

WORLD FIRST. AGAIN.

Smurfit Kappa Nettingsdorfer has been something of a trailblazer through the years. It was one of the first paper mills ever to use a shoe press and one of the first to try out "continuous batch" pulp cooking. And now, they have another world first to report...

Because it is now the only mill in the world with batch pulp cooking that also uses recycled secondary steam for woodchip pre-steaming. It also marks a major expansion by ANDRITZ in the world of batch cooking.

DARE TO BE DIFFERENT

Smurfit Kappa wanted to lower the mill's environmental impact by reducing consumption of steam, as well as improving pulp yield. But part of the motivation was simply that Nettingsdorfer's ethos is to be innovating all the time (remember the shoe press?). Pulp Mill Manager, Gunter Leitgeb, explains that "Continuous improvement is in our DNA. We all have to find new ideas and implement them. We get measured on it."

This was good news for ANDRITZ. Paavo Tolonen, Fiberline Director, ANDRITZ Pulp & Paper Services, says, "We are really convinced that this technology will work everywhere. But we needed to try it out in the real environment. It was important for us to find customers willing to share the risks in doing something new." Leitgeb explains, "ANDRITZ did everything to make us feel comfortable, with studies and guarantees. It helped us to do something new."

MOVING THE GOALPOSTS

And this really is something new.

The "continuous batch" system at Nettingsdorfer is basically batch pulp cooking, but with continuous liquor circulation, via a highly-developed system of interdependent tanks. Leitgeb says that before the recent upgrade with ANDRITZ, "our heat recovery system was already very good, near the world's best. But we still had waste energy. We still had to cool our liquid emissions with cold water." And on the quality front, the firm wanted to reduce the shives and the amount of uncooked chips by enhancing impregnation, which leads to improved pulp strength, a key selling point for kraftliner. The project also made it possible to compact the chips more, enabling the mill to increase chip density in the digester by 10% and creating flexibility for process optimizations. In short, the goals were to raise pulp quality and yield, while reducing energy consumption, and thereby cost and environmental impact. All while improving safety. Tolonen summarized, "In general, batch cooking has better flexibility with pulp quality and wood furnish, but worse energy consumption. The idea here was to combine (the best of) both."





Black liquor is flashed in new ANDRITZ efficient flash tank utilizing FlashLance™-technology.



“ANDRITZ did everything to make us feel comfortable, with studies and guarantees. It helped us to do something new.”

GÜNTER LEITGEB
Pulp Mill Manager
Smurfit Kappa
Nettingsdorfer

HOT CHIP

However, he admits that previously “conventional thinking was that chip pre-steaming wasn’t possible for batch digesters.” Nettingsdorfer and ANDRITZ have now proved otherwise.

Around the woodchip bin, the modifications included a new gas-handling and secondary heat-recovery system, which integrates with a new inclined Airlock Screw Feeder, as well as new Center Steaming in the HELP™- chip bin, which distributes steam more efficiently than traditional side-fed nozzles can do alone, so the same amount of steam does more presteaming. Then the chips are fed through new discharge conveyors into the mill’s four batch digesters, which now have new ANDRITZ SureFlow™ diagonal batch circulation screens, allowing increased compaction and higher liquor flow. In the tank farm, a new flash tank, including ANDRITZ’s FlashLance™, feeds unclean flash steam to a new vapor reboiler. Non-condensable gases flow to a new vent condenser, while the clean steam is fed back to the start of the process to steam

the new woodchips, just as some continuous pulping mills already do.

Helmut Adlboller, Assistant Pulp Mill, says “This was the first mill to do a batch rebuild [using continuous technology]. We dared to try it in the chip presteaming, although we didn’t know how it would handle the

temperatures. It was at 30°C, now it is at 60°C in winter and 90-100°C in the summer. It has reduced our steam consumption and given us better impregnation.” They are also minimizing the environmental impact. “Now, we have reduced the heat load going to the cooling system by 2 MW,” says Leitgeb.

Also, the new gas-handling system has prevented any release of gases to the environment. Leitgeb argues, “this is the new state of the art. Previously, the state of the art in continuous pulping used dirty steam for chip presteaming. But if they had no reliable gas-handling system, that created a smell.” He adds, “the new solution, using clean

secondary steam and a gas-handling system, was key for choosing ANDRITZ.”

And? “It worked. There is no odour issue.”

ADDED VALUE

Other benefits include steam consumption reduced by 5% to 10%, while refining

the presteamed chips now requires less energy. Heat waste has been reduced by around 5%, yield is up by around 0.5%, and the new digester screens have helped to increase production capacity.

Leitgeb also believes that “the side effects have been as important as the main

“We are really convinced that this technology will work everywhere.”

PAAVO TOLONEN
Director, Fiberline
ANDRITZ



New gas handling system ensures safety and odour-free operation of the chip bin.



Impregnation liquor pre-heaters are part of the heat optimization system.





Modified HELP™ discharge with center steaming provides excellent impregnation result.

effects. There were so many good side effects." These included an increase in turpentine output, as well as fewer potentially dangerous seal failures caused by the black liquor travelling continuously at high speed and pressure through the mill's complex tank farm. That means higher system availability. "If we have a problem, we have to shut down the whole system. But it's been running reliably for the past year and a half," Leitgeb explains.

TRUST IS A MUST

Which is no mean feat, when you consider

that "one of the biggest challenges was to integrate something new into a fully harmonized system. We needed something reliable, so we put a lot of effort into optimization. It had to take place during our normal yearly shutdown, and we planned for no losses, so timing was vital, and that was one of the reasons we chose ANDRITZ," says Leitgeb.

Another reason was the good relationship, as Tolonen and Leitgeb have known each other for over a decade. Even before Leitgeb joined Nettingsdorfer

seven years ago, the two men were working together at Leitgeb's previous employer (another Austrian paper mill). That mill had a big success in its digester with an ANDRITZ Double-Wash upgrade, and it was also there that Leitgeb first installed ANDRITZ SureFlow™ screens, which formed part of this new project at Smurfit Kappa Nettingsdorfer.

Robert Petroschinsky, mechanical design and construction engineer of Nettingsdorfer's Investment Project Planning group, comments, "The cooperation with ANDRITZ worked very well. They were very good during the shutdown, working shifts day and night to take out the old kit and install the new. Any delay would have meant not meeting our schedule, but we met all deadlines and quality parameters. I absolutely recommend it." Adlboller adds, "It was a very exciting start-up. It was completely new, but I always knew it would be fine. I've done a lot with ANDRITZ and it always worked fine. ANDRITZ gave good cooperation during the installation and start-up, as well as post-sales service to improve the process."

And Mia Rantasalo, Project Manager, ANDRITZ Pulp & Paper Services, points out that it takes two to tango, "Smurfit Kappa was very easy to work with because whatever we needed to discuss, they gave the



Left to right: Paavo Tolonen, Director Fiberline, ANDRITZ; Günter Leitgeb, Pulp Mill Manager, Smurfit Kappa Nettingsdorfer; Robert Petroschinsky, Mechanical Design and Construction Engineer, Smurfit Kappa Nettingsdorfer

Helmut Adlboller, Assistant Pulp Mill, Smurfit Kappa Nettingsdorfer and Mia Rantasalo, Project Manager, ANDRITZ

answer right away. They made it very easy as a team to get the best results for them. Everybody worked very fast."

DIGGING DEEP

Tolonen also argues that this project reveals huge potential for other batch pulp mills. "A lot of batch mills have no secondary heat recovery or chip pre-steaming. And there has been little development of the digester screens for decades. We have developed continuous pulping technology for batch pulping." He



Vapor reboiler generates fresh steam utilizing the energy of hot black liquor (Flash steam) and fractionates the flash steam condensate to turpentine rich and clean condensates.

argues that although ANDRITZ is a relatively new entrant into the batch pulping space, it has "huge knowledge and decades of experience that we can bring to batch cooking."

Leitgeb continues, "I would definitely suggest doing an audit with ANDRITZ, because they look for something new, not just safe. They go digging. They put their experience together with the mill and they are very advanced, with a lot of knowledge and experience.

He concludes, "If you have liquids that can flash, then definitely go for it. You get benefits in safety, environment, quality, production, availability, and raw material savings. I can't see a negative."

CONTACT

Paavo Tolonen
paavo.tolonen@andritz.com



MIA RANTASALO
Project Manager
ANDRITZ

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