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**Ships and marine technology —  
Offshore wind energy — Port and  
marine operations**

*Navires et technologie maritime — Énergie éolienne offshore —  
Opérations portuaires et maritimes*

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# Contents

	Page
<b>Foreword</b> .....	<b>xii</b>
<b>Introduction</b> .....	<b>xiii</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>2</b>
<b>4 Symbols and abbreviated terms</b> .....	<b>23</b>
4.1 Symbols.....	23
4.2 Abbreviated terms.....	27
<b>5 General considerations</b> .....	<b>27</b>
5.1 Introduction.....	27
5.1.1 General.....	27
5.1.2 Safety requirements.....	29
5.2 Jurisdiction.....	29
5.2.1 Introduction.....	29
5.2.2 Life at sea.....	30
5.2.3 Environment.....	30
5.3 HSSE plan.....	30
5.4 Risk management.....	31
5.4.1 Introduction.....	31
5.4.2 Techniques to evaluate risks.....	31
5.5 Job safety analysis.....	31
5.6 Environmental impact study.....	32
5.7 Manning, qualifications, job and safety training.....	32
5.8 Incident reporting.....	33
5.9 Personnel tracking.....	33
5.10 Approval by national authorities.....	33
<b>6 Organization, documentation and planning</b> .....	<b>33</b>
6.1 Introduction.....	33
6.2 Organization and communication.....	34
6.2.1 Project organization.....	34
6.2.2 Operational organization.....	34
6.3 Quality assurance and administrative procedures.....	35
6.4 Technical procedures.....	35
6.5 Technical documentation.....	36
6.5.1 Document numbering system.....	36
6.5.2 Port and marine operations documents.....	36
6.5.3 Operational schedule/programme.....	37
6.5.4 Contingency philosophy.....	38
6.5.5 Contingency planning and emergency procedures.....	38
6.5.6 Emergency preparedness bridging document.....	39
6.5.7 As-built documentation.....	39
6.5.8 Standards for data transfer to CAD systems.....	40
6.6 Certification and documentation.....	43
6.6.1 General.....	43
6.6.2 Required or recommended documentation.....	43
6.7 Marine warranty survey.....	43
6.7.1 Role of the marine warranty surveyor.....	44
6.7.2 Certificate of approval.....	44
6.7.3 MWS scope of work.....	45
6.7.4 Certificate of approval.....	45
6.8 Systems and equipment.....	45
6.8.1 General.....	45

6.8.2	Marine vessels	45
6.8.3	Major equipment	47
<b>7</b>	<b>Metocean and earthquake requirements</b>	<b>47</b>
7.1	Introduction	47
7.2	Weather-restricted/weather-unrestricted operations	48
7.2.1	Weather-restricted operations	48
7.2.2	Weather-unrestricted operations	48
7.3	Metocean conditions	48
7.3.1	Wind	48
7.3.2	Wave, wave period and swell conditions	49
7.3.3	Current	49
7.3.4	Tidal factors	49
7.3.5	Other metocean factors	50
7.3.6	Temperature	50
7.3.7	Marine growth	50
7.4	Metocean criteria	50
7.4.1	Design criteria and operational limits	50
7.4.2	Return periods	51
7.4.3	Response-based analysis	52
7.4.4	Probability distributions of sea state parameters	53
7.5	Weather windows	53
7.5.1	Weather-restricted operations	53
7.5.2	Impact on design	54
7.6	Operational duration and weather window	54
7.6.1	Time schedule	54
7.6.2	Point of no return	54
7.7	Operational limits	55
7.8	Forecasted and monitored operational limits	55
7.9	Metocean forecast	55
7.9.1	General	55
7.9.2	Forecast parameters	56
7.9.3	On-site monitoring	56
7.10	Earthquake	56
7.11	Soil	56
<b>8</b>	<b>Onshore transport and nearshore transport</b>	<b>56</b>
8.1	Introduction	56
8.2	Structural integrity calculations	56
8.3	Personnel qualifications	57
8.4	Loading, unloading and lifting	57
8.5	Transport via roads	57
8.6	Transport via inshore waterways	57
8.7	Transport via nearshore waterways	57
8.8	Transport via railways	58
8.9	Transport frames and equipment	58
<b>9</b>	<b>Intermediate storage areas</b>	<b>58</b>
9.1	Introduction	58
9.2	Infrastructure requirements	59
9.2.1	Load bearing	59
9.2.2	Surface	59
9.3	Personnel qualifications	59
9.4	Loadout, unloading and lifting	59
9.5	Storage frames and equipment	59
9.6	Requirements of components for storage	60
9.7	Protection of components against environmental conditions	60
9.8	Structural integrity calculations	60
9.9	Safety and security	60

<b>10</b>	<b>Pre-assembly</b> .....	<b>60</b>
	10.1 Introduction .....	60
	10.2 Pre-assembly area requirements .....	61
	10.3 Personnel qualifications .....	61
	10.4 Loadout, lifting and internal transport .....	61
	10.5 Pre-assembly activities .....	61
	10.6 Operational limits/weather conditions .....	61
	10.7 Pre-assembly equipment .....	61
	10.8 Structural integrity calculations .....	61
	10.9 Safety and security .....	61
<b>11</b>	<b>Harbour activities</b> .....	<b>62</b>
	11.1 Introduction .....	62
	11.2 Personnel qualifications .....	62
	11.3 Accessibility of harbour areas .....	62
	11.3.1 Water access .....	62
	11.3.2 Inland access .....	62
	11.4 Storage areas of quayside .....	62
	11.5 Safety and security measures .....	63
	11.6 Quayside requirements .....	63
	11.7 Harbour subsea soil requirements for jacking activities .....	63
<b>12</b>	<b>Weight control</b> .....	<b>64</b>
	12.1 Introduction .....	64
	12.2 Weight control classes .....	64
	12.3 Weight and CoG constraints .....	64
	12.4 Weight control audits .....	64
	12.5 Dimensional control .....	65
	12.6 Serial items .....	65
	12.7 Offshore wind farm components .....	65
	12.8 Weight determinations .....	65
<b>13</b>	<b>Stability</b> .....	<b>65</b>
	13.1 Introduction .....	65
	13.2 General requirements .....	66
	13.3 Stability calculations .....	66
	13.4 Intact stability .....	67
	13.4.1 Introduction .....	67
	13.4.2 Intact stability criteria .....	68
	13.5 Damage stability .....	69
	13.5.1 Introduction .....	69
	13.5.2 Damage stability criteria .....	70
	13.6 Single-barge transports .....	71
	13.7 Multi-barge transports .....	71
	13.8 Classed vessels .....	72
	13.9 Self-floating structures .....	72
	13.9.1 General .....	72
	13.9.2 Intact and damage stability .....	72
	13.9.3 Upending and installation of self-floating and launched steel structures .....	73
	13.10 Loadout operations .....	74
	13.11 Watertight integrity and temporary closures .....	75
	13.12 Inclining tests .....	75
<b>14</b>	<b>Ballasting operations</b> .....	<b>75</b>
	14.1 Introduction .....	75
	14.2 Ballast calculations for different stages .....	76
	14.3 In ballast system .....	77
	14.3.1 Operational aspects .....	77
	14.3.2 Other operational considerations .....	78
	14.4 Protection against damage and deterioration .....	78

14.4.1	General	78
14.4.2	Freezing	78
14.5	Prevention of progressive flooding in damage condition	78
14.6	Control and indicating systems	79
14.7	Pumps	80
14.7.1	Specification and layout	80
14.7.2	Pump performance curves and functional limitations	80
14.8	Valve arrangements	80
14.9	Vent systems	80
14.10	Air cushion system capacity	81
14.11	System testing	81
<b>15</b>	<b>Loadout</b>	<b>81</b>
15.1	Introduction	81
15.2	Categories of loadout	82
15.2.1	Design: structural analysis during all loadout phases	82
15.2.2	Loadout planning	82
15.2.3	Cargo weight details and COG information	83
15.2.4	Deck loading plan	83
15.3	Structure being loaded	83
15.4	Site and quay	84
15.5	Barge	84
15.6	Link beams, skidways and skidshoes	85
15.7	Moorings	85
15.7.1	Weather-restricted operation	85
15.7.2	Temporary mooring system	85
15.8	Grounded loadouts	86
15.9	Pumping and ballasting	86
15.9.1	Pump capacity	86
15.9.2	Recommended pump capacity	86
15.10	Loadouts by trailers, SPMTs or hydraulic skidshoes	88
15.10.1	Introduction	88
15.10.2	Structural capacity	88
15.10.3	Load equalization and stability	89
15.10.4	Vertical alignment	89
15.10.5	Skidshoes	89
15.11	Propulsion system design, redundancy and back-up	89
15.11.1	Propulsion system	89
15.11.2	Redundancy and recommendations	90
15.12	Float-on onto submersible barges or vessels	91
15.13	Lifted loadouts	93
15.14	Transverse loadouts	93
15.15	Barge reinstatement and sea fastenings	93
15.16	Tugs	94
15.17	Management and organization	94
15.18	Loadout manual	94
15.19	Operating manual	95
<b>16</b>	<b>Transportation</b>	<b>96</b>
16.1	Introduction	96
16.2	General considerations	97
16.2.1	Manned tows	97
16.2.2	Unmanned tows	97
16.2.3	Navigation lights, signals and day shapes	97
16.2.4	Contingency	97
16.2.5	Motion responses	97
16.2.6	Structural verification of the transported object	98
16.2.7	Bunker ports	99
16.2.8	Weather forecast	99

16.2.9	Design: Structural analysis during all transport phases.....	99
16.2.10	Transport planning.....	99
16.2.11	Operational limits.....	99
16.3	Weather routing and forecasting.....	100
16.4	Ports of shelter, shelter areas, holding areas.....	100
16.5	Inspections during the towage or voyage.....	100
16.6	Responsibility.....	101
16.7	Hazardous materials.....	101
16.8	Ballast water.....	101
16.9	Restricted depths, heights and manoeuvrability.....	101
16.10	Under-keel clearances.....	102
16.11	Air draught.....	103
16.12	Channel width and restricted manoeuvrability.....	103
16.13	Towline pull required, fleet composition and towing arrangement.....	103
16.13.1	Towline pull required.....	103
16.13.2	Towing fleet.....	104
16.13.3	Towing arrangement.....	104
16.13.4	Towline length.....	105
16.14	Tow out from dry dock.....	105
16.14.1	General.....	105
16.14.2	Under-keel clearance.....	105
16.14.3	Side clearances.....	105
16.14.4	Air cushion/air pressure.....	106
16.14.5	Capacity of winching and towing arrangements.....	106
16.14.6	Navigation systems.....	106
16.14.7	Survey requirements.....	106
16.15	Inshore tow.....	106
16.15.1	Tow route and towing clearances.....	106
16.15.2	Survey requirements.....	107
16.15.3	Navigation systems.....	107
16.16	Offshore tow.....	107
16.16.1	Holding areas and contingency plans for routing.....	107
16.16.2	Under-keel clearance.....	107
16.16.3	Special considerations.....	107
16.16.4	Navigation systems.....	108
16.16.5	Survey requirements.....	108
16.17	Transport onboard a vessel.....	108
16.17.1	Vessel selection.....	108
16.17.2	Stability.....	108
16.17.3	Under-keel clearance.....	108
16.17.4	Special considerations.....	108
16.17.5	Sea fastening.....	108
16.17.6	Navigation systems.....	110
16.18	Transport manual.....	110
16.18.1	Voyage planning.....	110
<b>17</b>	<b>Temporary mooring and stationkeeping for marine operations.....</b>	<b>112</b>
17.1	Introduction.....	112
17.2	Environmental criteria.....	112
17.3	Determination of mooring response.....	113
17.3.1	Analysis methods.....	113
17.3.2	General considerations on the mooring design.....	113
17.4	Sizing of mooring lines.....	114
17.4.1	General considerations.....	114
17.4.2	Line tension limits and design safety factors.....	114
17.4.3	Particular mooring conditions.....	114
17.5	Sizing of anchors.....	115
17.6	Sizing of attachments.....	115
17.7	Sizing of mooring line components.....	115

17.8	Clearances under extreme conditions	116
17.9	Tensioning of moorings	116
17.10	Other stationkeeping means	116
17.10.1	General	116
17.10.2	DP systems	117
17.10.3	Purpose-built mooring arrangements	117
17.10.4	Use of tugs	117
17.11	System for common reference stations	117
<b>18</b>	<b>Offshore installation operations</b>	<b>118</b>
18.1	Introduction	118
18.1.1	General	118
18.1.2	Design: Structural analysis during all installation phases	118
18.1.3	Installation planning	118
18.1.4	Cargo weight details and COG information	121
18.1.5	Operational limits	121
18.1.6	Design	122
18.2	Installation site	122
18.2.1	Sea floor survey	122
18.2.2	Soil survey	123
18.2.3	Soil preparation	123
18.2.4	Site-specific site plan	123
18.2.5	Unexploded Ordnance (UXO) Survey	123
18.3	Site actions on and motions of floating units	123
18.4	Systems and equipment	124
18.4.1	General	124
18.4.2	Vessels	124
18.4.3	Equipment (e.g. hammer, upending tools, grout spread, ROV, special lifting tools)	124
18.4.4	Position monitoring system	125
18.4.5	Ballast systems	125
18.4.6	Transport vessel interface with marine equipment	125
18.4.7	Floating structure interface with marine equipment	125
18.5	Launching	125
18.5.1	General	125
18.5.2	Operational aspects	125
18.5.3	Preparations at fabrication yard	126
18.5.4	Operational control parameters	126
18.6	Float-off	126
18.6.1	General	126
18.6.2	Operational aspects	126
18.6.3	Preparations at the fabrication yard	127
18.6.4	Operational control parameters	127
18.7	Positioning of vessels	127
18.8	Site reference system	128
18.9	Geotechnical site specific assessment	128
18.9.1	Required soil investigations	128
18.9.2	Penetration analysis, punch-through and horizontal-vertical-interaction	128
18.10	Site specific installation plan	130
18.11	Jack-up preloading procedure	131
18.12	Upending of foundation structure	131
18.12.1	General	131
18.12.2	Operational aspects	131
18.12.3	Preparations at the fabrication yard/offload location	132
18.12.4	Operational control parameters	132
18.13	Ballasting	132
18.14	Lifted installations	132
18.14.1	General	132
18.14.2	Installation of liftable jackets	133



18.14.3	Installation of templates for piles .....	133
18.14.4	Installation of piles .....	133
18.14.5	Installation of transition pieces .....	133
18.14.6	Installation of GBS .....	133
18.14.7	Installation of topsides .....	133
18.14.8	Transfer of items from a barge to the deck of a crane vessel/jack-up vessel .....	134
18.14.9	Installation of towers .....	134
18.14.10	.....	
	Installation of WTG including nacelle, hub and blades .....	134
18.14.11	.....	
	Operational aspects .....	134
18.14.12	.....	
	Fabrication yard .....	135
18.14.13	.....	
	Operational control parameters .....	135
18.15	Lowering by ballasting .....	135
18.15.1	General .....	135
18.15.2	Operational aspects .....	135
18.15.3	Operational control parameters .....	136
18.16	Precise positioning on the sea floor by active and passive means .....	136
18.16.1	General .....	136
18.16.2	Operational aspects .....	136
18.16.3	Operational control parameters .....	136
18.17	Skirt penetration .....	137
18.17.1	General .....	137
18.17.2	Gravity penetration .....	137
18.17.3	Suction penetration .....	137
18.17.4	Operational aspects .....	137
18.17.5	Operational control parameters .....	137
18.18	Piles installation .....	138
18.18.1	General .....	138
18.18.2	Operational aspects .....	138
18.18.3	Operational control parameters .....	139
18.19	Grouting .....	139
18.19.1	General .....	139
18.19.2	Grouting of pile — Transition-piece structure .....	139
18.19.3	Underbase grouting of pile — Jacket structures .....	140
18.19.4	Operational aspects .....	140
18.19.5	Preparations .....	140
18.19.6	Operational control parameters .....	141
18.20	Bolted connections of foundation .....	141
18.21	Welding of piles/foundation to topsides .....	141
18.22	Noise mitigation measures .....	141
18.23	Crew transfer from installation units .....	141
18.24	Offshore completion .....	142
18.24.1	General .....	142
18.24.2	ROV inspection .....	142
18.24.3	Removal of temporary equipment .....	142
18.24.4	Scour protection .....	142
18.25	Operating manual .....	143
<b>19</b>	<b>Design of lifting equipment .....</b>	<b>144</b>
19.1	Introduction .....	144
19.2	Rigging geometry .....	145
19.3	Actions and action effects .....	146
19.4	Weight contingency factors .....	147
19.5	Dynamic amplification factors (DAFs) .....	148
19.5.1	General .....	148
19.5.2	For lifts by a single crane on a vessel .....	148

19.5.3	For lifts by cranes on two or more vessels .....	149
19.5.4	Representative hook load .....	150
19.5.5	Representative lift weight per lift point .....	151
19.5.6	Representative forces on a lift point .....	152
19.6	Strengths of slings, grommets and shackles .....	156
19.6.1	General .....	156
19.6.2	Calculated strengths of the bodies of slings and grommets .....	157
19.6.3	Termination efficiency factor .....	159
19.6.4	Bending efficiency factor .....	160
19.6.5	Representative strengths of slings and grommets .....	161
19.6.6	Working load limits and design strengths of slings and grommets .....	162
19.6.7	Working load limit and design strength of shackles .....	164
19.7	Design verifications .....	165
19.7.1	Allowable hook load .....	165
19.7.2	Slings and grommets .....	165
19.7.3	Lift points and their attachment to the structure and supporting members .....	167
19.8	Lift point design .....	168
19.8.1	Introduction .....	168
19.8.2	Sling ovalization .....	169
19.8.3	Plate rolling direction and direction of loading .....	169
19.8.4	Pinholes .....	169
19.8.5	Cast padears and welded trunnions .....	169
19.8.6	Cheek plates .....	169
19.9	Clearances .....	170
19.9.1	Introduction .....	170
19.9.2	Clearances around lifted objects .....	170
19.9.3	Clearances around crane vessel .....	170
19.9.4	Clearances around mooring lines and anchors of crane vessels .....	171
19.9.5	Clearances around array cable zones .....	172
19.9.6	Clearances around spud-can positions of jack-up vessels .....	172
19.10	Bumpers and guides .....	172
19.10.1	Introduction .....	172
19.10.2	Object movements .....	172
19.10.3	Position of bumpers and guides .....	172
19.10.4	Bumper and guide loads .....	173
19.10.5	Design considerations .....	173
19.11	Heave compensated lifts .....	174
19.12	Lifts using DP .....	174
19.13	Practical considerations .....	174
19.13.1	Access .....	174
19.13.2	Design of sea fastening .....	174
19.13.3	Equipment .....	174
19.13.4	Slings .....	175
19.14	Certification requirements for lifting equipment .....	175
19.14.1	Standard lifting equipment .....	175
19.14.2	Custom-made lifting equipment .....	175
<b>20</b>	<b>Laying, burial and pull-in of sub-sea cables .....</b>	<b>175</b>
20.1	General .....	175
20.2	Planning and design .....	176
20.2.1	Cable dimensions and handling parameters .....	176
20.2.2	Seafloor survey — Specifically cable route corridors between turbines and substation(s) .....	177
20.2.3	Metocean conditions and criteria .....	177
20.2.4	Vessel suitability .....	179
20.2.5	Cable storage and cable handling equipment .....	180
20.2.6	Navigation equipment — Positioning and control of vessel/cable interface .....	180
20.3	Cable laying .....	181
20.3.1	Cable pull-in procedures .....	181

20.3.2	Cable lay .....	181
20.4	Cable protection.....	182
20.4.1	Cable burial.....	182
20.4.2	Non-burial cable protection.....	182
20.5	Post installation survey.....	184
20.6	Cable commissioning.....	184
20.7	Cable installation manual.....	184
<b>21</b>	<b>Personnel transfer .....</b>	<b>184</b>
<b>22</b>	<b>Construction management.....</b>	<b>185</b>
22.1	Introduction .....	185
22.2	Marine coordination.....	185
22.3	Harbour coordination.....	186
22.4	Guard vessel .....	186
22.5	Reporting.....	186
22.6	Personnel tracking.....	186
<b>Annex A (informative) Additional information and guidance .....</b>		<b>187</b>
<b>Bibliography.....</b>		<b>201</b>

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## Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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The committee responsible for this document is ISO/TC 8, *Ships and marine technology*.

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## Introduction

The series of International Standards applicable to the offshore wind industry, ISO 29400 to ISO 29406<sup>1)</sup>, constitutes a comprehensive and common basis covering port and marine operations of all offshore structures installed and maintained by the offshore wind industries worldwide. Through their application, the intention is to achieve reliability levels appropriate for offshore wind farm components, whatever the type of structure and the nature or combination of materials used.

This International Standard presumes compliance with international (e.g. IMO), national and local rules and regulations. This International Standard does not replace the applicable rules and regulations. Adherence to this International Standard will not necessarily ensure compliance with all applicable rules and regulations.

It is important to recognize that during port and marine operations the structural integrity of the component is an overall concept comprising models for describing actions, structural analysis, design rules, safety elements, workmanship, quality control procedures and national requirements, all of which are mutually dependent. The modification of one aspect of design in isolation can disturb the balance of reliability inherent in the overall concept or structural system. It is necessary, therefore, to consider the implications involved in modifications in relation to the overall reliability of structures in offshore wind farms.

The series of International Standards applicable to offshore wind farms is intended to provide a wide latitude in the choice of structural configuration, material and techniques without hindering innovation. Sound engineering judgment is, therefore, necessary in the use of these International Standards.

ISO 29400 was developed to provide comprehensive requirements and guidance for the planning, engineering and safe execution of port and marine operations for all types of components of offshore wind farms including cable-laying and burial barges and diving support vessels but excluding floating structures.

Port operations for installation of components of offshore wind farms cover all component transport to the ports, whether by land or via inland waterways, any intermediate storage as well as preassembly activities at the ports until placing the components close to any quayside for subsequent marine operations to start.

Marine operations for offshore wind farm structures cover loadout from the quayside, offshore transportation and installation phases when the structure is at risk from the marine environment up to and including any marine logistics during offshore commissioning works. Marine operations can extend to decommissioning, redeployment, removal, etc.

ISO 29400 describes the principles of and provides requirements and guidance for port and marine operations associated with WTG, cables and topsides installed in offshore wind farms, from the point of view of planning, engineering, implementation and documentation. Alternative requirements, methods and provisions can fulfil the intention of ISO 29400 and may be applied, provided it can be demonstrated that they achieve at least the same level of assurance and reliability. The overall objective of ISO 29400 is to ensure that port and marine operations are conducted within defined and recognized safety and reliability levels, wherever they are performed. Additional standards, codes and guidelines should also be taken into account, where applicable. Special attention should be paid to national regulations governing the area in which the port and marine operations are performed.

It is not the intent of ISO 29400 to govern the design of structures, systems and components used in port and marine operations, beyond the principles given. Recognized codes and standards are normally accepted as the basis for the detailed design and the fabrication requirements of such components.

[Annex A](#) provides some background and some additional information to the main body of the document and it is intended that it be read in conjunction with the main body of the document.

This International Standard is based on ISO 19901-6 while adapting it extensively to the specific requirements of the offshore wind industry.

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1) Planned International Standards.

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# Ships and marine technology — Offshore wind energy — Port and marine operations

## 1 Scope

This International Standard provides comprehensive requirements and guidance for the planning and engineering of port and marine operations, encompassing all documents and works related to such port and marine operations, e.g. the design and analysis of the components, systems, equipment and procedures required to perform port and marine operations, as well as the methods or procedures developed to carry them out safely.

This International Standard is intended to be comprehensive, covering all relevant information related to port and marine operations necessary for the installation and maintenance of offshore wind farms. It is not applicable to the case of floating turbines moored to the seabed.

This International Standard is applicable to port and marine operations for offshore structures including:

- foundations made from steel and concrete gravity base structures (GBS);
- piled steel foundation structures;
- subsea templates and similar structures applied for pre-piling of foundations;
- steel towers, nacelles and blades forming part of the wind turbine generators (WTG);
- mobile offshore units (MOU): jackup vessel/self-elevating offshore unit topsides and components of any of the above for offshore substations or offshore accommodations platforms;
- array cables within the wind farms as well as export cables connecting the wind farm to the grid.

This International Standard is also applicable to modifications of existing structures, e.g. installation of additional modules or exchange of components.

This International Standard is not applicable to the following operations:

- construction activities, e.g. in a fabrication yard onshore, where there is no exposure to the marine environment;
- operational and routine activities during the service life of the windfarm related to the technical maintenance works regularly required for the components;
- diving;
- marine operations related to the operational and routine activities during the service life of the windfarm.

This International Standard presumes compliance with international, national and local rules and regulations. This International Standard does not replace the applicable rules and regulations.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15544, *Petroleum and natural gas industries — Offshore production installations — Requirements and guidelines for emergency response*