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Mill maintenance: cooperation is the key

Our interview with Ilkka Hämälä (page 6) gives you a CEO's "helicopter view" of outsourced maintenance. But how is it viewed, and how does it work, at the mill level? We visited two Metsä Fibre mills (Äänekoski and Joutseno) to get the "on-the-ground view" of two different maintenance partnerships that ANDRITZ is involved in.

THE ÄÄNEKOSKI EXPERIENCE

The first ANDRITZ OPE (Overall Production Efficiency) agreement at Äänekoski in 2004 began in the white liquor plant. Cooking followed in 2005 and in 2007 the work was extended to the other fiberline processes of washing, screening, and oxygen delignification.

"We chose the fiberline and white liquor plant to focus OPE on because they have traditionally been our bottlenecks," says Camilla Wikström, Mill Manager.

"Before I came here three and one-half years ago," Wikström says, "ANDRITZ's OPE work in the white liquor plant helped us reduce kiln energy consumption and cut the amount of purchased lime. Today, we're working on small upgrades to our Ecofilters (white liquor filters) to improve throughput and white liquor quality. So there has been a pattern of continuous improvement."

Not a sidestream – part of our daily work

Botnia Mill Services (BMS), a company majority owned by the Finnish YIT, performs



the daily maintenance at Äänekoski as it does at all Metsä Fibre mills. "What we look to ANDRITZ for is their expertise in specific processes and equipment," Wikström says. "They have global experience with equipment, processes, and best practices that we can learn from. We expect them to come to us with new ideas and better ways of doing things."

The cooperation grows each day. "We want ANDRITZ to be present in the mill, not just monitor our systems remotely. Their involvement is not a sidestream operation, but part of our daily work. They work side-by-side with our production people and BMS."

Kalevi Kurki, ANDRITZ's Customer Service Manager, confirms. "It is important to be present," he says. "We can run simulation models and tune control loops remotely, and arrive at a solution. But without dialogue with the operators and managers, this has little value. Personal interaction is required."

Practical examples of success

In addition to the work in the white liquor plant, Wikström cites improvements in the cooking plant as a direct result of the OPE service. "When I came here, there was an ongoing discussion about digester problems in the winter time."

ANDRITZ's OPE team recommended solutions in two areas: small technical solutions for the digester and a different way of running it to improve its performance. "These were things that ANDRITZ pointed out and showed us supporting data," Wikström says. "Quite small things, but they made a big difference."

Then in 2010, ANDRITZ upgraded the digester with new screens and some other changes which improved the throughput and the in-digester washing. "We now get about 100 more tonnes per day through our fiberline," Wikström says. "Last winter we did not have discussions about digester problems, so it is no longer a big issue."

Record-setting performance

"At the end of the day, we are buying production and availability," Wikström explains. "The last two years here we have set production records (501,000 t/a in 2010 and 503,000 t/a in 2011). This year, we are on target to set a new record as well. The best year before 2010, production was 460,000 t/a. For the most part, this has been accomplished with small changes, not large capital investments."

Wikström is proud of her team and their accomplishments. "Our operational availability during the last three years has been 98-99%, which is excellent. We do not have separate targets for ANDRITZ – we only have mill targets. This I think is a very important part of our success. We come up with solutions together. Cooperation is the key."

"At the end of the day, we are buying production and availability."

Camilla Wikström
Äänekoski Mill Manager
Metsä Fibre



"It is important to work side-by-side with the mill team. Personal interaction is required."

Kalevi Kurki,
ANDRITZ Customer Service Manager (right) with Wikström at the base of the continuous digester where ANDRITZ helped throughput and washing performance, especially during the difficult winter months.

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JOUTSENO EXPANDS THE SCOPE

"Every business has certain things it needs to focus on," says Henrik Söderström, Vice President and Mill Manager at Joutseno. "We focus on being excellent in the pulp business. We look for partners who are excellent in the other things we need – like maintenance."

ANDRITZ's maintenance cooperation at Joutseno started in 2003 with the white liquor plant. Today it has expanded to a consortium with BMS and the activities are millwide. "In May of last year, we encouraged these two companies to form a consortium to expand their individual capabilities," Söderström says. "The difference with this consortium is that their service is now for the whole mill. In a way, we are the test for this concept inside Metsä Fibre, and I was very much in favor of doing this."

The targets against which the performance of the consortium is evaluated are quite sim-



▲ Consortium managers and Joutseno managers meet on a regular basis to review progress, adjust priorities, and plan future maintenance/development actions.

◀ Consortium member Botnia Mill Services (BMS) performs all process maintenance in the mill. ANDRITZ adds the capabilities for process development and optimization.

ple: availability, production, safety, and cost efficiency. "There are, of course, other metrics that we follow, but these are the ones we base compensation on," Söderström explains. "Having common targets ensures that everyone is thinking in the same way."

The whole idea is to utilize the synergies of each partner better than before. Not to im-

prove that "better than before" was negative. Söderström, like many of his colleagues at Metsä Fibre, believes that everything can be continuously improved. "Joutseno has been a very efficient and well-operating mill," he says. "Our availability has been satisfactory, but there is always room for performance improvement. During the last couple of years, our operational availability

has increased by more than two percentage points on a twelve-month rolling average basis." This is good news to Söderström. "Even a one percent improvement in operational availability is huge," he says. "We are talking about millions of euros."

Availability drives production and profits

Metsä Fibre defines "operational availability" as the number of minutes that chips are feeding the digester compared to the number of minutes that the digester is available to operate. This allows for planned shuts and other planned downtime.

"Availability drives maximum production," Söderström explains. "Every time the mill goes down there is increased risk for environmental emissions or a work accident. Each start-up and shutdown takes away from the speed of production. When our mill is not operating well, there is the obvious impact on the revenue side, but also huge impacts on the cost side. For example, our energy costs can triple because we have to use more natural gas instead of black liquor. Also, we may have to downgrade pulp to a lower quality."

Practical example

"One good example is the work done in our white liquor plant," Söderström says. "As recently as one year ago, the performance of the CD-Filter was a frequent topic of discussion at our morning meetings. We asked ANDRITZ to focus on it. One year later, the topic of white liquor filtration problems never comes to my ears. There were many practical actions taken."

Juha Titoff, ANDRITZ's Reliability Manager and the manager on-site at Joutseno, explains, "I was a key person in the original design of the CD-Filter, so correcting the situation at Joutseno got my attention. We collected data and modeled the process and came up with a solution. By modifying the operation of the filter, implementing new preventive maintenance procedures, and making modifications to the filter discs, we were able to eliminate the problems."

"There are other practical examples, for example decreasing problems during the winter time in the debarking and chipping line," Söderström says.

"These results are important in understanding the service we offer," says Harri Qvintus, ANDRITZ's Regional Service Manager for Northern Europe. "It is not just equipment, just process, just maintenance, or just training. It is the experience and knowledge to put all these things together into one solution."

From department-wide to millwide

"One of the challenges of a millwide maintenance approach is that we don't become too general," Söderström says. "So we managers and our consortium partners must sit together to allocate our resources to do the most good."

Qvintus understands the challenge. "Availability, stable production, and lower costs never go out of style," he says. "But each year, some mill priorities can change or the emphasis changes – say from maximizing production to focusing on cost savings. That is why we create, together with the mill, an annual plan for short-term targets and a longer term development plan."

"It is interesting, but whenever a bottleneck is eliminated it creates both a benefit and a potential prob-

"Even a one percent improvement in operational availability is huge. We are talking about millions of euros."

Henrik Söderström
Joutseno Mill Manager
Metsä Fibre



The ANDRITZ/BMS maintenance consortium at Joutseno covers the entire mill and is a test for the concept within Metsä Fibre. ▶



"It is not just equipment, process, maintenance, or training. It is the experience and knowledge to put all these things together into one solution."

Harri Qvintus
ANDRITZ Regional Service Manager, Northern Europe (left) with Juha Titoff in front of the CD-Filter at Joutseno



lem," Söderström says. "The benefit is increased throughput. The potential problem is additional stress on a downstream system, which will become the next bottleneck. By having our partners think millwide, they have the responsibility to make recommendations that give us millwide benefits – and not sub-optimize a specific process area."

Sustainable partnerships

"At the end of the day," Söderström says, "it comes down to having common interests. This ensures common efforts."

He highlights the importance of knowing your company's capabilities and the capabilities of potential partners. "All companies have a set of core competencies – the areas where they can focus to become truly excellent. When we are able to bring together different players with unique competencies – and have them all work on common targets with common efforts – we are most likely to be successful."

He pauses to emphasize a final point. "One prerequisite for this type of partnership is trust on both sides," he says. "And the proper financial incentives. The starting point has to be that everyone will profit in the long run. Otherwise, the partnership is not sustainable."

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ANDRITZ Reliability Manager

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After the Mobile OSR and upgrade, the Eerbeek mill increased the dryness of its deinked residue and cut energy costs. The mill's dried residue is used as an additive by local cement manufacturers.

Mobile On-Site Repair saves Eerbeek time and money

When it came time to rebuild the sludge screw press at Mayr-Melnhof's Eerbeek cartonboard mill, the best solution was also the closest. A Mobile On-Site Repair unit came right to the mill. The rebuild and upgrade were completed in half the normal time, no extra work was required of mill personnel, no spare shaft was needed, and transportation costs were avoided.

"Earlier, when we sent out our screw press shaft for service, it would take 10 or more days. Then ANDRITZ introduced us to a new concept they call Mobile OSR, which they had been using in Spain. It reduced the downtime to four days and we got upgraded components in the rest of the press at the same time," says Harry B. Jonker, Project Manager at Mayr-Melnhof's Eerbeek mill in the Netherlands.

Mobile On-Site Repair (Mobile OSR) can be used for all types of screw presses regardless of manufacturer, model, and size.

"To avoid longer downtime, Mobile OSR was the perfect solution for us," Jonker says. "We combined the screw press rebuild with another major overhaul we were doing at the mill, so the downtime was planned. ANDRITZ was on-site 24/7 to service and upgrade our screw press."

According to Jonker, ANDRITZ is a very reliable partner. "Not the cheapest, but then you get what you pay for," he notes. He says that the results of higher dryness and improved energy efficiency of his press was certainly worth the investment. The

production is 100 t/d of bone dry residue (sludge).

Signs of wear

A sludge screw press has a difficult job – squeezing water out of volumes of reject materials which are sometimes quite abrasive. As water adds weight, the transport and landfilling of sludge (sludge is normally hauled to a landfill or sometimes sent to local cement factories, fertilizer plants, etc.) would be much more expensive without the press. The water can be recovered and recycled in the process.