

Fynsværket Unit 8

Superheater 4 Exchange

A tender for improving the Superheater 4 on FYV8 unit 8, a biomass fired boiler, was issued in spring 2013.

SCOPE

Fynsværket has over the years had corrosion problems in the tubes of the superheater 4 resulting in leakages.

Fynsværket's investigations showed that the problem was due to very high temperature variations in the single tubes of the superheater banks, causing heavy corrosion on warmest tubes – also combined with high temperature variations crosswise from the left to right of the boiler.

These problems were annoying to Fynsværket so to be able to extend lifetime and reduce the service intervals it was necessary to obtain a solution and make some kind of construction change on the superheater.

The client also wanted part of the superheater banks exchanged, removal of magnetit debris in the lower part of the banks and new openings in the boiler walls for easier access in revision periods.

SOLUTION

BWSC's solution originated from a computer simulation of the flow based on the measured temperatures of the superheater.

– a solution with orifices in single tubes of the banks was dismissed as we did not believe this solution would work in a satisfying way.

The job was done within the normal outage of the plant during the summer revision. The superheater tubes that were to be exchanged were cut just below the ceiling and replaced.

The changes to the coupling were made in the penthouse and the cleaning for magnetit were done by cutting the tubes in the bottom part of the banks and vacuuming the tubes to make sure that no debris was left that could obstruct the flow.

The reinstalling of the whole unit was made and finished with a pressure test.

Installation of 4 new, larger, openings for man holes were made so that access for maintenance will be easier in the future.

Fynsværket is again up and running, the temperatures of the superheater tubes are as foreseen by the calculation and indicates an extremely good solution provided by BWSC.



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