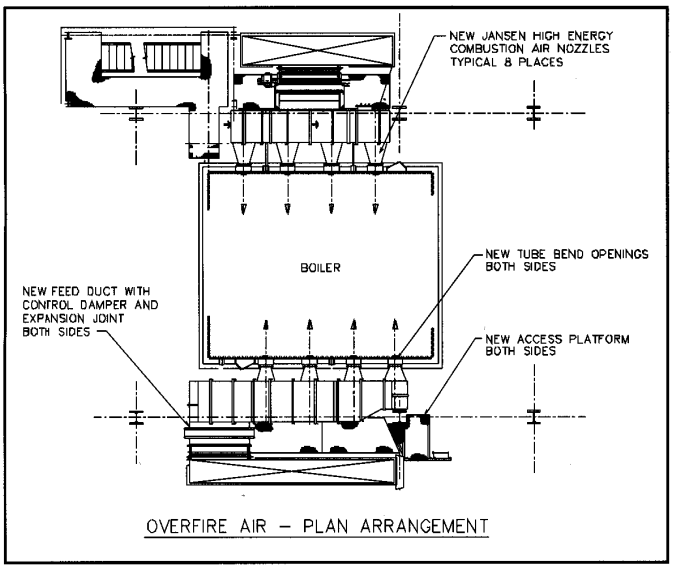
Project Description

JANSEN Combustion and Boiler Technologies, Inc.

No. 2 Power Boiler Overfire Air System Upgrade
Large Paper Company
Location: North America (US South)



Project Scope

JANSEN provided this Engineer, Procure, and Construct (EPC) project to an undisclosed customer in the southern US. The boiler is VU-40 type unit, supplied by Combustion Engineering in the late 1970s to burn natural gas and bark. The MCR steaming rate of the unit is 775,000 lb/hr at an operating pressure of 1,050 psig and final steam temperature of 825°F. The typical steaming rate prior to the upgrade was between 450,000 and 580,000 lb/hr from bark and fossil fuels.

The old overfire air (OFA) system consisted of ten large air ports located at five different elevations on both side walls. The ports were aligned to create a cyclonic flow pattern in the furnace. The arrangement of the original OFA ports was ineffective, as the boiler experienced difficulties in sustaining proper combustion of waste wood fuels.

The mill had the following goals for the OFA system upgrade of the No. 2 Power Boiler:

- Increase the annual average waste wood burning rate by 240 tons per day and thereby reduce fossil fuel consumption.
- Reduce carryover of ash and unburned char.
- Provide more stable combustion conditions in the full range of waste wood fuel qualities.
- Minimize emissions.

In December of 2001, the new OFA system was installed by JANSEN utilizing four custom sized Jansen High Energy Combustion Air Nozzles™ on each of the side walls. As with most JANSEN OFA system upgrades, FD fan modifications/replacements were not needed. This EPC project included engineering design, materials supply and construction-installation responsibility and was installed in a phased approach to meet the customer's schedule. The pressure parts were installed during the regular boiler outage that took six days. A short tie-in period was needed to do the final connections and "energize" the system.

Results

Performance testing at two separate bark burning rates took place in May of 2002. All performance goals were surpassed. Performance requirements had been specified by the mill for increased bark flow as well as reduction in stack emissions of NO_x and particulate matter. The upgraded OFA system on the No. 2 Power Boiler resulted in:

- Up to 20 tons per hour more bark burning than before.
- Reduced levels of NO_x and particulate emissions.
- Reduced grate temperatures (by approximately 75°F to 100°F) due to an increased ash layer on the grate.
- Improved burning of wet bark.

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