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Petroleum, petrochemical and natural gas industries — Dry gas sealing systems for axial, centrifugal, and rotary screw compressors and expanders

Industries du pétrole, de la pétrochimie et du gaz naturel — Systèmes d'étanchéité au gaz pour les compresseurs axiaux, centrifuges, à vis et les turbodétendeurs

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 6, *Processing equipment and systems*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 12, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition of ISO 6368 cancels and replaces ISO 10438-4:2007, which has been technically revised.

This document supplements API Std 692, 1st edition (2018).

The technical requirements of ISO 10438-4 and API Std 614 Part 4 used to be identical. In the meantime, API Std 614 Part 4 has been technically revised and published as API Std 692, 1st edition (2018). The purpose of this document is to bring it up to date, by referencing the current edition of API Std 692 and including supplementary content.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Users of this document are informed that further or differing requirements can be needed for individual applications. This document is not intended to inhibit a vendor from offering, or the purchaser accepting, alternative equipment or engineering solutions for the individual application. This can be particularly applicable where there is innovative or developing technology. Where an alternative is offered, the vendor needs to identify any variations from this document and provide details.

Petroleum, petrochemical and natural gas industries — Dry gas sealing systems for axial, centrifugal, and rotary screw compressors and expanders

1 Scope

This document is applicable to dry gas sealing systems for axial, centrifugal, and rotary screw compressors and expanders as described in ISO 10439 (all parts), ISO 10440-1 and ISO 10440-2. Although intended for use primarily in oil refineries, it is also applicable to petrochemical facilities, gas plants, liquefied natural gas (LNG) facilities and oil and gas production facilities. The information provided is designed to aid in the selection of the system that is most appropriate for the risks and circumstances involved in various installations.

This document does not apply to other types of shaft seals such as clearance seals, restrictive ring seals or oil seals.

This document is a supplement to API Std 692, 1st edition (2018), the requirements of which are applicable with the exceptions specified in this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4126 (all parts), *Safety devices for protection against excessive pressure*

ISO 10434, *Bolted bonnet steel gate valves for the petroleum, petrochemical and allied industries*

ISO 10438-1, *Petroleum, petrochemical and natural gas industries — Lubrication, shaft-sealing and control-oil systems and auxiliaries — Part 1: General requirements*

ISO 10438-2, *Petroleum, petrochemical and natural gas industries — Lubrication, shaft-sealing and control-oil systems and auxiliaries — Part 2: Special-purpose oil systems*

ISO 10438-3, *Petroleum, petrochemical and natural gas industries — Lubrication, shaft-sealing and control-oil systems and auxiliaries — Part 3: General-purpose oil systems*

ISO 10439-2, *Petroleum, petrochemical and natural gas industries — Axial and centrifugal compressors and expander-compressors — Part 2: Non-integrally geared centrifugal and axial compressors*

ISO 10439-3, *Petroleum, petrochemical and natural gas industries — Axial and centrifugal compressors and expander-compressors — Part 3: Integrally geared centrifugal compressors*

ISO 10440-1, *Petroleum, petrochemical and natural gas industries — Rotary-type positive-displacement compressors — Part 1: Process compressors*

ISO 10497, *Testing of valves — Fire type-testing requirements*

ISO 13706, *Petroleum, petrochemical and natural gas industries — Air-cooled heat exchangers*

ISO 15156 (all parts), *Petroleum and natural gas industries — Materials for use in H2S-containing environments in oil and gas production*

ISO 15761, *Steel gate, globe and check valves for sizes DN 100 and smaller, for the petroleum and natural gas industries*

ISO 16812, *Petroleum, petrochemical and natural gas industries — Shell-and-tube heat exchangers*

ISO 17292, *Metal ball valves for petroleum, petrochemical and allied industries*

ISO 17945, *Petroleum, petrochemical and natural gas industries — Metallic materials resistant to sulfide stress cracking in corrosive petroleum refining environments*

ISO 23251, *Petroleum, petrochemical and natural gas industries — Pressure-relieving and depressuring systems*

API Std 692, 1st edition (2018), *Dry Gas Sealing Systems for Axial, Centrifugal, and Rotary Screw Compressors and Expanders*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in API Std 692, 1st edition (2018) apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Supplements to API 692, 1st edition (2018)

4.1 General requirements

The requirements specified in API Std 692, 1st edition (2018) shall apply, with the exceptions specified in 4.2 to 4.9.

4.2 Sleeves, retainers, housings, disk, and carrier — Metals

The requirements specified in API Std 692, 1st edition (2018) Part 2, Annex H.5 shall apply with the following exception:

For the purpose of this provision, ISO 17945 shall be used in place of NACE MR0103.

4.3 Module DD3 — Double seal gas differential pressure control

The requirements specified in API Std 692, 1st edition (2018) Part 3, 6.7.5.5.1 shall apply with the following exceptions:

For the purpose of this provision, ISO 10439-3 shall be used in place of API Std 617.

For the purpose of this provision, ISO 10440-1 shall be used in place of API Std 619.

4.4 Cooler

4.4.1 The requirements specified in API Std 692, 1st edition (2018) Part 3, 7.2.6 shall apply with the following exception:

For the purpose of this provision, ISO 13706 shall be used in place of API Std 661.

4.4.2 The requirements specified in API Std 692, 1st edition (2018) Part 3, 7.2.8 shall apply with the following exception:

For the purpose of this provision, ISO 16812 shall be used in place of API Std 660.

4.5 Pressure-relieving devices

4.5.1 The requirements specified in API Std 692, 1st edition (2018) Part 3, 7.10.5 shall apply with the following exception:

For the purpose of this provision, ISO 23251 shall be used in place of API Std 521.

4.5.2 The requirements specified in API Std 692, 1st edition (2018) Part 3, 7.10.6 shall apply with the following exception:

For the purpose of this provision, ISO 4126 (all parts) shall be used in place of API Std 520.

4.5.3 The requirements specified in API Std 692, 1st edition (2018) Part 3, 7.10.7 shall apply with the following exception:

For the purpose of this provision, ISO 4126 (all parts) shall be used in place of API Std 526.

4.6 Materials

4.6.1 The requirements specified in API Std 692, 1st edition (2018) Part 3, 8.1.14 shall apply with the following exception:

For the purpose of this provision, ISO 17945 shall be used in place of NACE MR0103.

4.6.2 The requirements specified in API Std 692, 1st edition (2018) Part 3, 8.1.15 shall apply with the following exception:

For the purpose of this provision, ISO 15156 (all parts) shall be used in place of NACE MR0175.

4.7 Valves

4.7.1 The requirements specified in API Std 692, 1st edition (2018) Part 3, 9.3.3 shall apply with the following exception:

For the purpose of this provision, ISO 10434 shall be used in place of API Std 600.

4.7.2 The requirements specified in API Std 692, 1st edition (2018) Part 3, 9.3.4 shall apply with the following exception:

For the purpose of this provision, ISO 15761 shall be used in place of API Std 602.

4.7.3 The requirements specified in API Std 692, 1st edition (2018) Part 3, 9.3.5 shall apply with the following exception:

For the purpose of this provision, ISO 15761 shall be used in place of API Std 602.

4.7.4 The requirements specified in API Std 692, 1st edition (2018) Part 3, 9.3.8.1 shall apply with the following exception:

For the purpose of this provision, ISO 17292 shall be used in place of API Std 608.

4.7.5 The requirements specified in API Std 692, 1st edition (2018) Part 3, 9.3.8.7 shall apply with the following exception:

For the purpose of this provision, ISO 10497 shall be used in place of API Std 607.