

ProDecon® Case Study

30MW CHP Plant, UK

Online Heat Exchanger Chemical Cleaning



PROJECT HIGHLIGHTS

- ▶ ONLINE EXCHANGER CHEMICAL CLEANING
- ▶ 36 HOUR COMPLETION TIME
- ▶ ZERO DOWNTIME / OPERATIONAL DISRUPTION
- ▶ EFFICIENCY IMPROVED FROM 65°C TO 37°C
- ▶ SHUT DOWN PREVENTION

THE CHALLENGE

The closed circuit cooling water system at a UK CHP plant was operating towards the maximum allowable temperature due to the plate heat exchangers being fouled with corrosion material/water scale that had been generated over time without any preventative maintenance to remove it.

The closed circuit cooling water system provides cooling to the gas turbine lube oil coolers and to the generator lube oil coolers. As the temperature of the cooling water system was nearing the maximum allowable temperature of 65°C, there was a risk of the plant tripping. This situation could compromise steam supplies to a variety of clients in the area as well as reduced power supplies, costing the client vast amounts of money.

The plate heat exchangers provided the primary cooling for the lube oil systems. An offline clean of the exchangers was not practical as the exchangers could not be isolated from the main cooling water system.

The client was concerned the cooling water system would exceed the maximum operating temperature in the very near future and required an online solution to restore the performance of the plate heat exchangers to a standard that would allow it to stay online until their planned outage in 5 months' time.

THE SOLUTION

The client set an improvement target of reducing the cooling water operating temperature to 45-50°C from 65°C. ProDecon engineers studied the process flow and P&ID's after which a chemical clean of the entire cooling water circuit was proposed while it remained online without causing disruption to the operating plant.

ProDecon designed and constructed a new inlet and outlet manifold to the same specifications as the installed process equipment. The chemistry was selected for a 2 stage clean to suit the process equipment metallurgy and also the operating conditions of the live system to allow chemical with no negative impact on the process cooling duty.

The chemistry proposed removed the contaminants present to allow for increased cooling capacity and was followed up with a conditioning/passivation stage to prevent corrosion following the chemical clean.

THE RESULTS

The chemical clean lasted 36 hours without the need to isolate or take the exchanger offline. The plant continued its normal operations with zero disruptions caused.

The temperature of the system was reduced from 65°C down to 37°C following the completion of the 2 stage clean, allowing the cooler fans in the system to be stopped, providing additional operating savings.

The chemical cleaning of the cooling water system/plate heat exchanger was extremely successful, delivering the clients criteria whilst preventing the plant shutdown.



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