

# DIN EN ISO 19901-3:2015-04 (E)

**Petroleum and natural gas industries - Specific requirements for offshore structures - Part 3: Toppers structure (ISO 19901-3:2014); English version EN ISO 19901-3:2014, only on CD-ROM**

---

<b>Contents</b>		<b>Page</b>
<b>Foreword</b> .....		<b>v</b>
<b>Introduction</b> .....		<b>vii</b>
<b>1 Scope</b> .....		<b>1</b>
<b>2 Normative references</b> .....		<b>2</b>
<b>3 Terms and definitions</b> .....		<b>2</b>
<b>4 Symbols and abbreviated terms</b> .....		<b>6</b>
4.1 Symbols.....		6
4.2 Abbreviated terms.....		8
<b>5 Overall considerations</b> .....		<b>9</b>
5.1 Design situations.....		9
5.2 Codes and standards.....		9
5.3 Deck elevation and green water.....		10
5.4 Exposure level.....		10
5.5 Operational considerations.....		10
5.6 Selecting the design environmental conditions.....		11
5.7 Assessment of existing topsides structures.....		11
5.8 Reuse of topsides structure.....		11
5.9 Modifications and refurbishment.....		11
<b>6 Design requirements</b> .....		<b>11</b>
6.1 General.....		11
6.2 Materials selection.....		11
6.3 Design conditions.....		11
6.4 Structural interfaces.....		12
6.5 Design for serviceability limit states (SLS).....		12
6.6 Design for ultimate limit states (ULS).....		14
6.7 Design for fatigue limit states (FLS).....		15
6.8 Design for accidental limit states (ALS).....		15
6.9 Robustness.....		15
6.10 Corrosion control.....		16
6.11 Design for fabrication and inspection.....		16
6.12 Design considerations for structural integrity management.....		17
6.13 Design for decommissioning, removal and disposal.....		17
<b>7 Actions</b> .....		<b>17</b>
7.1 General.....		17
7.2 In-place actions.....		18
7.3 Action factors.....		20
7.4 Vortex-induced vibrations.....		21
7.5 Deformations.....		21
7.6 Wave and current actions.....		22
7.7 Wind actions.....		22
7.8 Seismic actions.....		22
7.9 Actions during fabrication and installation.....		24
7.10 Accidental situations.....		24
7.11 Other actions.....		34

<b>8</b>	<b>Strength and resistance of structural components</b> .....	<b>36</b>
8.1	Use of local building standards.....	36
8.2	Cylindrical tubular member design .....	36
8.3	Design of non-cylindrical sections.....	37
8.4	Connections .....	37
8.5	Castings .....	38
<b>9</b>	<b>Structural systems</b> .....	<b>39</b>
9.1	Topsides design .....	39
9.2	Topsides structure design models .....	39
9.3	Support structure interface .....	40
9.4	Flare towers, booms, vents and similar structures.....	40
9.5	Helicopter landing facilities (helidecks).....	41
9.6	Crane support structure.....	44
9.7	Derrick design .....	47
9.8	Bridges.....	47
9.9	Bridge bearings .....	48
9.10	Anti-vibration mountings for modules and major equipment skids.....	48
9.11	System interface assumptions .....	48
9.12	Fire protection systems.....	49
9.13	Penetrations.....	49
9.14	Difficult-to-inspect areas.....	49
9.15	Drainage.....	49
9.16	Actions due to drilling operations.....	49
9.17	Strength reduction due to heat.....	49
9.18	Walkways, laydown areas and equipment maintenance.....	50
9.19	Muster areas and lifeboat stations.....	50
<b>10</b>	<b>Materials</b> .....	<b>50</b>
10.1	General.....	50
10.2	Carbon steel.....	51
10.3	Stainless steel.....	53
10.4	Aluminium alloys.....	54
10.5	Fibre-reinforced composites.....	55
10.6	Timber.....	55
<b>11</b>	<b>Fabrication, quality control, quality assurance and documentation</b> .....	<b>55</b>
11.1	Assembly .....	55
11.2	Welding.....	56
11.3	Fabrication inspection.....	56
11.4	Quality control, quality assurance and documentation.....	56
11.5	Corrosion protection.....	57
<b>12</b>	<b>Corrosion control</b> .....	<b>57</b>
12.1	General.....	57
12.2	Forms of corrosion, associated corrosion rates and corrosion damage.....	57
12.3	Design of corrosion control.....	57
12.4	Fabrication and installation of corrosion control.....	58
12.5	In-service inspection, monitoring and maintenance of corrosion control.....	59
<b>13</b>	<b>Loadout, transportation and installation</b> .....	<b>59</b>
<b>14</b>	<b>In-service inspection and structural integrity management</b> .....	<b>60</b>
14.1	General.....	60
14.2	Particular considerations applying to topsides structures.....	60
14.3	Topsides structure default inspection scopes.....	61

**15 Assessment of existing topsides structures .....62**  
**16 Reuse of topsides structure.....63**  
**Annex A (informative) Additional information and guidance .....64**  
**Annex B (informative) Example calculation of building code correspondence factor ..... 108**  
**Annex C (informative) Regional information ..... 114**  
**Bibliography..... 115**