

ICS 75.200
CCS E 24



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 43130.2-2024

**Installation and equipment for liquefied natural gas - Design of
floating LNG installations - Part 2: Specific FSRU issues**

液化天然气装置和设备 浮式液化天然气装置的设计 第2部分：浮式储存和再气化
装置的特殊要求

(English Translation)

Issued on: April 25, 2024

Implemented on: August 1, 2024

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative references	
3 Terms, definitions and abbreviations	
3.1 Terms and Definitions	
3.2 Abbreviations	
4 Design Basics	
4.1 FSRU Overview	
4.2 Main design principles for process facilities	
4.3 Reliability, availability and maintainability of FSRU	
4.4 Special requirements for FSRU as LNG carrier	
4.5 FSRU Special Research	
5 Health, Safety and Environmental Requirements	
5.1 General requirements	
5.2 Environmental factors affecting water heating and cooling	
5.3 Security	
6 Mooring and positioning	
7 Hull Design	
7.1 General requirements	
7.2 Different operating models	
7.3 Hull design environmental conditions	
8 LNG Storage	
8.1 Specific requirements for cargo hold pressure management	
8.2 Specific requirements for overpressure protection of LNG supply ships	
8.3 Rollover risk	
9 LNG loading and unloading system	
9.1 General requirements	
9.2 Natural Gas Transmission: Natural Gas Transmission Requirements	
9.3 LNG Sampling	
10 BOG treatment and recovery	
10.1 General requirements	

- 10.2 Flexibility of LNG cargo tank design pressure
- 10.3 Recondenser
- 10.4 BOG compressor
- 11 Regasification equipment
 - 11.1 LNG pump
 - 11.2 LNG Regasification System
 - 11.3 Compensatory temperature device
 - 11.4 Ventilation of the regasification system
- 12 Gas export
 - 12.1 High integrity pressure protection system
 - 12.2 Metering of gas transport
 - 12.3 Odorization system
- 13 Public systems
 - 13.1 General requirements
 - 13.2 Cooling and heating media
- 14 Process and safety control systems
 - 14.1 General requirements
 - 14.2 Interface between FSRU and natural gas export
 - 14.3 Onshore/offshore communications
- 15 Security Management
- 16 Debugging
- 17 Inspection and maintenance
 - 17.1 General requirements
 - 17.2 Cargo hold
 - 17.3 Cabin pumps
 - 17.4 Regasification Equipment
 - 17.5 Recondenser
 - 17.6 Hoisting/lifting facilities
- 18 Corrosion and Protection
- 19 Converting existing units into floating LNG units
- Appendix A (Informative) Structure Number Comparison List
- Appendix B (Informative) List of Technical Differences and Their Causes
- Appendix C (Informative) Regasification System Description
 - C:1 Overview
 - C:2 Open loop (direct contact) gasifier

C:3 Open (intermediate fluid) gasifier

C:4 Closed loop evaporator

C:5 Hybrid gasifier

C:6 Air vaporizer

Reference

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents"

Drafting:

This document is Part 2 of GB/T 43130 "Liquefied natural gas plants and equipment - Design of floating liquefied natural gas plants":

GB/T 43130 has published the following parts:

--- Part 1: General requirements;

--- Part 2: Particular requirements for floating storage and regasification units:

This document is modified to adopt ISO 20257-2:2021 "Liquefied natural gas plants and equipment - Design of floating liquefied natural gas plants" Part 2: Particular requirements for floating storage and regasification units:

Compared with ISO 20257-2:2021, this document has many structural adjustments: A comparison of the structural number changes between the two documents See Appendix A for the table:

This document has many technical differences compared to ISO 20257-2:2021:

A list of these technical differences and their reasons is given in Appendix B:

The following editorial changes were made to this document:

--- Added examples of dry chemical fire extinguishing systems (see 5.3:5:2:5), scope of application of mooring positioning systems (see Chapter 6), and Detailed description of "Region" (see 9.2:4:2), pressure vessel specifications (see 10.3);

--- Replace the concentration unit from ppm to mg/L (see 5.2), and the pressure unit from bar to Pa [see 10.2, C:3:2a)];

--- Deleted the reminder of the probability of major accidents (see 5.3:4:1), referenced NPFA standard (see 5.3:5:2:2), 5:3:5:3:1 items Notes in e) and f) (see 5.3:5:3:1), LNG custody transfer guidelines (see 9.3);

--- EN 13645 (see 5.3:5:2:1) is replaced by the informative reference IMO 951 (23), GB/T

21412.2 replaces ISO 13628-2 (see 9.2:2:3) and GB/T 16647 replaced ISO/IEC 10027 (see 9.2:2:3):

Introduction

The purpose of this document is to establish the design and construction of floating liquefied natural gas plants and equipment applicable to floating liquefied natural gas plant projects:

Professional design criteria such as process, cryogenic piping, automatic control, safety and environmental protection provide functional support for the design of floating liquefied natural gas (LNG) devices:

GB/T 43130 "Liquefied Natural Gas Plants and the design of a floating liquefied natural gas unit is proposed to consist of two parts:

--- Part 1: General requirements: The purpose is to provide general requirements for all floating liquefied natural gas units (including liquefaction, storage, evaporation, transfer and treatment Provides functional guidance for the design and operation of plants for handling liquefied natural gas:

--- Part 2: Particular requirements for floating storage and regasification units: The purpose is to provide specific requirements for floating storage and regasification units described in GB/T 43130.1:

It provides specific requirements and guidance for the design and operation of a FSRU:

FSRU is a widely used floating liquefied natural gas unit that has the functions of receiving, storing and regasifying liquefied natural gas, as well as delivering it to land:

The function of natural gas pipeline transportation and metering: The general requirements for the design of floating liquefied natural gas units have been specified in GB/T 43130.1 this document supplements the FSRU special design requirements: This document does not specify the FSRU propulsion unit settings and special Requirements for establishing a regulatory system:

When a self-propelled FSRU is used as a liquefied natural gas carrier, the technical requirements for liquefied natural gas carriers shall be referred to:

Floating liquefaction plant and equipment for liquefied natural gas Design of natural gas installations Part 2: Floating Particular requirements for storage and regasification units

1 Scope

This document specifies the technical requirements for the design and operation of floating storage and regasification units (FSRU) as described in GB/T 43130.1: