

SPECTRUM

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MAGAZINE OF PULP & PAPER 



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ANDRITZ
Pulp & Paper

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ANDRITZ NEWS

Waste-to-Power

A new group within ANDRITZ PULP & PAPER is responsible for technical and commercial solutions to create energy (heat or electricity) using mill wastes as a fuel source. Converting Waste-to-Power (WTP) can considerably reduce dependency on purchased power, minimize the use of fossil fuels, and reduce deposits to landfills. ANDRITZ technology includes equipment for collection/compaction; followed by equipment to separate valuable parts of the waste stream and non-combustible materials; and systems for pelleting and/or power generation (power boilers and gasifiers).

You can read more about WTP in the next issue of SPECTRUM. Meanwhile, visit our website at: www.andritz.com/renewableenergy/waste-to-energy.htm



Looking up.

Over the last two years, our messages have had a rather serious tone. This one is more upbeat.

In Issue 1-2009 of Spectrum, we suggested that some companies might use the downtime brought on by the economic crisis to their advantage – shutting down unproductive machines, moving assets, changing grades, making key investments, and getting aligned for the next up-cycle.

You can read what some companies have done in this issue of Spectrum: Kama PPM switching to LWC grades from newsprint (page 30); Veracel (page 16) removing bottlenecks in the woodyard and the lime kiln; and Mondi Syktyvikar completing its major STEP investment in Russia (page 4).

In Issue 2-2009, we talked about our own proof of commitment: the fact that ANDRITZ was continuing its active R&D program and was making serious investments to lower CapEx and OpEx costs for you.

You can read about some of those new products in this issue. The Advanced Control Expert (ACE®) at Veracel (page 20); the dynamic simulator at Suzano (page 13), the PrimeDry Steel Yankee world records (page 32); and the new Bar-Tec® bonded screen baskets (page 23) are all good examples.

Especially in the Southern Hemisphere, we are responding to several serious inquiries to build new pulping lines. You might be interested in the Brazilian perspective about growth, technology, and sustainability as expressed in interviews with top managers at Veracel (page 19) and Suzano (page 10).

Within our own company, we have taken tough actions to control costs while still keeping our core R&D investments intact. In addition, we've made some strategic acquisitions in attractive niche markets (e.g. Biax films and nonwovens) to complete our product lines and broaden our competence.

plete our product lines and broaden our competence.

The results have been gratifying. Through the first three quarters of this year, sales, earnings, and profitability rose substantially. Order intake and order backlog have also increased compared to 2009. Our cash position is good and our balance sheet is strong.

There are indicators that the worst of the economic crisis is behind us. We have been busy developing the right technologies and services, and stand ready to be your partner going forward.

In the spirit of the season, we wish you and your families a very happy holiday. We hope you get the opportunity to rest and recharge to successfully meet the challenges of the New Year!

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

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



Spectrum 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: Volkmar Bogner, Björn Hansen, Minna Heinonen, Brigitte Jannach, Pirjo Nousjoki, Sharon Pirnak, Ursula Upanne, Manuela Wagner, Elisabeth Wolfond, Anne Ylitalo

Contributing Writers: Thomas Barbieri, Robert Pühr, Michael Samec, Elisabeth Wolfond

Contributing Photographers: Lars Behrendt, Bildhauer, Wolfgang Croce, Riku Ischella, Thomas Wedderwille, Studio Zink, Risi

Graphic Design: Gudrun Hadolt

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STEPping up in Russia.

Mondi recently completed its STEP project at the Syktyvkar mill in the Komi Republic – the largest mill modernization in the Russian pulp and paper industry in the past 35 years. One focus of STEP was best available technology (BAT), and that is where ANDRITZ stepped into the picture.



The STEP project is further proof of the professional, congenial, and solid relationship between Mondi and ANDRITZ.

Gerhard Kornfeld, CEO Mondi Syktyvkar

STEP, meaning simply a “step” in the right direction towards a positive future for the mill and the environment, was one of 48 major investment projects selected by the government in the Komi Republic as a basis for economic development of the country. The Syktyvkar mill modernization earned the attention of the highest government levels in Russia with a visit from Prime Minister Vladimir Putin, as well as Austria’s Minister of Economy, Reinhold Mitterlehner, and other senior executives.

The EUR 545 million investment at Syktyvkar began July 1, 2008 and has been successfully concluded on schedule. The main part of the Syktyvkar modernization was carried out by ANDRITZ whose scope of supply consisted of a new woodyard, rebuilding of the existing fiberlines, and a new evaporation plant and chemical recovery boiler.

“The main targets of the project were to replace obsolete technologies, enhance environmental measures, and increase the quality and competitiveness of our products,” says Gerhard Kornfeld, the CEO of

Mondi Syktyvkar. “We first presented this project to the Russian government in April 2006, and the modernization began in 2008. ANDRITZ played a significant role in the entire operation.”

The Mondi Group is a producer of paper and packaging materials with key operations and interests in Western Europe, emerging Europe, Russia, and South Africa where it is headquartered. In 2009, revenues were EUR 5.3 billion and the total number of employees exceeds 30,000.

A big STEP forward in wood processing

The Syktyvkar mill started as a state-owned company some 40 years ago. The mill produces office and offset papers, newsprint, and linerboard. It is one of the major integrated mills in Russia. For the Komi Republic, the Syktyvkar mill is a major employer, and it also provides electricity and heat for the region.

According to Kornfeld, the STEP investment has enabled Mondi Syktyvkar to increase its product quality and output for



GRAND CELEBRATION OF THE STEP PROJECT ON SEPTEMBER 28, 2010

Gerhard Kornfeld, CEO of Mondi Syktyvkar (left) and Wolfgang Leitner, President and CEO of the ANDRITZ GROUP, celebrate the excellent cooperation during the opening ceremony for the STEP project.

containerboard, uncoated woodfree paper, and newsprint.

The ANDRITZ woodyard is the largest in the world. It has the capacity to debark and chip four million cubic meters of soft and hardwood logs annually – an increase of 25% for the Syktyvkar mill. Production of market pulp, paper, and board is expected to increase more than 20% over the maximum output before the investment.

There are two debarking lines with the capacity to handle 415 m³ softwood and 300 m³ hardwood per line. Each line has a PowerFeed™ infeed conveyor, steel-wheel supported debarking drum (5.5x42 m), and a horizontally fed HHQ-Chipper™. The chippers are also among the largest in operation, with 3.87 m disc diameters and 18 knives.

Fueling a new chapter for the Russian pulp industry

“Investments in chemical pulping have been modest in post-soviet Russia, even if the national economy has been growing rapidly,” explains Igor Tretyakov, Deputy Managing Director of Pulp Production and Deputy Director of the STEP Project. “There is a growing global consciousness of the vast forest resources we have in our country. The decision by Mondi to completely rebuild and modernize the Syktyvkar mill opens up a new chapter in the history of the Russian pulp industry.”

The completed STEP project makes Mondi Syktyvkar the most modern pulp mill in Russia, according to Tretyakov. One of the highlights is the state-of-the-art ANDRITZ 3,560 tds/d recovery boiler, equipped with odorous gas incineration systems, which



“Not only will the new recovery boiler make the mill energy self-sufficient, it will allow us to sell electricity to the national grid.”

Konstantin Timshin,
Energy & Utilities Manager, Mondi Syktyvkar

LARGEST MILL MODERNIZATION IN RUSSIA IN RECENT HISTORY





"Fresh water consumption has been reduced by about 45%, and discharge to the Vychegda River has been reduced by almost 90%."

Wolfgang Schubert, Project Director

Wolfgang Schubert (left) with Johannes Galos, Senior Project Manager for STEP at Mondi

also maximizes electricity generation from the mill. Not only does it ensure cost-effective steam and power for the mill, but it helps to protect the environment due to its low emissions.

Konstantin Timshin, Energy & Utilities Manager, oversaw installation of the recovery boiler from Mondi Syktyvkar's side. "We made no structural changes inside our department when the STEP project started. We still have three major operations: power plant, steam and hot water generation, and water treatment. For ANDRITZ and us, the major challenge to resolve was how to adapt the new recovery boiler to the Russian law regulations and rules. As a whole, we were very satisfied with the ANDRITZ site team. It is truly a very strong international team."

Future plans include an idea for ANDRITZ specialists in Finland to monitor longer term performance of the boiler remotely online. "They will submit monthly reports suggesting what could be improved and how," Timshin explains.

In front of the recovery boiler is an ANDRITZ six-effect evaporation plant with a design evaporation rate of 550 t/h of water. Dry solids content of the black liquor is 75%. All condensates are separated for further use within the mill. The integrated stripping system extracts the methanol-rich con-

densates from the new and the existing evaporators, which is then treated in a new methanol plant and burned as liquid fuel.

For Timshin, a significant advantage for Mondi Syktyvkar is the energy generation capabilities of the new boiler. Not only will it make the mill energy self-sufficient, but it will allow the mill to sell electricity to the national grid. "The new chemical recovery systems also improve our environmental situation by reducing the amount of emissions to the air and water," he says.

Rebuilding the existing fiberline

ANDRITZ's rebuild of the fiberline included upgrades to both the hardwood and softwood lines. A new brownstock washing system includes a pressure diffuser washer and a two-stage DD Washer. The oxygen delignification was modified from one reactor system to two reactors and the screening modernization included a new CombiScreen™. New A and retrofitted D stages with another DD Washer were added to the bleach plant. This is the first ANDRITZ A-stage bleaching process in Russia. With this upgrade, the hardwood capacity increased to 1,500 t/d.

For the softwood line, ANDRITZ converted the existing continuous digester to Downflow Lo-Solids® cooking, utilizing the TurboFeed® chip feeding system. The

"The daily coordination meetings were very useful in resolving potential problems. We had very open dialogue and the best solutions were discovered together."

Faizur Rahman, Start-up Service Manager from ANDRITZ



The ANDRITZ woodyard has two debarking lines with the capacity to handle 415 m³ sob/h softwood and 300 m³ sob/h hardwood per line. The chippers are also among the largest in operation, with 3.87 m disc diameters and 18 knives. ▶▶



WORLD'S LARGEST WOODYARD



◀◀ The brownstock washing system includes new pressure diffuser (left) and new two-stage DD Washer (below).

REBUILD OF THE FIBERLINE



screening process was also modified. Capacity of the softwood line is now 1,000 t/d.

For improved environmental performance, two scrubbers were delivered in order to remove odorous gases from both lines.

A smooth partnership

Kornfeld, the CEO is very satisfied with the smooth procedure. "This was not the first project that Mondi and ANDRITZ have cooperated together," he says. "ANDRITZ helped us eliminate a bottleneck at our Mondi SCP's mill in Slovakia. Since then, the cooperation between the companies has grown to a long-term partnership. The

STEP project is further proof of the professional, congenial, and solid relationship between Mondi and ANDRITZ."

Extreme weather conditions

"Winters in the Komi Republic are long and severe," says Faizur Rahman, ANDRITZ's Start-up Services Manager for the STEP project. "For example, temperatures can reach -45° C." When extreme weather conditions threatened to delay construction and start-up, Mondi mobilized additional resources near the end of the project to keep the schedule.

According to Rahman, despite the fact that winter weather conditions were ex-



"The decision by Mondi to completely rebuild and modernize the Syktyvkar mill opens up a new chapter in the history of the Russian pulp industry."

Igor Tretyakov, Deputy Manager Director

Alexander Chukhlebov, Deputy Managing Director of ANDRITZ LLC (left) with Igor Tretyakov

NEW EVAPORATION PLANT AND RECOVERY BOILER

A new six-effect evaporation plant and a 3,560 tds/d recovery boiler were part of the ANDRITZ delivery. ▾



tre, the relationship with the customer was very smooth during the whole project. "The daily coordination meetings were very useful in resolving potential problems. We had very open dialogue and the best solutions were discovered together."

Environmental improvements

The STEP project ensures that Mondi Syktyvkar can meet the BAT requirements in accordance with environmental legislation. "Fresh water consumption has been reduced by about 45%, and discharge to the Vychegda River has been reduced by almost 90%," explains Wolfgang Schubert, Project Director for STEP at Mondi.

Emissions to the river were aided by the improved washing technology and by closing the process loops. Waste to landfill has been decreased by reducing the amount of wood losses from the woodyard. COD levels have been reduced by 40%.

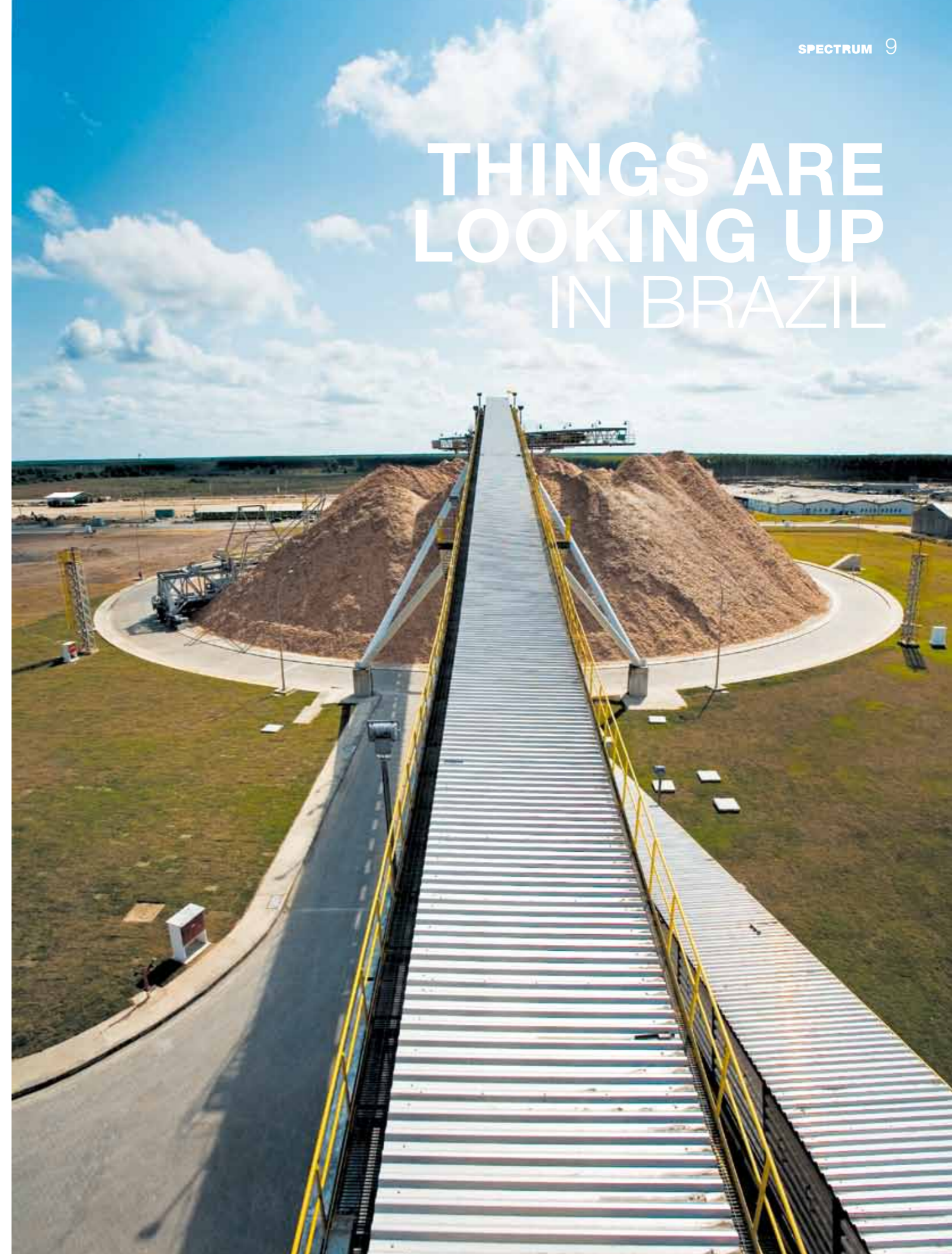
Johannes Galos, a Senior Project Manager for STEP at Mondi, explains that CO₂ emissions to the air were also reduced by 40% due to the new recovery boiler and lime kiln. "We have also been able to maximize our use of biomass, which helps reduce our fossil fuel consumption," he says.

According to Alexander Chukhlebov, Deputy Managing Director and Country Manager for capital systems at ANDRITZ's St. Petersburg office, environmental legislation in Russia is becoming more strict than in earlier times. "That is why we offer advanced technologies to ensure that our equipments' environmental footprints have the least impact," Chukhlebov says. "Mondi Syktyvkar acquired the best available technology from us to fulfill their requirements. In addition, local and foreign contractors provided support for the installation. This came together seamlessly with our own expert services and support."

In mid-2010, the All-Russian Lesprom Awards named the STEP project as "Investment Project of the Year" for the Russian pulp and paper industry. Mondi also received the "Most Dynamically Developing Company" award in the pulp and paper industry.

FIND OUT MORE AT
www.spectrum.andritz.com

THINGS ARE LOOKING UP IN BRAZIL



Simply Celaya.

After 40+ years in the business, Miguel Celaya, General Manager of Engineering and Projects for Suzano, knows a few things about running capital projects. When others his age are thinking about slowing down, Celaya is looking at two or three massive greenfield projects in the near future. “With these exciting projects on the horizon, why would I want to retire?”

In the beginning

I am a mechanical engineer by training. I started with PCC, a small mill in Santa Catarina that is now part of Klabin today. From there, I went to another company, and then to Aracruz, where I worked for almost 15 years. In 1991, I worked on three contracts for Mondi in South Africa. I was the chief engineer for Richards Bay. After that I was thinking whether to retire or not, then I received a phone call from Suzano in 1997.

The business of projects

Today, about 90% of my time is spent in preparing capital proposals for the board. My main contribution is first to get the concept right and to make sure the objectives are clear and understandable. I have other people to do the execution and coordination.

How does a project move from idea to reality? My clients (the mill people) have plenty of needs and wishes. I push the mill people to do a thorough analysis of sustainability and payback to help build a strong case, then I present the projects to the Board and get the money.

We use a rolling forecast to calculate if CapEx money is available, if more can be used, or if cuts have to be made. We have some rules of thumb about what is normal to spend to sustain a mill based on its value and age. Then we have some money for sustainability with regards to water, energy, etc. And then, we have some money for improvements that have attractive returns on investment. The total CapEx budget is a combination of these three.

Grow or die

Our company is 85 years old. The majority



is family-held, but the management team consists of professionals from the industry. Today, the stock value is about USD 4 billion. The target is to quadruple this by 2024 – which will be the 100th anniversary of Suzano.

We identified two major projects to help in that growth. Our intention is to purchase two identical mills at the same time, but delay the delivery of the second line by 18-24 months. This will reduce our investment costs and will also allow the suppliers to move smoothly from one project to the next. Each line will be about 1.4 million tonnes per year.

The first line is in the State of Maranhão (northeast Brazil). We are waiting for the final green light from the environmental authorities. We plan to purchase the equipment in the summer of 2011 and start up in 2013. The second line is in the State of Piauí, 600 km from the first mill.

EPC is the only way

We only work EPC. In Brazil, the most expensive commodity we have is money. EPC projects tend to be faster. There are huge savings in the cost of money when you accelerate the start-up. The value and return on investment is tremendous.

There are fewer territorial conflicts with EPC. It's really very simple: main EPCs, secondary EPCs, and an engineering company to put together the balance of the plant.

It also takes much more effort on our part to manage a non-EPC project – 200-300 of our own people. For EPC, our core team is about 25 people. An additional 40-50 will provide part-time services to the team for specialties like planning, safety, cleaning, and QC.

For these new lines, we are doing something a little different by issuing one EPC inquiry for the treatment of water (from the intake and treatment of incoming water to the diffusion of treated effluent to the river). One package. There is even a possibility to sell this plant and have someone operate it.

In support of the EPCs, we will have some frame contracts. Pumps, motors, automatic valves, instruments, transformers, inverters, etc., are going to be purchased directly by Suzano. In addition, we'll ask for 10-year maintenance contracts for each of these frame items just to make it more interesting for them.

Challenges

Every project has a challenge – usually more than one. There are some that we discover ahead of a project, and some that come up as we go along. This is what makes life interesting, isn't it?

One interesting challenge for the Maranhão project is that the river goes up and down 14 m due to seasonal rains. I think we have arrived at a good engineering solution to handle the mill's water needs.

Another challenge is to get qualified workers at the remote locations of our mills. In a new mill, the technology, the instrumentation, the controls are so great and you rarely have big problems. However, you need very qualified people to understand how to correct things when a disturbance occurs. And more important, you need people to minimize the chance for bad things to happen, because a lot of these problems are caused by operators.

In this regard, the IDEAS Simulator is the most effective tool we have. In addition, this web training is very good, especially for experienced operators.

Sustainability

We are very concerned and involved in sustainability. We are preparing carbon footprint information for our mills. The new projects have tough environmental standards. We will burn primary sludge in the power boiler and secondary in the recovery boiler. We are spending huge amounts of money on effluent treatment – the most modern technology in the world. This means designing the plants with excess hydraulic capacity to be able to handle any disturbances.

Working with ANDRITZ

My opinion about ANDRITZ has changed over the last 10 years. At one time, I regarded them as an equipment-selling company or something like that and their structure in Brazil was very weak. However, I've gained a lot of respect for ANDRITZ. It is an extremely responsible and competitive company and we have had an excellent partnership with them for three larger projects and several smaller jobs.



“Every project has a challenge – usually more than one. This is what makes life interesting, isn't it?”

Miguel Celaya, General Manager Engineering & Projects
Suzano Papel e Celulose

The future

I chose not to retire because I enjoy my work life. It is part of my work life to challenge other people and this, too, I enjoy. Once I discovered that the world is moved by questions, I became the King of Questions. I'm now in the position where others can give me the answers, I just focus on the right questions to ask. So far, it works.

Mucuri Line 2: ANDRITZ brings its expertise to the woodyard and fiberline.

A “best in class” woodyard and cost-efficient DD Washers help Suzano operate a world-class fiberline in Bahia.



“I am very impressed with the washing efficiency and the low chemical costs in the fiberline due to the DD Washers.”

Fabrício da Silva, Fiberline Executive Manager

In 2005, Suzano began a capital project to add a second pulping line to its Mucuri mill in the State of Bahia in Brazil. Line 1 was started in 1992. When Line 2 started up in 2007, it was the world’s largest single pulp line, with a design capacity of one million tonnes per year.

The project was packaged into eight major EPC deliveries. ANDRITZ was responsible for two major packages: the woodyard and the washing, screening, and bleaching portion of the fiberline.

“Best in class” woodyard

“I have been involved in quite a few new greenfield lines and mills,” says Miguel Celaya, head of Engineering and Projects for Suzano. “If you do not pay enough attention to the design of the woodyard, you

will end up paying for it for the life of the mill. ANDRITZ’s woodyard technology became the obvious choice after we had carried out a thorough evaluation. I consider it to be the best in class.

“When I was younger,” he explains, “I did a special study on woodyards. Some people consider them to be ugly, expensive, and terrible places, but I don’t. I visited woodyards in the USA. They put the logs in a channel with water, then take away the bark, and then try to dry the bark to burn in the boiler. It didn’t make sense. Here, we debark the logs in the forest and put the biomass back to the land. We transport 20% less weight to the mill. And then, we have very simple lines.”

Fiberline Executive Manager Fabrício da Silva has experience with ANDRITZ woodyards at two mills. “My first experience was at Fibria’s Jacarei mill,” he says. “There we had an older technology chip storage system with screws at the bottom, and I thought it worked pretty well. But at Mucuri we have the open chip storage pile with a stacker and reclaimer. With the reclaimer, it is much, much easier to do maintenance. Yes, you have to do regular maintenance. But, compared to other systems, the performance, the production, the reliability, the capacity are all superior.”

Looking at CapEx + OpEx

“We felt that ANDRITZ’s DD washing technology was technically superior, and we could have paid a cheaper initial price with a competitor,” Celaya says. “But we did a very careful analysis of CapEx and OpEx over 10-15 years and determined that the DD Washers have the lowest overall cost in terms of efficiency and chemical consumption. I must say, we are quite happy with our choice.”

According to da Silva, commissioning and start-up was without complications. “Our big challenge was in obtaining qualified operators,” he says. “The south of Bahia is more known for its beaches than for its pulp production. The IDEAS simulator played a big part in our start-up success. I had previous experience with IDEAS at Jacarei. At Mucuri, we did some improvements by having our operators provide input into the building of the computer model.”

“Our customers’ concerns and wishes are the most important,” says da Silva. “So for us everything is about pulp quality. Brightness, dirt content, and physical properties are values we constantly monitor. This is

“From a maintenance view, we can really notice a difference between ANDRITZ equipment and the equipment of other suppliers.”

Reginaldo Fernandes,
Maintenance Executive Manager



my first experience with DD Washers. I am very impressed with the washing efficiency and the low chemical costs in the fiberline due to the DD Washers. It is very good equipment.”

Excellent cooperation: production and maintenance

“I have been impressed with the genuine concern about meeting their performance guarantees,” da Silva says. “When we talk, ANDRITZ people are always asking how the equipment is performing and if there are areas where they can improve. If we have a question, they are quick to respond and very open to discussing the right solutions.”

Reginaldo Fernandes, Maintenance Executive Manager, has a similar view. “We have excellent cooperation from ANDRITZ whenever we have a question or problem,” he says. “From a maintenance view, we can really notice the difference between equipment suppliers. We have more problems with equipment not supplied by ANDRITZ, that is a fact.”

Fernandes and his team are midway through a program to ensure world-class maintenance at Mucuri. Part of this required a major reorganization. “We had our own personnel taking care of maintenance for Line 1,” he explains. “But, we didn’t have enough people to handle Line 2 as well. So, Mucuri contracted with a mechanical, an electrical/instrumentation, and a predictive maintenance company to do maintenance on Line 2. This was good for the start-up, but there was kind of a wall between the two lines. Since June 2009 we have been operating with both lines being maintained by our own employees. We’ve been able to coordinate and standardize much better now.”



SIMULATION AND WEB-TRAINING

Vitor Wuo leads Suzano’s project activities when it comes to automation and simulation. Wuo and his team were responsible for the implementation of the automation systems during Mucuri Line 2 project. It was an extensive effort, as the production line is heavily automated.

Part of the implementation included the IDEAS Simulator: a tool to help checkout a distributed control system (DCS) before start-up and to train operators to run a process – in a safe virtual environment before the mill ever starts up.

“It is very important,” Wuo says, “for the DCS and Simulator to be totally integrated.” By this he means that the DCS configurations are transferred to the Simulator so that it perfectly emulates the process. “The screen on the Simulator looks exactly like the screen on the DCS,” he explains. “There is no difference to the operators between operating a virtual process or the real one.”

Considerable work has been done by ANDRITZ Automation Solutions to build the mathematical models on which the Simulator relies. However, for each project effort is required to precisely model a specific mill. “We were very much involved in gathering data and providing our input to build the models for Line 2,” Wuo says.

The results? In Suzano’s case, there is a good benchmark as to the benefits of the Simulator. Line 1 was started up in 1992 with conventional training. Line 2 used the IDEAS Simulator. “The Line 2

operators achieved a 30% faster learning curve (ramp-up to full production) than did the Line 1 operators,” Wuo says.

And now, Wuo’s interest is in web-based process training from ANDRITZ. “The web tools in combination with the Simulator are perfect for us,” Wuo says. “Our target is to have our own operators start up a line – not the equipment suppliers. Web training and dynamic simulation bring us closer to this target.”

“Our target is to have our operators start up a line – not the equipment suppliers.”

Vitor Wuo, head of all automation projects





ANDRITZ SCOPE MUCURI LINE 2

Woodyard

The ANDRITZ woodyard consists of three complete wood-receiving and chipping lines for forest debarked logs, chip storage, chip screening, and bark handling.

- Each chipping line, capacity 280 m³ sub/h, is equipped with a log feeder deck, Euca-Roller™ bark separation system with washing, and a horizontally fed HHQ-Chipper™.
- Chip storage is an open circular system utilizing the latest blending bed technology with a rotating stacker-reclaimer. Storage volume is 94,000 m³ and a high reclaiming capacity up to 1,800 m³/h.
- Chip screening is performed after the chip pile using three CS 1000 gyratory chip screens.

Fiberline

The fiberline is designed to produce high brightness eucalyptus pulp at a rated capacity of 3,160 t/d. Included in the ANDRITZ delivery are:

- Four Drum Displacer® (DD) Washers for brownstock and post-oxygen washing.
- Post-oxygen pulp screening with two CombiScreen™.
- Four stages of ECF bleaching utilizing DD Washers and the patented A-stage process for reducing chemical consumption.



Chipping away at a bottleneck.

With pulp prices in good territory, maximum production is again the focus. Veracel Celulose of Brazil was experiencing a bottleneck in its woodyard which limited the mill's pulp throughput. Installation of a new wood preparation line – including the world's largest chipper – has broken the bottleneck and is producing quality above expectations.



"When we started this mill in 2005, we had two chipping lines," says Aureo Borges, Veracel's Manager of Engineering and Projects. "There were some problems from the very start with the woodyard area, mostly with the feeding lines to the chippers. Since we were operating both lines continuously in order to keep production, every time we had to take a line down for maintenance we fell behind."

Things got more challenging as the rest of the fiberline was ramped up after the start-up, according to Gilmar Franco, Pulp Production Manager. "Perhaps the existing woodyard would have been adequate, though maintenance-intensive, if we stayed at our original design rate of 900,000 t/a," he says. "However, we methodically increased production 25% over design in every other area of the mill. The woodyard really became our bottleneck."

"The woodyard really became our bottleneck."

Gilmar Franco, Pulp Production Manager

So, in 2008, Veracel's Industrial Director, Walter Martins, presented a proposal to its shareholders (Stora Enso and Fibria) to increase the capacity of the woodyard by adding a third line. According to Martins, "We were losing about 6,000 t/a production and sometimes we needed to burn oil in the power boiler because we did not have enough biomass from the woodyard." The shareholders approved the investment of USD 18 million and inquiries were sent out to the major suppliers.

A clear difference

Veracel began the process of evaluating technical and commercial proposals. "We made visits to reference mills to see the equipment in operation," says Ari Medeiros, who will soon replace Martins as Veracel's Industrial Director. "One of the references was at a nearby mill that has an ANDRITZ installation very similar to our re-

The new third line by ANDRITZ takes log bundles up to 6 m in length and converts to high-quality chips. Design is 400 m³ sub/h, but the line has operated at 500 m³ when needed. The HHQ-Chipper is the largest in the world. ▼



"The equipment is reliable and there is good access for maintenance."

Fernando de Oliveira,
Mechanical Maintenance Specialist

quirements. We had detailed discussions with the production and technical people and we were very impressed."

"The proposal from ANDRITZ was very competitive," Martins says. "The big difference is the log feeding to the chippers. With ANDRITZ we have a feeding deck or table, which is quite different from the equalizer drum of the existing lines, which was the main reason for the jams we were experiencing. Plus, the capacity of the chipper was higher than anyone else."

"We defined the capacity of the line at 400 m³ sub/h, the same as we had defined for the first two lines," Franco explains. "ANDRITZ proposed a line with a higher capacity than we initially asked for. We felt that they were the best choice considering the quality, the design, the throughput, the ease of operation and maintenance, as well as the commercial terms."

In July, 2008 Veracel signed a contract with ANDRITZ for the EPC delivery of the

new wood processing line. ANDRITZ personnel in Brazil and Finland coordinated the tasks for layout, process engineering, civil construction, automation, erection, commissioning, and start-up.

Robust, simple design

In the new line, log bundles (6 m long eucalyptus logs which have been debarked in the forest) are loaded onto the receiving deck, which discharges logs at constant capacity to the belt conveyor. The log flow is adjusted by a controller on the receiving deck and by a scale on the belt conveyor. Before entering the chipper, logs pass over a conveyor equipped with a bark separation section and a high-pressure washer.

According to Giani Valent, ANDRITZ's Project Manager, the horizontally fed HHQ-Chipper™ model EXL is the biggest in the world – having the disc diameter of 3.87 m and equipped with 18 knives. "This chipper produces very high quality chips at very high capacity," Valent says. "It can produce up to 800 m³ sub/h depending



▲ The HHQ-Chipper™, model EXL has a disc diameter of 3.87 m and is equipped with 18 knives.





“The ANDRITZ line is simple and reliable. The horizontal feeding of logs is a real improvement over our existing equipment.”

Aureo Borges, Manager of Engineering and Projects (left) with an associate at Veracel

upon the average log diameter and wood quality. In the case of Veracel, they have been operating an average of 440 m³ sub/h and the level of accepts has been 91.75%.”

St. Peter's Day start-up

The new line started up on June 29, 2009. “St. Peter's Day,” recalls Borges. “There is a big festival in Bahia state on that day so that is how I remember it. From start-up, the ANDRITZ line is simple and reliable. The lateral feeding of the logs to the deck is an improvement. The chipper is huge, and well-designed. The horizontal feed is much better than the drop feed on the other two chippers. There is much better throughput and fewer jams.”

Fernando de Oliveira, Mechanical Maintenance Specialist for Veracel concurs. “For us, the reliability of the ANDRITZ line is better,” he says. “Simpler equipment and the quality of construction is better. There is good access for maintenance and the overall availability is much higher.”

Franco points out the added flexibility that the third line gives. “Before, we were just doing emergency repairs,” he says. “Now we can take a line down for preventive maintenance while still meeting production demands.”

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With the lateral feeding of logs on the receiving deck and the horizontal feed to the chipper, throughput is excellent and jams are a thing of the past. ▶



Rewriting the headlines.

In May 2006, Spectrum published a cover story about the start-up of the greenfield Veracel mill with the headline “Single line success.” Now with the announcement of a new and larger pulp line, we’ll need a new headline for Veracel. After a recent conversation with Veracel top management, words like “sustainable,” “efficient,” and “accountable” come to mind.



▲ Sergio Alipio, President and CEO

Past and present

Alipio: We just reached a milestone – over five million tonnes of pulp produced in five years. We have shown that Veracel is competitive – not only with good technology, but with people capable of managing and operating in a remote place.

Martins: This mill was designed for 900,000 t/a. Today we operate at 1.1 million t/a. We have had it confirmed by an outside consultant that we could increase to 1.2 million t/a with basically the same equipment.

Alipio: Equally important is that we are the only company, perhaps in the world but certainly in Brazil, that has 100% of our fiber certified by FSC, Ceflora, and PFC. Certification is important because it shows proof of sustainable management. It does not get you a higher price, but it does give you more market opportunities.

This is easier to manage now, because we use 100% of our own wood. But in the future this will change to about 20% from local tree farmers and 80% from our own plantations.

Veracel is the only producer in Brazil that has certification from FSC and Ceflora for the first group of tree farmers from which we will purchase wood. This is a unique characteristic of our company.

Future

Alipio: We applied for permits in 2007 to build another line and we expect the green light by the end of this year. This one will be 1.5 million t/a. The line could start-up at the end of 2013 or beginning of 2014.

Medeiros: It is important for us to do this, because the Brazilian pulp industry has announced plans to build several new lines. I think that the market will be able to absorb this new capacity, mainly because Brazil is very competitive.

Martins: There is no line in the world today operating at 1.5 million tonnes. The largest operating line today is 1.3 million tonnes. There are a few advances that suppliers have made: the size of the boiler capacity has increased. Plus, we have learned a few things about how to increase capacity.

Bigger and faster and better

Martins: In my opinion, the next start-up could achieve its learning curve in less than six months. Last time we did it in 174 days. I think we could do the next one in 120 days.

Ari Medeiros, Recovery & Utilities Manager (soon-to-be Industrial Director) ▼



Sustainability

Alipio: In general, the permitting process is a little complex in Brazil. If it was only technical, we would get speedy approvals as we have demonstrated this is a very, very environmentally friendly mill.

In Bahia state, we have rainforests nearby, we have Indian populations in the surrounding area, etc.. The way for us to positively influence these groups is to have sustainability in everything we do. Here, it is not enough for community leaders to talk, but they also want to touch. This is the reason we live here: our families and houses are here. Perhaps 80% of my time is spent discussing, meeting, listening to local concerns.

Competitiveness

Martins: We benchmark our performance. We are very, very competitive in terms of costs.

Alipio: The saying is that past performance is the best predictor of future behavior. For our shareholders, the main basis for their decision to build a second line is our results. Not only in terms of production, but also in terms of quality, certification, and importantly, in terms of costs. So a second line here is not a dream, it is based on reality as we have demonstrated our capabilities.

Walter Martins, Industrial Director (soon-to-be Senior Consultant) ▼



Putting ACE® in place boosts production, saves money.

Is that better basis weight profiles in the white liquor plant ... and less chemical costs in the drying plant ... or better profiles in the drying plant and less chemical costs in the white liquor plant ... or? Sometimes we get so confused! Better let the experts at Veracel and ANDRITZ Automation tell you the story...



“Good stability ... good lime quality ... and reduced oil consumption. We are no longer a bottleneck.”

Estanislau Zutautas,
Causticizing/Kiln Coordinator

Two recent installations in Brazil show the versatility of the Advanced Control Expert (ACE®) in practice. What is ACE®? Marcos Freitas, Sales Director for ANDRITZ Automation in Brazil, explains:

“Take your very best operator, keep him/her alert and motivated 24 hours a day, seven days a week, and there you have ACE®. ACE® is an expert operator, optimizing a process (kiln or drying plant or bleach plant or whatever) for production, quality, and safety. The operator sets a production target and ACE® controls the production rate, temperatures, flows, etc. to make that production. ACE® always tells the operator what it is doing and why. It is not a black box, but an operator’s friend. It works with anyone’s DCS and is very easy to install.”

What got Gilmar Franco’s attention (Veracel’s Pulp Production Manager) was that ANDRITZ had so much confidence in ACE®. “They said that if it didn’t achieve the results, they would remove it at no cost to us,” Franco says. “We have no intention of giving ACE® back. We have become believers.”

Kiln ACE®: stability and cost savings

Estanislau Zutautas, Coordinator for the Causticizing/Kiln area, came to the Veracel mill in April 2009. “At that time, operators were trying to use advanced process control software from another supplier, but were not getting good results. So, they stopped using it.”

Specialists from ANDRITZ Automation came to the mill to install and fine-tune the Kiln ACE® system. “This period of time was valuable,” Zutautas says. “Their specialist had his own experiences with kilns

around the world. He worked side-by-side with our operators, asking questions and discussing the best way to control the kiln. It was helpful to have these discussions, and the outcome was very good.”

Even before Kiln ACE®, Veracel was improving the recausticizing plant. Ari Medeiros, Recovery & Utilities Manager, says, “We did a very good job together with ANDRITZ to change the internal design of the white liquor filter (CD-Filter). We have been running this new design for a year and the results are very nice. Calcium oxide in the lime is reduced, which improves the lime mud dryness.”

After Kiln ACE® was installed, Veracel ran the kiln for one month with no control to establish a baseline. Then the control was turned on.

“We got very good stability in the kiln operation and very good lime quality from the beginning,” Zutautas. “A major goal for us was to reduce oil consumption by substituting methanol from the stripping plant. In the past when we tried this, the TRS emissions rose too high. After all the changes we made after the shutdown, we reduced oil consumption from 130 kg/t to 100 kg/t. We can attribute about 6% oil savings directly to Kiln ACE®.”

“What has helped us most is the stable quality of lime,” says operator Evandro Bove. “This stability allows us to burn methanol within TRS limits, and also frees us up to focus on other ways to improve the process. We are no longer the bottleneck, and our throughput is better than expected.”



▲ Kiln ACE® has become the Veracel operators’ best friend. “We now have all the tools we need.”

The ANDRITZ drying machine at Veracel. Dryer ACE® optimizes production and controls the basis weight/moisture profiles to produce an excellent pulp sheet. Plus, it coordinates control of the screening plant. ▼



“We have much better control of temperatures in the calcination zone, and have eliminated hot spots,” says operator Francelino Filho. “This extends refractory life much longer than we ever experienced before. I have to confess that I did not believe it would be possible to operate the kiln with oxygen below 1.5%, but Kiln ACE® has shown this to be possible. This saves us fuel and keeps TRS emissions low.”

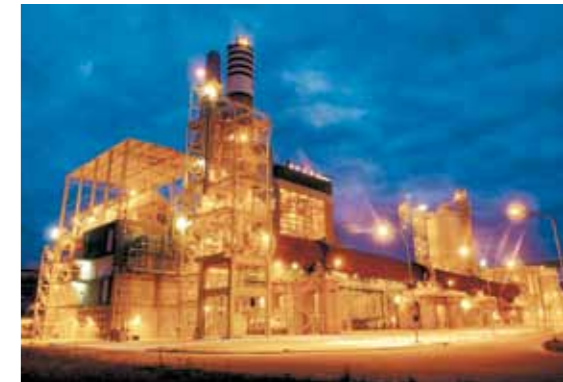
“When you have confidence in your instruments and lab reports, and you have a tool like Kiln ACE®, it’s easy to control the process,” Zutautas says. “We now have all the tools that we need.”

“In general, the cooperation with ANDRITZ has been excellent,” says Medeiros. “The white liquor plant used to be one of our biggest bottlenecks, but now we are running 10-15% over the design capacity in a very stable way.”

Dryer ACE® improves upon already outstanding performance

Jorge Sarcinelli, Drying and Packaging Coordinator, recounts the story at Veracel. “ANDRITZ talked to us about installing a Dryer ACE® system soon after start-up,” he says. “In October 2008, we took the first step, which was to use the system for optimizing basis weight and moisture profiles of the pulp sheet.”

ANDRITZ delivered the white liquor plant (kiln and recausticizing) to Veracel on an EPC basis for the greenfield start-up in 2005. ▼



In order to build the computer model, ANDRITZ Automation worked with Veracel to take measurements on the dewatering and drying machine at various positions and times: at different production rates and with different ratios of virgin-to-broke. This took some time, because according to Sarcinelli, “We were running at full production. We didn’t have the luxury to slow the machine down just so they could take their measurements. But, over several weeks they were able to build the complete model.”

With Dryer ACE® running, Veracel saw that it had improved the quality of their pulp sheet in terms of moisture and basis weight control on the drying machine.

“What was equally important for us, though, was to get control of our screening plant,” Sarcinelli says. The mill was experiencing disruptions in screenroom whenever there was a disturbance in the fiberline. “If the kappa went down and pulp viscosity lowered,” Sarcinelli says, “the pressure differential in the screen would rise and the interlocks would shut the screen down. We were also having problems with plugging.”

So, step two for Dryer ACE® – screening management – was added. The work was completed in June 2009.



▲ On the machine, basis weight and moisture profiles are improved. In the screenroom, shutdowns due to fiberline disturbances have been eliminated – and costly sheet breaks are minimized.

“With ACE®, we have control of the screenroom,” Sarcinelli says. “ACE® will change the flows to the different screens, accommodate changes in pressures, and enable the screenroom as a whole to run in the best way possible. ACE® operates the total plant to the maximum of what the machinery can produce at that moment, based upon the current conditions.”

The situation at Veracel today is that the drying plant no longer feels the impact of minor disruptions in the fiberline. “If there

is variability in the pulp when it arrives here, we can see the ACE® system moving setpoints to control the screening and reduce the machine speed automatically,” Sarcinelli says.

According to Sarcinelli, it’s not so simple to measure the economics of Dryer ACE® as it might be in other process areas. “I can tell you this: we have eliminated the shutdowns that we had before,” he says. “Within the 16-hour buffer inventory we have with the fiberline, ACE® is in control.

“Another measure is pulp quality. We have fewer variations in moisture, which saves us money. At the same time, if we want to go from 150 m/min to 185 m/min, ACE® raises the machine speed while keeping the moisture and basis weight profiles in the target range. It’s very easy for us and avoids lost production.”

According to Pulp Production Manager, Gilmar Franco, “After the installation, we could see the results immediately. The process runs in a very stable condition and the control is completely automatic. The system is very reliable and we use it all the time. The original expectation was to have better control of the drying machine. The control of the screening plant is a big plus for us.”

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“ACE® operates the total drying plant to the maximum of what the machinery can produce at that moment.”

Jorge Sarcinelli, Drying and Packaging Coordinator

Jorge Sarcinelli (left) with Marcos Freitas from ANDRITZ Automation



Strong and Noble.

The Latin words **Valeo** (strong) and **Nobilis** (noble or distinguished) are impressive words to describe screen baskets. Do the new Bar-Tec® screen cylinders from ANDRITZ Fiedler live up to such lofty names?

“We are in the business of *improving*,” says Manfred Renner, “not just *replacing*.”

And what do you do when there is little room for further improvement?

“We innovate!”

Renner is the Managing Director of ANDRITZ Fiedler, supplier of screen baskets and rotors. ANDRITZ acquired the German Fiedler in 2003 and moved forward with its Bar-Tec® series of wire screen baskets, which are very well regarded in the industry.

The two key parameters for any screen basket are strength and accuracy. There has always seemed to be a trade-off between the two. “There are very strong baskets on the market, but the slot width accuracy is not very good,” Renner says. “And, there are baskets which were very accurate, but not strong enough for certain applications.”

The Bar-Tec® W basket is a welded design. It is produced “in the round” (i.e. drawn wires are set in laser-cut rings) instead of using flat mats which have to be rolled

into a circle. This manufacturing technique eliminates joints and reduces stresses in the support rings. “We have sold thousands of units, and for most applications, this design works superbly,” Renner says.

“But our job is to be looking into the future,” he says. “We are at the technical limitations where we can’t make a welded basket stronger or more accurate.”

So Renner challenged his R&D team to come up with new basket designs that would exceed the capabilities of current screen baskets and would also have the flexibility to add other benefits in the future.

In reality, this meant one design for high-pulse, high-stress load applications (like OCC) and one design for applications requiring the narrowest slot widths and the highest slot width accuracy (like deinked pulp).

The other challenge: it had to be cost-competitive.

We accept the challenge

“Every designer and developer likes a big challenge,” says Thomas Mickelat, R&D



“Our goal was to design baskets that have the best strength and accuracy in the market.”

Manfred Renner, Head of Global Product Management for screen baskets and rotors



▲ One key to the strength of the bond is the large surface area in the connection between profile wire and support ring. The detail above shows the bond of a Bar-Tec® Valeo basket.





“Since metal bonding is done at normal temperatures, we avoid micro-cracks that potentially can originate during a high-heat welding process.”

Thomas Mickelat, R&D Manager

Manager. “We wanted to be very open to all possibilities – not just what we knew in-house.”

Mickelat took contact with the Fraunhofer Institute, Europe’s largest application-oriented research organization which happens to be centered in nearby Munich. “We didn’t want to limit the scope at the beginning,” Mickelat says. “It could be any material, and any method for connecting the material. Let’s just see what the possibilities are.”

The research and discussions took about one year. “In terms of materials, it was decided to keep with metal for the moment,” Mickelat says. “But after reviewing about 20 different possibilities for connecting the profile wires to the support rings, we decided to bond the surfaces together (as opposed to notching, clamping, or welding).”

With the idea to concentrate on bonding techniques, the development team took shape: with representatives from product management, IT, marketing, and manufacturing each playing a role.

A strong bond

Metal-to-metal bonding is common in certain industries (such as aerospace where strength and flexibility are required), but not in the world of screen baskets. There are definite advantages to metal bonding.

Tremendous dynamic stresses occur inside a screen with each suction and pressure pulse of the stock, and concentrate at the points of connection between the profile wire and support ring. “Since metal bonding is done at normal temperatures, we avoid micro-cracks that potentially could originate due to the high heat of the welding process,” Mickelat says. “I am a welding engineer and a mechanical engineer by training, so I have respect for welders. But, while welding is a good way to connect metal to metal, bonding also has its advantages.”

“It is a simple, elegant solution,” says Michael Reinstein, Product Manager. “But don’t confuse *simple* with *simplistic*. A bonded basket is stronger because there is a greater connection area than with a small spot weld on each wire. Also, the bond stays where you put it and will not dissolve in the process.”



“A bonded basket is stronger because there is greater connection area between profile wire and support ring when compared to the area of a simple spot weld.”

Michael Reinstein, Product Manager for screen baskets and rotors



Markus Schneider, R&D Engineer, recalls, “After we proved the concept, we moved to commercial-scale baskets – not only to test in the field, but also to make sure we had an efficient manual manufacturing process.”

In 2008, the R&D team got a green light from management to build up 100 baskets. “That was quite an intense period because we had to design the various profile wires and groove patterns for the different basket styles,” Schneider says. “We also had to train our manufacturing specialists how to prepare and produce the new baskets.”

If at first you don’t succeed...

Early in 2008, the development team built its first prototype – a very small cylinder that was installed in a bypass screen at a German mill (OCC stock prep application at 2.5% consistency with a very high rotor speed) so it would not disrupt production. Within days, the basket self-destructed.

“We learned a lot from that failure,” Mickelat says. “We analyzed everything in detail. Okay, we knew going in that we did not have the optimum profile wire/ring combination. But we also found that we had skipped over some steps in producing the prototype, for example, properly preparing and cleaning the materials before bonding.”

From this early setback, the progress going forward was remarkable. “Each prototype after that revealed more and more success,” Mickelat says. “We made scientific tests with different stocks, liquids, temperatures, and configurations of the profile wire and for the ring support groove in order to have the best bonding surface area possible.”

And today?

“We have shipped more than 500 bonded-baskets to mills around the world,” Renner says. “We are comfortable that we are shipping a very excellent product.” The company just acquired some new manufacturing technology to make the production of bonded baskets more efficient and less mechanical.

So the outcome of this R&D work so far is two innovative screen basket designs – Valeo and Nobilis.

For applications where very high strength is necessary, particularly OCC, the metal bonding technology enables a very robust design. The construction is free of most of the internal stresses created with conventional manufacturing techniques. This new high-strength design for OCC is called Valeo.

For applications such as deinked pulp, where slot width accuracy is critical for stickies removal, the metal bonding technology enables a design with the most accurate slot widths and the narrowest slots in the industry. This new high-efficiency design is called Nobilis.

Do customers notice the difference?

“Yes, they do,” Renner says. “Of course they expect that our baskets are strong and stable and will not break. But, they see that we are now delivering baskets with tolerances closer than any competitor. In terms of standard deviation, we used to achieve 20 microns, and now what we guarantee is 10 microns.”

What about future development?

“We are limited in the materials that are weldable, but, with bonding, other materials besides metal could be possible,” Mickelat says. “Who knows what the future will bring?”

Automated manufacturing: preparation of support rings and profile wires before assembly. ▼



Drumming up big smiles at Alier.

If paper quality remained the same before and after a capital investment, why are these people at Alier S.A. smiling?

Ask Pilar Carnicé of Alier S.A. when the new FibreFlow® Drum pulper from ANDRITZ started up. Based on her test data, she cannot tell you.

Carnicé, the mill's QC Manager, knows the date of course: after all, it was an important investment. "But, if you look at the paper test results, you cannot see a change," she says. "Concurra tests for carton, tensile tests for sacks, tensile and ply bond tests for gypsum – all the tests show no variability."

A big disappointment to Alier's top management? "No, not at all," says CEO Florentino Nespereira. "We celebrate it as a big success."

Okay. Perhaps we are missing something here? There must be more to the story.

35-40 different furnish qualities

"It's no mystery really," says Nespereira. "We are a 100% recycled mill and we produce a wide range of products from 50-450 g/m². We use a very wide range of wastepaper qualities, including liquid packaging board. When we use lower cost raw materials and maintain the quality our customers expect, we improve our margin. And, when we use considerably less energy and improve our productivity, we reduce costs further. This we have been able to do with the FibreFlow® Drum."

When asked to quantify the economics, Technical Director José Pulido is a little hesitant. "Let's just say that we had five batch pulpers that were old," he says. "Maintenance and repair was a daily activity. Three high-consistency pulpers used about 45-50 kWh per tonne. Two low-consistency pulpers cut plastics in furnish very small bits that were difficult to remove downstream.

"Compare that to today where the Fibre Flow® Drum consumes less than half that energy. Plastics and other contaminants come out whole. We get continuous production up to 750 t/d without much variability, even when substituting lower cost furnishes. And, we still keep our quality high."



"With five old batch pulpers, the pulping area had become a production bottleneck which affected the stability of our operations. Also, the energy costs were also extremely high."

— José Pulido, Technical Director



"From day one, there were no concerns about the Drum. Within a month, we were able to substitute lower quality raw materials to help with our cost structure."

— Florentino Nespereira, Chief Executive Officer

1ST NEW GENERATION FIBREFLOW® DRUM PULPER FOR AN OCC LINE IN EUROPE



From left to right: Kimmo Vanhala, ANDRITZ Fibre Flow® Drum Product Manager; José Pulido, Alier's Technical Director; Enrique Navarrete, recently retired Mill Manager at Alier; Florentino Nespereira, Alier's CEO, and José Corominola of Copapres, ANDRITZ'S local representative. ▼

Harder, but more opportunities

Being a 100% recycle mill with dozens of end products, and even more grades of incoming furnish to manage, Alier has done a masterful job of managing the complexities and opportunities it faces. "At times," Nespereira says, "this makes our life harder, but also gives us more possibilities."

Alier, near Lleida in Spain, is small by international standards. Nespereira sees this as an asset. "We are very close to our customers and markets," he says. "We are nimble and not afraid to try new things if we believe it will help our customers. Of course, with our size, we can't afford to make big mistakes."

Nespereira is a mechanical engineer by training who rose through the ranks of Sonae (the largest private employer in Portugal) for 20 years before being recruited to Alier in 2002. His experience is varied (production, start-ups, logistics, and general management), which gives him a good foundation for managing the complexities of Alier.

The product mix at Alier consists of various types of packaging papers (40-50%), sack papers (20%), gypsum papers (20%), and paper for shopping bags (10%). "Our strategy is to grow in the sack, gypsum,

and paper bag segments," Nespereira says. "With a new large 400,000 t/a machine being announced every year in the corrugated segment, it is clear that over time we will not be competitive."

A big push in helping to make the grade change to the new niche segments was Alier's investment in the pulp preparation area.

Improving the satellites

Five years ago, Alier began a program to improve what Nespereira calls the "satellite" areas of the mill. "We started by improving our water treatment system, then the pulp screening and cleaning area, and then debottlenecking the machine itself," he says.

By 2007-2008, the focus shifted to the pulping area. "In our opinion, this was clearly the worst area for our mill," says Pulido. "We had five pulpers, two low-consistency and three high-consistency. Each was a different model and from a different period, but on average they were 20-30 years old. This area not only became a production bottleneck in terms of capacity, but we had significant problems with maintenance, which affected the stability of our operations. Also, the energy costs were also extremely high."



▲ The FibreFlow® Drum processing line at Alier. About 30-40 different grades of waste-paper are processed into a variety of paper products at the mill.



“The new generation design is better at deflaking and defiberizing hard-to-pulp wastepaper furnishes.”

Kimmo Vanhala, FibreFlow® Drum Product Manager at ANDRITZ, inspects the screening zone of the Drum.

The three HC pulpers required steam and chemicals. Specific energy consumption was in the range of 45-50 kWh/t of production. In addition, one of the pulpers was dedicated to a specific raw material. “If the pulper was down for repair, we had to switch the product on our paper machine to accommodate this,” Pulido explains. “This caused disruptions in the stability of our process.”

The team at Alier came to the conclusion to purchase a continuous pulper that would be dedicated to producing pulp for 70-80% of its product mix, and to keep two out of the five batch pulpers for other specific products. “Even though the cost of a continuous pulper is higher than the traditional batch units, we wanted to get out of this nightmare of having to maintain five old pulpers,” says Nespereira. “The critical issues for us at the beginning were low maintenance and low energy consumption.”

Pulido is a 36-year veteran of Alier, first starting in the electrical maintenance department. Over the years, he has worked in virtually every department. Today, he is responsible for new projects and optimization activities. “When I first became involved with the project, I have to admit that I didn’t know ANDRITZ,” he says. “But after some conversations with José Corominola, ANDRITZ’s sales agent in Spain, and some meetings with their tech-



nical people, I became convinced that ANDRITZ had the simpler, more effective, and less costly solution. They also demonstrated to us that we could move to lower cost furnishes and still achieve our quality targets.”

Pulido and his colleagues visited an installation of the FibreFlow® Drum that has been operating 10+ years at Stora Enso (Barcelona). “We were impressed with the equipment construction and the reliability of the system.”

Alier signed the contract with ANDRITZ in April 2008 and the line started up in August 2009.

Smooth project

The erection went very well, but the biggest problem was in transport of the Drum itself from Finland. It left the workshop on time, but according to Nespereira, “everything was great until the truck got to the Spanish border. There we discovered that there is not one Spain, but 17 different Spains when it comes to getting permits to transport such a large piece of equipment (31.6 m long by 4.7 m in diameter) over the Spanish roads. Each community had to give a permit. This process took time.”

Still, Alier is pleased with the overall project execution and the choice of local subcontractors for ANDRITZ’s EPC delivery. The Drum started up easily with no problems.

Slushing and screening

The FibreFlow® Drum pulper has two zones inside it: one to gently slush and defiberize wastepaper and one to remove trash and major contaminants from the pulp. Over 200 Drums have been sold worldwide.

The Drum defiberizes wastepaper by gentle dropping and rolling actions. There are no moving parts inside and nothing to cut the fiber, so strength properties are retained. This also avoids disintegration of the contaminants.

According to Kimmo Vanhala, ANDRITZ’s FibreFlow® Drum Product Manager, the Drum has been on the market for 30 years. The applications experience has resulted in new enhancements for hard-to-pulp wastepapers sometimes found in OCC lines. “This Drum design is better at deflaking and defiberizing difficult furnishes,” Vanhala says. “It still retains the benefits of all FibreFlow® systems: gentle pulping action, efficient trash removal, and low energy consumption.”

Noteworthy results

“From day one, there were no concerns about the capacity of the drum, the quality of the pulp, and the consumption of energy,” Nespereira says. “All these things were accomplished very easily, without taking months to fine-tune. Within a month, we were able to substitute lower-quality raw materials to help with our cost structure.”

“This substitution of raw materials and elimination of chemicals in the pulping process contributes around 2/3 of the annual savings. Yet energy savings are also significant.”

“When running at design capacity, energy consumption is less than 20 kW/t,” says Pulido. “This is half of what we consumed with the HC batch pulpers.”

According to Pulido, operators easily adapted to the Drum and find it easy to handle. “Everything is automatic,” Pulido says. “The operator only needs to set the production setpoint and the Drum does the rest.”

FIND OUT MORE AT
www.spectrum.andritz.com



▲ Pilar Carnicé performs a paper tensile strength test.

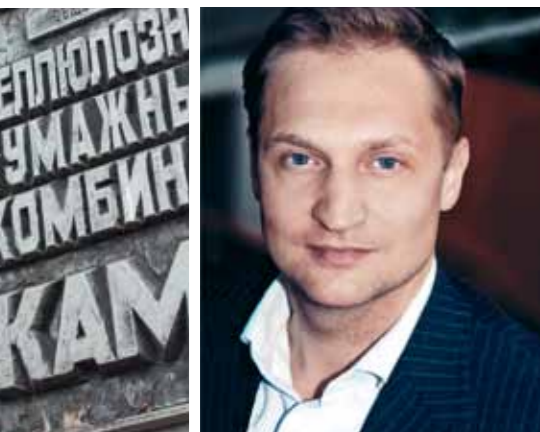


“Paper quality remained the same. The only difference I could see was less variability after the Drum was installed.”

Pilar Carnicé, Quality Control Manager

Birch-based LWC: a first in Russia.

Kama PPM is in the middle of completing an ambitious investment project to be the first production site in Russia for lightweight coated (LWC) papers. The raw material is hardwood (birch) processed by advanced ANDRITZ mechanical pulping technology.



"This is a pilot project to fine-tune our domestic coated paper production and reduce imports."

Sergey Malkov, Director of Technical Development, P&P Division, Investlesprom

Kama PPM, in the Perm region of Russia, is part of ZAO Investlesprom Holding, one of the Russia's largest holding companies in the timber industry. One of the latest investments is for the installation of a new woodyard and hardwood BCTMP line and the complete rebuild of a paper machine to produce LWC grades.

The LWC-Kama project is the first phase for Investlesprom to penetrate the coated paper market. According to Sergey Malkov, Director of Technical Development for the P&P Division of Investlesprom, the project is aimed at decreasing coated paper imports and gradually replacing imports with the production of domestic LWC paper of comparable quality.

"This is a pilot project to fine-tune our coated paper production," Malkov says. "We plan to follow this with a large project at Sokol-Vologda Paper Manufacture to produce 600,000 tonnes per year of coated paper in a wide spectrum of grades.

So, LWC-Kama is a very important project for us. Even though it is a pilot, we still expect a reasonable return on investment."

LWC-Kama will produce LWC on a completely rebuilt PM 7, which is being converted from its 40,000 t/a of newsprint production to about 85,000 t/a of LWC grades. At this level of production, about one-fourth of the total Russian printing industry's needs could be met by LWC-Kama, thus creating real competition with imported paper.

Unique project

Even on a global scale, LWC-Kama is unique. "Since no one has ever used birch BCTMP as the main fiber for producing high-quality LWC paper, it is not surprising that the project has been recognized at a federal level and is in the process of being granted status as a priority investment project in the area of forest utilization," says Malkov.

"When we began discussions with suppliers, ANDRITZ's technical solutions for both the woodyard and BCTMP line were superb in comparison to proposals from



their competitors," Malkov says. "The key factors were references, experience with birch, specific energy consumption, and process guarantees."

For the woodyard, Kama PPM purchased eco-friendly equipment such as the RotaBarker™, rotary debarker. "This environmentally friendly technology allows debarking of logs without using steam and water and in any conditions," says Konstantin Rauzer, LWC-Kama Project Leader. "There was nothing comparable at the time in Russia,"

The wood processing line was started in March 2010 and is running steadily.

The ANDRITZ P-RC APMP technology (Pre-conditioning Refiner Chemical Alkaline Peroxide Mechanical Pulp) allows production of high-quality tailor-made pulps. Delamination and opening up the chips as a pre-treatment before refining (using the MSD Impressafiner) is a key process step, according to Günther Glück, ANDRITZ's Mechanical Pulping Systems Project Manager.

The MSD removes extractives (resin) and other impurities from the chips at the front end of the process. Fibers from the primary HC refining stage are more flexible and resistant to high refining intensity, which allows the use of LC refining in subsequent refining stages. "It is this maximum application of LC refining that gives a

"There was no comparable woodyard technology in Russia at the time."

Konstantin Rauzer, LWC-Kama Project Leader

Vladimir Kudinov, ANDRITZ Sales Manager for Russia (left) with Konstantin Rauzer



▲ The MSD Impressafiner is a key process step in the P-RC APMP line.



▲ RotaBarker™ line with horizontally fed HHQ-Chipper™.

"Communications and cooperation are excellent."

Alexey Kononov, LWC-Kama Project Technical Manager



ANDRITZ LC refining inside the new BCTMP building. ▼



further decrease in energy consumption," Glück says.

"The usual challenges"

Alexey Kononov, LWC-Kama Project Technical Manager, is impressed that ANDRITZ and Kama are working with common goals and as true partners. "At the beginning, there were the usual small difficulties in communications since not everyone speaks Russian," Kononov says. "But in a short time, communications and cooperation improved and has remained at a high level."

According to Rudolf Hafner, ANDRITZ Site Manager, one of the major challenges was transporting all the equipment to the mill under a very tight schedule. Another challenge was the qualification and selection of local erection suppliers. "This took longer

than we expected," Hafner explains, "but, working together, we are all committed to completing this project on schedule."

Poised to lead

In Russia, the last three to four years have seen a significant rise in interest and investments in the local pulp and paper industry. "We are a growing market with significant amounts of forest raw material," Malkov says.

Leadership is in the fabric of Kama. For the years from 2006 to 2008, the Kama mill was the winner of a Pan-Russian competition for environmental protection in Russia. With the launch of the LWC-Kama project, the company is poised to become a leader in the production of LWC paper in Russia and possibly even compete on the global market.

FIND OUT MORE AT
www.spectrum.andritz.com

◀ Rudolf Hafner, ANDRITZ Site Manager, Vladimir Kudinov, ANDRITZ Sales Manager for Russia, Günther Glück, ANDRITZ Project Manager, Jani Jokela, ANDRITZ Service Engineer, and Alexey Kononov, LWC-Kama Project Technical Manager.

Heart of steel.

The Yankee dryer is considered the heart of a tissue machine. It is also one of the biggest cost factors in terms of manufacturing. Until recently, all Yankee dryers were made of cast iron. By replacing cast iron with steel, ANDRITZ not only found a way to reduce costs, but also to increase operational safety.



“The use of steel overcomes a major safety issue – the potential for an explosion due to a cast failure. The coating we use also reduces maintenance.”

Klaus Gissing, Vice President of the Tissue Machines and Air Systems product groups

The first steps

Before it offered a steel Yankee to the market, ANDRITZ engineers built a test cylinder to demonstrate that the very close tolerances could be maintained and that the performance would be as specified. Potential customers were very interested in the results of the tests.

Then to start, the focus was on producing steel Yankees for narrow tissue machines (i.e. 100”) – a growing segment of the market. The first four orders were received in 2009. A fifth order was for a medium-width machine. Now ANDRITZ is building steel Yankees for large machines (i.e. 200” width and up to 16 ft. diameter for tissue).

High precision in manufacturing

All the production steps – from engineering to packaging for transport – are done within ANDRITZ without any external sub-suppliers. Manufacturing of the PrimeDry

Steel Yankee is shared between workshops in Austria and Hungary. The Hungarian facility specializes in steel fabrication of the shell. The steel plate thickness is up to 80 mm and the plate must be perfectly shaped to form a cylinder. Then, the quality of the weld seam must be perfect.

The Austrian workshop manufactures the hollow shaft and mounts it in the dryer shell. The fully assembled Yankee is heated, coated, polished, tested, and then is packaged for transport.

High performance and energy savings

The performance of a PrimeDry Steel Yankee is better than an equally sized cast iron Yankee. The thermal conductivity of the steel is similar to cast iron, but the wall thickness is thinner due to the high strength of the steel. This reduces the weight of the Yankee and increases the amount of the heat transferred. Steel Yankees have an evaporation rate 15-20% higher than cast iron, which results in 8-10% better machine performance. This enables tissue producers to either increase production for the same energy input, or reduce energy consumption for the same production.

Safety is of top priority

Safety is the top priority in Yankee dryers as there is always the risk of an explosion due to the high pressure and high temperatures inside the dryer. As a result, the Yankee must meet very stringent testing requirements. Each Yankee undergoes a pressure test conducted by a third-party technical inspection authority before being shipped. The PrimeDry Steel Yankee has an advantage over cast iron models, because of the higher elasticity of steel, which reduces the risk of explosion.

Covering the complete range

ANDRITZ offers three standard diameters of the PrimeDry Steel Yankee for tissue production: 12 ft. (3,658 mm), 15 ft. (4,572 mm) and 16 ft. (4,877 mm). Paper width on the Yankee can be up to 5,600 mm. ANDRITZ also offers steel Yankees for paper and board, MG, and tobacco machines. Cast iron Yankees, manufactured in Germany, are still part of the ANDRITZ portfolio. This enables the company to provide individual solutions for each and every application.

Cost-efficient head insulation

Rising energy costs and the desire to reduce CO₂ emissions are the drivers for new technical solutions. Conventional Yankee cylinders exhibit significant heat loss at the head. In response, ANDRITZ developed head insulation for Yankee cylinders – cast iron or steel. This insulation is effective for any Yankee installation, not just tissue.

Assembly in the ANDRITZ workshop in Graz: lifting the hollow shaft into the dryer shell. ▼



Savings, expressed as a reduction in steam consumption, is in the range of 2-5%. For tissue producers, a major advantage is that the insulation covers the head screws – eliminating disturbing airflows and enabling a better sheet run. PrimeDry Yankee head insulation can be easily retrofitted to existing Yankee cylinders from any OEM.

Record breaking orders

Since 2009, ANDRITZ has received 10 orders for PrimeDry Steel Yankees from China, Germany, Indonesia, Russia, and Vietnam. The largest in terms of face length – 7.4 m with a 15 ft diameter – is a world record. It is being delivered to a large P&P producer in Indonesia for MG. Another world record was broken by the world's first 18 ft diameter PrimeDry Steel Yankee ordered by a Chinese manufacturer.



▲ New PrimeDry Steel Yankees packaged and ready for transport.

YANKEE CYLINDERS STEEL VS. CAST

The high-strength properties of steel enable a PrimeDry Steel Yankee to deliver higher performance than a cast iron model:

- The wall thickness of steel is less, permitting a more efficient heat transfer (evaporation rate).
- The elasticity of steel is higher, allowing for higher pressures and giving a margin of safety against thermal shocks, mechanical mistreatment (accidents), or potential explosions.
- Steel Yankees perform from day one. There is no run-in period required and no degrading of performance over time.
- Steel requires less grinding and polishing during shutdowns.
- The steel Yankee is not subject to de-rating due to thinning of the wall thickness or loss of metallic coating over its lifespan.
- The metallic coating of the steel enhances chemical coating and creping processes.
- Sheet stability is improved in the steel Yankee since there are no head bolt disturbances.



FIND OUT MORE AT
www.spectrum.andritz.com

Getting closer to optimum.

To produce the best quality paper from recycled fiber furnish is the target of Lenzing Papier. Lenzing Papier is getting much closer to optimum, thanks to a simple automation tool that analyzes dirt count online. This gives the craftsmen in the DIP plant the real-time information they need to blend a better pulp.

The anticipation was overwhelming – then the results came so quickly.

First, there were the two weeks for installing, programming, and testing the new system. Then, within eight hours after the unit was installed, a quantum leap in DIP pulp quality was made at Lenzing Papier in Austria.

“Previously we had to make handsheets in the lab to check DIP pulp quality. Between the lab checks, our operators were flying blind.”

Franz Gstettenhofer, Lenzing Papier Technical Director

Franz Gstettenhofer (left), with Siegfried Troppan, Sales Director for Europe of ANDRITZ Automation Solutions (middle), and Markus Bammer, Manager Deinking Line.

The leap is the result of PulpVision®, an online measurement tool. Instead of relying on handsheets and lab tests for the latest dirt count, Lenzing Papier's DIP plant operators are now getting this vital information in virtually real-time. Armed with this information, operators can quickly adjust the mix of recycled fiber furnish to the mill's 4.84 m trim paper machine to keep paper products within spec.

Lenzing Papier is one of the leading manufacturers of poster, offset, and copy papers made from recycled fiber. While some products have up to 50% virgin fiber, the specialty of the company is paper made from 100% recycle. For recycled fiber processors like

Lenzing Papier, where deinked pulp cleanliness is critical, PulpVision® has become the DIP plant operators' best friend.

An online “movie”

The PulpVision® system is simple and functional. A small flow of deinked pulp after the disperger and before the paper machine stock chest is diverted to a small pipeline where the unit is installed. The 5% consistency stock passes by a 10x10 cm measurement window in the unit. Much like a movie camera, the camera inside PulpVision® takes 24 pictures a second with a resolution from 7 to 100 microns. Dirt particles are counted and computer-analyzed for size and size distribution. The results are displayed on the operator's screen. Average results are updated every 10 seconds.



▲ Like a movie camera, the camera inside PulpVision® takes 24 pictures a second with a resolution from 7 to 100 microns. Dirt particles in the pulp are counted and computer-analyzed for size and size distribution.

No more waiting

In the control room at the mill, the dirt count values are displayed as simple graphics and bars. The information allows operators to create the most cost-effective mixture of different wastepaper qualities and to avoid unexpected dirt contamination.

If the dirt count exceeds a limit set for the grade of paper being produced, the system gives an alarm. A dirt count exceeding limits can cause downgrades or even disqualification with respect to grade-dependent quality specifications at the paper machine – unless the operator reacts quickly. Typically, this means adding a higher grade wastepaper into the mix to raise the cleanliness.

“Our paper is produced to tight specifications,” says Technical Director Franz Gstettenhofer. “If the dirt count is too low, this means we are using more expensive raw materials and lowering our margin. If the count is too high, we have to downgrade the

paper, selling it at a lower price, or repulp it. It is like walking a tightrope.”

The key to this balancing act, according to Gstettenhofer, is for operators to have accurate information quickly. “Previously we did the dirt count analysis in our lab by making handsheets. This process took time. In between lab tests, our operators were flying blind and could not quickly avoid critical and loss-generating situations.”

“We have to cook our soup fresh every day,” smiles Markus Bammer, Manager of the Deinking Plant, as he refers to the stock preparation task. “Now we can dose the ingredients much more exactly and we don't need to hope that the soup will be to our liking.”

The main ingredients in Lenzing Papier's “soup” are various standards of sorted office papers (colored and white), colored woodfree magazines, white business forms,



“We have to cook our soup fresh every day. Now we can dose the ingredients much more exactly and do not need to hope that the soup will be to our liking.”
Markus Bammer, Manager Deinking Plant

PULP VISION® ONLINE DIRT MEASUREMENT

- Real-time in-line sensor
- Detection and classification of dirt and ink particles
- Camera-based measurement: 6-24 frames per second
- Resolution: 7 to 100 microns
- Consistency range – 0.5-5%

Results

Savings based on cost-oriented selection of wastepaper qualities. The DIP process can be operated as close as possible to the quality limits with respect to dirt levels. Online measurement information from PulpVision® allows operators to react immediately to prevent off-spec paper production.





▲ The main ingredients in Lenzing Papier's paper from recycled furnish are various standards of sorted office papers (colored and white), colored woodfree magazines, white business forms, printed bleached sulphate board, and other wastepapers.

printed bleached sulphate board, and other wastepapers.

Excellent payback, easier production

Gstettenhofer is expecting a fast payback on Lenzing Papier's investment in PulpVision®. The savings come primarily from two areas: eliminating off-spec paper which must be repulped, and avoiding downgraded paper production due to high dirt penetration. He estimates annual savings of about EUR 100,000 in off-spec alone.

"We have not produced off-spec waste or downgraded any paper since PulpVision® was installed," says Gstettenhofer.

Upgrade planned

Gstettenhofer and Bammer are very satisfied with PulpVision®, and already have the first upgrade in sight. At the moment, Lenzing Papier's system only measures the

number and size of the dirt particles. Soon it will be upgraded to detect and quantify the problematic stickies remaining after the recycled fiber processing. "This will be another big step for us to improve our process stability and product quality," says Bammer, who is looking forward to this upgrade.

"We assume that we will be able to implement this update as easily as the first release of PulpVision®," says Siegfried Troppan, Sales Director for Europe of ANDRITZ Automation Solutions. "To bring PulpVision® to run clearly took us only some hours, because the project was prepared perfectly."

FIND OUT MORE AT
www.spectrum.andritz.com

REPLACEMENT BASKETS FOR THUNE PRESS

Most Thune screw presses have tailor-made baskets that can be very costly. There is a need for high quality, lower cost replacement baskets that can be delivered quickly. ANDRITZ saw this need and developed a solution. We analyzed the Thune baskets and standardized an improved design: a split-design that can be easily removed for maintenance, and the ability to replace only the screen plates instead of the entire basket. It is estimated that these two design features alone result in 70% savings in maintenance costs.

The replacement baskets required no modifications to the press itself.

Next, we created a streamlined manufacturing method to lower the cost of producing these baskets. The result? Direct replacements for baskets in all zones for Thune SP45, SP70, SP100, and SP150 presses. Over 25 replacement baskets were sold in the first year and have justified our customers' decision. The next step is to apply this state-of-the-art approach to screw presses from other manufacturers.

Work has already begun on applying the same approach to screw presses from other manufacturers. For more information, please contact your local ANDRITZ service representative, or email paper.service@andritz.com for a brochure.



TWIN WAVE DISC FILTER SECTORS

Here's a smart way to increase the capacity of a disc filter (no matter who the original manufacturer is) without influencing the vacuum or increasing energy consumption. It's called the Twin Wave Sector and it is a low-volume disc filter sector.

The Twin Wave gets its name from its special design that provides a much larger filtration area, enhances the discharge of fiber cake, and reinforces the sector frame. A capacity increase up to 20% is typical. No filter bags are required, so the disc filter sectors are maintenance-free. To date, over 500 sectors with this smart design have been sold to mills in Europe in the first year. The Twin Wave shows great promise for mills around the world.

Contact us for more information about replacement Twin Wave disc filter sectors: paper.service@andritz.com



EIGHT MORE FOR CHINA: PRIMELINE STRENGTHENS ITS POSITION

ANDRITZ PULP & PAPER launched new energy-saving features and capabilities for its line of CrescentFormer tissue machines and components. Type M machines (widths from 3.4-3.65 m) and Type W machines (widths from 5.4-5.6 m) can now be equipped with a PrimeDry Steel Yankee (see article on page 32), a PrimePress XT shoe press, and a PrimeDry HeatRecovery ReEvaporation system which all help to achieve remarkable savings.

These new features and capabilities have gained wide attention. Within the

last several months ANDRITZ received orders for eight tissue machines from Chinese customers. One machine is a Type M (PrimeLine™ M6); the remaining are Type W (four PrimeLine™ W6 and three PrimeLine™ W8). Three of the new machines will be delivered with steel Yankees and two with shoe presses.

This brings to 18 the number of high-speed tissue machines delivered to China. ANDRITZ PULP & PAPER has established its position as one of the leading suppliers of tissue machines and local services in China.



Highlights of NEW ORDERS

COMPLETE LINES
Domsjö Fabriker Örnsköldsvik, Sweden Complete debarking and chipping line. Includes Waplans drum with water hydrostatic support and horizontally fed HHQ-Chipper™.
CMPC Celulosa Santa Fe Mill, Chile Complete debarking/chipping line and modernization of fiberline, white liquor plant, and pulp drying. Upgrade to recovery boiler and key equipment for biomass handling.
Celulosa Arauco y Constitución Nueva Aldea Mill, Chile Complete RotaBarker™ debarking and chipping line for eucalyptus including an HHQ-Chipper™.
Shouguang Meilun Paper Shouguang City, Shandong, China Complete OCC line for 2,450 t/d production. Largest OCC line in the world.
Ganzhou Hwagain Paper Ganzhou, Jiangxi, China Two PrimeLine™ W6 tissue machines (one with PrimePress XT shoe press), including machine control systems.
Hengan Paper Jinjiang and Chongqing, China Two PrimeLine™ W8 and two PrimeLine™ W6 tissue machines including machine control systems. Both W6 machines are equipped with PrimeDry Steel Yankees – first 200" wide Yankee cylinders sold for high-speed tissue machines.
Tamil Nadu Newsprint & Papers Kagithapuram, Tamil Nadu, India Complete 3-loop deinking line for 300 t/d production. First ANDRITZ 3-loop deinking line in India.

COMPLETE LINES
An Hoa Paper Joint Stock Hanoi, Vietnam Complete calendering line: PrimeCal Hard and PrimeCal Soft calenders, PrimeCoat Film press, and PrimeCoat Blade coating heads.
KEY EQUIPMENT, UPGRADES, AND MODERNIZATIONS
Chenzhou Yunong Paper Industries Chenzhou, Hunan, China Wood handling system for APMP mill: HHQ-Chipper™, chip screening system, and two CenterScrew™ reclaimers.
PT-Tanjungenim Lestari Pulp and Paper Musi, Indonesia Upgrades to wood handling and fiberline. RotaBarker™ debarking and HHQ-Chipper™; digester upgrade with DownFlow LoSolids® cooking and upgrade to oxygen delignification system.
Anhui Huatai Forest Pulp & Paper Anqing, Anhui, China Equipment for brownstock washing, screening, and MC equipment for bleaching.
Sun Paper Yanzhou, Shandong, China Biomass handling and boiler feeding.
E.ON Värme Sverige Örebro, Sweden Biomass boiler for one of Sweden's largest biofuel-fired cogeneration plants. Includes biomass handling and boiler feeding equipment.
CMPC Celulosa Laja Mill, Chile Biomass handling: receiving, screening, and storing of biomass for modernization project.

KEY EQUIPMENT, UPGRADES, AND MODERNIZATIONS
Södra Cell Värö, Sweden ANDRITZ wash press (AWP) and screening modernization.
Nanhua Sugar Group Longzhou, Guangxi, China Equipment for brownstock washing, screening, and bleaching for a new bagasse fiberline.
Iggesund Paperboard Iggesund, Sweden High Energy Recovery Boiler (HERB) which will be the most efficient in the world (in terms of power-to-heat ratio). Also new headbox for pulp drying machine.
China Light Industry Nanning Engineering Design Nanning, Guangxi, China Screening for pulp drying line.
Fujian Qingshan Paper Qingshan, Fujian, China High consistency refining line for sack paper.
Estonian Cell Kunda, Estonia Low consistency refining stage to save energy and increase capacity.
Radece Papir Radece, Slovenia Four Papillon refiners CS380.
Zhejiang Xianhe Special Paper Quzhou, Zhejiang, China PrimeCalSoft calender for decor paper.
Shandong Chenming Qihe Paperboard Qihe, Shandong, China PrimePress X shoe press.

PANELBOARD
Vitebskdrev Vitebsk, Belarus 360 t/d pressurized refining system for MDF. Includes RotaBarker™ debarking. Order received via IMAL, Italy. First ANDRITZ MDF system in Belarus.
Hebei Kaiyue Wen An County Tianhua Density Board Langfang, Hebei, China 432 t/d pressurized refining system for MDF.
Yichang Jintaiyuan Wood Industry Yichang, Hubei, China 528 t/d pressurized refining system for MDF.
Hebei Shenzhou Changcheng Wood Industry Development Shenzhou, Hebei, China 348 t/d pressurized refining system for MDF.

WEB FOCUS ON RENEWABLE ENERGY

www.andritz.com/renewableenergy

ANDRITZ continues to develop technologies and processes for the generation of energy from renewable natural resources and from waste by-products. Our focus is in five major areas: Hydro Power, Biomass Power Generation, Liquid Biofuels, Solid Biofuels, and Waste-to-Power.

We now have a website to give an overview of our technologies and capabilities: www.andritz.com/renewableenergy

This is a work-in-progress, so please check back often for updates and enhancements.

The technologies combine the strengths of the different business areas within the ANDRITZ GROUP into complete plant solutions.



Highlights of NEW START-UPS

COMPLETE LINES
Mondi Syktyvkar Pulp and Paper Komi, Russia Complete high capacity debarking and chipping plant with two lines. Upgrade of softwood and hardwood fiberlines. Recovery boiler equipped with odorous gas incineration systems. Evaporation plant and condensate stripping plant.
Asia Pacific SSYMB (Shandong) Pulp and Paper Rizhao, Shandong, China Highest capacity white liquor plant in the world (18,000 m³/d).
Zhejiang Jingxing Paper Pinghu, Zhejiang, China Complete deinking line, stock preparation system, and paper machine approach system.

KEY EQUIPMENT, UPGRADES, AND MODERNIZATIONS
UPM Fray Bentos, Uruguay MC equipment and screening upgrade for fiberline. First new large ANDRITZ MC pump.
Domtar Kamloops, British Columbia, Canada Recovery boiler rebuild.
Altopro de CV Iztapalapa, Mexico Completion of pulp drying line.
Leipa – Georg Leinfelder Schwedt, Germany PrimeCal Soft calendering system. Start-up within 3 days of shutdown.
Reno de Medici Villa Santa Lucia, Italy Newly developed PrimeFlow SW headbox.

PANELBOARD
Yingang (Chengde) Wood Based Panel Chengde, Hebei, China 864 t/d pressurized refining system for MDF. Third ANDRITZ system for Yingang Group.
Baoshan Corporation (Group) Pengzhou, Sichuan, China 600 t/d pressurized refining system for MDF.
Plantation Timber Products (Leshan) Leshan, Sichuan, China 600 t/d pressurized refining system for MDF.
Fujian Yongan Forestry (Group) Yong'an, Fujian, China 720 t/d pressurized refining system for MDF. Third ANDRITZ system for Yongan Group.
Florapac MDF Pará, Brazil 384 t/d pressurized refining system for MDF.

PUTTING THE RITZ IN ANDRITZ Expanded pump portfolio for P&P



ANDRITZ is acquiring the German pump manufacturer RITZ to strengthen its pump portfolio. The transaction is expected to be completed this year.

The RITZ products applicable to Pulp & Paper are wastewater pumps (e.g. submersibles) and multi-stage pumps (e.g. shower water pumps). RITZ pumps are also used in water supply systems, in mining, and in offshore or subsea applications. For these applications, RITZ also manufactures the special motors that are required for underwater pumps.

With this addition, ANDRITZ now offers all the centrifugal pumps used in a pulp or paper mill, including single-stage centrifugal pumps, fan pumps, and MC pumps. The hallmarks of the pump line are low maintenance and very high efficiencies. For example, the ultra-low pulsation fan

◀ Single-stage centrifugal process pumps (installed on PM1 at Myllykoski Continental GmbH in Plattling, Germany).

pumps (for headbox and dilution water applications) achieve efficiencies above 90%. The new line of MC pumps are 70%+ efficient and can handle stock suspensions up to 16% consistency.

Information about the complete ANDRITZ and RITZ pump range is available at:

www.andritz.com/pumps and www.ritz-pumpen.de



▲ Headbox pump with efficiency of 91% and very low pulsation (installed on PM1 at Myllykoski Continental GmbH in Plattling, Germany).

This marks the second year for the PPI Awards program, which honors leadership, vision, innovation, and strategic accomplishments within the Pulp & Paper industry. Judging is done by a panel of experts from the industry who independently rank the entries against the award criteria set out in each category.

ANDRITZ sponsored the award for the **Green Energy & Biofuels** category. There were five finalists:

- In the space of 10 years, Chilean company **Arauco** launched five major energy independence initiatives, including a biomass-fueled cogeneration facility. These projects enabled Arauco to establish energy independence, reduce costs, and contribute its surplus to the national energy needs of Chile.

- **Portucel Soporcel** is close to finalizing two important biomass projects that will account for some 5% of the total renewable energy output of Portugal. New biomass power plants at its Cacia and Setúbal sites started to feed power into the national grid. The company is also implementing a new steam turbine for a biomass cogeneration plant at Figueira da Foz.

- Together with its partner Prokon Nord, German producer **Klingele Papierwerke** built a Waste-to-Energy plant that supplies its mill with steam and electricity. The plant burns in excess of 160,000 t/a of waste.

- **Kruger Products**, one of Canada's leading tissue producers, established Kruger Energy (KE) to develop renewable energy power plants as part of its



ANDRITZ CONGRATULATES WINNERS OF PPI AWARDS

commitment to sustainability. Together with KE, Kruger operates 34 green energy sites: hydroelectric, wind, biomass, and biogas.

- **Pratt Industries** completed a Waste-to-Energy plant at its Conyers, GA facility in the USA. The BFB Gasifier burns a large mix of solid biofuels and biomass. The fuels currently being used are residues from the paper mill (30%) and construction and green wood waste (70%). Since the installation of the plant,

greenhouse gas emissions have been cut by 27%.

And, the winner is **Portucel Soporcel Group**. Accepting the award was **Manuel Gil Mata**, member of the Board of Directors. Congratulations to Portucel Soporcel and all the companies who were selected as finalists!

PULP & PAPER PPI
INTERNATIONAL
AWARDS 2010