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

DL/T 461-2019

**Guide for operation and the maintenance of electrostatic
precipitators for coal-fired power plants**

燃煤电厂电除尘器运行维护导则

(English Translation)

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009 "Guidelines for Standardization Work Part 1: Standard Structure and Compilation".

Please note that certain contents of this document may involve patents. The issuing agency of this document is not responsible for identifying these patents.

This standard replaces DL/T 461-2004 "Guidelines for Operation and Maintenance of Electrostatic Precipitators in Coal-fired Power Plants". Compared with DL/T 461-2004, except for editorial the main technical changes are as follows.

--Add low-temperature electric precipitator and mobile plate type electric precipitator inspection, acceptance, commissioning and operation, maintenance and repair related content (see section 4.

Chapters 5 and 7).

--- Increase the relevant technical requirements and troubleshooting methods for

high-frequency power supplies and three-phase high-voltage rectifier power supplies (see Chapter 4, Appendix D).

--- Increase the operation optimization method and optimization test related content of the electrostatic precipitator (see 6.2, Appendix C).

--- Increase the electric precipitator operation power consumption test content (see 6.3.3).

--Combining the new technology of electrostatic precipitator and the ultra-low emission transformation of coal-fired power plants, the unsuitable formulations, requirements, parameter indicators, etc. in the original standard the content is revised.

This standard was proposed by the China Electricity Council.

This standard is under the jurisdiction of the Power Plant Boiler Standardization Technical Committee (DL/T 08).

Drafting organizations of this standard. Xi'an Thermal Power Research Institute Co., Ltd., Zhejiang Dawei High-Tech Co., Ltd.

1 Scope

This standard specifies the operation and maintenance of electric precipitators and auxiliary equipment for coal-fired power plants.

This standard applies to electric precipitators in coal-fired power plants.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 13931 Performance test method of electrostatic precipitator GB 50065 Grounding design code for AC electrical installations GB 50148 Code for construction and acceptance of power transformers, oil-immersed reactors, and transformers for electrical installation engineering GB 50169 Code for construction and acceptance of grounding devices for electrical installations GB 50171 Electrical installation engineering panel, cabinet and secondary circuit wiring construction and acceptance specification GB 26164.1 Electrical Safety Work Regulations Part 1: Heat and Machinery DL/T 514 Electric dust collector DL 5190.2 Electric Power Construction Technical Code Part 2: Boiler Unit HJ 75 Technical specification for continuous monitoring of emission of stationary pollution source flue gas (SO₂, NO_x, particulate matter) HJ 76 Technical requirements and testing methods for continuous monitoring system for emission of stationary pollution source flue gas (SO₂, NO_x, particulate matter) SDJ99 Electrostatic Precipitator Construction Technology Guide SD110 Electric measuring indicating instrument inspection regulation JJG 186 Moving Coil

Temperature Indication (Indicating Position Adjustment) Instrument Verification Regulation JJG 617 Verification Regulation of Digital Temperature Indicating Regulator JB/T 5845 Test method of rectifier equipment for high-voltage electrostatic dust removal JB/T 9688 Thyristor control high voltage power supply for electrostatic precipitator JB/T 11395 Three-phase high voltage rectifier power supply for electric dust removal JB/T 10862 Low-voltage control device for electrostatic precipitator JB/T 11268 Electricity-saving guidelines for electrostatic precipitators JB/T 11311 Mobile plate type electric dust collector JB/T 11639 High frequency and high voltage rectifier equipment for dust removal

3 Terms and definitions

The following terms and definitions apply to this document.

Low-low temperature electrostatic precipitator Electrostatic precipitator for treating flue gas temperature below the acid dew point and used for flue gas treatment of coal-fired boilers.

Operation optimization of electrostatic precipitator According to changes in working conditions such as unit load, coal type, etc., the operation mode and operation mode of the high-voltage power supply, rapping system, and heating system of each electric field of the electrostatic precipitator the control parameters are optimized and adjusted to reduce operating energy consumption while meeting the smoke and dust emission control targets.

4.1 General rules

The inspection of the electrostatic precipitator should be carried out before the trial operation, and the acceptance is qualified. The main design parameters and equipment specifications of the electrostatic precipitator are shown in the attachment Record A. Refer to Appendix B for acceptance documents and materials.

4.2.1 Metal structural parts

Check the installation quality of beams, columns, rods, plates, frames, and shells of metal structural parts, and shall comply with Section DL 5190.2 of Technical Code for Construction of Electric Power Part 2: Boiler unit.

4.2.2 Tightness check

Before laying the insulation layer, check the tightness of the body, and it should meet the requirements of SDJ99.

4.2.3 Distance between poles

Check the distance between the same pole and the opposite pole. The limit deviation should meet the requirements of DL/T 514.

4.2.4 Internal components

Check that the internal parts of the electrostatic precipitator should be free of sharp corners and burrs. Especially for the dust collector and discharge electrode frame, if the sharp corners and burrs are found, they should be eliminated immediately except.

4.2.5 Dust collecting electrode, discharge electrode and dust removal device

4.2.5.1

All bolts and nuts of the dust collecting electrode and discharge electrode system should be tightened and be welded without rotation.

4.2.5.2

The installation of the discharge electrode should meet the design requirements and the tightness should be moderate.

4.2.5.3

The flatness of the dust collecting electrode plate row is 10mm, the difference between the diagonal lengths is not more than 5mm, the positioning suspension and guiding structure are good, and the dust collection the gap between the lower end of the electrode plate row and the baffle plate of the ash hopper should meet the needs of thermal expansion.

Phenomenon to ensure the transmission of rapping acceleration.

4.2.5.4

The minimum discharge distance between the dust collecting electrode and the upper, middle and lower part of the discharge electrode frame shall meet the design requirements.

4.2.5.5

The adjustment of the rapping shaft system should meet the design requirements. the horizontal deviation of the center line of the side rapping shaft is not more than $\pm 1.5\text{mm}$, and the coaxial deviation is in phase.

The distance between the two adjacent bearing seats is 1mm, and the full shaft length is 3mm; when top rapping is used, the perpendicularity between the insulated shaft and the supporting rod is not more than 0.3%.

4.2.5.6

The insulator for suspending the electrode should be placed vertically in the beam (upper), the allowable deviation of the upper flange surface of the insulator is less than 1mm, and the dust cover the allowable deviation of the electrode suspension rod is 5mm.