

A bright new Starⁱⁿ kraft paper production

ANDRITZ and Zellstoff Pöls recently commissioned Europe's newest and largest specialty paper machine (PM2). The work was completed one month ahead of schedule. The new machine produces high quality kraft paper (the Starkraft brand). It also features the largest Steel Yankee in the world – along with some other technical highlights. This major investment opens up new possibilities for Pöls and is an excellent reference for ANDRITZ.

It is not often that a supplier gets the opportunity to offer a complete line – from stock preparation to machine to automation, and even the pumps. A request for such a line from a specialty paper producer is even more rare. So, you can imagine the intense competition from suppliers when the request for bid from Zellstoff Pöls of Austria for a complete line to produce machine-glazed kraft paper was received.

For ANDRITZ, this was an extremely important order to win, according to Michael Pichler, head of ANDRITZ's Pulp Drying and Paper Division. "We knew that we would have to deliver the best package, technically and commercially, in order to win the competition," Pichler says. "Even though we are located in Austria, which gives us some logistical advantages, Zellstoff Pöls is a global producer and a very sophisticated customer."

A good starting point

The starting point for the new machine was that Zellstoff Pöls, part of the Heinzl Group, needed to make a strategic decision about how to further develop the Pöls mill location. "The big question for us was what, in addition to pulp, could we produce that would create or add value?" says Dr. Kurt Maier, CEO of Zellstoff Pöls.

Pulp has been manufactured in Pöls for over 300 years. The company has made investments consistently over the years to stay current with technology and maximize efficiencies. For example, in recent years, the company invested EUR 150 million in capacity expansion and power generation projects.

Today, the Pöls pulp mill produces 410,000 t/a. It is the largest manufacturer of elemental chlorine free (ECF) bleached softwood pulp in Central and Southeast Europe. The pulp

◀ In the long-fiber line, a gravity table is used for pulp thickening, in order to reduce the volume of the subsequent storage tower. This is a new application of the ANDRITZ gravity table which is typically used for sludge dewatering.

mill processes two million cubic meters of wood each year, basically with CO₂-neutral production. So, one important capability, according to Maier, was that the employees in Pöls had an extremely good understanding of pulp production and wood fiber processing.

Another factor was that a small amount (15,000 t/a) of specialty paper production was already occurring at the mill. PM1 was shut down after the start-up of the new PM2, but as Maier points out, operating PM1 gave his employees good familiarity with specialty paper production and the specific requirements of that market.

This provided the basis for the new PM2 to take flight. Now, the question was, who should be the co-pilot for this new and major investment?

A trusted partner

“The timing of this project was perfect for us,” says Pichler. “We were looking to supply a state-of-the-art paper production line in Europe, with a customer who would be willing to incorporate some of our newer, more innovative design ideas into a proven machine platform. Most of our new machine references are in Asia, so it was strategically important to have a showcase machine in Europe again.”

The good cooperation between Zellstoff Pöls and ANDRITZ over the years, through a series of modernizations in the pulp mill, was an important consideration. Also, according to Stefan Wilms, ANDRITZ Project Manager, the proximity of the ANDRITZ workshop in Graz was a big advantage. “We were able to propose a workflow where many of the components for PM2 could be pre-assembled and tested in Graz,” Wilms says. “This speeded up the erection on-site and minimized the disruption inside an operating mill.”

All of these advantages aligned at the right time and formed the basis for the new ANDRITZ-designed machine to take flight.



▲ The PrimeLine MG paper machine has a working width of 5.4 m and features a number of technical highlights.



“Holding paper in my hands was physical proof that our hard work and excellent cooperation over many months paid off.”

Siegfried Gruber
Head of Project Engineering
Zellstoff Pöls

Key design consideration: grade variety

Initial discussions about the new machine began nearly three years ago, according to Tomas Nölle, ANDRITZ Vice President of Paper and Board Systems. “Pöls wanted to produce a variety of grades on the same machine,” he says. “Their wish was for a machine similar to PM1, but with a capacity over five times higher and with the ability to produce grades for a broader customer base. The number and type of grades was one of the biggest design challenges from the very start.”

During an early meeting, Nölle began sketching out concepts for what he calls a “jack-of-all-trades” machine. After discussion and the creative input of ANDRITZ’s engineers, a design was finalized that would produce machine-glazed (MG) white kraft paper for food packaging, carrier bags, gift wrapping paper, as well as industrial, medical, and clinical applications.

“Our grammage range is extremely broad (28 to 120 g/m²),” says Werner Hartmann,

Managing Director of Zellstoff Pöls’ Starkraft brand. “We are producing paper for basically six product categories, with between two and four sub-categories each. That means about 180 different specifications.”

“Zellstoff Pöls also required an extremely agile machine,” Nölle says. “It had to be able to switch grades in an instant to minimize waste and keep machine efficiency high. Keep in mind, this customer has a very precise knowledge of its markets and customers. A great value is placed on being able to meet customer demand without building excess inventory.”

And, of course, energy consumption was another important design consideration. This is especially challenging for a specialty paper machine with multiple grade changes.

Ready, set, go

With the design and details in hand, Zellstoff Pöls signed the contract with ANDRITZ in May 2012. This set in motion an ambitious plan on the part of ANDRITZ and the



▲ The gigantic heart of the machine – the PrimeDry Steel Yankee – is the largest in the world.



▲ TwinFlo refiners for optimum fiber development in the stock preparation process.



▲ The PrimeForm HB hybrid former provides excellent formation.



▲ View of the pre-dryer section with vacuum rolls and web stabilizers.

mill to deliver, install, and start-up a complete paper production line by December 2013.

When the contract was announced, Hartmann was a bit surprised by the skepticism he encountered from outsiders who he met at industry events. “I suppose if you just look at top-line data about the European paper industry,” he says, “the investment in a new specialty machine might seem difficult to justify. But, we looked at the kraft paper segment for food packaging and special purposes and arrived at a different conclusion. The growth in these segments is estimated to be 2-4% a year. And, unlike publication grades, this segment is not susceptible to competition from the internet, iPad, etc.”

Zellstoff Pöls intended to fully capitalize on this and their other key advantages: an extremely modern pulp mill, high-quality fiber, an excellent and sustainable eco-balance, the availability of energy at a good price thanks to investments in power generation, a very flexible machine

design, and the infrastructure to provide short-turn, flexible deliveries with fast grade changes.

Now that they have done so, the initial skepticism from the industry observers has turned to pure respect.

Full speed ahead

“From starting the civil works, it took just 13 months and 10 days until we had paper on the pope reel,” says Siegfried Gruber, Zellstoff Pöls’ head of Project Engineering, who was Project Manager for PM2.

“It should be pointed out that this was not only a Graz project,” says Wilms. “While it was nice that our main workshop was only 100 km away, we involved several locations and divisions, as well as a diverse group of specialist sub-contractors, in this project.”

For example, the stock preparation equipment and automation systems came from other ANDRITZ divisions. There are actually two stock prep lines for PM2 – one for the long-fiber pulp produced at the Pöls mill,

and one for the purchased bales of short-fiber pulp.

In the long-fiber line, ANDRITZ installed a gravity table for pulp thickening. The gravity table increases consistency from four to eight percent, allowing Pöls to save money by building a smaller storage tower. Separate refining lines for the long and short fibers are employed, though both use ANDRITZ TwinFlo double-disc refiners. Stock blending is performed in the ANDRITZ paper machine approach system, just prior to the high-efficiency 92% ANDRITZ headbox pump. ANDRITZ also delivered the paper machine approach and reject systems.

ANDRITZ supplied all centrifugal pumps of the PM2. The new series of MC pump feature patented SMARTSEP technology. With SMARTSEP, air is separated, fibers are fed back to the pump, and no vacuum pump is needed. The efficiency of these pumps at their duty point is well above average (70%+).

The heart of the machine

The *PrimeLine* MG paper machine has a



▲ The ANDRITZ headbox pump for PM2 operates at an impressive 92% efficiency.

working width of 5.4 m and features a number of technical highlights. The *PrimeFlow* headbox has a lamella design and dilution water control to ensure uniform fiber distribution on the wire. The hybrid former, a *PrimeForm* HB, provides excellent formation for the kraft paper sheet. The press section utilizes a compact two-nip *PrimePress* with a shoe press module for very gentle dewatering. Moisture is reduced further in the *PrimeDry* pre-dryer section, which includes vacuum rollers and web stabilizers.

The gigantic heart of the machine – the *PrimeDry* Steel Yankee – follows the pre-

dryers. The Steel Yankee at Pöls is the largest in the world. The Steel Yankee and the steam-heated hood (160° C) utilize heat from the mill's biomass boiler, improving the cost-efficiency of the drying process.

One of the more interesting aspects of the erection work was the assembly and installation of the Yankee. "The assembly and erection work for the Yankee was masterfully executed," says Gruber. "It has a 6.7 m diameter and is 6.25 m long, and was delivered to our site in two halves due to truck transport limitations. It was assembled at the site and was lifted by a massive crane (it weighs 150 tons), then lowered through the roof of the hall and into the right position on the machine. It was really very interesting to watch, as everything was coordinated perfectly."

Wilms recalls the crane lift well. "When the scheduled day arrived, there was too much wind to do the lift," he says. "The clearances were so tight, literally centimeters to spare. However, after a few hours, the wind died down and we could complete the lift and placement."



▲ The jumbo reel is rewound and converted to rolls on a two-drum *PrimeWinder* Arcus Evo.



▲ The symbol created for the Starkraft paper brand coming from PM2 is the "Flying Rhino." It symbolizes both strength and agility. Here an operator is shown in the new control room for PM2, equipped with automation systems from ANDRITZ.



▲ (Left to right): Siegfried Gruber, Head of Project Engineering, Zellstoff Pöls; Dr. Kurt Maier, CEO, Zellstoff Pöls; Werner Hartmann, Managing Director of Zellstoff Pöls Starkraft brand; Stefan Wilms, ANDRITZ Project Manager; Tomas Nölle, ANDRITZ Vice President of Paper & Board; and Michael Pichler, ANDRITZ Head of the Pulp Drying and Paper Division.

After the paper sheet is dried to final moisture in the after-dryer section, it passes through a *PrimeCal* Soft calendering system. The compression zone in the calender consists of an oil-heated thermo-roll and soft-covered Multi HV backing roll. This ensures excellent sheet smoothness and density with an even cross-direction profile. In the *PrimeReel* section the paper is then wound onto reels.

Jumbo rolls are moved to a two-drum *PrimeWinder* Arcus Evo. This equipment rewinds the paper and converts it into roll sizes required by Zellstoff Pöls' customers – with diameters from 450 to 1,500 mm. Jürgen Rieger, Zellstoff Pöls' Chief Operating Manager for PM2, praises the winding results that they have been able to achieve due to the winder's ability to suppress vibration.

An early Christmas present

All of these complex high-tech components, including a complete automation system from ANDRITZ, were installed by the end of September 2013. After commissioning, all involved remember the night of November 10, 2013 when fiber was put to the headbox. Early the next morning – and one month early in the schedule – the first paper was wound on the reel.

“At Pöls, we have a long tradition in papermaking, dating back to 1900. With the PM2 we have the latest available technology installed - a real start in a new dimension.”

Jürgen Rieger
Chief Operating Manager Pöls PM2
Zellstoff Pöls



"Holding that paper in my hands at last brought out an emotion difficult to express," says Gruber. "It was physical proof that our hard work and excellent cooperation over many months paid off."

From the ANDRITZ side, Wilms and his team were sharing the emotion. "It was, of course, wonderful to see high-quality pa-

per coming off the machine so early in the start-up. This was a cause for celebration. By this time, we had all become friends, and sharing this success with friends was a great feeling."

Hartmann adds: "We achieved the greatest production so far on the 23rd and 24th of December, which was a great Christmas present for us. Production has steadily continued into the New Year." In view of the fact that the PM2 has so far exceeded all targets, Hartmann is convinced that the production budget of 55,000 tons will be achieved this year.

CEO Maier emphasizes that not only the machine and his staff have fully met his high expectations, but also the team from ANDRITZ. "It was an advantage to us that they kept the same team in place for negotiations, engineering, and project direction," Maier says. "Key project team members were with us right from the start. That was very important to us."

Flying into the future

With a great start-up behind them, the team at Zellstoff Pöls has great expectations. "First, we need to earn this investment," Maier says, "and then we will continue to grow. This project definitely gives us wings for the future."

It is fitting that the symbol created for the new paper coming from PM2 is the "Flying Rhino." The Rhino symbolizes strength (company and product strength) and the ability to fly shows an agility to respond to the grade, delivery, and quality requirements of its customers. "Our message to customers is that we are a strong partner, ready to add value whenever white kraft paper can provide a good solution," Hartmann says.

Strong, adaptable, and agile: characteristics that can also be applied to the technology partner for PM2 – ANDRITZ.

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