

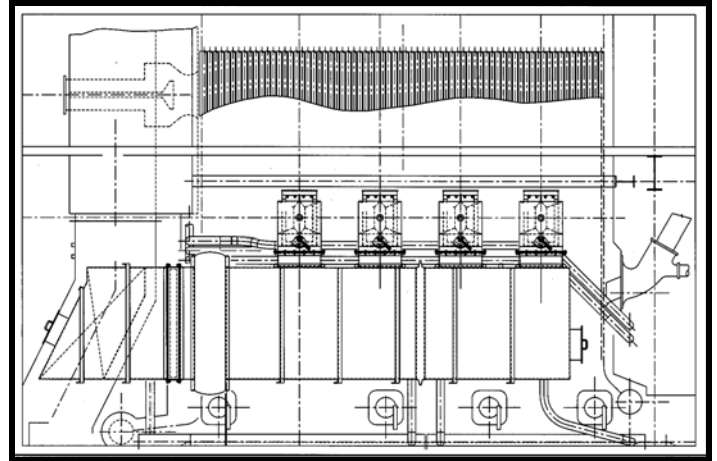
Project Description



Bark and Sludge Boiler Overfire Air System
Verso Paper Company
Jay, Maine

Project Scope

The boiler is a two-drum Stirling type unit, supplied by B&W in the early 1970s to burn wood waste, sludge, and fuel oil. The MCR steaming capacity of the unit is 300,000 lb/hr at an operating pressure of 900 psig and final steam temperature of 825°F. Before the upgrade, the unit averaged 260,000 lb/hr steaming rate on bark, dewatered waste water treatment solids (sludge), and fuel oil. The old overfire air (OFA) system consisted of an OFA booster air fan and numerous small OFA ports located at three elevations on the rear and two elevations on the front walls.



The unit experienced high amounts of carryover from the furnace and the need for continuous oil co-firing. A portion of the site-generated sludge was sent to the landfill due to combustion problems. The mill had several objectives for the OFA system upgrade:

- Reduce the amount of fuel oil burning by 75%.
- Burn all of the site-generated sludge.
- Reduce carryover of ash, fines, and char out of the furnace and reduce particulate emissions.

In the summer of 2000, a new JANSEN OFA system was installed utilizing four custom sized Jansen High Energy Combustion Air Nozzles™ on each of the side walls. Experience with other recent installations and Computational Fluid Dynamics (CFD) modeling conducted by JANSEN for this boiler demonstrated that the new OFA nozzles would provide excellent mixing, burnout of wood materials and volatiles, and a reduction in carryover out of the furnace. To accommodate the mill's tight shutdown schedules, the new OFA system was installed during two outages. As with most JANSEN OFA system upgrades, FD fan modifications/replacements were not needed.

Results

The owner has been very pleased with the performance of the boiler since the OFA system upgrade. In summary, the following project goals were achieved:

- The boiler generates up to 300,000 lb/hr of steam, firing predominantly wood and sludge.
- Oil usage has been reduced by more than 75% and the boiler now burns all mill generated sludge.
- The wood and sludge burning capacity has increased by over 25%.
- The unit has met stringent local particulate emission limitations.
- There has been a significant reduction in carryover and no signs of pluggage after one year of high load operation.