Petroleum and natural gas industries - Design and operation of subsea production systems - Part 7: Completion/workover riser systems

Petroleum and natural gas industries - Design and operation of subsea production systems - Part 7: Completion/workover riser systems

EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN ISO 13628-7:2007 sisaldab Euroopa standardi EN ISO 13628-7:2006 ingliskeelset teksti. Käesolev dokument on jõustatud 29.01.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 13628-7:2007 consists of the English text of the European standard EN ISO 13628-7:2006. This document is endorsed on 29.01.2007 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This part of ISO 13628 gives requirements and recommendations for the design, analysis, materials, fabrication, testing and operation of subsea completion/workover (C/WO) riser systems run from a floating vessel. It is applicable to all new C/WO riser systems and may be applied to modifications, operation of existing systems and reuse at different locations and with different floating vessels.	**Scope:** This part of ISO 13628 gives requirements and recommendations for the design, analysis, materials, fabrication, testing and operation of subsea completion/workover (C/WO) riser systems run from a floating vessel. It is applicable to all new C/WO riser systems and may be applied to modifications, operation of existing systems and reuse at different locations and with different floating vessels.

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Industries du pétrole et du gaz naturel - Conception et exploitation des systèmes de production immergés - Partie 7: Systèmes de liaison surface/fond de mer pour complétion/reconditionnement (ISO 13628-7:2005)

Erdöl- und Erdgasindustrie - Auslegung und Betrieb von Unterwasser-Produktionssystemen - Teil 7: Komplettierungs-/Auswältigungs-Risersysteme (ISO 13628-7:2005)

This European Standard was approved by CEN on 13 November 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

The text of ISO 13628-7:2005 has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum and natural gas industries" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 13628-7:2006 by Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2007, and conflicting national standards shall be withdrawn at the latest by June 2007.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 13628-7:2005 has been approved by CEN as EN ISO 13628-7:2006 without any modifications.

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Industries du pétrole et du gaz naturel — Conception et exploitation des systèmes de production immergés —

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 13628-7 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 4, *Drilling and production equipment*.

ISO 13628 consists of the following parts, under the general title *Petroleum and natural gas industries — Design and operation of subsea production systems*:

— *Part 1: General requirements and recommendations*

— *Part 2: Unbonded flexible pipe systems for subsea and marine applications*

— *Part 3: Through flowline (TFL) systems*

— *Part 4: Subsea wellhead and tree equipment*

— *Part 5: Subsea umbilicals*

— *Part 6: Subsea production control systems*

— *Part 7: Completion/workover riser systems*

— *Part 8: Remotely Operated Vehicle (ROV) interfaces on subsea production systems*

— *Part 9: Remotely Operated Tool (ROT) intervention systems*

— *Part 10: Specification for bonded flexible pipe*

— *Part 11: Flexible pipe systems for subsea and marine applications*

Introduction

This part of ISO 13628 has been prepared to provide general requirements, recommendations and overall guidance for the user to the various areas requiring consideration during development of subsea production system. The functional requirements defined in this part of ISO 13628 allow alternatives in order to suit specific field requirements.

This part of ISO 13628 constitutes the overall C/WO riser system standard. Functional requirements for components comprising the system and detailed requirements for riser pipe and connector design and analysis are included herein.

This part of ISO 13628 was developed on the basis of API RP 17G:1995, and other relevant documents on subsea production systems.

It is necessary that the users of this part of ISO 13628 be aware that further or different requirements might be needed for individual applications. This part of ISO 13628 is not intended to inhibit a vendor from offering, or the purchaser from accepting, alternative equipment or engineering solutions for the individual application.

This is probably particularly applicable where there is innovative or developing technology. Where an alternative is offered, it is the vendor's responsibility to identify any variations from this part of ISO 13628 and provide details.

Petroleum and natural gas industries — Design and operation of subsea production systems —

Part 7: Completion/workover riser systems

1 Scope

This part of ISO 13628 gives requirements and recommendations for the design, analysis, materials, fabrication, testing and operation of subsea completion/workover (C/WO) riser systems run from a floating vessel.

It is applicable to all new C/WO riser systems and may be applied to modifications, operation of existing systems and reuse at different locations and with different floating vessels.

This part of ISO 13628 is intended to serve as a common reference for designers, manufacturers and operators/users, thereby reducing the need for company specifications.

This part of ISO 13628 is limited to risers, manufactured from low alloy carbon steels. Risers fabricated from special materials such as titanium, composite materials and flexible pipes are beyond the scope of this part of ISO 13628.

Specific equipment covered by this part of ISO 13628 is listed as follows:

— riser joints;

— connectors;

— workover control systems;

— surface flow trees;

— surface tree tension frames;

— lower workover riser packages;

— lubricator valves;

— retainer valves;

— subsea test trees;

— shear subs;

— tubing hanger orientation systems;

— swivels;

— annulus circulation hoses;

— riser spiders;

— umbilical clamps;

— handling and test tools;

— tree cap running tools.

Associated equipment not covered by this part of ISO 13628 is listed below:

— tubing hangers;

— internal and external tree caps;

— tubing hanger running tools;

— surface coiled tubing units;

— surface wireline units;

— surface tree kill and production jumpers.

2 Normative references

The following referenced documents are indispensable for the application 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 148, *Steel — Charpy impact test (V-notch)*

ISO 377, *Steel and steel products — Location and preparation of samples and test pieces for mechanical testing*

ISO 783, *Metallic materials — Tensile testing at elevated temperature*

ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs*

ISO 898-2, *Mechanical properties of fasteners — Part 2: Nuts with specified proof load values — Coarse thread*

ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods*

ISO 3183 (all parts), *Petroleum and natural gas industries — Steel pipe for pipelines — Technical delivery conditions*

ISO 2566-1, *Steel — Conversion of elongation values — Part 1: Carbon and low alloy steels*

ISO 4885, *Ferrous products — Heat treatment — Vocabulary*

ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method*

ISO 6892, *Metallic materials — Tensile testing at ambient temperature*

ISO 9327-1, *Steel forgings and rolled or forged bars for pressure purposes — Technical delivery conditions — Part 1: General requirements*

ISO 9606-1, *Approval testing of welders — Fusion welding — Part 1: Steels*

ISO 9712, *Non-destructive testing — Qualification and certification of personnel*

ISO 10423:2003, *Petroleum and natural gas industries — Drilling and production equipment — Wellhead and christmas tree equipment*

ISO 10432, *Petroleum and natural gas industries — Downhole equipment — Subsurface safety valve equipment*

ISO 10474, *Steel and steel products — Inspection documents*

ISO 10945, *Hydraulic fluid power — Gas-loaded accumulators — Dimensions of gas ports*

ISO 11960:2001, *Petroleum and natural gas industries — Steel pipes for use as casing or tubing for wells*

ISO 11961, *Petroleum and natural gas industries — Steel pipes for use as drill pipe — Specification*

ISO 13533:2001, *Petroleum and natural gas industries — Drilling and production equipment — Drill-through equipment*

ISO 13535, *Petroleum and natural gas industries — Drilling and production equipment — Hoisting equipment*

ISO 13628-2, *Petroleum and natural gas industries — Design and operation of subsea production systems — Part 2: Unbonded flexible pipe systems for subsea and marine applications*

ISO 13628-4:1999, *Petroleum and natural gas industries — Design and operation of subsea production systems — Part 4: Subsea wellhead and tree equipment*

ISO 13628-5, *Petroleum and natural gas industries — Design and operation of subsea production systems — Part 5: Subsea umbilicals*

ISO 13628-6:2000, *Petroleum and natural gas industries — Design and operation of subsea production systems — Part 6: Subsea production control systems*

ISO 14693, *Petroleum and natural gas industries — Drilling and well-servicing equipment*

ISO 15156-1, *Petroleum and natural gas industries — Materials for use in H_2S-containing environments in oil and gas production — Part 1: General principles for selection of cracking-resistant materials*

ISO 15156-2:2003, *Petroleum and natural gas industries — Materials for use in H_2S-containing environments in oil and gas production — Part 2: Cracking-resistant carbon and low alloy steels, and the use of cast irons*

ISO 15156-3, *Petroleum and natural gas industries — Materials for use in H_2S-containing environments in oil and gas production — Part 3: Cracking-resistant CRAs (corrosion-resistant alloys) and other alloys*

ISO 17025, *General requirements for the competence of testing and calibration laboratories*

ISO 15579, *Metallic materials — Tensile testing at low temperature*

API [1)] Spec 7 [2)], *Rotary Drill Stem Elements*

API Spec 16C, *Specification for Choke and Kill Systems*

API RP 17B, *Recommended Practice for Flexible Pipe*

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1) American Petroleum Institute, 1220 L Street, North West Washington, DC 20005-4070, USA.

2) For the purposes of this part of ISO 13628, API Spec 7 will be replaced by ISO 10424-1 and ISO 10424-2 when they become publicly available.

ASME [3], *Boiler and pressure vessel code, Section VIII:2001, Rules for construction of pressure vessels, Division 1*

ASME, *Boiler and pressure vessel code, Section IX:2001, Welding and brazing qualification*

ASTM A193, *Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service*

ASTM A194, *Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure and High Temperature Service*

ASTM A320, *Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for Low-Temperature Service*

ASTM [4] A370, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*

ASTM A508, *Standard Specification for Quenched and Tempered Vacuum-Treated Carbon and Alloy Steel Forgings for Pressure Vessels*

BS [5] 7201, *Hydro-pneumatic accumulators for fluid power purposes — Part 1: Specification for seamless steel accumulator bodies above 0,5 l water capacity*

EN [6] 287-1, *Qualification test of welders — Fusion welding — Part 1: Steels*

EN 288 (all parts), *Specification and approval of welding procedures for metallic materials*

EN 1418, *Welding personnel — Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanized and automatic welding of metallic materials*

IEC [7] 60089-0, *Electrical apparatus for explosive gas atmospheres — Part 0: General Requirements, Fourth Edition*

MSS [8] SP-25, *Standard Marking Systems for Valves, Fittings, Flanges and Unions*

SAE [9] AS 4059, *Aerospace fluid power — Cleanliness classification for hydraulic systems*

3 Terms, definitions, abbreviated terms and symbols

For the purposes of this document, the following terms, definitions, abbreviations and symbols apply.

3.1 Terms and definitions

3.1.1
accidental load
load(s) which are imposed on the C/WO riser system under abnormal and unplanned conditions

EXAMPLES Loss of vessel station-keeping and heave compensator lock-up.

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3) ASME International, Three Park Avenue, New York, NY 10016-5990, USA.

4) American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, USA.

5) British Standards Institution, 389 Chiswick High Road, London W4 4AL, UK.

6) European Committee for Standardization, 36 rue de Stassart, B-1050, Brussels, Belgium.

7) International Electrotechnical Commission, IEC Central Office, 3, rue de Varembé, P.O. Box 131, CH-1211 Geneva 20, Switzerland.

8) Manufactures Standardization Society of the Valve & Fitting Industry, 127 Park Street, N.E., Vienna, VA 22180, USA.

9) SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, USA.

