

CleanFlow™

The CleanFlow™ Green Liquor Filter was developed in collaboration with the Royal Institute of Technology in Sweden and produces a particle-free green liquor with the use of membrane filtering. The add-ons work with existing filters allowing for easy, low risk implementation.

The problem

Non-process elements (NPE) such as magnesium, manganese and iron enter the recausticizing process through wood, water and makeup chemicals. In order to avoid a buildup of NPE in the process and remove green liquor dregs, clarifiers are often used. However, the capacity of the clarifiers can be limiting and present a bottleneck.

The solution

The CleanFlow™ System is a filtration technology proven to increase the capacity of a kraft mill recausticizing plant. CleanFlow can provide **additional filtration capacity** by **skidded modules** with equipment installed and instruments prewired to a local junction box. The concentration of particles can go from ~3000 ppm to <6 ppm with CleanFlow. The capacity of the system can be from a partial of the green liquor flow (typically 20-80 m3/h) up to a full liquor flow of ~400 m3/h.

How it works

The CleanFlow™ technology is based on crossflow filtration and enables removal of practically all particles. Unfiltered green liquor is pumped into the CleanFlow System from the dissolving tank or equalization tank. Filtered green liquor is sent to green liquor storage. A bleed stream of concentrated dregs is sent to the existing green liquor clarification/filtration. The CleanFlow™ utilizes membranes, ceramic rods, and cleaning procedures are automatic in the system. Figure 1 shows the membranes in the CleanFlow™ system.



Figure 2 Installed CleanFlow™ system

The benefits

The CleanFlow™ filter is installed in parallel with existing liquor filters. The existing capacity is kept when installing a CleanFlow™ system, which means **increased operational capacity and redundancy**. This means that the installation is easy to make, needs no **major stop** in production and has an inherently **low risk**. The lowered amount of inert content **reduces makeup** lime consumption, **improves** the lime **dewatering** and lowers the energy **consumption**.



Figure 2 Installed CleanFlow™ system

Filtered green and white liquor

In Figure 3, the difference between green liquor before and after filtration in the CleanFlow™ system can be seen. CleanFlow™ can also be used for additional filtration of white liquor after current systems. Nearly all particles from the white liquor can be removed from 300 mg/l to <2 mg/l. The economical gains are in increased capacity and reduced wear of other equipment.

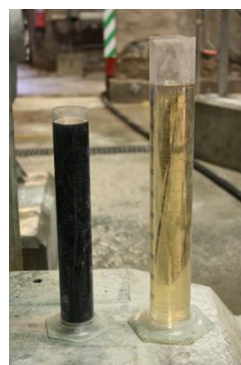


Figure 3 Unfiltered green liquor to the left and filtered green liquor to the right

