

hrl:

Bayswater Power Station

A hrl: case study



expertise in action



hrl: cools temperatures and increases revenues at Bayswater Power Station

Using a computer modelling software package, hrl: developed a three-dimensional model of the exit gas dust flows and temperatures.

Challenge

AGL Bayswater Power Station (formerly Macquarie Generation) is one of the largest power stations in New South Wales. During days of humid and very high summer temperatures, the power station could not maintain full load due to excessive plant temperatures resulting in revenue losses for the business.

Solution

Bayswater Power Station needed a solution to reduce the exit temperatures from the boiler to below 150°C, in order to maximise the life of the flue gas fabric system and prevent expensive damage whilst still maintaining full plant load. hrl: determined that this would be possible if a suitable air cooling system could be deployed into the exit flue gas duct after the combustion chamber (boiler) and before the fabric filter gas clean up system.

Using a computer modelling software package, hrl: developed a three-dimensional model of the exit gas dust flows and temperatures.

hrl: then designed and installed a computer controlled optimal atomization of fine water jets to quench the gas, keeping it below 150°C whilst the plant operated at full load.

This solution was then physically constructed and installed as a trial on one unit, and was proven to be successful at solving the problem. The solution was progressively rolled out across four units at Bayswater over several months, and integrated into the daily operations of the plant. It is now also used to manage the combustion of poor coal quality issues which can produce high flue gas duct temperatures, as well as providing flue gas temperature reductions on hot summer days.

Results

As a result of the installation, Bayswater Power Station can maintain full load operation on extreme days of summer temperatures. Generally, on days of extreme temperature, the pool price (dispatch price) is much higher and this enables the plant to be more flexible and competitive to achieve maximum revenue and profit outcomes. This has resulted in a significant economic gain, with the performance of hrl:'s Attemperating Spray System exceeding the expectations of both hrl: and Bayswater Power Station.

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