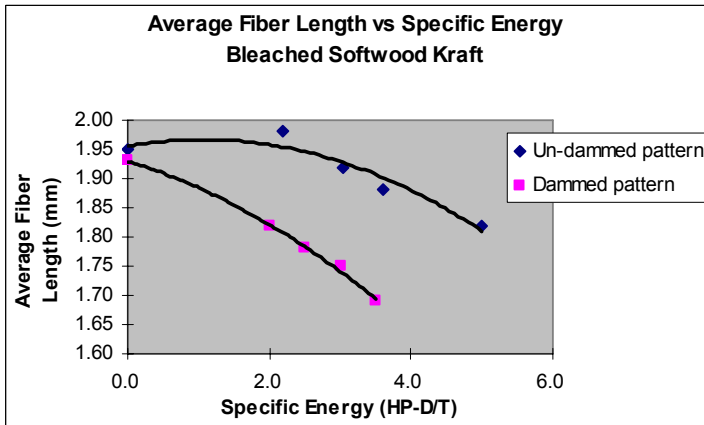


Winter 2006

Eliminate Refiner Plate Plugging and Reduce Costs with J&L's ReverseFlare™ Technology

A common problem facing many low consistency refiner systems today is plugged refiner plates which can lead to reduced capacity, short plate life and lower pulp quality. Many different contaminants such as plastics, rubber, tile grout and metal can be found in the fiber stream. Although much of this foreign material might be associated with recycled mills, refiners operating in fine paper applications can see debris as well, especially through broke systems. Refiner plates processing unbleached chemical pulps can also plug with shives and wood particles.

When a refiner plate plugs, the contaminant becomes a dam in the groove that blocks the fiber flow path through the plate, reducing refining efficiency and hydraulic capacity. As a result, plugged plates are often removed prematurely and can result in 25 – 50% reduced plate life even though there may be plenty of bar height remaining. We also know from experience that dammed plates reduce fiber length due to the high shear forces on the fiber as it passes over the dam in the groove:



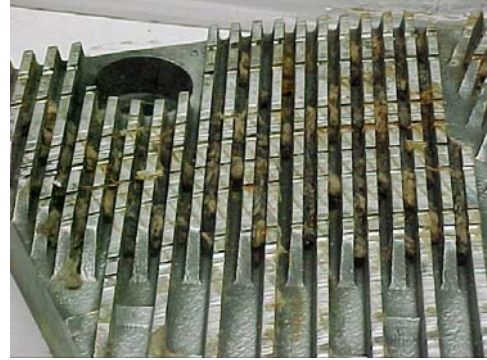
When the refining efficiency or strength drops off the tendency will be to increase refining energy to compensate. In order to maximize efficiency, at the lowest cost per ton, it is essential to keep the plate grooves free and clear of debris. The ideal solution to the problem is to simply remove the contaminants from the pulp stream. However, this is not always practical or affordable in some mills. Even though many systems have screens and cleaners to remove the debris, process upsets or worn out equipment can cause plugging problems for refiners running finer plate designs.

Many traditional plate designs have a more open, wider I.D. groove that narrows as you move toward the O.D. of the plate. These older style patterns allow contaminants to enter the refining zone but are easily wedged, especially if the groove narrows:

Used plates from a recycled furnish application



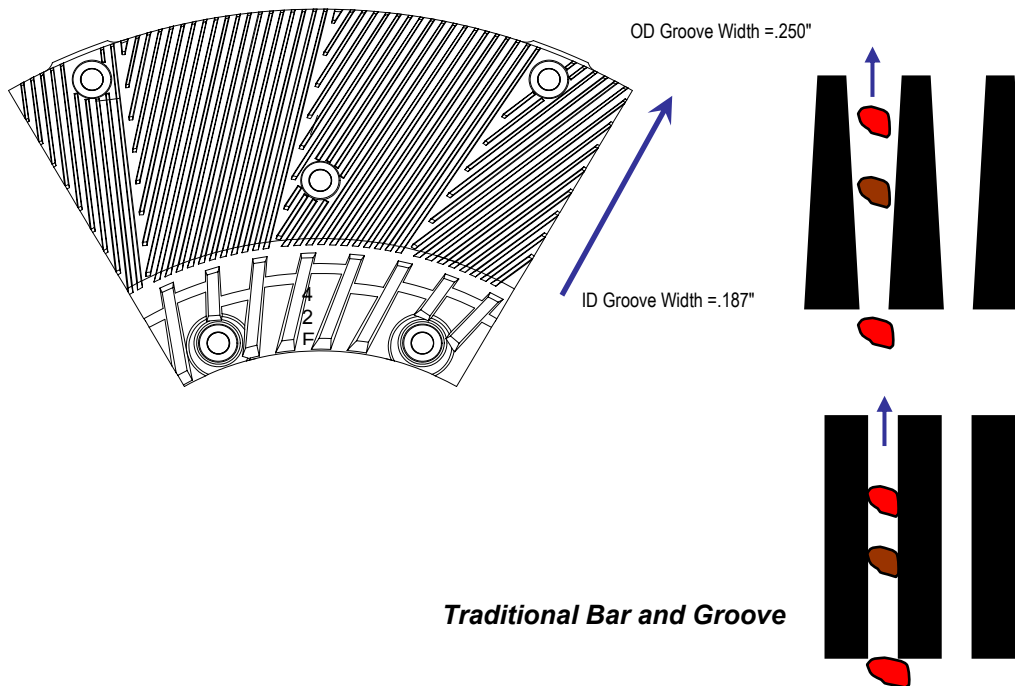
Plates from an unbleached virgin pulp application



In the past, the refiner plate application solution would be to install a more open plate with a wider groove. This may solve the plugging issue but coarser patterns raise the refining intensity which can damage fibers and result in lower pulp strength. This can be an expensive tradeoff so a new style plate design was clearly needed that would minimize plugging while allowing adequate Km/Rev of bar edge length for lower intensity refining.

J&L's ReverseFlare™ anti-plugging pattern technology is a simple but effective way to address stock contaminants. By flaring the groove open from the I.D. to the O.D. of the plate, debris that is small enough to enter the initial refining zone is less prone to wedging. The “reversed” groove (for example: .187” >> .250”), combined with centrifugal forces help debris move more freely through the plate:

ReverseFlare™ Bar and Groove



ReverseFlare™ patterns allow greater pattern flexibility in contaminant environments resulting in longer plate life, improved efficiency and lower costs. Contact your J&L Sales Representative to see how this product may benefit your process.