



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Design code for hydrogen station
(English Translation)**

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Directly in Plant Area and Buildings and Structures

Explanation of Wording in This Code

1 General Provisions

1.0.1 This code is formulated with a view to correctly implementing the principles and

1 General Provisions

1.0.1

This code is formulated with a view to correctly implementing the principles and policies of the national capital construction in the design of hydrogen station and hydrogen supply station, ensuring safety production, energy conservation, environmental protection, meeting production requirements, and achieving advanced technology and economy and rationality.

1.0.2 This code is applicable to the design of newly-built, renovated or extended hydrogen

station and hydrogen supply station and of hydrogen pipeline in plant area and shop.

1.0.3 The production fire hazard category of hydrogen station and hydrogen supply station shall be Category "A".

The explosion hazard grade of room or area with explosion hazard in hydrogen station and hydrogen supply station shall be divided into Zone 1 or Zone 2, and shall meet the requirements of Appendix A of this code.

1.0.4 The design of hydrogen station, hydrogen supply station and hydrogen pipeline shall not only comply with this code, but also those in the current relevant ones of the nation.

2.0.1 Hydrogen station

General term of process facilities, filling facilities, compression and storage facilities, auxiliary facilities and buildings and structures or locations required by hydrogen production through relevant process (for example, pressure swing adsorption by using water electrolysis, natural reformed gas, methanol reformed gas, coke oven gas, water gas, etc. as virgin gas).

2.0.2 Hydrogen supply station

General term of buildings and structures, hydrogen gas receivers or locations, supplying hydrogen through bottles or/and pipelines, excluding hydrogen generation equipment.

2.0.3 Hydrogen gas receiver

General term of containers with constant pressure and variable volume (wet storage holders) and with variable pressure and constant volume, for storing hydrogen.

2.0.4 Open flame site

Fixed site with exposed flame or red heat surface indoors and outdoors.

2.0.5 Sparking site

Chimney with spotting fire or such fixed site as outdoor grinding wheel, electric welding and gas welding (cutting).

3 General Layout

3.0.1

The layout of hydrogen station, hydrogen supply station and hydrogen gas receiver shall be determined in accordance with the following requirements through comprehensive comparison.

3.0.2

The fire separation between hydrogen station, hydrogen supply station, hydrogen gas receiver and buildings and structures shall not be less than those specified in Table 3.0.2.

3.0.3

The fire separation between hydrogen station, hydrogen supply station, hydrogen gas receiver and railway and road shall not be less than those specified in Table 3.0.3.

3.0.4

The fire separation between hydrogen gas receiver and receiver area shall meet the following requirements.

4 Process System

4.0.1

The type of hydrogen production system in the hydrogen station shall be determined in accordance with the following factors.

4.0.2

The system of hydrogen gas produced by electrolysing water shall be equipped with the following devices.

4.0.3

The oxygen gas produced through the system of hydrogen gas produced by electrolysing water may be recycled or directly exhausted to atmosphere as required, and shall meet the following requirements.

4.0.4

The arrangement of the hydrogen purification system by pressure swing adsorption shall be determined according to the following factors.

4.0.5

The hydrogen purification system by pressure swing adsorption shall be arranged with the following devices.

4.0.9 Hydrogen station and hydrogen supply station shall adopt gaseous storage hydrogen

gas in general, mainly including high, middle and low pressure hydrogen gas receiver and metal hydride hydrogen storage device, and shall generally meet the following requirements.

4.0.10 The arrangement of hydrogen gas receiver safety facilities of hydrogen station and hydrogen supply station shall meet the following requirements.

5 Equipment Selection

5.0.1

The design capacity of the hydrogen station should be determined in accordance with the following factors according to hydrogen gas purpose and use characteristics.

5.0.2

The model, capacity and quantity of the installation of hydrogen gas produced by electrolysing water shall be determined according to the following factors through technical and economical comparison.

5.0.3 Such auxiliary equipment for raw material water preparation and alkaline solution

preparation required by the installation of hydrogen gas produced by electrolysing water should be selected according to the following requirements.

5.0.4 The absorber set capacity and absorber quantity of the hydrogen purification system by pressure swing adsorption shall be determined according to the following factors through technical and economical comparison.

5.0.8 The selection and quantity of hydrogen gas compressors shall be determined according to gas inlet pressure, exhaust pressure, hydrogen gas purity and the maximum hourly hydrogen gas consumption of the user or the use characteristics of the user. The hydrogen gas compressors should not be less than 2 sets. Standby reciprocating hydrogen gas compressor with continuous operation shall be arranged.

5.0.9 The model and discharge capacity of the compressor for hydrogen gas filling shall be determined according to filling station or filling vessel specification, quantity, filling time, gas inlet pressure, exhaust pressure, etc. Standby hydrogen gas compressor for filling may not be arranged.

5.0.10 For purified hydrogen gas bottling, diaphragm compressor shall be adopted, and empty cylinder treatment system should be arranged, including cylinder vacuum pumping equipment and cylinder heating equipment.