 5.1.2 to 5.1.4 (see 5.1.2 to 5.1.4 for 2007);
- modified 5.4 (see 5.3, 2007 version 5.3);
- modified 5.5 (see 5.4, 2007 version 5.4);
- 6.1.3, 6.1.4 (see 6.1.3, 6.1.4 for 2007);
- 6.2.3, 6.2.4 (see 6.2.3, 6.2.4 of 2007);
- 6.3.3, 6.3.4 (see 6.3.3, 6.3.4 for 2007);
- modified 6.5 (see 6.5, 2007 version 6.4);
- Added Chapter 7 (see Chapter 7);
- Appendix A has been deleted (see Appendix A of the 2007 edition);
- Added references (see references).

And the normative reference in this part of the international standards are consistent with the relationship between China's standards are as follows.

Classification of electrical insulation heat resistance (IEC 60085.:2004, IDT); GB/T .

Evaluation and identification of electrical insulation structures (IEC 60505.:1999, IDT); GB/T .

--- GB/T 22715 AC motor stator forming coil impact voltage level (IEC 60034-15.:2009, IDT);

--- GB/Z22720.2-2013 Rotary motor voltage-type inverter-powered rotating motor

resistance to partial discharge electrical insulation structure (Type II) identification and accreditation test (IEC/T S60034-18-42..2008, IDT);

Guide for statistical analysis of electrical insulation breakdown data (IEC 62539.:2007, IDT) GB/T 29310-2012.

This part is made by China Electrical Equipment Industry Association.

This part is headed by the National Committee for Standardization of Rotating Electric (SAC/TC26).

This part is responsible for the drafting of the unit. Shanghai Institute of Electrical Science (Group) Co., Ltd., Zhejiang Xi Ma Motor Co., Ltd., Shandong Hua Li Machinery Group Co., Ltd., Suzhou Taihu Electric New Materials Co., Ltd., Zhejiang Jinlong Motor Co., Ltd., Suzhou Kuifeng Electric Insulation Systems Co., Ltd., Shanghai Dezhaio Electric Co., Ltd., Yongji new speed motor electrical limited liability company, Shanghai motor system Energy - saving Engineering Technology Research Center Co., Ltd., Shanghai Electrical Equipment Testing Institute.

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Introduction

IEC 60034-18-1 The general principles for the evaluation and classification of insulation structures for rotating electrical machines are presented.

This part only applies to the forming winding insulation structure and focuses on the thermal, electrical aging of the multi-factor assessment.

Functional Evaluation of Rotating Motor Insulation Structure Forming Winding Test Procedure Thermal, Multi - factor Evaluation of Comprehensive Stress Durability

1 Scope

This section specifies the evaluation procedure for the insulation structure while subjected to thermal and electrical stress durability tests. The test procedures in this section apply AC motor with or for the design of the winding insulation structure, the test protocol provides a benchmark and the structure under consideration in the voltage and temperature synthesis of the performance in contrast, temperature and voltage are used separately to evaluate performance in the past. The selected temperature and voltage should be made for the structure to be evaluated and the reference structure Within the appropriate time range and under actual stress. The test results of the structure to be evaluated indicate whether it is

better or worse Run the empirical structure of the benchmark, but can not be used to calculate the operating life. The evaluation of this part does not include the stress gradient.

The test procedures in this section do not apply to determining the interaction of heat and electrical stresses during aging and to determine the durability curve. If needed for additional information on the interaction or in order to determine the durability curve, it is necessary to do further testing, the temperature is constant at different voltages Perform an electrical aging or constant voltage at different temperatures for thermal aging.

2 Normative reference documents

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 17948.7-2016 General specification for functional evaluation of insulating structures for rotating electrical machines (IEC 60034-18-1.:2010, IDT) IEC 60034-15 AC motor stator forming coil impact voltage level (Rotatingelectricalmachines-Part 15.

Impulsevoltagewithstandlevelsofform-woundstatorcoilsforrotatinga.c.machines) IEC/T S60034-18-42 Rotary motor Voltage-type inverter-powered rotating electric machine Resistive to partial discharge Electrical insulation structure (type II) of the identification and accreditation test (Rotatingelectricalmachines-Part 18-42.

Qualificationandacceptancetestsfor partialdischargeresistantelectricalinsulationsystems (Type II) usedinrotatingelectricalmachines fedfromvoltageconverters) IEC 60085 Electrical Insulation Assessment and Design (Electricalinsulation-Thermalevaluationanddesigna-tion IEC 60505 Evaluation and identification of electrical insulation systems (Evaluation and Quintification ofelectricalinsulationsys-tems) IEC 62539 Guidelines for Statistical Analysis of Electrical Insulation Breakdown Data
(Guideforthestatisticalanalysisofelectricalinsu-lationbreakdowndata

3.1 Relationship with other standards

Unless otherwise recommended in this section, the principles of GB/T 17948.7-2016 and IEC 60505 should be followed.

3.2 Test procedures

Tests can be carried out in accordance with the complete or single-point multi-factor test procedure for simultaneous application of temperature and voltage. The single-point test procedure provides only