

STN	Ropný a plynárenský priemysel Modulárne vŕtacie súpravy pre pevné príbrežné plošiny (ISO 18647: 2017)	STN EN ISO 18647 45 0955
------------	--	--

Petroleum and natural gas industries - Modular drilling rigs for offshore fixed platforms (ISO 18647:2017)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 03/20

Obsahuje: EN ISO 18647:2019, ISO 18647:2017

130598

EUROPEAN STANDARD

EN ISO 18647

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2019

ICS 75.180.10

English Version

Petroleum and natural gas industries - Modular drilling rigs for offshore fixed platforms (ISO 18647:2017)

Industries du pétrole et du gaz naturel - Spécifications
pour une foreuse modulaire à bord de plateformes
fixes offshore (ISO 18647:2017)

This European Standard was approved by CEN on 9 September 2019.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN ISO 18647:2019 (E)

Contents	Page
European foreword.....	3

European foreword

The text of ISO 18647:2017 has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 18647:2019 by Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2020, and conflicting national standards shall be withdrawn at the latest by April 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 18647:2017 has been approved by CEN as EN ISO 18647:2019 without any modification.

INTERNATIONAL STANDARD

ISO 18647

First edition
2017-08

Petroleum and natural gas industries — Modular drilling rigs for offshore fixed platforms

*Industries du pétrole et du gaz naturel — Spécifications pour une
foreuse modulaire à bord de plateformes fixes offshore*



Reference number
ISO 18647:2017(E)

© ISO 2017

ISO 18647:2017(E)**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword	vi
Introduction	vii
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Abbreviated terms	4
5 Overall considerations	6
5.1 General.....	6
5.2 Functional equipment.....	6
5.2.1 Hoisting system.....	6
5.2.2 Rotary system.....	6
5.2.3 Circulation and solids control systems.....	6
5.2.4 Power and electrical systems.....	6
5.2.5 Well control system.....	7
5.2.6 BOP handling system.....	7
5.2.7 Cementing system.....	7
5.2.8 Pipe handling system.....	7
5.2.9 Instrument communication system.....	7
5.2.10 Auxiliary system.....	7
5.3 Layout.....	7
5.3.1 General.....	7
5.3.2 Drilling equipment set.....	8
5.3.3 Drilling support module.....	8
5.3.4 Drilling utilities.....	8
5.4 Health and safety considerations.....	8
5.4.1 General.....	8
5.4.2 Escape and alarms.....	8
5.4.3 Hazardous areas and storage of hazardous goods.....	9
5.4.4 Fire and explosion protection.....	9
5.4.5 Safety equipment.....	9
5.5 Operational considerations.....	9
5.6 Corrosion control.....	9
5.7 Structural considerations.....	9
5.8 Removal and abandonment.....	10
6 Design	10
6.1 General.....	10
6.2 Rig rating.....	10
6.3 Drilling equipment set.....	11
6.3.1 General.....	11
6.3.2 Derrick/Mast.....	12
6.3.3 Maximum hook load.....	12
6.3.4 Drill floor clearance.....	12
6.3.5 Top drive system.....	12
6.3.6 Well control equipment.....	12
6.3.7 BOP handling system.....	12
6.3.8 Circulation and solids control system.....	13
6.4 Drilling support equipment.....	13
6.4.1 Power of the mud pump set.....	13
6.4.2 Mud tank volume.....	13
6.4.3 Generator set.....	13
6.4.4 Electrical equipment and cabling.....	14
6.4.5 Emergency power supply.....	14

ISO 18647:2017(E)

6.4.6	UPS.....	14
6.4.7	Fuel tank.....	14
6.4.8	P-tanks and pipework.....	14
6.4.9	Auxiliary systems.....	15
6.4.10	Other requirements.....	15
6.5	Interfaces.....	16
6.5.1	Seawater.....	16
6.5.2	Fresh water.....	16
6.5.3	Fuel.....	16
6.5.4	Compressed air.....	16
6.5.5	Discharge system.....	16
6.5.6	Electrical interface.....	16
6.5.7	Instrument communication interface.....	16
6.5.8	Well control system interface.....	16
6.5.9	Safety system interface.....	17
6.5.10	Flowback system interface.....	17
7	Structural design.....	17
7.1	General.....	17
7.2	Structure simulation.....	17
7.3	Design checks.....	17
7.4	Material selection.....	17
7.5	Skid rail strength analysis.....	17
8	Construction and assembly.....	17
8.1	General.....	17
8.2	Planning.....	18
8.3	Equipment and materials handling.....	18
8.3.1	Arrival inspection of materials and equipment.....	18
8.3.2	Storage and tracking of materials and equipment.....	18
8.4	Structural steelwork fabrication.....	18
8.4.1	Cylindrical tubular members.....	18
8.4.2	Non-cylindrical sections.....	18
8.4.3	Skid rail fabrication.....	19
8.4.4	Tolerance for skid rail installation.....	19
8.5	Welding and inspection.....	19
8.5.1	Basic requirements.....	19
8.5.2	Visual inspection.....	20
8.5.3	Non-destructive inspection.....	20
8.5.4	Additional inspection requirement.....	21
8.6	Prefabrication and installation of the piping.....	21
8.7	Outfitting.....	21
8.7.1	Heat insulating materials.....	21
8.7.2	Penetrations.....	21
8.7.3	Fire doors.....	21
8.7.4	Installation of ladders and guardrails.....	22
8.8	Corrosion control.....	22
8.9	Installation of equipment.....	22
8.9.1	General.....	22
8.9.2	Hoisting equipment.....	22
8.9.3	Rotating equipment.....	22
8.9.4	Circulation and solids control equipment.....	22
8.9.5	Power and electrical equipment.....	24
8.9.6	Well control equipment.....	24
8.9.7	Pipe handling equipment.....	24
8.9.8	Fire and gas detection equipment.....	24
8.9.9	Drilling instrument communication system.....	25
8.9.10	Boiler and steam system.....	25
8.10	Weighing.....	25

9	Pre-commissioning	26
9.1	Pre-commissioning scope	26
9.2	Pre-commissioning preparation	26
9.3	Hoisting equipment	27
9.4	Rotating equipment	27
9.5	Circulation and solids control equipment	28
9.6	Power and electrical equipment	28
9.6.1	Diesel generator set	28
9.6.2	Transformer	28
9.6.3	Medium voltage switchboard, low voltage switchboard and motor control centre	29
9.6.4	UPS	29
9.6.5	Electric control system equipment	29
9.7	BOP handling equipment	29
9.8	Cementing equipment	29
9.9	Pipe handling equipment	30
9.10	Fire and gas detection system equipment	30
9.11	Instrument	30
9.11.1	Drilling instrument	30
9.11.2	P-tank instrument	30
9.12	Hydraulic system	31
9.13	Skidding equipment	31
9.14	HVAC equipment	31
10	Installation, hook up and commissioning	31
10.1	Loadout and marine transportation	31
10.2	Installation	32
10.3	Hook up	32
10.3.1	Equipment hook up	32
10.3.2	Piping system hook up	32
10.3.3	Electrical hook up	33
10.4	Commissioning	33
10.4.1	General	33
10.4.2	Preparations before commissioning	33
10.4.3	System function testing	35
10.4.4	System load testing	39
11	Quality control, quality assurance and documents	40
12	In-service inspection and integrity management	40
13	Reuse	41
	Annex A (informative) Additional information and guidance	42
	Annex B (informative) Guidance for load and resistance factor design/working stress design method	84
	Annex C (informative) List of typical fabrication design drawings and documents	91
	Annex D (informative) Typical loadout and seafastening design documents	96
	Annex E (informative) Typical acceptance report for an MDR on an offshore fixed platform	97
	Annex F (informative) Typical completion acceptance document and record for an MDR on an offshore fixed platform	100
	Annex G (informative) Typical in-service inspection plan for an MDR on a fixed offshore platform	102
	Bibliography	113

ISO 18647:2017(E)**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.

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see the following URL: www.iso.org/iso/foreword.html.

This document 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*.

Introduction

This document is applicable to modular drilling rigs on offshore fixed platform. It is intended to provide wide latitude in the design, construction, installation and commissioning of offshore modular drilling rigs on fixed platforms, without hindering innovation. Sound engineering judgment is therefore necessary in the use of this document.

The design of a modular drilling rig includes choices of drilling equipment, layout of modules, system interface, modular structures and so on. The construction of modular drilling rigs includes the assembly of structures, welding and inspection of structures, prefabrication and installation of the piping and cables, outfitting, corrosion control and onshore installation of equipment.

[Annex A](#) provides background to, and guidance on, the use of this document, and is intended to be read in conjunction with the main body of this document. The clause numbering in [Annex A](#) follows the same structure as that in the body of the normative text in order to facilitate cross-referencing.

[Annex B](#) provides a guidance of load and resistance factor design/working stress design method.

[Annex C](#) provides a list of typical fabrication design documents of modular drilling rigs.

[Annex D](#) provides a typical loadout and seafastening design document.

[Annex E](#) provides a typical acceptance report for modular drilling rigs on offshore fixed platform.

[Annex F](#) provides a typical completion acceptance document and record for modular drilling rigs on offshore fixed platform.

[Annex G](#) provides a typical in-service inspection plan for modular drilling rigs.

Petroleum and natural gas industries — Modular drilling rigs for offshore fixed platforms

1 Scope

This document gives requirements for the design, fabrication, installation, commissioning and integrity management of modular drilling rigs on offshore fixed platforms.

The modular drilling rig includes some or all of the equipment as follows:

- drilling equipment including a derrick/mast and its controls that can be moved by skidding a drilling support structure;
- drilling support equipment which includes support facilities such as power supply/distribution system;
- mud and cement storage, mixing, monitoring and control equipment.

This document is applicable to the modular drilling equipment on offshore structures for the petroleum and natural gas industries, as follows:

- new equipment arranged in a modularized form;
- the equipment contained in several modules, each of which can be lifted and installed on to the platform, however, the equipment may be arranged within the modules as is convenient;
- the modules assembled together offshore for hook up and commissioning;
- intended for long term use on a new fixed offshore structure;
- Intended for temporary use on a number of different offshore platforms.

This document is not applicable to drilling equipment

- installed on mobile offshore units, and
- intended primarily for onshore use.

This document does not apply to those parts and functions of an offshore platform that are not directly related to drilling.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 4406, *Hydraulic fluid power — Fluids — Method for coding the level of contamination by solid particles*

ISO 6807, *Rubber hoses and hose assemblies for rotary drilling and vibration applications — Specification*

ISO 13501, *Petroleum and natural gas industries — Drilling fluids — Processing equipment evaluation*

ISO 13535, *Petroleum and natural gas industries — Drilling and production equipment — Hoisting equipment*

ISO 18647:2017(E)

ISO 13626, *Petroleum and natural gas industries — Drilling and production equipment — Drilling and well-servicing structures*

ISO 13702, *Petroleum and natural gas industries — Control and mitigation of fires and explosions on offshore production installations — Requirements and guidelines*

ISO 13703, *Petroleum and natural gas industries — Design and installation of piping systems on offshore production platforms*

ISO 14693, *Petroleum and natural gas industries — Drilling and well-servicing equipment*

ISO 15138, *Petroleum and natural gas industries — Offshore production installations — Heating, ventilation and air-conditioning*

ISO 15513, *Cranes — Competency requirements for crane drivers (operators), slingers, signallers and assessors*

ISO 19901-3, *Petroleum and natural gas industries — Specific requirements for offshore structures — Part 3: Topsides structure*

ISO 19901-6, *Petroleum and natural gas industries — Specific requirements for offshore structures — Part 6: Marine operations*

ISO 19902, *Petroleum and natural gas industries — Fixed steel offshore structures*

IEC 61892-6, *Mobile and fixed offshore units — Electrical installations — Part-6: Installation*

API RP 2FB, *Recommended Practice for the Design of Offshore Facilities Against Fire and Blast Loading*

API RP 14G, *Recommended Practice for Fire Prevention and Control on Open Type Offshore Production Platforms*

API RP 505, *Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Zone 0, Zone 1 and Zone 2*

API Spec 16A, *Specification for Drill Through Equipment*

API Spec 16D, *Specification for Control Systems for Drilling Well Control Equipment and Control Systems for Diverter Equipment*

API Std 53, *Blowout Prevention Equipment Systems for Drilling Wells*

AWS D1.1/D1M, *Structural Welding Code — Steel*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN