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Installation and equipment for liquefied natural gas - Design of floating LNG installations - Part 1: General requirements (ISO 20257-1:2020)

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

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Installation and equipment for liquefied natural gas - Design of floating LNG installations - Part 1: General requirements (ISO 20257-1:2020)

Installations et équipements de gaz naturel liquéfié -
Conception des installations flottantes de GNL - Partie
1: Exigences générales (ISO 20257-1:2020)

Anlagen und Ausrüstung für Flüssigerdgas - Auslegung
von schwimmenden Flüssigerdgas-Anlagen - Teil 1:
Allgemeine Anforderungen (ISO 20257-1:2020)

This European Standard was approved by CEN on 7 March 2020.

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European foreword

This document (EN ISO 20257-1:2020) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" in collaboration with Technical Committee CEN/TC 282 "Installation and equipment for LNG" 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of an identical text or by endorsement, at the latest by November 2020, and conflicting national standards shall be withdrawn at the latest by November 2020.

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The text of ISO 20257-1:2020 has been approved by CEN as EN ISO 20257-1:2020 without any modification.

INTERNATIONAL STANDARD

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Installation and equipment for liquefied natural gas — Design of floating LNG installations —

Part 1: General requirements

*Installations et équipements de gaz naturel liquéfié — Conception des
installations flottantes de GNL —*

Partie 1: Exigences générales



Reference number
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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.

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This document was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 9, *Liquefied natural gas installations and equipment*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 282, *Installation and equipment for LNG*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 20257 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.

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Introduction

This document provides a non-exhaustive list of potential concepts. When a novel concept is proposed, the general principles in this document can be applied as far as applicable. Such design will result in a concept with equivalent level of safety and environmental friendliness to those currently considered as standard solutions. Guidance on the assessment of novel technology is provided in [Annex F](#).

In case a part of the installation, such as hull, vessel or structure, is already covered by another International Standard, including IMO, this document will only complement that applicable standard where necessary in order to ensure global safety, stability and integrity of the overall floating LNG installation.

This document assumes that a floating LNG installation is also designed to meet IMO and classification society requirements. It is not intended to preclude the use of a 'barge' solution. This document neither specifies the shape of the installation nor specifies the need for propulsion or an installation to fall within a particular regulatory regime. A barge can either be subject to exactly the same considerations as a unit designed as a non-propelled ship or not. This will depend on aspects such as whether a barge is located offshore or at shore, how it is transported, whether it stores LNG or not, the level of manning, the regulatory regime imposed on it. In this respect, the user of this document is expected to take hull structure design, means of external communications, and evacuation, escape and rescue arrangements, etc. into consideration.

Additional requirements by the Flag process, Shelf or Coastal Regulations can be applicable, that will vary depending on the type of floating LNG installation.

LNG as fuel bunkering applications is covered in ISO 20519 and in publications by the Society for Gas as a Marine Fuel.

Installation and equipment for liquefied natural gas — Design of floating LNG installations —

Part 1: General requirements

1 Scope

This document provides requirements and guidance for the design and operation of floating liquefied natural gas (LNG) installations, including installations for the liquefaction, storage, vaporisation, transfer and handling of LNG, in order to have a safe and environmentally acceptable design and operation of floating LNG installations.

This document is applicable to:

- floating LNG liquefaction installations (plant) — FLNG;
- floating LNG regasification installations (plant) — FSRU;
- floating storage units — FSU.

This document is applicable to offshore, near-shore or docked floating LNG installations.

This document includes any jetty in the scope in case of docked floating LNG installations with regards to the mooring. This document briefly describes floating LNG mooring concepts.

This document is applicable to both newbuilt and converted floating LNG installations, and addresses specific requirements.

This document is not applicable to:

- onshore LNG storage, liquefaction and/or regasification installations/plants, except for docked FSRU and/or FLNG installations;
- offshore LNG plants based on non-floating structure (such as gravity based structure [GBS] principle); and
- support onshore based facilities (such as support vessels, tugs, etc.).

This document is not intended for design floating power generation facilities though relevant parts of this document can be used.

This document is not intended to cover LNG as fuel bunkering applications.

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 834 (all parts), *Fire resistance tests — Elements of building construction*

ISO 1460, *Metallic coatings — Hot dip galvanized coatings on ferrous materials — Gravimetric determination of the mass per unit area*

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ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods*

ISO 4126 (all parts), *Safety devices for protection against excessive pressure*

ISO 9606 (all parts), *Qualification testing of welders — Fusion welding*

ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel*

ISO 10497, *Testing of valves — Fire type-testing requirements*

ISO 12944 (all parts), *Paints and varnishes — Corrosion protection of steel structures by protective paint systems*

ISO 15614-1, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys*

ISO 16903, *Petroleum and natural gas industries — Characteristics of LNG, influencing the design, and material selection*

ISO 16904, *Petroleum and natural gas industries — Design and testing of LNG marine transfer arms for conventional onshore terminals*

ISO 19900, *Petroleum and natural gas industries — General requirements for offshore structures*

ISO 19901-1, *Petroleum and natural gas industries — Specific requirements for offshore structures — Part 1: Metocean design and operating considerations*

ISO 19901-7, *Petroleum and natural gas industries — Specific requirements for offshore structures — Part 7: Stationkeeping systems for floating offshore structures and mobile offshore units*

ISO 19904-1, *Petroleum and natural gas industries — Floating offshore structures — Part 1: Ship-shaped, semi-submersible, spar and shallow-draught cylindrical structures*

ISO 20088 (all parts), *Determination of the resistance to cryogenic spill of insulation materials*

ISO 22899 (all parts), *Determination of the resistance to jet fires of passive fire protection*

ISO 23251, *Petroleum, petrochemical and natural gas industries — Pressure-relieving and depressuring systems*

ISO 24409-1, *Ships and marine technology — Design, location and use of shipboard safety signs, fire control plan signs, safety notices and safety markings — Part 1: Design principles*

ISO 28460, *Petroleum and natural gas industries — Installation and equipment for liquefied natural gas — Ship-to-shore interface and port operations*

IEC 60079 (all parts), *Explosive atmospheres*

IEC 60092-502, *Electrical installations in ships — Part 502: Tankers — Special features*

IEC 60331 (all parts), *Tests for electric cables under fire conditions — Circuit integrity*

IEC 61511 (all parts), *Functional safety — Safety instrumented systems for the process industry sector*

IEC 61892 (all parts), *Mobile and fixed offshore units — Electrical installations*

IEC 62305 (all parts), *Protection against lightning*

ISO/IEC 80079 (all parts), *Explosive atmospheres*

API RP 17B, *Recommended Practice for Flexible Pipe*

CAA CAP 437, *Standards for Offshore Helicopter Landing Areas*

EN 1127-1, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

EN 1474-2, *Installation and equipment for liquefied natural gas — Design and testing of marine transfer systems — Part 2: Design and testing of transfer hoses*

EN 1474-3, *Installation and equipment for liquefied natural gas — Design and testing of marine transfer systems — Part 3: Offshore transfer systems*

IMO/IGC Code, International code for the construction and equipment for ships carrying liquefied gases in bulk (IGC Code)

International Ship and Port Facility Security Code, IMO

IMO/SOLAS, International convention for the safety of life at sea

IMO/MODU, Code for the Construction and Equipment of Mobile Offshore Drilling Units

MARPOL, International Convention for the Prevention of Pollution from Ships

Ship to ship transfer guide for petroleum chemicals and liquefied gases, OCIMF

WHO Guidelines for Drinking Water Quality, World Health Organization

MOORING EQUIPMENT GUIDELINES OCIMF

koniec náhľadu – text ďalej pokračuje v platenej verzii STN