AP-16 Green Liquor Heating & Recausticizing

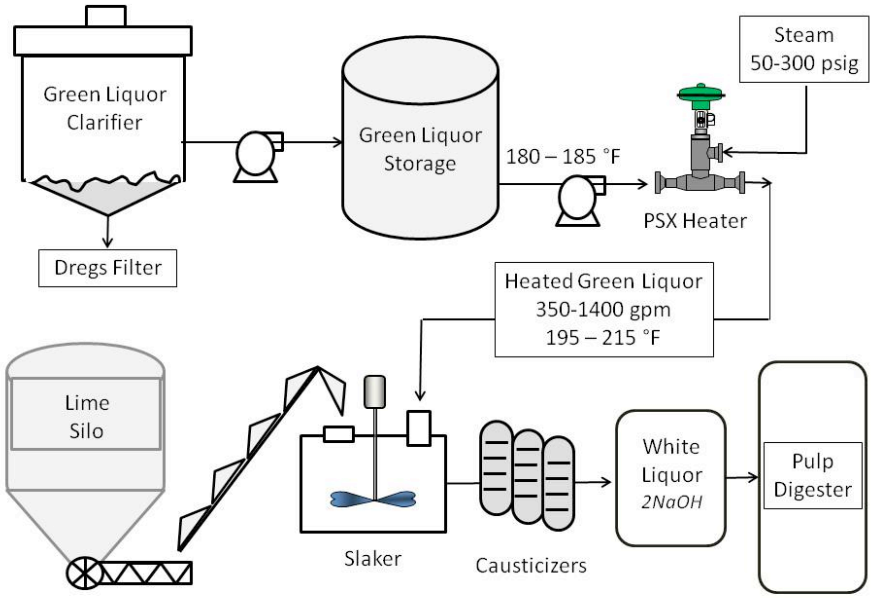

Fig. 1 – Green Liquor Heating & Recausticizing

Key Words – Green Liquor, Recausticizing, Steam Injection Heater, White Liquor, Pulp Mill

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 recausticizing tanks to produce white liquor. Flows vary based on the size of the pulp mill and can range from 350-1400 gpm.

Recausticizing 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*** also has a tendency to 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, in particular, 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 heater can be installed in-line upstream of the slaker. The PSX 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 end result will be higher quality white liquor for use in the digesters and reduced operating costs. The PSX heater can also be supplied in appropriate metallurgy to address the thermal cracking that can occur when heating green liquor.

Key ProSonix Heater Benefits…

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

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