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

GB/T 22720.2-2019

Replacing GB/Z 22720.2-2013

**Rotating electrical machines - Qualification tests for the partial
discharge resistant electrical insulation systems (Type II) used
in rotating electrical machines fed from voltage converters**

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Foreword

GB/T 22720 is divided into 2 parts.

---GB/T 22720.1 Rotating motor voltage type inverter-powered rotating electric machine without partial discharge (type I) electrical insulation structure

Identification and quality control testing;

---GB/T 22720.2 Rotating electric machine voltage type inverter-powered rotating electric machine resistance to partial discharge electrical insulation structure (type II)

Identification test.

This part is the second part of GB/T 22720.

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

This part replaces GB /Z 22720.2-2013 "Rotating motor voltage-type inverter-powered rotating electric machine resistant to partial discharge electrical insulation

Structure (Type II) Identification and Accreditation Test. Compared with GB /Z 22720.2-2013, the main technical changes in this section are as follows.

--- Revised scope (see Chapter 1, Chapter 1 of the.2013 edition);

--- Modified the main insulation sample (see 12.2, 11.3 of the.2013 edition);

--- Modified the daytime sample (see 12.3, version 11.2 of the.2013 edition);

--- Modified the main insulation identification procedure (see 13.2, 12.3 of the.2013 edition);

--- Modified the inter-turn insulation identification procedure (see 13.3, 12.2 of the.2013 edition);

--- Modified the anti-halation structure identification procedure (see 13.4, 12.4 of the.2013 edition);

--- Revised the qualification criteria for qualification testing (see Chapter 14, Chapter 13 of the.2013 edition);

--- Revised the appendix "Example of Impact Test Circuit" (see Appendix B, Appendix A of the.2013 edition);

--- Added Appendix D "Derivation of the insulation level of motor insulation impulse voltage" (see Appendix D);

--- Added Appendix E "Derivation of IVIC in the absence of a manufacturer's baseline life curve" (see Appendix E).

This part uses the translation method equivalent to IEC 60034-18-42.2017 "Rotating Electric Machine Parts 18-42. Voltage Type Inverter Power Supply

Rotating electrical machine resistance to partial discharge electrical insulation structure (type II) qualification test.

The documents of our country that have a consistent correspondence with the international documents referenced in this part are as follows.

--- GB/T 17948.3-2017 Rotating electrical machine insulation structure functional evaluation forming winding test procedures

Edge structure heat assessment and classification (IEC 60034-18-31.2012, IDT)

--- GB/T 17948.4-2016 Rotating electrical machines - Insulating structures - Functional assessment

Evaluation (IEC 60034-18-32.2010, IDT)

--- GB/T 20833.1-2016 Rotating electrical machine rotating machine stator winding insulation - Part 1.

(IEC TS60034-27.2006, IDT)

---GB/T 23642-2017 Electrical insulation materials and systems for transient rise and partial discharge under repeated surge voltage conditions

(PD) Electrical Measurement (IEC TS61934.2011, IDT)

---GB/T 29310-2012 Guidelines for statistical analysis of electrical insulation breakdown data (IEC 62539.2007, IDT)

For ease of use, this section has made the following editorial changes.

---Incorporate the contents of the International Standard Amendment;

--- In line with the existing series of standards, this part of the name is changed to "rotary motor voltage type inverter-powered rotary motor resistant to partial discharge

Identification test of electrical and electronic insulation structure (type II).

This part was proposed by China Electrical Equipment Industry Association.

This part is under the jurisdiction of the National Rotating Electric Machine Standardization Technical Committee (SAC/TC26).

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Introduction

"Inverter Structure of Rotating Motor Powered by Voltage Type Inverter" consists of two parts, and the insulation structure is divided into two categories. Type I and Type II.

Type I, does not withstand partial discharge during its operational lifetime and under specified conditions; Type II, any of the insulating structures throughout the operational life

Partially subjected to partial discharge. For Type I and Type II insulation structures, the power system integrator is responsible for coordinating the electrical performance of the complete powertrain system.

The motor manufacturer should inform the motor manufacturer of the terminal voltage that occurs during operation. At this time, the motor manufacturer will decide to apply for identification according to the severity.

Test of insulation structure. Insulated structure certified by IEC 60034-18-41 or IEC 60034-18-42 and powered by frequency converter

The impulse voltage insulation level can be derived. This indicates that the insulation can withstand the electrical stress generated by the inverter during operation. Severe grade base of type I structure

Impact rise time and peak-to-peak voltage. On this basis, the severity of the Type II structure is also affected by the surge voltage repetition rate and the fundamental voltage

characteristics.

Impact. It is recommended that the system integrator measure the phase-to-phase and relative ground voltage between the terminal and the ground after the inverter/motor system is installed.

Check if it meets the requirements.

0.1 IEC 60034-18-41

IEC 60034-18-41 discusses Type I insulation structures, which are typically used for rated voltages up to 700V with loose windings

The rotating electric machine of the stator. IEC 60034-18-41 gives the necessary normative references, terminology and shadows produced by the operation of the frequency converter ring. After determining the technical basis of the assessment procedure, the conceptual approach and pilot project are described.

0.2 IEC 60034-18-42

IEC 60034-18-42 describes the qualification test for the electrical insulation structure of Type II rotating electrical machines. Type II insulation is usually used for rated electricity

A rotating electric machine with a profiled winding of 700V and above. The qualification procedure is completely different from the type I insulation structure, and the procedure is included in the acceleration strip.

The test article is destructively aged. Manufacturers need to clarify the life curve of the insulation structure with appropriate calculations and/or test procedures (eg

It is described in IEC 60034-18-32 to provide an estimated life under the operating conditions of the frequency converter. Identify any applied anti-fog knots

The structure is very important, and the test should be carried out under sinusoidal and repeated impact conditions, respectively. If the insulation structure is proven to be within the specified aging conditions

With a reliable life, the insulation structure is approved for use.

Rotating motor voltage type inverter

Rotating electric machine resistant to partial discharge electrical insulation structure

(Type II) identification test

1 Scope

This part of GB/T 22720 specifies the supply of pulse width modulation (PWM) inverters