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**INDUSTRY STANDARD OF THE
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**Guide of operation and maintenance for wet cooling tower in
thermal power plant**

火力发电厂湿式冷却塔运行维护导则

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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 was proposed by the China Electricity Council.

This standard is under the jurisdiction of the Power Plant Steam Turbine Standardization Technical Committee.

Drafting organizations of this standard. Xi'an Thermal Power Research Institute Co., Ltd., Changzhou Jintan Plastic Factory, Xi'an Xire Energy Saving Technology Co., Ltd.

1 Scope

This standard specifies the general principles and requirements for the operation and maintenance of wet cooling towers in thermal power plants, as well as cooling tower tests and component updates.

This standard applies to wet cooling towers, dry-wet cooling towers can be used as reference. Not applicable to dry cooling towers and closed cooling towers.

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 document.

For undated documents, the latest version (including all amendments) applies to this document.

GB/T 50050 Design Code for Industrial Circulating Cooling Water Treatment GB/T 50392

Technical Design Specification for Mechanical Ventilation Cooling Tower DL/T 742 Quality Standard for Plastic Parts of Wet Cooling Tower Core DL/T 933 Cooling tower water spray filler, water remover, spray device performance test method DL/T 1027 Test Procedure for Industrial Cooling Tower DL/T 5525 Cooling tower core components selection design guide

3.1 General requirements

3.1.1

When the cooling tower is running in summer, it should reach the design cooling capacity.

3.1.2

When the cooling tower is operating in winter, measures should be taken to prevent ice load from causing damage to the tower core components.

3.1.3

For cooling towers equipped with anti-fogging devices, the anti-fogging devices should be put into operation during the anti-fogging period.

3.2 Cooling tower operation

3.2.1

Determine the economical and reasonable operation mode of the cooling tower based on the unit load, external weather conditions and equipment status.

3.2.2

When the cooling tower water supply system adopts the expansion unit system and the main control, it should be reasonably adjusted and distributed to each cooling tower according to the actual performance of the cooling tower the amount of water in the cooling tower will make the water temperature of the mixed tower reach the lowest value after cooling.

3.2.3

For cooling towers with trough water distribution, the cooling water should overflow the trough.

3.2.4

When the cooling tower is operating in summer, there should be no water spray area.

3.2.5

When the dry-wet cooling tower is operating in summer, the dry section system shall be closed and the wet section shall operate independently.

3.2.6

For mist-eliminating and water-saving cooling towers without dry section, the cold air inlet door should be closed in summer and the cold zone partition should be opened.

3.2.7

For cooling towers equipped with antifreeze plates, as the ambient temperature rises, the antifreeze plates should be removed in time. Fixed and adjustable antifreeze device, should Keep the opening of the antifreeze plate at the most favorable ventilation position to reduce the ventilation resistance of the cooling tower.

3.2.8

When the mechanical ventilation cooling tower is running in summer, the angle of the fan blades or the power of the variable frequency motor should be adjusted to make the air volume reach the design value.

3.2.9

The mechanical ventilation cooling tower shall regularly check the operation status of the fan and motor, and measure the oil level, oil temperature and vibration of the bearing oil tank in time.

When the oil level is lower than the design value, lubricating oil should be added; when the oil temperature is higher than the specified value, the fan should be shut down and the reason should be analyzed. The vibration exceeds the design safety it should be shut down and handled in time.

3.2.10

Monitor the water level of the cooling tower sump in real time. When the water level is lower than the design value, water should be added in time.

3.2.11

Clean the filter screen of the cooling tower regularly, and the water level difference between the inlet and outlet of the filter should not be greater than the specified value.

3.2.12

Develop an economical and reasonable sewage plan, measure the water quality changes of the cooling tower, and maintain the normal operation of the sewage system.

3.2.13

The quality of circulating water should comply with the relevant regulations of the GB/T 50050 standard.

3.2.14

If the ambient air temperature is lower than 0°C, the cooling tower should not be subjected to trial operation without heat load.

3.2.15

When the ambient temperature is lower than 0°C, which affects the safe operation of the cooling tower, antifreeze measures such as hanging antifreeze plates and putting antifreeze pipes into operation should be taken.

3.2.16

When cooling towers with zonal water distribution are operating in winter, the inner water distribution gate should be closed and the outer water distribution operation should be implemented.

3.2.17

When the icing in the cooling tower is severe, the circulating water should be gradually increased to quantify the ice.

3.2.18

The deicing of mechanical ventilation cooling tower may adopt the operation mode of fan reverse.

3.2.19

When a cooling tower with a siphon water distribution device is equipped with a small water volume, the whole tower should be operated according to the designed full load water volume first, and the whole tower should form a siphon.

After the water is distributed, the water supply of part of the circulating water pump can be stopped.

3.3 Cooling tower maintenance

3.3.1

Pay attention to maintaining the ventilation conditions and environmental sanitation around the cooling tower. There should be no influence on the ventilation of the cooling tower within 15m around the cooling tower body obstacle. The height of the ground around the cooling tower should be 20cm lower than the cooling tower collecting basin to prevent debris from entering the collecting basin.

3.3.2

Keep the filter screen of the backwater ditch intact and clean. The filter screen should be cleaned up in time, and the heavily rusted filter screen should be replaced in time.

3.3.3

During the overhaul, check the missing and damaged cover plates of the circulating ditch, shaft and main water tank. The missing and damaged cover plates should be filled in.

The cover of the position should be reset.