



- POWER STATIONS

Power Plant Sea Water Condenser Case Study China

At an LNG power plant in China, *HydroFLOW*® Multihead 50" with results showing reduced bacterial levels, improved steam condenser performance and reduced chemical usage in a sea water cooling system.

97%

Bacteria Reduction

7.4%

Transit Temp Reduction

0.86%

Vacuum Pressure Increase

\$56k

Annual Savings

⇒ BEFORE & AFTER

● BEFORE

- ✗ Biofilm and scaling required chemical dosing.
- ✗ Condensers cleaned every 4 to 6 months.
- ✗ Bacteria count at 300,000 CFU.

● AFTER

- ✓ Biofilm was greatly reduced during inspection
- ✓ Almost no hard scale observed in condenser.
- ✓ Bacteria reduced to 9,000 CFU in system.

OVERVIEW

A 180 MW LNG power plant in China uses sea water for its steam and vacuum condensers. The cooling system required regular chemical dosing to manage biofilm and scaling, with condensers opened for cleaning every 4 to 6 months. The system had a high bacterial load and required regular cleaning, with the objective to reduce chemical usage and improve steam condensation efficiency.

CHALLENGE

Biofilm, scaling and high bacterial levels were increasing maintenance and reducing condenser efficiency.

- High bacterial count of 300,000 CFU in the cooling system
- Biofilm and scaling required continuous chemical dosing
- Condensers needed cleaning every 4 to 6 months
- Performance losses in steam condensation efficiency



SOLUTION

Two *HydroFLOW*® Multihead 50" units were installed on 1250 mm condenser pipes in July 2018.

UNIT INSTALLED

2x *HydroFLOW*® Multihead 50"

PIPE SIZE

1250 mm outer diameter

WATER SOURCE

Sea water

INSTALL DATE

July 2018



INSTALLATION

HydroFLOW® units on condenser pipes.



RESULTS

% 97% bacteria reduction

Total bacteria count reduced from 300,000 CFU to 9,000 CFU after installation.

🚫 Biofilm not observed during inspect

Biofilm problem was solved during the trial period based on inspection results.

🕒 No hard scale observed

Inspection showed almost no hard scale inside the condenser after three months.

🌡️ Lower transit temperature

Steam condenser transit temperature decreased by 7.4% compared to previous year.

📈 Improved vacuum pressure

Vacuum pressure increased by 0.86% indicating improved condensation.

💰 Operational cost savings

Estimated annual savings of RMB 380,000 (\$56,000) from reduced LNG use and maintenance.

KEY TAKEAWAY

Summary

At a 180 MW LNG power plant in China, 2 *HydroFLOW*® Multihead 50" units was applied to a sea water condenser system. Within three months, bacterial levels dropped significantly, biofilm was no longer observed during the trial, and almost no hard scale was observed. Steam condenser performance improved with reduced transit temperature and increased vacuum pressure, while chemical use was reduced and operational cost savings were achieved.

97%

BACTERIA REDUCTION

7.4%

TEMPERATURE DROP

20%

CHEMICAL REDUCTION



ADDITIONAL PHOTO EVIDENCE



AFTER

Condenser tube inspection after 3 months



AFTER

Reduced scale inside condenser tubes

RELATED CASE STUDY

Power Plant Cooling System Case Study

China

An inland power plant using river water improved cooling efficiency and eliminated chemical dosing after installing HydroFLOW®. Results showed better steam condensation, reduced scaling, and cleaner discharge water suitable for reuse.

Zero Chemical Dosing

Chemical dosing fully stopped within one week of installation

1.5°C Temp Reduction

Steam condenser transit temperature dropped by 1.5°C

No Hard Scale Formation

Only soft scale found, easily removed with water jets

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