BHA® Powerwave® systems help clean fin-tubed economizer and achieve 0.5% heat rate improvement

Challenge

The Dynegy Vermillion plant has a 70 MW PRB coal-fired peak boiler and was experiencing build-up in their boiler back-pass. The combination of PRB coal and a tight fin design in the economizer was causing pluggage due to the ash packing between the fins. The plant would become rate limited due to the pressure loss and heat transfer efficiency loss resulting from the ash loading. Existing cleaning methods were not effective at removing the ash. The primary goal for Dynegy was to eliminate ash accumulation from their economizer in order to run full rate more efficiently.

Solution

CLARCOR Industrial Air recommended installing two BHA Powerwave+ systems on opposite walls and centered just above the economizer. During a trial installation of BHA Powerwave+, Dynegy tracked the cleaning performance using their plant instrumentation data for the differential temperature across the economizer on both sides of the unit. After the trial system was installed on January 10, 2008, the plant immediately saw an improvement in economizer heat transfer efficiency. Average flue temperature across the economizer dropped by 30ºF for the length of the trial, indicating elimination of significant ash loading which translated into more efficient heat transfer. Based on the successful results from the trial, Dynegy acquired two BHA Powerwave+ systems to clean the entire economizer section. These units were installed in March of 2009. After two weeks of operation, Dynegy reported over a 70ºF drop in economizer exit flue gas temperature and a 15ºF drop across the air preheater.

Results

The following results were achieved:

- 15ºF improvement in air heater outlet temperature, which correlates to a 0.5% improvement in boiler heat rate.
- Significant savings in terms of coal use and reduction in stack emissions.

Dynegy is satisfied with the results obtained so far and continues to monitor the performance of the permanent installation.

For more information, please contact your **CLARCOR Industrial Air** representative.
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