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ICS 29.160.20
CCS K21

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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 43188-2023

Guide for condition evaluation of turbogenerators

发电机设备状态评价导则

Issued on: September 7, 2023 **Implemented on: April 1, 2024**

Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents" Drafting. Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents. This document is proposed by the China Electricity Council. This document is under the jurisdiction of the National Electric Power Equipment Condition Maintenance and Online Monitoring Standardization Technical Committee (SAC/TC321). This document was drafted by: Xi'an Thermal Engineering Research Institute Co., Ltd., China Huaneng Group Co., Ltd., China Electric Power Research Institute Co., Ltd. Division, State Grid Shandong Electric Power Company Electric Power Research Institute, Harbin Electric Machinery Factory Co., Ltd., State Grid Zhejiang Electric Power Co., Ltd. Scientific Research Institute, Dongfang Electric Group Dongfang Electric Co., Ltd., North China Electric Power Research Institute Co., Ltd., China Datang Group Science Technology Research Institute Co., Ltd. Northwest Electric Power Experimental Research Institute. The main drafters of this document. Yang Bo, Liu Zhan, Lu Shanglin, Ma Jinhui, Gao Keli, Wu Liyuan, Cao Zhiwei, Jin Huiyong, Shao Xianjun, Wang Jianli, Leiyu, Zhang Jianding. Guidelines for evaluating the condition of generator equipment

1 Scope

GB/T 43188-2023 is the Chinese guide for evaluating the condition of turbogenerators. A large generator is overhauled on a schedule that costs the plant weeks of output, and the industry has been moving from fixed intervals to condition-based maintenance, which requires the condition to be expressed as a defensible grade rather than as an engineer's impression. The evaluation draws on partial discharge, insulation resistance and

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polarisation index, vibration, temperature, hydrogen purity and leakage, and the visual inspection record, and combines them. The standard sets the general requirements, the materials on which the evaluation is based, the evaluation of the individual parts and the overall rating that follows from them, with an informative annex giving the deterioration grades of the generator state quantities. It took effect on 1 April 2024.

This document specifies the overall requirements, evaluation data, component evaluation and overall evaluation of generator equipment status. This document is applicable to the condition evaluation of hidden pole synchronous generator equipment in coal-fired and gas-fired power plants. Other types of generators refer to use.

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2 Normative reference documents

This document has no normative references.

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 equipment statusequipmentcondition A comprehensive expression of the equipment's ability to maintain safe and stable operation under rated operating conditions.

3.2 State quantity conditionindicators Data, waveforms, images, sounds, phenomena, etc. that directly or indirectly reflect the status of the equipment must be inspected, powered on, online monitored, and stopped. Electrical test acquisition.

3.3 familydefectfamilydefect Defects caused by common factors such as design, materials, manufacturing, and workmanship.

Note. In practice, if the incidence rate of a certain defect in equipment of the same model and batch is significantly higher than the industry average, it is usually a family defect.

4 General requirements

4.1 Generator condition evaluation should collect pre-operation information, operating information, maintenance test information and other information during the entire life cycle of the equipment. The electrical and non-electrical state quantities contained in the information are analyzed and evaluated.

4.2 The generator status evaluation should include component evaluation and overall evaluation. The components include the stator, rotor and ancillary systems. The component evaluation is based on the status quantity. The degree of deterioration is divided into normal state, attention state, abnormal state and severe state.

4.3 The overall evaluation of the generator should be based on the components and combined with the overall performance of the generator.

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4.4 After the overall evaluation of the generator is completed, an evaluation report should be formed to provide operation, maintenance, and overhaul strategies based on the actual situation of the generator.

5 Evaluation information

5.1 Basic information Basic information should include (but not be limited to) equipment nameplate parameters, design specifications, ordering technical agreements, equipment technical specifications, equipment operation and maintenance

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