

Recykling gets big boost in the heart of Europe

The word “recykling” is relatively new in the Polish language and culture. Only 39% of paper and board is recycled in Poland (the lowest in the EU), but this is quickly changing. With new collection and sorting infrastructure coming into place, Stora Enso’s investment at its Ostrołęka mill is timed perfectly. ANDRITZ delivered the complete recycled fiber processing line – and a unique reject treatment system.

Nearly two million tonnes of valuable recyclable raw material goes to landfill or waste every year in Poland, mainly due to the lack of an effective waste management infrastructure. This is all changing in 2013 as Poland is establishing a common waste tax to fund the infrastructure development in order to meet European standards. The EU has directed that by 2020 at least 50% of the paper, plastic, glass, and metals in Poland’s municipal waste must be sorted out and reused.

Even with the lack of a public system, companies like Stora Enso “did not just stand by and watch as valuable materials were dumped into landfills,” says Michal Gawrych, Sales and Logistics Director at

Stora Enso’s Ostrołęka mill. “We created our own national network of 20 collection and sorting stations. Our system is one-of-a-kind in Poland.”

The baled OCC and mixed waste is transported to Stora Enso’s Ostrołęka mill and recycled into packaging paper and finished boxes. As of January 2013, the mill has an additional “hungry mouth” to feed – the new PM5. PM5, with a capacity of 455,000 t/a of 65-140 gsm testliner and fluting, produces more than five times the capacity of the machine it replaced.

A new 1,665 t/d recycled fiber (RCF) line from ANDRITZ – the most modern OCC line in Europe – feeds the hungry machine. The

rejects from the RCF plant are processed in a unique system, also from ANDRITZ, that helps fuel the mill’s new power boiler.

Ostrołęka mill

The Ostrołęka mill, located about 120 km from Warsaw, was built in 1959. It is the largest mill in Stora Enso Poland: comprising a pulp mill, paper mill, power block, corrugated board and box plant, and a sack plant.

“Demand for lightweight corrugated packaging is growing,” explains Harri Taipale, Stora Enso’s Project Area Manager for the RCF and effluent treatment portions of the investment. “This expansion project enables us to raise our containerboard self-sufficiency.”

Valuable energy from “waste”

Taipale came to Poland in 2008 to work on the project to build a new power plant and a new demineralized water treatment plant at the mill. “We have the ability to mix fuels in the power boiler,” Taipale says.

The 120 t/d reject treatment system from ANDRITZ contributes significantly to the fuel mix in the power boiler. Michael Waupotitsch, ANDRITZ’s Vice President for sludge and reject treatment, applauds Stora Enso’s focus on mining the valuable elements out of its waste streams. “The metals and plastics in rejects used to be discarded by mills,” Waupotitsch says. “Now they are a stream of additional revenue and a valuable energy source.”



▲ As Poland expands its recycling infrastructure to meet EU standards, Stora Enso has been actively involved. The 1,665 t/d recycled fiber line and advanced reject processing system from ANDRITZ is one of the EU’s largest, and certainly the most modern.

◀ (Left to right) Gerhard Knes, ANDRITZ Senior Project Manager; Harri Taipale, Stora Enso’s Project Area Manager; and Karol Janczewski, Stora Enso’s RCF and ETP Process Engineer.

The FibreFlow Drum pulper and the coarse screens in the RCF plant remove the large contaminants very early in the pulping process. ANDRITZ designed the reject treatment system and integrated the metals separators, compactors, shredders, and the conveying systems. According to Waupotitsch, "Rejects are run through a series of steps to recover the fiber, separate the metals (both ferrous and non-ferrous metals are recycled), and separate the plastics which are burned in the boiler."

The plastics portion of the line employs a unique device using Near Infrared Spectroscopy to separate "good" plastics from PVC. As Waupotitsch explains, "PVCs are landfilled due to their high chlorine content which could have a negative impact on the boiler internals. All other plastics are burned in the boiler."

A good foundation for progress

Stora Enso signed the contract with ANDRITZ in June 2011. "We knew right away that completing the civil works before winter was going to be a really big push for us," Taipale says. "ANDRITZ managed to quickly get us the engineering drawings we needed. This set a good foundation for



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Harri Taipale, Project Area Manager, Stora Enso

keeping to a very challenging time schedule throughout the project."

"We had a good professional and personal relationship with the Stora Enso team from the very beginning," says ANDRITZ Senior Project Manager, Gerhard Knes. "Communications and cooperation were excellent."

The ANDRITZ team worked to fine-tune the RCF system to focus on Stora Enso's goals of reducing energy consumption and reducing waste to landfill. Alexander Singer, Vice President of Recycled Fiber/OCC for ANDRITZ, says, "By making modifications to the layout and interfaces, we were able to improve the overall design. For example, we used frequency converters to save energy, and added bypass capabilities in the piping."

Happy with the technical solutions

As you walk through the RCF plant, the first impression is that the main components are very large. Second impression is that it is a very compact and well-thought-out layout. "Some of our suggestions even helped reduce the footprint of the installed equipment and therefore the size of the building," Singer says. "Not only does this increase

◀ Baled OCC and mixed waste is transported to Stora Enso's Ostrołęka mill and recycled into packaging paper and finished boxes. With a capacity of 455,000 t/a of testliner and fluting, Ostrołęka's new PM5 produces more than five times the capacity of the machine it replaced.



▲ The advanced 120 t/d reject treatment system from ANDRITZ separates metals, plastics, PVC, and coarse material such as sand (above). Plastics become fuel for the mill's power boiler. Metals are recycled. Sand and PVC materials are sent to landfill.

efficiency, it also saves energy as there are shorter pipe runs, smaller pumps, etc."

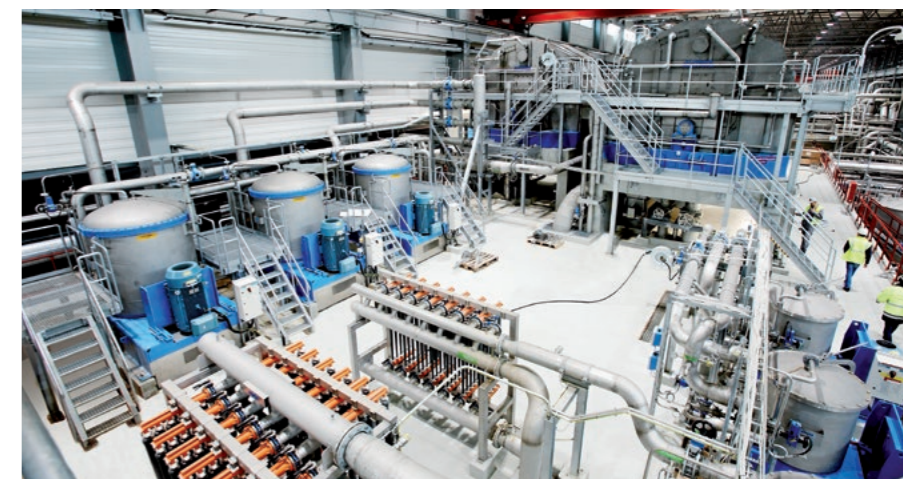
"I am really happy with the technology solution that we came up with," Taipale says. "For example, there is a tight limitation on the daily effluent that we can release to the river. We worked with ANDRITZ to separate the different water loops to reuse as much water as possible and have tight control over COD and BOD levels. That is why we selected, for example, the ANDRITZ screw presses. Fresh water consumption here is a quite low."

Asked what was a major learning for him working on an RCF project for the first time, Taipale says, "It seems that what you put in – you get out. The equipment can tolerate variations, as raw materials can change within a short time. We focus a lot of our efforts on controlling the raw material mix and getting the trash out early."

After the drum slushes and de-trashes the fibers, the downstream processes of screening, cleaning, fractionating, and thickening occur. Long and short fibers are fractionated in the RCF plant to supply the two-layer headbox on PM5.

Pipeline to old machine

Knes explains that they put a pipeline from the RCF to feed the old PM4 machine (lo-



▲ After the FibreFlow drum slushes and de-trashes the fibers, the downstream processes of screening, cleaning, fractionating, and thickening occur. Long and short fibers are fractionated in the RCF plant to supply the two-layer headbox on PM5.

cated in another building) in order to start-up and optimize the plant prior to the start-up of the new PM5. "I thought the pipeline would be removed after start-up, however we are still feeding both machines," he says. Taipale explains that by running lower grammages of testliner and fluting, "We can use the full capacity of the ANDRITZ RCF plant. The PM4 operators also like the new pulp from the RCF plant. The cleanliness and quality of the pulp from the new line is that much better."

"No two days are the same"

"I like project work," Taipale says. "There is no routine – no two days are the same. And of course there are always challenges, but with good partners we always find a solution."

The team at Stora Enso considers ANDRITZ a good partner. "We had an excellent level of performance and cooperation from the very

beginning," Taipale says, "from layout to engineering, to erection, to start-up. And we managed to keep all the time schedules."

The ANDRITZ RCF plant started up in December 2012 and the new PM5 started up in January 2013. "Our ramp-up was according to plan," Taipale says. "Start-up of the machine was about one month earlier than originally planned."

With PM5 online, Stora Enso now has a very integrated approach in Poland. It owns the raw material collection network, owns the new plant for producing the paper, and owns the converting plant for making the paper into boxes.

CONTACT
OCC/Recycled Fiber
alexander.singer@andritz.com
Reject treatment system
michael.waupotitsch@andritz.com



◀ Egon Rettenbacher, ANDRITZ Site Manager (left) and Heinz Kleinbichler, ANDRITZ Start-Up Supervisor