

Project Description

Power Boiler Economizer Addition

Domtar Papers

Kamloops, British Columbia, Canada

Project Scope

In 2011 and 2012, Domtar Papers installed new electrostatic precipitators (ESPs) on the No. 3 and No. 4 Power Boilers at their paper mill in Kamloops, British Columbia. As part of the ESP installation, Domtar decided to install new economizers to preheat feedwater in order to improve the boilers' thermal efficiency and reduce the flue gas volumetric flow and velocity through the new ESPs.

The No. 3 and No. 4 Power Boilers typically generate between 300,000 and 350,000 lb/hr of steam from waste wood firing and a small amount of natural gas. Jansen first carried out boiler evaluations to quantify the potential performance improvement by adding economizer surface to the boiler systems. After using the evaluation results to help justify the project economics, Domtar contracted with Jansen to provide the design, engineering, and material supply for the new economizers. Jansen also provided the connecting breeching sections and expansion joints at the economizer inlet and outlet for the No. 4 Power Boiler. Jansen's contract also included the design and engineering of the feedwater piping modifications and the new steam piping to the new economizer sootblowers.



Results

The No. 3 and No. 4 Power Boiler economizers were installed in October 2011 and May 2012, respectively, without any problems. Field measurements were taken several months after start-up to measure the boilers' thermal performance with the new economizers. The flue gas temperature drop across the No. 3 Power Boiler economizer was measured to be slightly over 100°F, which corresponds to a thermal efficiency increase of 7.1 percentage points. Similarly, the flue gas temperature drop across the No. 4 Power Boiler economizer was measured to be 110°F, which has produced a thermal efficiency increase of 8.6 percentage points. Both units have demonstrated low flue gas pressure drops across the new economizers, indicating very little plugging.