

An Inland Power Plant, China Cooling System (River Water)



Circulating Cooling System in Power Plant using river water.

Background

Site Condition:

An Inland power plant in China using river water for the cooling system which has two of 600MW each. Chemicals dosage included anti-scaling and biocide. Refill water volume ran at 700T/hr.

Source of water:

A little river called Yuen River. Quality of water varied from season to season. During summer raining reason, water turbidity was high

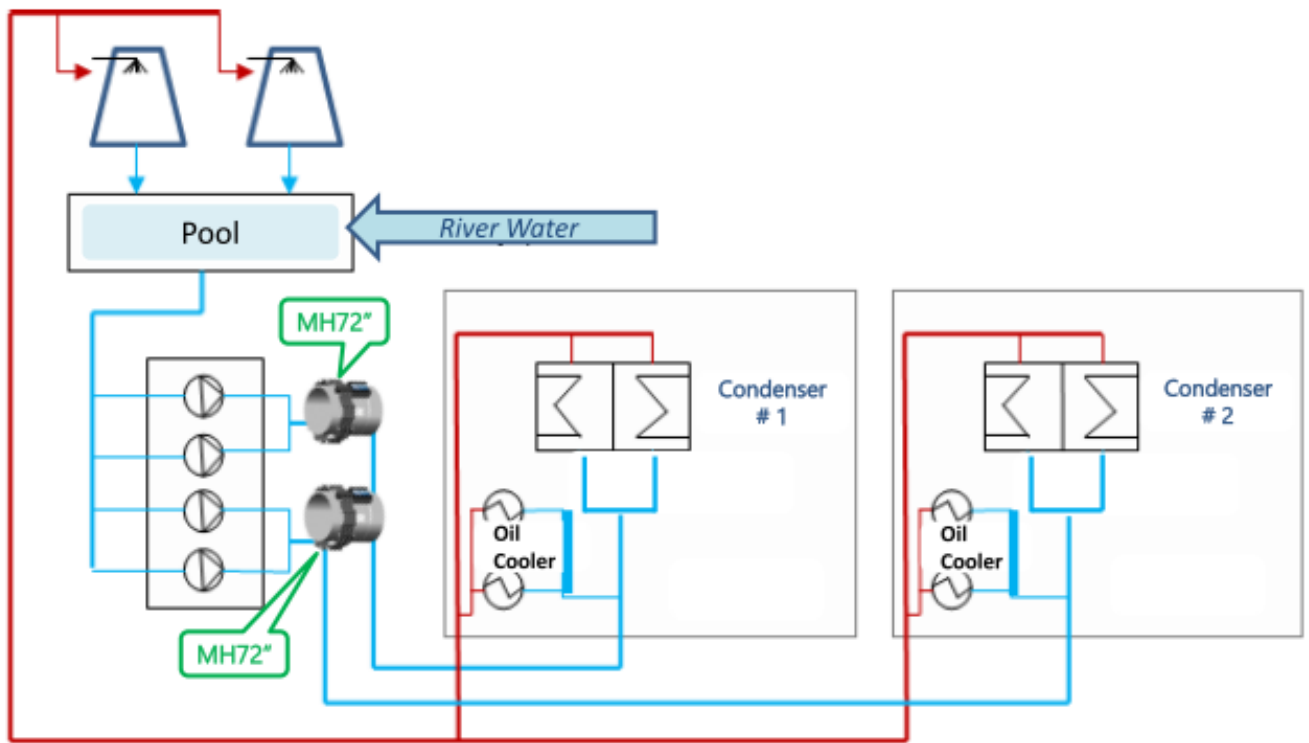
Objective:

To reduce chemical usage and improve steam condensation efficiency.

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Treatment

TWO *HydroFLOW Multi-heads MH72"* units were proposed for the complete system of the steam condensers in the power station and each pipe is 1800mm outer-diameter per attached flow diagram.



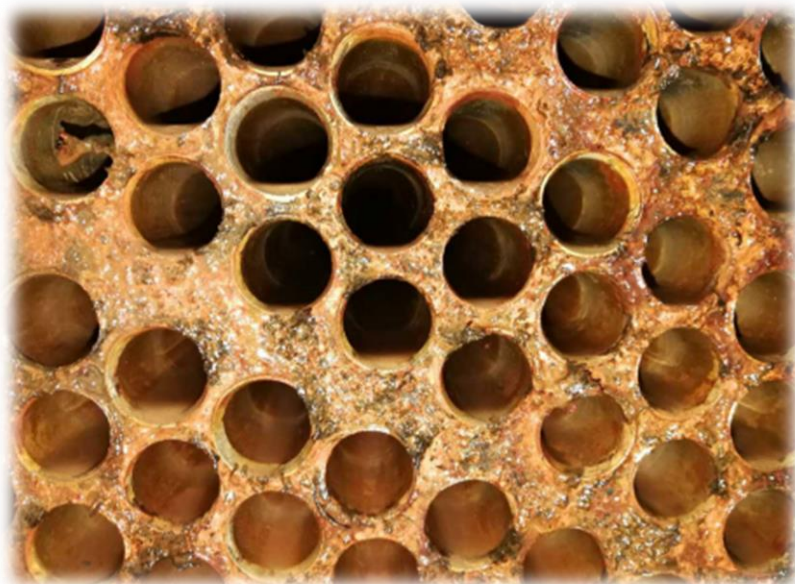
INSTALLATION DATE: 7th November 2016
 Pipe size: 1800mm O/D (Clear plastic cover to provide a shield for HydroFLOW MH72")

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Result – installed HydroFLOW after 3 months

After HydroFLOW installation in November 2016, only system 1 was in operation. Chemical dosage was stopped one week after HydroFLOW installation. System 2 was put into operation on Jan 21, 2017. Based on previous year data, transit temperature of the steam condenser was between 5°C – 6°C for the same period.

After HydroFLOW installation, the transit temperature of the steam condenser maintained at 4°C - 5°C which indicated a drop of 1.5°C. The vacuum pressure within the steam condenser increased by 1KPa which indicated that more steam was condensed into water.



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– powder scale inside cooling tower

On March 23, 2017, system 1 was opened for inspection. There was **NO HARD SCALE** formation inside the steam condenser. Only soft scale was found and could be washed down by water jets per attached photos. The factory decided to let system 2 keep on running until her annual preventive maintenance which will be in November 2017 if all operation data are within safety limit.



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CONCLUSION

After the installation of HydroFLOW, the power station achieved the following saving and environment benefits:

- Chemical dosage was eliminated for the operation.
- No hard scale was found inside the condenser and cooling tower cooling mate
- Steam condenser transit temperature dropped by 1.5°C and vacuum pressure increased by 1KPa compared with the same period in previous year.
- Discharge water from the cooling tower was used now for gardening and other application because there were no chemicals in the discharged water.

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