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

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Replacing GB 50041-2008

Standard for design of boiler plant

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Table of Contents

- 1 General
- 2 terms

1 General

1.0.1 This standard is formulated in order to make the boiler room design meet the requirements of energy saving, environmental protection, safe production, advanced technology, reasonable economy and quality assurance.

1.0.2 This standard is applicable to the design of industrial, civil and regional boiler rooms and their outdoor heat pipes within the following ranges.

1 For steam boiler boiler rooms with water as the medium, the rated evaporation capacity of a single boiler is 1t/h~75t/h, the rated outlet steam pressure is 0.10MPa (gauge pressure)~3.82MPa (gauge pressure), and the rated outlet steam temperature Less than or equal to 450°C;

2 Hot water boiler boiler room, the rated thermal power of a single boiler is 0.7MW~174MW, the rated outlet water pressure is 0.10MPa (gauge pressure)~2.50MPa (gauge pressure), and the rated outlet water temperature is less than or equal to 180 degrees C;

3 Outdoor steam pipes, condensate water pipes and closed circulation hot water systems that meet the parameters of paragraphs 1 and 2 of this article.

1.0.3 This standard does not apply to the boiler room design of waste heat boilers, waste incineration boilers and other special types of boilers and urban heating pipe network.

1.0.4 The design of the boiler room shall not only comply with this standard, but also comply with the current relevant national standards.

2.0.1 Boiler plant

A complex of boilers and auxiliary equipment and facilities to ensure the normal operation of the boiler.

2.0.2 Industrial boiler plant

The self-provided boiler room attached to the enterprise. Its task is to meet the heat (steam, hot water) needs of the enterprise.

2.0.3 Living boiler plant

A boiler room used to supply heat (steam) for people's lives.

2.0.4 regional boiler plant

A boiler room serving an area. In this area, there can be several enterprises, several civil buildings and public buildings and other construction facilities.

2.0.5 Independent boiler plant

The surrounding boiler room has no structural connection with other buildings.

2.0.6 dependent boiler plant

Boiler rooms adjacent to or located in other buildings.

2.0.7 underground boiler plant

A boiler room set below the ground.

2.0.8 Semi-underground boiler plant

The boiler room whose height below the ground exceeds $\frac{1}{3}$ of the net height of the boiler room and does not exceed the height of the boiler room.

2.0.9 basement boiler plant

Set in other buildings, the boiler room where the height of the boiler room floor below the outdoor ground exceeds $\frac{1}{2}$ of the clear height of the boiler room.

2.0.10 semi-basement boiler plant

Installed in other buildings, the height of the boiler room floor below the outdoor ground exceeds $\frac{1}{3}$ of the boiler room clear height and does not exceed $\frac{1}{2}$ of the boiler room.

2.0.11 outdoor thermal piping

The outdoor heat pipes of the enterprise-owned boiler room within the scope of the enterprise, and the outdoor heat pipes within the boundary of the regional boiler room.

2.0.12 pipeline piping

It is composed of pipeline components, pipeline supports and hangers, etc., and is used to convey, distribute, mix, separate, discharge, measure or control fluid flow.

2.0.13 piping system

A group of pipes connected by multiple pipes divided by fluid and design conditions.

2.0.14 Year-round steam (heat) supply

The steam (heat) supply from the boiler room to the heat user cannot be interrupted throughout the year. When the steam (heat) supply is interrupted, it will lead to danger to the lives of its personnel or major economic losses.

2.0.15 boiler room

The place where the boiler body is installed.

2.0.16 auxiliary room

All places where auxiliary machines, auxiliary equipment and production operations are installed except boiler rooms, such as water treatment rooms, fan rooms, water pump rooms, machine repair rooms, laboratories, instrument control rooms, etc.

2.0.17 service room

Places for employees to live or work, such as on-duty locker rooms, lounges, offices, private bathrooms, toilets, etc.

2.0.18 Duty room

A place for workers to change and store clothes on and off duty.

2.0.19 rest room

In the boiler room of the second and third shifts, it is a place for workers to rest in shifts.

2.0.20 Commonly used operation feed water pump

The feed water pump normally used by the boiler during operation.

2.0.21 standby feed water pump

The pump that feeds the boiler when the normal feed pump fails.

2.0.22 emergency feed water pump emergency feed water pump

The electric feed water pump stops running during a power outage, and the feed water pump used to prevent water shortage accidents in the boiler is generally a steam-driven feed water pump.

2.0.23 net distance

The distance between the outer edges of the most prominent adjacent parts of two objects.

2.0.24 relative density

The ratio of gas density to air density.

2.0.25 closed coal storage close area of coal

It is a closed warehouse used to store coal and prevent coal dust from escaping. The warehouse should be equipped with devices or facilities to discharge combustible gas outdoors in time.

2 The design water supply temperature and return water temperature of the hot water heating network shall be determined according to the specific conditions of the project, and shall be determined after a technical and economic comparison based on factors such as the boiler room, pipe network, heat station, and heat user's secondary heating system.

3.0.11 The selection of the boiler shall comply with the following provisions in addition to the provisions of Article 3.0.9 and Article 3.0.10 of this standard.

1 It should be able to burn the used fuel effectively, have high thermal efficiency and be able to adapt to the change of heat load;

2 should be conducive to the protection of the environment;

3. It should be able to reduce infrastructure investment and reduce operation and management costs;

4 A boiler with a high degree of mechanization and automation should be selected;

5 Its structure should be compatible with the seismic fortification intensity of the area;

6 For oil-fired and gas-fired boilers, in addition to complying with the above-mentioned provisions of this article, they shall also meet the requirements of fully automatic operation and have reliable combustion safety protection devices.

3.0.12 The number and capacity of boilers should be determined according to the design heat load after technical and economic comparison, and should meet the following requirements.

1 The number and capacity of boilers shall meet the requirements of the maximum design heat load of the boiler room under the rated evaporation capacity or thermal power of all operating boilers;

2 It shall be ensured that the boiler room can operate safely under high or low thermal load operating conditions, and the number of boilers, rated evaporation capacity or thermal