

The Reformation of Gas Technical Standards System

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Abstract – The current gas regulations have been reformed into a new technical standards system called as “KGS (Korea Gas Safety) Code” system. Korea Gas Safety Corporation has developed a new framework of technical standards classification method and will manage the new technical standards system in compliance with the mandatory requirements of gas regulations. This study will cover an overall view of the reformation and show “KGS Code” in detail.

Key words : gas technical standards system, KGS code, performance standards, specific standards

I. Introduction

In order to secure public safety in Korea, technical standards are regulated by laws in many fields such as electricity, communication, gas, etc. However, several questions have been raised constantly by industry and academic world to reconsider the form of technical standards. Regarding the current gas regulations in Korea, Enforcement Regulations Attached Table and a Notice related to high-pressure gas, liquefied petroleum gas and city gas are intermingled with a combined 1,028 administrative items and 3,213 technical standards.

Since government takes full responsibility of the enactment and revision of technical standards, many steps such as legislative advance notice and examinations by the Regulatory Reform Committee are required and, therefore, at least five months are required to complete the administrative procedures. Some problems related to the current gas regulations have been occurred because all of the technical standards are regulated by laws currently. First, even if new technology has invented, adoption of the new technology has to be delayed since the amendment of regulations to adopt the new technology should be made first. It is the cause to break the willingness in investing money to develop new technology. It can eventually cause decline of the national competitive power in industry. As an example, a domestic company had invented a product to check gas leaks by air bubbles, but since it took one year and two months to put the product into practical use, export of the product was delayed and

it caused the company loss of 0.6 million dollars. Second, delays in solving problems occurred by gas accidents and safety check-ups have made prevention of accidents difficult and it became hard to reduce the number of gas accidents. Third, many concerns about falling behind from the global trends have risen because of the rigidities of procedures for enactment and amendment of the technical standards. Moreover domestic manufacturers need to produce two different kinds of products, one for domestic use following domestic laws and the others for export [1].

II. Case Study on Applications of Technical Standards

2.1. Applications of Technical Standards in Japan

Japan has created its performance-based regulatory system based on “A 3-year deregulation plan (1998~2000)” since 1997. In performance-based regulatory system, general rules to secure gas safety are regulated by Enforcement Regulations as a form of “Performance-based Regulations” and government instructs “Interpretation Guidelines”. The high pressure gas safety institute of Japan (KHK) writes drafts of “Interpretation Guidelines” and this guidelines take effects as instructions by Ministry of Economy, Trade and Industry (METI). “Specific Standards” which are approved to have equivalent effects as “Interpretation Guidelines” by government are also operated. Any technology can be introduced in Japan as long as it is compatible with performance-based regulations and since specific technical standards are separated from laws, problems caused by delays in enactment and amendment are preventable.

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2.2. Applications of Technical Standards in USA

Unchangeable and major provisions among technical specifications are regulated by Code of Federal Regulations (CFR) in USA. More specified and substantial measures are operated as voluntary standards by standards bodies like American Society of Mechanical Engineers (ASME) and American Petroleum Institute (API) and those standards are cited in laws. When changes in technology occur, prompt adoptions are possible with the current system in USA as well [2-4].

2.3. Applications of Technical Standards in Germany

Germany is the ideal model of self-regulating safety management system. German Technical and Scientific Association for Gas and Water (DVGW), which is a voluntary standards body, leads the enactment and amendment of technical standards on gas safety. An article 16, paragraph 1 of Energy Economy Act says “Energy facilities should be installed and operated to secure technical safety, and generally approved technical regulations on the legal basis should be observed”. Observance with the technical standards that DVGW enacts and operates is assumed to be compatible with “generally approved technical regulations” by an article 16, paragraph 2 of the same act [1].

III. Methodology of Reformation

3.1. Performance Standards and Specific Standards

With the start of the reformation, dividing technical standards into performance-based requirements and means of compliance with performance-based requirements was needed. Since all the gas related technical standards are in laws and are regulated by

the government in Korea, defining performance-based requirements and means of compliance with performance-based requirements has been needed as well. Performance-based requirements are the minimum functions to secure safety, which should be preserved even if changes in technology are occurred. Performance-based requirement should remain in the Enforcement Regulations Attached Table. Means of compliance with performance-based requirements, however, can change based on the circumstances. Korea Gas Safety Corporation named performance-based requirements as “performance standards” and means of compliance with performance standards as “specific standards”. Specific standards are to be removed from laws and reorganized as “KGS (Korea Gas Safety) Code”. If performance standards and specific standards are mixed in the provisions in laws, objectives will be added to clearly explain the performance standards in laws and will be separated from specific standards, while specific standards will be moved to “KGS Code”.

3.2. Classification

Total of 4,241 provisions are included in the Enforcement Regulations Attached Table and a Notice currently but specific standards are about 76% and that is 3,213 provisions. These 3,213 provisions of technical standards are divided into 7 different fields with the codification work and those become the elements of 136 drafts of KGS Codes.

KGS Codes are divided into 3 high categories - Apparatus (A), Facilities (F), and General (G). Apparatus (A) are again divided into 3 lower categories, and those are Appliances (A), Burners (B) and Containers (C). Facilities (F) also have 3 lower categories, Production (P), Supply (S) and Use (U). However, for

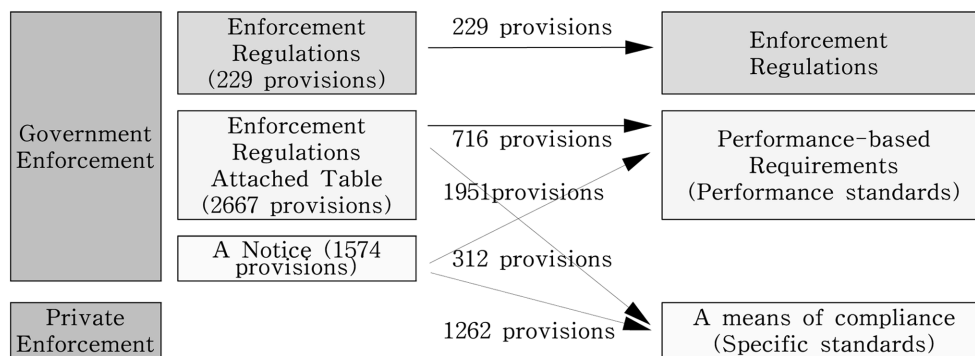


Fig. 1. Composition of performance standards and specific standards.

Table 1. Classification of KGS code.

Classification		Code symbol	Number of codes
Apparatus (A)	Appliances (A)	KGS AA	44
	Burners (B)	KGS AB	19
	Containers (C)	KGS AC	23
Facilities (F)	Production (P)	KGS FP	14
	Supply (S)	KGS FS	9
	Use (U)	KGS FU	12
General (G)	Common (C)	KGS GC	15

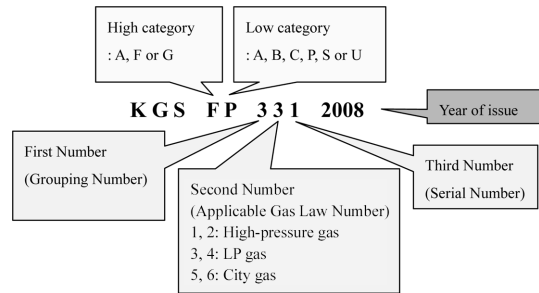


Fig. 2. An example of item numbering system.

General (G) category, Common (C) is the only lower category for now. Code Symbols and number of codes for each category are shown in Table 1.

Not like foreign gas related codes, KGS Code has its own numbering system as shown in Table 2 and Fig. 2, which is called “Item Numbering System”. Each Code Number is made up of the letter “KGS”, Item Number and Year of Issue. Item Number is again made up of two letters of Code Symbol and three numbers. For example, “FP 331” is an Item Number for “KGS FP 331 2008”. This Item Number is a unique number for “Code for Filling Facilities of LPG Containers” and anyone can know the name of the

Code only with this Item Number. Code Symbol “FP” indicates this code belongs to the high category of Facilities (F) and lower category of Production (P). First number “3” is a Grouping Number and indicates this code is about filling facility. Examples of the Grouping Number are shown in Table 2. Second number “3” is Applicable Gas Law Number and indicates “LP Gas Safety Management & Business Law” is related. When the second number is “1” or “2”, it indicates the code is related to high pressure gas. When the second number is “3” or “4”, it indicates the code is related to LP gas. “5” or “6” is for city gas and finally “0” is for general things or indicates the code is related to all kinds of gases.

Table 2. Examples of grouping number.

Classification	Symbol + grouping number	Grouping	
Apparatus (A)	Appliances (A)	AA1xx	Refrigerators
		AA2xx	Pipes
		AA3xx	Valves
		AA4xx	Pressure regulators
		AA5xx	Hoses
		AA6xx	Alarm shut-off devices
		AA9xx	Other appliances
	Burners (B)

Facilities (F)	Production (P)	FP1xx	Production facilities of high pressure gas
		FP2xx	Filling facilities of high pressure gas
		FP3xx	Filling facilities of LP gas
		FP4xx	Production facilities in city gas wholesale business
		FP5xx	Production facilities in general city gas business
	Supply (S)

Lastly, third number is serial number of the code. It is counted from "1" within the same Code Symbol. This item numbering system is very scientific and it enables administrative officers and users to find the relevant a code easily. Each category has its grouping number as shown in Fig. 2. Grouping number is the first number of three serial numbers and is given within each category [5,6].

KGS Code has one more numbering system other than "Item Numbering System" and it is "Provision Numbering System" which arranges numbers of provisions scientifically. For example, all the contents of provision number 2.1 of KGS AC codes are about designing and 2.3 are about materials. Every code in the same category has the same provision numbering system so that it is easier for users and efficient for administrative officers to find the same provisions in other codes. Drafts of 136 KGS Codes have been made on the basis of these two numbering systems.

IV. Conclusions

Three major effects are expected as a result of the reformation of gas technical standards system. First is shortening the period of amendment and revision of technical standards from over 11 months to about 1.5 months. It will help business to accept new technology promptly. Second is strengthening the competitiveness of business both domestically and internationally by eliminating trade barriers caused by different gas technical standardizing system. In article 2.7 of WTO/TBT Agreement says "Members shall give positive consideration to accepting as equivalent technical regulations of other members, even if these regulations differ from their own, provided they are satisfied that these regulations adequately fulfill the objectives of their own regulations". By eliminating rigidity of the current law system, many international disputes caused by trade barriers will be solved as

well. Last is to reduce the number of gas accidents by promoting self-regulating management system. Self-regulating management will become more important after deregulation and businesses will have more strict social responsibilities.

With this new system, anyone can apply for enactment or revision of gas technical standards. It enables related business officers and representative of users to actually participate in enactment and revision of gas technical standards. It also enables business officers to develop new technology speedily in an age of keen competition. Most importantly, It enables the completion of adequate system which means self-regulating management system and it will prevent overlapping accidents occurred both domestically and internationally.

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