

More CTMP from SCA

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INTRODUCTION:

“We’re up and running with our brand new CTMP facility - on-time and on budget. Equipped with the latest technology - not only providing unique opportunities for customized solutions but also an even broader technical portfolio. We already have a profitable business, a solid, growing customer base and we see growth in packaging and tissue, but also in new areas such as moulding, where we foresee a high future demand. Replacing fossil plastics with certified fibre-based solutions will certainly be an interesting area, so with the broadest CTMP portfolio in the market, we’re now taking a significant leap forward”, states a proud **Stefan Sjöström**, Director of Global Sales, CTMP.



Figure 1: Ortviken's industrial site, where infrastructure and modern parts from the paper production are reused in the new CTMP facility, to the benefit of both the environment and the economy.

“At the very least, we can also leverage solid and unique expertise in mechanical pulp that exists both in Ortviken and Östrand. Although our new facility uses cutting edge technology and is highly automated, CTMP production still requires experienced operators who constantly monitor and really understand the process - and we have that competence”, says Anders.

The biggest challenge, apart from the fact that we had a global pandemic to deal with during the project, affecting not only us but also our contractors and naturally logistics, was to tear down large parts of the closed paper mill at Ortviken and build a new bleached CTMP (Chemi Thermo Mechanical Pulp) facility at the same time. “Simply squeezing a new process into an existing costume”, is how Anders Granström, Mill Manager at SCA's new state-of-the-art CTMP facility puts it.

Ortviken's Industrial site

The industrial activity at Ortviken began as early as the middle of the 19th century. During the 20th century, Ortviken developed into a modern industry and in 1958 two paper machines were put into operation. At its peak, the factory had a production capacity of approximately 900,000 tons of publication paper, but in February 2021, production ended and the last paper machine was closed.

However, SCA had already decided to move the CTMP production from Östrand to Ortviken and invest SEK 1.45 billion in a new facility, thus significantly reducing the investment cost per ton, largely thanks to a well-developed infrastructure and modern parts already in place. This included key functions such as wastewater treatment, steam supply, electricity, and compressed air. Add to that the strategic location of the site, meaning that SCA can offer logistics solutions worldwide, although Europe will continue to be the main market for CTMP.



Figure 2: Anders Granström, Mill Manager Ortviken Pulp Mill and Maria Nordgren, Product Manager CTMP, in front of the baling line.

The CTMP expansion

“Significant focus has been placed on the design of the facility, above all to create capabilities for an impressively broad product portfolio. This incorporates the ability to use different fibre raw materials and for developing the pulp properties over several refining stages”, continues Anders.

“The wood handling department from the old mill is fully repurposed, but in order to efficiently handle different types of wood the number of chip silos has increased from one to three. Normally they would contain spruce chips, birch chips and sawmill chips, but different types of wood can be run in campaigns. An extended chip wash has been constructed to reduce odour and taste issues in the finished product. Within the pulp mill, the primary and secondary refiner and screening are reused, but now supplemented with a chip bin, impregnation, and preheater, as well as three low consistency refiners. Steam separation after primary refining is made using a pervapor. The disc filter has been rebuilt to handle the pulp’s dewatering for the different qualities”, explains Anders.



Figure 3: Wood chip silos and input of sawmill chips.

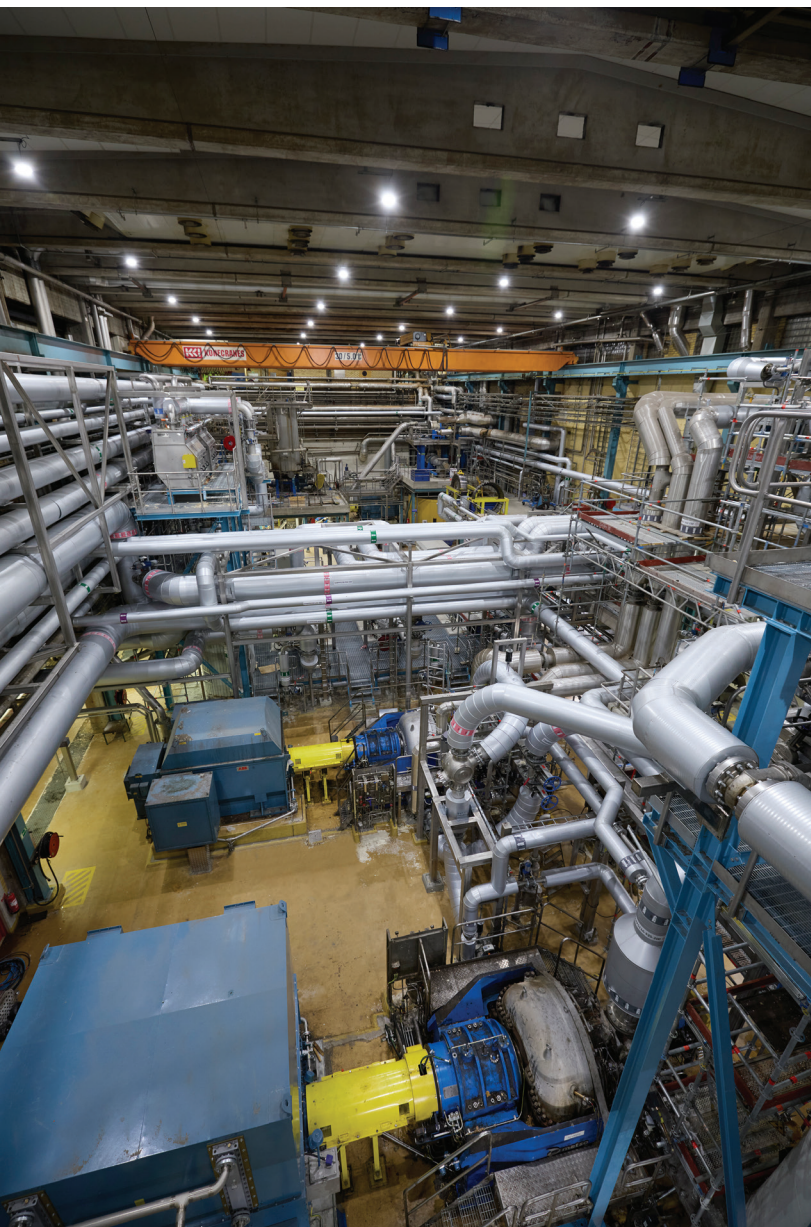


Figure 4: Primary and secondary refiners.

To produce birch CTMP, a new cleaning stage has been installed, cleaning birch pulp from black spots as well as the separation of stone cells. And the bleach plant has been rebuilt to facilitate two-stage bleaching, MC (medium consistency, approx. 8%), followed by HC (High Consistency, approx. 40%), with NaOH (sodium hydroxide), H₂O₂ (hydrogen peroxide) and NaSiO₂ (sodium silicate) as active bleaching chemicals. A new building has been erected which houses dewatering, two twin roll presses, two flash dryers and baling, as well as a wrapping facility. The facility is designed for a capacity of 300,000 tons a year, meaning that production will more than triple from today’s 90,000 tons.

“Everything is proceeding according to plan, and we are now working on qualifying existing products. As products are approved in terms of quality, production is moved from Östrand to Ortviken (Östrand will be shut down when everything is ready). Thanks to our formidable experience, we are also developing new products, and with our new state-of-the-art facility, plus the unique access we have to different types of certified wood and the R&D resources we have, we are certainly well equipped to develop completely new solutions. Above all, and what has been so much appreciated and successful so far, is that we can continue to develop these solutions together with our customers”, says Stefan Sjöström, Director of Global Sales.



Figure 5: Stefan Sjöström, Director of Global Sales, CTMP.

Quality

Ortvisken’s facility is unique from a quality online measurement perspective, where the aim is to do online quality classification of all pulp products, (something that is not done at many mills), explains Maria Nordgren, Production manager, CTMP. Including, for example, equipment from Pulp Eye and BTG, we have several online measurement points along the process, (CSF (Canadian standard freeness), shives, mean fibre length, brightness, spots and pH). We also use models to predict paper properties, such as bulk and strength, explains Maria.

“Our technical capabilities, access to different types of wood, and know-how mean that we now offer solutions to a much wider target group than before. For example, two-stage refining and the screening stage will enable a freeness range between CSF 350-750 ml as well as low shive contents. In addition, we will now be able to offer above 83 % ISO in brightness (enabled by the two-stage bleaching process). Add to that our in-house developed HT technology, providing outstanding possibilities of bulk, both for spruce and birch”, says Sara Qvist, Product Manager, CTMP.



Figure 6: Sara Qvist, Product Manager, CTMP



Figure 7: The three low consistency refiners.

HT is an in-house developed technique using higher temperatures and pressure levels, which softens the lignin, allowing the fibres to be separated more easily in the refiner. The result is a pulp with greatly increased bulk levels and low shives content, perfect for board customers with high demand for bending stiffness.

“Furthermore, the extended chip wash minimizes odour and taste issues, enabling us to offer products that are approved for food contact, i.e., meeting the high requirements in food applications that applies to different segments and markets. With that said, all our capabilities combined will now make us relevant for a much broader market, which is ideal” concludes Sara.

Technical challenges

Some compromises in the layout have been made, given the fact that the facility is partly built in old premises. The new plant has a lower redundancy rate because there are more single machines in several positions. Availability of such equipment, as well as preventive maintenance, becomes even more important. The disc filter needs to be able to handle a wide range of products and will not have the same productivity across all grades.

Figure 8: A newly erected building which houses dewatering, two twin roll presses, two flash dryers and baling, as well as a wrapping facility.



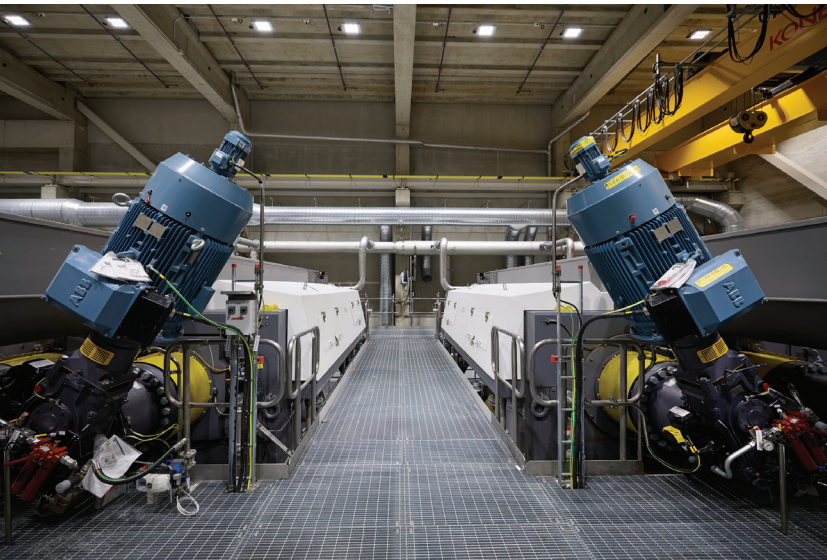


Figure 9: Twin roll presses.

The implementation time was an impressive 22 months (largely thanks to access of local expertise, as many contractors were from nearby areas). “To construct a new plant in a facility that is being shut down was naturally a challenge; as well as maintaining competence in a transition period, and generally conducting project activities during the covid pandemic, the invasion of Ukraine has of course also brought extra challenges”, summarizes Anders.

Energy

“At Ortviken there are five biofuel boilers, where internally generated bark, bio sludge from the wastewater plant, bark from other SCA units, and wood pellets are burned; there is also a turbine with an output of 16 MW. In the manufacture of bleached CTMP pulp, steam is also produced which is reused”, explains Maria. “The flash dryers have been equipped with a new solution, to preheat air to the dryers with a heat exchanger for increased energy efficiency; waste heat from the CTMP facility is used for water heating for other activities at the Ortviken site. SCA also leases premises at Ortviken to the company Renewcell (textile recycling). Furthermore, Ortviken supplies district heating to Sundsvall’s municipality, corresponding to the heating of 10,000 households”, continues Maria.

Figure 11: Inside control room.



Safety

Health and safety are fundamental to SCA’s operations. SCA has a zero-accident vision, and safety in the workplace is highly prioritized. “Double block and bleed” have been installed, meaning that two valves are used to ensure that it is possible to drain completely in all stages during maintenance work. In addition, light beams are installed, which means that the baling line is completely secured if someone gets too close.

Suppliers

The main supplier during the project has been Valmet (refiners, dewatering equipment, drying, baling and wrapping), as well as process simulation for the training of operators.

Other suppliers have been Andritz, delivering disc filters, and ABB, delivering motors, control systems, and quality monitoring during the entire process.

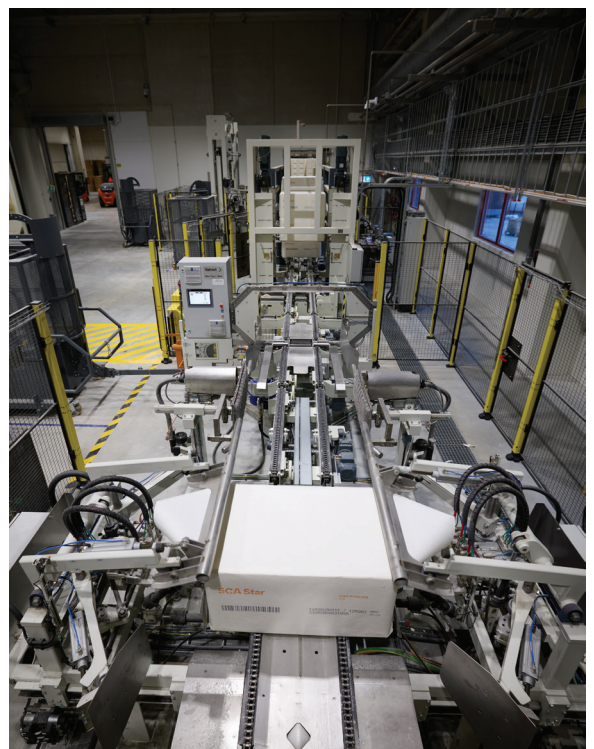


Figure 10: Baling line.

SCA More – the new CTMP portfolio

So, to summarise, Stefan concludes: “We are now taking a bold leap forward: Offering the broadest CTMP portfolio in the market, with an unseen opportunity to tailor solutions.

With unique access to well-managed FSC and PEFC-certified forests, together with a proprietary supply of fossil-free green energy, we can deliver outstanding environmental performance. In our processes, we always make use of the entire tree from our forests and have unlimited access to versatile raw materials, such as birch. As a knowledgeable and committed partner, we’re determined to improve our customers’ performance, making more for less and thus helping our partners do even better business. Which is why we named our new CTMP portfolio SCA More!”.