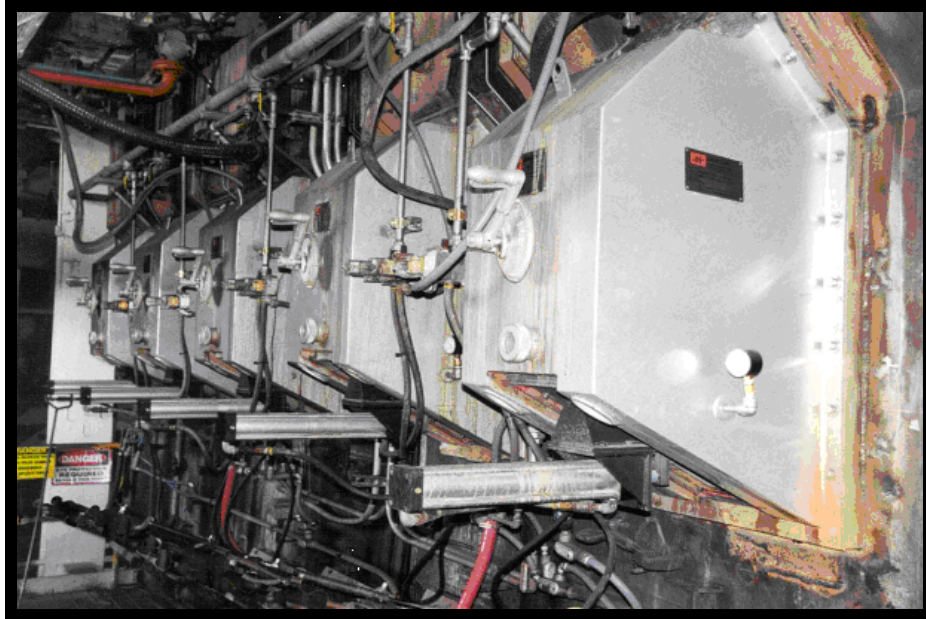


## PROJECT CAPABILITIES

### RECOVERY BOILER CAPACITY UPGRADES (KRAFT)



#### Increased Capacity

Existing recovery boilers often have a potential for increased throughput, while meeting stringent air emission limitations, provided these units are upgraded with modern air and liquor delivery systems. Using the patented Jansen High Energy Combustion Air Nozzle™, JANSEN has retrofitted over 30 recovery boilers for this purpose. The capacity gains over previous operation have been in the range of 20% to 50% with TRS release well below 5 ppm. Additionally, both boiler pluggage and air emissions have decreased as a result of the improved combustion conditions.

#### Scope of Services

Typical upgrade engineering services from JANSEN include:

- In-house CFD modeling to optimize design features of the modifications.
- Redesign of the air delivery and distribution system, including multi-level air supply, fans (if needed), ducting, ports, and air nozzles.
- Redesign of the liquor delivery and firing systems, including piping, liquor heaters, gun ports, and liquor nozzles.
- Redesign of boiler pressure parts (JANSEN has ASME S-stamp certification) and auxiliaries for improved operation, reduced pluggage, additional capacity, or other purposes.
- Implementation of DNCG incineration.

#### Selected References (see next page)



## **Selected References**

### **Recovery Boiler Capacity Upgrades (Kraft)**

Boise Cascade Corporation - International Falls, MN  
Bowater Carolina - Catawba, SC  
Clearwater Paper - McGehee, AR  
Domtar Papers - Cornwall, ON  
Fletcher Challenge Canada Ltd. - Mackenzie, BC  
Georgia-Pacific Corporation - Big Island, VA (2 units)  
Georgia-Pacific Corporation - Camas, WA  
Georgia-Pacific Corporation - Clatskanie, OR  
Georgia-Pacific Corporation - Monticello, MS (2 units)  
Georgia-Pacific Corporation - Palatka, FL (1987)  
Georgia-Pacific Corporation - Palatka, FL (2007)  
Georgia-Pacific Corporation - Zachary, LA  
Mackenzie Pulp Mill Corp. - Mackenzie, BC (in progress)  
MacMillan Bloedel Limited - Port Alberni, BC  
Mead Paper - Chillicothe, OH  
Mead Paper - Escanaba, MI (multiple phases)  
NewPage Corporation - Wickliffe, KY  
Packaging Corporation of America - Valdosta, GA  
Rayonier, Inc. - Jesup, GA (2 units)  
SAPPI North America - Skowhegan, ME (partial)  
Simpson Tacoma Kraft Company - Tacoma, WA  
Skeena Cellulose, Inc. - Prince Rupert, BC  
Smurfit Cartón de Colombia - Cali, Colombia (2 units)  
Smurfit Mocarpe - San Felipe, Venezuela  
Smurfit-Stone Container Corporation - Brewton, AL (2 units)  
Weyerhaeuser Paper Company - New Bern, NC