

Overview of the Designated Equipment Inspection Ordinance

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Table of Contents

1. Introduction	1
1-1. Designated Equipment	1
1-2. The Background of the Establishment of the Designated Equipment Inspection Ordinance	1
2. Overview of the Designated Equipment Inspection Ordinance	1
2-1. Scope of the Designated Equipment	1
2-2. Categories of the Designated Equipment	2
2-3. Designated Equipment Inspection	3
2-4. Methods of Designated Equipment Inspection	3
2-5. Marking	4
2-6. Circular Notice Issued for Performance Standardization of the Designated Equipment Inspection Ordinance	5
2-7. Relationship with the Completion Inspection Conducted by the Prefectures	5
2-8. Relationship between a Manufacturer of the Designated Equipment and a Plant	5

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1. Introduction

1-1. Designated Equipment

Among equipment for high pressure gas production, Designated Equipment is the equipment designated by an Ordinance of Ministry of Economy, Trade and Industry (hereinafter referred to as the “METI”), for which inspection of its design or material quality or inspection in the process of its manufacturing is deemed particularly necessary for the prevention of explosions or other accidents due to high pressure gas, pursuant to Article 56-3 of the High Pressure Gas Safety Act.

1-2. The Background of the Establishment of the Designated Equipment Inspection Ordinance

Prior to 1975, Completion Inspections were obligated before and after installation of high pressure gas production equipment as the statutory inspection. The users, rather than the manufacturers, of the high pressure gas equipment were legally responsible for its suitability at the time of its installation.

However, this created a disparity between the actual manufacturers of the high pressure gas equipment and the persons legally responsible for such equipment. In addition, there was a concern about not conducting the test necessary for maintaining the safety, such as material verification test, weld testing, and so on when structural standards for high pressure gas equipment were prescribed. As a consequence, the Designated Equipment was defined in the amendment of the Law in 1975 to correct such undesirable effects. Then, in the following year (in 1976), the Designated Equipment Inspection Ordinance (hereinafter referred to as “the Equipment Ordinance”) was established.

2. Overview of the Designated Equipment Inspection Ordinance

2-1. Scope of the Designated Equipment

The scope of the Designated Equipment includes high pressure gas equipment other than the following containers:

As described in (c) below, containers fall under the category of Designated Equipment if the product of the design pressure and the internal volume is over 0.0004.

- (a) Containers subject to the Container Safety Ordinance;
- (b) Containers for nitrogen production equipment which are accredited as the Specified Equipment; and
- (c) Containers for which a product of 0.004 or less is obtained when multiplying design pressure, expressed in MPa, by internal volume, expressed in m³;
- (d) Containers with an internal volume of 0.001 m³ or less and a design pressure of less than 30 MPa;
- (e) Containers for pumps, compressors, and accumulators;
- (f) Containers for shock absorbers and other buffer devices;
- (g) Containers for flow meters, level gauges, and other measuring instruments and strainers;

- (h) Containers for automobile airbag gas generators; and
- (i) Containers for accumulators.

2-2. Categories of the Designated Equipment

Among high pressure gas production equipment, Designated Equipment refers to the items of equipment which are specified in Article 3 of the Equipment Ordinance and which are classified in the following categories:

Categories of Designated Equipment (Article 2 of the Equipment Ordinance)	
1) Tower	--- Tower-shaped equipment
2) Reactor	--- Equipment to generate chemical reactions
3) Spherical tanks	--- Spherical shaped storage tanks
4) Flat-bottom cylindrical tanks	--- Cylindrical storage tanks with a flat bottom
5) Rock cavern storage	--- Storage utilizing space in bedrock
6) Heat exchanger	--- Equipment to exchange heat between two fluid bodies
7) Evaporator	--- Equipment to vaporize liquefied gas
8) Condenser	--- Equipment to liquefy compressed gas
9) Furnace	--- Equipment to heat high pressure gas
10) Vertical cylindrical tanks	--- Vertically placed cylindrical tanks
11) Horizontal cylindrical tanks	--- Horizontally placed cylindrical tanks
12) Bulk storage tanks	--- Storage tanks for LPG
13) Other pressure vessels	--- Equipment other than 1), 2), 6) to 9).

Diagram 1: Categories of the Designated Equipment

Main examples of Designated Equipment are as follows:



Photo 1: Towers



Photo 2: Heat exchanger



Photo 3: Spherical tanks



Photo 4: Vertical cylindrical tanks



Photo 5: Horizontal cylindrical tanks

2-3. Designated Equipment Inspection

The Designated Equipment Inspection is an inspection conducted based on Article 56-3 of the High Pressure Gas Safety Act. The manufacturers or importers of the Designated Equipment shall subject their Designated Equipment to the Designated Equipment Inspection. Foreign manufacturers of the Designated Equipment to be furnished for export to Japan may also apply for the Designated Equipment Inspection of their products.

The Designated Equipment Inspection, pursuant to the Equipment Ordinance, is conducted for each manufacturing process, including design, materials, fabrication, welding, and structure, by the Minister of METI, the High Pressure Gas Safety Institute of Japan, or a Conformity Inspection Body for Designated Equipment designated by the Minister of METI.

However, the inspection is not necessary for the following Designated Equipment:

- (a) Designated Equipment manufactured by the (domestic or foreign) Registered Manufacturers of the Designated Equipment who are holders of the Designated Equipment Standards Conformity Certificate; and
- (b) Designated Equipment for export or other usages specified by the Equipment Ordinance.

2-4. Methods of Designated Equipment Inspection

Designated Equipment Inspection is conducted by the High Pressure Gas Safety Institute of Japan in accordance with the Designated Equipment Inspection Ordinance for each manufacturing step from design, material, fabrication, welding, and structure, as shown in Diagram 4.

When a Designated Equipment has successfully passed the Designated Equipment Inspection, a Designated Equipment Inspection Certificate is issued. (Article 56-4, paragraph (1) of the Act)

Designated Equipment which has successfully passed the Designated Equipment Inspection and for which such a fact may be confirmed by a Designated Equipment Inspection Certificate shall not be required to undergo a Completion Inspection. (Article 20-2, paragraph (1) of the Act)

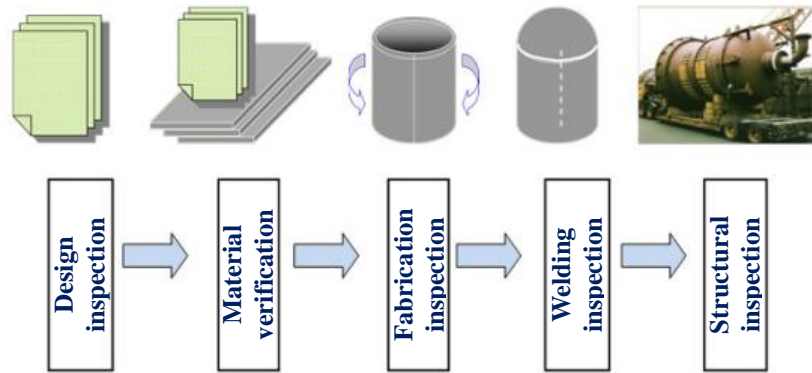


Diagram 4: Inspections for each manufacturing process conducted in the Designated Equipment Inspection

Inspections for each manufacturing process conducted in the Designated Equipment Inspection are stipulated in Articles 46 to 50 of the Equipment Ordinance.

Specific inspection methods are provided for in the detailed Exemplified Standards which are proved to conform with those performance standards in the Circular Notice relevant to assessing conformity with the performance standards specified in the Designated Equipment Inspection Ordinance, “Use of Performance Standards Specified in the Designated Equipment Inspection Ordinance” (hereinafter referred to as Exemplified Standards.)

- (a) Design inspection (Article 46 of the Equipment Ordinance)
 - Inspection of the structural drawing
 - Inspection of the design calculation
- (b) Material check (Article 47 of the Equipment Ordinance)
 - Verification of certificate of the Mill test
 - External inspection
- (c) Fabrication inspection (Article 48 of the Equipment Ordinance)
 - Inspection of forming process
 - Inspection of pre-welding process
- (d) Welding inspection (Article 49 of the Equipment Ordinance)
 - External inspection
 - Non-destructive test
 - Mechanical test
- (e) Structural inspection (Article 50 of the Equipment Ordinance)
 - Hydraulic test
 - Leak test
 - Inspection of dimensions

2-5. Marking

When a person whose equipment has undergone a Designated Equipment Inspection has been issued the Designated Equipment Inspection Certificate, he/she shall mark to that effect clearly and indelibly on a thick and visible part of the Designated Equipment without delay. Items to be marked include the name of the manufacturer, name of the inspection body,

certificate number, certificate issuance date (year and month), design pressure and temperature, type of high pressure gas, internal volume, and other items.

2-6. Circular Notice Issued for Performance Standardization of the Designated Equipment Inspection Ordinance

In 2001, a Circular Notice relevant to assessing conformity with the performance standards specified in the Designated Equipment Inspection Ordinance, “Use of Performance Standards Specified in the Designated Equipment Inspection Ordinance” was issued to standardize performance of the Designated Equipment Inspection Ordinance.

The technical standards specified in an Ordinance of METI and the inspection methods (in case of the Designated Equipment Inspection Ordinance) used to be prescribed in the Ordinance as detailed standards. The performance approach, which adopts performance standardization, allows inspection bodies to judge conformity with performance standards in individual cases, and to quickly respond to technical developments achieved by business operators.

In this Circular Notice, detailed standards which conform with the performance standards are specified as Exemplified Standards in the Appendices 1 to 7 shown below. The Exemplified Standards are sorted into general standards (Appendices 1 and 7), standards for specific objects (Appendices 2, 3, and 4) and standards for the registration system (Appendices 5 and 6).

Appendix 1: Interpretation of the Technical Standards for Designated Equipment

Appendix 2: Interpretation of the Technical Standards for Flat Bottom Cylindrical Tanks

Appendix 3: Interpretation of the Technical Standards for Bulk Storage Tanks

Appendix 4: Interpretation of the Technical Standards for Components, etc., of the Designated Equipment

Appendix 5: Interpretation of the Technical Standards for Manufacturing Equipment and Inspection Equipment for the Designated Equipment

Appendix 6: Interpretation of the Technical Standards for the Quality Control Methods and Inspection Bodies

Appendix 7: Interpretation of the Technical Standards for Class 2 Designated Equipment

2-7. Relationship with the Completion Inspection Conducted by the Prefectures

A business operator who has obtained high pressure gas production permission (in case of a Class 1 Producer) shall undergo a Completion Inspection by the prefecture. However, the business operator shall be exempt from the Completion Inspection in cases where the Designated Equipment, which has successfully passed the Designated Equipment Inspection and which has received a Designated Equipment Inspection Certificate, is installed.

2-8. Relationship between a Manufacturer of the Designated Equipment and a Plant

Diagram 5 shows the roles of the manufacturers of the Designated Equipment and of the plants in which the Designated Equipment is installed.

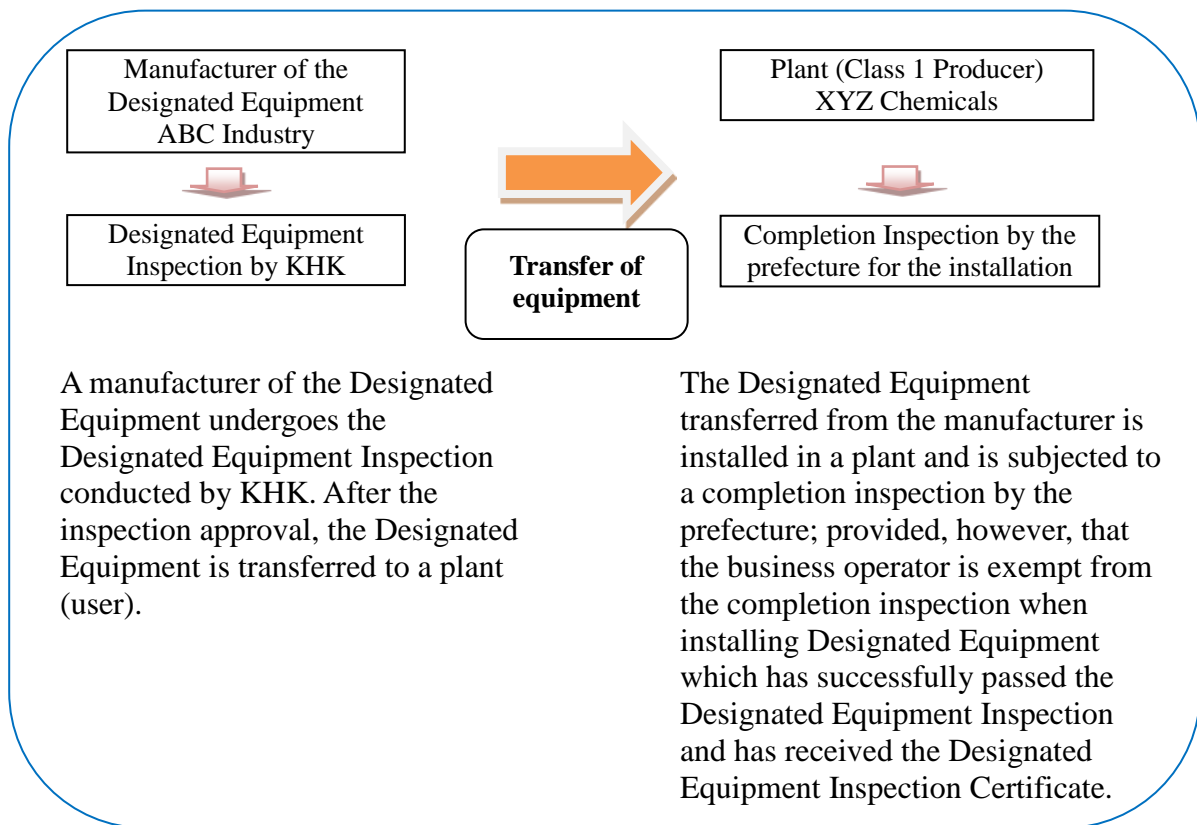


Diagram 5: Relationship between a Manufacturer of the Designated Equipment and a Plant