

D-75 Acoustic Horn Installation

Results in Reduced Outages and Increased Heat Rate, with Less Expense

case study

Challenge

American Bituminous Power Partners in Grant Town, West Virginia (an ARIPPA affiliate) operates two 400,000 pound per hour boilers that burn bituminous coal waste. The boilers were experiencing challenges with high exhaust temperatures that approached maximum baghouse limits and the facility was using sootblowers to address this challenge.

Solution

Following a thorough evaluation of the facility, GE Energy recommended the installation of two Powerwave® D-75 acoustic cleaning systems on the Unit A boiler (one in the superheater midsection, and the other between the superheater and economizer banks in the back pass). After using these horns for a year, the plant saw a drop in exit temperature of 5°–10°F, which led them to outfit the entire backpass with acoustics horn during the next outage. The horns were installed in the economizer midsection, on top of superheater 1, on top of the upper primary air heater bundle, on top of the secondary upper airheater bundle, and on top of the lower primary air heater bundle. The plant also outfitted their second unit with seven acoustic cleaners to match the first unit. They sounded each horn for 10 seconds every 10 minutes, starting at the top horn location and moving downwards. The horns are controlled through the plant DCS.



Result

The following results were achieved by outfitting the backpass with Powerwave acoustic cleaners:

- Decreased exit temperatures on average by 30° to 35°F
- Improved net heat rate by 40–50 BTU per KW-hr
- Reduced the frequency of sootblowing* by 33% to 66% (depending on the type of coal that was burned)
- Eliminated a half-day from the outage schedule due to reduced need to air-lance, and much cleaner tube bundles

*Powerwave acoustic cleaning systems operating using compressed plant air, as opposed to expensive steam that sootblowing requires.



D-75 cleaners were installed in each of the seven access doors throughout the backpass of both 80 MW boilers.

GE Energy has been supplying Powerwave acoustic cleaning systems to help significantly improve cleaning processes for air pollution control equipment for over 20 years, in applications including:

- Boiler tubes/heat exchangers
- Baghouse fabric filters
- Electrostatic Precipitator (ESP) components
- Selective Catalytic Reduction (SCR) equipment
- Material handling (hoppers, fans, silos, and ductwork)

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