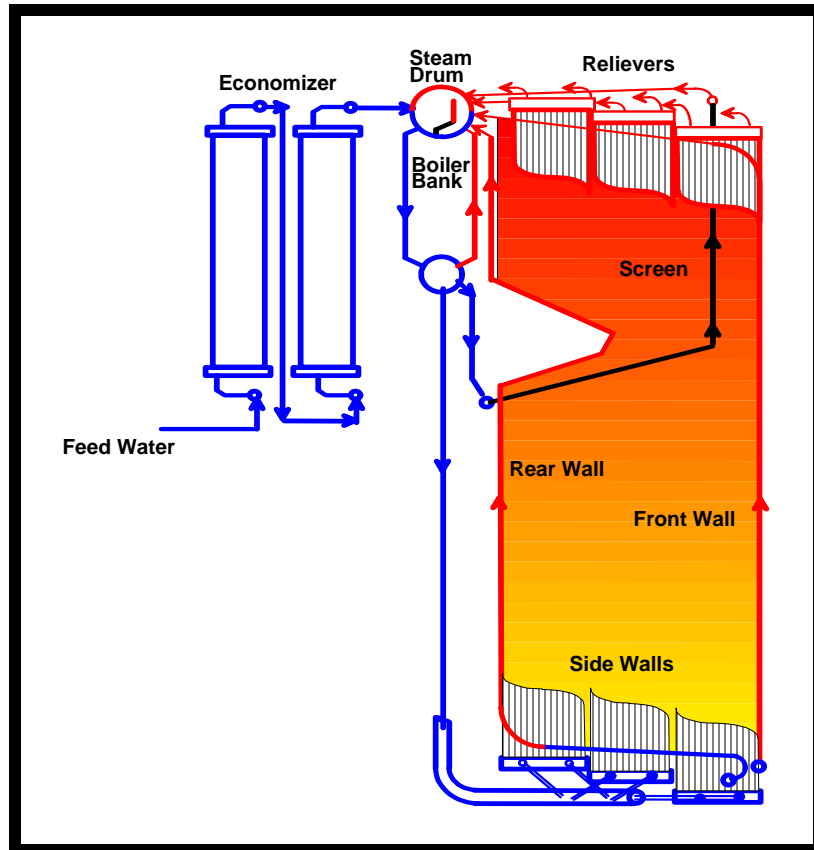


# CAPABILITIES

## BOILER CIRCULATION STUDIES



### Boiler Circulation

Circulation of water through boiler tubes is necessary to prevent tube overheating and potential failure. The need to conduct a circulation study on a boiler is typically dictated because of any one, or combination of, the following reasons:

- To establish the maximum steaming rate at which circulation remains adequate.
- To determine pressure part modifications needed to support a significant increase in fuel burning rate.
- To evaluate the effect of changing boiler operating conditions (such as type of fuel or operating pressure) on circulation.
- To evaluate the effect of changing heating surfaces on circulation.
- To uncover factors causing repeat pressure part failures and/or tube overheating.
- To investigate the cause of excessive scale depositions inside tubing.

A valuable technique used by JANSEN during its analyses of circulation conditions is the application of Ultrasonic Flow Monitoring (UFM).

### Selected References (see next page)



## Selected References

Alberta-Pacific Forest Industries, Inc. - Boyle, AB  
APRIL Group - Rizhao, China  
AssiDomän Sepap - Stetí, Czech Republic  
Australian Paper - Morwell, Australia  
Blue Ridge Paper Company - Canton, NC  
Boise Cascade Corp. - DeRidder, LA  
Boise Cascade Corp. - International Falls, MN (2 units)  
Boise Cascade Corp. - Jackson, AL  
Boise Cascade Corp. - Rumford, ME  
Boise Cascade Corp. - Wallula, WA (2 units)  
Bowater Incorporated - Catawba, SC  
Cariboo Pulp & Paper Co. - Quesnel, BC  
Carter Holt Harvey Pulp & Paper Ltd. - Tokoroa, NZ  
Champion International Corp. - Quinnesec, MI  
Champion International Corp. - Roanoke Rapids, NC  
Champion Papel e Celulose Ltda. - Mogi Guaçu, Brazil  
Domtar Papers - Cornwall, ON  
Domtar Inc. - Bennettsville, SC  
Domtar Inc. - Kingsport, TN  
Domtar Inc. - Lebel-sur-Quevillon, PQ  
Donohue Forest Products Inc. - St. Félicien, PQ  
E.B. Eddy Forest Products Ltd. - Espanola, ON  
Federal Paper Board Company, Inc. - Riegelwood, NC  
Fletcher Challenge Canada - Mackenzie, BC  
Fort James Corporation - Clatskanie, OR  
Fraser Papers Inc. - Edmundston, NB  
Fraser Papers Inc. - Park Falls, WI  
Georgia-Pacific Corporation - Big Island, VA  
Georgia-Pacific Corporation - Cedar Springs, GA  
Georgia-Pacific Corporation - New Augusta, MS  
Georgia-Pacific Corporation - Palatka, FL  
Georgia-Pacific Corporation - Wauna, OR  
Graphic Packaging - Macon, GA  
Harmac Pacific Inc. - Nanaimo, BC  
Hercules Pinova - Brunswick, GA  
Howe Sound Pulp & Paper - Port Mellon, BC  
Inland Paperboard & Packaging, Inc. - Orange, TX  
International Paper Co. - Pine Bluff, AR  
International Paper Co. - Pineville, LA  
International Paper Co. - Riegelwood, NC  
International Paper Co. - Svetogorsk, Russia (2 units)  
Interstate Paper Company - Riceboro, GA  
Irving Pulp & Paper, Limited - Saint John, NB  
Kimberly-Clark Corporation - Coosa Pines, AL  
Kimberly-Clark Forest Products Inc. - Terrace Bay, ON  
Kimberly-Clark Nova Scotia Inc. - New Glasgow, NS  
MacMillan Bloedel Limited - Port Alberni, BC  
Mead Corporation - Chillicothe, OH  
Mead Corporation - Escanaba, MI (2 units)  
Mead Corporation - Kingsport, TN  
MeadWestvaco - Phenix City, AL (2 units)  
Minnesota Power - Grand Rapids, MN  
Montenay Onyx - Burnaby, BC  
Northwood Pulp & Timber, Inc. - Prince George, BC  
Packaging Corporation of America - Valdosta, GA  
Plainwell Paper Company - Anderson, CA  
Pope & Talbot, Inc. - Halsey, OR  
Rayonier, Inc. - Jesup, GA  
Repap British Columbia Inc. - Prince Rupert, BC  
Repap Manitoba - The Pas, Manitoba  
Riverwood International Corporation - West Monroe, LA  
SAPPI Fine Papers North America - Muskegon, MI  
SAPPI Fine Papers North America - Skowhegan, ME  
Severoslovenské Celulóžky a Papierne as - Ruzomberok, Slovak Republic  
Simpson Paper Co. - Eureka, CA  
Simpson Tacoma Kraft - Tacoma, WA  
Smurfit Cartón de Colombia - Cali, Colombia (2 units)  
Smurfit Mocarpel - San Felipe, Venezuela  
SP Newsprint - Newberg, OR  
Stone-Consolidated Corp. - Fort Frances, ON  
Stone-Consolidated Corp. - Portage du Fort, PQ  
Stora Enso North America - Wisconsin Rapids, WI  
Tasman Pulp and Paper Company Ltd. - Kawerau, NZ  
Western Pulp Limited Partnership - Squamish, BC  
Westvaco Corporation - Covington, VA  
Westvaco Corporation - Wickliffe, KY  
Weyerhaeuser Canada Ltd. - Kamloops, BC  
Weyerhaeuser Paper Company - Longview, WA  
Weyerhaeuser Paper Company - New Bern, NC  
Weyerhaeuser Paper Company - Springfield, OR (3 units)