

Electrical Power Industry

The NAWT quantum collar devices are used in various thermal power plants.

A thermal power plant is a power station that converts thermal energy into electrical energy. In the steam generation cycle, heat is used to boil water in a large pressure vessel to produce high-pressure steam, which drives the connection to an air compressor. The low-pressure exhaust gas from the air compressor enters the steam condenser, where it is cooled to produce hot condensed water, which is recycled to the heating process to produce more high-pressure steam.

The main equipment prone to scale and rust is the air compressor and the condenser.



CASE 4.

Thermal Power Plant

(China, Yunnan)

Total system water volume: 4000 tons;

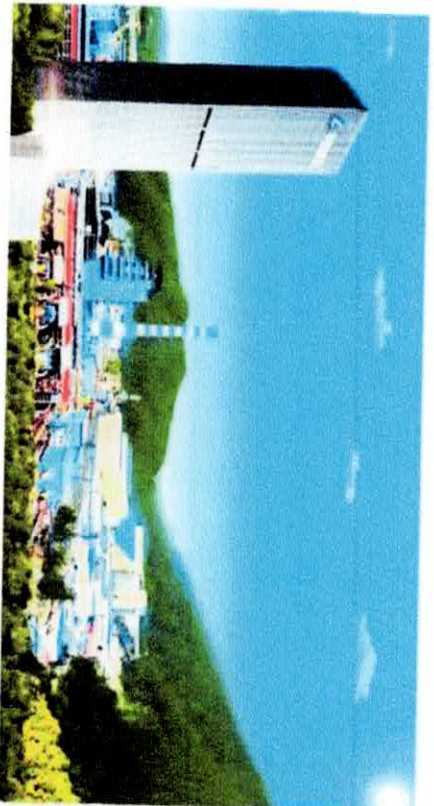
Nominal diameter of circulation branch pipe: 60

Branch pipeline flow: 2000 T/h;

System water supply: 3% of the total water vol

Hydration hardness: 4mmol/L;

Circulating water inlet temperature: 37°C in sur
winter



Cooling tower and cooling pool:

Cooling pool volume: 1000m³

Circulation flow: 3600m³/h

Cooling tower: L85 fan counterflow cooling tower

Cooling equipment:

(1) Condenser: Model N-650-1

Cooling area: 650 m²

Water channel: 2 channels 1 process

(2) Medium pressure turbine oil cooler, low pr
oil cooler

(3) Generator air cooler

(4) Online analysis of instrument cooler.

Installation

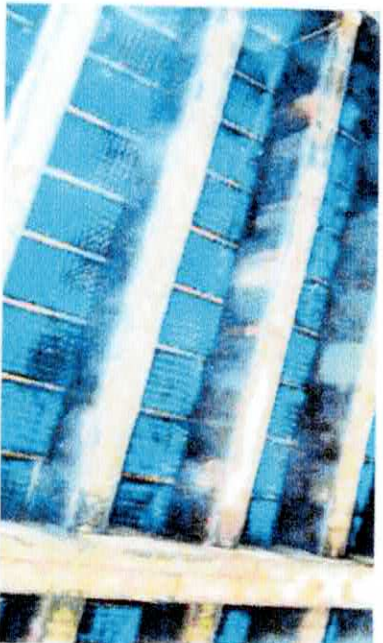
The 100865KW stem turbine generator set produced by a German company was introduced. The circulating cooling water system of the generator set directly uses customized quantum collars instead of the originally planned chemical water treatment method.

The NAWT quantum collar was installed on two branch pipes of the circulating cooling water system. It started working July and the tracking time was until November a total of 17 months. Production was suspended for four months due to a system shutdown and maintenance. The actual working time was 14 months.



Effect of Use

The cooling tower and cooling pool are very clean. There is no blockage in the filter in the tower. there is no bacteria and mud or other attachments on the wall of the pool and around it. The iron fence of the channel in the pool has been exposed and in contact with the air for than a year, basically no rust.



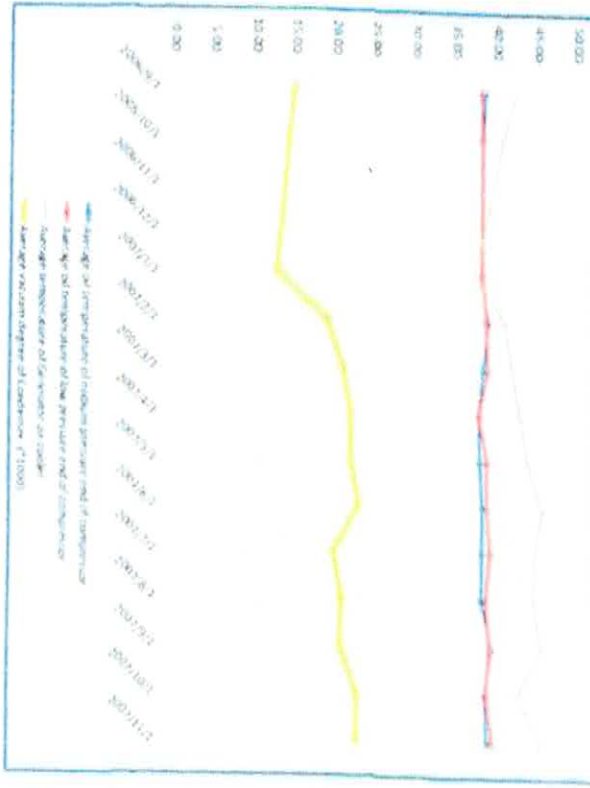
The cooling effect of the equipment is normal. The turbine oil temperature and generator air cooler temperature within the control range. The following is the monitoring data of the cooling equipment.

The minimum pH value is 7 and the maximum is 8.94 , which is relatively stable and no acidification occurs.

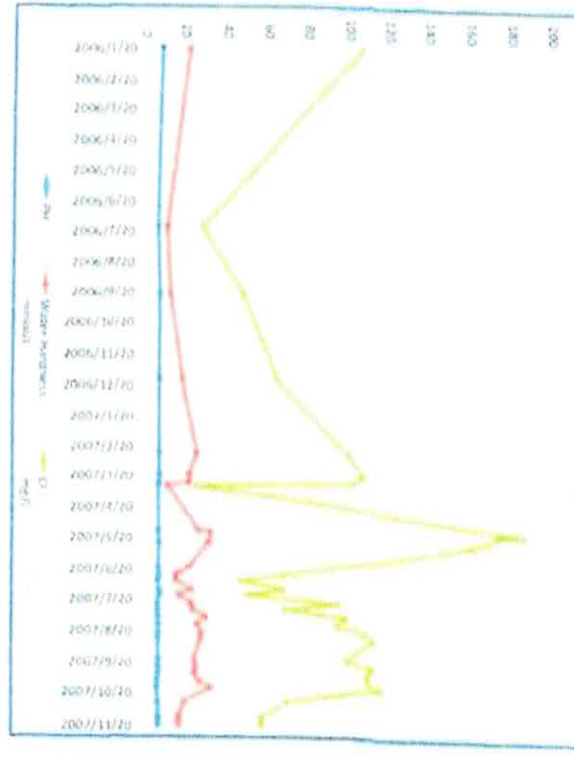
The concentrate factor of circulating cooling water is measured by c1-content. The value of the supply water is maximum value is 160, the concentration factor is close to 10, and the average value is 7.13.

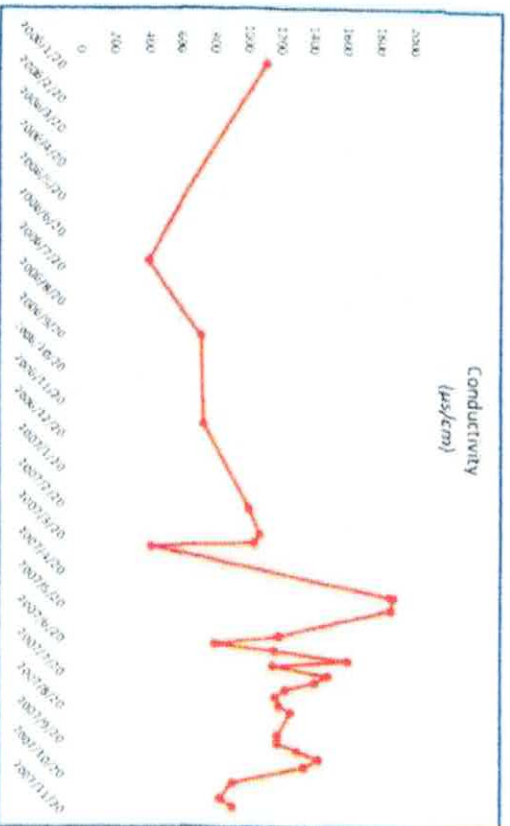
Generally, the concentration factor of industrial circulating water should be controlled at 2-4. When the concentration increases, water can be saved, but scaling and corrosive substances in the circulating water increase, making the system easy to block. The NAWT quantum collar changes the physical properties of calcium titanate, iron oxide in the water, so that they no longer deposit on the pipe wall. In this way, even if the concentrate ratio is very high, the circulation system can still work normally.

Cooling Equipment Data Record Sheet



Water Quality Record Data





Summarize

NAWT quantum Collar has 3 benefits;

- 1- If chemicals treatment is user, the annual purchase cost is about \$110,000 yearly. Now the cost of purchasing the NAWT quantum collar is saved by over 50%. And the function can last for years depending on the EMF. No manual maintenance is required.
- 2- Increase the concentration ratio of circulating water and save more than 100,000 tons a year.
- 3- There is no problem of subsequent drainage pollution.