

**PROFESSIONAL STANDARD OF THE PEOPLE'S
REPUBLIC OF CHINA
中华人民共和国行业标准**

**Technical Standard for Vehicle Liquefied
Natural Gas Fueling Station
液化天然气 (LNG) 汽车加气站技术规范**

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In accordance with the *Measures of Industrial Standard Management of Energy Field* (trial), National Energy Administration approves the *Technical Standard for Vehicle Liquefied Natural Gas (LNG) Fueling Station* as the industrial standard after reviewing, with the number of NB/T1001-2011, which would be implemented from November 1, 2011.

The National Energy Administration is responsible for the management of *the Standard*, the North China Municipal Engineering Design & Research Institute is responsible for the explanation of the specific technical content, and China Building Industry Press organized by Petroleum & Gas Division of National Energy Administration is responsible for the publication and distribution.

National Energy Administration

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July 28, 2011

Foreword

The Standard is drafted in accordance with the provision set out in the *Directives for Standardization-Part1: Structure and Drafting of Standards* GB/T1.1-2009.

The Standard is formulated in accordance with the requirement of *Notice on the First Batch of Preparation (Revision) Plan of the Industrial Standard in Energy Field* (GNKJ [2010] No.320) for the purpose of standardizing the construction of LNG fueling stations, unifying the technical requirement and achieving safety and reliability with advanced technology and reasonable economy.

The Standard is divided into 10 chapters and 2 annexes, which mainly includes the following contents: scope, normative references, terms, classification of gas fueling station and selection of site, plane arrangement inside the station, process facilities, fire fighting equipment and water supply and drainage, electric, buildings and structures, heating and ventilation, afforest, construction and acceptance.

The Standard is put forward by Petroleum & Gas Division of National Energy Administration of PRC, which will be put under the centralized management of it.

During the implementation process of *the Standard*, every unit is expected to summarize the experience and accumulate data according to the engineering practice. In case *the Standard* is need to be modified and supplemented, please send the opinions and relevant data to the No.4 design institute of North China Municipal Engineering Design & Research Institute *Technical Standard for Vehicle Liquefied Natural Gas (LNG) Fueling Station* (Address: No.99, Qixiangtai Road, Hexi District, Tianjin City Post code: 300074) for our reference when we revise it.

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Technical Standard for Vehicle Liquefied Natural Gas Fueling Station

1 Scope

1.0.1 *The Standard* stipulates the provisions on the design, construction, etc. of the liquefied natural gas (LNG) fueling station.

1.0.2 The standard is suitable for the design, construction and acceptance of the following newly-built, expanded and rebuilt fueling stations with the storage volume of LNG no more than 180m³, operating pressure of LNG no more than 1.6MPa and operating pressure of L-CNG no more than 25.0MPa:

- 1) Liquefied natural gas (LNG) fueling station (hereinafter referred to as LNG fueling station);
- 2) Liquefied compressed and gasified natural gas fueling station (hereinafter referred to as L-CNG fueling station);
- 3) The gas fueling station in which LNG and L-CNG are jointly constructed (hereinafter referred to as LNG/L-CNG fueling station);
- 4) The station in which LNG, L-CNG and LNG/L-CNG gas and oil fueling station are jointly constructed (hereinafter referred to as gas and oil fueling station).

1.0.3 In addition to comply with *the Standard*, the design and construction of the gas fueling station shall comply with the currently national mandatory standard.

2 Normative references

The standards below are essential for the application of *the Standard*. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard.

For the undated documents so quoted, the latest editions shall be applicable to this Standard.

- | | |
|------------|--|
| GB 150 | Steel pressure vessels |
| GB/T 11790 | General principles for cold insulation technique of equipments and pipes |
| GB/T 14976 | Stainless steel seamless tubes for fluid transport |
| GB 18047 | Compressed natural gas for vehicle use |
| GB 18442 | Cryo-insulation pressure vessels |
| GB/T 19204 | General characteristics of liquefied natural gas |

- GB/T 20368 Production, storage and shipping of liquefied natural gas (LNG)
- GB 50016 Code of design of building fire prevention
- GB 50019 Code for design of heating and ventilation and air conditioning
- GB 50052 Code for design of supply and distribution systems for electric power
- GB 50057 Code for design of protection for buildings against lightning
- GB 50058 Code for design of electric systems in places with explosion and fire
- GB 50217 Code for design of cables of electric engineering
- GB 50140 Code for design of extinguisher distribution in buildings
- GB 50156 Code for design and construction of motor gasoline and gas filling station
- GB 50191 Code of anti-seismic design for buildings
- GB 50235 Code for construction and acceptance of industrial metallic pipelines
- GB 50236 Code for construction and acceptance of field equipment and industrial pipe welding engineering
- GB 50257 Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering
- GB 50264 Design code for insulation engineering of industrial equipment and pipe
- GB 50126 Code for construction of industrial equipment and pipeline insulation engineering
- GB 50303 Code of acceptance of construction quality of electrical installation in building
- GB 50316 Design code for industrial metallic piping
- GB 50484 Code for technical of construction safety in petrochemical engineering
- GB 50493 Specification for design of combustible gas and toxic gas detection and alarm for petrochemical industry
- GB 50517 Code for construction quality acceptance of metallic piping in petrochemical engineering
- HG/T 20592~20635 Steel Pipe Flanges, Gasket and Bolting
- SH/T 3412 Specification for selection inspection and acceptance of metallic hose for piping in petrochemical industry
- SH/T 3521 Technical code of construction of instrumentation engineering for petrochemical industry
- SY 0007 Design standard of corrosion control for steel pipeline and storage tank
- TSG D0001 Pressure Pipe Safety Technology Supervision Regulation for Industrial Pressurized Pipe
- TSG R0004 Supervision Regulation on Safety Technology for Stationary Pressure Vessel
- TSG ZF001 Safety Technical Supervision Regulations for Safety Valves

3 Terms

3.0.1 Liquefied natural gas (LNG)

It is a kind of colorless fluid under the liquid state, which mainly consists of methane, and the component may contains a small amount of ethane, dimethylmethane, nitrogen or other component that often exist in the natural gas.

3.0.2 Compressed natural gas (CNG)

Refer to the gaseous gas that is pressed to the pressure of no more than 25MPa.

3.0.3 LNG fueling station

A special place that fuels the LNG fuel for the LNG car gas tank

3.0.4 L-CNG fueling station

Transferred from LNG to CNG, it is a special place that fuels CNG fuel for CNG car gas tank.

3.0.5 LNG/L-CNG fueling station

A collective name, under which, LNG fueling station and L-CNG fueling station are jointly constructed.

3.0.6 Oil and gas fueling station

A collective name, under which, oil fueling station and gas fueling station are jointly constructed

3.0.7 Buried LNG tank

It is a kind of LNG tank that is installed in the tank pool and the top of the tank lower than the ground elevation by 0.2m within 4m surrounding area.

3.0.8 Underground LNG tank

It is a kind of LNG tank that is installed in the tank pool, and over half of the tank body is installed under the ground within 4m surrounding area.

3.0.9 Dike

It is a kind of structure that is used to dam the leaked LNG when the LNG tank accident occurs.

3.0.10 Design pressure

In the design of tank, equipment or pipeline, it is a kind of pressure that is used to determine the minimum allowable thickness or the physical property of its components. The design pressure that determines the thickness of any special components includes hydrostatic head. The determination of the design pressure includes the hydrostatic head.

3.0.11 Operating pressure

The highest pressure may be reached under the normal operating condition of the pressure vessel and pipeline system.

3.0.12 LNG point of transfer

The fixed joint that is used to unload and loaded LNG on the LNG transport vehicle

3.0.13 Station house

A building that is used for the management and operation of the oil and gas fueling station

3.0.14 Fueling platform

A platform that is used to install dispenser

3.0.15 LNG (CNG) dispenser

Special equipment that is used to fuel LNG (CNG) for LNG (CNG) car gas cylinder and that is equipped with metering device and valuation device.

3.0.16 Shut off device

A kind of safety device which has automatic shut-off function of gas fueling system when the filling hose is under a certain exogenic action.

3.0.17 Fueling connector

Special equipment that fuels LNG (CNG) for LNG (GNG) gas cylinder through the connection of auxiliary dispenser with the filling hose.

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