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شرکت ملی گاز ایران

مدیریت پژوهش و فناوری

امور استانداردها

IGS

مشخصات فنی خرید

آند لوله ای تیتانیوم پوشش شده با ترکیب اکسید فلز

Mixed Metal Oxide (MMO) Coated Titanium Tubular Anode



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شرکت ملی گاز ایران



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مدیر محترم پژوهش و فناوری
رئیس محترم امور مجامع

باسلام،

به استحضار می‌رساند در جلسه ۲۱۰۰ مورخ ۱۴۰۳/۱۲/۲۶ هیأت مدیره، نامه شماره ۲۰۶۰۲۲ مورخ ۱۴۰۳/۱۲/۱۴ آن مدیریت درمورد تصویب نهایی مقررات فنی شرکت ملی گاز ایران مربوط به گروه های پوشش و حفاظت کاتدی و ابزار دقیق به شرح زیر مطرح و مورد تصویب قرار گرفت.

۱- مشخصات فنی خرید آند لوله ای تیتانیوم پوشش شده با ترکیب اکسید فلز

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۲- دستور العمل بازرسی کنتورهای دیافراگمی

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این مصوبه در حکم مصوبه مجمع عمومی شرکت های تابعه محسوب و لازم الاجرا می باشد.

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Foreword

This standard specification is intended to be mainly used by N.I.G.C. and contractors, and has been prepared base on interpretation of recognized standards and technical documents, as well as knowledge, backgrounds and experiences in gas industries at national and international levels.

Iranian Gas Specification (IGS) are prepared, reviewed and amended by technical standard committees within NIGC standardization division of research and technology management and submitted to "the standards council of NIGC" for approval.

IGSs are subjected to revision, amendment or withdrawal, if required, and thus the latest edition of IGS shall be checked / inquired by NIGC'S users.

This standard must not be modified or altered by NIGC employees or its contractors. Any deviation or conflicts between this specification and other applicable standards, codes, procedure or well-known manufacturer's specifications must be resolved in writing by the user or its representative through Manager, Engineering Department or standardization division of NIGC.

The technical standard committee welcomes comments and feedbacks from concerned or interested corporate and individuals about this standard, and may revise this document accordingly based on the received feedbacks.

General Definitions

Throughout this standard the following definitions, where applicable, should be followed:

- 1- "STANDARDIZATION DIV." is organized to deal with all aspects of industry standards in NIGC. Therefore, all enquiries for clarification or amendments are requested to be directed to mentioned division.
- 2- "COMPANY": refers to National Iranian Gas Company (NIGC).
- 3- "SUPPLIER": refers to a firm who will supply the service, equipment or material to IGS specification whether as the prime producer or manufacturer or a trading firm.
- 4- "SHALL ": is used where a provision is mandatory.
- 5- "SHOULD": is used where a provision is advised only.
- 6- "MAY": is used where a provision is completely discretionary.

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IGS-M-TP-022(1) 2024 SUMMARY OF CHANGES

The most important changes include the following but are not limited to, and the complete reading of the standard text by the end user is mandatory:

Clause	Title
3	DEFINITIONS
4	REQUIREMENTS
5	DOCUMANTATION
6	PACKAGING
12	INSPECTION AND TESTING
13	HEALTH, SAFETY AND ENVIRONMENT
ANNEX B	Data Sheet for MMO Anode
ANNEX D	Backfill Material Properties

1. SCOPE

This standard specification covers the minimum requirements for manufacturing, procurement and inspection of mixed metal oxide (MMO) coated titanium tubular anodes to be used mainly in deep anode beds for pipelines and gas distribution networks in impressed current cathodic protection (ICCP) systems.

The anodes in both the dry-type deep and surface anode beds shall be backfilled with calcined petroleum coke according to Annex D.

2. REFERENCE

Throughout this standard the following dated and undated standards/codes are referred to. This referenced documents shall, to the extent specified herein, from a part of this standard. For dated references, the edition cited applies. For undated references, the latest edition of the referenced documents applies.

2.1 Normative References

ASTM B 338 (2014) "Standard Specification for Seamless and Welded Titanium Alloy Tubes for Condensers and Heat Exchangers"

ASTM B 539 (2020) "Standard Test Method for Measuring Resistance of Electrical Connections (Static Contacts)"

ASTM D 3032 (2016) "Standard Test Method for Hookup Wire Insulation"

ASTM D 3359 (2017) "Standard Test Method for Measuring Adhesion by Tape Test"

ASTM F 2391 (2022) "Standard Test Method for Measuring Package and Seal Integrity using Helium as Tracer Gas"

ISO 4624 (2023) " Paints and Varnishes–Pull-off Test for Adhesion "

IPS-M-TP-750 (2021) " Material and equipment standard for cathodic protection "

NACE TM0108 (2012) "Standard Test Method for Testing of Catalyzed Titanium Anodes for Use in Soils or Natural Waters"

NACE SP0572 (2007) "Standard Practice for Design, Installation, Operation, and Maintenance of Impressed Current Deep Anode Beds"

2.2 Informative References

EN 10204 (2004) "Metallic Products-Types of Inspection Documents"

3. DEFINITIONS

Anode Consumption Rate

The rate of anode coating mass consumption for a given current output over a given period, normally stated in milligram per ampere year.