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

GB/T 46473-2025

Natural gas screw expander units

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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 involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the China Electrical Equipment Industry Association. This document is under the jurisdiction of the National Technical Committee on Standardization of Screw Expanders (SAC/TC512). This document was drafted by: Wuhan New World Refrigeration Industry Co., Ltd., Jiangxi Huadian Power Co., Ltd., Xi'an Jiaotong University, and Jiangxi... Jiangxi Provincial Institute of Quality and Standardization, Shanghai Qiyao Energy Saving Technology Co., Ltd., Jiangxi Provincial Carbon Neutrality Research Center, Jiangxi Academy of Sciences Applied Physics Research Institute, Nanjing Agricultural University, Sun Yat-sen University, Jiangxi Huadian Screw Power Generation Technology Co., Ltd., Ordos Energy Bureau, Etuoke Banner Changmeng Natural Gas Limited Liability Company, Jiangxi Provincial Institute of Inspection, Testing and Certification Industrial Products Inspection and Testing Institute. The main drafters of this document are. Zhang Tianyun, Liu Fenggang, Xia Hang, Xing Ziwen, Qin Zhijun, Fan Min, Ji Chen, Huang Xinyue, Zhu Liwei, and Wang Qiuyu. Jiang Xiaoping, Zhai Yujia, Lu Lei, Shi Jinming, Diao Anna, Wang Chuang, Xie Zonghong, Cao Heping, Chen Liangle, Hu Shangyin, Guo Bingbing, Zhang Xiaoqiang, Liu Weiyu Qiao Hailong, Zeng Yongjun, Liu Jinliang, Huang Wenxing. Natural gas screw expander (set)

1 Scope

GB/T 46473-2025 is the Chinese national standard covering recovering the energy that a

pressure regulating station otherwise throws away - the screw expander in place of a throttle valve, its performance and efficiency, the sealing of a machine handling flammable gas, and the heating needed because expansion chills the stream. First edition, in force from 1 May 2026. Issued on 31 October 2025, it has been in force since 1 May 2026.

This document specifies the structural classification, technical requirements, explosion-proof requirements, safety requirements, and test methods for natural gas screw expanders (units). Inspection rules, marking and factory documents, packaging, transportation and storage. This document applies to applications that utilize the pressure energy from natural gas pipelines to output power through a screw expander, thereby driving a generator or powering a fan or water pump. Natural gas screw expanders (sets) with a design pressure not exceeding 10MPa, where mechanical equipment performs work. This document also applies to hazardous locations in Class IIA, IIB, and IIC, T1~T4 groups, where flammable gases and vapors mix to form an explosion hazard, as well as areas where explosions occur. Screw expanders (assemblies) used in environments where explosive gas mixtures are present or may be present. Other types of screw expanders (units) that utilize flammable and explosive gases for power generation shall be implemented in accordance with this document.

2 Normative references

The following documents, through normative references within this document, constitute essential clauses of this document. Those with dates are listed below. For cited documents, only the version corresponding to that date applies to this document; for undated cited documents, the latest version (including all amendments) applies. This applies to this document.

GB/T 150 (All Parts) Pressure Vessels GB/T 151 Heat Exchangers

GB/T 755 Ratings and Performance of Rotating Electrical Machines

GB/T 3797 Electrical control equipment

GB/T 3836.1 Explosive Atmospheres - Part

3 Equipment protected by increased safety type "e"

GB/T 3836.28 Explosive Atmospheres - Part

28. Basic Methods and Requirements for Non-Electrical Apparatus for Explosive Atmospheres

GB/T 4208 Degrees of protection provided by enclosures (IP code)

GB/T 4942 Protection ratings (IP codes) for integral structures of rotating electrical machines GB/T 13306 Nameplates

GB/T 14285 Technical Specification for Relay Protection and Safety Automatic Devices

GB/T 14711 General Safety Requirements for Small and Medium-Sized Rotating Electrical Machines

GB/T 14976 Stainless steel seamless pipes for fluid transport

GB/T 18430.1 Vapor compression cycle chilled water (heat pump) units - Part

1. Chillers (heat pumps) for industrial or commercial and similar applications Pump unit

GB 19517 National Technical Specification for Safety of Electrical Equipment

GB/T 20136 General Test Methods for Internal Combustion Engine Power Stations

GB/T 20320 Methods for measuring and evaluating the electrical characteristics of wind turbine generator sets in wind power generation systems

GB/T 20322 Reciprocating compressors for the petroleum and natural gas industry

GB/T 20368 Liquefied Natural Gas (LNG) Production, Storage and Transport