SLOVENSKI STANDARD
SIST EN ISO 19901-2:2026

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Posebne zahteve za naftne ploščadi - 2. del: Potresno projektiranje (ISO 19901-2:2026)

Specific requirements for offshore structures - Part 2: Seismic design (ISO 19901-2:2026)

Öl- und Gasindustrie einschließlich kohlenstoffarmer Energieträger - Spezielle Anforderungen für Offshore-Anlagen - Teil 2: Seismische Auslegungsverfahren und -kriterien (ISO 19901-2:2026)

Exigences spécifiques relatives aux structures en mer - Partie 2: Conception sismique (ISO 19901-2:2026)

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ICS:

75.180.10	Oprema za raziskovanje, vrtanje in odkopavanje	Exploratory, drilling and extraction equipment
91.120.25	Zaščita pred potresi in vibracijami	Seismic and vibration protection

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Specific requirements for offshore structures - Part 2: Seismic design (ISO 19901-2:2026)

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Öl- und Gasindustrie einschließlich kohlenstoffarmer Energieträger - Spezielle Anforderungen für Offshore-Anlagen - Teil 2: Seismische Auslegungsverfahren und -kriterien (ISO 19901-2:2026)

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

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European foreword

This document (EN ISO 19901-2:2026) has been prepared by Technical Committee ISO/TC 67 "Oil and gas industries including lower carbon energy" in collaboration with Technical Committee CEN/TC 12 “Oil and gas industries including lower carbon energy” 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of an identical text or by endorsement, at the latest by January 2027, and conflicting national standards shall be withdrawn at the latest by January 2027.

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.

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International Standard

ISO 19901-2

Specific requirements for offshore structures —

Part 2: Seismic design

Exigences spécifiques relatives aux structures en mer —

Partie 2: Conception sismique

Fourth edition
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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 document 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).

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For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 67, *Oil and gas industries including lower carbon energy*, Subcommittee SC 7, *Offshore structures,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 12, *Oil and gas industries including lower carbon energy,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 19901-2:2022), which has been technically revised.

The main changes are as follows:

— the scope has been expanded to cover offshore wind and other renewable energy offshore structures;

— requirements from common industry specifications (IOGP JIP 35) have been incorporated;

— the seismic hazard maps have been updated.

A list of all parts in the ISO 19901 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The International Standards for offshore structures prepared by ISO TC 67/SC 7 comprise:

— ISO 19900, the unifying International Standard for offshore structures;

— the ISO 19901 series, providing specific requirements for offshore structures;

— ISO 19902, ISO 19903, ISO 19904-1, the ISO 19905 series and ISO 19906, “structure type” standards.

Figure 1 illustrates the relationships between the International Standards for offshore structures prepared by ISO TC 67/SC 7.

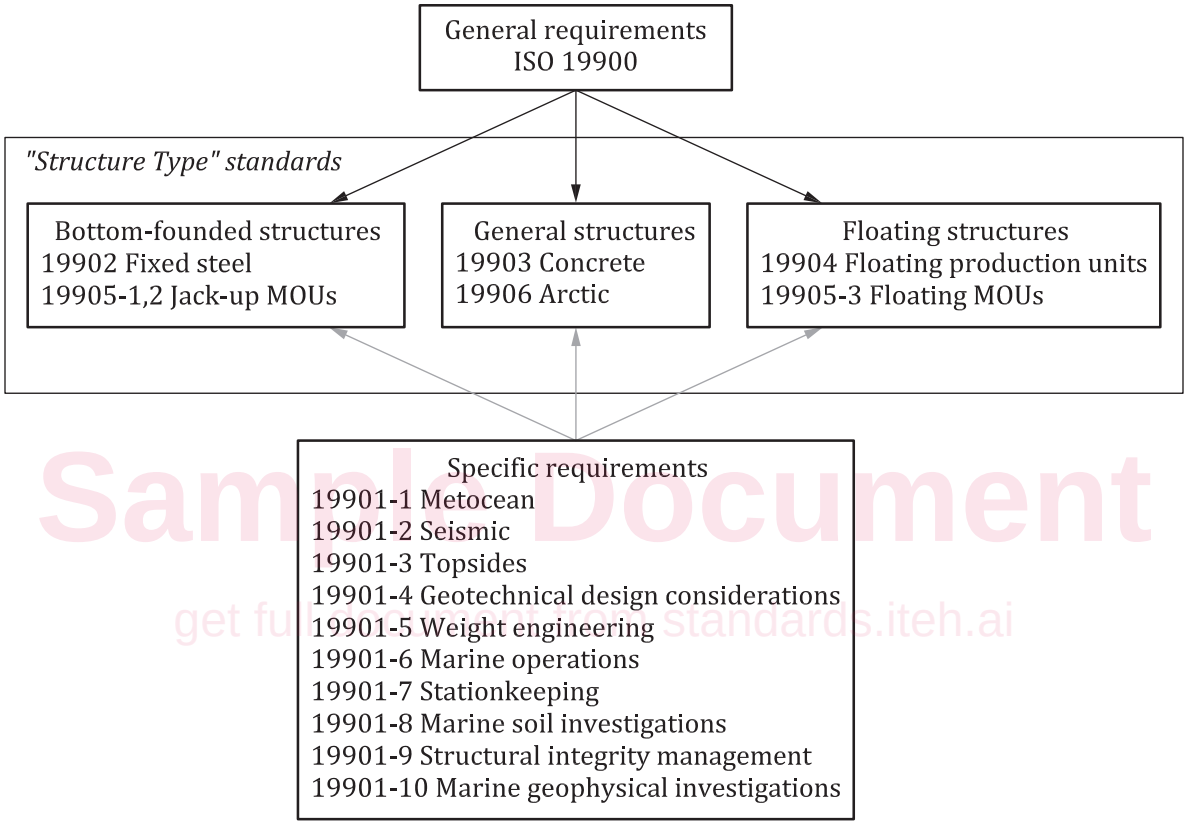

Figure 1 — Relationship of International Standards for offshore structures prepared by ISO/TC 67/SC 7

Seismic conditions vary widely around the world, and the design criteria depend primarily on observations of historical seismic events together with consideration of seismotectonics and local soil conditions. Additional information and guidance are given in Annex A, where the clause numbering mirrors the normative clauses to facilitate cross referencing.

Statements containing requirements (“shall” and “shall not”), recommendations (“should” and “should not”) or permissions (“may”) are collectively referred to as provisions.

Specific requirements for offshore structures —

Part 2: Seismic design

1 Scope

This document contains requirements for seismic design and assessment of offshore structures.

This document includes recommendations for the effects of seismic events on floating structures.

This document addresses specifically the design and assessment of offshore structures subjected to earthquake-induced ground motions. It also covers briefly other geologically induced hazards such as liquefaction, slope instability, fault surface displacement, tsunamis, mud volcanoes and shock waves.

This document provides requirements for site-specific probabilistic seismic hazard analysis for offshore structures in high seismic areas and for offshore structures with high consequence levels.

2 Normative references

The following documents are referred to in the text in such a way that some or all 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 19900, *Oil and gas industries including lower carbon energy — General requirements for offshore structures*

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

IOGP S-631-11, *Supplementary Specification for Fixed Steel Offshore Structures, International Oil & Gas Producers Association, Version 2, 8 February 2021*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 19900 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
abnormal level earthquake
ALE
ground motion (3.6) due to a rare intense earthquake with a very low probability of occurrence during the life of the structure

Note 1 to entry: Typically, having an annual *probability of exceedance* (3.10) of one in a few thousand years.

3.2
active fault
fault likely to have another earthquake in the future

3.3
attenuation
decay of seismic waves as they travel from the earthquake source to the site under consideration

3.4
deaggregation
separation of seismic hazard contributions from different faults and seismic source zones

3.5
extreme level earthquake
ELE
ground motion (3.6) due to an earthquake with a reasonable probability of occurring during the life of the structure

Note 1 to entry: Typically having an annual *probability of exceedance* (3.10) of one in a few hundred years.

3.6
ground motion
accelerations, velocities or displacements of the ground produced by seismic waves radiating away from earthquake sources

Note 1 to entry: A fixed offshore structure is founded in or on the seabed and consequently only seabed motions or motions along the length of piles are of significance. The expression "ground motions" is used rather than "seabed motions" for consistency of terminology with seismic design for onshore structures.

Note 2 to entry: Ground motions can be at a specific depth or over a specific region within the seabed.

3.7
liquefaction
fluidity of soil due to the increase in pore pressures caused by earthquake action under undrained conditions

3.8
mud volcano
diapiric intrusion of plastic clay causing high pressure gas-water seepages which carry mud, fragments of rock (and occasionally oil) to the surface

Note 1 to entry: The surface expression of a mud volcano is a cone of mud with continuous or intermittent gas escaping through the mud.

3.9
probabilistic seismic hazard analysis
PSHA
framework permitting the identification, quantification and rational combination of uncertainties in earthquakes' intensity, location, rate of recurrence and variations in *ground motion* (3.6) characteristics

3.10
probability of exceedance
P_e
probability that a variable (or an event) exceeds a specified reference level within a given exposure period

EXAMPLE The annual probability of exceedance of a specified magnitude of ground acceleration, ground velocity or ground displacement.

3.11
pushover analysis
application and incremental increase of a global static pattern of actions on a structure, including equivalent dynamic inertial actions, until a global failure mechanism occurs

3.12
response spectrum
maximum responses of a series of single-degree-of freedom systems subjected to a given base motion, plotted as a function of natural frequencies for specific values of damping

3.13
safety system
system provided on the offshore structure to detect, control and mitigate hazardous situations

EXAMPLE Gas detection, emergency shutdown, fire protection, and their control systems.

3.14
seabed slide
failure of seabed slopes

Note 1 to entry: The seabed is defined as the soil material below the sea floor (ISO 19900:2019, 3.47).

Note 2 to entry: The effective seabed is defined in 8.3.2; typically, being the upper 30 m of seabed material.

3.15
seismic hazard curve
curve showing the annual *probability of exceedance* (3.10) against a measure of *ground motion* (3.6) or response of the single degree of freedom oscillator

Note 1 to entry: The seismic measures can include parameters such as peak ground acceleration, *spectral acceleration* (3.19), spectral velocity or spectral displacement.

3.16
seismic reserve capacity factor
C_r
factor indicating the structure's ability to sustain *ground motions* (3.6) due to earthquakes beyond the level of the *extreme level earthquake* (3.5)

3.17
seismic risk category
SRC
category defined from the consequence level and the intensity of seismic motions

3.18
site response analysis
wave propagation analysis permitting the evaluation of the effect of local geological and soil conditions on the *ground motions* (3.6) as they propagate up from depth to the surface at the site

3.19
spectral acceleration
maximum acceleration response of a single degree of freedom oscillator subjected to *ground motions* (3.6) due to an earthquake

3.20
tsunami
long period sea waves caused by rapid vertical movements of the sea floor

Note 1 to entry: The vertical movement of the sea floor is often associated with fault rupture during earthquakes or with *seabed slides* (3.14).

3.21
zero pad
technique used in signal processing particularly when analysing earthquake recordings using the fast Fourier transformation