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

GB/T 10184-2025

Performance test code for utility boilers

电站锅炉性能试验规程

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. This document replaces GB/T 10184-2015 "Power Plant Boiler Performance Test Procedure". Compared with GB/T 10184-2015, except for structural adjustment In addition to the integration and editorial changes, the main technical changes are as follows:

- a) Added several terms and definitions, and changed the definitions of some terms (see Chapter 3, Chapter 3 of the.2015 edition);
- b) Added requirements for fuel and desulfurization agent characteristics in the test conditions (see 4.2.3.1, 4.5 of the.2015 edition);
- c) The boiler heat balance diagram has been changed, and the heat brought in by the medium outside the system boundary has been added to the external heat (see Figure 1,.2015 edition Figure 1);
- d) Added test requirements and test methods for items such as "maximum continuous evaporation capacity of boiler" (see 4.2.12 to 4.2.21);
- e) The accuracy requirements of the main test instruments have been changed (see Table 8, Table 7 of the.2015 edition);
- f) Changed the requirements for smoke composition analysis methods (see Table 13, Table 12 of the.2015 edition);
- g) Added the processing principles of the original test measurement data (see 6.1);
- h) Added the calculation method of excess air coefficient when burning gas fuel [see formula (19)] and dry air entering the system boundary and calculation method of heat carried by water vapor [see formula (59) and formula (61)];

- i) The calculation formula for the converted mass fraction of desulfurizer ash per kilogram of fuel fed into the furnace has been changed [see formula (23), 2015 version of formula (22)];
- j) Added the classification of boiler efficiency (see 7.1.1.1);

1 Scope

China's national performance test code for utility boilers - the procedure by which the efficiency and performance of a power station boiler are determined, and one of the largest technical documents in the national catalogue. It matters commercially out of all proportion to its obscurity: the acceptance of a new unit, the settlement of a contract guarantee between a boiler maker and a utility, and the assessment of a plant after an overhaul all turn on a number produced by this procedure, and a fraction of a percentage point of efficiency on a large unit is worth a great deal of coal every year. The document specifies the requirements, the methods and the calculations for the performance testing of utility boilers: the preparation and the agreements to be reached before the test, the operating conditions and the stability required, the measurements to be made and the instrumentation and its accuracy, the sampling and analysis of the fuel, the determination of the efficiency by both the input-output method and the heat loss method, the corrections to reference conditions, the uncertainty analysis, and the reporting. The heat loss method is where most of the length is, because determining efficiency by measuring what is lost rather than what is delivered requires each loss to be established separately - the dry gas loss, the losses from the moisture in the fuel and from the hydrogen in it, the unburned carbon in the ash, the radiation and convection from the setting, and the sensible heat in the ash - and each has its own measurement and its own uncertainty. The clauses on the pre-test agreements are the ones that prevent disputes: what is fixed in advance, in writing, between the parties is what stops a test producing a number that one side will not accept. Issued on 28 March 2025 and in force since 1 October 2025.

This document specifies the terms and symbols, test items and requirements, test items, instruments and test methods, data Processing and process quantity calculation, test result calculation, and test report. This document applies to the following power plant boiler performance tests burning coal, oil, gas and biomass fuels.

- a) Power station boilers with a steam flow rate of not less than 35t/h, a pressure of not less than 3.8MPa, and a temperature of not less than 440°C;
- b) Identification test, acceptance test and routine test, as well as for other purposes (including combustion adjustment, fuel change, equipment improvement, etc.) Boiler performance tests were carried out. This document is not applicable to the performance tests of nuclear power plant steam generators, waste heat boilers, and waste incineration boilers. The performance test of power station boilers burning other fuels shall be carried out in accordance with this document.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 211 Determination of total moisture in coal

GB/T 212 Industrial analysis methods for coal

GB/T 213 Method for determination of calorific value of coal

GB/T 214 Determination of total sulfur in coal

GB/T 218 Determination of Carbonate Carbon Dioxide Content in Coal

GB/T 474 Coal sample preparation method

GB/T 476 Determination of carbon and hydrogen in coal

GB/T 483 General provisions for coal analysis test methods

GB/T 3286.8 Chemical analysis methods for limestone and dolomite Part

8 Determination of loss on ignition Gravimetric method

GB/T 3286.9 Chemical analysis methods for limestone and dolomite Part

9.Determination of carbon dioxide content - Soda asbestos absorption Gravimetric method

GB/T 3715 Terminology related to coal quality and coal analysis

GB/T 4756 Manual sampling method for petroleum liquids

GB/T 6284 General method for determination of moisture in chemical products - Loss on drying method

GB/T 6907 Boiler water and cooling water analysis method Water sampling method

GB/T 8174 Testing and evaluation of thermal insulation effect of equipment and pipelines

GB/T 10410 Gas chromatography analysis of major components of artificial gas and liquefied petroleum gas

GB/T 12145 Steam quality for thermal power generating units and steam power equipment

GB 13223 Emission Standard of Air Pollutants from Thermal Power Plants

GB 13271 Boiler Air Pollutant Emission Standard