Paper Mill - Pulp Slurry
White Water Polishing for Water Re-Use

Equipment: Durco Filters TF Tubular Filter Continuous Filtration System, 6-filter tube array with slotted filter elements and fully automatic backwash option.

Industry: Pulp & Paper
Location: Northern Michigan, USA
Installation Date: April 1987
Process Flow: 1200 GPM @ 70 PSI

Case: This Durco Filters designed tubular filter has handled 17,996,800,000 gallons of water since its installation in 1987.

If you were to put each filtered gallon into a 1-gallon can, it would create a stack of cans that would reach to the moon more than 14 times!

The Durco Filters designed tubular filter is very reliable while achieving significant energy savings and reducing consumption chemicals.

- Conserves Water
- Saves Energy
- Saves Chemicals
- Approx. 30-Day Payback

The Problem: A prefilter step passes the raw white water through a device called a Saveall. After passing through, the white water still contains small amounts of fibers. Since these fibers have been mechanically and chemically treated to interlock and form a sheet of paper, they tend to form lumps and knots that can harm downstream systems like knock off showers that contain calibrated directional spray nozzles.

The Solution: A Durco Filters TF Tubular Filter ‘Polishing’ System efficiently removes the trace quantities of cellulose paper fibers from the prefiltered white water stream. For shower system spray nozzle protection, the required filter retention is typically calculated by dividing the nozzle orifice size by a factor of 6. For example, for a 0.035 inch orifice, a filter retention of 0.006 inches is required.
The system is automated and designed to internally backwash on a preset rise in differential pressure of 15 PSI. This system filters 1200 GPM, at an operating pressure of 60-70 PSI, producing clarified white water suitable for re-use at the mill.

The unfiltered raw white water is removed from the pulp slurry at the wet end of the Fourdrinier paper machine, and undergoes multiple filtration steps before it can be reused. Passing through the Saveall separates out valuable cellulose fiber so it can be reclaimed to the Fourdrinier machine feed chest.

**Durco Filters Experience:** Many years of empirical testing have proven that slotted filter elements perform best in fiber-laden water filtration applications. In comparison, wire mesh filters (that have a weave of fine stainless steel wires) tend to cause the fibers to ‘staple’ to the mesh, making their removal from the filter elements extremely difficult. The smooth surface of the slotted tubular filter media avoids the stapling effect, and allows the tubular filters to be cleaned in place by manual or automatic backwashing.

**More Benefits:** By re-using process white water (typically at ~120°F) versus consuming fresh water (averaging about 50°F) significant energy savings are made due to avoiding the necessity to heat the relatively cold fresh water. Additionally, the process white water also retains many of the special chemical additives required to enhance the formation of the paper sheet on the Fourdrinier machine, which decreases the chemical cost of the operation.