

Polysulfide cooking

Improved pulp yield and pulp properties



Polysulfide cooking

Higher yield, better pulp quality

While the polysulfide cooking process has been around for many years, and is proven in select mills around the world, it has not been used that often. The use of polysulfide cooking liquor improves pulp qualities that offer real benefits to papermakers – reduction in refining energy and enhancements in fiber bonding. Equally important, polysulfide cooking increases fiber yield for the pulp producer, especially for softwood pulps. A new focus on increasing yield, and overcoming bottle-necks in the recovery cycle without major capital investments, is causing mills to take a fresh look.

The characteristically orange-colored polysulfide liquor is made by modifying conventional white cooking liquor by oxidizing sodium sulfide in the liquor to polysulfide with the help of an active coal catalyst and air, without harmful substances. This process is carried out in a MOXY plant, which ANDRITZ has installed in several mills around the world.

In polysulfide cooking, the polysulfide liquor is added to the impregnation stage at the beginning of the cooking process. The liquor oxidizes the end groups of the hemicelluloses, and slows down the alkaline peeling reactions, resulting in higher hemicellulose yield.

For the papermaker, pulp produced with polysulfide liquor has increased tensile strength as well as stiffer pulp fibers, which increases the internal bond strength (Scott bond). Papermakers have documented reduced refining energy consumption due to the improved beatability of the pulp.

Polysulfide cooking also helps to reduce solids in the black liquor, which in turn reduces the load on the recovery boiler. With increases in yield, pulp quality, and overall pulp production, this makes investment in polysulfide cooking economically very beneficial.



▲ Metsä Fibre's Joutseno mill modified its fiberline to use ANDRITZ's polysulfide cooking process. This is the world's largest single polysulfide cooking plant.

▼ Polysulfide is converted from white liquor in a MOXY plant

Benefits

- Increased cooking yield
- Higher pulp yield
- Improved pulp properties
- Reduced energy consumption in refining
- Reduced load on the recovery boiler
- Increased pulp production without major capital investment



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