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

GB/T 25738-2024

Replacing GB/T 25738-2010

**Technical guideline for motor commissioning in nuclear power
plants**

核电厂电动机调试技术导则

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents". Drafting is required. This document replaces GB/T 25738-2010 "Technical Guidelines for Commissioning of Electric Motors in Nuclear Power Plants". In addition to structural adjustments and editorial changes, the main technical changes are as follows: The scope of application has been changed (see Chapter 1, Chapter 1 of the 2010 edition);

a) The definition of nuclear safety-grade motor has been changed (see 3.2, 3.2 of the 2010 edition);

b) Added the requirements for the completion of motor installation (see 4.1.3);

c) The provisions for checking lubricating oil have been changed [see

1 Scope

China's national technical guideline for commissioning the electric motors of a nuclear power plant. It specifies the requirements, the procedures and the acceptance criteria for the commissioning of motors installed in nuclear power plants. A nuclear station contains several thousand motors, from small valve actuators to the reactor coolant pumps of several megawatts, and commissioning them is not the same exercise as commissioning motors anywhere else. The reason is classification. A proportion of those motors are safety class: they drive the emergency feedwater pumps, the safety injection pumps, the containment

spray, the essential service water and the emergency ventilation, and their function is to start and run when the plant is in a condition it was designed never to reach. A motor that has never been asked to do that must nevertheless be demonstrated capable of it, and that demonstration is what commissioning provides. So the guideline covers what is verified and in what order: the pre-commissioning checks on installation, alignment, insulation, earthing and cooling; the no-load and coupled running; the starting behaviour and the voltage dip the motor causes and tolerates, which matters because a safety motor must start on a degraded supply from the emergency diesel; the thermal behaviour and the temperature rise at load; the vibration signature, which becomes the baseline against which the machine will be monitored for the rest of its life; and the protection and control interface. And it covers the documentation, because the commissioning record of a safety class motor is a licensing document that will be referred to for decades. Issued on 26 October 2024 and in force since 1 May 2025, it replaces GB/T 25738-2010.

This document specifies the commissioning conditions, commissioning methods, judgment criteria, and report contents for AC asynchronous motors in nuclear power plants. This document applies to the commissioning of AC asynchronous motors in nuclear power plants.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the latest version (including all amendments) applies to this document. In this document.

GB/T 755 Ratings and performance of rotating electrical machines

GB/T 1032 Test methods for three-phase asynchronous motors

GB/T 10068 Mechanical vibration of motors with a shaft center height of 56 mm or more - Measurement, evaluation and limits of vibration

GB/T 14048.12 Low-voltage switchgear and controlgear Part 4

3. Contactors and motor starters for non-motor loads AC semiconductor controllers and contactors

GB 50150 Electrical Equipment Acceptance Test Standard for Electrical Installation Engineering

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 components Items that make up equipment.

Note. Typical components of an electric motor include stators, rotors, bearings, couplings, electric heaters, coolers, terminal boxes, locking devices, seals, sensors, Devices, etc.

3.2 nuclear safety class motor Suitable for motors required to protect the public during and after an accident.

4.1 Debugging Prerequisites

4.1.1 The instruments and meters used for debugging shall be inspected and calibrated to be qualified and within the validity period.

4.1.2 The design and manufacturing completion documents of the motor should be complete and valid.

4.1.3 The motor installation is complete, the electrical and instrumentation circuits are terminated, and the auxiliary systems are available.

4.1.4 The debugging related documents have come into effect and the debugging work permit has been obtained.

4.1.5 The quality appraisal of nuclear safety-grade motors, special test factory documents and the application environment of nuclear safety-grade motors shall comply with the design requirements.

4.2.2

e) of the.2010 edition];

d) Added the requirement to check the current transformer (CT) wiring [see

e) Added the requirement to check the neutral point connection [see

f) Added the requirement to inspect the inverter [see

g) Added requirements for no-load starting voltage drop measurement (see 4.4.3.1);

h) Added requirements for no-load starting of motors with frequency converters (see 4.4.3.7);

i) Added requirements for measuring the voltage drop when starting with load (see 4.4.4.2);

j) Change "low-voltage motor" to "motor with rated voltage below 1 000 V" and change "high-voltage motor" to "motor with rated voltage below 1 000 V". Motors with a voltage of 1 000 V and above" (see 4.4.3.2, 4.4.4.3, 4.4.4.4,.2010 edition 4.4.3.2, 4.4.4.3, 4.4.4.4);

k) The normative appendix "Quality Appraisal and Special Tests for Typical Nuclear Safety-Grade Motors" (see Appendix A of the.2010 edition) has been deleted. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is

proposed and coordinated by the China Electricity Council. This document was drafted by: Suzhou Thermal Engineering Research Institute Co., Ltd., CGN Engineering Co., Ltd., China Nuclear Power Engineering Co., Ltd., Grid Electric Power Technology Co., Ltd., China Electric Power Engineering Consulting Group East China Electric Power Design Institute Co., Ltd., Jiamusi Electric Motor Co., Ltd. company. The main drafters of this document are. Liu Yong, Yuan Jin, Chen Wei, Zhou Jieliang, Ye Yongjian, Chang Yanqin, Gong Boyang, Jin Chengyi, Zha Dongjian, Liu Qiang, Jin Chungang and Yu Chuanlin. The previous versions of this document and the documents it replaces are as follows: First published in.2010 as GB/T 25738-2010; This is the first revision. Technical Guidelines for Commissioning of Electric Motors in Nuclear Power Plants