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

GB/T 21211-2017

Replacing GB/T 21211-2007

**Equivalent loading and superposition techniques -- Indirect
testing to determine temperature rise of rotating electrical
machines**

等效负载和叠加试验技术 间接法确定旋转电机温升

(English Translation)

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Foreword

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

This standard replaces GB/T 21211-2007 "indirect method of equivalent load and superimposed test to determine the temperature rise of rotating electrical machines," and GB/T 21211-2007 compared to the main technical changes are as follows.

--- Modify the level of accuracy of measuring instruments, should not be less than 0.5 (see Chapter 4, see the 2007 edition of Chapter 4);

--- Redefinition of the uncertainty of the various indirect methods (see Chapter 5, Chapter 6, see the 2007 edition of Chapter 6, Chapter 7, Section 8 chapter);

--- Increasing the uncertainty of the various indirect methods of classification, in accordance with the "low" "medium" "high" guide the preferred method (see Chapter 7);

--- Added Appendix A instance calculation.

This standard uses the translation method identical with IEC 60034-29:2008 "Rotating Electrical Machinery Part 29. Equivalent load and stacking test technology Indirect determination of temperature rise. " the documents of our country that are consistent with the corresponding international documents that are normative references in this standard are as follows.

Rotating electrical machines (other than traction motors) - Test method for determining loss and efficiency (IEC 60034-2-1).

2007, IDT).

This standard has the following editorial changes.

--- Modify the standard name;

--- Remove the IEC 60027-4 listed in Chapter 2 (the document does not normative references in the text), the document IEC 60027-4 is listed New added references

--- Increasing the formula number;

This standard proposed by the China Electrical Equipment Industry Association.

This standard by the National Standardization Technical Committee rotating electrical (SAC/TC26) centralized.

This standard was drafted unit. Shanghai Electrical System Engineering Research Center Co., Ltd. energy saving, Shanghai Electric Group Co., Ltd. Shanghai Electric Factory Division, Shandong Huali Motor Group Co., Ltd., Zhejiang Jinlong Electric Co., Ltd., Fujian Anbo Motor Group Co., Ltd., Shanghai Drive Electric Co., Ltd., CSR Zhuzhou Motor Co., Ltd., Xi'an Tai Fu Cima Electric Co., Ltd., Zhejiang Hailong Technology Co., Ltd., Rongcheng Rongjia Power Co., Ltd., Shanghai Chuan Electric Co., Ltd. also.

Introduction

The purpose of this standard is to provide a variety of indirect load test method to determine the temperature rise of rotating electrical machines, including AC induction motor, AC synchronous power Machine and DC motor temperature rise. In some cases, this test method also comes with the measurement or estimation of other parameters such as loss and vibration Act, but it is not specifically stated that this method provides these data.

As the test methods recommended by this standard are equivalent, it can only be based on applications, test equipment, motor type and test results the accuracy of the choice of test methods.

This standard can not be understood as any motor can be tested according to any or all of the test methods. Some specific tests should be pressed A special agreement between the manufacturer and the user is established.

NOTE The method described in this standard is only an approximation of the thermal behavior of a motor under normal rated load conditions. Therefore, the tests obtained with these test methods as a result, according to the agreement between the manufacturer and the user, the basis for evaluating whether the heating of the motor conforms to 8.10 of IEC 60034-1 can be evaluated.

Equivalent load and overlay test techniques Indirect method to determine the temperature rise of rotating motor

1 Scope

This standard applies GB/T 755-2008 coverage for a variety of reasons can not be loaded to the specified conditions (rated or other load) for Thermal test of motors and generators.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 755-2008 Rotating electrical machinery quota and performance (IEC 60034-1:2004, IDT) IEC 60034-2-1 Rotating electrical machines - Part 2-1. Test methods for determining loss and efficiency (except traction motors) (Rotating electricalmachines-Part 2-1.Standardmethodsfordetermininglossesandefficiencyfromtests (ex-cluding machinesfortractionvehicles))

3 Symbols, units and subscripts

The following symbols and units apply to this document.

K temperature rise factor, in Kelvin per Watt (K/W)

Note 1: The full name of K is "Characterize the slope of a linear change in temperature rise with loss", see IEC 60027-4, No. 901.

deltatheta temperature rise in Kelvin (K) theta temperature, in degrees Celsius (°C) P Power, loss, in watts (W) I current in amperes (A) R resistance in ohms (ohm) X reactance in ohms (ohm) U voltage in volts (V) E potential in volts (V) f Frequency in Hertz (Hz) f_{1,2} main/sub-frequency in Hertz (Hz) deltat interval in seconds (s) T torque in Newton meters (N · m) J Moment of inertia, in kilograms square meters (kg · m²) cosphi power factor
Uncertainty of gamma method, the unit is percentage (%)

Note 2: This definition indicates that the measured temperature rise at gamma > 0 is higher than at actual load conditions.

deltaf modulation frequency amplitude, in Hertz (Hz) lambda Vice voltage and the main voltage ratio