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

GB/T 11023-2018

Replacing GB/T 11023-1989

Test method of SF₆ gas tightness for high - voltage switchgear

高压开关设备六氟化硫气体密封试验方法

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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 11023-1989 "High-voltage switchgear sulphur hexafluoride gas seal test method", this standard and GB/T 11023- The main technical changes in 1989 are as follows:

- Added normative references and revised subsequent chapter numbers (see Chapter 2);
- Added terms and definitions such as "inflated compartment" and "controlled pressure system of gas" (see Chapter 3);
- Adjusting the test project overview, increasing the allowable air leak rate F_p based on the relative annual air leakage rate F_y limit, increasing the allowable The limit of the leak rate gives the recommended method for obtaining an accurate measurement volume. The contents of the original Appendix A are moved into the strip and carried out. Modified (see 4.1);
- Increase the acceptable ambient temperature value in the sealing test at room temperature (see 4.2);
- Adjust the contents of the high and low temperature sealing test that are not related to the sealing test (see 4.3);
- Added 5.1.4 "infrared imaging leak detection" and 5.1.5 " mass spectrometry leak detection" in qualitative leak detection (see 5.1);
- Adjust the order of the four test methods in quantitative leak detection, adjust the

calculation formula to the calculation method using tracer gas, and inflate The post-station time and the post-banding time are uniformly regulated (see 5.2);

---In the buckle method, the relationship between the insufflation time interval T and the relative annual air leakage rate Fy is increased (see 5.2.2);

---In the pressure drop method, the relative air leakage rate Fd of the controllable pressure system for the gas and the number N of the daily air supply are increased. Calculation method (see 5.2.4);

--- Add relevant examples in Appendix A and Appendix B (see Appendix A, Appendix B);

--- Added Appendix C "Infrared Imaging Leakage Principles and Spectral Examples" (see Appendix C). This standard was proposed by the China Electrical Equipment Industry Association. This standard is under the jurisdiction of the National High Voltage Switchgear Standardization Technical Committee (SAC/TC65). This standard was drafted. Xi'an High Voltage Electric Apparatus Research Institute Co., Ltd., State Grid Anhui Electric Power Company Electric Power Research Institute, State Grid Anhui Electric Power Company, China Electric Power Research Institute Co., Ltd., Xi'an Xidian High Voltage Switch Co., Ltd., Shanghai Tianling Switch Factory Company, ABB (China) Co., Ltd., Shanghai Electric Transmission and Distribution Test Center Co., Ltd., Beijing Cree Distribution Automation Co., Ltd. Division, Shanghai Keshi Technology Development Co., Ltd., Xiamen ABB High Voltage Switch Co., Ltd., New Northeast Electric Group High Voltage Switchgear Co., Ltd. Division, Pinggao Group Co., Ltd., Chuankai Electric Co., Ltd., Xi'an Xidian Electric Research Institute Co., Ltd., Xi'an Xidian Switch Electric Co., Ltd. Company, Shandong Taikai High Voltage Switch Co., Ltd., Zhejiang Switch Factory Co., Ltd., Beijing Beikai Electric Co., Ltd., Schneider Electric (China) Co., Ltd., Qingdao Ocean Electrical Equipment Testing Co., Ltd. The main drafters of this standard. Feng Wujun, Zhang Zikai, Tian Enwen, Zhang Jinbo, Yang Wei, Zhu Taiyun, Tian Yu, Ke Yanguo, Liu Zhiqiang, Chen Nan, Hao Yuliang, Liu Ying, Zhang Zhengan, Li Juan, Lu Quanfeng, Tan Yan, Wu Weidong, Xie Jianbo, Liu Yixi, Huang Hui, Hu Zhaoming, Wang Yan, Jin Xuejiang, Gao Erping, Zhang Yizhen, Lin Lin, Gao Ning, Zhao Guoqiang, Ji Guanghui, Yang Xiaoqun, Li Shuping, Jiang Wei, Xiao Fengliang, Zhou Qingqing, Yin Hongyan, Zhang Wenbo, Shu Yonglin, Li Xianzhe. The previous versions of the standards replaced by this standard are.

---GB/T 11023-1989. High-voltage switchgear sulfur hexafluoride gas Seal test method

1 Scope

GB/T 11023-2018 is the Chinese national standard on test method of sf6 gas tightness for high - voltage switchgear, in the field of electrical engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 28 December 2018 by the State Administration for

Market Regulation; Standardization Administration of China, and has been in force since 1 July 2019. Classification: ICS 29.120.60, CCS K43. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the terms and definitions, test items and test methods for the sulphur hexafluoride gas seal of high voltage switchgear. The test method specified in this standard is used to determine the relative annual air leak rate of the switchgear/compartiment. This standard applies to the gas sealing test of high-voltage switchgear with sulphur hexafluoride gas as insulation and/or arc extinguishing medium.

Note. High-pressure switchgear or other electrical equipment (such as sulphur hexafluoride current transformer, etc.) that uses other gases as the operating, insulating and/or arc extinguishing medium Body seal test can refer to this standard.

2 Normative references

The following documents are indispensable for the application of this document. 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 11022-2011 Common technical requirements for high voltage switchgear and control equipment standards

GB/T 15823-2009 Non-destructive testing leak detection method

3 Terms and definitions

The following terms and definitions as defined in GB/T 11022-2011 apply to this document. For ease of use, the following is repeated Certain terms and definitions in GB/T 11022-2011.

3.1 Inflatable compartment gas-filled compartment The compartments of the switchgear and control equipment, the gas pressure inside the compartment is maintained by one of the following systems.

- a) a controllable pressure system;
- b) closed pressure system;
- c) Seal the pressure system.

Note. Several gas-filled compartments can be permanently joined to each other as a common gas system (airtight assembly). [GB/T 11022-2011, definition 3.6.6.1]

3.2 Gas controlled pressure system controlled pressuresystemforgas Automatically compresses the air supply from the outside or the internal air supply.

Note 1. Examples of controllable pressure systems are air circuit breakers (air blow circuit breakers) or pneumatic operating mechanisms.

Note 2. The space can consist of several permanently connected inflatable compartments. [GB/T 11022-2011, definition 3.6.6.2]

3.3 Gas closed pressure system closed pressuresystemforgas A space for qi replenishment by manual connection to an external air source when needed.

Note. Rewrite GB/T 11022-2011, definition 3.6.6.3.