ISO 20257-2:2021 (E)

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

Contents

Foreword

- 1 Scope
- 2 Normative references
- 3 Terms, definitions and abbreviated terms
 - 3.1 Terms and definitions
 - 3.2 Abbreviated terms
- 4 Basis of design
 - 4.1 General description of FSRU
 - 4.2 Main design criteria for process facilities
 - 4.3 Reliability, availability and maintainability of LNG floating installation
 - 4.4 Specific requirements for FSRU operating as LNG carrier
 - 4.5 Specific FSRU studies
 - 4.5.1 General
 - 4.5.2 Environmental impact of seawater intake and discharge study
 - 4.5.3 Recirculation study
 - 4.5.4 Scour protection study
- 5 Specific health, safety and environmental issues
 - 5.1 General
 - 5.2 Environmental considerations related to water heating and cooling issues
 - 5.3 Safety considerations
 - 5.3.1 General requirements
 - 5.3.2 Layout constrains
 - 5.3.3 Layout constraints with respect to surroundings
 - 5.3.3.1 Applicability
 - 5.3.3.2 Qualitative analysis
 - 5.3.3.3 Confirmation by calculation
 - 5.3.4 Layout constraints with respect to facility arrangement
 - 5.3.4.1 Qualitative analysis
 - 5.3.4.2 Confirmation by calculation
 - 5.3.5 Risk prevention measures
 - 5.3.5.1 General
 - 5.3.5.2 Active fire protection
 - 5.3.5.2.1 Active fire protection philosophy
 - 5.3.5.2.2 Systems design
 - 5.3.5.2.3 Water systems
 - 5.3.5.2.4 Foam systems
 - 5.3.5.2.5 Dry chemicals systems
 - 5.3.5.3 Fire, cold spill and gas detection system
 - 5.3.5.4 Drainage systems
 - 5.3.5.5 Emergency response
 - 5.3.5.6 Safety integrity levels
- 6 Mooring and stationkeeping
- 7 Hull design

8 LNG storage

- 8.1
- Specific requirements for cargo tank pressure management

- 8.2 Specific requirements for LNGC overpressure protection
- 8.3 Rollover risk

9 Transfer systems

- 9.1 General
- 9.2 Send-out natural gas: NG gas transfer requirements
- 9.2.1 Functional requirements
- 9.2.2 Transfer systems design
- 9.2.2.1 Composition
- 9.2.2.2 Articulated piping solutions
- 9.2.2.3 Flexible pipe solutions
- 9.2.3 Emergency disconnection
- 9.2.3.1 Quantitative risk analysis inputs
- 9.2.3.2 Emergency disconnection system
- 9.2.3.3 Flange-to-flange connection
- 9.2.4 Operating envelope
- 9.2.4.1 General
- 9.2.4.2 Operating of transfer systems equipped with EDS
- 9.2.4.3 Operating of transfer systems not equipped with EDS
- 9.3 LNG sampling

10 BOG handling and recovery

- 10.1 General
- 10.2 LNG tank design pressure flexibility
- 10.3 Specific requirements for recondenser
- 10.4 Specific requirements for gas compressors
- 10.4.1 General
- 10.4.2 Specific functional requirements for LD compressors
- 10.4.3 Specific functional requirements for HD compressors
- 10.4.4 Specific functional requirements for HP or MSO compressors

11 Regasification equipment requirements

- 11.1 LNG pumps
- 11.1.1 General
- 11.1.2 Functional requirements
- 11.1.3 Materials selection
- 11.1.4 In-tank LNG pump
- 11.1.5 HP LNG pump
- 11.2 LNG vaporization system
- 11.2.1 Functional requirements
- 11.2.2 Vaporization type
- 11.2.3 Materials selection
- 11.2.4 Protective coating
- 11.2.5 Marine growth
- 11.2.6 Stability/vibration
- 11.2.7 Safety relief valves
- 11.3 Trim heater
- 11.4 Venting from regasification systems
- 12 Gas send out
 - 12.1 High integrity pressure protection system
 - 12.1.1 Send-out pressure control
 - 12.1.2 Typical description of HIPPS
 - 12.1.3 Design requirements for HIPPS
 - 12.2 Send-out gas metering
 - 12.2.1 Uses of send-out gas metering
 - 12.2.2 Measurement devices type
 - 12.2.3 Accuracy
 - 12.2.4 External influences
 - 12.2.5 Gas chromatograph Gas analyser
 - 12.2.6 Sparing philosophy
 - 12.2.7 Z-configuration
 - 12.3 Odorization systems

- 13 Utilities
 - 13.1 General
 - 13.2 Cooling and heating medium
 - 13.2.1 Cooling medium
 - 13.2.1.1 General
 - 13.2.1.2 Seawater for equipment
 - 13.2.1.3 Freshwater for equipment
 - 13.2.2 Heating medium
 - 13.2.2.1 Seawater
 - 13.2.2.2 Steam
 - 13.2.3 Nitrogen system
 - 13.2.4 Fuel gas

14 Process and safety control systems

- 14.1 General requirements
- 14.2 Interfaces between FSRU and gas export connection
- 14.3 Communication onshore/offshore
- 15 Security management
- 16 Commissioning

17 Inspection and maintenance

- 17.1 General requirements
- 17.2 Cargo tank
- 17.3 In-tank LNG pump
- 17.4 Regasification equipment
- 17.4.1 HP LNG pump
- 17.4.2 LNG vaporizer
- 17.5 Recondenser
- 17.6 Handling/Crane equipment
- 18 Preservation and corrosion protection
- 19 Conversion of existing unit to floating LNG installations
- Annex A (informative) Regasification system description
 - A.1 General
 - A.2 Open loop (direct contact) vaporizer
 - A.3 Open loop (intermediate fluid) vaporizer
 - A.4 Closed loop vaporizer
 - A.5 Combined vaporizers
 - A.6 Ambient air vaporizers

Page count: 40