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GB/T 43922-2024

Inspection and evaluation of in-service polyethylene gas pipeline

在役聚乙烯燃气管道检验与评价

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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: This document was jointly issued by the National Technical Committee on Boiler and Pressure Vessel Standardization (SAC/TC262) and the Ministry of Housing and Urban-Rural Development of the People's Republic of China: The Ministry jointly proposes and coordinates it: This document was drafted by: China Special Equipment Testing and Research Institute, China Municipal Engineering North China Design and Research Institute Co:, Ltd:, Shanghai Special Special Equipment Supervision and Inspection Technology Research Institute, Jiangsu Special Equipment Safety Supervision and Inspection Research Institute, Hong Kong and China Investment Co:, Ltd:, Shenzhen Gas Group Group Co:, Ltd:, Anhui Special Equipment Testing Institute, Fujian Boiler and Pressure Vessel Inspection Institute, Beijing Jiaotong University, China Special Inspection Shenzhen Fuel Safety Technology Service (Shenzhen) Co:, Ltd:, Henan Boiler and Pressure Vessel Inspection Technology and Science Research Institute, Shenyang Special Equipment Inspection and Research Institute, Shaanxi Special Equipment Inspection and Testing Institute, Beijing University of Technology, China University of Petroleum (Beijing), Yada Plastic Products Co:, Ltd:, Shanghai Fuel Gas Co:, Ltd:, Shanxi Huaxin City Gas Group Co:, Ltd:, Chongqing Special Equipment Testing Institute, Guangdong Special Equipment Testing Research Institute Zhongshan Testing Institute, China Resources Gas Zhengzhou Engineering Construction Co:, Ltd:, SINOMACH Special Equipment Inspection Co:, Ltd:, China National Petroleum Corporation Engineering Materials Research Institute Co:, Ltd:, Fujian Hengjie Plastic New Materials Co:, Ltd:, Neijiang Inspection and Testing

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1 Scope

GB/T 43922-2024 covers the inspection and evaluation of in-service polyethylene gas pipelines, the buried PE distribution mains that carry gas beneath Chinese cities. They are a difficult asset to inspect: they are non-metallic, so the pigging and magnetic techniques used on steel do not apply; they are often not accurately recorded, so the first task is finding them; and their critical feature, the butt fusion joint, is buried and can only be assessed by excavation and specialised NDT. The standard sets the general requirements, the data collection and document review, the field inspection, the fitness-for-service evaluation, the rating of the safety condition, the use of risk-based inspection, the inspection intervals and the handling of findings and the inspection report. Its annexes carry the technique: the annual inspection requirements, the methods for locating a pipeline and determining its depth of burial, the gas leak detection methods with their grading, digital radiographic testing of welded joints, phased array ultrasonic testing of butt fusion joints with a catalogue of characteristic images, and methods for predicting the remaining life. It applies to in-service polyethylene gas pipelines within the Chinese special equipment catalogue, and excludes polyethylene pipes used for trenchless rehabilitation.

This document specifies the data collection and information review, on-site inspection, suitability evaluation, installation and Technical contents including full condition rating, risk-based inspection, inspection cycle, etc: This document applies to the inspection and evaluation of in-service polyethylene gas pipelines within the scope of the special equipment catalogue: This document is not applicable to the inspection and evaluation of polyethylene gas pipelines for trenchless repair:

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 15558 (all parts) buried polyethylene (PE) piping systems for gas

GB 50028 Urban Gas Design Code

GB 55009 Specification for gas engineering projects CJJ

63 Polyethylene Gas Pipeline Engineering Technical Standard CJJ/T 215 Technical Specification for Leakage Detection of Urban Gas Pipeline Networks

3 Terms and definitions

The following terms and definitions apply to this document: 3:

1 Tracing device locating device A device that can be used to detect and determine the location of the pipeline along the pipeline: 3:

2 Warning device warning device It is laid above the buried gas pipeline and sprayed with warning signs to indicate that there are urban gas pipelines underground: 3:3 deeprootedplants Plants whose roots reach deep into the buried part of polyethylene gas pipelines may damage the pipeline itself:

4 General requirements

1 The inspections specified in this document include periodic inspections and annual inspections: Periodic inspections are divided into routine inspections and annual inspections based on the inspection methods: There are two types of risk-based inspection (RBI): Regular inspection should include data review, on-site inspection and suitability (fitness for use) evaluation: Conventional inspection method, or risk-based inspection method based on pipeline damage mode and risk level combined with pipeline usage: Inspections should be carried out on the basis of annual inspections: Annual inspections may not be carried out in years when periodic inspections are carried out: 4:

2 Regular inspections should be carried out using routine inspection methods: When the conditions specified in 9:1 are met, risk-based inspections may be used: