

# PROJECT PROFILE



## DOMTAR PAPER MILL

### SBC ELECTRONIC WATER TREATMENT SYSTEM WITH FILTRATION

#### CUSTOMER PROFILE

Domtar owns and operates a leading Canadian Paper Mill in Espanola, Ontario, Canada that produces over 200 different grades of technical and specialty papers. Paper production is 78,000 tons per year with pulp production of 350,000 tons.

#### APPLICATION

The #1 Lime Kiln Wet Scrubber Recycle Shower Flow and Slurry Transfer flows were impacted by scaling of the process piping over a 90 day period. The scale would start to foul the scrubber body each run until the next shutdown for cleaning.

Once a Scrubber fouls beyond a certain point there are three concerns:

- Loss of production of Lime due to a forced Scrubber cleaning.
- Environmental impact due to the loss of Shower Recycle flow.
- Loss of lime mud to the mud mix box due to reduced Transfer Flow from the scrubber.

Consequences of the Scrubber and associated pipe scaling were dust discharges to the atmosphere, lost production (down time due to cleaning), lost product (lime mud), and the costs of dredging the lost product from the lagoons.



#### PROBLEM

##### Lime Kiln Scrubber

A properly designed wet scrubber is a highly efficient approach to controlling lime kiln emissions which contain SO<sub>2</sub> and HCl acid gases, metals, and particulate matter. A Venturi scrubber followed by a cross-flow entrainment separator has the advantages of a small footprint. A multi-clone upstream of the Venturi scrubber removes the bulk of the lime dust. The multi-clone keeps the majority of the lime dust in a dry form. This reduces maintenance in the scrubber and greatly reduces the quantity of scrubber sludge. The wet scrubber can also be operated in a flue gas desulphurization mode resulting in a gypsum by-product. Often the initial capital investment for a wet scrubber is less than a dry injection fabric filter. This results in low operating costs and significant savings for lime kiln facilities.

#### SOLUTION

##### 12" SBC

DSI Canada Ltd provided Domtar with a trial of Griswold's SBC Technology for a term of 120-days. The SBC system was installed on the scrubber to reduce or eliminate the scale in the scrubber body process equipment.

## CUSTOMER STATEMENT

“Since you installed the latest SBC upgrade, there has been a noticeable improvement in the #1 Kiln Wet Scrubber Operation. From mid May of 2007 until our September shutdown we have seen consistent Recycle and Transfer flows from the #1 Kiln Scrubber.

Our plant has, essentially, two twin lime kilns with wet scrubbers, the age of the units being the primary difference. The main operating differences between the two kilns are fuels fired and mud loading. Our #1 Kiln sees more Sulfur since we burn TRS gases (Total Reduced Sulfur compounds and methanol). The TRS/methanol fuel is a by-product of the wood cooking/pulping operation. The #1 Kiln Wet Scrubber Recycle Shower Flow and Slurry Transfer flows were impacted by calcium sulfate scaling of the scrubber body and piping from the start of each run until the next cleaning, we would see a severe deterioration in flows over a 90 day period. #2 Kiln Scrubber can run 365 days without requiring cleaning but will see a reduced Scrubber Recycle Shower Flow and Transfer Flow if we incinerate the TRS gases in the #2 Kiln.

As stated at the beginning, the #1 Kiln Operated from mid May until Sept 2nd (~113 days) with both good Scrubber Recycle and Transfer flow rates. Make-up water to the suction of the Scrubber Cone outlet was not opened and the Scrubber was not overflowed to keep the Slurry Solids in line, on any other run these two events would have occurred. During this 113 day run we did not require a kiln outage to clean the scrubber. Also, inspection of the transfer line since the last cleaning shows very little build up. This is the best Scrubber run I am aware of since my involvement with the Recast/Kiln area.”

- Robert McDonald - Asst. Superintendent Steam & Recovery

## RESULTS

Reduced Calcium Sulfate scaling, Reduced Water Consumption, Reduced Environmental Impact Due to Reduction in Dust Discharge, Eliminated Plant Downtime Due to Previously Required Cleaning and Maintenance



Normal scaling of Lime Kiln Scrubber over a 90 day period



113 days with 12" SBC  
No restriction of flow