

DIN EN ISO 13628-4: 2011-09(E)

Petroleum and natural gas industries - Design and operation of subsea production systems - Part 4: Subsea wellhead and tree equipment (ISO 13628-4:2010 + Cor. 1:2011); English version EN ISO 13628-4:2010 + AC:2011, only on CD-ROM

Contents

Page

Foreword.....	4
Introduction	5
1 Scope	6
2 Normative references.....	9
3 Terms, definitions, abbreviated terms and symbols.....	10
3.1 Terms and definitions	10
3.2 Abbreviated terms and symbols.....	15
4 Service conditions and production specification levels	17
4.1 Service conditions	17
4.2 Product specification levels.....	18
5 Common system requirements.....	18
5.1 Design and performance requirements	18
5.2 Materials.....	30
5.3 Welding	31
5.4 Quality control.....	32
5.5 Equipment marking.....	35
5.6 Storing and shipping	36
6 General design requirements for subsea trees and tubing hangers.....	37
6.1 General.....	37
6.2 Tree valving	39
6.3 Testing of subsea tree assemblies	47
6.4 Marking	52
6.5 Storing and shipping	52
7 Specific requirements — Subsea-tree-related equipment and sub assemblies.....	52
7.1 Flanged end and outlet connections	52
7.2 ISO clamp hub-type connections	70
7.3 Threaded connections	70
7.4 Other end connectors	70
7.5 Studs, nuts and bolting	71
7.6 Ring gaskets.....	71
7.7 Completion guidebase.....	72
7.8 Tree connectors and tubing heads.....	73
7.9 Tree stab/seal subs for vertical tree	77
7.10 Valves, valve blocks and actuators	78
7.11 TFL wye spool and diverter.....	91
7.12 Re-entry interface.....	92
7.13 Subsea tree cap.....	93
7.14 Tree-cap running tool	96
7.15 Tree-guide frame	98
7.16 Tree running tool.....	102
7.17 Tree piping.....	105
7.18 Flowline connector systems	107
7.19 Ancillary equipment running tools	110
7.20 Tree-mounted hydraulic/electric/optical control interfaces	112
7.21 Subsea chokes and actuators.....	115
7.22 Miscellaneous equipment.....	126
8 Specific requirements — Subsea wellhead	130
8.1 General.....	130

8.2	Temporary guidebase	131
8.3	Permanent guidebase	132
8.4	Conductor housing	136
8.5	Wellhead housing.....	139
8.6	Casing hangers.....	142
8.7	Annulus seal assemblies	145
8.8	Casing hanger lockdown bushing	146
8.9	Bore protectors and wear bushings	147
8.10	Corrosion cap	149
8.11	Running, retrieving and testing tools	149
8.12	Trawl protective structure	149
8.13	Wellhead inclination and orientation.....	149
8.14	Submudline casing hanger and seal assemblies	150
9	Specific requirements — Subsea tubing hanger system	151
9.1	General	151
9.2	Design	151
9.3	Materials	154
9.4	Testing.....	154
10	Specific requirements — Mudline suspension equipment.....	155
10.1	General	155
10.2	Mudline suspension-landing/elevation ring.....	159
10.3	Casing hangers.....	160
10.4	Casing hanger running tools and tieback adapters	161
10.5	Abandonment caps	162
10.6	Mudline conversion equipment for subsea completions	162
10.7	Tubing hanger system — Mudline conversion equipment for subsea completions.....	163
11	Specific requirements — Drill-through mudline suspension equipment.....	164
11.1	General	164
11.2	External drill-through casing hangers (outside of the hybrid casing hanger housing).....	164
11.3	Hybrid casing hanger housing.....	164
11.4	Internal drill-through mudline casing hangers	166
11.5	Annulus seal assemblies	168
11.6	Bore protectors and wear bushings	169
11.7	Tubing hanger system — Drill-through mudline equipment for subsea completions.....	171
11.8	Abandonment caps	171
11.9	Running, retrieving and testing tools	171
Annex A (informative)	Vertical subsea trees	172
Annex B (informative)	Horizontal subsea trees	176
Annex C (informative)	Subsea wellhead	179
Annex D (informative)	Subsea tubing hanger	181
Annex E (normative)	Mudline suspension and conversion systems.....	185
Annex F (informative)	Drill-through mudline suspension systems.....	192
Annex G (informative)	Assembly guidelines of ISO (API) bolted flanged connections	194
Annex H (informative)	Design and testing of subsea wellhead running, retrieving and testing tools...204	
Annex I (informative)	Procedure for the application of a coating system	207
Annex J (informative)	Screening tests for material compatibility	210
Annex K (informative)	Design and testing of pad eyes for lifting.....	215
Annex L (informative)	Hyperbaric testing guidelines	230
Annex M (informative)	Purchasing guidelines	232
Bibliography	254