

Project Description



No. 2 Power Boiler Overfire Air System

Tolko Manitoba Inc.

The Pas, Manitoba, Canada

Project Scope

Tolko Manitoba Inc. operates a Foster Wheeler waste wood power boiler that provides the balance of the steam not provided by the recovery boiler for the pulp mill in The Pas, Manitoba, Canada. Prior to the JANSEN overfire air (OFA) system installation, the No. 2 Power Boiler had been operating with an OFA system upgrade that consisted of rear wall OFA ports and an abandoned higher level “cyclonic” OFA port arrangement. The boiler was experiencing:

- High superheater metal temperature excursions (up to 200°F over design) due to delayed combustion.
- The need for auxiliary firing of fuel oil to maintain consistent combustion and to allow the boiler to follow variations in steam demand.
- Limitations on the quantity of waste wood burned due to the carryover and high superheater metal temperatures.



In May 1998, a new JANSEN OFA system was installed utilizing six custom sized Jansen High Energy Combustion Air Nozzles™ on each of the side walls. Since the boiler has a sloped water-cooled pinhole grate, the placement of the nozzles was arranged to meet the combustion requirement of that style system. Eight nozzles (four on each side wall) were installed in an interlace formation at an elevation approximately two feet above the fuel feed spouts to give complete coverage over the furnace cross section. Four additional nozzles (two on each side wall) were installed above the lower portion of the grate approximately six feet above the grate.

Results

The new OFA system has allowed Tolko to:

- Operate the boiler in automatic mode following steam demand on waste wood only. No auxiliary fuel is needed for loads from 40,000 lb/hr up to 170,000 lb/hr.
- Maintain superheater metal temperatures well within normal limits including high load operation and load swings.

When originally approved in 1998, the project was estimated to have a 12-month payback. The boiler has been operating so well with the new JANSEN OFA system that the payback was achieved in six months.