



Green liquor measurement

Increase reliability using clamp on meter for process stability

Summary

We were requested to support a paper mill customer to increase the green liquor flow measurement reliability to better control their recovery boiler efficiency. The current installation used three orifice plates with differential pressure transmitters.

Application

Green liquor is the dissolved smelt of sodium carbonate, sodium sulfide and other compounds from the recovery boiler in the Kraft process. The liquor's eponymous green color arises from the presence of colloidal iron sulfide.

The green liquor is usually reacted with lime (CaO) in the causticizing stage to regenerate white liquor. Alternatively, green liquor can be used prior to white liquor to extract some hemicellulose. The specific flow measurement was on a 150mm (6") line size at a temperature of $\sim 100^{\circ}\text{C}$ (212°F).

Challenge

The current measurement was prone to clogged impulse lines leading to very regular cleaning operations to unclog. A portable test was performed to assess the suitability of clamp on liquid transit time technology due to the difficulty of this flow measurement. While the test was successful, the customer wanted validation over a longer time period.

Benefits:

- External measurement = No clogging risks
- External measurement = No process shut down to install
- External measurement = Safety, no personnel exposed to hot chemical hazards from the green liquor
- Ultrasonic Technology = No maintenance
- Reliable measurement = Better process efficiency

Solution

The AquaTrans AT600 were installed in single traverse set up with the 0.5MHz C-RS transducers to overcome the attenuation observed from the green liquor. This proved to be successful. This plant and other plants are now using our portable ultrasonic meter to check all of their fixed inline meters.

