

SCA Obbola manages complete liquor recovery –

FROM SMELT TO WHITE LIQUOR

A Valmet whole line measurement system that was instrumental in the new causticizing plant start-up includes a new reduction degree measurement. **TEXT** Sören Back and Mark Williamson

The implementation of Valmet Recovery Liquor Analyzer, named Valmet Alkali R, was a key factor in the successful start-up of a new causticizing line at SCA's Obbola pulp mill in Sweden. The new analyzer completes the required chain of measurements of the causticizing process and gives operators the tools they need to stabilize and optimize the entire process from the recovery boiler onward. "The start-up was one of the best I have ever experienced," says **Thure Sandström**, Manager of the Recovery Area. He continues; "We installed the sampling and analyzing equipment during a production

shut down. We got reliable measurement data from the very first day."

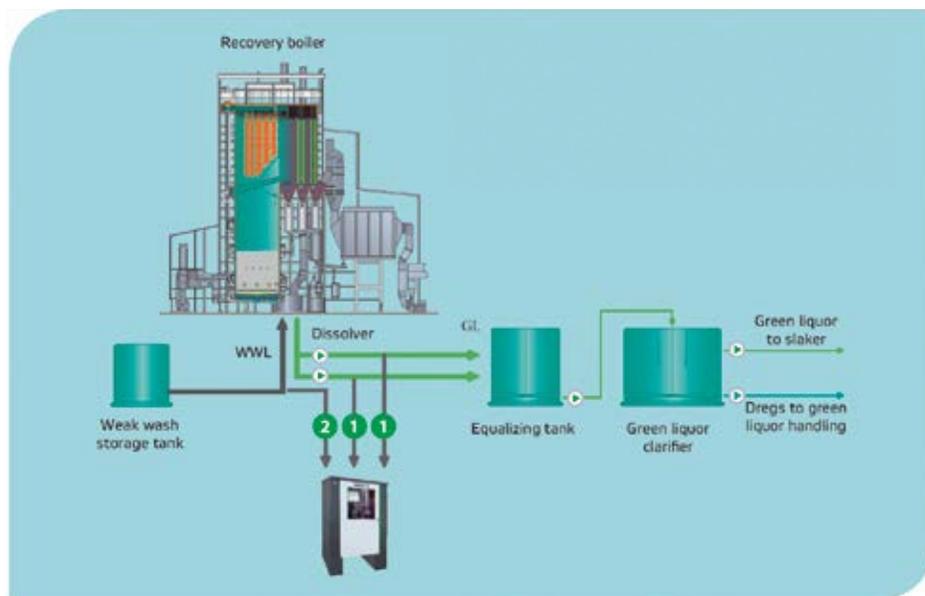
"With the new system we have learned more about how the recovery process, and in particular how the recovery boiler performs," **Peter Olsson**, Recovery Boiler Manager, adds. "Now we have a reliable tool for better process control and process understanding. We see a number of opportunities to optimize the recovery process as focus can be put on the recovery boiler and its performance."

So what are the new features of the Valmet Alkali R? To manage the entire chemical conversion process the first measurement point has been moved as far back as possible to the smelt dissolving tank where the reduction degree from the recovery boiler

is measured. This is accomplished by a new titration module that measures sodium sulfate, complementing the previous capability to measure various alkalinity, sulfidity and causticizing efficiency parameters in the rest of the line. As well as providing information for recovery boiler reduction management, this measurement also allows the precise control of dissolving tank green liquor density and TTA.

Valmet Alkali R analyzers were first tested in two kraft mills in Finland where they have now been taken into regular production use. The first full-production unit was purchased by SCA Obbola where it has been performing well from day one, helping the mill to optimize the operation of a new causticizing plant since the start-up in November, 2013.

Green liquor sampling point before the slaker. From left to right; Kristina Jonsson, Annika Hedman and Thure Sandström.



Valmet Alkali R measurement points at the smelt dissolving tank.

ROI potential

What extra capability for control and process optimization does this give operators and mill engineers? **Antti Kokkonen**, Valmet's Product Manager for Valmet Alkali R, responds: "A higher reduction degree means that less white liquor is needed to achieve the required alkali charge to the digester. Also, the amount of dead load accumulation in the recovery process can be decreased by improved reduction efficiency and this will improve energy and loading performance of the process equipment. This also enables higher energy production in the recovery boiler. In addition, there is lower lime demand at a given production rate, and with higher sodium sulfide content the theoretical maximum causticizing efficiency

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is lower, which also decreases dead load if the mill is achieving reasonable CE% target.” He estimates that a possible return on investment for a 1,000 t/d fiber line where reduction degree was increased by 3% could add up to 1 million euros per year, due to de-bottlenecking and production increases of over 1% in the causticizing plant, lime kiln, and evaporation plant and in energy savings in these stages.

Stable analysis with improved safety

While the other mills used the analyzer to improve the existing processes, the Obbola mill had its own reasoning relating to the plant start-up. “There were a couple of reasons for us to consider an automated sampling and analyzing system,” says Thure Sandström, “As we were investing in a completely new causticizing plant we wanted to have a modern system improving work safety, as there are always safety issues in manual sampling, and more frequent process data to

support the process operators. An important parameter was to have frequent data on the reduction degree. Earlier the sampling frequency of 6 to 8 hours was not good enough as we needed reliable information quicker, down to a level of every hour, or

every second hour, on the recovery boiler performance. This called for an automated online solution.” In addition to improved safety, SCA also received a measurement system that would improve the repeatability of the measurements for better control. “We could immediately see that the stability of the analysis results improved as we got rid of the variations due to different ways of manually taking the samples,” Project Leader **Kristina Jonsson** says.

Exceeded goals

Has the mill achieved their goals with this investment? Thure Sandström responds positively: “We have not only achieved the goals, but also exceeded them. In all fairness, this is due to the automatic analyzing system and the new causticizing plant. The whole white liquor production is more automated nowadays and its progress is frequently followed by the system in real time. Hence we have a better control of what is happening.” ■

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