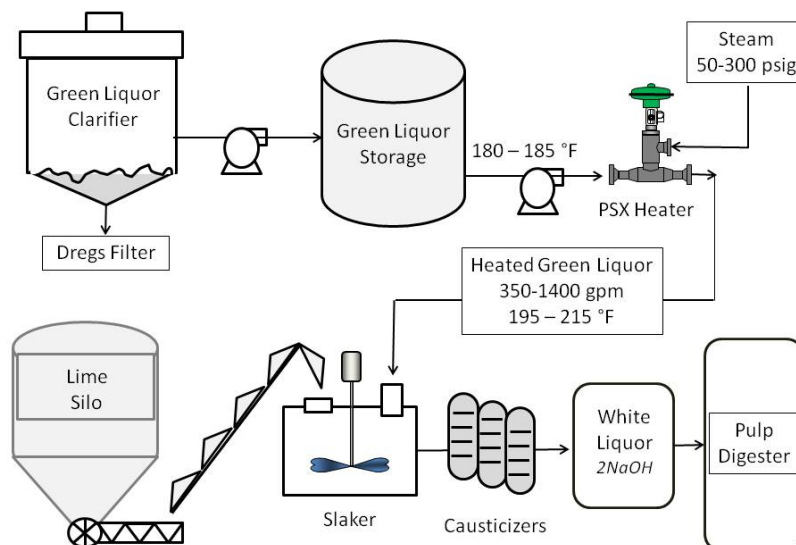


## Green Liquor Heating and Reausticizing



Kraft Pulp mills produce pulp from wood chips. Within the pulp production, a chemical process produces green liquor. Green liquor is a combination of recovery boiler smelt, and dilute white liquor. Dregs are removed and liquor is sent to reconstituting tanks to produce white liquor. Flows vary based on the size of the pulp mill and can range from 350-1400 gpm.

Reconstituting is a two-stage process used to recover chemicals from in the pulp production process. First stage reaction occurs with lime in a highly agitated vessel known as a Slaker at high temperatures (180-215°F). The second stage reaction occurs in a series of agitated tanks known as Causticizers where the reaction is completed.

**Process Heating Challenges** - Green liquor must be heated prior to the lime addition and temperature plays a key role in the chemical reaction.

- **Sparging** can create “hot spots” in the slaker or causticizers, resulting in uneven reactions within the vessel. This can cause incomplete regeneration, chemical carryover, or excessive reaction times. Sparging can also exaggerate dust formation from the vessel during operation producing maintenance issues.
- **Heat exchangers** are subject to damage as Green liquor is corrosive at elevated temperatures. Stainless steel welds are susceptible to stress corrosion which can lead to shorted heat exchanger life and cross contamination between the steam and liquor.
- **Eductor style steam injectors** with limited turndown (2:1) are prone to steam cavitation & accelerated wear.

A PSX I-Series heater can be installed in-line upstream of the slaker. The PSX I-Series Heater assures **high velocity steam** injection for rapid and complete condensation of the steam via our **internally modulated steam injection** design. Our **Radial Multi-port Jet Diffuser** assures uniform heating of the liquor. This results in a more uniform causticizing reaction, thus reducing lime costs, and allowing better control of the process. The result will be higher quality white liquor for use in the digesters and reduced operating costs. The PSX I Series heater can also be supplied in appropriate metallurgy to address the thermal cracking that can occur when heating green liquor.

### ProSonix PSX I-Series Heater Benefits

- Fewer Process Upsets and reduced steam vibration from more efficient internally modulated steam injection
- High Liquid Turndown up to 10:1 to match the Mill's operating conditions
- Precise Temperature Control of +/- 1°F produces a higher quality liquor with less carryover
- Lower Production Costs from more efficient slaker operation and lower lime feed costs
- Reduced Maintenance Costs & Downtime with appropriate metallurgy and elimination of steam cavitation.

For more information, please visit [pro-sonix.com](http://pro-sonix.com).