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Forward

VALMET'S CUSTOMER MAGAZINE | 3/2018



Joining
forces
for innovation

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Editorial

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Valmet Customer Days 2018 was a great success

In early October, Valmet Customer Days gathered together 216 customers from over 40 countries in Vienna, Austria. The theme was sustainable innovations. Our guests got to know our latest innovations and Industrial Internet solutions, as well as our well-received Performance Centers, providing remote services globally. Furthermore, the participants visited our selected customer reference sites virtually for the first time, and the experience was inspiring.

Customer Days is an event where we give our customers an opportunity to find out about the latest developments in process technologies, services, and automation solutions. It also gives you an excellent opportunity to meet your colleagues and to share best practices.

We are happy that so many of you took part in this great event. We are also grateful for all the positive feedback:

96 percent of people who gave us feedback would absolutely participate again, and 93 percent would highly recommend the event to their colleagues. That is a great result, and one that we are proud of!

This magazine shows the highlights of the event and discusses further the theme of sustainable innovations. I want to thank all of you who made this year's Customer Days a huge success – you our dear customers, the 23 customer speakers who devoted time and effort to delivering excellent presentations at the event, and the committed Valmet organizing team, who expended every ounce of effort in ensuring that everything went smoothly to the finest detail.

I hope to see as many of you as possible at the next Valmet Customer Days in 2020!



ANU SALONSAARI-POSTI
SENIOR VICE PRESIDENT
MARKETING AND COMMUNICATIONS

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World's largest production line for bleached softwood pulp started up

The expanded SCA Östrand pulp mill in Timrå, Sweden started up at the end of June 2018. Valmet's delivery to the project included new cooking plant, fiber line and evaporation plant. Very soon after the start-up, the plant was producing pulp with high strength, purity and brightness.

This project has doubled SCA Östrand's production capacity from 430,000 tonnes a year to 900,000 and has made it the largest

production line for bleached softwood kraft pulp in the world.

"The rebuild and expansion of the Östrand pulp mill is one of the largest ever industrial investments in northern Sweden. In spite of complexities such as doubling the size of the pulp mill in a running mill, we started up the new plant on schedule and within budget," says **Ingela Ekebro**, Project Director from SCA.

New spreader roll service workshops in North and South America

Valmet has expanded the operations of its service center in Neenah, Wisconsin, USA, and in Sorocaba, Brazil, to include comprehensive spreader roll services. The new workshops serve customers in the pulp, paper, board and tissue industries.

"Our state-of-the-art spreader roll service workshops provide fast,

high-quality services to our customers. We have invested in separate, dust-free clean rooms for handling and installing bearings, which ensures high quality and contributes to longer roll running times," says **Jukka K. Toikkanen**, Global Technology Manager for Roll Maintenance at Valmet.

In addition to keeping spreader rolls in excellent condition, spreader roll services ensure optimized roll performance, improved end-product quality and reliable, wrinkle-free runs.

First Valmet BioTrac™ Steam Explosion System to be installed in France

Valmet has agreed with FICAP on the delivery of the world's first continuous steam explosion system – BioTrac – for producing black pellets. The pellet plant will produce both white and black pellets and will have an annual capacity of 120,000 tonnes of pellets a year.

"Since 2013, Valmet has focused on commercializing the BioTrac process, and we are very happy to finally see the first project being realized. This is the first use of a continuous steam explosion system for this application," says **Mattias Erixon**, Manager Sales, Biomass Conversion at Valmet.

The start-up of the black pellet production plant is planned for 2020.



5th

Valmet has been included in the **Dow Jones Sustainability Index (DJSI)** for the fifth consecutive year, maintaining its position among the world's sustainability leaders.

MEMBER OF
Dow Jones Sustainability Indices
In Collaboration with RobecoSAM



Automation business strengthened with US-based Enertechnix

Valmet has acquired Enertechnix, a high-tech combustion diagnostics and monitoring technology company based in Washington state in the USA. The company develops innovative technologies for boiler imaging and temperature measuring, and holds a leading position in the US market.

"Enertechnix's combustion diagnostics and monitoring systems meet the needs of today's recovery and power boiler operators well. We are especially excited about their comprehensive imaging and high-temperature measurement solutions as well as the many opportunities they provide in opening a whole new window into the boiler process," says **Sami Riekkola**, President of the Automation business line at Valmet.



Valmet to supply key pulp mill technology for ARAUCO pulp mill project in Chile

Valmet has signed a letter of award with ARAUCO to supply key pulp mill technology including pulp drying and baling, a recovery boiler, and a biomass boiler. The delivery of the pulp drying and boilers will be on an EPS basis, including plant engineering, procurement and supervision.

This letter of award is part of ARAUCO's MAPA project, a major investment to expand its current production capacity and build a new pulp production line at the Arauco Mill, located in the Biobío region in Chile. The new line is expected to start operating in 2021.

Rectification to the In brief highlight about Berneck in Forward 2/2018

The debarking drum mentioned in the text was acquired by Berneck for the Curitibanos' mill which was started up in 2012. This second acquisition highlights the continued partnership between the companies.

Valmet's tenth OptiConcept M paper machine runs smoothly at Lee & Man Paper

PM 21 in Lee & Man Paper's Jiangxi mill is the tenth OptiConcept M machine in the world since Valmet launched the concept in 2011. The paper machine has been running smoothly since its installation at the end of 2017, and it produces high-quality containerboard grades from 100-percent recycled raw materials.

"PM 21 is our second OptiConcept M machine, and it has again proved to be the industry standard with its state-of-the-art technology and excellent product quality. It has a compact and efficient design, it enables us to reduce energy and fiber consumption, and it is safe and easy to operate," says **Tao Xiangcun**, Senior Production Manager at Lee & Man Paper.

"PM 21 was an exceptionally quick project. It took only 14 months from the day the contract was signed to the start-up, and sellable paper was produced right after start-up," adds **Leo Lin**, Project Manager at Valmet.



Leo Lin, Valmet's Project Manager, and Tao Xiangcun, Senior Production Manager at Lee & Man Paper.

Valmet Customer Days 2018



Focus on sustainable innovations

Valmet Customer Days attracted 216 customers from 41 countries. Sustainable innovations and customer results were on focus at the event, which took place in Vienna, Austria in October 2018.

← Valmet's President and CEO Pasi Laine opened the event and welcomed the customers with his "Towards a Sustainable Future" presentation.

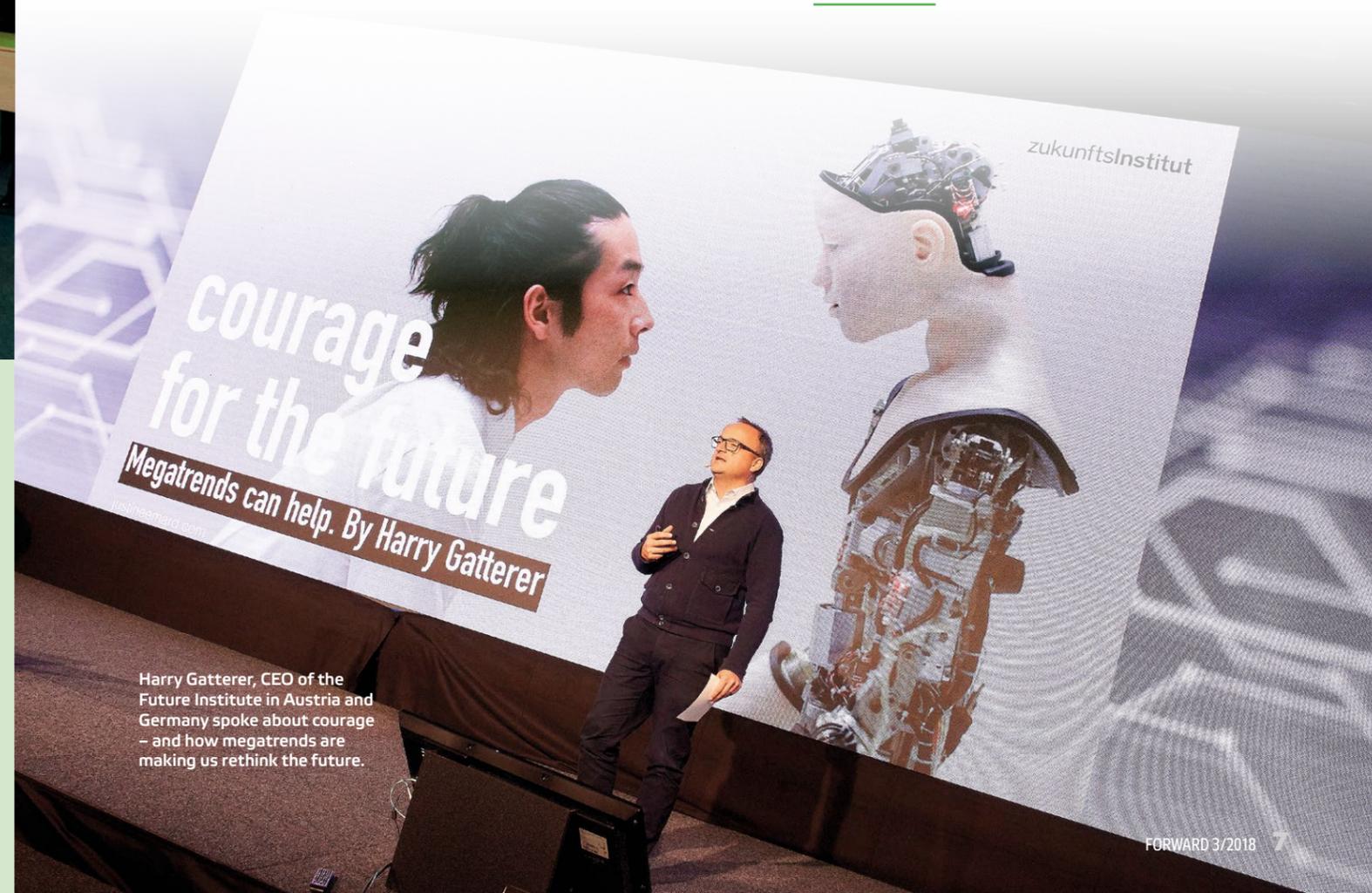
The event started with a get-together in the evening of October 3. The next day, there was an opening session for all participants, after which the program split into industry-specific tracks for pulp, paper and board, tissue, and energy. These programs included new interactive elements: virtual reference visits and the "Future Interactive" program.

Customer speakers on stage

As at previous Valmet Customer Days, the event focused on customers: 23 customer speakers were on stage presenting results and sharing experiences from their mills

and plants. Several keynote speakers brought inspiration and shared their views on how megatrends affect us all, how we need to rethink the way we manage innovation, or how we can use more sustainable packaging. There were also many Valmet experts on stage talking about the latest sustainable ideas to move customers' performance forward.

Read more about the thoughts of one of Valmet Customer Days' keynote speakers. **Fredrick Hacklin**, Professor of Entrepreneurship at Vlerick Business School, and Managing Director of Corporate Innovation Lab, shares his views on managing innovation in the 'Expert's voice' article on page 70.



Harry Gatterer, CEO of the Future Institute in Austria and Germany spoke about courage – and how megatrends are making us rethink the future.

Valmet Customer Days 2018



↑ Jukka Moiso, CEO of Huhtamäki, brought the audience a food packaging converter's view of materials: He discussed fibers and plastics as packaging materials, and how waste collection and recycling play an important role in the work towards a more sustainable world.



↑ A Shared Journey Forward: Shu Junming, General Manager of Zhejiang Shanying Paper, told the Paper & Board session audience how Shanying and Valmet are cooperating more closely to move Shanying's performance and process reliability forward. The practical implementation involves a shared roadmap with concrete action points.



↑ Jean Yves Nouaze, Executive General Manager of Visy Pulp & Paper, described how optimization solutions and services in the pulping process have brought concrete results like quality improvements and cost optimization, and enabled the production of new grades.



↑ Jari Almi, Head of Valmet Industrial Internet focused on how to reach peak performance with Industrial Internet solutions.



↑ The discussion was active in the Energy session.

Virtual reference visits

The virtual reference visits gave the participants an easy and inspiring way to visit a reference mill or plant. There was a specially set up virtual reference room at the event venue, where customer hosts took the participants through mill visits with the help of videos, animations, and more. There were virtual visits to the Turun Seudun Energiantuotanto Naantali power plant and Metsä Group's Äänekoski bioproduct mill in Finland, a Pratt Industries board-making line in the USA, and the Lila Kagit tissue mill in Turkey.



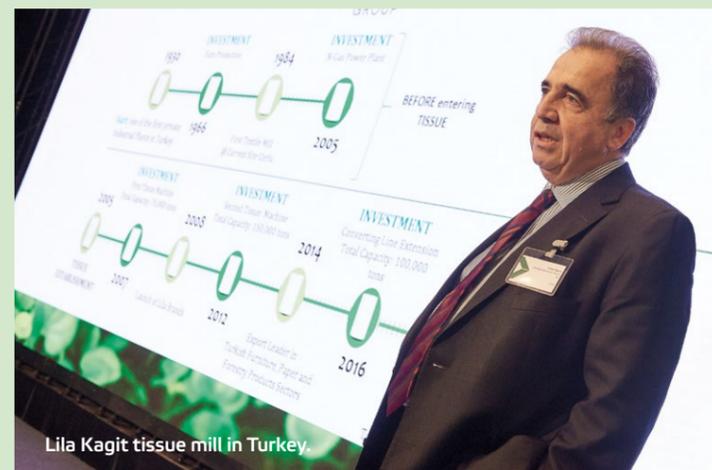
Turun Seudun Energiantuotanto, Naantali power plant.



Pratt Industries board-making line in the USA.



Metsä Group's Äänekoski bioproduct mill in Finland.



Lila Kagit tissue mill in Turkey.

Future Interactive program

In the Future Interactive program, the participants experienced how new innovations, digitalization and technologies like virtual, augmented and mixed reality (VR, AR, MR) can move their performance forward. They were introduced to Valmet's vision of a future control room and discovered how Valmet serves its customers on-site and remotely. The customers were also able to try for themselves how Valmet's virtual, augmented and mixed reality applications can be utilized to facilitate maintenance and other operations at power plants and at pulp, paper, board and tissue mills.



↑ The Valmet Industrial Internet presentation ended with a demonstration of how Valmet serves its customers through Valmet Performance Centers, Customer Portal and Field Services. The demonstration was based on a real-life customer case. From left in the photo: Valmet Performance Center expert Toni Mäcklin, field service expert Marko Heino (pictured on the screen) and Jari Almi, Head of Valmet Industrial Internet.



Valmet's Petri Tiihonen, Product Manager, Strategic Programs, Automation, presenting the vision of a future control room.



The participants tried out Valmet's virtual, augmented and mixed reality applications.

INNOVATIONS BUILT ON 220 YEARS OF INDUSTRIAL HISTORY

Leading the way in sustainability

Sustainability work at Valmet has become systematic and an integral part of day-to-day operations. The company has earned recognition for being one of the most sustainable companies in the world, and nowadays is driving change throughout its entire supply chain with its sustainability initiatives.

TEXT Helena Raunio PHOTOS Tomi Aho, Tomi Parkkonen and Valmet

Historically, companies' responsibility for their employees and society began with improvements in safety at work and social conditions. Valmet started to pay special attention to these aspects in the twentieth century, particularly during the Second World War and its aftermath. Extensive residential areas were built for employees around the Rautpohja factory in Jyväskylä. An outpatient care unit laid the foundation for occupational

health care. The first pension fund was established, and the company invested in employees' well-being through sports, recreational and club activities.

In the 1980s and 1990s, companies started improving the energy efficiency of processes and developing technologies that reduced the consumption of raw materials. At Valmet, this was reflected in product development, where solutions were sought in response to customers' needs and changes in the market through economies of scale and later also by means of resource efficiency.

Responsibility for surrounding societies

The role of large companies in their surrounding societies was not discussed more extensively until the 1970s. "The role of companies with international operations has increased significantly over the past few decades, as such companies have suppliers and production in multiple countries. In other words, their impact on the surrounding environment and society has increased, which is why their responsibility has also increased accordingly," says **Laura Puustjärvi**, Head of Sustainability at Valmet.

For this reason, international organizations, such as the OECD, International Labor Organization (ILO) and EU, have begun to develop more extensive regulation of sustainability principles for multinational companies.



“Over the past few years, Valmet has created a systematic approach to manage sustainability in its supply chain.”

Valmet promotes these principles and also is a member of the UN Global Compact initiative. The globally approved ten principles of the initiative are related to human rights, labor rights, environmental protection and anti-corruption activities.

Sustainability as a competitive factor

At present, major megatrends that also affect Valmet’s operations include a clean, resource-efficient world; digitalization and new technologies; the increasingly urbanized, responsible consumer; and transparency. The impact of these trends extends from the company’s customer interface all the way to consumer brands and buying behavior.

“Today, the most innovative companies, including Valmet, have realized that sustainability must be developed throughout the value chain. This supports sustainable growth, brings cost savings and enables companies to manage their business risks more extensively,” says Puustjärvi.

Sustainability work also has a significant effect on customer relationships: a responsible company is an attractive supplier. “A customer may use Valmet’s technologies for 10–100 years, which can correspond to 95% of the environmental impact of the entire value chain of the solution.

For this reason, it’s important to reduce the impact of the technologies on the environmental footprint as early as the planning phase,” says Puustjärvi.

“In other words, our choices are extremely important in terms of raw materials, emissions, energy and water consumption, chemicals and waste.”

Recognition for sustainability work

Sustainability work at Valmet is systematic and an integral part of day-to-day operations. Adopted in 2014, the company’s Sustainability360° agenda focuses on five aspects: sustainable supply chain; health, safety and the environment; people and performance; responsible solutions; and corporate citizenship.

The implementation of the program is monitored regularly. As a result of this work, Valmet was included in the Dow Jones Sustainability Index (DJSI) for the fifth consecutive year in 2018. The DJSI monitors companies in terms of continuous development, among other aspects.

“I’m proud of our organization. We have succeeded in further developing our work and integrating sustainability deeper and deeper into our key processes, from strategy to HR operations, product development and procurement,” says Puustjärvi.

Valmet has in place a systematic approach to manage sustainability in its supply chain. The target is to conduct at least 50 supplier sustainability audits by the end of 2018.



“While we keep implementing our sustainability agenda as a global company, we are also putting key sustainability principles into practice in our supply chain,” says Jukka Koponen, Vice President, Procurement at Valmet.



“Managing sustainability supports sustainable growth, brings cost savings and enables companies to manage their business risks more extensively,” says Laura Puustjärvi, Head of Sustainability at Valmet.

Engaging suppliers

In 2016–2018, the Sustainability360° agenda has especially been focusing on ensuring sustainability across the supply chain, in addition to the continuous improvement of safety culture.

As early as twenty years ago, Valmet began to pay attention to ensuring the recyclability of consumable parts, for example. Today, this aspect is considered at the product development stage. The purchasing and procurement function cooperates with the product development and sales departments. “If product development calls for seeking solutions that increase efficiency or save energy, we must find such solutions. Our job is to ensure that the process phases don’t involve any substances hazardous to health, for example,” says Jukka Koponen, Vice President, Procurement at Valmet.

Valmet has 10,000 suppliers in 50 countries. The impact of sustainability work increases immensely when the entire supply chain is taken into account. Over the past few years, Valmet has created a systematic approach to manage sustainability in its supply chain including a Sustainable Supply Chain Policy, as well as sustainability risk assessments, self-assessments, audits and corrective measures.

“If the operations of a raw material supplier, component manufacturer or subcontractor are not sustainable, they cannot partner with us,” says Koponen.

Leading the way

Practical examples are changing operations gradually.

“While we keep implementing our agenda as a global company, we are also putting key sustainability principles into practice in our supply chain. It has been encouraging for many developing suppliers to join our chain,” Koponen points out. ■



CUSTOMER'S VOICE

Moving forward together

SAICA El Burgo's new off-line coating machine:

Joining forces for innovation

Sergio Alonso and Seppo Salminen exploring the paper quality. "The very first day that we were coating, the appearance of the paper was excellent – much better than white top liners," says Alonso.

SAICA was aiming for improved quality, reduced costs, and responsible fiber use, but it found itself with innovative coated white top liner grades with better properties than they bargained for. This was a result of three partners – SAICA, Valmet and pigment supplier Omya – joining forces.

TEXT Pauliina Purola PHOTOS Joonas Nieminen

"SAICA is a fully integrated containerboard producer. We go from recycling of paper all the way to box production. Among the players in the containerboard market, we consider ourselves as the one with the strongest focus on papermaking innovations," says **Federico Asensio**, Group Director for R&D&i at S.A. Industrias Celulosa Aragonesa (SAICA). "Our idea with the new of-line coating machine was, if we wanted to replace white fibers with something else, it had to be printable with a standard flexo printing technology," Asensio says. Having the full cycle of box production in its own hands, SAICA started its development journey for the new product together with Valmet and the pigment supplier Omya.

"We were about to do something nobody else had done before. We knew that Valmet wanted to make this project fly."

A cycle of trial and improvement

Trust and partnership have been the forces carrying this project forwards. The development partnership between SAICA and Valmet was completed when pigment supplier Omya joined. This group had what it took to make excellent boxes. Asensio describes the three partners: "We worked as a group, as a team. We made the base paper at our industrial units, and we went together to Valmet's pilot facilities to coat it. We took the new paper to our corrugators and converting units to produce the board and run the printing trials. It made us realize the goal was achievable, although there was still room for improvement in several variables." The cycle of development started again – the cycle of trial and improvement. Eventually, SAICA and Valmet shook hands on a complete offline coating machine.

Pilot trials: a key element

Being able to test the final products at each step of the path has been essential. The pilot facilities at Valmet



Together towards innovation



"Pilot trials at Valmet Paper Technology Center were really helpful in this coating machine project. SAICA was aiming for something completely new, and people really want to see the unexpected happen with small-scale pilot machinery. My task has been to help SAICA with the pilot trials and fine-tuning the full-scale machinery at SAICA El Burgo,

Spain," says **Jukka Heimonen**, Paper Technology Manager at Valmet.

"I started to work with the SAICA team well before the start-up. This was their first time doing coated boards, and their personnel needed training. SAICA sent 20 people for training with Valmet's pilot machinery. It was good to get to know them well in the training: how they worked, their goals etc."

"We studied together e.g. coating color preparation, coating basics, taping the rolls, and changing the coating blades. This training opportunity had a great effect on the start-up of the new coating machine. Everything went really well," Jukka concludes.

Paper Technology Center have been key to this. **Alberto Mena**, Head of Pulp and Chemicals for R&D&i projects at SAICA, explains about the pilots: "The final product is much better than we expected. This is due to the pilot trials. The people there were very flexible. We needed to make many modifications to the pilot machine and trial programs. They never expressed any irritation, and they always did their best. The flexibility was impressive – we believe it's the best pilot facility we've ever used." SAICA's Innovation Technology Project Manager for R&D&i **Diego Compaired** was also complimentary: "The pilot trials sped up the coating definition with an opportunity to test different ingredients and different coating amounts."

Now that the coating machine is up and running, the benefits of the pilot trials are clear. **Sergio Alonso**, Production Manager of PM 10 & OMC at SAICA, explains: "Now we are only fine-tuning the machine. The pilot trials ensured the very first rolls were of high quality." The first high-quality rolls were produced by the end of January 2018, with the new coating machine.



Alberto Mena (on the left), Head of Pulp and Chemicals for R&D&i projects, and Diego Compaired, Innovation Technology Project Manager of SAICA.

Clear targets

The main idea at the beginning was to replace the white fibers with something else to save on costs and improve the appearance quality of the final paper. There were also other targets, as Compaired reveals: "One target of this project was to increase our product range, as we had a lack of coated grades. We wanted to offer our customers a wide range of products made from recycled raw material. The process we developed is one of the most innovative in the world in the recent years"

Using only brown fiber requires quite a lot from coating. "We wanted to have a wider range of products, to have more flexibility in the market. The coverage is very good, too. It is the main reason why we are not using a white layer of fibers. The very first day that we were coating, the appearance of the paper was excellent – much better than white top liners," says Alonso about the importance of the even coverage of curtain coating and the good results of the project.

In May 2018, SAICA launched the new Infinite collection of high-quality, 100-percent recycled white papers.

More than bargained for

The results were much better than expected. "After some trials, there was a moment in the research project when we realized that the behavior of the new grade was completely different to the ones we wanted to replace. The paper had better brightness. It was totally even, with none of the impurities that usually result from recycled fibers. There were no minor defects of colored fibers, black spots, or changes in other color variables. But the most important property was the enhanced brightness of the paper, and the lightness and intensity of the printing colors. The colors appeared glossier," Asensio explains more about the development phase.

"With standard white top testliners, you cannot control the three variables of whiteness. With this new way to produce the paper, we could control those with each parent roll. We managed to supply the market with products that add real value. It is a big advantage to have a very good-looking box at a very affordable price compared to the traditional double-coated grades," Asensio continues. SAICA had managed to develop a novel product and with more properties than they bargained for.

Very positive feedback on the new grades

Customers who have experienced the new grades have been very positive towards the products: OMC Superintendent **Javier Garcia Muñoz** from SAICA shares their comments: "We have received very positive feedback from our customers about the quality and the printabil-

ity of our papers." Compaired adds: "Our customers are quite impressed with the performance of our papers. In terms of printability, they perform very well. The behavior in corrugating lines is very good. In fact, compared to the competition, this paper can be glued much more easily on corrugating lines, offering the possibility to reduce glue consumption. It also reduces the washboard effect – it gives a much more uniform surface on which to print."

A beautiful story of partnership

Customers seem to be very satisfied with the new product range. For Asensio, this was also a journey of trust and partnership: "When you are looking at an innovation project, you need to feel comfortable and trust the capabilities of your supplier – your partner. We needed a very strong partner capable of reacting to unknown events – we were about to do something nobody else had done before. We knew that Valmet wanted to make this project fly."

"This is a very beautiful story of partnership. Together, the three of us have succeeded in delivering an innovative grade to the market. Together, we added value to our customers, to brand owners," says Asensio and finishes the story of the new Infinite products. ■

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→ OMC Superintendent Javier Garcia Muñoz from SAICA: "This new coating machine has met the requirements for us in the coating process. The most important pieces are the supply system, the coating head applicators, and the air dryer system. And all of them have been running very well and efficiently. In my opinion, SAICA choose Valmet because of the technology."

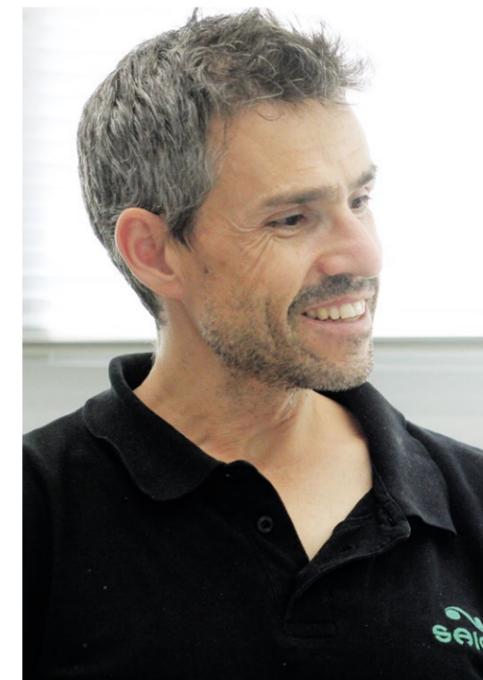
→ → "The paper had better brightness. It was totally even, with none of the impurities that usually result from recycled fibers," Federico Asensio describes.



The new off-line coating machine.

Off-line coating machine delivery with Valmet installation

- 2 × OptiCart Stream parent roll carts
- Transfer rails and rebuild of existing transfer rails
- Unwind station
- Coating station supply systems
- OptiCoat Layer two-layer curtain coating station and OptiCoat Jet blade coating station
- Coating drying section with OptiDry Coat air dryers
- OptiAir Recovery heat recovery system
- OptiCalender Sort soft nip calender
- OptiReel Linear reel
- OptiWin Drum two-drum winder
- Valmet DNA machine controls
- Valmet IQ Quality Management Solution including quality control system, coat weight profilers and process and quality vision
- Valmet PQV web break analysis and web inspection system
- Sectional drive controls
- An extensive machine clothing and blade package for start-up





Next level of performance at Turun Seudun Energiantuotanto

The entire Naantali power plant is running with Valmet DNA and operating from one centralized control room, now that NA 4 has the latest version of the Valmet DNA automation system.

Valmet's automation systems and Industrial Internet solutions enable Turun Seudun Energiantuotanto (TSE) plant to run at a totally new level of efficiency in its performance and operations.

TEXT Lisa Kettman-Kervinen PHOTOS Hannes Frigård

In December 2018, the much-talked-about new NA 4 Naantali power plant of Turun Seudun Energiantuotanto Oy (TSE) will celebrate one year of being online. In just under a year of operations, the plant has shown good operational results and has sparked a lot of public interest.

A breakthrough vision

Valmet has a great reason to celebrate this anniversary too: In large part due to the global scope of Valmet's delivered solutions, this multi-fuel power plant is a showpiece packed with Valmet's innovative concepts, and a real breakthrough for the future. Naantali Blocks NA 1-3 have been running with Valmet DNA solutions for decades, and the newest Block NA 4 is a great continuation of this long-term cooperation.

In addition to the technology Valmet delivered – a circulating fluidized bed boiler, with the flexibility to burn different types of biofuel – the company's automation systems and Industrial Internet solutions enable the plant to run at a totally new level of efficiency in its performance and operations.

Now that NA 4 has the latest version of the Valmet DNA automation system, the entire Naantali power plant is running with Valmet DNA and operating from one centralized control room. From overall process control and district heating management, through monitoring emissions, and all the way to managing biofuels from forest to gate – everything relies on automation and Industrial Internet solutions developed by Valmet. Together, these systems compose one seamlessly functioning entity providing basic control, optimization, and advanced reporting.

From overall process control and district heating management, through monitoring emissions, and all the way to managing biofuels from forest to gate – everything relies on automation and Industrial Internet solutions developed by Valmet.

Optimized energy through Industrial Internet

The Valmet DNA Energy Management solution covers the Naantali power plant, several biofuel-fired district heating boilers, and also heat pump plants and several oil boilers. Based on estimated demand, production optimization calculates hourly, daily and weekly production plans for the production of electricity, district heating, district cooling and process steam.

The solution utilizes several data sources for production planning, such as weather forecasts, electricity and CO₂ price forecasts, as well as fuel contract information. Production optimization enables energy to be produced using the most cost-effective power plant units and fuels.

Fuel chain automation innovation

Within this wide set of automation solutions, the biggest innovation is Valmet DNA Fuel Chain Management,



“Valmet DNA Fuel Chain Management has allowed us to integrate every factor in the production of biopower into a single, controllable unit. We used to order fuel via email, which was daunting. Now, it is effortless,” says Sanna Alitalo, Operations Manager at TSE.

which was developed together with the customer.

The unique advantage of Valmet DNA Fuel Chain Management is that the system enables fuel deliveries to be automatically planned according to the plant's production forecast. DNA Fuel Chain Management is integrated into Valmet's energy production optimization solution, making the plant's daily operations more effective, transparent, and profitable for all parties involved in the supply chain.

The Industrial Internet-based solution makes weekly fuel orders and logistics information available online to the plant personnel, logistics companies and truck drivers. Fuel arriving at the plant is recognized at the gate, and each truckload is recorded. The amount of energy is calculated with the Valmet DNA Fuel Data Manager system, and moisture is measured with online measurements. Contract management is updated according to calculations, and the information is available to the supplier and plant personnel. Transparency is key in collaboration and communication.

After plant operations started, TSE also began ordering fuel from abroad, with loads arriving by ship at the harbor in front of the plant. Adding shiploads to the DNA Fuel Chain Management was easy in the current DNA Fuel Data Manager system. As a result, foreign suppliers can now also utilize the DNA Fuel Chain Management software from their own locations around the world.

“Valmet DNA Fuel Chain Management has allowed us to integrate every factor in the production of biopower into a single, controllable unit. Previously, we had to order fuel via email, which was a daunting challenge. With the new optimization tool, it has been made effortless,” says Sanna Alitalo, Operations Manager at TSE. “Now, I can't manage without it.”

District heating optimized

Among the new capabilities is the optimization of the district heating transmission from Naantali to the district heating network in the Turku region. Valmet DNA District Heating Manager is utilized, for example, to control the temperature and pumping of the heat carrier in the



The Valmet DNA Energy Management solution covers the Naantali power plant, several biofuel-fired district heating boilers, and also heat pump plants and several oil boilers.

15 km pipeline between the Naantali plant and the city of Turku. Proactive control of supply temperatures helps maximize CHP power production and reduce heat losses along the entire line.

“With Valmet DNA District Heating Manager, the heat transfer capacity from the Naantali plant to the city of Turku is continuously adjusted based on consumption demands. As a result, fuel costs are cut considerably, even in fluctuating and demanding temperature conditions. We have achieved significant savings with the optimized control of the 15 km district heating pipeline between Naantali and Turku,” says Tapani Bastman, Managing Director, TSE.

Efficiency throughout

Now that almost a year has passed, the benefits of this automation investment strategy are easy to see.

From input fuel to output heat and electricity, all the stages and processes of TSE's new NA 4 plant are controlled and optimized with ease. And while market volatility demands changes, flexible and futureproof systems allow TSE to look to the future with confidence.

“Our major investment in advanced automation and Industrial Internet-based systems is a smart solution, bringing more benefits to the optimization of the entire energy system of the Turku region. In the future, there will be performance agreement and solution roadmaps in place to further develop Valmet's smart energy solutions in Naantali,” says Bastman. ■

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Smooth start-up with Valmet Training Simulator

When a new white liquor plant was installed at the CMPC Laja mill in Chile, simulator training and testing of the distributed control system (DCS) were essential parts of the project. They were key factors in achieving a fast, smooth start-up. **TEXT AND PHOTOS** Lars Almkvist

Due to environmental restrictions, the CMPC Laja mill needed to improve the environmental performance of its white liquor plant. “We had a deadline of March 29, 2018 to improve the situation. The decision to build a new white liquor plant was taken in 2016, and the investment totaled EUR 120 million,” says **Carlos Figueroa**, Production Manager at the Laja mill.

Rapid, smooth start-up

On February 24, 2018, the new white liquor plant started up. There was a direct switch from the old plant to the new one, without any need for a shutdown.

“The fact that we didn’t need to stop and we instantly reached nominal production is hugely impressive. Thanks to the good co-operation with Valmet and the invaluable training – including the simulator – the start-up was very successful,” says Figueroa.

Classroom training

The technology in the white liquor plant was new to everyone, so there was a focus on training. A total of 18 people – operators, process engineers, shift managers and DCS engineers – took part in the classroom and simulator training, focusing on basic knowledge of the new equipment.

“The trainers were very skilled, and the training was at the right level,” says **Pedro Peralta**, Process Team Leader and the coordinator of the training.

Simulator tests and training – a key to success

A Valmet Training Simulator was included in the project. The simulator was first tested by Valmet and then verified in close collaboration with simulator engineers, DCS programmers and process engineers at the Laja mill. More than 50 issues related to the DCS applications were found during the simulator tests.

“It is a great advantage using the simulator during the DCS tests. The DCS programs and displays are much better tested than in projects without a simulator,” says Peralta.

A train-the-trainer course was held for Pedro Peralta and two others so that they could themselves conduct simulator training on site with all the operators. The simulator training was led by process specialists from Valmet. A simulator specialist participated to support the trainers. A number of pre-defined scenarios and exercises were developed, and all the operators had to run the exercises and related tests to pass the training.



A total of 18 people took part in the classroom and simulator training, focusing on basic knowledge of the new equipment.

Carlos Figueroa, Production Manager and Pedro Peralta, Process Team Leader are pleased with the results. “The simulator training was excellent. The simulation and scenarios were very realistic,” Peralta summarizes.

"The simulator training was excellent. The simulation and scenarios were very realistic," says Peralta.

Mauricio Matamala, Simulator Systems Engineer at the Laja mill, gives his perspective: "There were initial tests of the simulator system early in the project. This was valuable for the rest of the project. The co-operation with the simulator engineers from Valmet was excellent."

"The trainers were very skilled, and the training was at the right level."

In-house simulator training to be continued

"The training has enabled our own trainers to run the simulator, and now they can create customized exercises so that others also can learn. The system administration by mill system engineers works very well," says Matamala.

The simulator will continue to be used for training new staff. At the time of the interview, additional simulator training was being conducted for other mill personnel.

Stable production and high availability

With the new white liquor plant, CMPC has seen many improvements related to better quality, reduced environmental impact and higher availability. The white liquor quality is better, the amount of suspended solids in white liquor has improved, the active alkali is more stable, and the dryness of the lime mud is higher. CMPC were able to discontinue using a polymer that was previously required. The working environment has also improved, and the whole area is much cleaner.

"Thanks to the invaluable training, the white liquor plant today operates at a stable production with high availability," concludes Figueroa. ■

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On February 24, 2018, the new white liquor plant started up. There was a direct switch from the old plant to the new one, without any need for a shutdown.

Alexander Tuvanof, Technical Development Director of Board Production at Arkhangelsk mill (right), is pleased with the open dialogue with Valmet. He is pictured with Alexey Bondarenko, Sales Manager from Valmet.

Aiming higher
 in recycled packaging



Arkhangelsk Pulp and Paper Mill decided to invest in recycled packaging, while seeking a capacity increase of 30 percent. After an extensive rebuild from Valmet, the BM 2 kraftliner production line will start up during the first half of 2019. **TEXT** Marika Mattila

Afifth of the world's forest area – about 810 million hectares – is in Russia. The country has the world's largest forest resources, giving its pulp, paper, and board industries strong investment drivers to develop their production. Virgin fibers dominate on the raw material side: 75 percent of all paper fibers produced in Russia are based on virgin fibers, and only 25 percent on recycled. Arkhangelsk considered this an opportunity

for the company to grow, while utilizing the increasing amount of recycled fibers.

"Our direction for the future is to go forward with lightweight recycled packaging. We invested in Valmet's high technology and know-how to ensure smooth start-up and in order to be able to produce high-quality board right after the start-up. It is better to work with experienced experts with a good reputation and to ensure that you'll get what you are paying for," summarizes **Dr. Heinz**

Zinner, Chairman of the Board of Directors of JSC Arkhangelsk Pulp and Paper Mill.

After the rebuild, BM 2 is able to produce 270,000 tonnes a year of high-quality lightweight kraftliner grades with a wide basis weight range of 80–275 g/m².

Creating the right solution together with Valmet

In Arkhangelsk, finding the right solution for BM 2 was a challenging process. The space in the existing building was a limiting factor, and the requirements were high for the latest technologies to be able to stand out in the market. “We are not building a new plant. We are building at an existing site with a running machine nearby. Valmet’s support and detailed preliminary estimates helped us a lot. The machine – Valmet’s OptiConcept M – has a unique frame structure with a modular design, which decreases construction and installation work costs and time,” says **Alexander Tuvanof**, Technical Development Director of Board Production at the Arkhangelsk mill.

“Without Valmet as a technology and automation supplier, we wouldn’t have any competitive advantages. Now we are able to produce lightweight, high-quality kraftliner, which will help us to improve our position among the competition,” explains **Aleksey Dyachenko**, Sales Director of the Arkhangelsk mill.

A challenging rebuild project of this size also requires smooth communication and trust between the parties. “Valmet’s people listen to us and understand very well what we want and what we need. The communication has been fluent,” says **Pavel Smirnov**, Mill Development Director at the Arkhangelsk mill.

Improved quality and production flexibility

Improved kraftliner quality and production flexibility were two of the project’s targets. “Each part of the machine provides advantages to the properties of the end product, such as surface properties and strength. We will also have a wide basis weight range, from 80 to 275 g/m², and a wide range of end product formats, from 3 m to 50 cm, provided by the latest winder technology and roll handling system,” says Tuvanof, who goes on to explain the cost saving targets: “We definitely expect decreased costs and energy consumption. We expect heat saving of 15–20 percent, as well as savings of about 8 percent in electricity consumption and about a 5 percent reduction in water consumption per tonne of paper produced.”

Valmet’s delivery also included a Valmet DNA automation system for process control. “Valmet DNA is simple and functional, with good visualizations. For us, it is important that the main equipment supplier has everything for the successful realization of the project, including automation solutions. We use Valmet DNA even on the equipment not supplied by Valmet,” says Smirnov.

Towards more sustainable business

“Sustainability is very important to us. The legislation in Russia is very strict about emission levels nowadays, but our customers are also evaluating us based on environmental performance and require confirmation of our sustainable production. We are proud to say that we are fulfilling these requirements extremely carefully. We are one of the first companies in Russia that is working hard to monitor reductions in CO₂ emissions,” says Dr. Zinner.

The new board-making technology will further help

Highlights of Valmet’s delivery scope

OptiFlo Fourdrinier and OptiFormer Multi

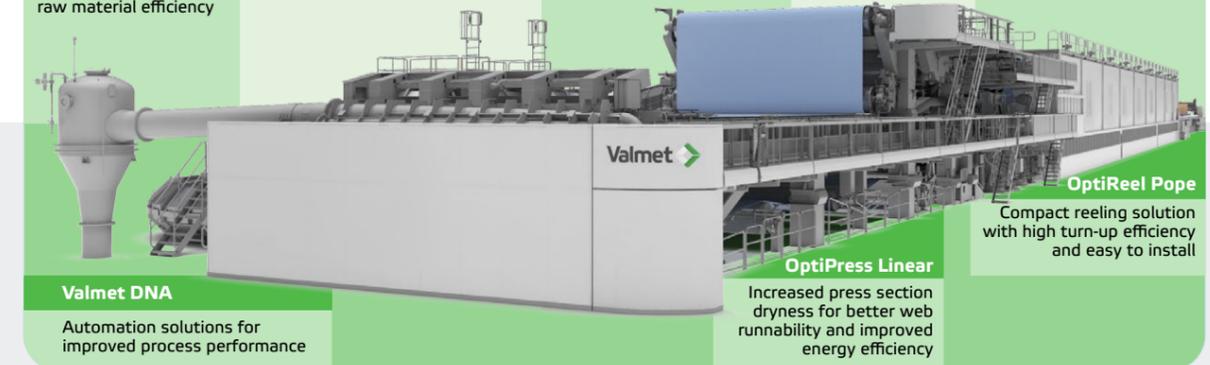
Unique wet end solution for excellent board quality with high raw material efficiency

OptiCalender Compact

Compact calendering for maximum usability with minimum operational costs

OptiWin Drum

High-capacity winding with reliable throughput and wide roll size range.



Valmet DNA

Automation solutions for improved process performance

OptiPress Linear

Increased press section dryness for better web runnability and improved energy efficiency

OptiReel Pope

Compact reeling solution with high turn-up efficiency and easy to install

Grade: fluting and kraftliner | Basis weight range: 80-275 g/m² | Wire width: 7000 mm

Design speed: 1000 m/min | Annual capacity 270 000 tonnes/a

the Arkhangelsk mill to reduce its heat, energy and water consumption, minimize emissions, and shift towards recycled raw materials.

Arkhangelsk Pulp and Paper Mill has received recognition for its systematic sustainability work. According to the Environmental Pulp and Paper Company Index Russia 2017, Arkhangelsk received high scores especially for

environmental management systems, the environmental footprint of the production processes, and the transparency of information on the environmental qualities of its products. ■

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“We are expecting three capabilities from our suppliers and partners: the reliability to give us what we have agreed, the ability to solve problems, and quick response times,” says Dr. Heinz Zinner, Chairman of the Board of Directors of JSC Arkhangelsk Pulp and Paper Mill.



“Without Valmet as a technology supplier, we wouldn’t have competitive advantages. The product quality improvements will help us to improve our position in the market,” says Aleksey Dyachenko, Sales Director of Arkhangelsk Pulp and Paper Mill.

It’s all about mutual trust

Pekka Turtinen, Senior Sales Manager, was the main contact for Arkhangelsk during the sales phase of the project.

“My task was to collect all necessary expertise, data and solutions, and to put them within the customer’s reach from the beginning. It is very important in these kinds of large investment projects that there is mutual trust. Cultural differences and language barriers need to be overcome, and that certainly happened in this project,” explains Turtinen.

He continues: “I enjoyed our discussions with the Arkhangelsk team. They certainly challenged us, but at the same, they listened to our proposals and suggestions. Even with difficult topics concerning automation, contracts and delivery limits, both parties were looking for solutions that would suit both of us. The customer understood our need to understand the basics of their targets: They gave us samples of furnish and board early on, and Valmet was able to do extensive studies to give us realistic promises of quality, which are fulfilling market needs for end products.”

“One important thing for us is that the process technology supplier can provide us the full scope for a successful project realization, like automation systems,” says Pavel Smirnov, Mill Development Director of Arkhangelsk Pulp and Paper Mill.



Be different, be successful

"Valmet tissue machines are well adapted to support our production targets with bamboo fiber. That is unique," says Wei Chong, the leader of the project at Lee & Man's Chongqing mill. Ji Yongwei, Valmet's Project Manager on the left.



When the goal was set in 2013 it looked almost impossible to reach. But less than five years later, Lee & Man Paper had made it: with the help of Valmet, they made it to the top three in the Chinese tissue market. **TEXT** Sara Li

On June 9, 2018, TM 17 tissue machine started up successfully at Lee & Man's Chongqing mill. It was the last of nine tissue machines supplied by Valmet to the same mill. The first started up in 2015. Four machines started up within three months in the end of 2016, and the last four within four months in 2018.

Foundation in long cooperation

Lee & Man is a key player in the pulp and paper market in China, and its cooperation with Valmet goes back to the beginning of the century. Mutual trust was built and strengthened through cooperation in several capital projects at different locations – and this cooperation is ongoing.

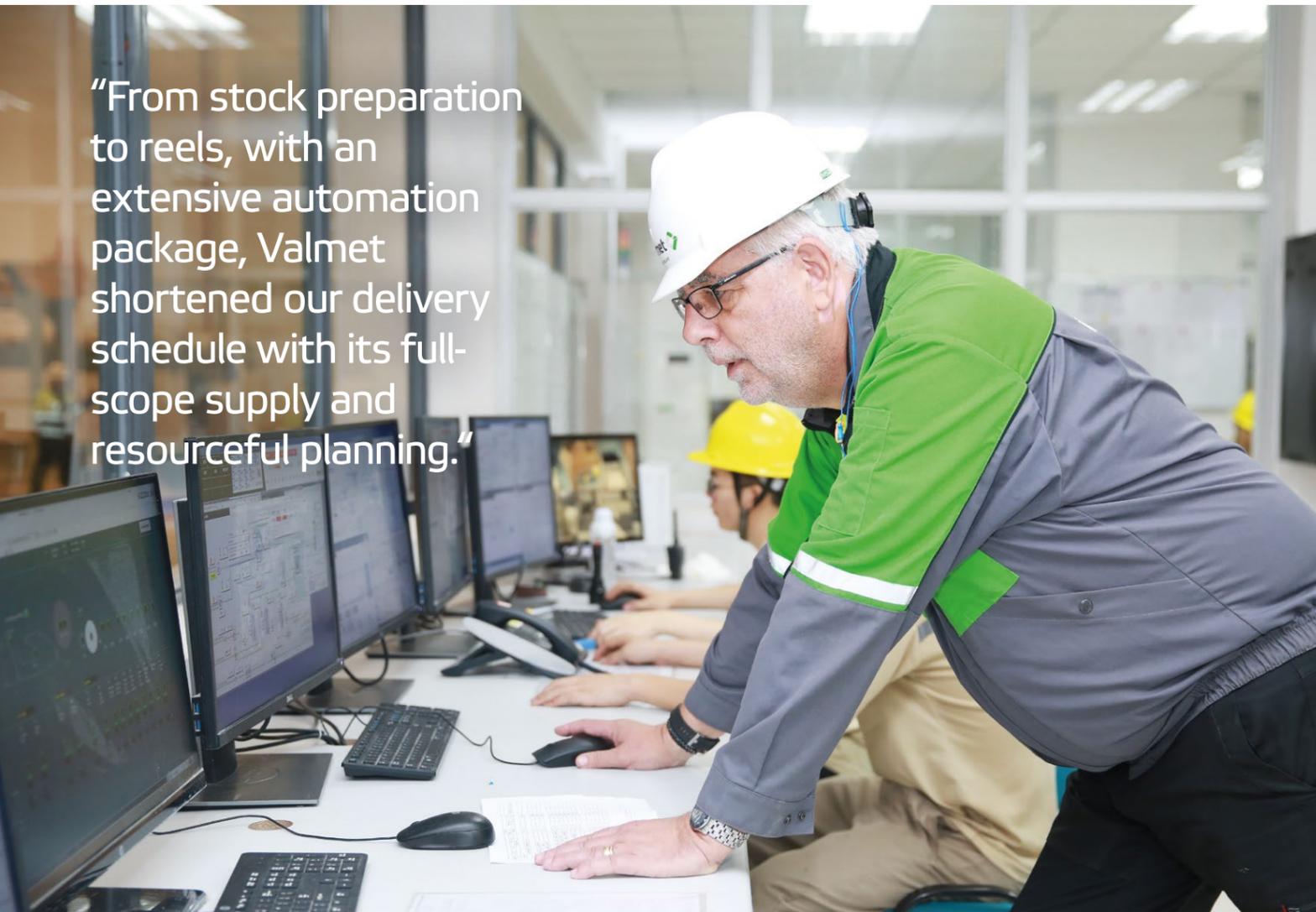
When Lee & Man decided to enter tissue market in China, they set a clear goal – to enter the top three in the market within five years. They further specified the goal in three must-wins: to cooperate with leading suppliers, to use the best raw materials, and to produce first-class products.

So they turned to Valmet, and the story of the nine Advantage DCT 200 HS tissue machines at the Chongqing mill started.

Record fast start-ups

When the goal was set in 2013, it looked almost impossible to reach, but less than five years later, Lee & Man had made it. The jumbo roll sales ranked among the top three in the Chinese market.

"Of course, we had challenges. Our schedule was very tight, and it was hard to find experienced staff. But when we started to cooperate with Valmet, things got easier. Valmet plays an essential role in our success," **Wei Chong**, the leader of the project at the Chongqing mill, recalled. "From stock preparation to reels, with an extensive automation package, Valmet shortened our delivery schedule



“From stock preparation to reels, with an extensive automation package, Valmet shortened our delivery schedule with its full-scope supply and resourceful planning.”

All tissue machines at the mill are equipped with extensive automation packages. In the picture Valmet's project manager Tomas Eklund.

with its full-scope supply and resourceful planning. From engineering, installation supervision and training, to start-up and commissioning, Valmet's experienced team ensured that things happened on time, and the startups were quite smooth: The shortest paper-on-reel time was two-and-a-half hours, and we reached a speed of 1,800 meters a minute in the first week.”

“From TM 4 to TM 17, we have set so many records together, and we worked more like one team. I would like to take this opportunity to thank **Tomas Eklund** and **Ji Yongwei**, Valmet's project managers, and **Liu Jijiang**, Valmet's site managers, as well as **Lei Fengming**, **Zhou Chunjie**, and **Wang Chaoguang**, Valmet's startup managers, and the entire Valmet project team. Their cooperation with our team was perfect, the conditioning work was finished perfectly and on schedule, and the machines were running stably right after startup. We learnt a lot from Valmet's experts. One machine after another, step by step, we made it.”

First class quality from bamboo

The Chongqing mill mainly uses bamboo fiber slush as raw material. It is not a material commonly used by other tissue makers.

“One reason why we chose to cooperate with Valmet is that we were satisfied with our raw material test in Valmet's pilot machine in Karlstad. Valmet tissue machines are well adapted to support our production targets with bamboo fiber. That is unique. The softness and bulk of our unbleached tissue were quickly accepted and recognized by the consumers,” Wei added.

“I attribute the first-class quality to Valmet's stock preparation and forming technology. The bamboo fiber was handled and formed well, which improved the tissue quality significantly.”

“We also found that the combination of steam-heated hood, Advantage ViscoNip press and cast Yankee dryer is a reliable configuration that enables low energy consumption with high production. When press dryness increased

by 3 percent, we could save 12 percent of steam, which is a lot. All of these nine machines use this concept.”

“Furthermore, we are currently following official regulations to change fuel from coal to natural gas, which means increased energy costs. So energy-saving equipment matters more than ever, and will make our products more competitive not only on quality, but also on price,” Wei summarizes happily.

Easy operation with Valmet automation

All tissue machines at the mill are equipped with extensive automation packages.

“We rely on our automatic staff,” Wei laughs, “We built a new mill here in 2013. To employ experienced staff was our main challenge at the beginning, and it is still a problem nowadays, since young people do not want blue-collar jobs. But Valmet DNA and Valmet IQ limit the impact from that.”

“Its integrated design, unified interface, and easy operation were preferred by our people. The machine, even including the chemicals, was controlled automatically, with only 2000 plus I/O, that is not easy. Valmet has leading technology.” ■

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Valmet deliveries

Valmet supplied nine Advantage DCT 200 HS tissue machines to Lee & Man from 2014 to 2018. All these machines have a width of 5.6 m and a design speed of 2,000 m/min, using virgin fiber or bamboo fiber slush as raw material. The production lines are optimized to save energy and to enhance the quality of the final product.

Valmet's scope of delivery of each machine comprised a complete tissue production line featuring stock preparation systems and an Advantage DCT 200 HS tissue machine. The tissue machines are equipped with an OptiFlo headbox and a cast alloy Yankee cylinder. They also feature the Advantage tissue technology, including a ViscoNip press, an Air-Cap hood, a WetDust dust system, a sheet transfer system, and a SoftReel P reel. The stock preparation lines consist of OptiSlush pulpers, OptiFiner conical refiners, and OptiScreen machine screens.

Furthermore, the deliveries included an extensive automation package, with Valmet DNA machine and process controls and Valmet IQ quality controls. Basic engineering, installation supervision, training, start-up and commissioning were also included in the deliveries.



About Lee & Man Paper Manufacturing

Established in 1994, Lee & Man Paper Manufacturing Ltd. has grown from a small company into a leading paper and pulp manufacturer. The company's 6,500 employees are located at the company's five production sites in China. The company has a capacity of seven million tonnes of container board, duplex board and tissue paper, as well as 180,000 tonnes of pulp.

“The softness and bulk of our unbleached tissue were quickly accepted and recognized by the consumers,” says Wei.



Valmet's Industrial Internet capabilities together with the remote diagnostic feature of Valmet DNA Machine Monitoring enable efficient predictive maintenance at Metsä Group's bioproduct mill in Äänekoski, Finland.

TEXT Nigel Farrand PHOTOS Metsä Group

Invaluable vibration analysis at Metsä Group's bioproduct mill

↑ Metsä Group's bioproduct mill in Äänekoski, Finland, utilizes Valmet's DNA automation system for the whole mill.

Metsä Group started up the world's first next-generation bioproduct mill in Äänekoski, Finland, in August 2017. It's called a bioproduct mill since it extends the product portfolio with new bioproducts, generates excess bioenergy, and uses no fossil fuels. Producing 1.3 million tonnes of pulp per year – mainly for export to Europe and Asia – the mill's main products are softwood and birch pulp for board, tissue and printing paper, and specialty products. Valmet's delivery to the mill included the recovery boiler, pulp drying line, gasification plant, lime kiln, sulfuric acid plant, and mill-wide Valmet DNA automation system for the whole bioproduct mill, including machine and drive controls for the drying machine.

Valmet DNA Machine Monitoring – always a step ahead

Operating as a fully integrated application in the automation platform, Valmet DNA Machine Monitoring measures and analyzes the mechanical condition and performance of machines based on vibration measurements and other machine parameters from the DNA process control system. DNA Machine Monitoring provides protection and diagnostics tools for critical machinery, as well as condition monitoring and analysis tools for predictive maintenance purposes.

For **Juha Anttonen**, Mill Reliability Engineer, machine monitoring is an essential part of the mill's operations: "It helps on so many levels: good condition monitoring provides the means to concentrate limited maintenance resources in the right place. If we have a bearing problem

"Analysis and monitoring abnormal trends can be done remotely utilizing Valmet's Industrial Internet capabilities."

for instance, we have time to plan, order spare parts if necessary, and avoid unplanned downtime."

With a six-person team of mechanical fitters covering 14 different areas in the mill, time for in-depth condition monitoring is limited and, according to Anttonen: "With over 1,500 measuring points in the system, it was a smart decision to buy remote diagnostic support from Valmet. With machine condition monitoring, we don't wait for preset alarm levels to be exceeded before we take action. To gain the fullest advantage from the system, trends of developing abnormal conditions also need to be analyzed and followed."

Vibration analysis service via secure remote connection

Analysis and monitoring abnormal trends is the responsibility of Vesa Onnela, a Valmet condition monitoring specialist in Valmet's Performance Center. Using a secure remote connection to the mill system and free from the day-to-day maintenance activities at the mill, Onnela can concentrate on examining trends or other changes in the vibration spectra measured by the system. "I send

a report every Friday to the mill with a condensed view of the machine conditions and expert analysis of the vibration signals. Covering about 600 pumps, motors, fans, compressors plus the lime kiln, pulp dryer and turbine, various advanced tools in our system help me identify, locate and analyze problems in a targeted fashion. Serious problems that I think need immediate attention can be handled easily by phone," says Onnela.

The weekly report gives Anttonen a full picture of developing problems and scheduled maintenance can be planned well in advance, allowing the mill personnel more time for causal analysis.

Versatile connectivity including SAP

One target with Valmet DNA was to incorporate process controls, machine condition monitoring and field device management into one system to see the interactions, for instance, what changes occur in vibrations when production parameters change. Operators are immediately alerted to problems and can quickly take corrective action.

An additional feature of the system delivery is the Valmet Maintenance Pad, a fully functional industrial tablet computer with Valmet Machine Analyzer software that includes route planning, route and off-route measurements, as well as efficient tools for vibration analysis. In addition to the 1,500 continuously monitored vibration points, there are 10,000 offline points. The maintenance pad is used for almost 6,000 route-based measurements, with historical data available for instant analysis during the route. "This was another reason to buy Valmet," says Anttonen. "The Maintenance Pad interfaces directly with the online machine monitoring, giving us direct access to the SAP maintenance system as well as the 50,000 data points connected to the process control system. As far as I am aware, this is not possible with any other handheld system."

System was performing before day one!

Before the mill even started up, a potential risk was averted during a pressure test of the recovery boiler. Problems with the main feedwater pump were observed at Valmet's Tampere factory, where part of the automation system was still waiting for delivery after the factory acceptance tests. "Luckily, the process interface input/output cards in



One of the more than 1,500 sensors connected to the Valmet DNA Machine Monitoring system.

the mill were connected and Valmet personnel 150 kilometers away quickly informed us by phone that we had a problem. I can't think of another automation system that could have warned us in that kind of situation," says Anttonen.

"Valmet's machine monitoring and remote analysis service has proved invaluable during the startup phase of the mill," he continues, "like identifying problems with new equipment before warranties expire, or pinpointing lubrication problems, for example. In a modern mill like this, everything runs at full capacity, close to maximum loads, so continuous condition monitoring is a must."

Valmet's remote diagnostic support has identified about 200 potential machine problems in eight months since mill startup, not a surprise for Juha Anttonen. "With a new mill, new equipment and so many different suppliers involved during installation, it is to be expected. Following a typical bell curve, reported events will decrease over the next few years until various equipment lifetimes are reached. What has been exceptional is that we have not suffered production losses or downtime due to machine vibration or gearbox faults since startup." ■

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Simplified case example from Vesa Onnela's weekly report



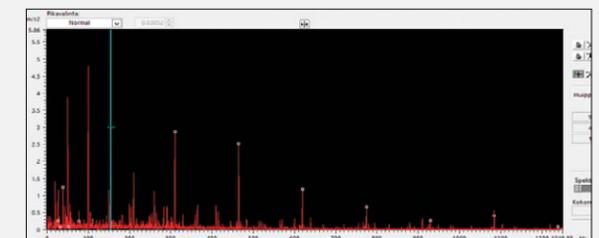
Air compressor, 630 kW motor, constant speed 50 Hz.

Envelope RMS				
Relative change last two weeks				
Time	9.10.2017 00:00	20.10.2017 8:23		
Actuator	This week	Previous	Difference	Relative difference
1171K002 PAINELMAKOMPRESSORI 2 M02	7,6	4,6	3,1	67%
146F018 SAVUKAASUPUHALLIN M01	0,9	0,7	0,3	39%
143D004 TUURIN AUKUOLIMMOLI 1 M03	0,3	0,3	0,1	33%

Big relative change (67%) identified by automatic report.



Finding is checked with analysis tool that indicates developing bearing failure.



Detailed analysis by Onnela points to a damaged outer race.



Sufficient warning was provided for the planned replacement of the bearing, which was damaged by stray current.

↓ Juha Anttonen,
Mill Reliability
Engineer,
demonstrates
Valmet's
handheld
Maintenance
Pad.



Making root causes visible

In order to improve runnability on its PM 3 board machine, AB Grigeo Klaipėda in Lithuania recently installed a Valmet IQ Web Monitoring System (WMS) to discover more about the origins and causes of web breaks.

TEXT AND PHOTOS Nigel Farrand

AB Grigeo Klaipėda was founded in the Lithuanian coastal town of Klaipėda in 1898 and is one of the oldest companies in Lithuania. The mill produces raw material for the production of corrugated cardboard – testliner (used for the outer plies of corrugated board) and fluting for corrugated boards, as well as cardboard paper honeycomb from a 100-percent-recycled (mainly OCC) furnish. The main grades produced on the two-layer machine are in the 90–140 gsm range.

Improving runnability

As part of the continued investment in the machine to improve product quality and productivity, the forming section was rebuilt in 2016, together with the installation of a silent drive system in the dryer section. Upgrades to the Valmet's distributed control (DSC) and quality control systems (QCS) were also made at that time. In addition to improved quality, the machine speed also increased by 20 percent.

Vidas Beržonskis, Managing Director of Grigeo Klaipėda, takes up the story, "Our next target was runnability. One of the problems we faced was increased breaks in the drying section. Part of the reason was, of course, the higher speed, but we also faced problems with dust, stickies, and some dirt as well. We knew they affected breaks, but we had no proof. So finding the reasons behind the breaks became a priority, and we decided to install a web break camera system."



"The camera system has enabled the next step of our investment plans," says Vidas Beržonskis, Managing Director.



"We saw how easy it was for the operators to use the system," says Paulius Sereikis, Technical Director.

"Now we can see exactly what has happened to the paper and where it started."

Making the right choice

The Valmet IQ Web Monitoring System was top of the list. "Technically, the systems we looked at were very similar, but the operator interface for the Valmet system was easily superior, as well as the easy integration with the existing Valmet DNA DCS and Valmet IQ QCS on the machine," says Beržonskis. A visit to a Finnish reference installation sealed the deal. "We saw how easy it was for the operators to use the system, and when Valmet offered newer and more compact camera designs with separate, high-power light sources, we were convinced that it was the right choice," says **Paulius Sereikis**, Technical Director.

A total of 14 cameras were installed from the press section to the size press, with flexibility added by two moveable cameras that can be setup to monitor other areas on the machine. Startup took place in October 2017. "We worked very well with Valmet throughout the design phase and implementation. We have had good experience with our existing Valmet systems, and now we are able to focus on the important areas," says Sereikis.

Easy to use

Irmantas Zubrus, Head of the Technology Group, is similarly impressed: "We can look at the break from 22 seconds before it occurred to eight seconds afterwards, synchronized for all the cameras, so we can follow a problem through the machine as it develops. Now we can see exactly what has happened to the paper and where it started. Knowing the reasons behind a break lets us find some good solutions, whether it involves stock preparation or changes to the machine," he says. "The interface is so easy to use: very user-friendly and intuitive. It's easy to drag the time cursor for multiple video clips with the mouse, and the high-resolution video makes it easy to see



areas of interest. We can now have a history of particular problems and can analyze further when necessary."

Guiding further improvements

For Beržonskis, the Valmet IQ Web Monitoring System has been a great success and is guiding the mill to future improvements. "We have probably found the reasons behind 75 percent of the breaks, and the camera system has enabled the next step of our investment plans to reduce the problem. When breaks occur in the same area and in the same location, we can actually see what caused the

problem. This may mean we stop the machine to clean the wire or dryer fabrics, and thus avoid another break."

"We decided to also order a dryer fabric cleaning system from Valmet, which was installed earlier this autumn to reduce the problems caused by dust and stickies. The main proof that this would be a good investment was the break camera system. With no more guessing, we are very confident now with the decision on the fabric cleaning system," Beržonskis concludes. ■

↑ Irmantas Zubrus, Head of the Technology Group, pictured here with one of the two mobile cameras at the dryer section.

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Higher nip loading has improved dewatering, and web dryness in the press section has increased from 49 to 51 percent.

Valmet Press Roll Cover PP

pays for itself

At Vijay Anand's board mill in India, an upgrade to their traditional rubber covers proved that remarkable performance improvements are possible even with machine consumables. **TEXT** Ankit Arya

Highly loaded press rolls have a questionable reputation in terms of the reliability of the roll covers and the durability of the bearings. This proved to be true for Vijay Anand with the traditional rubber covers it has been using for several years. In the worst cases, these covers failed in debonding, causing unplanned shutdowns and requiring immediate roll changes.

Upgrading for better roll performance

Established in January 2007, Vijay Anand Kraft Papers is the leading manufacturer of packaging paper in India, with a capacity of 66,000 tonnes a year. The mill manufactures test liner and fluting media from recycled waste paper.

The mill started to work with Valmet to plan a roll cover upgrade to improve their roll performance. The goal was not only to improve the durability and reliability of the roll covers, but also to boost dewatering by increasing the nip load. After **Santosh Tiwari** from Valmet and **Dharam Agarwal**, Managing Director of Vijay Anand, concluded the negotiations and aligned the targets, the press rolls were upgraded with Valmet Press Roll Cover PP premium polyurethane roll covers between 2016 and 2017.

Benefits that speak for themselves

The performance of the roll has significantly improved, and the first set of roll cover changes was enough to demonstrate the power of the latest roll cover technology.

The benefits are clear: The rolls can be operated without internal water cooling, which means savings on maintenance and water pumping costs. Thanks to the lower rolling resistance, the energy consumption of the press section is lower, and there is no need for cooling water for the jumbo rolls.

"Now we can run with higher loads and longer grinding intervals. Our target is to achieve a grinding interval of two years," says Agarwal.

The most remarkable benefit is the increased nip loading. The old covers restricted the nip loading to 200 kN/m, whereas the new Valmet Press Roll Cover PP enables nip loading levels above 350 kN/m.

The clearly higher nip loading has also improved dewatering, and web dryness in the press section has increased from 49 to 51 percent.

After the first successful results, Valmet has executed several roll cover upgrades at Vijay Anand; so far, four Valmet Press Roll Cover PPs are in use at the mill.

Payback in less than eight months

The mill had been using traditional rubber covers since the startup of their machine in 2008. The Valmet roll cover upgrade has demonstrated that remarkable performance improvements are possible even with machine consumables. Furthermore, in the bigger picture, choosing a premium-quality product is also the best way to save costs.

Considering only the price of the premium polyurethane covers, it may seem that roll cover upgrade costs are higher with advanced products. But adding the cost savings achieved through increased dryness, energy savings and other improvements reveals that upgrading to premium covers is an excellent investment. Even only considering the savings on reduced steam consumption and the previous roll failure costs, Vijay Anand's investment paid for itself in less than eight months. ■

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"Now we are aiming for a grinding interval of two years with Valmet Press Roll Cover PP," says Dharam Agarwal from Vijay Anand.

The art of maximizing production

Getting the most out of a production line in terms of capacity and paper quality demands a number of skills, the capability to run at high speed, reliable and efficient equipment, as well as the courage to push boundaries.

Fabrica de Papel San Francisco has that all.

TEXT Katarina Åhsberg

Fabrica de Papel San Francisco (PSF) in Mexicali, Mexico, has set the target of growing in line with the market, or even exceeding that growth. To meet the demand for capacity, they have invested in new tissue machines every three or four years. Most recently, in another Valmet Advantage DCT 100TS machine for TM 7.

Full speed

Investing is one thing, but the capability to get large volumes of high-quality paper out of the lines is something else. Running as fast as possible has been part of

PSF's strategy ever since the start-up of their first tissue machine. They have a continuous production speed many other producers can only dream of.

Dario Palma y Meza, Operations Director, explains their strategy: "In all aspects of our business and our company, we want to get the most out of our equipment. Since the machine is designed for 2,200 meters a minute, our strategy is to run as close as possible to that level. To be competitive in the Mexican market, you need an efficient production process and qualified people. And you always need to be in touch with the latest trends, and what can give you the edge in manufacturing."

With the new TM 7, Fabrica de Papel San Francisco's Mexicali mill will reach a daily production of 500 tonnes of tissue, while running a high percentage of very low basis weight.

“A good supplier becomes a part of our team. It’s very important to have a responsible crew you can trust.”

TM 7 sets new record

TM 7, an Advantage DCT100TS machine, is the company’s newest tool to follow this strategy. The start-up set yet another record, reaching 2,000 m/min within 48 hours – and it just continues!

To execute a start-up in that short time means that a lot of things must work perfectly together.

“This was the sixth tissue machine we have started up, so one big factor is of course to utilize people’s experience from previous installations. We always use our best operators who are familiar with the process and the technology. Support from Valmet is also important, as is a stable and reliable tissue machine with high efficiency. We had a really good start-up, and we have been running at full speed ever since,” Palma continues.

Pioneering in tissue production

PSF is something of a pioneer in the tissue business. The company already set the world speed record back in 2009, and it was the first to start up an Advantage NTT machine. Today it produces high-value grades from virgin pulp on the NTT machine.

“The NTT concept is great. It has given us the oppor-

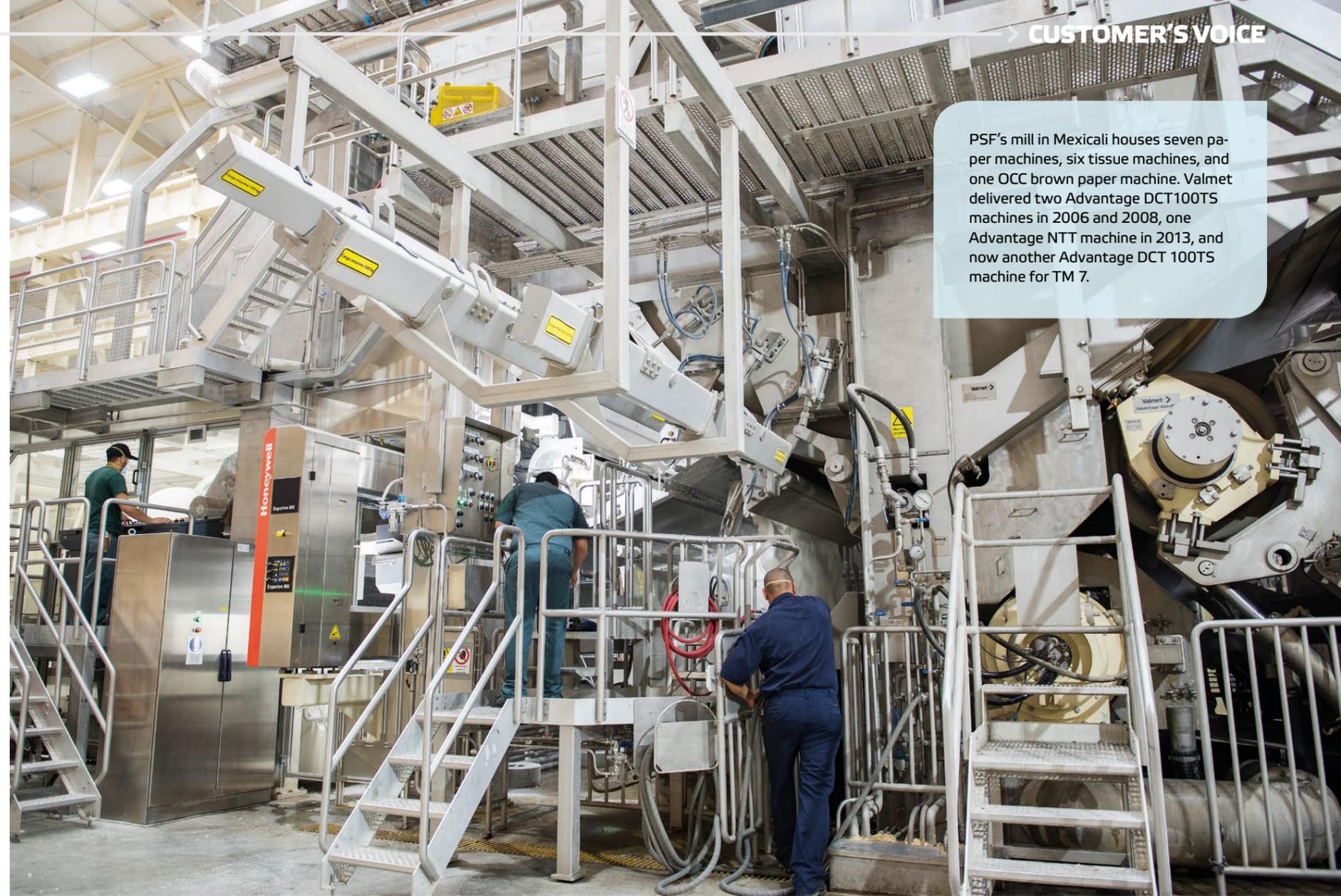
tunity to enter the textured market. We are happy to have the capability not only to do textured tissue, but also conventional tissue at a high basis weight. Its drying capacity gives a very nice level of production that I haven’t heard of from any other machine,” says Palma.

High-quality tissue with low energy consumption

So why did they decide to invest in a new Advantage DCT machine this time?

“The Mexican market mainly requires 100% recycled tissue. The premium type of virgin fiber products is a small part of the market, somewhere between five and ten percent. So, our need was basically a machine that could provide us with 100-percent recycled, low-basis-weight bath tissue. It is also in our philosophy to go for low energy consumption and the lowest possible emissions into air and water. Valmet recommended the Advantage DCT machine with an Advantage ViscoNip press to achieve the best tissue quality combined with the lowest energy consumption,” explains Palma.

The ViscoNip press is a new technology for the mill team in Mexicali. They are still learning, but in general,



PSF’s mill in Mexicali houses seven paper machines, six tissue machines, and one OCC brown paper machine. Valmet delivered two Advantage DCT100TS machines in 2006 and 2008, one Advantage NTT machine in 2013, and now another Advantage DCT 100TS machine for TM 7.



← “Choosing the Advantage DCT machine was quite easy. The ViscoNip makes it the most efficient and best choice for the grades we need to produce,” says Zarate.

←← “Our need was basically a machine that could provide us with 100-percent recycled, low-basis-weight bath tissue,” Palma summarizes.

they are comfortable with the process and find it easy to handle.

“The machine is running very well, and we are mainly utilizing low and medium nip loads to get more caliper and softness. Running at 2,150 meters a minute in daily production is not a problem, and we have even hit speeds of 2,200 for several days. We have also seen savings in electricity so far,” says **Enrique Zarate**, Mill Manager.

“Choosing the Advantage DCT machine was quite easy. The ViscoNip makes it the most efficient and best choice for the grades we need to produce,” Zarate continues.

Trust and teamwork

PSF and Valmet have a long-term relationship covering four tissue machine installations. For Zarate, it has been

a benefit to work together with the same supplier for all four projects. “A good supplier becomes a part of our team. It’s very important to have a responsible crew you can trust and be open with about problems or challenges, and a team that makes all the effort to solve any issue. It makes life easier for all of us.”

With the new TM 7, the Mexicali mill will reach a daily production of 500 tonnes, considering they run a high percentage of very low basis weight. Their market share in Mexico is currently 18 percent, with a target of continued growth. And with skills, dedication and expertise, they will hold on to the need for speed. ■

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↑ PSF mainly produces bath tissue, napkins, kitchen towel and hand towel for the consumer and away-from-home markets. The mill supplies jumbo rolls to their converting facilities in Mexicali, Guadalajara and Monterey.



"We have reduced waste by 30 percent, and we have also been able to substantially increase the machine speed," says Wojciech Lupa, Corrugator Manager at Schumacher Poledno.

Schumacher Poledno in Poland is part of Schumacher Packaging Group, one of the largest family-run manufacturers of corrugated and solid boards, with 15 plants at 13 locations in Germany, Poland and the Netherlands.

The key to higher corrugator productivity

When the Poledno corrugated box plant in Poland started to use Valmet's IQ Moisturizer system to reduce warping, they soon noticed additional improvements besides reduced waste thanks to higher machine speed and increased production flexibility.

TEXT AND PHOTOS Nigel Farrand

Warping is one of the most serious defects that can occur on corrugated boards. Differences in moisture content in the top and bottom facings cause the sheet to warp or bend towards the side with higher moisture. For sheet-fed converting or printing, having flat sheets is extremely important for trouble-free feeding of the machines. Schumacher Poledno had had a relatively good re-moisturizing experience with an earlier device installed for testing purposes in 2015 to improve the quality of corrugated board and reduce production losses caused by warped board. However, for **Wojciech Lupa**, Corrugator Manager, a test run in late 2016 with a Valmet IQ Moisturizer unit showed that additional improvements could be made to control warping. "Our main idea was to further reduce the waste caused by warping."

In August 2017, a two-beam Valmet IQ Moisturizer system was successfully started up to control warping on Poledno's 2.8-meter-wide line producing corrugated board. "Since the installation of the two IQ Moisturizers before the double backer, we have reduced waste by 30 percent, and we have also been able to substantially increase the machine speed," says Lupa.

Improved quality from fine mist spraying

Warping problems can cause jams in various kinds of converting and printing equipment, interfere with the stacking of paper and board products, and make the appearance of the product unacceptable. The IQ Moisturizer corrects warping in combined board by spraying a fine mist on the top and bottom of the sheet in a controlled way, providing a very high degree of control and very fast response to conditions that negatively affect quality.

Machine speed up by 20 percent

Poledno manufactures five-layer boards with B, C and E flute combinations at various weights. "We found that during our trial with Valmet, the IQ Moisturizer with its atomized spray was especially better with heavy grades, achieving much better penetration of water than our earlier system. Now with heavier grades, the two rows of atomizing spray nozzles deliver as much as four grams a square meter without streaking and, as well as eliminating warp, have enabled a 20-percent increase in machine speed.

Easy adjustment from the control room

IQ Moisturizer's profiling capability is particularly useful to cure S-warping, and operators can easily make adjustments from the control room when they see the first sheets from the machine," says Lupa. The control system delivered with the moisturizer takes care of production rate changes automatically, so during reel changes or grade changes when the machine speed is changing, the moisturizer adapts immediately.

"With a smooth installation and startup, our experience with Valmet has been very positive. Training for both operators and maintenance staff was good," declares Lupa.

Expanded product offering

As well as producing high-quality packaging products, Poledno also supplies board for other producers with stringent quality demands. "We have a very good customer requiring heavy grades of board, and the Valmet IQ moisturizer is the key tool in keeping them satisfied," says **Tomasz Zamczala**, Production Manager. "The moisturizer has enabled us to expand our product offering and today, ten percent of production is heavier grades."

"Compared to before, we are more flexible, we generate less waste, and we utilize a higher machine speed, resulting in more production – a pretty good outcome," he concludes. ■

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One of the two IQ Moisturizers in the tight confines of the corrugator.



Tomasz Zamczala, Production Manager.



Two staggered rows of nozzles deliver a finely atomized water spray to avoid streaking.

Valmet Refiner Segments create 6 GWh in energy savings a year

The latest solutions from Valmet Refiner Segments lead to remarkable reductions in energy consumption in the pressure groundwood (PGW) process. In addition, overall optimization increases the production rate and guarantees excellent quality in the end product.

TEXT: Petteri Vuorio and Marianne Valta PHOTOS: Burgo Group



“The combined result of the two optimization projects has had a significant impact on the paper mill.”

Energy costs are a major issue in the production of mechanical pulp. Valmet Grinding Surfaces Galileo and Valmet Refiner Segments with turbine feature are examples of the latest solutions to tackle the energy consumption challenge at different phases of the PGW process. Burgo's Verzuolo mill has achieved significant energy savings with Valmet's optimization solutions.

Diamond-coated surface

Valmet introduced the Galileo grinding segments concept in 2010 to improve the grinding process. It is based on a steel core that has segments coated with industrial diamonds bolted to it, and it replaces the pulp stone traditionally used for grinding. With this technology, energy savings of up to 300–500 kWh per tonne of paper produced can be achieved. In addition, overall production capacity can increase by 20–50 percent.

Turbine segments – the most energy-efficient segment design

Reject refining is another energy-consuming part of the PGW process. Turbine segments are the key to a

totally new approach to refining. The main objective is to produce fibers that have been treated uniformly and have properties that are as similar as possible. To achieve this, the fibers and steam must flow in a controlled fashion



through the disc gap, and all rotation and backflow must be minimized. The efficient flow reduces the need for energy in the refiner.

“To offer excellent optimization services to our customers, we are supplementing the Galileo grinding surfaces with refiner segments development in reject refining. Measurement show that the most energy-efficient feature, Turbine segments, reduce energy the most at the refining stage. In reject refining, the fibers are strong, and high-intensity refining treats them so that they have good bonding properties, leading to excellent pulp,” explains **Petteri Vuorio**, Global Technology Manager from Valmet.

The results speak for themselves

Raffaele Marinucci, Mill Director at Burgo's Verzuolo mill, summarizes the results: “We have co-operated with Valmet in two different projects, achieving good results both times. Previously, after replacing the conventional pulp stone with Galileo, we achieved energy savings of 10 percent and increased the production rate by a further 25 percent. The energy savings we created after installing the new Turbine segments in both reject refiners amounted to 30 percent, which we estimate is about 6 GWh a year.”

“The combined result of the two projects has had a significant impact on the paper mill, both from an economic and environmental point of view in terms of reduced CO₂ emissions.” ■

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What is a PGW process?

PGW stands for “pressurized groundwood.” The PGW process utilizes round logs as raw material for producing mechanical pulp. The process consists of several stages, including grinding, screening, reject treatment, bleaching, dewatering, and storage. Valmet's pressure grinders and complete PGW processes produce mechanical pulp for products of the highest final quality – and with the lowest energy consumption and environmental load.

Reliable measurement of solids in centrate



The Steinhäule wastewater treatment plant in Germany treats around 40 million m³ of wastewater per year, a capacity of 440,000 population equivalents. This results in roughly 1 million m³ of sewage sludge, which is dewatered for energy production. Sludge dewatering has been considerably upgraded with the installation of Valmet Low Solids Measurement. **TEXT** Susanne Haase

At Steinhäule, they had been discussing a reliable option for measuring the solid content of centrate for a long time. They had conducted experiments using all kinds of different measuring systems, but they had never managed to find anything truly reliable. For example, the formation of gas bubbles proved to be problematic for optical measurement with a camera. “We were not able to always operate the centrifuges at the best operating point and, as a result, we used too much flocculant, for example,” says **Erwin Schäfer**, Plant Manager, describing the situation before Valmet Low Solids Measurement (Valmet LS) was installed.

The Valmet LS caught Schäfer’s eye when the Finnish engineering company showed it off at IFAT, the world’s

leading trade fair for the industry. Ultimately, it provided the possibility to control the dewatering process more accurately through continuous measurement of the solid content in the centrate.

Practical experience with test unit

Following some consultations and meetings, the unit was delivered in autumn 2016, adapted to the needs of the team at the wastewater treatment plant. However, the unit was initially only leased for a period of six months in order to gain some practical experience.

The Valmet LS was mounted on a wall in close proximity to the centrifuge. “The operators had already adjusted their response times. After all, this was a suitable place for automated sampling with enough centrate water

available to operate the device continuously,” says Schäfer. The installation was quick and easy, and the system has been measuring the total amount of free-floating solids ever since.

Close collaboration

Schäfer highlights the close cooperation with the supplier: “It was a matter of trust and cooperative collaboration from the very start. It made sense – and it was important – to involve and coordinate with the employees, especially as we had tested various solid matter measurement systems before, but unfortunately had not had any satisfactory results.”

Volker Herrmann, his colleague who is in charge of construction, planning and mechanical maintenance of thermal sludge utilization within the plant, also points out the “very positive course of the project”: “We have very high requirements for the reproducibility of the samples,” he says. “From the very start, the equipment worked just like we had envisioned it would work.”

Promising results from the very start

Once the unit was running, the centrifuge was operated in all possible areas of work. The results delivered by the Valmet LS were compared with the values from the laboratory measurements and a corresponding calibration was carried out. “Our operators watched very closely, wondering whether they could trust the values from the new device.” Soon though, they received positive feedback. “Actually within a few days,” according to Herrmann. “In fact, our colleagues here are very skeptical – in a positive sense – and they do question things.”

Immediate payback

The first impression was good and solidified within the first year after the installation of the Valmet LS. “We think

“We never thought that this acquisition would be so beneficial so soon.”

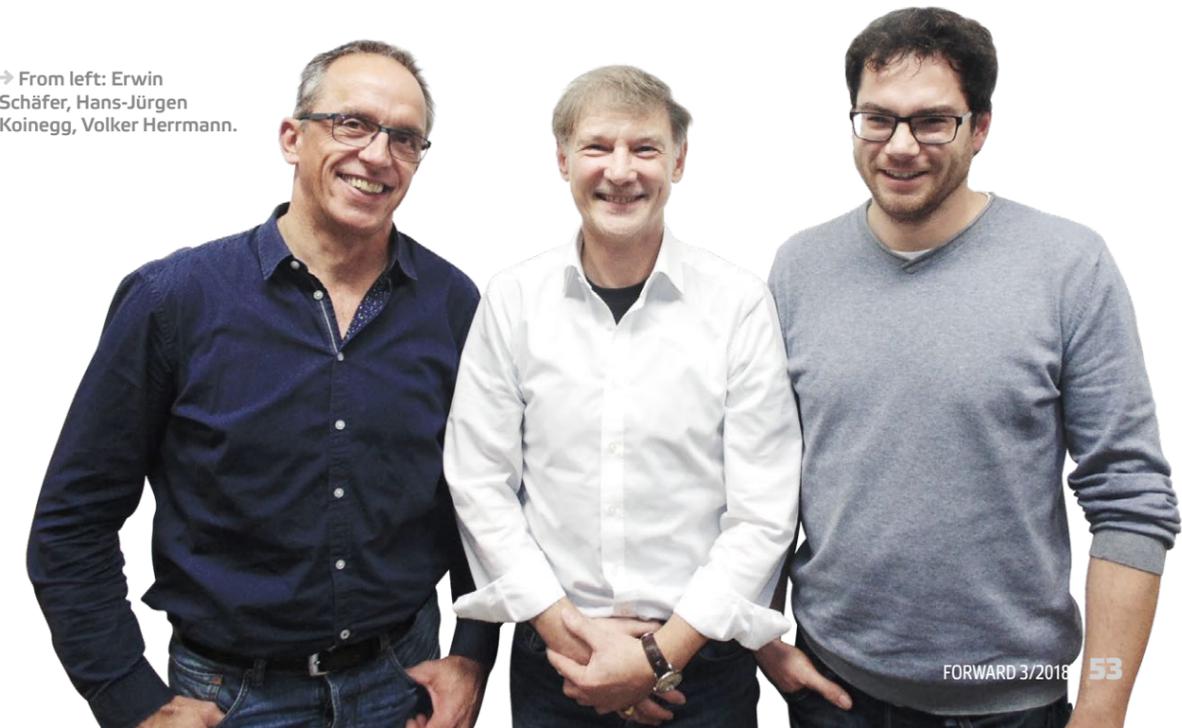
we saved almost EUR 10,000 in the first year by using less flocculant. We never thought that this acquisition would be so beneficial so soon,” says Schäfer. “In addition, it is important for us to keep pollution as low as possible. So 4,000 kilos less of flocculants, or less polymer use, is of course a very positive result in terms of sustainability.” Schäfer, who has been working at the company for 24 years, also highlights the spirit of the waste treatment plant. “We do not want to be driven; we want to pro-actively walk new and innovative paths!”

Harald Straßer, Master Mechanic in Thermal Sludge Recycling: “We were skeptical at first, but after some time in operation, things turned out very positively!”

His colleague **Stefan Mayr**, Master Electrical Engineering and Thermal Sludge Recycling, can’t imagine doing it without the equipment. ■

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→ From left: Erwin Schäfer, Hans-Jürgen Koinegg, Volker Herrmann.



Increased winder capacity

through optimized set change and gluing



End gluing with a traversing nozzle

Automated end gluing

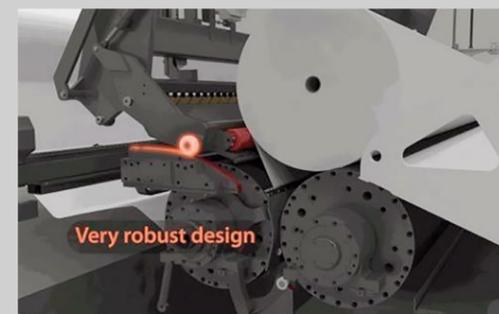
- Less manual work at the winder
- Reliable
- Fewer mechanical components
- Use of hot glue
- Less need for maintenance
- Easier to clean than the conventional systems
- Home position on the side of the paper web
- Only two nozzles compared to conventional systems with 30–100 nozzles
- Fewer spare parts required
- Clean machine surroundings

Technical solution

- Applicable with most winders
- Fast, precise control of gluing due to servo technology
- Fast linear movement.



When a set change is carried out at the winder, a strip of glue is applied to the paper web in the cross direction by a fast-moving, servo-controlled nozzle. The small inclination angle between machine direction and nozzle movement – adjusted for the web speed – ensures that the glue strip is straight. Traversing end-gluing is precisely controlled, so the glue does not get too close to the edges of the web or the slitting points.



The cores are received with suction cups from the core trough with vertical movement. When the customer rolls have been ejected from the winder, the core loader loads the cores accurately into the nip of the winding drum. The improved set change equipment performs the set change faster than a conventional system because a low rotational speed is no longer required during the end-gluing operation. Also, a counter blade is no longer needed for the web cutting.

When Steinbeis Papier in Glückstadt, Germany, started to develop papers for high-performance inkjet printing, they needed to make sure their winder was up to the challenge. They turned to Valmet to improve the winder set change time.

TEXT Ville Piipponen, Marianne Kasjan
PHOTOS Steinbeis, Valmet

In 2015, Steinbeis Papier in Glückstadt, Germany, was making improvements on its PM 4 papermaking line. The mill was developing papers for high-performance inkjet printing, which demanded more from the capacity of the existing winder. The development work on lightweight coated (LWC) grades for high-performance inkjet printing meant that the customer rolls were smaller than before, making the set change times even more important.

Need for increased capacity

Valmet had already delivered an OptiWin Belt winder to Steinbeis Papier back in 2000, but there had been no rebuilds since the start-up: the winder had fulfilled its task, as it was designed to meet the previous production targets. Steinbeis Papier chose Valmet as their partner to develop a solution to increase the winder capacity and to implement the necessary work.

From taping to gluing

An evaluation of the potential capacity increase showed that end taping during the set change was one of the biggest time-consumers, with a direct impact on capacity. The plan was to replace the time-consuming end taping process with Valmet's traversing end-gluing device. The delivery also included improved set change equipment – a roll ejector – which ensures further time savings and reliable operation at higher throughput rates. Steinbeis Papier was very convinced of the solutions Valmet had suggested.

Rebuild during scheduled shutdown

Both parties were pleased with the close cooperation during the project phase. The rebuild was carried out during a short, scheduled annual shutdown, and the optimizations were carried out together with the customer during the start-up. Valmet's improvements brought the desired results and trouble-free operation. ■

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What's cooking?

Next-generation CompactCooking™ takes continuous cooking to the next level

The third generation of Valmet's CompactCooking launches, with increased flexibility, improved steaming and washing, and easy maintenance.

TEXT Kristofer Sjöblom

Valmet's CompactCooking first hit the market in 1997, and the second generation followed in 2003. Currently, close to 50 systems are in operation, helping pulp mills worldwide to achieve excellent pulp quality, maximize pulp yield and minimize pulp reject, as well as to cut steam and power consumption.

Customer focus

"CompactCooking has been the obvious choice for a majority of pulp mills, but we can always improve. Some customers with mega size hardwood digesters have asked for improvements. As we constantly develop our products and systems, customer feedback is a key element of this improvement process. Based on our development work, the new generation mainly focuses on pulp mills cooking hardwoods, in particular mega size mills," says Patrik Lidbäck, Sales Manager for CompactCooking.

Greater dimensions – higher demand

The trend is towards ever-larger pulp mills, as larger-scale facilities enable more cost-effective production and increased profitability.

“Large-scale facilities bring specific challenges. The greater size imposes greater stresses on the equipment in order to ensure optimal operation. The third generation of CompactCooking from Valmet boosts a continuous cooking system that is excellent for mega-mills,” says Lidbäck.

To the next level

“CompactCooking is a successful concept that we have developed further in a variety of ways. We have improved steaming and washing, and we can now offer an even more efficient and flexible system. The third generation of CompactCooking is also easier to maintain, providing reduced maintenance thanks to a new, more cost-effective layout and by replacing high pressure feeder with pumps,” says **Jonas Saetheråsen**, Project Manager for the development of the third generation of CompactCooking.

Improved steaming and washing

The new CompactCooking has a more efficient steaming process than its predecessor, allowing for much better conditions for the impregnation process. The washing

“We work together with our customers to tailor solutions to their needs.”

performance has also been improved. The pulp from the digester is cleaner, so there is less demand on downstream processes.

“The chemical consumption in the bleaching plant will decrease due to the more efficient washing. Our development work has led us to focus on the subsequent processing steps as well. When continuous cooking works really well, it positively affects the processes that follow,” says Saetheråsen.

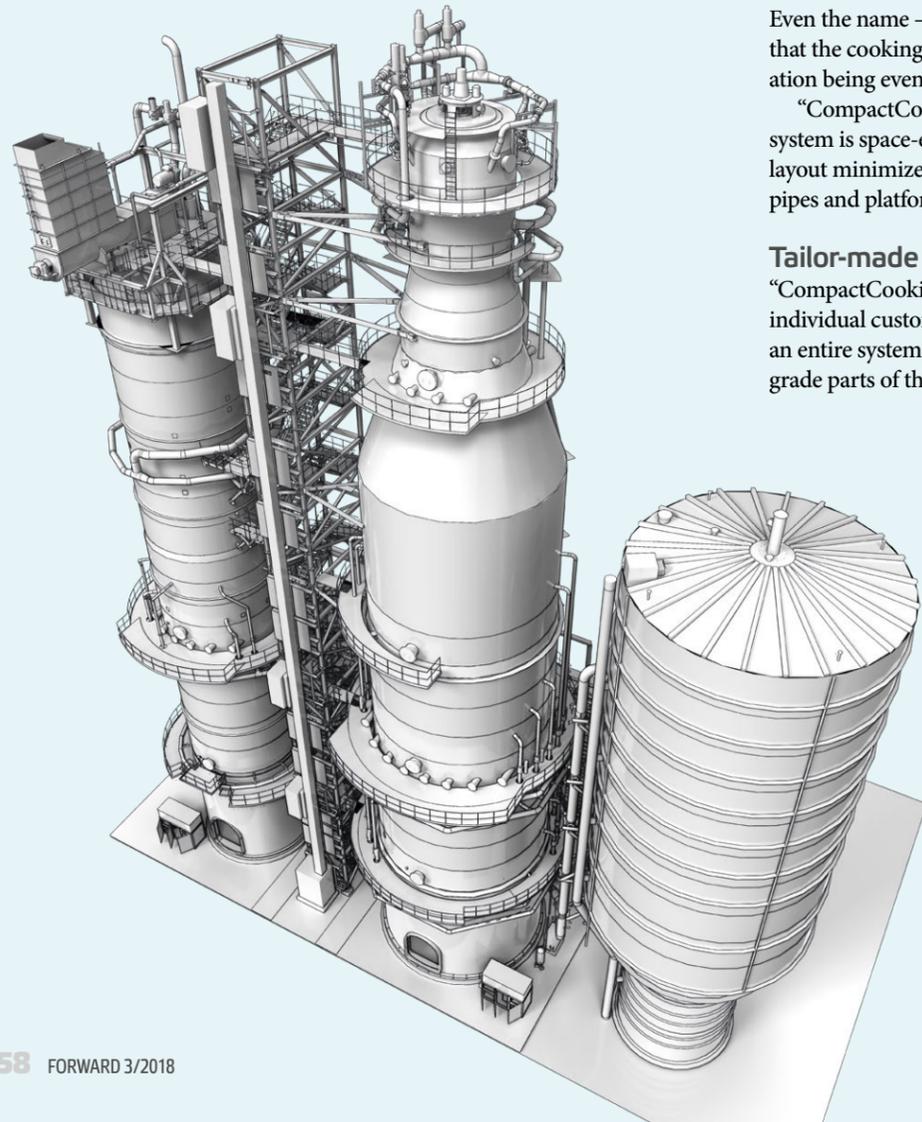
Even more compact

Even the name – CompactCooking – alludes to the fact that the cooking system is compact, with the third generation being even less space consuming.

“CompactCooking is perfectly named. The new system is space-efficient and easy to maintain. The new layout minimizes the cost of peripheral systems, such as pipes and platforms,” says Lidbäck.

Tailor-made solutions

“CompactCooking is modular, and tailor-made to suit individual customer requirements. Some customers need an entire system, while others are simply looking to upgrade parts of their cooking plant,” Lidbäck explains.



→ Jonas Saetheråsen led the project team that developed the third generation of CompactCooking.

→→ “CompactCooking has been the obvious choice for a majority of pulp mills,” says Patrik Lidbäck, Sales Manager for CompactCooking.



Flexibility is the keyword, and the goal of the project team was to build a system that can be developed in collaboration with the customer.

“CompactCooking is prepared to handle changes that may arise. For instance, the pulp mill might want to produce a new pulp grade, or to boost production as the mill scales up to achieve higher production,” says Saetheråsen. “The third generation of CompactCooking has built-in flexibility and can be adapted to meet the changes pulp mills will be facing.”

Multiple specialists involved

The development work has involved many experts at

Valmet. Jonas Saetheråsen led the project team that developed the third generation of CompactCooking.

“We have very diverse skillsets within the project team: machine designers, plant engineers, process engineers, and staff from our laboratory among many others. Everyone has contributed with their unique skills. Laboratory trials and simulations are crucial steps on the way to producing a new product or a new process at an industrial scale,” he says. ■

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Proven benefits

ImpBin technology

- Impregnation at low temperature and for a long time

Two-vessel system concept

- Low cooking temperature
- Enables liquor-to-wood ratio control
- Enables black liquor recirculation for high yield
- Concurrent operation

Simplicity

- Few active components

Results

- High yield
- Low reject amount
- Low energy consumption
- Easy to maintain
- High availability

Next-generation performance improvements

Optimized bleachability

- Improved alkali profile
- Cleaner pulp at the end of the cook

Improved washing

- Up to three radial wash zones

Improved flexibility

- Three cooking zones
- Possibilities to adjust temperature and alkali charge throughout the cook

Improved maintenance/accessibility

- Screen cleaning

Improved sustainability

- Odor-free impregnation vessel
- Connected to DNCG
- Improved turpentine recovery for softwood

Find out more: valmet.com/whatscooking



Process data visualization like never before

The new Valmet DNA Dashboards take situational awareness to a new level by offering significant information and highly visualized process data for any user group – from operators to the CEO – at any location.

TEXT Valmet and Marjaana Lehtinen

“The dashboards are web applications that provide essential, pre-analyzed information presented in an easy-to-interpret way,” explains **Petri Tiihonen**, Product Manager for Strategic Programs in the Automation business line at Valmet. “Based on our extensive process know-how in the pulp and paper and energy industries, we have been able to develop industry-specific dashboards, unlike any other supplier.”

Use anywhere you need data

Valmet DNA Dashboards are based on existing Valmet DNA products and solutions, and can be easily added to them. They collect data from DNA Process Controller and DNA Historian and visualize it for process or quality monitoring to provide real-time and recent historical data. This allows users to react to changing situations better and more quickly.



Imagine being in a situation where you immediately need to know all the key performance indicators (KPIs) of your mill or plant, let's say, to make an important decision. You can find this data scattered around in your plant or mill systems and reports, but you simply do not have time to gather it. You need the data right this minute!

This is where Valmet DNA Dashboards come in handy. Valmet has recently launched them as the first step towards the new nature of automation, in which an automation system turns increasing dataflow into meaningful information and increases dialogue with data.

Pre-analyzed, visualized data

Valmet DNA Dashboards use real-time and historical data already available in your Valmet DNA automation system and show it to you in a highly visual format. They enable you to immediately see, for example, what is currently happening in your process, what the KPIs of your production processes are, or how your product quality is developing.

“The Valmet DNA Dashboards can be used in offices, control rooms or maintenance workshops – you name it. And they can be used mobile in any location – even on your own couch at home.”



DNA Alarm Dashboard provides an overview of the alarm system and allows you to see key alarm metrics at a glance. It helps minimize the number of alarms and design a more efficient alarm philosophy.

“Dashboards complement DNA Operate in control rooms, but their use is not limited to control rooms – far from it. They can be used static in meeting rooms, offices, corridors or maintenance workshops – you name it. And they can be used mobile in any location – even on your own couch at home,” Tiihonen points out.

Designed with the user in mind

Modern user experience principles played a central role in the application design of the dashboard concept. The information content and presentation format were chosen to respond the tasks and challenges of different user groups and roles. In this way, the dashboards truly turn data into meaningful information for users.

It is possible to complement the Valmet DNA Dashboards with Valmet Industrial Internet applications and services.

Dashboards for multiple industries

Valmet has launched dashboards for various applications. There is an alarm management dashboard suitable for all industries. For the paper, board and tissue industries, Valmet provides a dashboard to monitor quality and production monitoring. For the energy industry, there is a dashboard for monitoring energy production and avail-

ability, as well as emissions and production efficiency. For the pulp industry, Valmet offers a dashboard for monitoring pulp production, and departmental and bale quality. ■

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Benefits of Valmet DNA Dashboard in brief

- Provides key performance indicators to different user roles in a plant
- Connects easily to existing system data
- Essential, pre-analyzed information clearly visible and easy to interpret
- Can be used with a mobile device without any installation
- Can be made available to any user group, from operators to the CEO
- Provides a starting page to drill down to more detailed reporting or analysis

Watch video *The New Nature of Automation* in [Youtube.com/valmetglobal](https://www.youtube.com/valmetglobal)

The shoe press belt family is growing

H

as in "high performance"



Valmet has been producing shoe press belts for the global market since the mid-1990s. Today, Valmet Black Belts are known for their excellent material mix, long lifetime and good dewatering capability. To meet the demands of today's paper production, Valmet has recently developed yet another belt type: Valmet Black Belt H.

TEXT Marianne Valta PHOTO Tomi Parkkonen

Valmet Black Belt H is a high-performance belt for all shoe presses. Due to its high durability and mechanical strength, it is equally suitable for both fast- and slow-running paper and board machines. "Compared to our other belts, the new H type has better dewatering properties and minimized crack development due to the new elastomer formulation and flexible paper side reinforcement. The partly transparent elastomer enables precise control of the casting process and quality," explains **Satu Hagfors**, Product Group Manager for Belts at Valmet.

Carefully chosen raw materials ensure excellent belts

The new reinforcement yarn was chosen after thorough work.

“The new H-type yarn has 25 percent higher strength, better flex properties and lower deformation risk than previous reinforcement yarns, creating better mechanical strength even under extreme machine conditions,” Hagfors says.

Quality never goes out of fashion

Over the last few years, Valmet has invested significantly in the quality of the shoe press belt production process. The casting process is very delicate, and therefore vulnerable to any changes in the conditions of the production facility, such as temperature and humidity.

The list of improvements made in the casting process is extensive.

“For example, we now have data logging systems including high-speed HD cameras to recognize any casting disturbances. The data loggers follow up over 100 parameters during casting. The on-line graphs are visible on the operators’ control screens throughout the process and are double-checked afterwards by quality personnel. To further enhance the control of our casting process quality, we have made our belts partly transparent so that we can also inspect the critical yarn layout before finalizing the belt,” Hagfors explains.

The latest investments at Valmet’s production site in Tampere, Finland, have increased the level of automation in the production process.

“We now have automatic systems to ensure accurate dosage and homogenous mixing of all the polyurethane components and process additives. Also, the finishing machine has been upgraded with a new automation system to ensure the surface quality,” Hagfors continues.

Inspection and analysis play key roles in product development

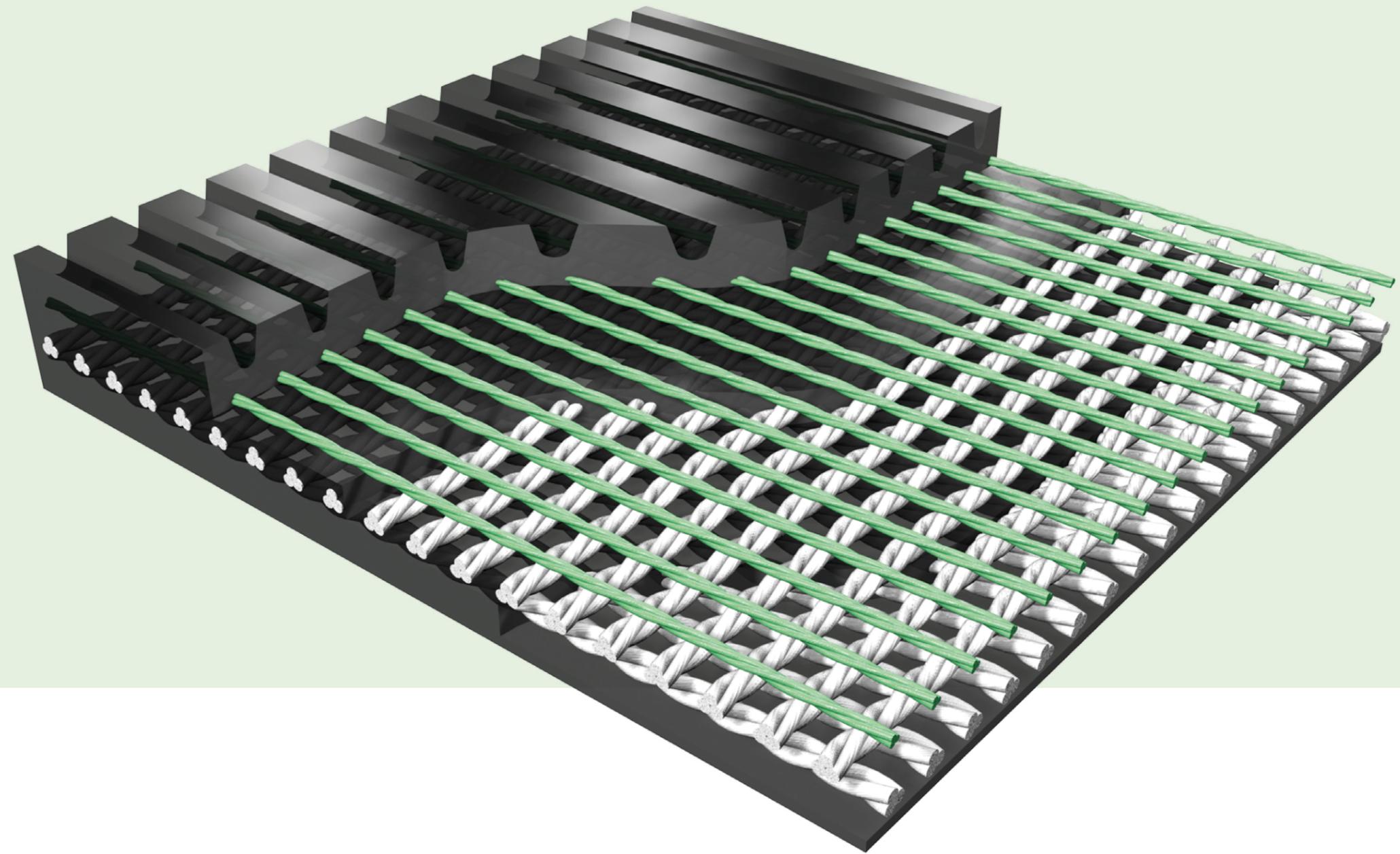
Valmet is equally interested in delivering excellent belts to its customers and developing new products for future needs. For that purpose, Valmet has improved the actual manufacturing process, as well as setting up other innovative ways to inspect the finished product and follow it up during its life cycle.

“For example, we use a special scanner to monitor the grooves on our belts before shipping, during shutdowns, and at our laboratory after the removal of the belt. The information is used for further product development,” Hagfors says.

Launching new products takes time

Another proof of Valmet’s innovativeness is the test machine developed solely for belt development purposes.

“In a test, samples are run for certain times through a nip under three different pressures. The temperature and



The new Valmet Black Belt H retains its mechanical properties even under extreme loads.

length of the samples are monitored throughout the test. Also, the tensile properties of the samples are measured as new and after the test,” Hagfors explains.

The test machine is a true asset in new product launches.

“Launching new products is never done overnight, as references are extremely important in our business. Even after we get our belts running, we may need to wait for a year to get data from the used belt. Through testing, we have been able to show that the new Valmet Black Belt H retains its mechanical properties even under extreme loads where other belts lose their strength and dimensional stability as the reinforcement fibers get damaged,” Hagfors says.

All in for the customers

The belt production process is very delicate, and the product itself can be fine-tuned with various surface patterns.

“The uniqueness of the belts highlights the significance of having dedicated sales personnel and product managers. We need to know our customers and have our ears wide open. I’m proud to say we have an outstanding team and state-of-the-art equipment to ensure top-quality products and service for our customers. This is how we live Valmet’s values: we always go the extra mile to move customers’ performance forward,” Hagfors concludes. ■

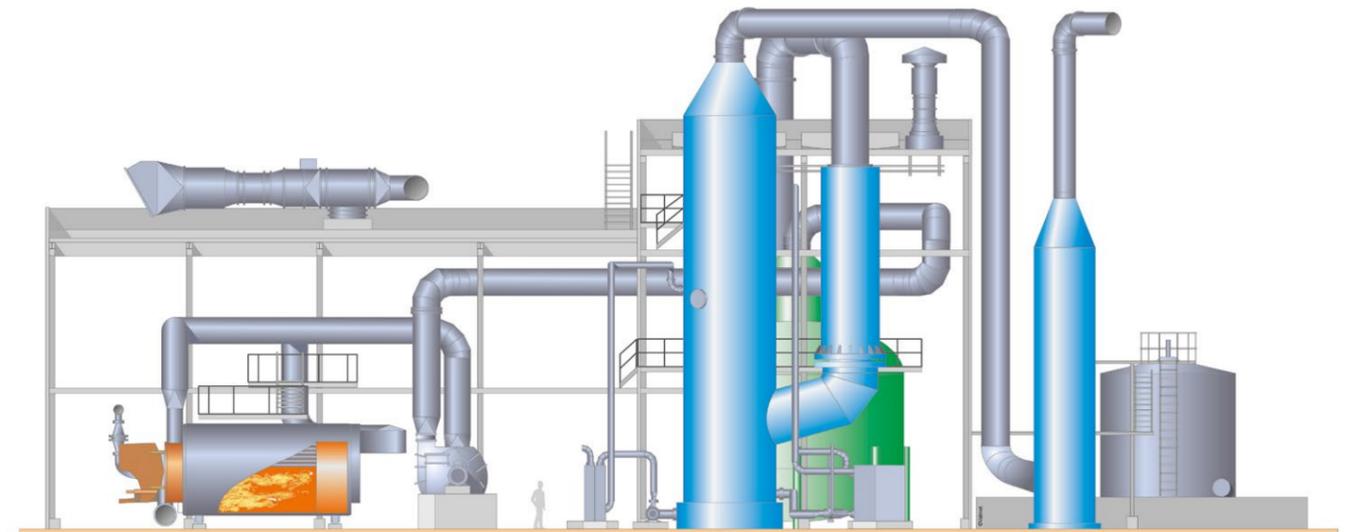
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Creating a valuable product from hazardous side streams

Producing sulfuric acid from a pulp mill's non-condensable gases (NCG) is a true win-win-win solution. An innovation developed by Valmet improves the chemical balance of mills, generates cost savings, and reduces environmental impact. **TEXT AND PHOTO** Lotta Forssell



To succeed in a project like this, you need to have the right team, combining both technical knowledge and a strong drive to deliver results.



Concentrated non-condensable gases are collected and led to a collection tank, from which they are taken to a separate incinerator. In the incinerator, the total reduced sulfur compounds in the CNCG are oxidized into SO₂. The flue gas from the boiler is led to a catalytic reaction vessel. The catalyst oxidizes SO₂ by using excess oxygen supplied through combustion air into SO₃. Flue gases from the catalytic converter are passed into a condensing tower. The temperature of the flue gases is reduced with the cooling liquid, and the SO₃ in the flue gases reacts with H₂O to produce sulfuric acid.

Creating something new is always interesting and exciting, especially when it is done with a clear goal and tight time schedule. This was the kind of challenge that Metsä Group gave Valmet's team as part of the Äänekoski bioproduct mill project. The emission limits based on best available techniques set very low limits on emissions into the air and water from the mill. Therefore it was essential to find a new solution for reducing the chemical losses and consequently emissions from the production process. In line with the bioproduct mill thinking, the goal was to produce valuable sulfuric acid internally from mill's own side streams.

Finding the right solution

Sodium and sulfur are essential chemicals in kraft pulping, and they play a vital role in the quality of the pulp production. Balancing these chemicals directly contributes to the efficiency of the pulp mill. The side stream processes – like production of tall oil or lignin – increase the demand of sulfur intake into the production process.

“If there is a surplus of sulfur in the process and the process losses are very small, you need to find a way to balance the incoming and outgoing sulfur. Conventionally, this balance is achieved by removing sulfur from the process with recovery boiler ash. However, removed ash also contains sodium and this loss needs to be replaced by external supply of valuable caustic soda,” explains **Tero Juutilainen**, the Product Manager for Valmet's Sulfuric Acid Plant.

Production of sulfuric acid itself is a well-known process. But developing an integrated solution to produce sulfuric acid at a mill site from the mill's own process streams was not that clear cut. The work started by identifying the source of the sulfur, which was selected to be concentrated, non-condensable gases (CNCG). The sulfuric acid plant consists of a CNCG incinerator, catalytic converter, condensing tower, and bisulfite scrubber, including product storage tanks.

“The biggest challenge in this kind of sulfuric acid production is the end concentration of the acid – 50 to 70 percent – which is the

most aggressive concentration. To manage the corrosion, we needed to carefully design the temperatures and materials in the process,” explains **Antti Väljä**, Project Manager from Valmet.

Win-win-win results

The project was a success. The plant was ready on time and has been able to produce sulfuric acid of excellent quality, surpassing all the criteria for externally sourced sulfuric acid.

“To succeed, we needed to have the right team in place, combining both technical knowledge and a strong drive to deliver results – not to mention a small hint of daredevil. This development project was an excellent example of cooperation between Valmet and customer teams,” explains **Asta Humalajoki**, Product Sales Chief Engineer from Valmet's Mill-Wide NCG Solutions team.

“This kind of integrated sulfuric acid plant is a true win-win-win solution for managing the chemical balance. This is an environmental investment with a tangible financial payback in chemical savings,” Juutilainen continues.

Having its own sulfuric acid plant brings the mill significant environmental advantages. One of them is that the amount of sulfate going to the mill's effluent treatment plant is reduced and the sulfate load in the nearby waterways decreases drastically.

The produced acid can be used in bleaching, the chlorine dioxide production plant, tall oil production, pH control, and the wastewater treatment plant. The economic savings come first and foremost in the form of smaller need for make-up sodium, while savings in sulfuric acid purchases have only a secondary impact. The average overall saving is about EUR 5 per tonne of pulp produced. In addition, reduced dumping of ash leads to further economic and environmental benefits. ■

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Bold enough to **break** industrial boundaries

Professor Fredrik Hacklin urges companies to forget their traditional innovation patterns and take the leap towards more experimental business models. Hacklin took the stage and shared his views on business models of the future at Valmet Customer Days 2018 in Vienna. **TEXT** Vesa Puoskari **PHOTOS** Tomi Aho

Many industries in the West have reached the point where their core businesses are operating in rather mature markets. To increase value capture, companies have to go further in exploring alternative opportunities.

“The most profitable companies are not only excellent at continuously improving their core business, they also never stop exploring new opportunities for creating and capturing value,” explains **Fredrik Hacklin**, Professor of Entrepreneurship at Vlerick Business School, and

Managing Director of Corporate Innovation Lab.

Successful B2B firms provide a strong showcase in the way they are gradually shifting away from manufacturing products and providing maintenance services towards more complex and experimental business models. “Instead of just developing new products within their expertise, they are building new business models beyond their industry,” he says.

Hacklin offers the example of Rolls-Royce and its “Power-by-the-Hour” approach to engine maintenance management of aircraft, where the company offers a

“The boundaries between industries are gradually disappearing, as a lot of competition is emerging from across industries.”

complete engine and accessory replacement service on a cost-per-flying-hour basis. The operator pays only for engines that perform well.

Forget your industry!

Amidst this process of continuous structural change, the boundaries between industries are gradually disappearing, as a lot of competition is now emerging from across industries. There is a new normal in business life: players from other fields are entering with new ideas to disrupt the market of well-established traditional industries.

Hacklin encourages companies to investigate alternative business models and put them into a new context. “What if your company were to apply a business model from the hotel industry, such as Marriott, logistics companies such as DHL, or coffee makers like Nespresso?” he asks.

At the same time, he suggests that companies could consider applying their competence and new business models in other industrial sectors as well – while keeping in mind that they need to carefully consider which businesses they choose.

“Turning a product business into a software business is trendy, but it is not necessarily a good idea for the majority of firms. Digital business model innovation needs to be linked to key strategic questions, not tools,” says Hacklin.

When developing scalable digital services and turning a B2B business into a platform game, there is a risk involved in inviting new, hungry players with an appetite for expansion.

“The competition is no longer just inside the industry, as players like software companies could enter and claim a significant stake of the market,” he warns.

“Companies have to consider carefully if they are ready for this type of competition. Do they know who they’ll be facing on the other side of the table? And how can they ensure and protect their underlying traditional competitiveness?”

“In the end, in tapping into attractive alternative business models and digital opportunities, companies need to resist the temptation to sacrifice their core offering – physical products, production processes, close customer relations and industry expertise,” Hacklin reminds us.

Rapid prototyping with customers

In the digital era, the software industry has turned the traditional innovation process upside down. Instead of developing new products internally and then launching them on the market, companies are developing applications together with their customers.

When companies develop their products and services, says Hacklin, they should creatively find a way to involve customers as early as possible in the process. The aim is to launch the first version quickly and then update it constantly in cooperation with clients. The process can be called rapid prototyping, or the lean start-up method applied to business-to-business commerce.

“Developing digital business should be a means to an end. The first stage is to fully understand the customer’s challenge, and then to figure out how to apply a technology or digital solution to address the issue,” Hacklin emphasizes.

“When all this is done well, the customer might actually be willing to pay more for the products and services. The sales organization of the company could serve as a starting point here.”

“In doing this, we can’t be afraid of experimenting with new organizational models. For example, we can engage our customers by opening up and reorganizing our R&D capabilities and innovation labs towards a wider public, creating joint platforms, or even inviting companies from other fields into the process. Experiment yourself – there are no limits,” he says.

Learning from start-up companies

Another way to foster new business ideas and technologies is to cooperate with start-up companies. They can offer valuable leverage in the launch of new ecosystems.

“There has been a clear shift in mindset in corporate ventures. Instead of the traditional financial rationale, corporations are now looking to start-ups as a window for learning and acquiring new technologies. Through tapping into the start-up ecosystem, corporates can acquire a more dynamic and entrepreneurial vibe even for their own organizations,” says Hacklin.

Also, from the perspective of the start-ups, the conversation is moving beyond capital. Big corporations represent attractive partners because they are good at scaling up their businesses and mass production processes. They also have access to supply chains and customers.



Digital business model innovation needs to be linked to key strategic questions, not tools,” says Fredrik Hacklin.

“Start-ups want to benefit from the know-how and access to customers that large companies have. But many partnerships suffer because the corporate parent simply does not have enough time for sparring and working together with the start-up,” he notes.

“The parent company should facilitate knowledge transfer by, for instance, sending their most skilled engineers to work at the start-up, or even inviting the start-up team to spend more time inside the corporation as well. In other words, they should focus less on the financial capital investment, but much more on transferring experience and developing talent,” states Hacklin.

Breaking organizational silos

A crucial condition for success in the new business landscape is the ability to dismantle organizational silos and

find new ways of working internally. “As our world is very much in transition, we have to find an organizational structure that is capable of responding to rapid changes,” explains Hacklin.

“The question is how to establish cross-functional teams – how to set up new organizational units or corporate labs. Here again, don’t be afraid of experimenting with new structural set-ups,” he urges us.

A happy customer should be the main reason for the mission. “As we move downstream in the value chain with our offering, companies are getting closer to their customers, which enables increased profit margins. The closer we get, the higher the potential gain,” he concludes. ■

Around the world

What is happening in the global pulp, paper and energy industries? *Around the world* demonstrates some of the events and projects where Valmet has worked together with customers to move their performance forward.

OCC and container-board lines for Mondi SCP Ružomberok in Slovakia

Valmet will supply Old Corrugated Container (OCC) and OptiConcept M containerboard making lines with a winder for Mondi SCP's mill in Ružomberok, Slovakia. PM 19 including Valmet's automation solutions will be designed to produce a new and unique environmentally sound containerboard grade, kraft top white, which combines the strength, printability and appearance benefits of a white virgin fibre top layer with the economic advantages of a recycled fibre bottom layer.

Cooking plant to Burgo Ardennes pulp mill in Belgium

Valmet will supply Burgo Ardennes with a batch cooking plant for its pulp mill in Virton, Belgium.

Biomass-fired boiler plant to Elenia Lämpö Oy's Vanaja power plant in Finland

Valmet will supply a biomass-fired boiler plant to Elenia Lämpö Oy's Vanaja power plant in Hämeenlinna, Finland. The investment will enable the company to raise the share of renewable fuels used in the city's district heat production to over 80% and increase the energy efficiency of its heat production.

Automation and safety system to the Balticconnector pipeline project gas compression station in Finland

Valmet will supply an automation and safety system to the new gas compression station of the Balticconnector pipeline project in Inkoo, Finland. The offshore pipeline will connect the gas networks in Finland and Estonia. Valmet's delivery includes a Valmet DNA automation system, a Hima safety system, application software configuration, factory acceptance testing, commissioning and operator training.

Multifuel power boiler and a flue gas cleaning system to Japan

Valmet will supply a multifuel power boiler and a flue gas cleaning system to Air Water & Energia Power Onahama Corporation at Onahama Plant located at Iwaki City, Fukushima Prefecture, Japan. The new CFB boiler will enable the power plant to achieve a stable power supply at high thermal efficiency while significantly reducing CO₂ emissions.

Crecia-Kasuga started up a Valmet Advantage Tissue machine in Japan

Crecia-Kasuga Co., Ltd has successfully started up a new tissue line, jointly delivered by Valmet and Kawano Zoki Co., Ltd., at the company's new production facility in Fuji, Japan. Valmet's delivery included an Advantage DCT 135HS machine with Valmet's key technologies OptiFlo Headbox, Advantage ViscoNip press, AirCap hood and steel Yankee dryer.

Valmet acquires US-based Enertechnix

Valmet has acquired Enertechnix, a high-tech combustion diagnostics and monitoring technology company based in Olympia in the USA. The company develops innovative technologies for boiler imaging and temperature measuring.

Extensive paper machine grade conversion rebuild for Burgo Group in Italy

Valmet will supply an extensive paper machine grade conversion rebuild and a wide scope of automation for Burgo Group S.p.A. at its Verzuolo Mill in Italy. In the project, originally Valmet-supplied paper machine PM 9 and related stock preparation systems currently producing lightweight coated (LWC) paper grades, will be rebuilt to produce recycled containerboard grades.

Advantage tissue production line to CMPC Tissue in Argentina

Valmet has been chosen as the supplier of a complete tissue production line by CMPC Tissue S.A. The tissue line will be installed at CMPC's Zarate mill in Argentina. The new production line will add over 50,000 tons of high quality toilet and towel grades to the company's annual production.

Biomass boiler to Greenalia's new power plant in Spain

Valmet will supply a biomass boiler to Greenalia's new Curtis-Teixeiro biomass power plant in Teixeira, Spain. With Valmet's boiler technology, the plant will be able to supply power in an efficient and sustainable way. The order was placed by ACCIONA Industrial and Imasa, a Spanish EPC contractor joint venture for the plant.

Third Advantage tissue production line to Lila Group in Turkey

Valmet will supply a complete Valmet Advantage DCT 200 tissue line to the Turkish tissue manufacturer Lila Group in Corlu, 100 km west of Istanbul. The TM3 line will be equipped with all state-of-the-art options available including stock-preparation and an extensive automation package to achieve production with high efficiency and low energy consumption. Valmet has previously delivered two Advantage DCT 200 tissue lines to the same mill.

Another OptiConcept M containerboard making line for Shanying International in China

Valmet will supply yet another OptiConcept M containerboard making line for Shanying International Holdings Co., Ltd., in the city of Jingzhou in Hubei province, China. The new production line (PM 23) with a wide automation package is following the delivery of the previous OptiConcept M board machine (PM 21) announced in December 2017.

Web monitoring systems to Shanying Huazhong Paper in China

Valmet has received orders for next-generation web monitoring systems from Shanying Huazhong Paper Industry Co., Ltd. in China. The full-scale Valmet IQ Web Monitoring Systems will be installed on two paper machines at the company to improve and maintain machine productivity.

Long-term mill maintenance services agreement with Asia Symbol in China

Valmet and Asia Symbol (Shandong) Pulp and Paper Co., Ltd. have signed an agreement for the maintenance services for the company's board machines and pulp mill in China.

About Valmet

Valmet is a leading global developer and supplier of services, automation and technologies for the pulp, paper and energy industries. Our more than 12,000 professionals around the world work close to our customers and are committed to moving our customers' performance forward – every day.



Agile innovation

Last year, Valmet launched a unique innovation training program to introduce agility typical of small startup companies in its innovation activities. Within the Innovation Pathways training program, customers and Valmet specialists from different parts of the organization sit down at the same table. **TEXT** Helena Raunio

The Innovation Pathways program seeks to reach the agility of startup companies while making use of the benefits of a large company: the ability and perseverance to test and

refine the best ideas into new business. "The goal of the Innovation Pathways training program is to increase the competence and innovation mindset of our own company. At the same time, we use the program to solve problems of our key cus-

tomers," says **Ari Saario**, Head of Valmet's Research and Development. The practical management of the training program is taken care of by Board of Innovation, an international company specializing in innovation strategies. More

than 100 people from Valmet have already participated in the program, together with a group of representatives of customer companies.

More speed and agility

Even though there has been no shortage of ideas so far, the challenge lies in the further development: In the innovation process, it is crucially important to make the right choices, faster and more efficiently. In addition, one needs to have the courage to give up ideas for which there are no further development opportunities in sight early enough.

"The most important thing about the whole program is the development and improvement of the innovation culture and engaging in more long-term joint development work with key customers," Saario says.

A meeting point for innovation

Twice a year, 30 Valmet employees are selected for the training program from different cultures and functions. Those selected include personnel from procurement, sales and HR, as well as the pulp, paper and board, energy, and automation businesses.

"We want to have people from all business lines and all geographical areas participating in the program. This is not just a question of offering innovation

training for research personnel, but a way to have people with different work tasks collide in a new way and bring them out of their silos," Saario says.

This collision will be an advantage later on when the participants return to their own work tasks. Those who participate in the program will return with new skills and networks that can be utilized in the development of one's own work, as well as an increasingly innovative way of thinking.

The best innovations are created through cooperation

For customers, the program offers an opportunity to innovate a new product, operating method, business idea or process.

Saario has observed that customers are increasingly eager to implement development projects together with their main suppliers, so the interest is mutual.

"We also engage in development work together with our most important suppliers and customers, as well as research institutes. The use of such consortiums has produced the best results."

Solving actual problems

The training is built around an actual customer problem, which is processed for six months. The teams develop ideas and business models, and in connection with them, Valmet employees are taught new things.

According to Saario, this is a form of learning by doing. The customer is present in many parts of the training, and the program culminates in the Dragon's Den section, where the participants pitch their ideas to the top management of Valmet and the customer. "Now that we are running the third course, this feels even better than I was hoping for at the initial stage."

However, Saario emphasizes that Innovation Pathways is only a part of Valmet's innovation activities. Long-term product development projects that take several years and include complex processes and large-scale testing will continue to have an important role in the company in the future as well. For these projects, the time span can be up to ten years.



Forward

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Valmet's customer magazine

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Move your cooking technology forward



CompactCooking™ is Valmet's continuous cooking system. It was a revolution when it was launched in 1997 and it has been under evolution ever since. Today 48 CompactCooking systems are in operation, helping pulp mills world-wide to achieve excellent pulp quality, maximum pulp yield, low reject rate, as well as low steam and power consumption.

We are now introducing the next generation CompactCooking technology, which builds on the quality and efficiency benefits of the existing system. The enhancements include better steaming, impregnation, washing and bleachability as well as higher flexibility, improved maintenance and accessibility.

Find out more at valmet.com/whatscooking

