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**Guide for the on-site recycling and reuse of sulfur hexafluoride
gas**

六氟化硫（SF₆）气体的现场循环再利用导则

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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. 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 was proposed by the China Electricity Council. This document is under the jurisdiction of the National Electrochemical Standardization Technical Committee (SAC/TC 322). This document was drafted by: State Grid Jiangsu Electric Power Co., Ltd. Electric Power Research Institute, State Grid Anhui Electric Power Co., Ltd. Electric Power Science Research Institute, State Grid Jiangsu Electric Power Co., Ltd., State Grid Shandong Electric Power Company Electric Power Research Institute, Guangdong Power Grid Co., Ltd. Science Research Institute, State Grid Chongqing Electric Power Company Electric Power Research Institute, Nanjing University of Aeronautics and Astronautics, State Grid Qinghai Electric Power Company Electric Power Science Research Institute, Xi'an Jiaotong

University, China Huachuang (Suzhou) Electric Power Technology Research Co., Ltd., Henan Hitachi Co., Ltd., Shandong Zhonghui Instrument Co., Ltd., Langxi Instrument (Shanghai) Co., Ltd., and Xiamen Jiahua Electric Power Technology Co., Ltd. The main drafters of this document are. Zhang Xiaoqin, Zhu Hongbin, Ding Ran, Qi Jiong, Qi Guodong, Li Xiaodian, Yao Qiang, Jiang Jun, Liu Zien, Yu Naihai, Zhao Ke, Xiao Hanyan, Zhou Shanghu, Zhang Guanjin, Wang Haifei, Yu Xiang, Wang Chen, Liu Tao, Li Bo, Bi Haicheng, Li Jianhao, You Junbiao. Sulfur hexafluoride (SF₆) gas On-site recycling guidelines

1 Scope

China's national guide to recovering and reusing sulfur hexafluoride on site. SF₆ is the insulating and arc-quenching gas of high voltage switchgear, and it is unmatched for the purpose - which is fortunate, because it is also the most potent greenhouse gas known, with a global warming potential more than twenty thousand times that of carbon dioxide and an atmospheric lifetime of millennia. Every gram released stays released. So the entire discipline around it is containment: gas is recovered from equipment before maintenance rather than vented, purified on site of the moisture, air and the toxic decomposition products that arcing creates, and returned to the equipment. The guide covers how that is done, which matters because the decomposition products - sulfur oxyfluorides and hydrogen fluoride among them - are acutely toxic, and a recovery operation done carelessly harms the people doing it as well as the atmosphere.

This document describes the on-site detection, recovery, purification, and recharging of sulfur hexafluoride (SF₆) gas in electrical equipment. The law stipulates the technical indicators and safety protection measures for on-site detection, recovery, purification and recharging of SF₆ gas. This document applies to the on-site recycling of SF₆ gas in electrical equipment, SF₆ mixed gas and other application scenarios of SF₆ gas. Recycling shall be implemented as per the reference.

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 version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 150.2 Pressure Vessels Part

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 SF₆ gas recovery recovery of sulfur hexafluoride gas The process of extracting SF₆ gas from electrical equipment using special equipment and filling it into gas storage containers.

3.2 SF₆ gas purification purification of sulfur hexafluoride gas The process of removing moisture, solid particles and other impurities from SF₆ gas by physical and chemical methods.

4 Manufacturing, inspection and acceptance

GB/T 12022 Industrial sulfur hexafluoride

GB/T 34525 Safety regulations for the handling, loading and unloading, storage and use of gas cylinders DL/T 506-2018 Method for measuring humidity of insulating gas in sulfur hexafluoride electrical equipment DL/T 639 Guidelines for safety protection of personnel operating, testing and maintaining electrical equipment using sulfur hexafluoride DL/T 662.1-2021 Technical requirements for sulfur hexafluoride gas recovery devices Part

1. Sulfur hexafluoride gas recovery devices DL/T 920-2019 Determination of air, carbon tetrafluoride, hexafluoroethane and octafluoropropane in sulfur hexafluoride gas by gas chromatography DL/T 1205-2013 Test method for decomposition products of sulfur hexafluoride electrical equipment DL/T 1353-2014 Technical Specification for Sulfur Hexafluoride Treatment System DL/T 1553 Sulfur hexafluoride gas purification process DL/T 1823-2018 On-site detection method for mineral oil, hydrolyzable fluoride and acidity in sulfur hexafluoride gas TSG

21 Safety Technical Supervision Regulations for Stationary Pressure Vessels T/CEC 140-2017 Method for measuring the purity of sulfur hexafluoride gas in sulfur hexafluoride electrical equipment