

Code for Facilities, Technology and Inspection for Stationary Refueling of Compressed City Gas

Transportation Vehicles

Gas Technical Standards Committee

Byung-Hak Choi, Professor of Gangneung-Wonju

National University

Vice-Chairman Gi-hyun Jang, Professor of Inha University

Yoon-Gil Hwang, Manager of Energy Safety Department,

Ministry of Trade, Industry & Energy

Chae-Sik Kwak, Director of Technology and Safety,

Korea Gas Safety Corporation

High-Pressure Gas

Byung-Hak Choi, Professor of Gangneung-Wonju

National University

Seong-Jin Song, Vice president of SungKyunKwan

University

Beom-Seok Lee, Professor of KyungHee University

Chun-Seok Yoon, CEO of Hanul E&R

Yeong-Hoon Ann, Professor of HanYang University

Liquefied Petroleum Hyeong-Hwan Ann, Professor of Korea National

Gas University of Transportation

Hyuk-Myun Kwon, Professor of YonSei University

Jeong-Sik Cheon, Director of E1 CO., Ltd.

kyung-Soo Kang, Senior Researcher of Korea Institute of

Energy Research

Yong-Kwon Lee, Vice-President of DaeYeon Co., Ltd.

Urban Gas Dong-Il Shin, Professor of MyongJi University

Jeong-Hoon Kim, Principal Researcher of Korea Institute

of Machinery and Materials

In-Cheol Jeong, Director of Yesco Co., Ltd. Gi-hyun Jang, Professor of Inha University

Hydrogen Gas Kwang-Won Lee, Professor of HoSeo University

Ho-young Jeong, Professor of ChonNam National

University

In-Yong Kang, CEO of H&Power Co., Ltd.

Woon-Bong Baek, Senior Researcher of Korea Institute

of Standards and Science

Korea Gas Safety Code

This code is the detailed standards established by the Gas Technical Standards Committee in accordance with Article 22-2 of "High-Pressure Gas Safety Control Act", Article 45 of "Safety Control and Business of Liquefied Petroleum Gas Act" and Article 17-5 of "Urban Gas Business Act", Article 48 of "Promotion of Hydrogen Economy and Hydrogen Safety Control Act". Since conformity to this Code is deemed to conform to the laws and regulations above, this Code must be observed.

This English version of KGS Code is an informal translation from its Korean original version. Only the Korean version of the KGS Code is officially effective since it has been authorized by the Gas Technical Standards Committee (KGS Code Committee). The secretariat of the Committee reserves the right to revise the English version whenever translation errors are found.

History of Establishment and Revision of KGS Code	
Code Number	KGS FP653 ²⁰²¹
Code Title	Code for Facilities, Technology and Inspection for Stationary Refueling of Compressed City Gas Transportation Vehicles

Date of	Description
Establishment/Revision	
September 24, 2010	Established (Notification of the Ministry of Knowledge Economy No. 2010-374)
January 5, 2012	Revised (Notification of the Ministry of Knowledge Economy No. 2011-635)
November 17, 2014	Revised (Notification of the Ministry of Trade, Industry & Energy No. 2014-589)
July 3, 2015	Revised (Notification of the Ministry of Trade, Industry & Energy No. 2015-372)
August 7, 2015	Revised (Notification of the Ministry of Trade, Industry & Energy No. 2015-436)
January 8, 2016	Revised (Notification of the Ministry of Trade, Industry & Energy No. 2016-006)
January 8, 2016	Revised (Notification of the Ministry of Trade, Industry & Energy No. 2016-006)
September 29, 2017	Revised (Notification of the Ministry of Trade, Industry & Energy No. 2017-475)
August 10, 2018	Revised (Notification of the Ministry of Knowledge Economy No. 2018-419)
April 5, 2019	Revised (Notification of the Ministry of Knowledge Economy No. 2019-218)
May 21, 2019	Revised (Notification of the Ministry of Knowledge Economy No. 2019-317)
July 16, 2019	Revised (Notification of the Ministry of Trade, Industry & Energy No.
	2019-434)
March 18, 2020	Revised (Notification of the Ministry of Trade, Industry & Energy No. 2020-169)
September 4, 2020	Revised (Notification of the Ministry of Trade, Industry & Energy No. 2020-523)
January 12, 2021	Revised (Notification of the Ministry of Trade, Industry & Energy No. 2021-012)

June 8, 2021	Revised (Notification of the Ministry of Trade, Industry & Energy No. 2021-448)
October 8, 2021	Revised (Notification of the Ministry of Trade, Industry & Energy No. 2021-699)

Table of Contents

1. General	1
1.1 Scope	1
1.2 Validity of Code	1
1.3 Definitions	1
1.4 Application of Codes (currently not used)	5
1.5 Interim Measures	5
1.5.1 Interim measure for installation of filters	5
1.5.2 Interim measure for bollards installation < Newly established on April 5, 2019>.	5
1.6 Restriction on Use of Appliances	5
2. Installation Standard	6
2.1 Layout standard	6
2.1.1 Distance from protected installations	6
2.1.2 Distance from naked lights	6
2.1.3 Distance from other facilities	6
2.1.4 Distance from business place perimeter	7
2.1.5 Distance from road boundary	7
2.1.6 Distance from railroad	7
2.1.7 Securement of open space	7
2.2 Foundation Standard	7
2.2.1 Soil survey	8
2.2.2 Foundation works	11
2.2.3 Fixation of storage tanks	13
2.3 Storage Facility Standard	17
2.3.1 Materials of storage facilities	17
2.3.2 Construction of storage facilities	17
2.3.3 Installation of storage facilities	17
2.4 Gas Facility Standard	21
2.4.1 Materials of gas facilities	21
2.4.2 Construction of gas facilities (currently not used)	22
2.4.3 Thickness and strength of gas facilities (currently not used)	22
2.4.4 Installation of gas facilities	22
2.4.5 Performance of gas facilities	24
2.5 Piping Standard	24
2.5.1 Piping materials	24

	2.5.2 Configuration of piping systems (currently not used)	25
	2.5.3 Thickness of piping	25
	2.5.4 Jointing of piping	25
	2.5.5 Measures for absorption of expansion and contraction of piping	25
	2.5.6 Insulation of piping (currently not used)	26
	2.5.7 Installation of piping	26
	2.5.8 Installation of associated piping facilities	28
	2.5.9 Performance of piping	28
	2.5.10 Marking of piping systems	28
2.6	Accident Prevention Facility Standard	29
	2.6.1 Installation of overpressure safety devices	29
	2.6.2 Installation of gas leak detection and alarm and automatic shutoff systems	42
	2.6.3 Installation of emergency shutoff devices	45
	2.6.4 Installation of backflow prevention devices	46
	2.6.5 Installation of backfire prevention devices (currently not used)	46
	2.6.6 Installation of hazard monitoring and control devices (currently not used)	
	2.6.7 Installation of accidental start prevention devices	46
	2.6.8 Installation of explosion-proof electric facilities	46
	2.6.9 Installation of ventilation systems (not applicable)	46
	2.6.10 Installation of corrosion protection systems	46
	2.6.11 Installation of static eliminators	48
	2.6.12 Installation of toppling prevention devices (not applicable)	49
	2.6.13 Installation of insulation facilities (currently not used)	49
	2.6.14 Installation of emergency release couplers	49
	2.6.15 Installation of protection facilities for refueling dispensers	49
2.7	Damage Control Facility Standard	50
	2.7.1 Installation of dikes (not applicable)	50
	2.7.2 Installation of protected walls	50
	2.7.3 Installation of sprinkler systems (not applicable)	54
	2.7.4 Installation of detoxification facilities (not applicable)	54
	2.7.5 Installation of neutralization and transfer facilities (not applicable)	55
	2.7.6 Installation of wind indicators (not applicable)	55
	2.7.7 Installation of fire extinguishing facilities	55
	2.7.8 Installation of passages (not applicable)	55
	2.7.9 Installation of temperature rise prevention facilities	55
2.8	Associated Facilities Standard	57
	2.8.1 Installation of measuring facilities	57

2.8.2 Installation of emergency power systems	58
2.8.3 Installation of communication systems	59
2.8.4 Installation of operation facilities	59
2.9 Marking Standard	60
2.9.1 Boundary markings and warning signs	60
2.9.2 Identification marks and hazard signs (not applicable)	62
2.9.3 Perimeter fences	62
3. Technical Standard	63
3.1 Safety Maintenance Standard	63
3.1.1 Maintenance of foundations (currently not used)	63
3.1.2 Maintenance of storage facilities	63
3.1.3 Maintenance of gas facilities	66
3.1.4 Maintenance of piping systems (currently not used)	67
3.1.5 Maintenance of accident prevention facilities	67
3.1.6 Maintenance of damage control facilities (currently not used)	67
3.1.7 Maintenance of utilities	67
3.2 Manufacturing and Refueling Standard	67
3.2.1 Preparation for manufacturing and refueling (currently not used)	67
3.2.2 Manufacturing and refueling operation	67
3.2.3 Follow-up measures after manufacturing and refueling	68
3.3 Self Inspection Standard	68
3.3.1 Inspection of overall installation (currently not used)	68
3.3.2 Inspection of foundations (currently not used)	68
3.3.3 Inspection of storage facilities (not applicable)	68
3.3.4 Inspection of gas facilities	68
3.4 Repairs, Cleaning and Removal Standard	71
3.4.1 Preparation for repairs, cleaning and removal	71
3.4.2 Repairs, cleaning and removal works	72
3.4.3 Follow-up measures after repairs, cleaning and removal	73
4. Inspection Standard	74
4.1 Inspection Items	74
4.1.1 Intermediate inspection	74
4.1.2 Completion inspection	74
4.1.3 Regular inspection	75
4.1.4 Occasional inspection	75
4.2 Inspection Methods	75
4.2.1 Intermediate inspection	76

Code for Facilities, Technology and Inspection for Stationary Refueling of Compressed City Gas Transportation Vehicles

1. General

1.1 Scope

This Code applies to the facilities, technology and inspection for refueling installations for compressed city gas transportation vehicles (installations for refueling of compressed gas transportation vehicles with compressed city gas supplied through piping or storage tanks; hereinafter referred to as "refueling installations") among gas refueling facilities in conformity to the Enforcement Regulation of the Urban Gas Business Act (hereinafter referred to as "Enforcement Regulation"), Article 2, Clause 4, No.3. <Revised on January 5, 2012>

1.2 Validity of Code

- **1.2.1** This Code has passed the deliberation and resolution by Gas Technical Standards Committee (Bill No. 2021-7, September 10, 2021) in conformity to the High Pressure Gas Safety Control Act, Article 33-2, in accordance with the Urban Gas Business Act (hereinafter referred to as "Act"), Article 17-5, Clause 2, has been approved by the Ministry of Trade, Industry & Energy (Notification No. 2021-699 of the Ministry of Trade, Industry & Energy, October 8, 2021), and is valid and effective as the detailed standards in conformity to the Act, Article 17-5, Clause 1.
- **1.2.2** Conformity to this Code is deemed to conform to Table 6-2, No. 2 of the Enforcement Regulation in accordance with the Act, Article 17-5, Clause 4. <Revised on August 7, 2015>

1.3 Definitions

The terms used in this Code are defined as follows:

1.3.1 "Combustible gases" are acrylonytrile, acrylaldehyde, acetaldehyde, acetylene, ammonia, hydrogen, hydrogen sulfide, hydrogen cyanide, carbon monoxide, carbon disulfide, methane, methane chloride, methane bromide, ethane, ethane chloride, vinyl chloride, ethylene, ethylene

ı