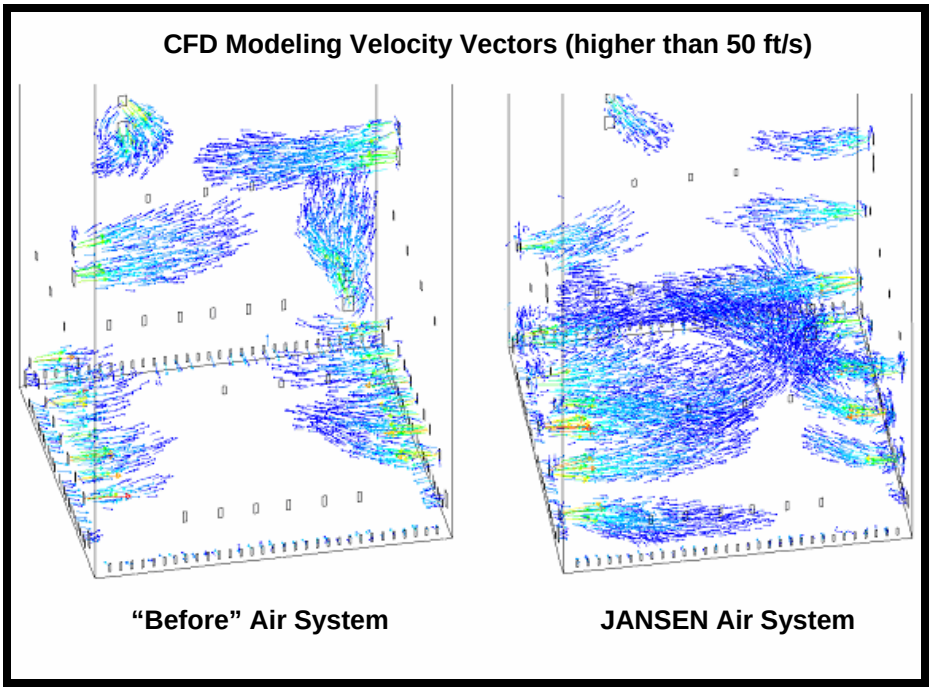
Project Description

JANSEN Combustion and Boiler Technologies, Inc.

Multi-Level Air System Upgrade on CE Recovery Boiler
Large Tissue Manufacturer
North America (US-South)



Project Scope

In December 2005 JANSEN was awarded the contract to provide engineering and equipment supply for the combustion air system upgrade of a large recovery boiler in operation at a tissue manufacturer in the US-South. The recovery boiler is a Combustion Engineering unit that was originally installed in 1974 to process 3.6 million lb/day of virgin black liquor dry solids.

On this unit in 1987, as the very first-of-its kind, the original two-level air delivery system had been upgraded by JANSEN, including new overbed air equipped with patented High Energy Combustion Air Nozzles™. After this initial upgrade, the BLDS burning capacity could be increased to 4.5 million lb/day.

With this new upgrade in 2006, the mill had the following goals:

- Increase the BLDS throughput up to 5 million lb/day at dry solids content between 68% and 75%.
- Reduce flue gas temperatures exiting the furnace in order to minimize potential superheater corrosion.
- Reduce emissions of air pollutants and minimize water wash frequency.

CFD modeling by JANSEN of the combustion process first demonstrated that the unit's best performance could be achieved with an upgrade consisting of the following elements:

- Primary air, unmodified, around the periphery of the furnace,
- Secondary (overbed) air on the front and rear walls with new JANSEN air nozzles and removal of the existing side wall secondary air ports,
- Quaternary air on the front and rear walls, located just above the elevation of the liquor guns, and equipped with new JANSEN air nozzles.
- Tertiary air supply, essentially unchanged from the original tangential upper air supply from all four walls.

No new fans or fan modifications were required and the existing secondary air supply ducting and windbox/belt duct were reused for the upgrade.

Results

The air system modifications were installed during the boiler's annual outage in the summer of 2007 and the combustion air system is meeting expectations.

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