

HJ

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Guidelines for feasible technologies for pollution prevention and control of industrial boilers

工业锅炉污染防治可行技术指南

(English Translation)

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1 Scope of application

This standard proposes feasible technologies for the prevention and control of waste gas, waste water, solid waste and noise pollution of industrial boilers.

This standard can be used as a single steam boiler with an output of 65 t/h and below using coal, oil, gas and biomass briquette fuel as fuel, various capacity Environmental impact assessment of industrial production and civil heating boiler construction projects such as hot water boilers and organic heat carrier boilers, layer-fired boilers of various capacities, etc.

price, the formulation and revision of national pollutant discharge standards, the management of pollutant discharge permits and the selection of pollution prevention and control technologies.

When selecting pollution prevention technologies for industrial boilers using briquette, coal-water slurry, coal gangue, petroleum coke, oil shale and other fuels, refer to this standard the feasible technologies for pollution prevention and control of coal-fired boilers in Zhunzhong; this standard may be referred to when selecting pollution prevention and control technologies for industrial boilers using alcohol-based liquid fuels Feasible technologies for pollution prevention and control of medium oil boilers.

This standard does not apply to pollution prevention and control of industrial boilers fueled by domestic waste and hazardous waste.

2 Normative references

This standard refers to the following documents or clauses thereof. For dated references, only the dated version applies to this standard.

For undated references, the latest edition (including all amendments) applies to this standard.

GB 8978 Integrated Wastewater Discharge Standard GB 12348 Industrial Enterprise Boundary Environmental Noise Emission Standard GB 13271 Boiler Air Pollutant Emission Standard GB 16297 Comprehensive Emission Standard of Air Pollutants GB 18597 Hazardous Waste Storage Pollution Control Standard GB 18599 General Industrial Solid Waste Storage and Landfill Pollution Control Standard "Administrative Measures for Automatic Monitoring of Pollution Sources" (Order No. 28 of the State Environmental Protection Administration) "Notice on Issuing the Catalogue of Highly Polluting Fuels" (Guohuanqiqiqi [2017] No. 2) "Measures for the Administration of Hazardous Waste Transfer Forms" "National Hazardous Waste List"

3 Terms and Definitions

The following terms and definitions apply to this standard.

boiler

Use the heat energy or other heat energy released by fuel combustion to heat hot water or other working fluids to produce specified parameters (temperature, pressure) and quality steam, hot water or other working fluid equipment.

Note: The rated output (heat production) of the boiler is generally expressed in two units, namely thermal power and evaporation. Thermal power in megawatts (MW), evaporation the unit of quantity is ton/hour (t/h). The heat production of 0.7 MW is equivalent to the evaporation of 1 t/h.

available techniques of pollution prevention and control According to my country's environmental demand and economic level in a certain period of time, comprehensive use of pollution prevention technology and pollution control technology in the process of pollution prevention and control technology and environmental management measures to stably meet the national pollutant discharge standards and large-scale application of technology.

4.1 Thermal production process

4.1.1

The boiler heat production process mainly includes combustion system, storage system, preparation and transportation system, auxiliary system and pollution control system Wait. See Appendix A for the typical boiler thermal production process and main

pollution-producing nodes.

4.1.2

The combustion methods of the combustion system mainly include bed combustion (layer combustion furnace represented by chain furnace and coal thrower furnace), fire chamber combustion (chamber combustion furnace), fluidized bed combustion (fluidized bed furnace); the storage system mainly includes fuel silo/storage tank, fuel storage yard, fly ash warehouse, desulfurization by-product warehouse, ash slag yard, etc.; preparation and conveying system mainly includes fuel preparation device, fuel feeding device, fuel conveying device, etc.; auxiliary system Mainly includes softened water preparation system and cooling water system; pollution prevention system mainly includes waste gas, waste water, solid waste and noise pollution prevention and control system, etc.

4.1.3

Fuels mainly include coal, oil, natural gas and biomass briquette fuel.

4.1.4

The chemicals used in the boiler heat production process mainly include desulfurizers (limestone, lime, magnesium oxide, magnesium hydroxide, hydrogen Sodium oxide, sodium carbonate, etc.), denitration reducing agents (urea, ammonia, etc.) and water treatment agents (coagulants,, flocculants, etc.).

4.2 Generation of pollutants

4.2.1

The pollutants in the exhaust gas mainly include particulate matter, sulfur dioxide (SO₂), nitrogen oxides (NO_x), mercury and its compounds. of which Particulate matter mainly comes from combustion system, storage system, preparation and delivery system; SO₂, NO_x, mercury and their compounds are produced in combustion system.

See Appendix B for the concentration of flue gas pollutants at the furnace outlet of typical industrial boilers.

4.2.2

Wastewater mainly includes production waste water such as wet desulfurization waste water, softened water regeneration waste water and boiler sewage.

4.2.3

Solid wastes mainly include general industrial solid wastes such as fly ash, slag, desulfurization by-products, waste vanadium-titanium catalysts, waste ion exchange Replace resins, etc., which are included in the "National Hazardous Waste List" or are identified as dangerous according to the identification standards and identification methods of hazardous wastes stipulated by the state.

characteristic hazardous waste.

4.2.4

The noise mainly comes from the combustion system (blower, etc.), preparation and conveying system (coal mill, crusher, belt conveyor, etc.), Pollution prevention system (booster fan, desulfurizer circulating pump, etc.) and auxiliary systems (process water pump, etc.).

5.1 General principles

5.1.1

Boiler users should give priority to the use of low-sulfur and low-ash fuels that meet relevant national or local standards and policy requirements to reduce fuel consumption.

Concentrations of particulate matter, SO₂, mercury and their compounds from fuel combustion.

5.1.2

The boiler user should choose the furnace type and combustion equipment with good low nitrogen combustion effect.

5.1.3

The boiler user shall strengthen the regular maintenance and maintenance of the low-nitrogen combustion equipment to ensure its stable operation.

5.2 Low nitrogen combustion technology

5.2.1

Low-nitrogen combustion equipment is the carrier of low-nitrogen combustion technology. The low-nitrogen combustion technology mainly includes low-nitrogen burners, overall air classification in the furnace Combustion technology, flue gas recirculation technology, etc., have the characteristics of low investment cost and convenient operation and maintenance. When using this technology, it should also be coordinated to control Products of incomplete combustion of carbon such as carbon monoxide.

5.2.2

Low-nitrogen burners are suitable for chamber furnaces and can be classified into diffusion burners (including fuel-graded low-nitrogen burners, air gas staged low nitrogen burners) and premixed burners.

5.2.2.1

Through the optimization of the physical structure, the diffusion burner stratifies and feeds the air and fuel into the furnace to realize staged combustion, expanding the Combustion area, lower flame temperature, reduce NO_x generation. Coal, oil, natural gas, coke oven