



# SLOVENSKI STANDARD SIST EN ISO 19901-5:2004

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**Petroleum and natural gas industries - Specific requirements for offshore structures - Part 5: Weight control during engineering and construction (ISO 19901-5:2003)**

Petroleum and natural gas industries - Specific requirements for offshore structures - Part 5: Weight control during engineering and construction (ISO 19901-5:2003)

Erdöl- und Erdgasindustrie - Offshore-Plattformen - Teil 5: Gewichtskontrolle während der Auslegung und Konstruktion (ISO 19901-5:2003)

Industries du pétrole et du gaz naturel - Exigences spécifiques relatives aux structures en mer - Partie 5: Contrôles des poids durant la conception et la fabrication (ISO 19901-5:2003)

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**ICS:**

75.180.10	Oprema za raziskovanje in odkopavanje	Exploratory and extraction equipment
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**Petroleum and natural gas industries - Specific requirements for offshore structures - Part 5: Weight control during engineering and construction (ISO 19901-5:2003)**

Industries du pétrole et du gaz naturel - Exigences spécifiques relatives aux structures en mer - Partie 5: Contrôles des poids durant la conception et la fabrication (ISO 19901-5:2003)

Erdöl- und Erdgasindustrie Besondere Anforderungen an Offshore- Bauwerke - Teil 5: Gewichtskontrolle während der Auslegung und Konstruktion (ISO 19901-5:2003)

This European Standard was approved by CEN on 10 July 2003.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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

**Management Centre: rue de Stassart, 36 B-1050 Brussels**

**EN ISO 19901-5:2003 (E)****Foreword**

This document (EN ISO 19901-5:2003) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum and natural gas industries" in collaboration with Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum and natural gas industries", the secretariat of which is held by AFNOR.

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 2004, and conflicting national standards shall be withdrawn at the latest by January 2004.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

**NOTE FROM CMC** The foreword is susceptible to be amended on reception of the German language version. The confirmed or amended foreword, and when appropriate, the normative annex ZA for the references to international publications with their relevant European publications will be circulated with the German version.

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The text of ISO 19901-5:2003 has been approved by CEN as EN ISO 19901-5:2003 without any modifications.

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**Petroleum and natural gas industries —  
Specific requirements for offshore  
structures —**

Part 5:

**Weight control during engineering and  
construction**

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*Industries du pétrole et du gaz naturel — Exigences spécifiques  
relatives aux structures en mer —*

*SIST EN ISO 19901-5:2004*

*Partie 5: Contrôles des poids durant la conception et la fabrication*

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 19901-5 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 7, *Offshore structures*.

ISO 19901 consists of the following parts, under the general title *Petroleum and natural gas industries — Specific requirements for offshore structures*:

- *Part 4: Geotechnical and foundation design considerations*
- *Part 5: Weight control during engineering and construction*

The following parts of ISO 19901 are under preparation:

- *Part 1: Metocean design and operating considerations*
- *Part 2: Seismic design procedures and criteria*
- *Part 3: Topsides structure*
- *Part 6: Marine operations*
- *Part 7: Stationkeeping systems for floating offshore structures and mobile offshore units*

ISO 19901 is part of a series of standards for offshore structures. The full series consists of the following standards:

- ISO 19900, *Petroleum and natural gas industries — General requirements for offshore structures*
- ISO 19901 (all parts), *Petroleum and natural gas industries — Specific requirements for offshore structures*
- ISO 19902, *Petroleum and natural gas industries — Fixed steel offshore structures*
- ISO 19903, *Petroleum and natural gas industries — Fixed concrete offshore structures*
- ISO 19904, *Petroleum and natural gas industries — Floating offshore structures*

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- ISO 19905-1, *Petroleum and natural gas industries — Site-specific assessment of mobile offshore units — Part 1: Jack-ups*
- ISO/TR 19905-2, *Petroleum and natural gas industries — Site-specific assessment of mobile offshore units — Part 2: Jack-ups commentary*
- ISO 19906, *Petroleum and natural gas industries — Arctic offshore structures*

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## Introduction

The offshore structures International Standards ISO 19900 to ISO 19906 constitute a common basis covering those aspects that address design requirements and assessments of all offshore structures used by the petroleum and natural gas industries worldwide. Through their application the intention is to achieve reliability levels appropriate for manned and unmanned offshore structures, whatever the type of structure and the nature of the materials used.

It is important to recognize that structural integrity is an overall concept comprising models for describing actions, structural analyses, 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. The implications involved in modifications, therefore, need to be considered in relation to the overall reliability of all offshore structural systems.

The offshore structures International Standards are intended to provide a wide latitude in the choice of structural configurations, materials and techniques without hindering innovation. Sound engineering judgement is therefore necessary in the use of these International Standards.

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# Petroleum and natural gas industries — Specific requirements for offshore structures —

## Part 5: Weight control during engineering and construction

### 1 Scope

This part of ISO 19901 specifies requirements for controlling the weight and centre of gravity (CoG) by means of mass management during the engineering and construction of structures for the offshore environment. The provisions are applicable to offshore projects that include structures of all types and materials.

This part of ISO 19901 differentiates between projects where considerations with regard to weight and CoG have a high priority as a result of weight and/or CoG sensitivity, and projects where weight and CoG are of little consequence. This differentiation has been made by the introduction of three different classes of structure (Class A, Class B and Class C). Depending on the degree of control necessary, different clauses of this part of ISO 19901 will apply; Clause 4 provides guidelines for assigning one of these classes.

This part of ISO 19901

- specifies quality requirements for reporting of weights and centres of gravity,
- specifies requirements for weight reporting,
- provides a basis for overall project status reports or management reports for all classes,
- specifies requirements for weight and load budgets for offshore installations,
- specifies the methods and requirements for the weighing of major assemblies, and the determination of weight and centre of gravity,
- specifies requirements for weight information from suppliers, including weighing of equipment and bulk materials for offshore installations;

and may be used

- as a basis for planning and presentation of the contractor's weight-reporting system;
- as a basis for evaluation of the contractor's weight-reporting system;
- as a means of refining the structural analysis/model;
- as a contract reference between the ordering client and the contractor;
- as a basis for costing.

## ISO 19901-5:2003(E)

## 2 Normative references

The following referenced documents are indispensable for the application 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.

*Guide to the expression of uncertainty in measurement (GUM)*, BIPM, IEC, IFCC, ISO, IUPAC, IUPAP and OIML

## 3 Terms, definitions and abbreviated terms

### 3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1.1

##### **assembly**

designed and fabricated group of bulk and equipment items which form one unit

#### 3.1.2

##### **ballast**

variable solid or fluid content used to trim a floating structure and/or keep a certain draft

#### 3.1.3

##### **base weight estimate**

weight estimate used for budgeting purposes which does not include any unforeseen quantity growth, estimating errors or unnamed events

#### 3.1.4

##### **base weight contingency**

weight addition, based on risk analysis or experience, used to transform a base weight estimate into a 50/50 weight estimate accounting for uncertainties

#### 3.1.5

##### **budget weight**

weight reference figures as defined in the weight and load budget and related to the initial or changed design concept

#### 3.1.6

##### **bulk**

component or arrangement of components defined as stock materials or of low complexity

NOTE Bulk items support the equipment items by providing infrastructure around and between them.

#### 3.1.7

##### **client weight reserve**

weight addition with CoG (usually a fixed weight) controlled by the client and used to cater for any orders for variation to the contractual design concept

#### 3.1.8

##### **CoG envelope**

defined constraint volume within which the CoG of an assembly must remain for design purposes

#### 3.1.9

##### **consumables**

variable content, which is solid in stores and fluid in utility tanks

EXAMPLES Fuel, provisions, service/potable water, operating utilities.

**3.1.10****contractor weight reserve**

weight addition (usually a fixed weight) controlled by the contractor and used to cater for any design growth due to development of the initial design concept

**3.1.11****deadweight**

total carrying capacity of a floating structure

NOTE Includes weight of crude oil, deck cargo, temporaries, water, snow and ice accumulations, marine growth, ballast water, consumables, crew and their effects.

**3.1.12****displacement**

weight of the volume of water displaced by a floating structure, which is the sum of lightweight and deadweight

**3.1.13****dry weight**

weight of a component, weight item or an assembly in its dry installed condition including permanent utilities

NOTE 1 Examples of permanent utilities are gearbox oil, hydraulic oil, filter sand, etc.

NOTE 2 Any content of operating fluid flowing through a component, weight item or an assembly is excluded.

**3.1.14****equipment**

component, or arrangement of components, built for specific function(s)

NOTE The component/assembly normally has unique documentation due to its function and complexity.

**3.1.15****first fill**

initial filling of liquid in equipment items, piping lines or tanks

NOTE First fill typically takes place towards the end of site construction, prior to tow-out and prior to filling for normal operations.

**3.1.16****float-out**

loading condition in which a major assembly is transferred from a dry construction site to become self-floating

**3.1.17****fluid content**

all fluids flowing through a component, weight item or an assembly

EXAMPLES Process gases, liquids, powders, etc.

**3.1.18****future weight**

weight of a component or an assembly to be installed after the start of production

NOTE Start of production is also known as "first oil".

**3.1.19****grillage**

temporary structural foundation assemblies for modules or sections during transportation

**3.1.20****gross reported weight**

sum of the net weight and weight allowance