

**Petroleum and natural gas industries - Design and  
operation of subsea production systems - Part 15:  
Subsea structures and manifolds (ISO 13628-15:2011)**

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ICS 75.180.10

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English Version

Petroleum and natural gas industries - Design and operation of  
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15: Structures immergées et manifolds (ISO 13628-  
15:2011)

Erdöl- und Erdgasindustrie - Auslegung und Betrieb von  
Unterwasser-Produktionssystemen - Teil 15: Unterwasser-  
Aufbauten und Verteilerstücke (ISO 13628-15:2011)

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## Foreword

This document (EN ISO 13628-15:2011) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" in collaboration with 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.

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### Endorsement notice

The text of ISO 13628-15:2011 has been approved by CEN as a EN ISO 13628-15:2011 without any modification.

# Contents

Page

Foreword .....	v
<b>1</b> <b>Scope</b> .....	<b>1</b>
<b>2</b> <b>Normative references</b> .....	<b>3</b>
<b>3</b> <b>Terms, abbreviated terms, and definitions</b> .....	<b>4</b>
3.1 <b>Terms and definitions</b> .....	4
3.2 <b>Abbreviated terms</b> .....	7
<b>4</b> <b>Manifold and template functional considerations</b> .....	<b>9</b>
4.1 <b>General</b> .....	9
4.2 <b>System requirements</b> .....	10
4.3 <b>System Interfaces</b> .....	12
4.4 <b>Cluster manifold requirements</b> .....	13
4.5 <b>Template system requirements</b> .....	13
<b>5</b> <b>Design considerations</b> .....	<b>14</b>
5.1 <b>System design</b> .....	14
5.2 <b>Loads</b> .....	17
5.3 <b>Piping design</b> .....	18
5.4 <b>Structural design</b> .....	19
5.5 <b>Foundation design</b> .....	22
5.6 <b>Components</b> .....	25
<b>6</b> <b>Verification and validation of design</b> .....	<b>26</b>
6.1 <b>Design verification</b> .....	26
6.2 <b>Design validation</b> .....	28
6.3 <b>Other comments</b> .....	30
<b>7</b> <b>Materials and fabrication requirements to piping systems</b> .....	<b>30</b>
7.1 <b>General</b> .....	30
7.2 <b>Pipe and pipe fittings</b> .....	31
7.3 <b>Forged components</b> .....	32
7.4 <b>Chemical composition and weldability</b> .....	32
7.5 <b>Test sampling of base materials</b> .....	33
7.6 <b>Mechanical and corrosion testing of base materials</b> .....	33
7.7 <b>Non-destructive inspection of components</b> .....	35
7.8 <b>Fastener materials</b> .....	37
7.9 <b>Bending and forming operations</b> .....	37
7.10 <b>Overlay welding and buttering of components</b> .....	39
7.11 <b>Welding and non-destructive testing of piping systems</b> .....	40
<b>8</b> <b>Fabrication and manufacturing considerations</b> .....	<b>49</b>
8.1 <b>External corrosion protection</b> .....	49
8.2 <b>Colours</b> .....	49
8.3 <b>Material traceability</b> .....	49
<b>9</b> <b>Installation, operation and maintenance considerations</b> .....	<b>50</b>
9.1 <b>Installation requirements</b> .....	50
9.2 <b>Operations requirements</b> .....	50
9.3 <b>Maintenance considerations</b> .....	51
9.4 <b>Requirements during installation</b> .....	52
<b>10</b> <b>ROV/ROT aspects</b> .....	<b>55</b>
<b>11</b> <b>Lifting considerations</b> .....	<b>56</b>
11.1 <b>Pad eyes</b> .....	56

<b>11.2</b>	<b>Other lifting devices .....</b>	<b>56</b>
<b>12</b>	<b>Equipment marking .....</b>	<b>56</b>
<b>13</b>	<b>Transportation and storage .....</b>	<b>57</b>
<b>13.1</b>	<b>General.....</b>	<b>57</b>
<b>13.2</b>	<b>Storage and preservation procedure.....</b>	<b>57</b>
<b>13.3</b>	<b>Sea-fastening .....</b>	<b>57</b>
<b>14</b>	<b>Abandonment provisions .....</b>	<b>57</b>
<b>14.1</b>	<b>General.....</b>	<b>57</b>
<b>14.2</b>	<b>Decommissioning .....</b>	<b>57</b>
<b>14.3</b>	<b>Design .....</b>	<b>58</b>
<b>14.4</b>	<b>Post-abandonment operation.....</b>	<b>58</b>
<b>14.5</b>	<b>Structures .....</b>	<b>58</b>
<b>14.6</b>	<b>Manifolds .....</b>	<b>58</b>
<b>14.7</b>	<b>Templates .....</b>	<b>58</b>
	<b>Annex A (informative) Typical manifold data sheet.....</b>	<b>59</b>
	<b>Bibliography .....</b>	<b>61</b>

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

## Part 15: Subsea structures and manifolds

### 1 Scope

This part of ISO 13628 addresses recommendations for subsea structures and manifolds, within the frameworks set forth by recognized and accepted industry specifications and standards. As such, it does not supersede or eliminate any requirement imposed by any other industry specification.

This part of ISO 13628 covers subsea manifolds and templates utilized for pressure control in both subsea production of oil and gas, and subsea injection services. See Figure 1 for an example of such a subsea system.

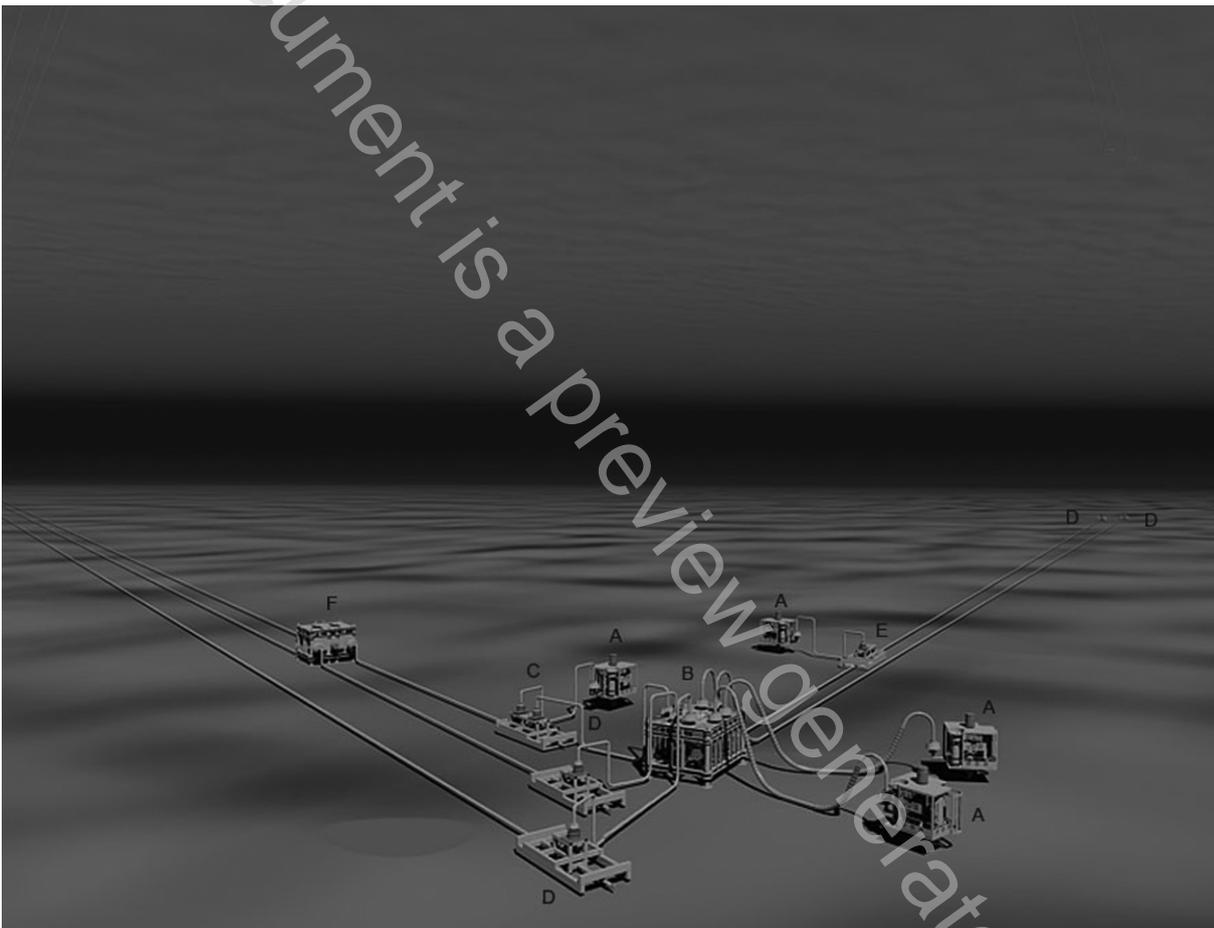
Equipment within the scope of this part of ISO 13628 is listed below:

- a) the following structural components and piping systems of subsea production systems:
  - production and injection manifolds,
  - modular and integrated single satellite and multiwell templates,
  - subsea processing and subsea boosting stations,
  - flowline riser bases and export riser bases (FRB, ERB),
  - pipeline end manifolds (PLEM),
  - pipeline end terminations (PLET),
  - T- and Y-connection,
  - subsea isolation valve (SSIV);
- b) the following structural components of subsea production system:
  - subsea controls and distribution structures,
  - other subsea structures;
- c) protection structures associated with the above.

The following components and their applications are outside the scope of this part of ISO 13628:

- pipeline and manifold valves;
- flowline and tie-in connectors;
- choke valves;
- production control systems.

NOTE General information regarding these topics can be found in additional publications, such as ISO 13628-1 and API Spec 2C.



**Key**

- A tree
- B cluster manifold
- C PLEM
- D PLET
- E inline tee
- F multi-phase pump skid

**Figure 1 — Example of some typical subsea structures**

## 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 3183, *Petroleum and natural gas industries — Steel pipe for pipeline transportation systems*

ISO 3834-2, *Quality requirements for fusion welding of metallic materials — Part 2: Comprehensive quality requirements*

ISO 9606 (all parts), *Qualification test of welders — Fusion welding*

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

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

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

ISO 13628-1:2005, *Petroleum and natural gas industries — Design and operation of subsea production systems — Part 1: General requirements and recommendations*

ISO 13628-1:2005/Amd 1:2010, *Petroleum and natural gas industries — Design and operation of subsea production systems — Part 1: General requirements and recommendations — Amendment 1: Revised Clause 6*

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

ISO 13628-8, *Petroleum and natural gas industries — Design and operation of subsea production systems — Part 8: Remotely operated tools and interfaces on subsea production systems*

ISO 14731:2006, *Welding coordination — Tasks and responsibilities*

ISO 15156 (all parts), *Petroleum and natural gas industries — Materials for use in H<sub>2</sub>S-containing environments in oil and gas production*

ISO 15590-1, *Petroleum and natural gas industries — Induction bends, fittings and flanges for pipeline transportation systems — Part 1: Induction bends*

ISO 15609 (all parts), *Specification and qualification of welding procedures for metallic materials — Welding procedure specification*

ISO 15614 (all parts), *Specification and qualification of welding procedures for metallic materials — Welding procedure test*

EN 473, *Non-destructive testing — Qualification and certification of NDT personnel — General principles*

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*

EN 10228-3, *Non-destructive testing of steel forgings — Part 3: Ultrasonic testing of ferritic or martensitic steel forgings*

ASME B31.3, *Process Piping*

ASME V, 2007, *Boiler and Pressure Vessel Code (BPVC), Section V, Nondestructive Examination*

ASME VIII, 2007, Boiler and Pressure Vessel Code (BPVC), Section VIII, *Rules for Construction of Pressure Vessels*, Div. 1

ASME IX, Boiler and Pressure Vessel Code (BPVC), Section IX, *Welding and Brazing Qualifications*

ASNT SNT-TC-1A, *Recommended Practice No. SNT-TC-1A, Personnel qualification and certification in nondestructive testing*

ASTM A388, *Standard Practice for Ultrasonic Examination of Steel Forgings*

ASTM E562, *Standard Test Method for Determining Volume Fraction by Systematic Manual Point Count*

ASTM G48, *Standard Test Methods for Pitting and Crevice Corrosion Resistance of Stainless Steels and Related Alloys by Use of Ferric Chloride Solution*

NS 477, *Welding — Rules for qualification of welding inspectors*

### 3 Terms, abbreviated terms, and definitions

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

#### 3.1 Terms and definitions

##### 3.1.1

##### **carbon steel**

full range of carbon, carbon-manganese and low-alloy steels used in the construction of conventional oilfield equipment

##### 3.1.2

##### **corrosion-resistant alloy**

##### **CRA**

alloy that is intended to be resistant to general and localized corrosion in oilfield environments that are corrosive to carbon steels

NOTE This definition is in accordance with ISO 15156 (all parts) and is intended to include materials such as stainless steels and nickel base alloys. Other ISO documents can have other definitions.

##### 3.1.3

##### **driven pile**

##### **jetted pile**

typically a tall steel cylindrical structure, with or without internal stiffener system, used to support subsea structures

NOTE Driven piles are usually driven into the sea-floor with impact hammers, while jetted piles rely on jetting the soil at the lower end of the pile.

##### 3.1.4

##### **inline tee**

system of piping and valves used to make a subsea connection at the middle of a pipeline, and generally integral to the pipeline

NOTE The pipeline may be used to transport produced fluids or to distribute injected fluids.

##### 3.1.5

##### **low-alloy steel**

steel containing at least 1 % and less than 5 % of elements deliberately added for the purpose of modifying properties