SLOVENSKI STANDARD
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Installation and equipment for liquefied natural gas - Design of floating LNG installations - Part 1: General requirements (ISO/DIS 20257-1:2018)

Anlagen und Ausrüstung für Flüssigerdgas - Teil 1: Allgemeine Anforderungen an schwimmende Flüssigerdgas-Anlagen (ISO/DIS 20257-1:2018)

Installations et équipements de gaz naturel liquéfié - Conception des installations en mer - Partie 1: Exigences générales pour installations flottantes de GNL (ISO/DIS 20257-1:2018)

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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 en mer —

Partie 1: Exigences générales pour installations flottantes de GNL

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Foreword

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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 9, *Liquefied natural gas installations and equipment*

A list of all parts in the ISO 20257 series can be found on the ISO website.

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Introduction

ISO 20257 consists of the following parts, under the general title Installation and equipment for liquefied natural gas — Design of floating LNG installations:

Part 1 : General Requirements for Floating LNG installations

Part 2 : Specific Requirements for FSRU (Floating Storage and Regasification Unit)

Part 3 : Specific Requirements for FLNG (Floating Liquefied Natural Gas Facilities)

Identification of patent holders, if any.

Installation and equipment for liquefied natural gas — Design of floating LNG installations— Part 1: General Requirements

1 Scope

The objective of ISO 20257 is to provide requirements and guidance for the design and operation of floating liquefied natural gas (LNG) installations including those 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.

ISO 20257 is applicable for the following floating LNG installations:

- Floating LNG liquefaction installations (plant) – FLNG– the whole floating installation, between the designated gas import connection boundary limit, and the export connection boundary limit. Feed gas can typically be from gas field, associated gas from oil field or from piped gas from a transportation grid.

- Floating LNG regasification installations (plant) – FSRU- the whole floating installation including storage, LNG transfer facilities (from the shuttle manifold), regasification facilities up to the designated gas export connection boundary limit

- Floating Storage Unit – FSU - the whole floating installation including storage, LNG transfer facilities (from the shuttle/LNG carrier manifold) up to FSU export connection boundary limit – see definition of FSU in section 3.

ISO 20257 is applicable for offshore, near shore or docked floating LNG installations

ISO 20257 includes any jetty in the scope in case of docked floating LNG installations with regards to the mooring.

Floating LNG mooring concepts are briefly described in section 6

Floating LNG installations are considered to comprise the following major elements:

- Hull Structure, also known as Hull;

- Gas Processing, Vaporization and Liquefaction, also known as Topsides (including Flare);

- LNG Storage, also known Cargo Containment, Systems and Cargo Handling Systems;

- Hydrocarbon Transfer, also known as Cargo Transfer Systems (including offloading equipment and systems, if applicable);

- Mooring Systems, including jetties, fendering (if applicable);

- Other Systems, including utilities, accommodation, etc.

Note to entry 1 : Topsides are not relevant for FSU applications.

ISO 20257 is covering both Newbuilt and Converted floating LNG installations. Specific Requirements are addressed in section 19

Listing of potential concepts is not intended to be exhaustive. When a novel concept is proposed, it shall follow the general principle of this standard as far as applicable. Such design should result in a concept with equivalent level of safety and environmental friendliness to those currently considered as standard solutions.

In case a part of installation (such as hull, vessel or structure) would already be covered by an international standard (including IMO) , the ISO 20257 will only complement the applicable standard where necessary in order to ensure global safety, stability and integrity of the overall floating LNG installation

The text below assumes a Floating LNG installation which is generally designed to meet IMO and Classification Society requirements. This is not intended to preclude use of a "Barge" solution. It should not therefore be assumed that specific requirements are given either to the shape of the installation or to the need for propulsion or for an installation to fall within one regulatory regime or another. Depending, for example, on 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, it may or may not be subject to exactly the same considerations as a unit designed as a non-propelled ship.

Individual consideration will need to be given in light of these issues. These issues may include (not exhaustive list):

- Hull structure design
- Means of external communications
- Safety evacuations and escape arrangements

Exclusions

This standard is not intended to be applicable to

- Onshore LNG storage, liquefaction and/or regasification installations/plants. However, standard is applicable to docked FSRU and/or FLNG installations as mentioned above.
- Offshore LNG plants based on non-floating structure (such as Gravity Based Structure principle).
- Support onshore based facilities (such as support vessels, tugs, …)

This standard is not specifically intended to design Floating Power Generation facilities. However, relevant parts might be used.

This standard is not intended to cover LNG as fuel bunkering applications. For these applications, reference is made to ISO 20519 and to publications by the Society for Gas as a Marine Fuel (SGMF).

2 Normative references

2.1 Local Regulations

Local Regulations shall in any case be complied with.

Where local regulations exist in which some of the requirements are equal or more stringent, they must be complied with.

In case an installation shall be flagged and/or subject to Shelf/Coastal State Requirements, additional requirements may be required and shall be appraised for each installation.

2.2 List of Standards

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.

ACGIH Association Advancing Occupational & Environmental Health, TLVs® and BEIS® based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices

AGA Report 5, Natural Gas Energy Measurement

API RP 17B, Recommended Practice for Flexible Pipe

API RP 2D, Operation and Maintenance of Offshore Cranes

API RP 2SK, Design and Analysis of Stationkeeping Systems for Floating Structures

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 RP 520, Sizing, Selection, and Installation of Pressure-Relieving Devices in Refineries

API RP 521, Guide for Pressure-Relieving and Depressuring Systems

Approved List of biological Agents (Advisory Committee on Dangerous Pathogens), HSE Book, 2013

ASME B31.3, Process Piping

CAA CAP 437, Standards for Offshore Helicopter Landing Areas

Canadian Centre for Occupational Health and Safety – Humidex Rating and Work Document last update on September 5, 2013. [10]

EHS Guidelines, World Bank Group Environmental, Health, and Safety Guidelines,

EI15 EI Model code of safe practice Part 15: Area classification for installations handling flammable fluids

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

EN 13480, Metallic industrial piping

EN 1473, Installation and equipment for liquefied natural gas - Design of onshore installations

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