

TSG

**SPECIAL EQUIPMENT SAFETY TECHNICAL SPECIFICATION OF THE
PEOPLE'S REPUBLIC OF CHINA**

TSG 11-2020

Replacing TSG G0001-2012

Regulation on Safety Technology for Boiler

锅炉安全技术规程

(English Translation)

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Table of Contents

Foreword
1 General provisions
2 Materials
3 Design
4 Manufacture
5 Safety accessories and instruments
6 Combustion equipment, auxiliary equipment and system
7 Installation, modification and repair
8 Use management
9 Inspection
10 Special requirements
11 Supplementary provisions
Annex A Selection of materials for boiler
Annex B Product certificate of boilers
Annex C Code numbering method for special equipment
Annex D Principles for type test model coverage of liquid (gas) fuel burners
Annex E Supervision and inspection items of boiler manufacturing
Annex F Supervision and inspection items of boiler installation
Annex G Certificate for supervision and inspection of boiler
Annex H External inspection items of boiler
Annex J Internal inspection items of boiler

1.1 Purpose

This Regulation is formulated according to Special equipment safety Law of the People's Republic of China and Regulations on safety supervision of special equipment with a view to ensuring the safe operation of boiler, preventing and reducing accidents, protecting people's life and property safety, and promoting economic and social development.

1.2 Application scope

This Regulation is applicable to steam boilers, hot water boilers and organic heat carrier boilers within the scope of Special equipment catalogue.

Note 1-1: Heat recovery (waste heat) boilers manufactured according to the boiler design shall meet

the requirements of this Regulation.

1.2.1 Boiler body

Boiler body is a whole composed of boiler drum (shell), start-up (steam-water) separator, water storage tank, heating surface, header and its connecting pipes, hearth, combustion equipment, air preheater, boiler wall, flue (air duct), frame (including platform and escalator), etc.

1.2.2 Pipes within the boiler range

(1) For power station boiler, the pipes include main water supply pipe, main steam pipe, reheat steam pipe, etc. (Note 1-2) and branch pipe within the first valve (excluding valve, the same below);

(2) For boilers other than power station boilers, the pipes include pressure-bearing pipes from the outlet of feed water (oil) pump to the first circumferential weld of steam distribution header which connects the external pipes for those arranged with steam (water or oil) distribution header (hereinafter referred to as steam distribution header, Note 1-3) or include the pressure-bearing pipes from the outlet of feed water (oil) pump to the outlet valve of main steam (water or oil) for those not arranged with steam distribution header.

Note 1-2: The main water supply pipe refers to the pipe from the check valve at the outlet of feed water pump to the inlet header of economizer; the main steam pipe refers to the pipe from the outlet header of the final superheater to the high-pressure main steam valve of the steam turbine (for pipe-main operating boiler, to the first valve in front of the main pipe); reheat steam cold section pipe refers to the pipe from steam turbine exhaust check valve to reheater inlet header; reheat steam hot section pipe refers to the pipe from the outlet header of the final reheater to the middle-pressure main steam valve of the steam turbine.

Note 1-3: The steam distribution header shall be designed and manufactured in accordance with relevant requirements of boiler header or pressure vessel.

Note 1-4: The power pipes outside the boiler scope which connect to the boiler may be installed, supervised, inspected and periodically inspected together with the boiler with reference to the requirements for pipes within the boiler range.

1.2.3 Safety accessories and instruments of boiler

Safety accessories and instruments of boiler include safety valves, bursting discs, devices (instruments) for pressure measurement, water (liquid) level measurement and temperature measurement, safety protection devices, sewage and water discharge devices, etc.

1.2.4 Auxiliary equipment and system of boiler

Auxiliary equipment and system of boiler include fuel preparation and water treatment equipment and systems.

1.3 Exclusions

- (1) Steam boilers with the designed normal water level water capacity (for concurrent boiler and other boilers without fixed steam-water dividing line, the water capacity shall be calculated according to the geometric total capacity in the inlet and outlet of steam-water system, the same below) than 30L, or with the rated steam pressure less than 0.1MPa;
- (2) Hot water boilers with rated outlet water pressure less than 0.1MPa or rated thermal power less than 0.1MW;
- (3) Organic heat carrier boilers with rated thermal power less than 0.1MW.

1.4 Boiler equipment Class

According to the parameters, the boiler equipment shall be divided into Classes A, B, C and D.

1.4.1 Class A boiler

Class A boilers refer to boilers with p (gauge pressure, the same below, Note 1-5) $\geq 3.8\text{MPa}$, including:

- (1) Supercritical boiler, $p \geq 22.1\text{MPa}$;
- (2) Subcritical boiler, $16.7\text{MPa} \leq p < 0.7\text{MW}$ (Q is rated thermal power, the same below); liquid phase organic heat carrier boiler, $Q > 4.2\text{MW}$.

1.4.3 Class C boiler

- (1) Steam boiler, $p \leq 0.8\text{MPa}$, and $V > 50\text{L}$ (V is the water volume at designed normal water level, the same below);
- (2) Hot water boiler, $0.4\text{MPa} < p < 3.8\text{MPa}$, and $t < 120^\circ\text{C}$; $p \leq 0.4\text{MPa}$, and $95^\circ\text{C} < t < 120^\circ\text{C}$;
- (3) Gas phase organic heat carrier boiler, $Q \leq 0.7\text{MW}$; liquid phase organic heat carrier boiler, $Q \leq 4.2\text{MW}$.

1.4.4 Class D boiler

- (1) Steam boiler, $p \leq 0.8\text{MPa}$ and $V \leq 50\text{L}$;
- (2) Hot water boiler, $p \leq 0.4\text{MPa}$ and $t \leq 95^\circ\text{C}$.

Note 1-5: p refers to rated working pressure of boiler, which represents the rated steam pressure for steam boiler, the rated outlet water pressure for hot water boiler and the rated outlet pressure for organic heat carrier boiler.

1.5 Boilers for which overseas standards are adopted

For boilers for which overseas standards are adopted, the requirements for materials, design, manufacturing and product inspection, safety accessories and instruments, ex-factory documents, nameplate, etc. shall not be lower than the requirements of this Regulation, otherwise, technical review and approval shall be conducted in accordance with the requirements of 1.6 of this Regulation.

1.6 Handling of special cases

If the relevant organizations adopt new materials, new technologies and new processes, which are inconsistent with this Regulation or are not required by this Regulation, which may have a significant impact on safety performance, they shall report to the State Administration for Market Regulation which entrusts the Special Equipment Safety and Energy Saving Technical Committee to conduct technical review, and the new materials, new technologies and new processes may be put into production and use only after the review results are approved by the State Administration for Market Regulation.

1.7 Relationship with technical standards and management system

This Regulation specifies the basic safety requirements of boilers, and the technical standards and management systems adopted in the production, use, inspection and testing of boilers shall not be lower than the requirements of this Regulation.