

FiberSpectrum

Issue 18 - No. 2/2008

The Magazine of Andritz Pulp&Paper



We wanted a new high-quality tissue line that was easy to install, easy to start up, easy to operate, and easy to maintain."

Andreas Noack, Managing Director of Fripa.

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FiberSpectrum is published by:

Andritz AG
Stattegger Strasse 18
A-8045 Graz, Austria
Tel: +43 316 6902 0
pulpandpaper@andritz.com

Managing Editor:
Gudrun Hadolt
gudrun.hadolt@andritz.com

Editor:
Robert Pühr
robert.puhr@andritz.com

Editorial Team: Olavi Pomoell
Petra Binder Ursula Upanne
Bjørn Hansen Manuela Wagner
Brigitte Jannach Elisabeth Wolfond
Mia Passi

Contributing Writers:
Thomas Barbieri
Robert Pühr
Regina Puschnig

Contributing Photographers:
Thomas Barbieri
Lars Behrendt
Dieter Brasch
Wolfgang Croce
Manfred Fitz
Nico Fliegner
Riku Isohella
Robert Pühr
Pei Xiong Wu
Hannu Vallas

Graphic Design:
Gudrun Hadolt
gudrun.hadolt@andritz.com

Print:
Medienfabrik Graz

Fiber Spectrum is published in five languages; English, Chinese, Russian, Japanese and Portuguese. You will see the use of both "tonnes" and "tons" in this publication: tonnes for metric units and tons for American units. Unless otherwise noted, metric units are used. Copyright © Andritz AG 2008. All rights reserved. No part of this publication may be reproduced without permission of the publisher.



Andritz Kufferath: expanding full-line service

Andritz recently acquired major assets of Andreas Kufferath GmbH & CoKG., a well-established and high-quality supplier of forming fabrics and technical cloths. The name of the company has been changed to Andritz Kufferath.

The products of Andritz Kufferath include forming fabrics for paper, board, and tissue machines, and specialized TechnoWeave® cloths which are used in a variety of industrial applications. Kufferath also supplies press wires, disc filter cloths, cleaner bags, and other speciality items for the pulp and paper industry.

The acquisition of Kufferath continues our strategy to be a full-line supplier to the industry. Customers now have access to these consumable items through the global Andritz organization.

A message from Andritz Pulp & Paper Management

Dear Readers,

Focusing on things we know.

As we write this, the world's economies are shifting dramatically. Words like recession, crisis, and even depression are appearing in the daily headlines of major newspapers. In times of uncertainty, it can be quite easy to focus on all the unknowns and to worry about what might happen.

As an industry we have faced challenges from the time that the Chinese invented papermaking (105 A.D.). And, we have shown our versatility, flexibility, ingenuity, (and sheer determination at times) to constantly make progress. We have faced many, many cycles. It serves us well to recall and rely upon **the things that we know** to guide us through:

The importance of action. Our experience has shown us that being preemptive (taking measures against the anticipated or feared) is much better than being reactive. We can actively manage our future by being preemptive against workshop loading, commodity prices, manpower requirements, and currency swings.

The ingenuity of people. In times of necessity, the truly bright people seem to become even more inventive, more creative, and more ingenious. All of our businesses rely upon finding and retaining these valuable people.

The role of technology. Just as talented people find the solutions to our current and future problems, applied technologies help us to secure those efficiency gains. Whether it be for information exchange, engineering, manufacturing, or sales/marketing efficiencies, technology is a powerful tool for change.

The focus on service. A business based solely on technical products lacks the dimensions necessary for success in today's complex world. Every customer needs support to a varying degree – from assistance in

specifying the right product in some cases to actually operating and maintaining the product in other cases. The ability to offer this flexible range of service support – at the time and place the customer needs it – defines the ability to succeed.

Economics has never been a perfect science, and economic uncertainty is not really news. But we can say – with certainty – that there will be challenges ahead for the pulp and paper industry and its suppliers.

About a year ago we introduced a new theme line, "We accept the challenge!".

It expresses our approach to helping you find the right solutions and communicates concisely how we want to be perceived. We invite you to discuss your most pressing challenges with us and, together, we'll find the most suitable solution.

This issue of FiberSpectrum contains real-life stories of challenges faced and solutions found. We hope you enjoy reading it. As always, we thank you for your continued trust in us and wish you the very best throughout the holidays and the coming year.

Wolfgang Leitner



Karl Hornhofer
Member of the Executive Board
Pulp & Paper – Capital Systems

Wolfgang Leitner
President & CEO

Humbert Köfler
Member of the Executive Board
Pulp & Paper – Service and Units

First, fast, and flexible in tissue

Just weeks after the introduction of the PrimeLineCOMPACT concept, Papierfabrik Albert Friedrich KG (Fripa) ordered the first unit – continuing its strategy of investing in ultra-modern production lines to meet changing customer requirements. The COMPACT machine was delivered in combination with Andritz stock preparation systems, which saved Fripa time and money.

“Changing consumer requirements can be reached more efficiently with flexible, middle-sized machines, like the COMPACT design.”

Andreas Noack, Managing Director of Fripa (left) shakes hands with Günter Offenbacher, Senior Manager Sales for tissue systems from Andritz.



In March 2008, Fripa started up the first Andritz PrimeLineCOMPACT – a complete tissue-making line from stock preparation to the parent roll, including automation. Located in Miltenberg, in the heart of Germany, the fast-moving Fripa stays ahead of its competition by investing in ultra-modern converting lines and packaging systems to give it extreme flexibility.

Fripa’s investment goal, according to Managing Director Andreas Noack, was to install a new line capable of producing approximately 100 t/d of high-quality tissue that was easy to install, easy to start up, easy to operate, and easy to maintain.

“The tissue industry is a dynamic business,” says Noack. “Changing consumer habits have a more direct influence on tissue than on other paper grades. This means that the technologies we employ must be flexible to meet these changing requirements. For Fripa, these requirements can be reached more efficiently with flexible, middle-sized machines, like the COMPACT design.”

First installation based on trust

“In 1996, Andritz rebuilt our PM 5 and did a very good job,” says Andreas Liebich, Division Manager Paper Production. “The cooperation was very good and they proved their technical competence to us. They also have excellent references for delivering tissue machines with good price-performance ratios. Based upon this trust, we did not feel there would be extra risk to install the first PrimeLineCOMPACT line.”

“Even in business, there is an emotional side,” Noack says. “Business is a matter of trust. You don’t build trust

with a company, but with people. We have a good, stable relationship with Andritz people that has been proven over the years. Our Andritz contacts, both on the technical and commercial side have been excellent. This is important for us as a medium-sized business.”

COMPACT, but full-featured

“Each component in the PrimeLine family has unique strengths and innovations,” says Günter Offenbacher, Andritz’s Senior Manager Sales for tissue systems. “The COMPACT production line is no exception.”

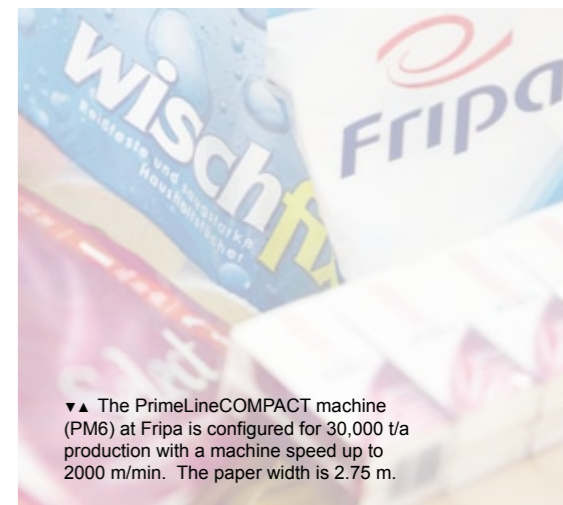
The idea behind COMPACT is to combine cost efficiency with proven quality. A special project team made up of Andritz process experts, engineers, manufacturing specialists, customers, and industry designers was created to arrive at the final design. The key to COMPACT’s cost efficiency is the level of standardization – which reduces engineering hours, manufacturing hours, installation time, and even transport costs.

“Single modules can be shipped in standard containers, with the exception of the Yankee,” Offenbacher says.

The components are combined in standard arrangements to achieve the speed and production capacity required by each customer. In Fripa’s case, the new PM6 is configured for 30,000 t/a production and a machine speed up to 2000 m/min. The paper width is 2.75 m.

The stock preparation system is an Andritz ShortFlow™ design and is sized for 120 bdt/d of bleached virgin pulps. The FibreSolve™ pulper with two conveying lines is a combined solution for hardwood and softwood fibers. The hardwood line (60 bdt/d) consists of a protection screen, a deflaker, and a TwinFlo™ refiner. The softwood line (60 bdt/d) is very similar but with two refiners.

In addition to the stock preparation, Andritz also delivered equipment for the broke line (20 bdt/d capacity) and the systems for water recirculation and fiber recovery.



▼▲ The PrimeLineCOMPACT machine (PM6) at Fripa is configured for 30,000 t/a production with a machine speed up to 2000 m/min. The paper width is 2.75 m.



“Minimizing chest volumes, together with the ShortFlow blending system, has helped us optimize production.”

Helmut Hofherr, Head of Paper Production.



The approach flow system to PM6 supports a two-layer headbox. It consists of a ShortFlow™ blending system (for wire and felt layers) as well as the headbox screens and fan pumps and gives Fripa lots of flexibility for grammage and color changes.

“The two-layer headbox has a stiff lamella which allows us to optimize the purity and fiber structure of each layer by adjusting the jet velocities of each layer,” Liebich says. “From our point of view, the two-layer headbox in combination with a suction roll and high-temperature hood offers the best combination to produce high-quality toilet paper with a relatively low chemical input.”

The PrimeForm CrescentFormer generates a uniform paper web with the best possible formation quality. The press section consists of a single suction press for high product quality. Following the press, the PrimeDry Yankee is ribbed and optimized for a high heat flow and an even drying profile. The high-efficiency EquiDry S hood is designed for 600°C and has automated Correcta-zones which allow regulation of the moisture profile. Beginning at the creping doctors, the sheet run

is equipped with threading and sheet support equipment and a dust removal system. The reel, called the PrimeReel Standard, is pneumatically controlled and includes a linear primary arm and a pivoting secondary arm.

A working partnership

Like every project, this one had its challenges. “A big challenge for us was the Bundes-Immissionsschutzgesetz (BlmSch), the federal law for emissions protection,” Noack says. “We do not deal with that on a regular basis, so it was considerable work for us to go through the licensing procedure. Even with the support of our provincial government, it took one year to get all the permissions.”

Another challenge was the space issue. Fripa defined the place for the new machine and had to purchase some additional real estate. This impacted their existing infrastructure during the construction phase.

“But despite these challenges on our side, the project was executed in an excellent way and progressed smoothly,” Noack says.

“We chose a turnkey delivery from Andritz,” Liebich says. “Fripa contributed only some small parts of the total installation. We built the hall and provided the steam, water, and electricity for the machine.”

“We did not have a dedicated project team to work solely on the new PM6,” Noack says. “Our employees had to cope with double workloads, because they had their regular jobs to do. That is probably the situation in many small and middle-sized businesses, so we relied heavily on Andritz’s project team. What impressed me was that we were able to bring in our own ideas and know-how to the project. Andritz was flexible and encouraged a true partnership. It’s not just a commercial transaction for them, but an exchange of ideas and solutions. This has not been the case with other suppliers, especially in a turnkey delivery.”

Full speed in two weeks

In mid-March, Fripa began the start-up of the COMPACT line on a “stop-and-go” basis with the machine running at 1000 m/min. During the whole start-up phase, only about five tonnes of off-spec paper was produced. The small amount of rejects and the fast start-up were impressive accomplishments.

Within a few days, production was continuous, with the machine reaching incremental speeds of 1300 and

Fripa (Papierfabrik Albert Friedrich)

1500 m/min. After only two weeks, operational speeds of 1800 m/min were achieved. Also, after two weeks, the machine was operated completely by the Fripa team, without Andritz personnel on site. Andritz supported with 24-hour telephone availability for any questions or problems, but there were few occasions to use it.

“We had a very good start-up and reached relatively high production of super-soft toilet paper very quickly,” Liebich says.

“Minimizing chest volumes, together with the ShortFlow blending system, has helped us optimize production,” says Helmut Hofherr, Head of Paper Production at Fripa. “Changes in the ratio of fiber input or strength properties are conveyed to the machine very quickly which results in faster grade changes and more efficient optimization work. I was particularly surprised by the Andritz automation systems, especially in the stock preparation area. The sequencing of start-ups, grade changes, and shutdowns all run perfectly.”

Energy and environmental advantages

“The new machine is not as high as conventional machines and is engineered in a very compact, modularized design,” Liebich says. “This configuration has several advantages. Wire and felt changes can be made with minimal downtime. The machine is easier to clean than a conventional machine, as it is smaller and more open.”

One of the design goals of the COMPACT design was energy-efficiency. According to Offenbacher of Andritz, the COMPACT concept with ShortFlow™ leads to less energy consumption, and also contributes to a faster return on investment.

“In the future, papermaking in Germany will not be possible without taking energy factors into consideration,”

Noack explains. “Energy will become the decisive question, as it highly influences the product from the cost side. The energy input on PM6 is as low as we estimated, but our goal is to get it even lower. We have done a very good job of optimizing PM5, and I believe we can be as successful with the new machine.”

The same can be said about effluent volumes. “On PM5, we have about 1.8 l per kg of production,” Liebich says. “For the new PM6, we installed special components to further close the effluent loop. The amount of effluent is below what Andritz estimated, but we are sure there are further optimization possibilities.”

“Today, the stock preparation systems and water treatment systems are already fully optimized,” Liebich continues. “We still have some adjustments to make to the machine for product optimization. I think this should be completed by the end of the year. We have very high paper quality standards and want to reach a similar quality level at significantly higher speeds as we have on our optimized PM5 right now.”

Flexibility in the market

As for Fripa’s markets, Noack is optimistic. “Before you can discuss the overall market, you always have to ask what your own position is,” he says. “There are companies that strongly focus on Europe. And, there are others that are positioned locally. We consider ourselves to be in the second category. We’re a middle-sized business with our main focus in Germany. Due to acquisitions and takeovers, the competitive situation is tough, but there are advantages as well. As a result of mergers, customers are seeking alternative suppliers. From this point of view, new and interesting relationships will be initiated.”

►► find out more at www.fiberspectrum.andritz.com



“We had an excellent start-up and could achieve a high level of production capacity within a short period of time.”

Andreas Liebich, Division Manager Paper Production.

▼ Wire and felt changes can be accomplished quickly due to the modular, compact machine design.



▼ As part of the package, Andritz delivered the stock preparation system (ShortFlow™) for virgin fibers, a broke processing line, and the systems for water recirculation and fiber recovery. The delivery also included the automation systems. The approach flow system to PM6 supports a two-layer headbox. It consists of a ShortFlow™ blending system (for wire and felt layers) as well as the headbox screens and fan pumps and gives Fripa lots of flexibility for grammage and color changes.



New SC grade comes on-stream in China

In a land dominated by LWC grades for publication and advertising materials, a unique joint venture is taking bold steps to offer an alternative. SC paper manufactured at the Dawang mill in China gets great reviews from customers for its optical and surface qualities – thanks in part to Andritz technology for processing and deinking the 100% wastepaper furnish.

“I’m always ready for one more interesting challenge.”

Hanspeter Elger, SEHT’s Area Project Manager for Raw Material Preparation.



You hear people talking about *global cooperation* and *global efficiency* – but when you actually witness it in person, the words take on new meaning. Such is the case with a unique joint venture involving Stora Enso of Finland and Shandong Huatai Paper of China which built the first professional SC paper production line in China. How the two companies got together is an interesting story.

Combining strengths

Stora Enso wanted to reuse the old PM 6 from its Maxau mill, Germany, in an emerging market and talked with several prospective buyers. When talking with Shandong Huatai Paper about buying PM 6, the discussion turned to doing something more – combining Stora Enso’s expertise in producing SC papers with Huatai’s infrastructure (people, power, water, waste treatment, transportation, and sales network).

Shandong Huatai Paper is well known in the Asian region, and is a powerhouse in China. Part of the Huatai Group (third largest enterprise group in China), it produces one third of the newsprint in China (1.2 million tonnes per year). It has an extensive sales and technical support network established in China.

Satisfying a market need

The market need was uncovered when Stora Enso worked with Shandong Huatai in late 2004 to do a pre-feasibility study for building a publication paper production facility in China. Arne Sundkvist, the DIP Process Manager from Stora Enso’s Hylte mill in Sweden who had technological responsibility for



“The DIP plant is running exceptionally well. We’re very happy with the quality of the deinked pulp. The systems run reliably and are easy to control.”

Liu Shuliang, Production Manager.

▼ Quality of the SC paper produced at the Dawang mill is very high. Here a technician runs laboratory tests on the 100% recycled furnish.

this global project, was part of that joint team.

“Our thinking was to offer Chinese advertisers, cataloguers, and magazine publishers an alternative to LWC grades,” Sundkvist says.

The recommendation from the pre-feasibility study was to form a joint venture and to relocate the machine from Maxau to China to keep investment costs at a reasonable level. Stora Enso Huatai (Shandong) Paper – known as SEHT – was formed in April 2006.

From Germany to China

Carsten Wenk was the Operational Director for SEHT. He explained that Stora Enso replaced its PM 6 machine at Maxau with a new 7.2 m trim SC machine. The year was 2004.

In July, PM 6 was stopped. It was dismantled in just six days and then carefully packed into 140 shipping containers. “It was just 75 days from the shutdown of the old PM 6 to having paper on the reel of the new machine,” says Wenk. Wenk was involved in many projects at the mill – the rebuild of PM 8, the upgrade of the groundwood line, the installation of the new Andritz bleach plant, and the installation of the new PM 6. He was Production Superintendent on the new machine. With the birth of the SEHT joint venture, PM 6 had a new home. “I guess you could say that I relocated with the machine,” Wenk says.

One more interesting project

The chosen site for SEHT’s new SC line was Huatai’s large industrial

complex near Dongying (called the Dawang mill). Surrounding the new SC production line is the world’s largest newsprint production base (Shandong Huatai Paper), with power plant, wastewater treatment, warehouses, and transportation depot already in place.

The Huatai infrastructure allowed the SEHT team to focus on an efficient installation and start-up, according to Hanspeter Elger, the Area Project Manager for Raw Material Preparation (recycled fiber processing and deinking).

“I have worked with paper grades from tissue to board,” Elger says. “This gives me a generalist view of our industry, and has been very helpful for this project at the Dawang mill, since each of us has to wear several hats.”

Interestingly, Elger was only two months away from retirement when the management of Stora Enso asked if he would be willing to manage the DIP project at SEHT. “Why not?” Elger agreed. “I’m always ready for one more interesting challenge.”

The DIP project

The capital investment for the new production line was approved by the board of directors in August 2006 and the project took off on an extremely fast-track. In fact, in anticipation of a “green light” from the board, Andritz and other suppliers were first invited for discussions in June of that year. “We divided the process into three key areas: drum pulper with feed, the main DIP process, and sludge handling,” says Sundkvist. “We targeted to have one supplier, if possible. If you have one supplier, you never have to ques-



“We helped SEHT save time and money because they didn’t have to engage a separate engineering consultant for the DIP plant. To keep to the fast-track schedule, we did the basic engineering in-house.”

Hubert Leitner, Project Manager from Andritz.



Stora Enso Huatai (Shandong) Paper



"I have been very impressed with the Andritz start-up team."

Franziska Schütt (right), Start-up Engineer from Stora Enso, with Hanspeter Elger.

tion about who is responsible for the process success."

All the work was completed on a fast-track basis – just 15 months from board approval (August 2006). "We were under immense pressure since this project was planned to be built in the shortest time within Stora Enso," says Hermann Mahlert, head of the corporate project team. "Our marketing people wanted to get paper off the machine before the end of 2007 due to the upcoming Olympic games."

Elger's counterpart on the project from Andritz was Hubert Leitner, Project Manager. Working out of Graz, Austria, Leitner coordinated the work of his team, which included members from Finland, Austria, and Andritz Technologies Ltd. in Foshan, China.

"Because of the tight schedule, we took full responsibility for the basic engineering, while the detailed engineering was done by a Chinese design company," Leitner says. "We actually started the basic engineering work on a handshake and attended a large project kickoff meeting in Düsseldorf in mid-August 2006 before the official board approval at the end of the month."

"We saved time and money on the project because we didn't have to engage a separate engineering consultant in Europe for the DIP plant," Sundkvist says. "Andritz did the work as required."

The total scope of Andritz's supply was all the equipment for the recycled fiber production line, including paper feeding and sorting, the FibreFlow® drum pulper, cleaning, screening, flotation, thickening, dispersing, bleaching, sludge handling, and internal water treatment. In addition, Andritz delivered the technology for the approach flow and water systems, including all screens, cleaners, disc filters, and the MultiRetention Deculator® system.

"We were very familiar with Andritz's technology from installations in other Stora Enso mills," Elger says. "They have all the elements from technology, to project execution, to service support in place. It was a solid decision as they are a proven partner."

Engineering was completed in March 2007 and equipment erection began in June. By a stroke of good luck, the large FibreFlow® drum (3.5 m diameter by 25 m long, supplied and installed in one piece) was delivered one month ahead of schedule.

The DIP plant started up in the middle of November and by the end of the month, the first paper came off the reel. "To be honest, at the very beginning I was not convinced we could make it," Mahlert says. "But everybody on the project team did their utmost in the last weeks and days. This has been a great experience to work with this multi-cultural team."

"The start-up was quite good," Wenk says. "Andritz did a good project for us, as usual. What I like about working with Andritz is that whenever we encounter a problem, the discussion is about how to find a good solution – not about fixing blame."

Pushing it further

"In just the first four months of operation, our machine efficiency increased close to world class level," says Wenk. "So, we can say that the start-up of this whole line has been remarkable. We had the advantage of getting some very experienced papermakers from Huatai."

One of those experienced papermakers is Liu Shuliang, who is now Production Manager at SEHT. Liu came to the project in August 2007 while PM 6 was being commissioned. He brought with him a team of about 100 people from Shandong Huatai Paper to operate the DIP plant, paper machine, and finishing operations.

"The DIP plant is running exceptionally well," says Liu. "We're very happy with the quality of the deinked pulp and we are averaging about 400 tonnes of production per day." Liu is also impressed with the level of automation in the plant. Only one operator per shift is required. "The systems run reliably and are easy to control," he says.

Sundkvist concurs. "The deinking line is stable and reliable," he says. "We do not have unforeseen stops in production. If I summarize it, I would say that Andritz has done a good job and we are where we planned to be at this stage in the ramp-up."

Furnish for the SC paper is a 50/50 blend of old magazines (OMG) and old newspapers (ONP). "Brown fiber in the ONP is our biggest problem," Elger says. "We employ a small crew one shift a day to manually sort it out. There is also about 7% incoming dirt with the furnish, which is well handled by the Andritz systems."

Franziska Schütt, from Stora Enso's Sachsen mill in Germany was part of the start-up team. This was a new experience for her, being her first start-up. "I have been very impressed with the Andritz start-up team," she says. "They have the knowledge and they know exactly where to check if there is a problem. I have learned a lot in my six months here."

Establishing a market reputation – one roll at a time

In the Chinese market, Stora Enso registered its EnviPress™ brand with a Chinese name, Yue Yin Cim™. It is produced in a range from 45 to 64 g/m². Shang Xiangyang, Sales Administration Manager for SEHT, says that printers are adjusting to SC paper and that the first trials have been very promising. He shows as an example a recent advertising flyer test printed for the IKEA company in China.

"As China increases its paper consumption, it will need more specific paper grades," Shang says. SC paper is an uncoated grade that combines printability and runability with a lower cost structure than LWC grades. It contains a significant amount of fillers (minerals and chemicals) to give it the brightness and opacity that advertisers, cataloguers, and magazine publishers love.

"By starting up the first large SC production line in China – especially with 100% recycle and its environmental benefits – we are boosting development in the Chinese paper industry," Shang says. "This is a challenge for all of us. We have a new company, a new product, a new market, and new people in our team. We are all growing together."

►► find out more at www.fiberspectrum.andritz.com



▲ The FibreFlow® drum pulper in operation at SEHT. The DIP plant started up in the middle of November 2007 and by the end of the month, the first SC paper came off the reel.



"The deinking line is stable and reliable. We do not have unforeseen stops in production."
Arne Sundkvist, DIP Process Manager at Stora Enso's Hylte mill.



◀ Andritz screw press in foreground and SelectaFlot deinking cells in background.

Conquering inner space

Just like a shoemaker trying to fit a large foot in a small shoe, the project team at UPM Kymi's mill had to fit a new chemical recovery island in the same space occupied by the old one – with the old equipment remaining in operation during the entire construction. Everyone likes a challenge – including Andritz, who provided technology for evaporation, white liquor production, and the fiberline.



“Our biggest challenge was space. We were replacing two old lines with one modern line with a live mill operating all around us.”

Matti Haukijärvi, UPM Vice President and Project Director.

When UPM Kymi began moving equipment and pouring new foundations for its chemical recovery plant upgrade, it was not entirely clear what they would find underneath the ground. A large portion of the new line was being built around – and over – the two existing lines that were over 30 years old and, by Project Director Matti Haukijärvi's own admission, were “well worn out.”

Yes, there were a few surprises as old piping runs and electrical cables were uncovered during the demolition. But, each surprise was taken in stride by Haukijärvi and his team. The net result is a massive modernization project that was completed on-time, virtually on-budget, and with a very fine safety and environmental record. Haukijärvi, an understated Finn to be sure, regards the accomplishment as “a very good project.”

The investment of over € 340 million was one of the largest in Finland during the period from 2006-2008, and was designed to secure the long-term efficiency of Kuusankoski's operations. “We have been producing sulphate pulp in this mill site since 1964,” says Haukijärvi. “This site has a grand history, having been involved in forest products since 1872.”

Focus on recovery

Kuusankoski's fiberlines were modernized when Andritz delivered a new continuous cooking system for the hardwood line in 1999 and retrofitted the old softwood digester with Down-flow Lo-Solids® cooking technology in 2001. The upgrades also included Diamondback™ chip bins and a TurboFeed® chip feeding system. With the digesters running well, UPM next looked to eliminate the bottlenecks in

the chemical recovery process. “Our equipment was considerably worn, the technology outdated,” says Matti Tikka, Project Manager for the new evaporation plant and the recovery boiler, and now a Production Manager for the new chemical recovery plant. Tikka, an 18-year veteran at Kuusankoski, knows well the mill's strengths and limitations.

“The efficiency of the two old lines was suffering as maintenance and operating costs were creeping higher,” Tikka says. “Plus, the turbo-generators were undersized so that we could not take advantage of the potential bioenergy we could produce. Also, there were gains in environmental performance that we wanted to make.”

In March 2006, the UPM board approved the investment: two obsolete chemical recovery lines were to be replaced by a single modern one. Scheduled for start-up was the summer of 2008.

The targets

In addition to updating the technology, there were specific targets for the project (named REC⁰⁸) according to Haukijärvi. “We wanted to open up critical bottlenecks to improve pulp production, increase the utilization of biofuels, and double our bio-electricity production,” he says. “We also wanted to reduce fossil fuel-based CO₂ emissions and improve our energy self-efficiency. We felt we could dramatically reduce NCG discharges and reduce overall air emissions levels by 15-20%.”

The project included a new seven-effect evaporation plant from Andritz, an Andritz white liquor plant capable of generating 8500 m³/d of cooking liquor for the mill's two digesters, and



Andritz delivered a 8500 m³/d white liquor plant as part of the modernization at Kuusankoski. Proven technologies such as X-Filters for green liquor filtration, a CD-Filter for white liquor, and an LMD-Filter for the lime mud are employed.

“We were doing Just-in-Time construction where components were transported to the mill and lifted directly into final position.”

Jorma Vento, Andritz Project Manager for the white liquor plant.



a new Diamondback™ chip bin with pre-steaming and reboiler for the softwood digester. In addition, UPM Kymi installed a new recovery boiler with a 113 MW backpressure extraction turbine-generator, an auxiliary boiler, a NCG-boiler, and new automation equipment.

Some new challenges

The construction of the new chemical recovery island was the biggest ongoing investment project not only for UPM, but also for the Finnish forest industry. As such, it had the full attention of UPM management and the local community. Energy-efficiency was an important aspect.

“Energy-efficiency has become a significant competitive factor for pulp and paper producers,” says UPM's President and CEO Jussi Pesonen. “UPM has consistently improved its energy efficiency through investments in Finland and other countries.”

The project team challenged itself to improve other efficiencies including project organization, cooperation, safety, and start-up performance. “But the biggest challenge for us was the space limitation,” Haukijärvi says. “Everything was tight, with little or no room for laydown and staging in certain areas. Plus, the new chemical recovery island was being built virtually on top of the existing installations – at a time when the mill was in full production.” “The Kymi mill continued to run flat out to meet market demands,” Tikka says.

“In fact, the pulp mill set a production record during the time we were constructing the new plant.”

“We had six to seven months of pre-work before the machine erection could begin,” Haukijärvi says. “We planned our moves, demolished buildings, moved tanks, and relocated pipelines all while working around a live, operating mill. We were very concerned about safety with all this activity in a concentrated area, but I'm happy to report that there were no major incidents.”

The original thinking was to conduct the project in two phases: with the evaporators, recovery boiler, and turbine-generator coming on-stream in August 2008 and the white liquor plant in February of 2009. However, as work proceeded, it was decided to start all the processes together and do it over the summer of 2008.

JIT construction

On paper, it looked like a “normal” white liquor plant delivery to Jorma Vento, Andritz's Project Manager for Chemical Systems. “However, on-site we could see there would be significant challenges due to the space limitations.”

Without space inside the mill for material laydown or staging, the coordination with sub-suppliers was extremely critical for large components. “We had Just-In-Time construction where components were transported to the site and lifted directly into final position,” Vento says. “It is amazing that we were

able to accomplish this without an accident and to keep the schedule.”

The level of cooperation and coordination during this project was really quite remarkable according to Vento. “All the suppliers had to work around an operating mill,” he says. “The project managers from all the suppliers would come together on a regular basis and try to foresee problems. We would share information with each other about our erection plans to avoid, for example, trying to put two large cranes in the same area.”

Tapio Lintunen, Project Manager for the Andritz evaporators, faced similar challenges. In addition, the weight

limitations on local highway bridges precluded Andritz from delivering the evaporator vessels completely assembled. “The largest vessels (9.5 m diameter) weighed too much to be brought in as single units,” Lintunen says. “So, we had to do the final assembly on-site.”

Only two shutdowns were planned for the switchovers from the old systems to the new. A five-day shutdown occurred in August 2007, followed by a three-day shut in May 2008 for the final interconnections. The commissioning and start-up occurred exactly on schedule and “perfectly” according to Lintunen. “UPM gave us very high marks for the start-up as our team did a tremendous job.”



“The black liquor is concentrated to 85% dry solids, which allows the recovery boiler to generate more energy with lower emissions.”

Tapio Lintunen, Andritz Project Manager for the evaporation plant.

the last concentrator in the evaporator train,” Lintunen says. “The concentration of the firing liquor is 85% dry solids, which allows the boiler to generate more energy at lower emissions.”

Another technology cited by Tikka is the chip pre-steaming system with a reboiler that Andritz installed on Kymi’s softwood digester. “With this closed system, not only are we more energy-efficient, but we’ve eliminated any gases escaping to the atmosphere,” Tikka says. “It’s very clean and very efficient.”

A new feature, not involving water consumption, but still environmentally centered, is the new Andritz LimeFire™ burner on the lime kiln. “This is a new design that we originally tested at this mill about four years ago,” says Markku Lankinen, Sales Manager for Andritz. “It reduces NO_x emissions by 30% by utilizing an internal turbocharger for flame shaping.”

Best performer

Haukijärvi, Tikka, and the rest of the project team managed 50 civil contracts and 100 machine delivery and erection contracts simultaneously to achieve an on-time start-up for the chemical recovery modernization. Not an easy task, but “all part of the job” according to Haukijärvi.

Tikka, too, is very satisfied with the results. “The Andritz systems are producing high dry solids black liquor for the generation of energy from biomass,” he says. “The white liquor quantity and purity to the cooking plant is excellent. And, we’re operating within our environmental limits.”

According to UPM, the investments in the Kymi mill put it in an even better position to become the best performer in the industry.

►► find out more at www.fiberspectrum.andritz.com



▲ The UPM Kymi mill is located in southeastern Finland, on the Kymijoki River. It has a proud tradition and was the birthplace of Kymi Paper, which was merged with UPM in 1996.

▼ Markku Lankinen, Andritz Sales Manager (left), and Matti Tikka, a UPM Project Manager for the new evaporation plant and recovery boiler, and now a Production Manager for the new chemical recovery plant, warm their hands near the firing end of the Andritz lime kiln. This is the first installation of the new LimeFire™ burner from Andritz.



▲ Andritz delivered a seven-effect evaporation plant as part of the project and also the methanol liquefaction plant. Secondary condensates are stripped and collected in four streams – all of which are reused by the mill.

► Tight spaces. The new chemical recovery systems were installed in and around the existing old systems while the mill continued to operate. This is a view of the Andritz white liquor plant taken through one of the Andritz evaporators.

Reusing water

According to Tikka, there are only proven technologies at Kuusankoski. “We don’t take risks on equipment that we can’t rely on,” he says, “but something new is always welcome.” He cited several Andritz technologies that impressed him with regards to key environmental issues.

One is the condensate segregation and stripping capabilities of the seven-effect evaporator plant from Andritz. According to Sanna Semi, a Sales Engineer with Andritz, most mills normally utilize two or three of the condensate streams from the evaporators. Kuusankoski uses four. “We’re reusing every drop of water that we can,” is how Tikka puts it.

Two of the condensate streams are routed to the fiberline and two to the fiberline and to the recausticizing. According to Lintunen, “The mill tells us they use 80% of all condensates from our plant as if it was hot washing water in the fiberline and recausticizing. The purity of the condensates is very high.”

Another rather unique aspect of the evaporators is the high dry solids content of the black liquor. “This plant has our liquor heat treatment integrated into



Positive signals and green energy for Obbola

To rebuild or replace? That was the question facing SCA Packaging as it evaluated what to do with a 45-year-old recovery boiler at its Obbola, Sweden mill. Other mills facing similar situations may benefit from the analysis and experience of the Obbola mill's project team – and its good cooperation with Andritz in finding the right solution.

"When the capital project was approved, it was a very positive signal for us," says Fredrik Mellesmo of SCA Packaging. "First, that the company was investing in our future at Obbola, and second that we were getting modern and interesting technology to work with."

Mellesmo directed the capital investment project that led to a new Andritz High Energy Recovery Boiler (HERB), an Andritz methanol plant, a new Siemens 25 MW turbine-generator, and a water treatment plant being installed at the Obbola mill.

"For every project, we want to be able to compare apples-to-apples as much as possible when we evaluate quotations."

Per Strand, Managing Director for the Obbola mill.

But before Mellesmo became Project Director, he was part of the team that conducted a pre-study for a major rebuild of the mill's old recovery boiler. The shift in thinking from rebuild to replace makes for an interesting story.

Reduced pressure, reduced capacity

"We began in 2004 to investigate the rebuild of our old recovery boiler (installed in 1962) because the boiler had cracks in the water and steam drums," Mellesmo says. "To run within safe limits, the authorities required us

to decrease the pressure in the boiler every year. We knew we could operate until about 2007 without doing anything big, but after that a major rebuild would be required."

Per Strand, Managing Director for the Obbola mill continues, "Our initial hope was that we could rebuild the old boiler in steps. This way, we could reduce the amount of capital required and spread it over several years. But the age of the boiler, and uncertainties about what surprises we might encounter when we opened the boiler during the rebuild, concerned us."

▼ High Energy Recovery Boiler (HERB) with design capacity of 1000 tds/d.

"To keep the boiler alive, we would have to replace the drums in a very short period of time, so that meant we would almost have to do everything in one step instead of a phased approach," Mellesmo says. "We would lose the advantage of spreading out the capital investment, and the shutdown time would be very long – 70-80 days. Plus, we would not gain any electrical power production.

When you build a recovery boiler in Sweden today, you must take into account the electricity generation capacity," Mellesmo says. "Green Certificates (a tradeable commodity in Sweden) can give us big economic benefits since the power we generate is from renewable energy sources. We look at the boiler from an energy point of view and try to get as high steam data as possible."

The study team's conclusion was that it would be a really huge investment just to rebuild the boiler. "Toward the end of that pre-study we began to investigate the possibility of buying a new recovery boiler instead," Mellesmo says.

Getting what we wanted

So, during 2005, the emphasis shifted to intensive discussions with all the recovery boiler suppliers about a new boiler. "We went into considerable detail and took it to the point of having almost final contracts that were technically acceptable to us. The scope was well-defined."

With technical solutions and price quotations in hand, the capital request was presented to SCA Packaging's top management in the autumn of 2005. The project was green-lighted in October. "The decision had to come quickly because we wanted to do the switchover during a planned maintenance stop in 2007," Mellesmo says. "So, working back from that date, we knew when we needed to start."

In December 2005, Andritz was awarded the contract. "They had a solution that was most acceptable to us in terms of materials, processes, technologies, and commercial terms," Strand says. Mellesmo adds, "There is a lot of

knowledge and experience within the Andritz organization. It was very easy to discuss process solutions with them. The same people were involved through the entire project from pre-sales to completion so there was real continuity and commitment."

High energy

The design capacity of the old boiler was 750 tds/d, with 60 bar pressure at 460 °C. Design capacity for the new boiler would be 1000 tds/d with 110 bar pressure at 505 °C, which would produce significantly more steam and electrical energy.

It helped that SCA's Östrand mill in Sweden (see *FiberSpectrum* Issue 14) had gone through a similar process of installing a high-pressure, high-temperature Andritz recovery boiler in 2006. Åke Westberg, SCA's Project Director at the time, sat on the steering committee for Obbola's boiler. "Since we are using basically the same suppliers that Östrand did, we got a lot of experience and information from Åke's successful project."

Originally, the Obbola/Andritz team had thoughts of trying to improve upon the steam values that were achieved at Östrand. The cost of the special materials required to achieve a higher temperature than Östrand were prohibitive. "Keep in mind that the Östrand boiler is about three times the size of ours," Mellesmo says. "We could not justify the investment expense for the little extra energy we might produce. We are a bit lower in steam temperature (10 °C lower), but higher in pressure (4 bar)."

Smooth project

In March 2006, site work began. Obbola was responsible for the civil work (foundations, etc.). In July, pressure parts were delivered from Andritz. "There were no real delays throughout the project," Mellesmo says. "I am quite pleased with our overall safety record. During construction, there were no major safety problems.

By April 2007, commissioning started and the first oil firing began in August.



"The company is investing in our future at Obbola, and we have modern and interesting technologies to work with."

Fredrik Mellesmo, Project Director (standing) with Heikki Hämäläinen, Assistant Project Manager from Andritz.



▲ Part of Andritz's scope was the ABB distributed control system (DCS).





▲ Helena Lindqvist, Production Technician for Power and Recovery (left), with Kristina Jonsson, Recovery Process Engineer, inside the new Andritz boiler.

The first black liquor was fired in the new boiler on September 26, 2007 and the switchover from the old boiler to new was done at this time. "We had a provision to be able to switch back to the old boiler if we needed to for any reason," Mellesmo says, "but we never had to do it. Once we fired the Andritz boiler, we never looked back."

Basically one month after liquor firing, the Obbola team took over the boiler and has been operating it since. Urban Lundström, a Boiler Operator at Obbola who has worked at the mill for 18 years, agrees the new boiler is "working very

▼ Lars-Gunnar Magnusson, Andritz Service Manager (left), with Lars Åke Larson, Boiler Operator, inside the new Andritz recovery boiler.



SCA Packaging

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One thing that Obbola is working on now is how to keep the simulator alive so it can be used for new operators or refresher training. "A lot of mills don't do this and I think we see that as a mistake," Strand says. "We spent a lot of time and money on training and we want to ensure that we get the most economic payback from it."

Fine-tuning

Lars Åke Larson, Boiler Operator and a veteran at the mill with 28 years experience, really likes the new operating environment. "It was very physical work with the old boiler," Larson says. "Now we are much more automated. But the automation also has more trips and safety logics built-in so that we have to be much more precise to meet all the environmental limits."

Helena Lindqvist, Production Technician, is relatively new to the recovery area, but has been involved in instrumentation at Obbola for over 20 years. "Coming from outside the chemical recovery area, I have to say that the system is more complex than I thought it would be," Lindqvist says. "We are very satisfied with the new boiler and with Andritz. We get the help we need."

Lindqvist says that the main activity at the moment is trimming the air pressures and flows at the different levels (what is known as the "interlace" of air) and also char bed control. "Each boiler has its own personality," she says. "The operators are moving from the old personality to the new one, and learning how to fine-tune as they go."

Recovery and green electricity

"The system in Sweden is so that if you put energy out into the market, you have to have a certain percentage of green electricity," Strand says. "If you don't produce green electricity yourself, you can buy certificates from someone else who is producing it. We purchase about 50% of our power at this mill, but we have already covered the green cer-

tificates that SCA needs. That means we can sell the remainder, which is quite a large part of our total electricity production, to other companies."

To maximize the production of green electricity, Obbola not only has black liquor, but also the pitch oil (residue from the tall oil by-product) that it burns in its recovery boiler. The tall oil is processed by another company and the pitch oil is transported back to the mill. This way, the mill can utilize the full capacity of the boiler even if the black liquor load is not sufficient. In addition, methanol is used to burn the strong gases from the mill in the recovery boiler. Andritz supplied the methanol plant.

"Based upon the materials that are commercially available today, we at SCA are at the limits of extracting the most energy from the recovery boiler," Mellesmo says.

View from the "helicopter"

"Wood prices and recovered paper prices are moving rapidly upwards," Strand says. "Energy costs are also rising, so we are facing a tight squeeze. The recovery boiler gives us a big positive effect since we can produce more green electrical power."

Obbola still has to purchase power from the grid because its large paper machine requires more power than the mill can generate. "Still, we are buying much less power than we used to," Strand says.

"For me, I was not so much involved in the technical detailed discussions," he continues. "My interest as the MD is in making sure we have the performance levels and guarantees that we want. If I climb into a helicopter to take an overall view, the project was executed very smoothly. My overall impression is that it is a successful project. From the helicopter, it looks very good."

SCA Packaging and the Obbola mill

SCA Packaging is Europe's second largest producer of containerboard paper used for the manufacturing of corrugated board. The Obbola mill can trace its roots back to 1889 as a sawmill, but first began pulp production in 1913.

By the end of the 1960's, the special pulp produced at Obbola (to produce insulation paper for the inside of electrical cables) was no longer needed. At this juncture, SCA had to come to a decision – either close the mill or convert it to some other production. A major investment was required to continue. SCA formed a joint venture with St. Regis for the production of kraftliner. This included the installation of a paper mill and the conversion of the pulp mill to support the production of kraftliner.

The kraft mill produces about 240,000 t/a and the recycled fiber line produces about 200,000 t/a. Obbola has one of the widest liner machines in the world (9.4 m) and is known for its high productivity in manufacturing low basis weight kraftliner.

The products from the mill are Kraftliner and Eurokraft. Kraftliner is mainly based on virgin fibers. Eurokraft is based on recycled fibers, but with a virgin top layer. The mill is specialized in the lower grammage range. About 50% of the production is sold to SCA Packaging box plants.

►► find out more at www.fiberspectrum.andritz.com



Keeping profits from wearing away

To keep a paper mill running efficiently and profitably is a real challenge. It is not only the paper machine that counts, but every single component in the process. Stora Enso's Sachsen Mill teamed up with Andritz to rebuild and upgrade their dewatering equipment (even though the equipment was not supplied by Andritz). The results have been impressive.



“Technical solutions that help us optimize our processes, improve efficiency, and reduce specific energy consumption are very important.”

Ralph Wurlitzer, Technical Manager at the Sachsen mill.

▼ Not only are the processes *inside* the Sachsen mill considered to be ecologically sound, but *outside* some 120 “eco-workers” (German Heath sheep) do their daily job – grazing the mill’s 50 ha of green space in a natural, organic way.

Stora Enso's Sachsen Mill is a producer of high-quality standard newsprint paper. It is located in Eilenburg, Saxony, in the southeast of Germany, 150 km south of Berlin. It was originally built as a greenfield project in 1994.

In February 2008, the mill's 320 employees celebrated a milestone – the production of 4,000,000 tonnes of newsprint in 14 years of operation. To put this in perspective, that is the equivalent of a one meter width paper web stretching to the moon and back 120 times.

Blue Angel products

Sachsen's PM1 is a 340,000 t/a machine which incorporates calendering technology from Andritz-Küsters. With a trim width of 9.21 m and an operating speed up to 1750 m/min, PM1 produces “NewsPress” (standard newsprint) and “FlyoPress” (high-gloss uncoated for commercial flyers and newspaper inserts) brands for Stora Enso.

Within only five months after start-up, all of Sachsen's paper grades received the “Blue Angel” label for eco-friendly products and services in Germany (see side story). This label is often an important feature for the mill's printing house customers. But ecology is only part of the story.

“The paper industry is in a difficult situation today as energy and raw material prices are high,” says Ralph Wurlitzer, Sachsen's Technical Manager. “Technical solutions that help us optimize our processes, improve efficiency, and reduce specific energy consumption are very important.”

Deinking for internal and external customers

Sachsen is a 100% recycled fiber mill. It converts 500,000 tonnes of household wastepaper per year. About half is collected in the region; the rest comes from its neighbors (e.g. Czech Republic and Poland) and from Nordic countries.

The deinking plant produces pulp for PM1 and also for sale to market. Each day, 1400 tonnes of wastepaper are fed into the two lines of the deinking plant. Large contaminants (such as CD's inserted in a magazine) are removed in the Andritz FibreFlow® drum pulpers. Finer heavy contaminants (sand and staples) are screened from the stock in the coarse screens. Printing inks and very fine impurities (including stickies) are extracted during the deinking and cleaning stages. The pulp is then stored in a DIP tower for transfer to the paper machine approach flow system or it is dewatered in an Andritz twin-wire press (started up in 1994) before flash drying. The plant has two dewatering loops: Loop 1 has two disc filters and four screw presses, Loop 2 has two disc filters, three screw presses, and one twin wire press.

Dewatering bottleneck

Loop 2's three screw presses were creating a production bottleneck for the whole mill. “We have always had enough pulp to feed the paper machine,” says Frank Reinboth, Deinking Production Engineer, “but the plant could not deliver enough for the production of deinked market pulp, which achieved good prices. The screw presses were the bottleneck.” (The presses were not manufactured by Andritz.) Matthias Schuchardt, Foreman Mechanic Deinking, continues. “The wearing of the screws has always been a problem,” he says. “After several hard facings on the screws during shutdowns, we had reached the limits. Despite the repairs, we did not have optimum performance. The only alternative was to rebuild the screws to their original state or better.”

Long-lasting service relationship

The business relationship between the Sachsen mill and Andritz started when the mill was built. In 2006, Sachsen asked Andritz to overhaul its screw presses in Loop 2. “To increase production, we wanted to increase the dryness content from each screw press,” says Reinboth. Sachsen also wanted Andritz to upgrade the me-



▲ From left to right: Ulf Scott, Andritz Product Manager Paper Engineered Services, Matthias Schuchardt, Foreman Mechanic Deinking, Frank Reinboth, Deinking Production Engineer, and Hubert Hermann, Andritz Senior Service Manager Dewatering & Bleaching in front of screw press #5 in Loop 2. In the background you see screw presses #6 and #7 also rebuilt in 2007/2008.



Nico Flegner



“The upgrade with wear shoes is really an improvement and makes my life as a maintenance manager much easier.”

Matthias Schuchardt, Foreman Mechanic Deinking at the Sachsen mill.

▼ Stefan Fuchs (left), Andritz Erection Site Manager, and Daniel Stelzl, Andritz Erection Supervisor, do final checks after upgrading a disc filter with a new “Air Lock” valve, referred to as a “trunk nozzle”, because it resembles an elephant’s trunk.

chanical back-pressure device on each screw press to pneumatic control and implement the new control strategy in the existing PLC.

Reinboth discussed options with Hubert Riemer, Andritz’s Global Product Manager for Dewatering & Bleaching. “The fascinating thing was that, even though the presses were not supplied by Andritz, Hubert very quickly found out the weak point, which was the geometry of the screw,” Reinboth says. “He immediately proposed a technical solution which included upgrading of the screw geometry in the high-pressure zone of each press so that the new back-pressure control would work efficiently.” Also, the worn-out screw flights needed to be reconditioned and prepared to equip them with Andritz wear protection.

“This solution was very clear and directly addressed the problems we were having,” Reinboth says. “In addition, Andritz guaranteed a capacity increase of 10%, which was much higher than offered by any other supplier. The choice was clear to go with Andritz.”

Sharp capacity increase

The three screw presses were upgraded during successive maintenance shutdowns. A challenging aspect of the project for Andritz was that the

upgrades were done on machines from another supplier. “Each rebuild project has its challenges,” explains Hubert Hermann, Andritz Senior Service Manager for Dewatering & Bleaching. “Even though we had all the data and machine layouts, there can always be surprises when you actually open the machines.”

Screw press #5 was the first to be rebuilt in April 2007, as it showed the highest wear. After restarting the deinking line, the press immediately delivered the guaranteed 10% capacity increase. “We did some optimization work, for example in the control settings, and then we reached 20% production increase,” Reinboth recalls. “This was enormous.”

The rebuild of screw press #6 came next in September 2007, with screw press #7 seven months later. After the shutdown in April 2008, #7 showed a sharp increase in production from 260 t/d at an outlet consistency of 26-31% to 360 t/d at a consistency of 29-30%. “Now that all the screw presses in Loop 2 have the same excellent dewatering performance, we are in the position to even shut off one press, if paper production goes down a bit,” Reinboth says. “This gives us the potential for energy savings.”

Longer operational life

As part of the upgrade, Andritz installed wear plates and shoes to improve the lifetime performance of the presses. Before the upgrade, hard facing of the worn-out screw flights was required every two to three years. However, these machinings were not 100% accurate in restoring the screw diameter to the original dimensions. In addition, the procedure was very labor-intensive. After the upgrade, changing of the wear shoes in the high-pressure zone of the press can be done in a double shift (compared to three days for a hard facing). “This is really an improvement and makes my life as a maintenance manager much easier,” says



▲ Gottfried Prettenthaler (left) and Hans-Peter Ritter, both Andritz Erection Supervisors, check the piping of the pneumatic back-pressure device on screw press #5.

“Andritz guaranteed a capacity increase of 10%, which was much higher than offered by any other supplier.”

Frank Reinbroth, Deinking Production Engineer at the Sachsen mill.



Schuchardt. “The operational life of the screws will be much longer, and repairs are simpler and cheaper.”

Next: disc filters and Loop 1

Next in Sachsen’s program to eliminate bottlenecks are the two former Ahlström disc filters located before the screw press in Loop 2. During the September shutdown this year, Andritz installed a new patented “Air Lock” valve on one of the filters. The valve resembles an elephant’s trunk, so is referred to as the “trunk nozzle.”

“We had concerns that the filtrate quality would suffer – that a higher amount of fibers would be rejected with the filtrate,” says Reinboth. “The Andritz guarantee values were very ambitious. But, we can say that the filtrate quality is better than guaranteed. Andritz also surpassed the stated 5% capacity increase, and there is still room for more. Jürgen Hirschberger (Andritz’s Product Manager for Dewatering & Bleaching) helped us a lot and advised us how to optimize the disc filter operation.”

Also in September, Andritz began upgrading Loop 1 by installing new back-pressure devices on the four screw presses located before the disperger stage. The Sachsen mill has on its “wish list” similar upgrades to the presses as were done for Loop 2 (i.e. changing the screw geometry, reconditioning of the screw and installing the wear plates and shoes) as budgets permit.

“After the very good experience with the upgrades in Loop 2, improvements in Loop 1 have a high priority,” says Reinboth. “Before the first rebuild, we had some questions about Andritz’s ability to upgrade another supplier’s equipment and reaching our requirements for capacity improvement. But, these questions have been answered and we have high praise for the Andritz team on the results achieved.”



“Blue Angel” label – the first and most well-known eco-label worldwide.

Blue Angels and Green

Stora Enso defines Group-level environmental performance targets for air, water, and landfill waste – as well as targets for improving energy efficiency and the traceability of fiber. Voluntary environmental management systems (according to ISO 14001 and/or EMAS) ensure that all Stora Enso mills focus on the most critical issues in each location where the company operates.

The paper produced at the Sachsen Mill carries the “Blue Angel” label – the first and most well-known eco-label worldwide. Since 1978, it has set the standard for eco-friendly products and services in Germany. Today, about 10,000 products and services in 80 product categories carry this label. A consumer can be sure that “Blue Angel” products have been produced in an ecologically-friendly way.

► find out more at www.fiberspectrum.andritz.com

Independent Sun shines in the East

Paper consumption in China is growing rapidly to meet the needs of the 1.3 billion people. The growth of the domestic Chinese paper industry is limited by only one thing – the lack of raw materials. This is where domestic pulp production and Andritz technologies step into the picture.



“The cooperation between Andritz and Sun Paper has been very effective, congenial, and professional.”

Ying Guangdong, Deputy General Manager and Chief Engineer of Sun Paper Group.

It is estimated that by the year 2010, there will be more than 200 enterprises each producing over 100,000 tonnes of paper per year in China. This totals 80 million tonnes – the total production of the world's seven largest paper companies.

With this rise in paper production, China has become more and more dependent on international pulp suppliers. Three years ago, China imported close to 25 million tonnes of pulp and wastepaper for its mills. That figure will certainly grow. That said, increased production of pulps from local reeds, bamboo, and wheat straw is also expected to increase. Domestic wood pulp production will grow as well, with pulpwood from domestic plantations, supplemented by imported wood chips and pulpwood.

Seeking independence

One paper producer with a strategy to become independent in raw material supplies is the Sun Paper Group in Yanzhou, Shandong Province. The company's 22 paper machines (the 23rd is now under construction) with a total capacity of 2.5 million tonnes per year, are now being at least partially supplied by their first Andritz P-RC APMP line of 100,000 tonnes per year. Shortly after starting up the first line, Sun Paper and Andritz signed a second contract in March 2008 for another line with almost double the capacity of the first one.

APMP

The Andritz P-RC APMP (Alkaline Peroxide Mechanical Pulping) process is ideally suited for various Asian hardwoods like poplar and tropical hardwoods like eucalyptus and acacia, because it produces a high-quality pulp in a very energy-efficient way. Which makes it perfectly matched for the Chinese needs. The P-RC in the name

indicates chip pre-conditioning followed by refiner chemical treatment. Compared to a conventional CTMP process with post-bleaching, this pre-treatment uses less overall electrical energy. Plus, by splitting the application of alkali peroxide between the chip impregnation stage and the primary refiner, better chemical efficiency, with improved optical and strength properties in the pulp, is achieved.

The pre-treatment consists of an efficient application of alkali and peroxide in the chip impregnation stage, followed by a short reaction time in a bin. The pre-conditioned chips are refined to individual fibers in a pressurized high-consistency refiner and alkali and peroxide are again added. The pulp then drops to a high-consistency bleaching tower to develop brightness and other pulp properties. After the bleaching tower, the pulp is washed and dewatered on a screw press before it is treated in further process stages to reach its final quality. This produces a high-brightness pulp suitable for printing/writing, LWC paper, liquid packaging, and other bleached board grades. A separate post-bleaching stage is usually not needed.

Remarkable growth speed

“Our target is that by 2010 the annual capacity of our pulp and paper mill will be 3.5 million tonnes and sales will be RMB 20 billion (€ 2.2 billion) per year, with most of the raw materials supplied by ourselves,” says Ying Guangdong, Deputy General Manager and Chief Engineer of Sun Paper Group.

The speed of the company's growth has been remarkable. “In March 1982, Yanzhou Fulou Paper Making Factory was founded with a loan of RMB 30,000 (€ 3,279), with only 30 locals in the country-type workshop,” Ying ex-

plains. “In 1994, the corporation grew and became Shandong Sun Paper Industry Group Company and in 2000, the company reorganized into a Joint Stock Company. Today, the capacity of Shandong Sun Paper Industry Joint Stock Co., Ltd. is 2.5 million tonnes per year.”

The Sun Paper Group has integrated papermaking, chemical production, foreign trade, power generation, R&D, timber plantations, and capital investments inside its three companies: Shandong Sun Paper Co., Shandong International Paper & Sun Coated Paperboard Co., and International Paper & Sun Cartonboard Co. In China, Shandong Sun Paper Industry is the largest privately owned and managed paper business, as well as the largest producer of premium coated packaging board. Sun Paper Group employs more than 7000 people. Its paper and board products are sold throughout China and exported to more than 20 countries in Southeast Asia, Africa, and the USA.

For paper production, the Group uses various raw materials including NBKP, LBKP, APMP, straw pulp, and imported wastepaper. “These materials are suitable for different paper and board grades,” Ying explains. “For the APMP line, there are abundant wood resources in the mill area, the most important raw material being poplar. It is very suitable for the APMP.”

When Sun Paper signed the agreement with Andritz for the first APMP line at their Yanzhou mill, they began reducing their purchasing of APMP pulp even before the Andritz line had been handed over. “The start-up of the plant was so successful, that we were reaching quality and capacity targets within a week,” says Manfred Fitz, Andritz Project Manager. “The line was running continuously and all the pulp we produced was being used by the paper machine.” This allowed Sun Paper to use their own APMP rather than purchasing it elsewhere.

“We were adjusting and optimizing to achieve the final performance values within three weeks from start-up,” Fitz says.



▼ The Alkaline Peroxide Mechanical Pulping (APMP) line that Andritz delivered to the Yanzhou mill has a capacity of 100,000 t/a. Quality and capacity targets were reached within one week of operation. Sun Paper has ordered a second APMP line, doubling the capacity of the first, which is scheduled to start up in May 2009.





▼ Manfred Fitz, Andritz Project Manager (left) and An Qing Chen, Sun Paper Project Manager for the APMP process discuss the benefits of the Andritz Fiber Centrifuge, which is shown above. The Fiber Centrifuge separates steam and fiber, minimizing fiber carryover to the heat recovery system. This helps avoid blowline plugging and ensures trouble-free operation.



Ying is complimentary of the flexibility of the Andritz APMP process. “The capacity is quite large and the working efficiency is very high, which is suitable for the development in China,” he says.

Evaporation included

Sun Paper needed the APMP pulp to blend with their other raw material grades (e.g. deinked pulp from imported wastepaper, kraft, and other mechanical pulps) to achieve the required paper properties. Earlier they purchased this pulp from other APMP plants, but they are now in a position to produce their own. As part of the investment, an evaporation system was needed to process the effluents and recover the water. Sun Paper chose to install three new MVR evaporation systems from Andritz.

Mechanical Vapor Recompression (MVR) technology uses a compressor (low-rotation speed turbo fan) to increase the pressure of the vapors being evaporated. This allows the vapor to be used as a heating medium in the process. The MVR Evaporator extracts clean water from the effluent from the APMP process which is saturated with dissolved wood solids and alkali chemicals. The evaporator condensate is treated and returned to the APMP process, significantly reducing total water consumption. The residuals are further concentrated and incinerated. Andritz also provided a system for collecting and treating the odorous gases from the process.

The Sun Paper Group’s new evaporation units are the first in China to be used in this way for the wastewater system. “With the evaporation units from Andritz, we get very good results, which is a favorable precondition for us to achieve zero discharge,” Ying points out.

“In our company, we have a wastewater treatment plant which utilizes anaerobic, aerobic, biochemical, and physico-chemical treatments,” Ying says. “The

final COD of the treated water is below 80 mg/l. For each effluent stream, we have already reached the environmental performance standards of the industry.”

Automation too

For such a major greenfield project, several interfaces (e.g. wood handling, chip storage, fiberline, evaporation, etc.) have to be taken care of. Combining everything in one controllable system for fast start-up and continuous operation was the goal of Sun Paper.

“We selected the Distributed Control System (DCS) from Andritz because it could control multiple systems with its own supervisory functions,” Ying says. “The interface with other systems is quite efficient. Andritz understands all the various system controls, providing us with the most suitable solution. Of course, this was strengthened by frequent positive communications between Andritz specialists and our operators. The major advantages of Andritz technologies are their highly flexible design, low energy consumption, and significantly high production capacity.”

Cooperation is the key

“The first time when all project team members met at the Yanzhou mill, we saw our task as transforming Sun Paper’s goal into a real plan,” says Fitz of Andritz. “Their goal was to start up the mill in the shortest possible time. From this, we built an effective plan together. Through open dialog, transparency, and close cooperation, all outstanding issues were agreed upon and implemented in the engineering documents.”

“The cooperation between Andritz and Sun Paper has been very effective, congenial and professional,” Ying confirms. “We exchanged views about every question and issue, and came to a solid and satisfactory conclusion without effort. Only with this kind of cooperation could we get a success-

ful start-up. The fast-track delivery of Andritz’s equipment was excellent. In this way, the whole project period was shortened.”

With any project come technical issues and challenges. In the case of the APMP line at the Yanzhou mill, there was a slight vibration in the main refiner. However, this was quickly solved. A few other technical issues developed and were quickly resolved, too. “Overall, Andritz has an outstanding service group,” Ying says. “Andritz responded very promptly and I was somewhat amazed of the efficiency.”

More self-sufficient and autonomous

The new Andritz P-RC APMP line currently under construction will have a capacity of 200,000 t/a. Erection work will begin in January, and start-up is planned for May 2009. “This will triple the Group’s APMP production from the current 100,000 t/a to 300,000 t/a,” Fitz says. Andritz is also supplying a disc screen and chip screen for the incoming wood processing.

Ying adds: “This will further reduce our purchase of APMP market pulp to make the composition for our paper and board grades. Moreover, it enables us to produce pulp that is directly in accordance with the quality parameters of our end products.”

The Sun Paper Group also has chemical pulping projects ongoing. At Yanzhou, Andritz is delivering fiberline systems, chemical systems, and woodyard equipment (chip receiving, reclaiming, and screening systems). “At the same time, we are building a pulp project and power plant in Laos,” Ying remarks. Sun Paper’s growth continues without delay, and Andritz is there to provide the technology and service needed – now and in the future.

►► find out more at www.fiberspectrum.andritz.com



▲ Andritz supplied MVR evaporation technology to process the effluents from the mechanical pulping process and allow their re-use – the first in China to be used in this way for effluent evaporation.

▼ The new APMP line produces high-quality pulp for Sun Paper’s machines – reducing the company’s dependence upon purchasing pulp from other suppliers.



New Orders

► Complete Lines

Wood Processing

Complete Lines & Systems

Veracel Celulose
Eunapolis, Bahia, Brazil
Chipping line (EPC delivery)

OOO Kamabumprom
Perm Region, Russia
Woodyard with RotaBarker™

Key Equipment

UPM-Kymmene, Wisaforest
Pietarsaari, Finland
New HQ-Chipper™ with HQ-Plus™ service agreement

Mondi Syktyvkar Pulp and Paper
Komi, Russia
Bark handling and 2 CS chip screens for two-line debarking plant

Anhui Huqian
Fu'Nan, Anhui, China
Market chip receiving, screening, storage

Sun Paper Group
Yanzhou, Shandong, China
4 CantiScrew™ screw reclaimers, chip screen

MCC Paper Yinhe
Linqing, Shandong, China
CenterScrew™ screw reclaimer, CS chip screen

Tableros Talsa
Utisa, Spain
2 PowerScrew™ screw reclaimers

Fiberline

Complete Lines & Systems

Sun Paper Group
Yanzhou, Shandong, China
Fiberline main equipment

Key Equipment

Stora Enso
Skutskär, Sweden
AWP wash press
First order for this new system

Södra Cell
Värö, Sweden
AWP wash press
Second order received for an AWP

Upgrades & Modernizations

Chuetsu Pulp & Paper
Sendai, Japan
Fiberline modernization with ECF bleaching
New DD10 washers

Ballarpur Industries
Sewa, India
Screening system retrofit and chemical mixers

Recovery

Complete Lines & Systems

Fortum Termest
Pärnu, Estonia
Biomass power boiler

Södra Cell Värö
Värö, Sweden
Evaporation plant

Key Equipment

Sun Paper Group
Yanzhou, Shandong, China
2 Zedivap® effluent evaporators for APMP line
Repeat order

Upgrades & Modernizations

SCA Hygiene Products
Mannheim, Germany
Evaporator capacity increase

Sappi Fine Paper North America
Skowhegan, Maine, USA
Recovery boiler retrofit

Pulp Drying

Key Equipment

Guangxi Jingui
Qinzhou, Guangxi, China
2 slab presses

Aracruz Celulose
Aracruz, Espírito-Santo, Brazil
Primary screen A73

Zellstoff- und Papierfabrik Rosenthal
Blankenstein, Germany
Sheet transfer

ALTRI Celbi Mill
Figueira da Foz, Portugal
Hall ventilation and bale lift

Upgrades & Modernizations

Veracel Celulose
Eunapolis, Bahia, Brazil
Screening system upgrade

Södra Skogsägarina
Mönsterås Bruk, Sweden
Screening plant upgrade

Chemical Systems

Complete Lines & Systems

Sun Paper Group
Yanzhou, Shandong, China
LimeGreen filter for green liquor filtration, LimeFree for dregs handling, LimeWhite for white liquor filtration and LimeDry filter

Mechanical Pulping

Complete Lines & Systems

Confidential customer
USA
Medium-size pilot plant

Confidential customer
Italy
Laboratory equipment for ethanol production

MCC Paper Yinhe
Linqing, Shandong, China
P-RC APMP system

Key Equipment

Sun Paper Group
Yanzhou, Shandong, China
2nd impregnation stage for P-RC APMP system
Extension of the 2nd P-RC APMP system

Confidential customer
China
2 HC-Fluffers for P-RC APMP system
First Andritz fluffers in China

► Key Equipment

Upgrades & Modernizations

OOO Kamabumprom
Perm Region, Russia
Upgrade of existing CMP system to advanced P-RC APMP technology
First P-RC APMP system for Russia

Panelboard

Complete Lines & Systems

Guangxi Yizhou Kaili Wood Industry
Yizhou, Guangxi, China
Pressurized refining system for MDF with 600 t/d capacity

Jiangxi Green Nature Panel Board
Shangrao, Jiangxi, China
Pressurized refining system for MDF with 360 t/d capacity

Guang Dong (Zhanjiang) Medium Density Fibre Board
Zhanjiang, Guangdong, China
Pressurized refining system for MDF with 312 t/d capacity
Repeat order

Fengkai Weilibang Wood Industry
Fengkai, Guangdong, China
Pressurized refining system for MDF with 840 t/d capacity
Largest MDF refiner in China, 5th order from Weihua group

ShaanXi Zhong Xing Timber
Xi'An, Shaanxi, China
Pressurized refining system for MDF with 600 t/d capacity

Plantation Timber Products (Leshan)
Leshan, Sichuan, China
Pressurized refining system for MDF with 600 t/d capacity

Fiber Preparation

Complete Lines & Systems

Forestal y Papelera Concepción
Coronel, Chile
Complete 250 t/d OCC line for corrugated medium
Andritz's first OCC system in Chile

► Upgrades and Modernizations

CHH Pacific Paper Sdn.Bhd
Bentong City, Malaysia
Complete OCC line with 210 t/d capacity, complete DIP, LBKP, NBKP & LBKP line, broke system, saveall disc filter
Greenfield mill – the first white coated duplex board project in Malaysia

Lincang Nanhua Paper
Lincang, Yunnan, China
4 approach systems for printing & writing paper

Guangxi Yongkai Sugar Manufacturing
Nanning, Guangxi, China
2 approach systems for printing & writing paper

Henan Yinge Industrial Investment Holding
Luohe, Henan, China
Complete approach system including Deculator® unit
Specialty fine papers

Phuong Dong Packaging Paper Manufacturing
Tien Du Town, Vietnam
Complete OCC line

Liaoning Zhenxing Ecology Paper
Panjin, Liaoning, China
2 approach systems and 2 Andritz disc filters for offset paper

Key Equipment

SCA Packaging Italia
Porcari, Italy
SelectaFlot SFL4 flotation unit with FoamEx FE2 foam breaker
Andritz disc filter DF57

Papelera Tucuman
Lules, Argentina
Rebuild of screening system with 230 t/d capacity

Global Chung Hwa Engineering
Jambi, Indonesia
Stock preparation components for 6 tissue machines

Yuen Foong Yu Paper
Kaohsiung, Taiwan
Rebuild of PM19 approach system

PT Indah Kiat Pulp & Paper
Perawang, Indonesia
Papillon refiner CC450
First Papillon refiner to be installed by the APP group

Paper Machines

Key Equipment

Kartonsan Karton
Izmit, Turkey
Board machine rebuild: suction formers, dryer section, and tail threading

Wepa Papierfabrik P. Kregel
Arnsberg-Müschede, Germany
Steam recovery system
Up to 30% steam savings for Yankee

Paper Finishing

Key Equipment

Fujian Quingshan
Quingzhou Shaxian, Fujian, China
PrimeCal Hard calender

SNCPA
Tunis, Tunisia
PrimeCal Hard calender

Kartonsan
Istanbul, Turkey
PrimePress X for white lined chipboard

FS Karton
Neuss, Germany
4 PrimeFeeder systems
Excellent trials in Krefeld's PrimeFeeder pilot plant

Upgrades & Modernizations

Bachofen & Meier
France
PrimeAir Glide airtum

Gebr. Bellmer
Niefern Öschelbrunn, Germany
PrimeRoll Vacu vacuum roll

Papierfabriken Cham-Tenero
Cham, Switzerland
PrimeCoat Curtain coater
Multi-layer design for specialty coating machine (working width 3280 mm and design speed of 1000 m/min)



► Complete Lines

Nonwovens

Upgrades & Modernizations

Ascania

Aschersleben, Germany
Twin calender (neXcal twin®)

Upgrade of the world's widest neXcal® nonwoven calender (supplied by Andritz, roll width 7300 mm) to a twin calender

Recent Start-ups

Wood Processing

Complete Lines & Systems

Tiger Forest & Paper – Hunan Juntai Pulp & Paper

Huaihua, Hunan, China

Woodyard with chip storage

Part of complete mill delivery by Andritz: most modern, and highest capacity debarking line in China

Temple Inland

Orange, Texas, USA

Tree-length debarking and chipping line with log portal crane

Turnkey project - 30 tonne portal crane and complete long-wood processing system (PowerFeed, debarking drum, twin chipper, and bark hog)

Sappi Saiccor

Umkomaas, South Africa

New chipping line with out-stocking conveyors, chip inventory and reclaiming

Eucalyptus Fiber Congo

Pointe Noire, Republic of Congo

Chipping plant

Key Equipment

Finnforest

Kyröskoski, Finland

Thickness screen with disc screen technology

Kotlas

Archangelskaja, Russia

Rechipper

Recent Start-ups

Sappi Saiccor
Umkomaas, South Africa
Help™ bin discharger

The Price Companies
Macon, Georgia, USA
Gyratory chip screen

Tolko Industries
Slave Lake, Canada
2 rotary debarkers with PowerFeed infeed

Upgrades & Modernizations

Mondi Packing Stambolijski
Stambolijski, Bulgaria
Modernization of debarking line

Fiberline

Complete Lines & Systems

Tiger Forest & Paper – Hunan Juntai Pulp & Paper

Huaihua, Hunan, China

Fiberline

Part of complete mill delivery

Upgrades & Modernizations

Sappi Saiccor
Umkomaas, South Africa
Screening, oxygen stage and bleach plant

Metsä-Botnia

Kemi, Finland

Oxygen stage washing

First DD10 series washer

Recovery

Complete Lines & Systems

UPM-Kymmene, Kymi
Kuusankoski, Finland

Evaporation plant and MeOH liquefaction plant

Tiger Forest & Paper – Hunan Juntai Pulp & Paper

Huaihua, Hunan, China

Evaporation plant and recovery boiler

Part of complete mill delivery

Sappi Saiccor
Umkomaas, South Africa
Evaporation plant with a foul condensate stripping system and MeOH liquefaction equipment

Key Equipment

Australian Paper
Maryvale, Australia

Second step of double-drum recovery boiler modernization

Pulp Drying

Complete Lines & Systems

Sappi Saiccor
Umkomaas, South Africa

Pulp drying plant

Tiger Forest & Paper – Hunan Juntai Pulp & Paper

Huaihua, Hunan, China

Pulp drying plant 4.2 m working width

Part of complete mill delivery

Upgrades & Modernizations

ALTRI Celbi Mill
Figueira Da Foz, Portugal

Upgrade twin wire former, new pulp dryer, Cutter Layboy & baling

First EPC turnkey rebuild project

Chemical Systems

Complete Lines & Systems

Tiger Forest & Paper – Hunan Juntai Pulp & Paper

Huaihua, Hunan, China

White liquor plant

Part of complete mill delivery

UPM-Kymmene, Kymi
Kuusankoski, Finland

White liquor plant

Mechanical Pulping

Complete Lines & Systems

Nanning Jinlang Pulp
Nanning, Guangxi, China

P-RC APMP refining system for 200 admtd

► Upgrades and Modernizations

Holmen Paper Braviken
Braviken, Sweden
TMP chip washing and pressurized pretreatment for 800 atmt/d

UPM Kymmene
Jämsänkoski, Finland
TMP bleaching and washing system for 700 bdmt/d

Panelboard

Complete Lines & Systems

Liaoning Taian Weiliban Woodworking Industry

Anshan, Liaoning, China

Pressurized refining system for MDF with 600 t/d capacity

3rd order from Guandong Weihua group

Satipel Industrial

Uberaba, Brazil

Pressurized refining system for MDF with 770 t/d capacity

Turanlar Group

Samsun, Turkey

Pressurized refining system for MDF with 600 t/d capacity

Homanit Polska

Karlino, Poland

Pressurized refining system for HDF (MDF) with 576 t/d capacity

4th order from customer

Unopan Tableros de Fibras

Burgos, Spain

Fiber Preparation system for MDF (wood-yard, chip cleaning, and pressurized refining) with 720 t/d capacity

Fiber Preparation

Complete Lines & Systems

Phoenix Pulp & Paper
Khon Kaen, Thailand

Complete line for stock preparation, broke handling and fiber recovery

International Paper & Sun Cartonboard
Yanzhou, Shandong, China

Stock preparation lines for BM17



► Key Equipment

Shandong International Paper & Suncoated
Yanzhou, Shandong, China
Stock preparation line for BM22

Abhishek Industries Limited
Barnala, Punjab, India
Pulping and stock preparation lines

Dongguan Land Dragon Paper Industries
Dongguan, Guangdong, China
Approach system for PM19

Dongguan Sea Dragon Paper Industries (Taicang)
Taicang, Jiangsu, China
MOW line for PM20; approach systems for PM20 and PM21

Nine Dragons Paper Industries (Chongqing)
Jiangjin, Chongqing, China
Approach systems for PM22 and PM23

Key Equipment

Mondi Packaging South Africa
Felixton, South Africa
FibreFlow® drum and coarse screening for OCC line

Upgrades & Modernizations

Nine Dragons Paper Industries
Dongguan, Guangdong, China
Rebuild of MOW line for PM3

Ningbo Asia Pulp and Paper
Ningbo, Zhejiang, China
Rebuild for ONP line for PM6

Paper Machines

Complete Lines & Systems

SCA Tissue North America
Barton, Alabama, USA
PrimeLine tissue machine with 5.4 m working width

Key Equipment

Kartonsan Karton Sanayi ve Ticaret
Izmit, Turkey
Canopy hood and PrimeDry heat recovery system

Sappi Austria
Gratkorn, Austria
PrimeRun HV and PrimeRun D web stabilizers and PrimeVAC vacuum rolls in the single-tier drying section of PM9 and PM11

Paper Finishing

Complete Lines & Systems

Sappi Saiccor
Umkomaas, South Africa
PrimeCal Hard calender

Confidential customer
China
PrimeCal Soft calender

Lee & Man Paper Manufacturing
Hong Kong, China
2 PrimeCal Hard calenders

Zhangzhou Liansheng Paper Co
Fujian, China
PrimeCal Hard calender

Indah Kiat
Riau, Indonesia
PrimePress X for pulp

ALTRI Celbi Mill
Figueira da Foz, Portugal
PrimePress X for pulp

Confidential customer
USA
PrimePress Trix module and PrimeRoll HV Smart

OPE[®] keeps your mill running



Andritz Services will help you raise the overall production efficiency (OPE[®]) of your mill.

With Andritz, you get more than proven technology. You have access to our expertise to extract maximum performance over the lifetime of your equipment. We work in close cooperation with your operations, management, maintenance, and local partners to apply

the most modern maintenance technologies and tools for achieving the best results. Using our best global experts and online diagnostics we provide immediate and long-term support.

Together with your experts we look at your whole mill processes – not just maintenance problems – to improve your overall production and equipment efficiency.

We accept the challenge!

ANDRITZ