

Mondi has invested significantly in Ružomberok, the site of Slovakia's largest integrated mill, in the past 10 years. This latest investment in new recovery systems from ANDRITZ not only removes a bottleneck, it also propels the mill toward energy self-sufficiency.

Yes, the technology to increase pulp production, produce more green energy, and improve the carbon footprint is working well. And yes, the project itself has been a resounding success in terms of schedule, budget, and safety according to Tomi Lonka, Mondi SCP Project Director and now the mill's Technical Director.

Great alignment

Lonka, originally from Finland, has carried out projects in places like China, Indonesia, and Brazil. He was familiar with ANDRITZ technol-

ogy, particularly in the kiln and recaust areas. "But this is my first project with an ANDRITZ recovery boiler," he is quick to point out.

"The level of cooperation has been excellent, Lonka says. "Both sides were well-aligned in terms of common targets and good communications. We openly discussed and resolved any issues. This was one of the key factors in this project's success."

"We were operating at full production the entire time," says Vladimír Krajčí, Pulp Operations Manager. "Our goal was to combine the several elements of the project in such a way as to minimize the impact on the mill."

De-bottlenecking and de-stressing

"In general, there is usually a bottleneck somewhere in a mill," explains Peter Scholtz,

Production Manager. "Here, the pressure has been on recovery. The equipment was always pushed to its limits – and so were my operators."

Parts of the mill's first recovery boiler (RB1 built in 1981) were approaching end of life. "Our options were to replace major components or invest in a new boiler that would give us better energy generation options," Krajčí says.

The kiln was installed probably 30 years ago and was "part Russian, part Western" according to Scholtz. "We were able to coax about 420 t/d out of it, but there were maintenance issues, dusting, and occasional plugging that were a constant challenge," he says.

"There were some corrosion issues with the old units, and the second effect was a prone-

ness to calcium scaling," says Peter Baláž, Mondi's Commissioning Manager for the project and now Recovery Line & Energy Manager. "We also wanted to increase the production of condensate to decrease fresh water consumption."

Good reference inside the mill

When Mondi approved the investment, several suppliers were evaluated. According to Baláž, "Important to us was a proven ability to meet our performance requirements and high safety standards. Characteristics such as quality, reliability, and the commercial terms were also important."

"It helped ANDRITZ that they had done such a good job with the RB2 (2005) project and that the boiler is operating so well," Scholtz says. "That gave them a good reference inside our mill. We visited an ANDRITZ reference in

Austria to see the kiln and recaust technology in operation."

Challenging schedule

The contract for the recovery boiler was signed in February 2013. The boiler started up in September 2014 – 18.5 months after contract signing. "By optimizing the construction part, we achieved maximum economic benefit," Lonka says. "We worked at a fast pace, with more or less 24/7 construction."

Says Oiva Väisänen, ANDRITZ Project Manager for the new recovery boiler, "On a fast-track schedule, there is no room for wasted effort or duplication. We worked as one team – Mondi and ANDRITZ. All the milestones were achieved at the times scheduled."

"There was especially good alignment during commissioning," Lonka says. "The project spanned two annual shutdowns. We were

able to accomplish all the mechanical work and tie-ins during these planned shuts. That was a very hectic time for all of us."

RB3: a new source of green energy

With the start-up of the new recovery boiler (RB3), the mill the mill significantly increased its energy self-sufficiency and reduced emissions.

During the sales phase, ANDRITZ presented different scenarios from a traditional boiler to a modern HERB (High Energy Recovery Boiler) design. "We aimed from the very beginning for a high-energy boiler," Krajčí says. "We knew

"We knew that a high-energy boiler would help us increase energy self-sufficiency while de-bottlenecking our recovery operations."

Vladimír Krajčí
Pulp Operations Manager

FAST AND GREEN.

Mill and its neighbors love the result.

People are all smiles – inside the mill gate and out – after the start-up of Mondi SCP's investment project in green energy at the Ružomberok mill in Slovakia.





▲ Peter Scholtz, Production Manager (left), with Peter Baláz, Mondi Commissioning Manager



▲ Oiva Väisänen, ANDRITZ Project Manager for the new recovery boiler (right), talks with Peter Kral, Mondi's recovery boiler Superintendent.

this would help us increase energy self-sufficiency while de-bottlenecking our recovery operations.”

RB3 has a capacity of 1,750 tds/d. Other design points are 87.7 kg/s steam at 495°C and 96 bar(a). “Our black liquor is on the low side in terms of chlorides, but higher in potassium,” Krajči explains. “This was a major factor in determining the design temperature and pressure of the boiler.”

The boiler was delivered on an EPC basis, with Mondi responsible for the civil construction. “We chose EPC because we could get exactly what we wanted, with the supplier’s guarantee that our return on investment would be delivered,” Lonka says.

According to Väisänen, “We were fortunate that there was a team of experts on the Mondi side who reviewed drawings and responded in a timely manner. Their professionalism helped us to stay on schedule.”

After start-up, the boiler was operated at 115% of capacity for testing. Normally it operates in the 90-95% range. “With RB3 on-stream, we do not need to push RB2 so hard anymore,” says Baláz.

Unique evaporator evolution

ANDRITZ converted Ružomberok’s two LTV evaporator trains into one plant with falling film (lamella) technology in a series of steps over the past few years. The last step, and part of

this project, was the addition of five vessels and a stripper system for the intermediate process condensate (B condensate). Nominal evaporation capacity increased from 470 to 550 t/h.

According to Tapio Lintunen, ANDRITZ Project Manager for the evaporation systems, “This evolution of the plant from LTV to falling film is quite unique in my experience.”

ANDRITZ had to do a lot of process design work to make the transition from the LTV units (built in the early 1970s) to falling film technology. “We had to check every pipe, pump, and valve in the process engineering phase to determine what could be kept and what would have to be replaced,” Lintunen says. “The surprise to me was the number of tie-ins.



▲ In a unique series of steps, ANDRITZ converted Ružomberok’s two LTV evaporator trains into one plant with falling film technology. Nominal evaporation capacity increased from 470 to 550 t/h.

Normally, we expect about 100, here there were about 240. Even with this, everything went well. Mondi handled the piping design in a short time frame and executed it well.”

This is the first time ANDRITZ has installed a light stripper in a Mondi mill. The light stripper purifies the B condensate. With this device, the COD load in the condensate is much lower.

The liquor leaves the evaporation plant at about 75% dry solids and is piped both to RB2 and to the HD concentrator 300 m away where it is boosted to 85% for RB3. “I learned that not many mills are running at 85% dry solids,” Krajči says. “We were able to do this virtually from start-up.”

“The lamella technology provides us with more heating surface and better throughput,” says Baláz. “We also have higher quality condensate which we can use in the bleach plant washers. We have been able to cut our consumption of fresh water because of this.”

Low-NOx LimeKiln

The new ANDRITZ LimeKiln, with its 4 m diameter, is designed for 510 t/d of production. It was delivered in 14 months from order to start-up, according to Hannu Sankala, ANDRITZ Project Manager for the kiln project.

“What we are seeing with the new kiln is better quality lime and more of it,” Scholtz says. “We have good control of dryness and carbonates. And, it operates with excellent stability.”

This LimeKiln has modern blow seal technology on the feed end and a low-NOx burner on the hot end. The blow seal contributes to a much cleaner environment outside the kiln. There are no significant dusting problems and the housekeeping is very clean.

“We have six low-NOx installed now,” Sankala says. “It uses a turbocharged pre-burner to mix the gas and air in such a way as to combust the remaining fuel gas completely. The result is lower emissions, even with the lower temperature in the burner tip.”

The burner system also incinerates odorous gases collected and processed by the new ANDRITZ methanol plant. There are three other locations (RB2, RB3, and a dedicated burner) where odorous gas can be burned.

According to Krajči, the new LimeKiln reduces the requirements for fresh lime and lime mud to be trucked to the mill. “We will reduce the number of trucks in and out of the mill by 2,000 per year,” he says.

Reduced stress

“Our old kiln operated until the August 2014 shutdown,” Lonka says. “We did the change-over in one week, and the new kiln began operation. The recovery boiler started up in September one day ahead of schedule. The turbine came on-line on time. All the plants are performing at the throughput and quality we contracted for.”

“Overall, the stress level of our recovery operators has reduced a lot,” Krajči smiles. “I now occasionally see feet up on the table now that their equipment is no longer the bottleneck. Now we need to enhance our fiberline – to put the pressure back on recovery.”

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▲ Tomi Lonka, Mondi Project Director (left), with Vladimir Krajči, Pulp Operations Manager

“The level of cooperation has been excellent. All the plants are performing at the throughput and quality we contracted for.”

Tomi Lonka
Mondi Project Director

