SLOVENSKI STANDARD
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Petroleum and natural gas industries - Design and operation of subsea production systems - Part 3: Through flowline (TFL) systems (ISO 13628-3:2000)

Petroleum and natural gas industries - Design and operation of subsea production systems - Part 3: Through flowline (TFL) systems (ISO 13628-3:2000)

Erdöl- und Erdgasindustrie - Konstruktion und Betrieb von Unterwasser-Produktionssystemen - Teil 3: Through-flowline (TFL)-Pumpsysteme (ISO 13628-3:2000)

Industries du pétrole et du gaz naturel - Conception et exploitation des systemes de production sous-marins - Partie 3: Systemes d'injection TFL (ISO 13628-3:2000)

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75.180.10	Oprema za raziskovanje in odkopavanje	Exploratory and extraction equipment

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Petroleum and natural gas industries - Design and operation of subsea production systems - Part 3: Through flowline (TFL) systems (ISO 13628-3:2000)

Industries du pétrole et du gaz naturel - Conception et exploitation des systèmes de production sous-marins - Partie 3: Systèmes d'injection TFL (ISO 13628-3:2000)

Erdöl- und Erdgasindustrie - Konstruktion und Betrieb von Unterwasser- Produktionssystemen - Teil 3: Through-flowline (TFL)-Pumpsysteme (ISO 13628-3:2000)

This European Standard was approved by CEN on 7 December 2000.

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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 Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (ISO 13628-3:2000) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum and natural gas industries" in collaboration with Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum 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 2001, and conflicting national standards shall be withdrawn at the latest by June 2001.

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

Endorsement notice

The text of ISO 13628-3:2000 has been approved by CEN as EN ISO 13628-3:2000 without any modifications.

NOTE Normative references to International Standards are listed in Annex ZA (normative).

Annex ZA
(normative)

Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

Publication	Year	Title	EN	Year
ISO 13628-4	1999	Petroleum and natural gas industries - Design and operation of subsea production systems - Part 4: Subsea wellhead and tree equipment	EN ISO 13628-4	1999

INTERNATIONAL STANDARD

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

Part 3: Through flowline (TFL) systems

Industries du pétrole et du gaz naturel — Conception et exploitation des systèmes de production sous-marins

Partie 3: Systèmes d'injection TFL

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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 3.

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 part of ISO 13628 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 13628-3 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum and natural gas industries*, Subcommittee SC 4, *Drilling and production equipment*.

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

— *Part 1: General requirements and recommendations*

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

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

— *Part 4: Subsea wellhead and tree equipment*

— *Part 5: Subsea control umbilicals*

— *Part 6: Subsea production control systems*

— *Part 7: Workover/completion riser systems*

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

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

Annex A forms a normative part of this part of ISO 13628. Annexes B, C and D are for information only.

Introduction

This part of ISO 13628 is based on API RP 17C:1991 [5].

The TFL systems and tools described herein permit both horizontal transport and vertical entry into the wellbore.

Users of this part of ISO 13628 should be aware that further or differing requirements may 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 may be particularly applicable where there is innovative or developing technology. Where an alternative is offered, the vendor should 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 3: Through flowline (TFL) systems

1 Scope

This part of ISO 13628 specifies requirements and gives recommendations for the design, fabrication and operation of TFL equipment and systems.

The procedures and requirements presented are for the hydraulic servicing of downhole equipment, subsea tree and tubing hanger, and flowlines and equipment within the flowlines.

This part of ISO 13628 primarily addresses TFL systems for offshore, subsea applications but it may also be used in other applications such as highly-deviated wells or horizontally-drilled wells.

Subsea separation, boosting, metering and downhole pumps are outside the scope of this part of ISO 13628.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 13628. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 13628 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3183-1, *Petroleum and natural gas industries — Steel pipe for pipelines — Technical delivery conditions — Part 1: Pipes of requirement class A.*

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

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

API RP 14E, *Design and Installation of Offshore Production Platform Piping Systems.*

API Std 1104, *Welding of Pipelines and Related Facilities.*

3 Terms, definitions and abbreviated terms

For the purposes of this part of ISO 13628, the following terms, definitions and abbreviated terms apply.

3.1 Terms and definitions

3.1.1
bend radius
radius of curvature as measured to the centreline of a conduit

3.1.2
circulation control valve
valve normally placed across the circulation point to allow isolation of the tubing strings or tubing/casing during production

3.1.3
circulation point
location where communication is established between supply and return fluids for TFL servicing

3.1.4
diverter
device used to direct tools at a branch connection

NOTE Used generically, it refers to that category of equipment which includes deflectors, diverters and selectors.

3.1.5
drift
gauge used to check the minimum radius of curvature and minimum ID of loops, flowline and nipples

3.1.6
H-member
nipple assembly that provides fluid communication and circulation between strings of tubing in the wellbore

3.1.7
loop
curved section of pipe allowing change in direction of TFL flowlines

3.1.8
lubricator
tube and valve assembly that permits tool-strings to be inserted into and removed from a pressurized system

3.1.9
parking system
system whereby tools/equipment for a particular tubing size are transported through a flowline of a larger size by a transport (carrier) piston string which is left behind or "parked" outside the well while the remaining equipment continues into the tubing

3.1.10
profile
internal conduit configuration (receptacle) used to engage tools

3.1.11
recess
enlargement in conduit bore, normally concentric with the bore

3.1.12
sealing bore
polished section of conduit that receives a packing element

3.1.13
flowline
service line
line from a platform or land facility to a subsea facility used for TFL servicing

NOTE It may also be used for production or other testing of the well.

3.1.14
flowline signature
service line signature
particular set of pressure pulses (spikes) read or recorded at the surface that identifies a certain point in the service/flowline or well as tools are pumped past

3.1.15
subsea tree
christmas tree placed at the seabed

3.1.16
TFL piping system
all piping from the surface lubricator through the flowline and tubing to the deepest point in the well to which TFL tools can be circulated

3.1.17
tubing-retrievable safety valve
downhole safety valve run in the well on tubing

NOTE It is normally surface-controlled and has an ID close to the size of the tubing bore, thereby providing an almost unrestricted bore.

3.1.18
wye spool
piping section of a subsea tree where the loop joins the vertical tubing bore

3.2 Abbreviated terms

BHP	bottom-hole pressure
CCV	circulation control valve
EUE	external upset end
ID	inside diameter
OD	outside diameter
SDC	side door choke
SCSSV	surface-controlled subsurface safety valve
SVLN	safety valve landing nipple
TFL	through flowline
TRSV	tubing-retrievable safety valve
TMD	total measured depth
TVD	true vertical depth