



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

GB/T 50102-2014

Replacing GB/T 50102-2003

Code for design of cooling for industrial recirculating water

工业循环水冷却设计规范

(English Translation)

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1.0.1

This code is formulated with a view to implementing the technical and economic policies of the nation in design of facilities for cooling for industrial recirculating water and thus achieving advanced technology, safety and applicability, economic rationality, energy saving and environmental protection and guaranteed quality.

1.0.2

This code is applicable to process and structural design for open recirculating water cooling facilities.

1.0.3

The type selection of recirculating water cooling facilities shall be determined through technical and economic comparison according to the production process requirements for the quantity, temperature and quality of recirculating water, as well as operation mode of water supply system, etc., and in combination with the following factors:

- 1 Local natural conditions, such as hydrogeology, meteorology, topography and geology;
- 2 Supply of materials, equipment, electricity and make-up water;
- 3 Site layout and construction conditions;
- 4 The interaction between recirculating water cooling facilities and the surrounding environment;
- 5 Safety reliability of buildings (structures).

1.0.4

In addition to this code, the design of recirculating water cooling facilities shall also meet the requirements of the current relevant standards of the nation.

2.0.1 open recirculating water cooling facilities

cooling facilities where industrial recirculating cooling water (hereinafter referred to as recirculating water) is directly exposed to the atmosphere.

2.0.2 evaporation loss

loss of recirculating water due to vaporization of liquid surface.

2.0.3 drift and blow-out loss

loss of recirculating water due to entrainment of water droplets by airflow.

2.0.4 purge loss

loss of recirculating water due to discharge of a certain amount of water from the recirculating water system to maintain a certain concentration cycle of recirculating water.

2.0.5 rate of evaporation water loss

percentage of evaporation water loss amount of cooling facilities such as cooling towers, cooling pond and spray pond in recirculating water entering these cooling facilities.

2.0.6 rate of drift and blow-out water loss

percentage of the drift and blow-out water loss of cooling facilities such as cooling towers and spray pond in recirculating water entering these cooling facilities.

2.0.7 concentration cycle of recirculating water

ratio of the salt content of the recirculating water to the salt content of makeup water.

2.0.8 seawater salinity

ratio of total dissolved solid mass to seawater mass in g/kg.

2.0.9 air deflector

device for steering flow installed at air inlet of cooling tower.

2.0.10 super large-scale cooling tower

natural draft counter flow cooling tower with area of water drenching greater than or equal to 10000m².

2.0.11 seawater cooling tower

wet cooling tower using seawater as recirculating water.

2.0.12 flue gas discharged cooling tower

natural draft cooling tower with flue gas discharge function.

2.0.13 velocity of flue gas at outlet pipe in cooling tower

average flow velocity of flue gas at outlet pipe in the tower.

2.0.14 outlet velocity of cooling tower

average flow velocity of mixed gas at cooling tower outlet.