

ICS 75.200
CCS E 24



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

GB/T 43130.1-2023

**Installation and equipment for liquefied natural gas - Design of
floating LNG installations - Part 1: General requirements**

液化天然气装置和设备 浮式液化天然气装置的设计 第1部分：通用要求

(English Translation)

Issued on: September 7, 2023

Implemented on: January 1, 2024

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

Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative reference documents	
3 Terms and definitions, abbreviations	
4 Design Basics	
4.1 Site selection and meteorological and oceanographic conditions	
4.2 Design Guidelines	
5 Health, safety, environment	
5.1 General requirements	
5.2 Safety environmental protection barrier identification and design requirements	
5.3 Environmental factors	
5.4 Safety precautions	
5.5 Occupational health and industrial hygiene considerations	
5.6 Ergonomics and Human Factors Engineering	
6 Mooring positioning system	
6.1 General requirements	
6.2 Permanent mooring in open water	
6.3 Permanent mooring near shore or quay	
6.4 Mooring system design under special conditions	
6.5 Temporary mooring for loading and unloading LNGC34	
6.6 Pier mooring infrastructure design	
6.7 Transfer of materials and personnel	
7 Hull design	
7.1 Hull structure design	
7.2 Stability and watertight integrity	
8 LNG storage	
8.1 General	
8.2 Sloshing load	
8.3 Boil-off gas treatment	
8.4 Anti-rollover management	
8.5 LNG storage and discharge system	

- 9 LNG loading and unloading system
 - 9.1 General requirements
 - 9.2 Loading and unloading system design
- 10 Boil-off gas treatment and recovery
 - 10.1 General
 - 10.2 Evaporative gas collection system
 - 10.3 Gas return system
 - 10.4 Evaporative gas recovery
 - 10.5 BOG compressor
 - 10.6 Flare/Vent
- 11 Cryogenic pipeline
 - 11.1 General
 - 11.2 Pipe components
 - 11.3 Pipeline
 - 11.4 Valve
 - 11.5 Thermal insulation layer
 - 11.6 Preventing zinc contamination of austenitic steels
- 12 Public systems
 - 12.1 System classification
 - 12.2 Electrical
 - 12.3 Instrument compressed air systems
 - 12.4 Hydraulic system
- 13 Process
 - 13.1 General requirements
 - 13.2 Process control system
 - 13.3 Ship control system
 - 13.4 Interfaces between floating LNG units and onshore
 - 13.5 Safety control system
 - 13.6 Closed-circuit television surveillance system (CCTV)
 - 13.7 Measurement
 - 13.8 Communication
 - 13.9 Environmental monitoring and control
- 14 Security Management
 - 14.1 General requirements
 - 14.2 Sea lanes

- 14.3 Overland access
- 15 Debugging
 - 15.1 General requirements
 - 15.2 System partitioning and debugging plan
 - 15.3 Implementation
 - 15.4 Security
 - 15.5 Commissioning Organization
 - 15.6 Delivery
 - 15.7 Startup and performance testing
- 16 Inspection and Maintenance
 - 16.1 General
 - 16.2 Specific requirements for floating LNG units
- 17 Protection and anti-corrosion
 - 17.1 Painting
 - 17.2 Cathodic protection
 - 17.3 Anti-corrosion of seawater and fire-fighting pipelines
- 18 Operational Preparation
- 19 Specific requirements for retrofitting of floating LNG units
- Appendix A (informative) Structure number comparison list
- Appendix B (informative) List of technical differences and their causes
- Appendix C (normative) LNG loading and unloading system design basis and standards
 - C.1 Loading and unloading system solution
 - C.2 Key points
 - C.3 Loading and unloading arrangements
 - C.4 Operating envelope
- Reference

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting.

This document is Part 1 of GB/T 43130 "Liquefied natural gas installations and equipment - Design of floating LNG installations".

GB/T 43130 has published the following parts.

---Part 1: General requirements.

This document has been modified to adopt ISO 20257-1:2020 "Liquefied natural gas plants and equipment - Design of floating liquefied natural gas plants, Part 1 Part. General Requirements".

Compared with ISO 20257-1:2020, this document has many structural adjustments. A comparison of the structural number changes between the two documents is at a glance.

See Appendix A for the table.

Compared with ISO 20257-1:2020, there are many technical differences between this document and the clauses involved in the outer margins.

The straight single line (?) is marked. A list of these technical differences and their causes is provided in Appendix B.

The following editorial changes have been made to this document.

---Deleted some informative content such as notes (see 3.1.2, 3.1.3, 4.1.1.1, 4.1.1.4, 4.2.3.1.2, 5.2.1, 5.3.2.3, 5.3.3, 6.7, 8.4.1, 10.1, 10.3, 11.6);

---Consolidate the siting investigation requirements applicable to floating LNG units at berthing terminals (see 4.1.1.1.4);

---Supplementary explanation on the value of K (see 4.2.3.2.1.2);

---Added operational procedures, maneuvering requirements, risk assessments, checklists and examples of transfer compatibility questionnaires for ship-to-ship transfer operations Please refer to the description in China Classification Society's "Guidelines for Ship-to-Ship Transfer" (see 4.2.6.5);

---Deleted the informative content of environmental impact assessment (see 5.3.2.3);

---Deleted the informative content on the characteristics of floating LNG units (see 5.4.1);

---Replaced IEC 61508 with the informative reference GB/T 20438 (see 5.4.2.4);

---Deleted the informative content of dynamic positioning (see Chapter 6);

---Replaced ISO.19900 with the informative reference GB/T 23511 (see 6.6.1);

---Replaced EN1473 and NFPA59A with the informative GB/T 22724 and GB/T 20368 (see 8.5.1);

---Deleted the informative content generated by BOG (see 10.1);

---Deleted the informative content of the gas return system (see 10.3);

---Deleted the informative content that aluminum or zinc is heated together with steel or copper (see 11.6);

---Replaced ISO 16903 with the informative reference GB/T 19204 (see 11.2.1);