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IGS

مشخصات فنی خرید

مشخصات فنی آند تیتانیوم با پوشش MMO

Mixed Metal Oxide (MMO) Coated Titanium Anode



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باسلام،

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FOREWORD

This standard specification is intended to be mainly used by NIGC and contractors and has been prepared on interpretation recognized standards , technical documents , knowledge , backgrounds and experiences in gas industries at national and international levels .

Iranian gas standards (IGS) are prepared , reviewed and amended by technical standard committees within NIGC Standardization division and submitted to the NIGC's "STANDARDS COUNCIL" for approval .

IGS Standards are subject to revision , amendment or withdrawal , if required , thus the latest edition of IGS shall be checked/inquired by NIGC users .

This standard must not be modified or altered by the end users within NIGC and her contractors . Any deviation from normative references and / or well known manufacturers specifications must be reported to Standardization division .

Any comments from concerned parties on NIGC distributed IGS are welcome to technical standards committees and will receive serious attention and consideration should a revision to standards is recommended .

GENERAL DEFINITIONS :

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

- 1- "STANDARDIZATION DIV." has been organized to deal with all aspects of industrial standards in NIGC . Therefore , all queries for clarification or amendments are requested to be directed to mentioned div.
- 2- "COMPANY" : refers to national Iranian gas company .
- 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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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 .

Note : For surface anode beds , the anodes shall be used only in stable soils with low resistivity .

2. REFERENCES

Throughout this standard specification the following standards are referred to . The editions of these standards that are in effect at the time of issue of this standard specification (2010) shall , to the extent specified herein, form part of this standard specification . The applicability of changes in standards that occur after the date of this standard specification shall be mutually agreed upon by the purchaser and the supplier .

2.1 Normative References

ASTM B 338 (2001) "Standard Specification for Seamless and Welded Titanium Alloy Tubes for Condensers and Heat Exchangers"

ASTM B 539 (2002) "Standard Test Method for Measuring Resistance of Electrical Connections (Static Contacts)

ASTM D 3032 (2004) "Standard Test Method for Hookup Wire Insulation"

ASTM D 3359 (2002) "Standard Test Method for Measuring Adhesion by Tape Test"

ISO 334 (1992) "Solid Mineral Fuels – Determination of Total Sulfur – ESCHKA Method"

ISO 351 (1996) "Solid Mineral Fuels – Determination of Total Sulfur – High Temperature Combustion Method"

ISO 562 (1998) "Hard Coal and Coke – Determination of Volatile Matter"

ISO 567 (1995) "Coke – Determination of Bulk Density in a Small Container"

ISO 609 (1996) "Solid Mineral Fuels – Determination of Carbon and Hydrogen – High Temperature Combustion Method"

ISO 625 (1996) "Solid Mineral Fuels – Determination of Carbon and Hydrogen – LIEBIG Method"

ISO 687 (2004) "Solid Mineral Fuels – Determination of Moisture in the General Analysis Test Sample"

ISO 1013 (1995) "Coke – Determination of Bulk Density in a Large Container"

ISO 1171 (1997) "Solid Mineral Fuels – Determination of Ash Content"

ISO 2325 (1986) "Coke – Size Analysis (Nominal Top Size 20 mm or Less)"

NA CE TM0108 (2008) "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"

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 .

Anode String

Several anodes fitted to a single lead wire to form a string of anodes for use in deep-well ground beds .

Backfill

Material placed in a hole to fill the space around the anodes , vent pipe , and buried components of a cathodic protection system .

Bore Hole

A hole drilled into the earth for the installation of a deep groundbed system .

Centralizer

Centralizer is applied to ensure that the anode(s) remain central when installed in restricted vertical bore holes . Centralizer is fitted into the PVDF tube seals and do not restrict the active length of the anodes(s) element .

Standard sizes range between 150 mm (6") to 300 mm (12") .

Current Density

The current to or from a unit area of an electrode surface .

Deep Groundbed

One or more anodes installed vertically at a nominal depth of 30 m (100 ft) or more below the earth's surface in a drilled hole for the purpose of supplying cathodic protection .