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

Part 5: Subsea umbilicals

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

Partie 5: Faisceaux de câbles immergés



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Contents

Page

Foreword vi

Introduction vii

1 Scope 1

2 Normative references 1

3 Terms, abbreviated terms and definitions 3
3.1 Terms and definitions 3
3.2 Abbreviated terms 10

4 Functional requirements 11
4.1 General requirements 11
4.2 Project-specific requirements 12

5 Safety, design and testing philosophy 12
5.1 Application 12
5.2 Safety objective 12
5.3 Systematic review 12
5.4 Fundamental requirements 12
5.5 Design philosophy 13
5.6 Testing 14

6 Design requirements 16
6.1 General 16
6.2 Loads 16
6.3 Load effect analysis 20
6.4 Installation analysis 26
6.5 Fatigue life 27

7 Component design, manufacture and test 27
7.1 General 27
7.2 Electric cables 28
7.3 Hoses 38
7.4 Optical-fibre cable 49
7.5 Metallic tubes 54

8 Terminations and ancillary equipment design 71
8.1 Design principles 71
8.2 Design process 71
8.3 Armour terminations 71
8.4 Tube and hose terminations 72
8.5 Cable terminations 72
8.6 Pull-in head 73
8.7 Topside hang-off 73
8.8 Subsea termination interface 74
8.9 Subsea umbilical termination 74
8.10 Bend restrictors 74
8.11 Bend stiffeners 75
8.12 Ancillary equipment 75

9 Umbilical design 78
9.1 Temperature range 78
9.2 Maximum tensile load 78
9.3 Ultimate tensile load 78
9.4 Minimum bend radius 78

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9.5 Cross-sectional arrangement 78
9.6 Lay-up 79
9.7 Sub-bundles 79
9.8 Inner sheath 79
9.9 Armouring 79
9.10 Outer sheath 80
9.11 Length marking 80

10 Umbilical manufacture and test 80
10.1 Umbilical manufacture 80
10.2 Qualification and verification tests 83

11 Factory acceptance tests 84
11.1 General 84
11.2 Visual and dimensional inspection 84
11.3 Electrical continuity at the termination 84
11.4 Trial termination fit-up 84
11.5 Electric cable 84
11.6 Optical fibre cables 85
11.7 Hoses 85
11.8 Tubes 86
11.9 Terminations 86
11.10 Continuity check 86

12 Storage 86
12.1 General 86
12.2 Protection of unterminated umbilical components 86
12.3 Spare length 87
12.4 Repair kits 87
12.5 Handling for integration tests 87

13 Pre-installation activity 87
13.1 Umbilical information 87
13.2 Route information 88
13.3 Terminations and ancillary equipment information 88
13.4 Host facility information 89
13.5 Subsea structure information 89
13.6 Host facility visit 89

14 Load-out 90
14.1 General 90
14.2 Technical audit of load-out facilities 90
14.3 Load-out procedure 91
14.4 Pre-load-out meetings 91
14.5 Pre-load-out tests 91
14.6 Load-out operation 92
14.7 Stopping and starting the load-out 93
14.8 Handling of the umbilical 93
14.9 Load-out monitoring 94
14.10 Load-out on a reel or carousel 94
14.11 Post-load-out tests 95

15 Installation operations 95
15.1 General 95
15.2 Requirements for installation vessel and equipment 95
15.3 Pre-installation survey 96
15.4 I-tube or J-tube pull-in operations 97
15.5 Lay-down of subsea termination (first end) 100
15.6 Lay route 100
15.7 Handling requirements for the main lay 100
15.8 Vessel positioning to achieve required touch-down 101
15.9 Control and monitoring of length laid 101
15.10 Integrity monitoring during lay 102

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15.11 Burial operations **103**
15.12 Approach to subsea termination position (second end) **104**
15.13 Lay-down of subsea termination **104**
15.14 Pull-in of subsea termination **105**
15.15 Pipeline crossings **105**
15.16 Buoyancy attachments **106**
15.17 Arming of the weak link **106**
15.18 Post-lay survey **106**
15.19 Post-burial survey **106**
15.20 Post-pull-in test **107**
15.21 Post-hook-up test **107**
15.22 Retrieval of installation aids **108**
15.23 Contingencies **108**
15.24 Repairs **108**
15.25 Post-installation survey **108**

Annex A (informative) **Information that should be provided in a purchaser's functional specification** **109**

Annex B (informative) **Umbilical testing** **116**

Annex C (informative) **Hose and tube preferred sizes** **120**

Annex D (normative) **Characterization tests for hoses and umbilicals** **121**

Annex E (informative) **Fatigue testing** **125**

Annex F (informative) **Load-effect analysis** **127**

Annex G (informative) **Umbilical full-scale tests** **139**

Annex H (informative) **Tube material matrix** **145**

Annex I (informative) **Tube-wall thickness example calculation** **157**

Annex J (informative) **Buckling of metallic tubes** **164**

Bibliography **167**

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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 13628-5 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*.

This second edition cancels and replaces the first edition (ISO 13628-5:2002), which has been technically revised.

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*

A Part 12, dealing with dynamic production risers, a Part 13, dealing with remotely operated tool and interfaces on subsea production systems, a Part 15, dealing with subsea structures and manifolds, a Part 16, dealing with specification for flexible pipe ancillary equipment, and a Part 17, dealing with recommended practice for flexible pipe ancillary equipment, are under development.

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Introduction

This part of ISO 13628 is based on the first edition of ISO 13628-5, which was based on API Spec 17E, second edition and API RP 17I, first edition. The first edition of ISO 13628-5 was adopted by API as API Spec 17E, third edition. It is intended that API Spec 17E, fourth edition, will be identical to this International Standard.

It is important that users of this part of ISO 13628 be aware that further or differing requirements can 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 engineering solutions for the individual application. This can be particularly applicable if there is innovative or developing technology. If an alternative is offered, it is the responsibility of the vendor to identify any variations from this part of ISO 13628 and provide details.

In this part of ISO 13628, where practical, US Customary (USC) and other units are included in parentheses for information.

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

Part 5: Subsea umbilicals

1 Scope

This part of ISO 13628 specifies requirements and gives recommendations for the design, material selection, manufacture, design verification, testing, installation and operation of umbilicals and associated ancillary equipment for the petroleum and natural gas industries. Ancillary equipment does not include topside hardware. Topside hardware refers to any hardware that is not permanently attached to the umbilical, above the topside hang-off termination.

This part of ISO 13628 applies to umbilicals containing components, such as electrical cables, optical fibres, thermoplastic hoses and metallic tubes, either alone or in combination.

This part of ISO 13628 applies to umbilicals for static or dynamic service, with surface-surface, surface-subsea and subsea-subsea routings.

This part of ISO 13628 does not apply to the associated component connectors, unless they affect the performance of the umbilical or that of its ancillary equipment.

This part of ISO 13628 applies only to tubes with the following dimensions: wall thickness, $t < 6$ mm, internal diameter, ID < 50,8 mm (2 in). Tubular products greater than these dimensions can be regarded as pipe/linepipe and it is expected that they be designed and manufactured according to a recognised pipeline/linepipe standard.

This part of ISO 13628 does not apply to a tube or hose rated lower than 7 MPa (1 015 psi).

This part of ISO 13628 does not apply to electric cable voltage ratings above standard rated voltages $U_0 / U(U_m) = 3{,}6/6(7{,}2)$ kV rms, where U_0, U and U_m are as defined in IEC 60502-1 and IEC 60502-2.

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 527 (all parts), *Plastics — Determination of tensile properties*

ISO 1402, *Rubber and plastics hoses and hose assemblies — Hydrostatic testing*

ISO 4080, *Rubber and plastics hoses and hose assemblies — Determination of permeability to gas*

ISO 4406, *Hydraulic fluid power — Fluids — Method for coding the level of contamination by solid particles*

ISO 4672:1997, *Rubber and plastics hoses — Sub-ambient temperature flexibility tests*

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