VOITH

nextlevel

by Voith Paper — N° 09

Papermaking for Life

Editorial nextlevel N° 09

Dear Readers,

It takes vision and teamwork to deliver the means to minimize the environmental impact of our industry. It requires us to rethink traditional approaches to established processes and take bold decisions to save energy, water and fiber.

This is exactly what we are doing in our advanced R&D facilities around the world, in independent research programs and in joint projects with our customers. Voith has always recognized the importance of working with the best in the industry. This approach has kept us and our customers at the forefront of sustainability. It ensures we deliver energy-efficient, advanced technology for the low-impact production of sustainable, bio-based materials.

As the global turmoil over the energy and climate crises continues, there is a growing sense of urgency to take decisive action. In this special issue of nextlevel, we share how we are defining ways to decarbonize, electrify and future-proof papermaking. I hope our commitment to sustainable papermaking will inspire you to join us on this important journey.

Andreas Endters
President & CEO Voith Paper

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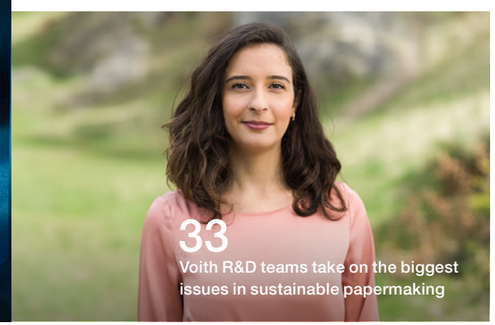

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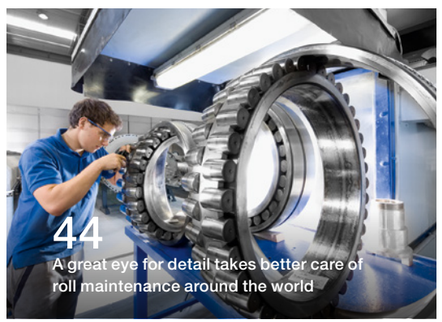

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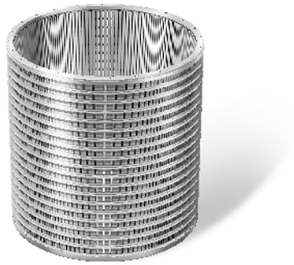

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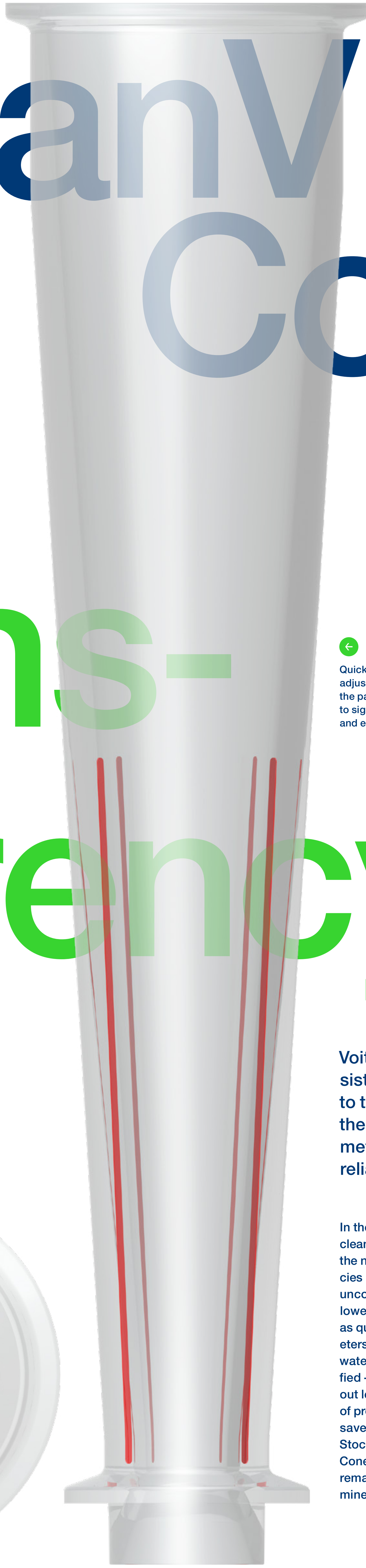
CleanView Cone: Full Trans-parency



Thanks to the transparent cone wall of the CleanView Cone, process parameters can be visually identified.

Quick and simple adjustment of the parameters leads to significant fiber and energy savings.

Voith's innovative cone for low-consistency cleaners brings full transparency to the cleaning process. Thanks to the transparent cone wall, process parameters can be visually identified and reliably adjusted.

In the stock preparation's cleaning process with centrifugal cleaners, the potential to improve efficiency is high. Now, the new transparent CleanView Cone unlocks higher efficiencies in a cost-effective way. Blockages, for example from uncontrolled flow conditions or excessive thickening in the lower cone, can be immediately detected and removed as quickly as possible. As a result, important process parameters, such as stock consistency or the addition of dilution water, can not only be systemically but also visually identified – which means that complex sampling has to be carried out less often. "Through the quick and simple adjustment of process parameters, fibers, energy, and therefore costs are saved," says Elmar Ott, Product and Service Manager of Stock Preparation at Voith Paper. In addition, the CleanView Cone comes with an optical wear indicator, which shows the remaining wall thickness. This makes it easier to determine the wear condition of the cone – even during operation.

CleanView Cone – Clear Benefits

→ Minimal investment costs
→ Wear and blockages are clearly visible
→ Fiber and energy savings are made possible

News
from the world of Voith Paper

World’s largest kraftliner machine enters service

In early November 2022, Voith successfully brought the world’s largest kraftliner machine on stream for the Swedish forest industry company SCA at its Obbola site. The state-of-the-art XcelLine paper machine with a design speed of 1,400 m/min and a wire width of 10,200 mm will produce 725,000 tons of high-quality kraftliner annually. With it, SCA is setting new standards when it comes to resource efficiency, productivity, safety and quality.
In addition to the paper machine, Voith is responsible for all relevant auxiliary systems and supplied a variety of automation and digitalization solutions as well as a comprehensive service, spare parts and wear parts package. In 2023, a Voith BlueLine stock preparation system will replace the existing unit and further increase sustainability at the Obbola site, as the new plant consumes up to 40 kWh less energy per ton produced compared to conventional units and will use roughly 30 percent less fresh water than before.

Design speed
1,400
m/min

Wire width
10,200
mm

725,000
tons of high-quality kraftliner anually

Rebuild in Peru

Trupal is relying on Voith for the first of three rebuild phases of its PM 7 at the Trujillo location in northern Peru. As part of the rebuild, Voith will supply a new NipcoFlex shoe press and modernize the dryer section. The goal of the leading paper manufacturer in Peru is to significantly increase the dry content after the press section, thereby increasing machine speed and production. At the same time, energy consumption will be significantly reduced. “We have chosen Voith again because we need the unique delivery capability and in-depth expertise of its specialists,” says Paola Medina, Chief Executive Officer of Trupal. “This first phase of the rebuild is very important, and we need a strategic partner that we trust completely.”

Automatic format change for greater safety

Voith recently introduced FastFormat, its first product for fast and safe format changes. The solution has a return on investment of only a few months and particularly helps paper manufacturers avoid capacity losses due to frequent format changes. With FastFormat, the winder’s engaging edge slitters can be moved at crawl speed and the web width can be changed, enabling automated format changes without operator intervention. This not only increases safety for the operator, but also boosts the winder’s production capacity thanks to shorter set-up times. Approximately one minute can be saved per format change with FastFormat. The solution is already being used successfully in the German town of Witzenhausen. “FastFormat offers us enormous productivity and safety benefits and is an important step towards a fully automated process,” confirms Ulf Heiligtag, Head of Technology at DS Smith Paper. “The installation process went smoothly and the solution runs as expected – we are extremely satisfied,” adds Stephan Siebold, Project Director at DS Smith Paper.

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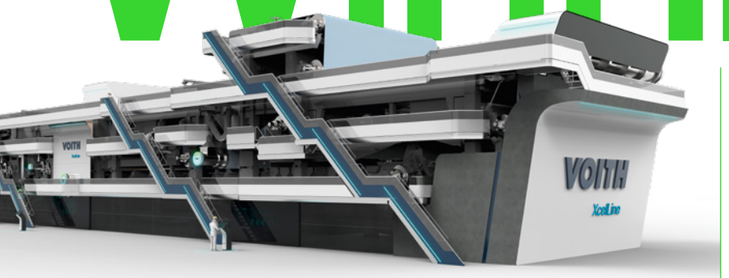
Award-Winning



Solutions from Voith recently received two awards for their outstanding performance and design. The renowned accolades are proof of the company's innovative strength and future viability.

Winner of the highly coveted sustainability award

Voith has won the 2023 German Sustainability Award Design in the Vision category. The company received the prestigious award for its XcelLine paper machines, which already stand out today for their significantly reduced energy consumption, high level of fiber utilization and significantly reduced water consumption. "This award highlights our market-leading and innovative solutions that play an instrumental role in achieving a sustainable transformation in the paper industry," said Dr. Michael Trefz, President Projects at Voith Paper. Voith's "Papermaking Vision," a visionary design study that goes far beyond the current state of the art and outlines the future of papermaking, was one of the decisive factors in winning the award. Voith is already gradually integrating the visionary concept into customer projects and in doing so is optimizing performance, quality and design, as well as safety, user-friendliness and ease of maintenance. According to the award's organizers, in view of the huge amount of paper used every day, the contribution to climate change mitigation and environmental protection that Voith makes with its machines is immense.

↑ Voith's visionary "Papermaking Vision" design study showcases the sustainability of future papermaking and was instrumental in winning the 2023 German Sustainability Award Design.

WINNER
German Sustainability Award Design 2023

Visionary refiner concept

Voith's new InfibraFiner has already won the Baden-Württemberg International Design Award, the Focus Open 2022 in silver, even before its market launch. A jury of design experts particularly highlighted the solution's visionary appearance, innovative strength and future viability, as well as the value it offers customers. In addition to its outstanding design, the InfibraFiner features significantly improved performance figures – compared to conventional refiners, it offers an additional capacity of up to 28 percent and makes a much more consistent and energy-optimized refining process possible. To achieve the best possible ease of operation, the Voith SmartLight on the refiner cover provides a visual indication of the machine's status, performance and current maintenance condition at all times. The latest member of the BlueLine stock preparation product family is currently in its trial phase, with the first InfibraFiner (IF90 DG) already reliably in operation and others of its kind about to be brought into service.

← The new InfibraFiner is a real eye-catcher thanks to its clear structures, high-quality surfaces and modern materials.

FOCUS OPEN 2022
SILVER

Could the world-beating Voith NipcoFlex shoe press perform even better? A cross-functional team of experts set out to find out. Their results are more than promising!

High performer

It's high time to come clean about a secret. A cross-functional team of Voith experts has been working intensely on the design of the NipcoFlex shoe press. Richard Horn, Product Manager Press Section at Voith Paper, believes the team is already onto something special. "Without giving too much away, it will involve important innovations that will boost both efficiency and sustainability of a Voith technology that is already world beating," he says.

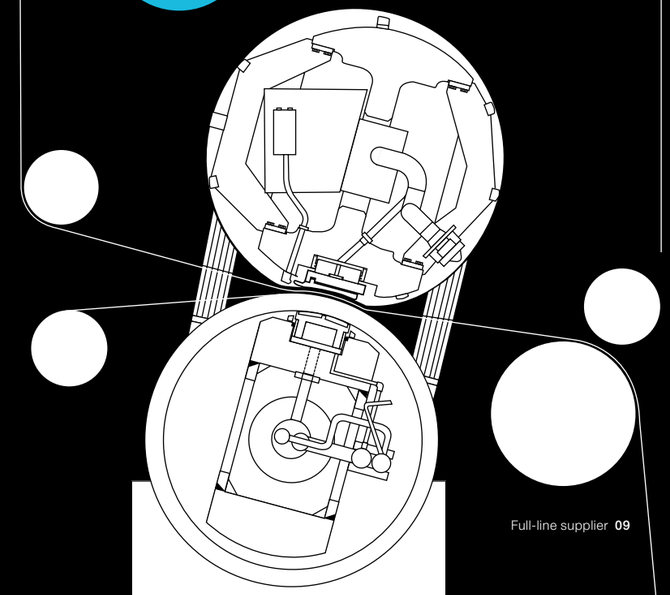
For Helga Krieger, R&D Engineer at Voith Paper and the project lead, the promising results of recent trials of the new shoe press design are not a surprise. "Our design team has a unique range of skills, knowledge and experience. We are working as one in a team of experts in chemical engineering, industrial design, process engineering and digitalization," she notes. "We also work together with specialists in our QualiFlex press sleeve family." It's this close alignment of expertise and process knowledge that ensures a more joined-up approach to the challenge the team has set itself: design a shoe press that will increase dewatering significantly in the press section to ultimately reduce energy consumption in the drying section.

"We've been busy working on computer simulations, creating working prototypes and testing the new equipment at our pilot facilities in Heidenheim, Germany," adds Horn. "Such a holistic approach helps pinpoint and implement incremental improvements to our shoe press design that will bring compelling benefits for our customers." Real-world trials with selected customers are expected to be underway in the near future.

Innovation
A cross-functional team is collaborating on the design.

Dewatering
The goal is to significantly increase dry content after press.

Sustainability
R&D is focused on reducing energy consumption in the drying section.



Teamwork as the key to success
from left to right: Oliver Thomas (Voith), Peter Czoski (Papierfabrik Niederauer Mühle GmbH) and Giancarlo Gianlorenzi (Toscotec)

In the town of Kreuzau in the German state of North Rhine-Westphalia, a comprehensive rebuild of PM 2 at Papierfabrik Niederauer Mühle GmbH resulted in paper of the highest quality and made the production process more resource-friendly. This achievement was made possible by the strong synergies between the Voith and Toscotec teams.

Strong Synergies

Enhancing product quality, productivity and the competitiveness of its mill through the use of innovative technologies – these were the ambitious goals Niederauer Mühle was pursuing through the rebuild of its PM 2 in Kreuzau at the end of 2021. For the implementation of this high-performance project, the company made the decision to entrust full-line supplier Voith and its subsidiary Toscotec with most of the duties. “Both companies impressed us with their market-leading technologies, many years of experience and high standards of quality,” explains Roman Knorr, Operations Manager at Papierfabrik Niederauer Mühle GmbH.

Scan the QR code to learn more about the PM 2 rebuild project.

About Niederauer Mühle

Niederauer Mühle is one of the leading suppliers of white-covered corrugated base paper from 100 percent recycled fibers. In 1984, the Autenrieb and Meyer families took over the company. As owners, they continue to manage the mill in first and second generation to this day. Continuous investments in the latest technology, innovative technologies and qualified employees ensure the highest quality of the paper. Since 1984 the production volume has been increased from 9,000 to nearly 350,000 tons of white-covered corrugated base paper per year today.

Rebuild project to the highest standards of technology

“We wanted to ensure that PM 2 was elevated to a new level in terms of quality, yet without losing efficiency,” says Knorr, describing the challenge. The rebuild of the dryer section laid the foundation for energy-efficient production and an improvement in the quality of the corrugated base paper produced by Niederauer Mühle from 100 percent recycled paper. To this end, Toscotec supplied 22 new TT SteelDryers, which feature higher heat transfer rates compared to cast iron cylinders due to their thinner shell and achieve a drying capacity that is up to 30 percent higher. As a result, in combination with a new drying hood also supplied by Toscotec, they enable significant energy and cost savings. In addition, Voith supplied a SpeedSizer HPX with high line force that applies the starch film evenly and, due to the higher level of starch penetration, particularly efficiently with respect to the raw material. This represents a significant advantage, as up to now PM 2 did not include a film applicator unit. In addition, the fully automated ropeless threading system from Voith’s Prevo family, which makes it possible to thread the tail ropelessly and safely, now enhances overall safety when working on PM 2. With its innovative nozzle and valve technology, the installed OnQ ModulePro nozzle moistener ensures that the moisture cross profile is perfect across the entire paper web and that downstream processing runs smoothly. Its results have prompted Niederauer Mühle to also consider replacing the existing unit on PM 2’s cousin.

Combined expertise creates unrivaled added value for customers

“With concentrated expertise, innovative components and state-of-the-art technologies, we have ensured that Niederauer Mühle achieves its efficiency and productivity targets through competitive investments,” notes Giancarlo Gianlorenzi, Area Sales Manager at Toscotec, summing up the benefits of the joint machine rebuild by Voith and Toscotec. The combined expertise of both companies made it possible to take a particularly comprehensive view of the project in order to guarantee that paper production at the site would be both resource-friendly and energy-efficient. “Our customers benefit from two one-of-a-kind product and service portfolios that, when combined, offer significant added value,” reports Oliver Thomas, Sales Manager at Voith Paper. “These strong synergies enable us to successfully perform rebuilds of any kind.” The fact that twice the expertise in this case also leads to twice the benefit is demonstrated by the customer’s high level of satisfaction. “After an impressively short implementation phase of only nine months from when we awarded the contract, we’ve been achieving excellent levels of quality with outstanding processing properties since bringing PM 2 back on stream, which is also what we’ve been hearing from our customers,” reports Peter Czoski, Plant Manager at Papierfabrik Niederauer Mühle GmbH. “To sum up, we would carry out the rebuild in exactly the same way again.”

“Full-line supplier Voith and its subsidiary Toscotec were the perfect partners for our ambitious rebuild project.”

Roman Knorr
Operations Manager at Papierfabrik Niederauer Mühle GmbH

nextlevel N°09

At your Service

Successful aftermarket support relies on the timely delivery of high-quality parts and comprehensive services to customers who have a variety of complex needs. Thanks to a range of digital platforms and tools, domain expertise and local experts on the ground, Voith is creating a customer-centric operation like no other in the industry.

Digital focus:
Antonio Lemos, Regional President Voith Paper South America

Taking the lead:
Dr. Jürgen Abraham, President Products & Services and Digital Business Officer, Voith Paper

Tailored support:
Björn Kleigrewe, Head of Solution Management Spare Parts, Voith Paper

Make no mistake, the modern paper mill comes equipped with technology that reduces uncertainty and increases plant efficiency. And yet, at times the paper mill can still be a very high-pressure environment, as Dr. Jürgen Abraham, President Products & Services and Digital Business Officer at Voith Paper, highlights. “If operators were to wear a smartwatch, it would record a regular heartbeat that mirrors the smooth running of the machines – but also heart rate spikes during those moments when important decisions had to be taken fast,” he says. “With the comprehensive aftermarket service we provide, we are getting rid of those spikes. And at the same time, we’re maximizing machine availability and resource-efficiency.”

Ten years ago, Voith made a conscious decision to widen the company’s aftermarket support and services. The goal was to provide papermakers with all the tools and means necessary to take decisive, proactive measures to keep their machines in optimum condition and running at peak performance. Over the years, Voith’s aftermarket support has been extended, tweaked, digitalized and optimized. “By continuously working with our customers, we continue to improve, becoming speedier at what we do and more spot on with the services we provide. We’re on a transformative journey,” notes Dr. Abraham. “And it’s not over yet.”

A cultural shift for your benefit

One of the biggest challenges is perhaps more cultural than technological. As Dr. Abraham explains, a pure equipment supplier typically has the luxury of extensive lead times to work on the optimum design. In contrast, in the aftermarket business, you need to be able to respond to requests within very tight deadlines. “Our aftermarket teams have to work with a very different sense of urgency,” he says. “They understand that ‘now’ really means ‘now.’”

Crucially, papermakers want a 24/7, one-stop solution with rapid response times. For Antonio Lemos, Regional President Voith Paper South America, Voith’s new ticketing system is one example of how the company is working towards that goal. “In many ways, our system replicates well-proven customer support tools in B2C businesses,” Lemos says. “Most importantly, it brings us closer to our customers, allowing us to open a communication channel and to be more responsive.” In addition, the ticketing system makes it easier to keep the customer informed of the progress of their request. “It does not matter where the client opens the request, from a web form or via email, we will keep them informed until its resolution,” explains Lemos. Moreover, this system helps the internal teams process requests faster, allowing Voith to rigorously track and measure the speed and quality of its services, something that is unthinkable with emails alone. Using modern tools such as the Net Promoter Score (NPS), feedback can be elicited in a timely and straightforward way, which helps Voith understand the customer experience better and effectively make improvements. As a result, focus is directed to the areas that need it the most. In a way, the ticketing system is a symbol of the general cultural shift taking place within Voith. “This can only be achieved due to an internal mindset change. We are pulling together our expertise and tapping into digital tools so that we can jointly work faster with a common purpose, which is serving our customers in the best way possible,” adds Lemos.

Expert insights matter

Voith’s full-line supplier expertise and extensive experience certainly puts the organization in a unique position to provide an aftermarket service that covers all aspects of papermaking. Many team members have first-hand knowledge of machine start-ups, and they know what it feels like to be at the controls. They are therefore motivated to make a difference. “Their insights help raise awareness of the kind of support we need to offer,” says Dr. Abraham. “Which is why we increasingly provide a successful consultancy service on optimal spare parts inventory management.”

Björn Kleigrewe, Head of Solution Management Spare Parts at Voith Paper, has more details. “A single production line depends on tens of thousands of components and parts. If a crucial piece fails and a spare is not immediately on hand, it could derail a multi-million operation,” says Kleigrewe. For Kipaş Kağıt, a Turkish paper manufacturer, the Voith spare parts consultancy certainly contributed to the successful start-up of their new production line. Harun Gulsen, Mechanical Maintenance Manager at Kipaş Kağıt, highlights one aspect of the successful collaboration. “There’s no doubt that Voith’s on-site team is fully focused on ensuring the maximum availability of our machine,” he says. “Their pragmatic, flexible and friendly approach is always highly appreciated.”

Having supplied the company’s Söke plant in western Turkey with an entire production line for board and packaging papers, which included BlueLine stock preparation technology, the XcelLine paper machine and the latest automation technology, Voith was ideally placed to advise the company on its spare parts needs. “Because of our in-depth knowledge of the inner workings of the production line, we could identify which parts were critical and make sure they were delivered on time to ensure a successful start-up,” explains Kleigrewe. “Our personal insights bring a new level of confidence to the inventory management of a paper mill.”

Dr. Abraham agrees with that assessment, adding: “Our domain knowledge is the key to the comprehensive nature of our aftermarket support and our consultancy service.” As is the close collaboration across regional organizations. Such a joined-up approach brings important insights and helps identify areas of improvement in the customer-centric management of spare parts. “Our focus is on improving the whole process surrounding the aftermarket services, from the identification of critical parts to their timely delivery,” continues Dr. Abraham. Having a regional focus within a global organization also brings huge advantages. “We are very well set up to cater to the specific needs and expectations of our customers, which can vary across regions,” he explains. “By holding local inventory of selected critical parts, for instance, we introduced a 24-hour express delivery service. It’s just one example of how we’re making spare parts inventory management more convenient for the customer.”

Digital platforms offer new benefits

Customer-centricity and convenience also play a role in the design of the Voith Paper Webshop, which offers the best one-stop-shop experience in the industry. Currently, it provides real-time information in seven languages on the immediate availability of around 130,000 key spare parts. However, the Webshop is only one of a range of digital platforms and applications that make spare parts inventory management easier. Another is the OnCare portfolio, which includes OnCare.eDoc, an easy-to-manage, searchable digital documentation platform that links directly to the Webshop. Voith teams working in the background also have access to the equipment and service history of a mill, which improves the quality of advice they provide. “High-quality expert advice is at the heart of the Voith aftermarket support, whether it’s provided remotely, for instance through the Voith OnPerformance.Lab, using remote video communication tools, or on site, by the local service teams,” explains Dr. Abraham. “In every case, the Voith teams enhance in-house expertise to achieve the best possible outcome.” At the same time, such platforms help document processes and conserve operational know-how for the next generation of papermakers. The remote service option has proven so popular that Voith recently opened other OnPerformance.Lab sites in Tokyo, Japan, and Kunshan, China, to help meet increased demands in these regions.

Multi-level model

Providing expert guidance, high-quality products and tailored aftermarket services to maximize machine availability and support papermakers in the transition to sustainable papermaking:

- **Expert consultancy on spare parts, wear parts, services and digital solutions**
- **Dedicated on-site support for troubleshooting and improving plant efficiency**
- **Simplified, integrated one-stop-shop: Voith Paper Webshop**
- **24/7 ticketing service for easy and fast access to the necessary support**

Get in touch with our aftermarket experts at vpservice@voith.com

> When it comes to sustainable and efficient papermaking, our aftermarket service is a crucial enabler."
>
> **Dr. Jürgen Abraham**
> **President Products & Services and Digital Business Officer, Voith Paper**

In Europe, one flagship venture is already reaping the benefits of digitalization with Voith's Papermaking 4.0 portfolio, namely for Smurfit Kappa, a leading provider of paper-based packaging solutions. Since day one of operation in 2021, Voith's advanced process control system OnEfficiency.Strength has brought significant cost savings and more stable paper quality. The installation followed Voith's intensive analysis of process and production data and the extensive training of the plant's personnel. "Voith digital solutions, services and training deliver impressive value on top of a competitive edge," highlights Dr. Abraham. "We ensure our customers save time, costs and resources every day in a way that is far easier than they could have imagined."

It is only through such comprehensive solutions that condition monitoring of machines is secured 24/7. And that lifts the pressure off the machine operators. "Our Papermaking 4.0 portfolio helps papermakers create a safe, less stressful and highly productive working environment," notes Dr. Abraham. "Our digital solutions approach makes sure the workspace is user-friendly and that all the relevant information needed to create an efficient papermaking process is presented on a visually attractive, easy-to-digest interface."

On-site support impacts results

While the advantages of cloud-based, remote support are undisputed, customer proximity on the ground is essential, believes Setiawan Djohannes, Sales Director Fabric & Roll Systems Indonesia at Voith Paper. "We gain a better understanding of the needs of our customers when we see the machines in action and listen to the individual concerns of the machine operators on a regular basis," says Djohannes. "Such a close, collaborative customer relationship allows us to follow a solutions-based approach."

One such relationship is with Fajar Paper, a leading manufacturer of packaging paper in Indonesia. The local Voith service team provided valuable support when the PM 2 at the West Java plant was experiencing high sheet breaks in the press section. One solution involved using the Magna Rock II R cover on the center press roll, where stickies had been identified as a major cause of concern, and optimizing the suction press roll cover with MatchFlow. After implementation, the monthly rate of sheet breaks was reduced by 44 percent, and the dryness content was increased at the third press by 1.2 percent.

Mulyadi, Production Head of PM 2 at Fajar Paper, is enthusiastic about the results. "I feel the dirt deposit improvement on the doctor blade in the center roll has decreased significantly and there is no rewetting in the suction press roll anymore," Mulyadi highlights. The clear and instant benefits led to further improvements to PM 2 under the guidance of the local team, which brings together full-line supplier expertise from across Voith. This helps prevent silo thinking and leads to impactful results for customers. For PM 2, this includes the installation of Voith HydroSeal on the suction rolls, which is expected to further benefit the customer by saving water consumption and drive load. At the same plant, the Voith service team is helping to unlock the full potential of the PM 8 machine, by providing expert advice and a range of products, including roll covers, press felts and the Voith QualiFlex press sleeves. "Customers see that we deliver on our promises time and time again," adds Djohannes. "Together with our full-line supplier expertise, our solutions-based approach builds trust in our products and services."

The same approach is taken in the U.S. As Ethen Watkins, Sales Representative at Voith Paper, explains, customer proximity also leads to dramatic improvements. In the case of the North American papermaker Sylvamo, Watkins and his team identified how to reduce break-in time from an average of five days down to 12 hours. It involved replacing the company's standard set-up on the Single-nip NipcoFlex press with Voith press felts, which resulted in increased press exit solids and improved moisture profile. Joe Lyons, Eastover PM 1 Superintendent has only compliments about the outcome. "Per Voith's recommendation, we made a small change to the bottom fabric and have been extremely pleased ever since," Lyons says. "We have proven the felts will run out to eight weeks, and possibly beyond, without any loss of functionality. Our Voith service rep provides us with up-to-date scans on a regular basis along with suggestions to further improve our machine stability. We have been very pleased with the service." As the Voith solution also increased the press exit solids, which resulted in lower steam usage, the change also supports the company's sustainability goals.

The future is digital, human-centric and sustainable

Sustainability is increasingly the driver for aftermarket support. The reason for this is clear. A papermaking process that consumes fewer resources puts increased demands on a plant's standards of efficiency. By combining the best in digital tools, cloud-based platforms and expert insights, Voith is helping papermakers make the transition to a future that is both sustainable and efficient. "Given the ongoing energy, water and climate crises, everything we do has to support sustainable papermaking," concludes Dr. Abraham. "This is the biggest challenge we face. But it also gives us the opportunity to help our customers rethink papermaking and make it better, which is the idea behind our Papermaking for Life sustainability program. And when it comes to sustainable and efficient papermaking, our aftermarket service is a crucial enabler."

Successful mergers depend on the clear benefits they bring for customers. This is especially the case for dataPARC. This joint automation and digitalization portfolio from Voith and BTG will make it easier for papermakers to build sustainability into pulp and paper production.

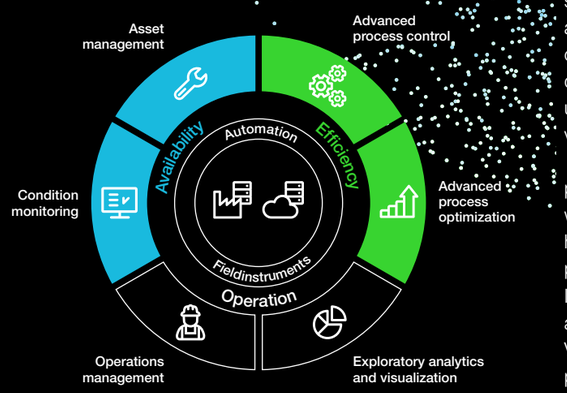
The smart combination of two established data platforms, Voith's cloud solution OnCumulus and BTG's on-premise installation dataPARC, puts papermakers in a better position to understand and mitigate the environmental impact of their operations. For Peter Eisen, Senior Vice President Product Management Digital & AMB at Voith Paper, combining their proven strengths into dataPARC creates an unrivalled solution. "From woodyard to winder, we now have a complete ecosystem of digital tools and the domain knowledge to automate and optimize the entire pulp and papermaking process," he says.

Crucially, dataPARC will offer a fully integrated, hybrid system, which means it combines the advantages and almost unlimited computing power of a cloud platform with the benefits of an on-premise solution. Thanks to Voith's expertise in artificial intelligence and big data analytics, it is designed to unlock operational insights from customer data so that papermakers can prioritize actions that deliver on sustainability. The strengths of dataPARC lie partially in its user-friendly design and in its ability to process high-frequency data or closed control loops. "The advantage to our approach is that we have designed an intuitive user interface with the operations in mind,"

dataPARC

says Jason Myers, Business Director of dataPARC. "dataPARC is designed by the end user, for the end user. You don't need a background in advanced analytics or data mining to drive operations efficiency, productivity and variability reduction from our platform. Our goal is to deliver a flexible, feature-rich and intuitive software package that allows users to ask questions of data and get the answers immediately." This is why it is so popular with operators and sought after by manufacturers in a variety of industries. Currently, over 800 sites in more than 30 countries are using dataPARC to optimize plant efficiency and gain cost advantages.

One result of this merger is that the Voith OnCumulus cloud platform will now go under the name of dataPARC Cloud. It will complement the existing dataPARC platform and act as the hub for the Voith Papermaking 4.0 portfolio, the advanced applications specifically designed for the pulp and paper industry. It will also offer the BTG MACS advanced control solutions as part of the OnEfficiency portfolio. This final step expands the Voith portfolio for cross-process controls and AI-supported process optimization, especially in the area of pulp production.



19 Page 38

#sustainable paper making

Discover the potential of sustainable papermaking.

Sustainability is the defining issue of our lifetime. At Voith, it's in the company's DNA. Voith R&D and product innovations are driving resource-efficiency and the decarbonization of paper mills, and supporting the development of sustainable, low-carbon materials – including for packaging and hygiene products. With emissions-breaking technology and sustainable wear parts along the paper production line, Voith is taking papermaking into a sustainable future. This is equally true for the company's own production sites, which have already been transformed into climate-neutral operations worldwide. What follows is a snapshot of key Voith activities and their impactful results across the industry.

Join Voith on the path to future-proofing papermaking for life!

Papermaking for Life

Booklet 1

Energy for all-around sustainability

There is no simple roadmap to sustainable papermaking. Discover how targeted investments, long-term partnerships and breakthrough technologies are transforming the industry. A holistic approach is what's needed to make a difference.

€100 million

Voith Paper is committed to an annual R&D investment of around €100 million in sustainable technology and processes.

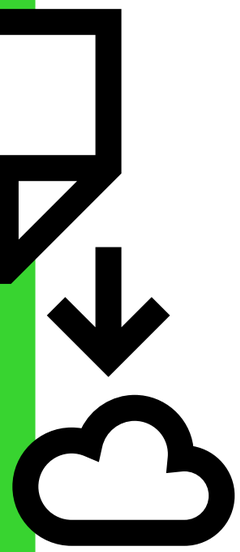
Papermaking has the greatest potential to be truly sustainable. "Fortunately, paper is an inherently sustainable material and a crucial part of today's bioeconomy," notes Dr. Michael Weiss, who, as Chief Technology Officer at Voith Paper, is driving the company's forward-thinking sustainability strategy.

"As a full-line supplier, it's our responsibility to provide the means for our industry to be innovative, efficient and sustainable," continues Weiss. That clear commitment already delivers best-in-class performance to get the most out of resources, achieving up to 20 percent savings for the company's customers in energy, water and fiber consumption. Despite such impressive inroads into sustainable papermaking, there's no sign of complacency at Voith. Instead, there's a constant push for more. "We're working relentlessly to develop solutions that make sense from a sustainability and competitive standpoint," adds Weiss. "We've made significant progress already – and we're investing around €100 million each year in vital R&D to make sure we continue to bring the solutions our industry needs.

"Given the unprecedented energy and climate crises, it's also imperative to make the right choices," continues Weiss. "Sustainability is about preserving our resources so that future generations have a chance, just as we had, to live in prosperity and wealth."

Innovative process technologies from Voith Paper already reduce the carbon footprint of papermaking by up to 20 percent.

20%



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Impact investing

Voith has acquired a stake in Yangi® AB, the Swedish pioneer of dry forming technology for 3D-formed, cellulose-based packaging. Compared to wet pulp molding and the production of petroleum-based packaging, the Yangi® approach cuts both CO_2 emissions and energy consumption by 75 percent.

The timing is right

Such a clear sense of purpose and focus on long-term sustainability has always been central to the decision-making processes at Voith, but it is especially important given the current climate. Now, more than ever, papermakers want competitive carbon-neutral production lines with minimal water usage. Consumers are demanding transparent evidence of sustainable products and practices. And then there’s legislation. In the EU, it comes from the European Green Deal, which includes a target of net zero emissions by 2050. China is currently on a massive decarbonization drive, aiming for carbon neutrality by 2060, while the U.S. recently passed the most ambitious climate law in its history. Voith has set the bar even higher, committing to enabling 100 percent CO_2-neutral paper production by 2030. Against such a backdrop, only a wide-ranging, holistic approach to papermaking can have the environmental and competitive impact that’s needed. “A key element to achieving this target within such a short timeframe is the efficient use of renewable energy,” says Weiss. “At the same time, we need disruptive solutions that change papermaking much more drastically. This requires us to pinpoint optimal process technologies, tap into digital solutions more and enable breakthrough concepts and technologies for paper production.”

To this end, Voith teams up with leading papermakers, industry suppliers, research initiatives and institutions to ensure that innovations have the best-in-class impact everyone wishes to see. Voith played a key role in the founding of the Modellfabrik Papier, for instance, which now boasts 20 shareholders and seven renowned scientific institutions. The common goal here is to save 80 percent of the energy required in the papermaking process by 2050 through disruptive papermaking solutions and technologies.

“Crucially, by exploring and developing disruptive technologies together with our customers and experts in the field, we will achieve maximum decarbonization of papermaking processes for good,” says Weiss. “Such disruptive innovations have the potential to reduce CO_2 emissions drastically.” →

Voith Paper has set a target of 100 percent CO_2-neutral paper production by 2030.

100%

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Over 300 digital installations confirm Voith's leading position with Papermaking 4.0 solutions.

Partnerships bring solid solutions

Success also depends on close, innovative partnerships with like-minded customers, such as Koehler Paper. The family-run company and producer of flexible packaging solutions and specialty paper is, like Voith, firmly committed to sustainability as a key driver of innovations in their business. It hosts production line 8, one of the world's most powerful specialty paper machines, in Kehl, Germany. The set-up, comprising BlueLine stock preparation, a wet end process, XcelLine paper machine, offline coating machine and VariPlus roll cutter from Voith, serves as an important benchmark for resource-saving paper production. Dr. Stefan Karrer, Chief Operating Officer at Koehler, is convinced that it pays to work closely together. "By joining forces, we're better able to identify and implement activities that bring fast optimization in the short term and sustainable papermaking for the long term," he says.

This partnership also draws on this joint expertise to evaluate the electrification of the manufacturing process using renewable energy and energy storage, as well as energy recovery systems and the use of high temperature heat pumps. Such technology helps reduce carbon emissions and secures independence from the global energy markets. "What's more, we are building on important insights from our partnership with Koehler to develop further future concepts," adds Weiss. "Breakthroughs here also feed into our collaborative work with Toscotec on decarbonizing tissue paper manufacturing, whereby Toscotec's energy-efficient technology and know-how are crucial to advancing sustainability. This open sharing of ideas ultimately benefits all our customers."

Decarbonization takes shape

While it's important to push the needle on innovative thinking to decarbonize the industry, it also pays to focus on the areas that make sense – economically, technologically and technically. Current science, for instance, does not back the use of green hydrogen to power whole paper mills. That said, in one project Voith is nevertheless exploring how today's gas-powered infrared dryers can already be operated with hydrogen.

For Weiss, decarbonizing the drying process is a clear priority. Firstly, it accounts for around two-thirds of the overall energy consumption of a paper production line. And secondly, depending on the individual circumstances and conditions, the electrification of drying processes offers a possibility to directly utilize green electricity and can show fast returns. However, a fast return is not the sole priority, as Weiss makes clear. "It's one thing to decarbonize a process, but it's quite another to develop a new kind of technology that stands out from the current state of the art to bring down investment costs and open up new possibilities to operate the process."

Right now, modern high dew point hoods, such as the Voith EcoHood 65, already achieve up to 25 percent savings in energy consumption compared to conventional hoods. It's possible to massively increase the heat recovery potential of the hood with an upcoming new addition to Voith's Papermaking 4.0 portfolio, the OnC.HoodBalance dew point and zero-line control. Such results confirm that this modern portfolio of digital applications optimizes and automates processes, reducing a mill's carbon footprint by up to 10 percent. Further digital solutions are already in the pipeline, including OnView.Energy. This application uses dashboard and reporting functions from OnView.Reports to visualize the energy consumption of a paper mill in a user-friendly display. One viewing option allows the comparison of energy consumption in different time periods or with different paper grades. "It's clear that digitalization will continue to play an important role," adds Weiss. "As our Papermaking 4.0 portfolio improves the availability and efficiency of the production line, we reduce energy consumption overall." This is a crucial step towards decarbonizing the industry.

10%

The Papermaking 4.0 portfolio already helps optimize and automate processes, reducing a mill's carbon footprint by up to 10 percent in the process.

> By joining forces, we're better able to identify and implement activities that bring fast optimization in the short term and sustainable papermaking for the long term."

Dr. Stefan Karrer
Chief Operating Officer at Koehler Paper

> “Ultimately, the goal is to create closed-loop systems with zero waste.”
>
> Henning Laubrock
> Head of Sales and Technology, Meri Environmental Solutions

Booklet

2

Fully committed to circularity

Circular economy tools and processes developed by Voith and Meri Environmental Solutions are accelerating the necessary shift to more environmentally responsible papermaking, waste-to-energy solutions and best-in-class recycling facilities. Closed-loop systems with zero water effluent and zero waste are the future.

82 %

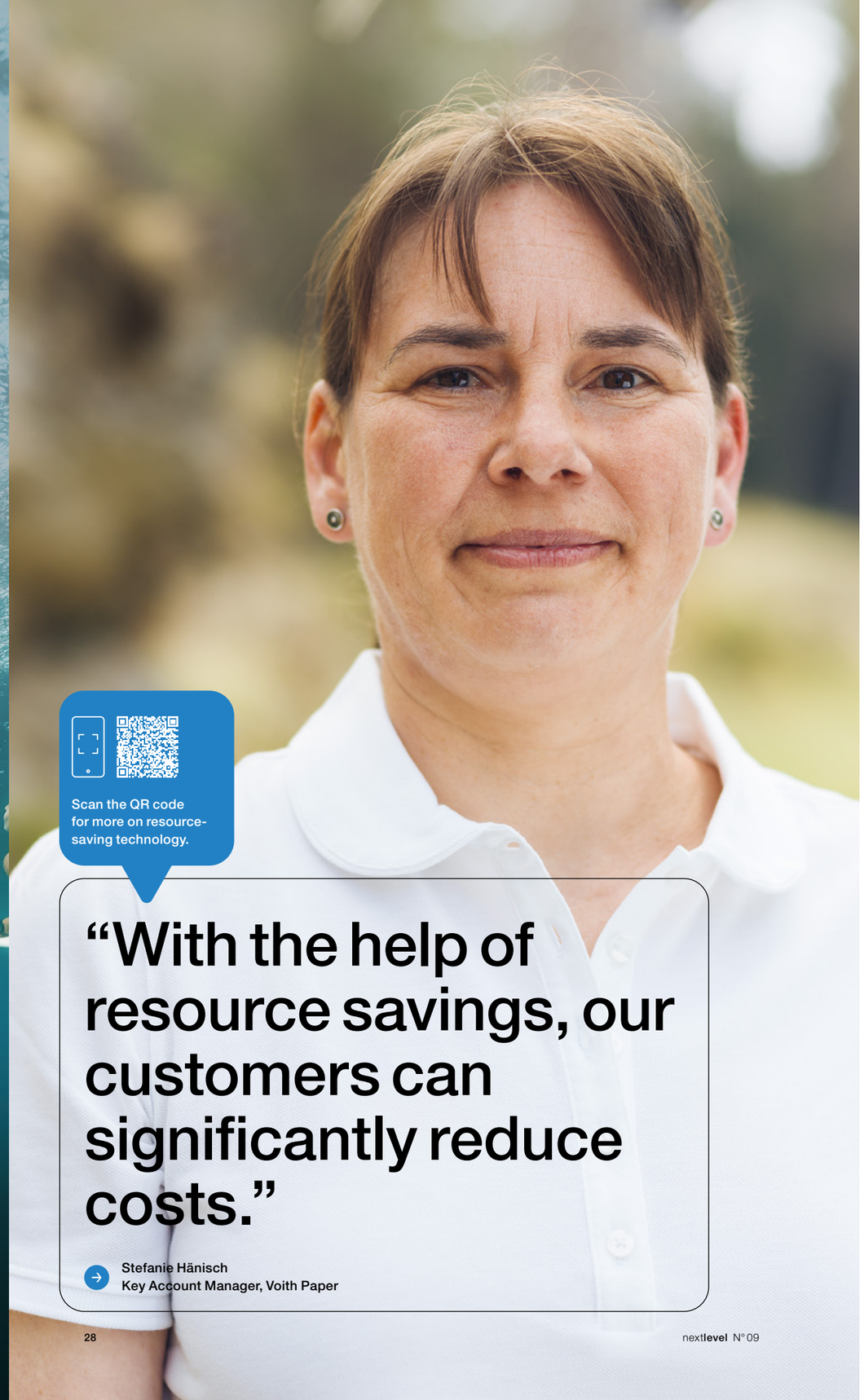
The Voith HydroSeal innovation achieves an 82 percent reduction in water consumption for lubrication of sealing strips annually.

Climate change is impacting fresh water availability in complex ways. Our modern consumption patterns generate waste and consume energy on an unprecedented scale. Thanks to the technologies developed by Meri Environmental Solutions, a Voith company, papermakers are taking tighter control of water, sludge and rejects, and turning waste into energy within their plants. “Ultimately, the goal is to create closed-loop systems with zero waste,” explains Henning Laubrock, Head of Sales and Technology at Meri. “Adopting a more circular economy model in papermaking dramatically reduces water consumption, curbs fossil fuel energy use, and recovers valuable materials to feed back into the value chain.”

The fact that Voith has always been at the forefront of resource-conserving recycling of recovered paper certainly puts the company at an advantage when it comes to circularity. Since the early days of recycling, however, the quality of recovered paper has deteriorated considerably. For stock preparation in particular, this brings new challenges. “Together, Voith and Meri are the only ones who can supply full-line solutions for papermaking that include water management, reject/sludge handling processes and effluent treatment,” notes Laubrock. “We also design and supply waste-to-energy systems that generate valuable fuel out of the residuals from the papermaking process. As a result, we support customer competitiveness by reducing their dependency on external energy sources.” It is this unrivalled level of competence that convinces papermakers to work with Voith and Meri when planning and building sustainable paper mills, or when transforming existing production lines into more sustainable operations. →

90 percent fresh water savings through a completely new papermaking process using disruptive technologies

2030 Targets



Scan the QR code for more on resource-saving technology.

“With the help of resource savings, our customers can significantly reduce costs.”

Stefanie Hänisch
Key Account Manager, Voith Paper

0 l/kg

The AquaLine Zero water management system reduces fresh water consumption to 1.5 liters per kilogram of paper produced and sets the process effluent volume at 0 l/kg.

Saving water and resources

Given the right conditions, requirements and operational environment, the technological solutions from Voith and Meri already achieve tremendous reductions in the specific fresh water requirement and the specific process effluent volumes of a paper mill. For instance, the AquaLine portfolio offers three state-of-the-art solutions: AquaLine Zero, AquaLine Flex and AquaLine. Each one has its own compelling benefits. Green Bay Packaging, the North American pulp and paper manufacturer, decided on AquaLine Flex for its plant in Wisconsin, the most high-tech paper mill in the U.S. The water management system supports the sustainability goals of the Green Bay Packaging production line, which includes the XcelLine testliner machine and the BlueLine OCC stock preparation system. The focal point of the AquaLine Flex system is a so-called “biological kidney,” which treats the process water in such a way that it can largely be returned to the production cycle.

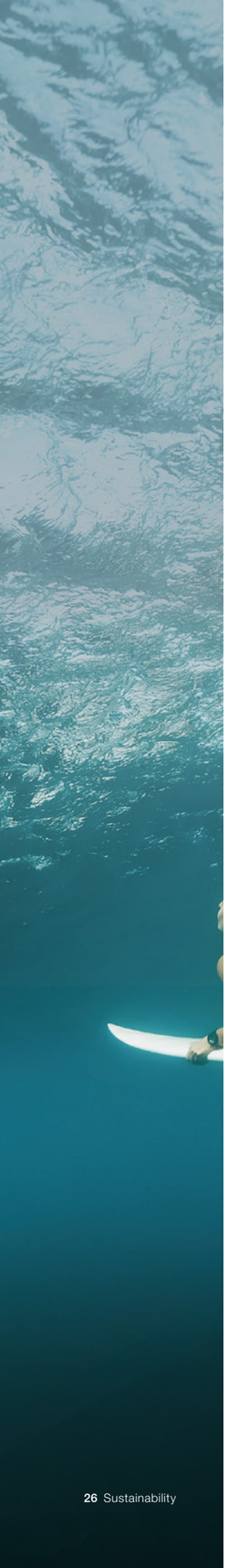
Voith innovations have an impact on water consumption in other areas, too, as customers who opt for HydroSeal, the modern alternative to conventional sealing strips for suction rolls, have discovered to their advantage. “With the help of resource savings, our customers can significantly reduce costs,” highlights Stefanie Hänisch, Key Account Manager at Voith Paper. For one board mill in the U.S., adopting HydroSeal resulted in an 82 percent reduction in water consumption for the lubrication of sealing strips each year, which translates into cost savings of more than US$30,000 for fresh water and wastewater. “In this way, our customers can secure their competitiveness and continue to operate in a profitable way,” adds Hänisch.

Using waste, closing the loop

When papermaking is viewed from a circular economy perspective, there is huge potential to keep materials and water within closed-loop systems. The Turkish paper manufacturer Kipaş Kağıt produces approximately 25,000 m^3/d of biogas at their effluent treatment plant designed and delivered by Meri. This biogas is converted into approximately 90 MWh/d of electricity, and the green energy is fed into a public network. The combination of the advanced “gas tight” R2S anaerobic reactors with the LimeTrap® allows for high reduction of COD (chemical oxygen demand) and controlled removal of Ca^{2+} from the process water. The LimeTrap® generates a “softened” fraction essential for the “bio-kidney” function. This enables increased recirculation of process water to the stock preparation system. The following stages of aeration, sedimentation and final polishing allow a minimized environmental impact. For the rejects and residuals conditioning, Meri has designed and delivered a comprehensive integrated WSR (Water, Sludge, Reject) Subsystem. This includes a rope shredding stage, which is integrated with the downstream coarse reject handling and multiple stages of metal separation, shredding and dewatering in order to generate a “ready-to-burn” fuel fraction for the mill power plant. The internal water loop clarification is secured by several Deltapurge NG DAF units, which take care of the removal of contaminants, as well as the control of suspended solids.

90 %

Voith is closely involved with 4evergreen Alliance. This cross-industry initiative seeks to raise the overall recycling rate of fiber-based packaging to 90 percent by 2030.



73%

The recycling rate in Europe, where it's the highest in the world, currently stands at 73 percent.

The Sludge dewatering system combines the processing of primary and secondary sludge as well as fine residuals producing one burnable fraction at high dryness through the high efficiency RSP screw presses. The mill waste is so converted into valuable fuel. "At a time when energy costs continue to rise, we provide solutions that help papermakers cover their heating demands more economically and in an environmentally sustainable way," concludes Laubrock.

Meri has developed low-impact, integrated system technologies that deal with the challenging quality of today's recovered paper and stringent environmental requirements for sustainable production. This enables the majority of the reject streams to be transformed into energy sources or re-used to make other products, building a circular economy model as a result.

Minimal fiber loss, high-quality results

As well as focusing on the sustainable processing of waste feeds in papermaking, Voith has always been a leader in developing concepts that minimize fiber loss and produce high-quality stock. The BlueLine stock preparation family, for instance, has been a central part of impactful Voith R&D investments for over 20 years. To date, more than 70,000 system components and over 85 complete systems have been installed, reducing water consumption, pump energy and carbon emissions in the process, while maximizing raw material yield and minimizing fiber loss. In light of the limited availability of raw materials and rising energy costs, Voith developed a low-impact, highly innovative pulping technology for the German paper manufacturer Papierfabrik Palm. Designed for a production of 500 tons per day, the first prototype of this new pulping technology enables the company to save 1,000 MWh of energy per year. This innovative pulping concept reduces specific pulping energy by more than 30 percent compared to conventional pulping systems.

Other notable R&D breakthroughs include the award-winning InfibraFiner refiner, which won the Focus Open 2022 Baden-Württemberg International Design Silver Award. Interestingly, the jury highlighted three key advantages to the InfibraFiner design: its innovative strength, the direct added value for customers and its future viability. The future of stock preparation is also increasingly digital. The monitoring tool, OnView.MassBalance, gives papermakers greater real-time visibility into fiber yield. For one paper mill in France, it has already resulted in a two percent improvement in fiber yield, which means the solution will pay for itself in less than a year. "This digital tool is further proof that we are the innovators when it comes to optimizing recycling processes and minimizing fiber losses," says Dr. Michael Weiss, Chief Technology Officer at Voith Paper. "Such results strengthen sustainable papermaking and help deliver the efficiency improvements necessary to achieve our target of a 90 percent recycling rate by 2030."

30%

Specific pulping energy is already reduced by more than 30 percent with disruptive stock preparation technology.

50%

InduraClean IDC-5 and the new InduraClean IDC-4 reduce energy consumption in the cleaning bank by up to 50 percent.

85

Over 85 complete BlueLine stock preparation systems have already been installed.

"We are the innovators when it comes to optimizing recycling processes and minimizing fiber losses."

Dr. Michael Weiss
Chief Technology Officer, Voith Paper

> Voith will continue on this path, developing products for a sustainable future.”
>
> Oliver Crasser
> Sales Manager, Voith Paper

Booklet 3

All-cellulose option

Voith is a research partner in the CelluWiz project, which is focused on process developments for a recyclable and compostable all-cellulose multi-layer material for food packaging.

R&D innovations for sustainable change

Voith’s multi-level approach to R&D and cutting-edge pilot plants ensure that bio-based, biodegradable material is produced more efficiently. Highly resistant fabrics, roll covers, press sleeves and felts save water, cut energy use and boost performance. The latest breakthroughs include AiroGuide Tune Green, a composite guide roll cover using bio-based materials. Now, that’s innovative!

The news that microplastic pollution was discovered in fresh snow in Antarctica – and in the lungs of humans – should shock us all. Such findings also create a deepening sense of urgency for the development of sustainable paper materials and papermaking processes. Voith is already investing considerable resources in internal research projects to extend and ensure the rapid development of viable alternatives to petroleum-based materials.

At the world’s most advanced pilot coater, located at the Voith Paper Technology Center in Heidenheim, the focus is on one of the toughest challenges in the industry – the development of sustainable barrier material that is part of the bioeconomy. This is where Débora Souza, R&D Engineer Paper Machine at Voith Paper, and a team of multidisciplinary experts are busy running state-of-the-art trials on the highly modernized pilot coater. Souza and her colleagues are confident their work is helping to set standards in sustainable bio-based paper grades.

“Our internal research ultimately supports our customers who want to get rid of plastic or microplastics in their barrier papers,” explains Souza. It’s a complex task that requires new concepts, processes and technologies to ensure the end products work as intended without harming the environment. Much of Souza’s work revolves around the testing of coating and drying concepts to investigate how plastic-based chemicals can be sustainably replaced with bio-based alternatives – and still run on high-speed machines. The demands are particularly high, as the solutions need to reach the barrier performance of existing products and be also renewable and biodegradable. As well as food safe. Not only that, to be sustainable, such highly functional barrier papers and flexible packaging solutions need to be produced in an energy-efficient and resource-saving way. As a result, Souza needs to test a whole range of oxygen and water vapor barriers, as well as coatings that protect from oil and grease, in pilot scale reflecting real-world conditions.

Fortunately, the new pilot coater features expanded drying capacities and the latest automation technology and sensor systems. The modular set-up allows a total of 18 coating variations, which leads to high-quality solutions that are scalable to individual production lines. In addition, it also helps that the Voith Paper Technology

Scan the QR code for more on sustainable R&D.

“Our pilot facilities provide the best research conditions.”

Débora Souza
R&D Engineer Paper Machine, Voith Paper

Future-oriented

Regulators around the world are increasingly banning the use of certain types of PFAS (per- and polyfluoroalkyl substances) in food packaging because of the potential health hazards. Voith R&D supports the development of sustainable replacements.

Bio-based

This describes products produced from biomass, which refers to renewable organic raw materials.

Center covers all production steps, from BlueLine stock preparation solutions through the entire papermaking process – all in one location. Souza is convinced of the benefits such flexible pilot facilities bring, both for internal R&D and customers. “Together with our customers, we work on new concept developments for their production lines and can, at the same time, test the recyclability of their final product,” she says, and adds: “Our pilot facilities provide the best research conditions for us to develop a broad range of sustainable alternatives to petroleum-based packaging. We’re able to test different chemicals, processes and parameters, so it’s quite a dynamic job. I’m constantly learning.”

Breakthroughs in biodegradable materials

Other environmentally friendly breakthroughs in papermaking are taking place at the Business Unit Nonwovens and the Nonwovens Technology Center in Düren, where Oliver Crasser, Sales Manager at Voith Paper, takes up the story. “In one case, our own research and a close partnership with the nonwovens expert Trützschler Nonwovens led to the development of a unique product portfolio that was ahead of its time,” explains Crasser. “We recognized early on that it would be a challenge to replace conventional wet wipes that, when flushed, are responsible for impossible-to-budge fatbergs in the sewage systems of major cities around the world.” Voith brought the know-how and HydroFormer technology to produce nonwoven materials made completely of cellulose-based, renewable fibers. Trützschler provided their proven AquaJet technology for high-performance Wet-Laid Spunlacing, an innovative configuration for hydroentangling. The set-up produces the strength and characteristics necessary for wet-laid products without the use of chemicals. For Papel Aralar, the Spanish papermaker, the technology is a key part of their PM 5 production line and ensures the manufacture of plastic-free, flushable and biodegradable hygiene wipes.

The next logical step was to combine the HydroFormer technology with a carding unit, also supplied by Trützschler. With these CP (carded/pulp) products, a broad portfolio of flushable baby and adult wipes can be produced, again based only on pulp, viscose or lyocell fibers. Europe’s leading producer of hygiene wipes, the Polish nonwovens manufacturer Ecowipes, will commission their second Voith and Trützschler Nonwovens CP line in May. Such results are a positive sign for Crasser. “I’m proud that our R&D helps our customers meet the surge in demand for environmentally friendly wipes,” he says. “Voith will continue on this path, developing products for a sustainable future.”

Dual action on sustainable fabrics and rolls

As well as leading research on sustainable end products, Voith’s R&D also focuses on making the production processes more sustainable at every level. This includes wear parts, such as fabrics, roll covers and press sleeves, as their performance has a highly relevant impact on the overall carbon footprint of a paper mill.

“There are two distinct focus areas for how wear parts contribute to sustainability,” explains Dr. Robert Hilbing, Senior Vice President R&D Fabric & Roll Systems at Voith Paper. The first involves investing in innovations that boost the dewatering efficiency of wear parts. Improvements here automatically bring down energy and water consumption along the entire paper machine and ultimately help reduce the costs of running a mill. In parallel, Voith R&D is exploring how conventional, petroleum-based materials can be replaced with bio-based alternatives in the next generation of wear parts, thereby playing a role in strengthening the circular economy.

20 °C

TissueFlex technology enables a faster start-up at temperatures 20°C lower than in conventional systems.

As regards dewatering, the Efficiency Add-Ons for press fabrics provide multiple examples of what can be easily achieved. Most notably, the +Peak technology, a specially developed elastomer material, boosts resilience over the lifetime of a felt press and enhances nip dewatering capacities. For one customer, +Peak resulted in higher dryness on a tandem press at 300 to 600 m/min machine for liquid packaging material that led to an 11 percent reduction in average steam production, dropping from 1.6 t/t to 1.43 t/t with +Peak. For one German manufacturer of graphical paper, SolarPress covers bring energy savings in the dryer section – thanks to a 1.5 percent higher dry content after the press section. This is achieved with the increased void volume, which is ensured by the surface stability and more open areas of the SolarPress design. Tissue manufacturers have benefited energy-wise from installing TissueFlex, which ensures the maximum machine speed during the start-up phase of the press felt is reached at hood temperatures set at 20°C lower than normal. Such success stories confirm that sustainable operations make financial and environmental sense.

AiroGuide Tune Green

Certified according to DIN CERTCO for bio-based material, AiroGuide Tune Green benefits from the latest technology for roll covers and contributes to the preservation of resources.

Longer life span, sustainable lifecycle

“It’s equally important that what keeps the plants running – the wear parts – are also sustainable,” says Hilbing. This is a challenge, as Lidia Loskan, R&D Project Manager Sustainability at Voith Paper, explains. “There is currently no better material to create roll covers and press felts than petroleum-based materials,” she says. “It has all the necessary characteristics and qualities needed in papermaking.” This fact makes the R&D teams more determined to increase the performance and service life of such roll covers, press sleeves and fabrics – and to intensify the research on bio-based, competitive alternatives.

“The hot spot of the lifecycle of a product is at the raw materials stage,” adds Loskan. “It’s where the biggest impact can be achieved in the carbon footprint of a product.” A lifecycle analysis (LCA) can bring transparency to the decision-making process. Cradle-to-gate lifecycle assessments provide customers with reliable details about the energy, waste and water consumption during the production of a wear part. Equally, such assessments support Voith in making science-backed comparisons across material feeds. As a result, the teams can explore which bio-based options and conventional materials are most viable.

This approach to R&D led to the first guide roll cover to obtain an internationally recognized certification for using renewable raw materials in the manufacturing process. AiroGuide Tune Green, a composite cover using bio-based materials with mineral fiber reinforcement, has been certified by DIN CERTCO of the TÜV Rheinland Group, a neutral third-party certification organization that specializes in bio-based material certification. This cover also excels in performance. It has good stress and high wear resistance, which translates into lower maintenance requirements and less grinding compared to standard covers. When used with SkyLine doctor blades, the paper machine can be operated without additional lubrication showers, reducing water consumption and misting. As with any guide roll, it also minimizes damage to the forming and press fabrics. It’s a clear example of a product breakthrough that supports sustainability goals on multiple levels.

While research continues into bio-based materials, the work on optimizing the lifetime of Voith’s portfolio intensifies. By improving the hydrolysis resistance properties, for instance, average cover runtimes are extended even further, bringing additional environmental and financial wins. Finally, the entire manufacturing process for wear parts is increasingly coming under the microscope. Carbon emissions can be further reduced by using renewable energy in production, introducing material recycling and increasing process efficiency. Exciting and challenging times indeed for R&D.

R&D

Voith Paper R&D also focuses on making the production processes more sustainable at every level.

“It’s equally important that what keeps the plants running – the wear parts – are also sustainable.”

Dr. Robert Hilbing
Senior Vice President R&D Fabric & Roll Systems, Voith Paper

What we do

Ranked by ISS ESG as one of the three best-rated machinery and equipment companies worldwide for sustainability, Voith clearly takes its responsibilities seriously – for the sake of customers, communities and the climate.

Sophie Alice Fischer
Sustainability
Manager, Voith Paper

100%

carbon neutral

All activities at Voith Paper sites worldwide have been 100 percent climate neutral since 2022.

11 GWh

Voith Paper's own renewable energy generation will increase to more than 11 GWh per year by the end of fiscal 2026/27. Currently, the company is generating around 3 GWh per year on its own roofs.

Top ranked

The independent rating agency ISS ESG awarded Voith a premium rating of B- in 2022, which puts the company among the top three machinery and equipment organizations worldwide for sustainability.

"In terms of sustainability performance, we are currently ranked among the top three plant and mechanical engineering companies in the world," highlights Sophie Alice Fischer, Sustainability Manager at Voith Paper, who sees the award from the independent rating agency ISS ESG as a just reward for the company-wide, decade-long commitment to sustainability. "We've been tracking our water, waste and energy consumption since 2012," Fischer notes. "Back then, our clear sustainability strategy was pioneering. That's why we see the benefits already. Our results show that we have moved past the point where businesses would think there had to be a financial trade-off by becoming sustainable."

Voith is renowned for resource-efficient papermaking innovations. What's perhaps less known is that the company uses its R&D ingenuity to optimize its own operations. "Since 2012, we've reduced the amount of waste by 45 percent, water consumption by 57 percent and energy consumption by 49 percent in relation to sales by the 2021/22 fiscal year. What's more, we make our actions transparent in our annual sustainability report," Fischer says. "We are driven by a clear purpose to make our operations sustainable, which is why we are setting even more ambitious goals for the future and intensifying our NetZero-concept."

Crucially, it's a team effort. "Our success builds on local projects," adds Fischer. They include switching to efficient LED lighting, as well as more sophisticated solutions, such as comprehensive waste heat recovery systems and plant-wide photovoltaic installations. Targeted measures cut out unnecessary resource-intensive steps, such as eliminating superfluous washing processes. Circular business models are on the increase, for instance through the local recycling of fabric spools. "Singling out one project is an impossible task. You can feel the commitment to sustainability at every one of our production sites around the globe," adds Fischer. "Every one of them deserves the applause."

What also deserves applause is the scale of social commitment. As with the sustainability measures, the causes Voith supports have a decidedly local focus. In Brazil, it takes the form of the Voith Brazil Foundation, which provides local children with important educational support and cultural opportunities they might otherwise miss out on. It's one more example of why the dedication of the local teams puts Voith in the best possible position to address the sustainability and social challenges of our time.

#VoithCares

Supporting a diverse range of social, cultural and educational initiatives in local communities.

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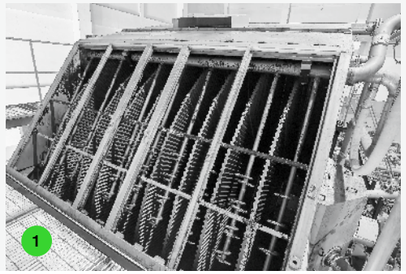
#efficient paper making

Discover the potential of efficient papermaking.

Go with the FloW



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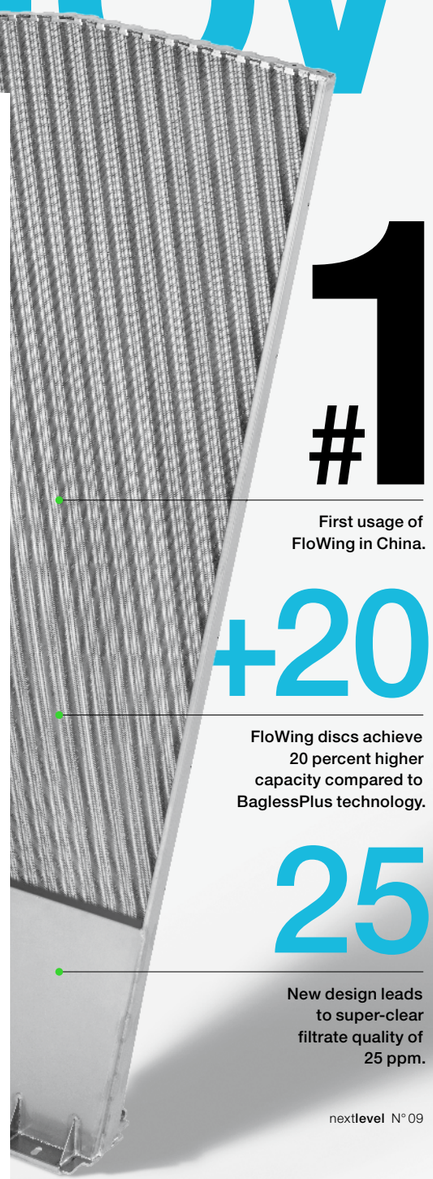
1 FloWing bagless filter discs installed at Guangdong Songyang Recycle Resources Co., Ltd.

As the first papermaker in China to switch to FloWing, the latest generation of Voith's breakthrough bagless disc technology, Guangdong Songyang Recycle Resources Co., Ltd is also the first to benefit from higher throughput, reduced maintenance costs and an important boost to sustainability goals.

The dewatering process must flow smoothly to get the desired results: a higher, sustainable and more reliable production; superb filtrate quality; and lower maintenance efforts and costs. With FloWing, Voith's latest generation of bagless filter discs, all three demands are consistently met to the highest of standards, as Zhu Baofeng, Technology Director for Guangdong Songyang Recycle Resources Co., Ltd, the first Chinese paper manufacturer to install such discs, confirms. "Voith's FloWing technology shows strong, stable performance and has a high capacity," he says. "Due to the high quality of the super-clear filtrate in our SaveAll discfilter, we were able to stop the gravity filter of the paper machine." How is this possible?

The clue lies in the distinctive shape of the FloWing disc and its outstanding rigidity and service life. The wing-shaped geometry increases the active dewatering area significantly compared to conventional segments. This provides a higher hydraulic capacity. What's more, FloWing builds on the breakthrough features of the BaglessPlus technology – which revolutionized the dewatering process over 20 years ago. As a result, the FloWing disc design secures optimum growth of the fiber mat and knock-off properties.

"At Guangdong Songyang Recycle Resources, the outcome surpassed our expectations and warranty," explains Bruce Sun, the local Product Manager at Voith Paper. "Installing FloWing discs in InfiltraDiscfilter 570 increased production capacity by 20 percent for the same stock consistency and we also improved the super-clear filtrate quality, bringing it down to 25 ppm." The innovative design therefore helps lower energy consumption and save natural resources at the same time. Given the convincing results in terms of quality, costs and sustainability, it's expected that more leading papermakers will decide to go with the flow – and install FloWing.



#1

First usage of FloWing in China.

+20%

FloWing discs achieve 20 percent higher capacity compared to BaglessPlus technology.

25 ppm

New design leads to super-clear filtrate quality of 25 ppm.

The world's largest paper machine, Hainan PM 2 in China, is a record-breaking Voith design. With SmoothLite, a long-life, lightweight transfer belt, this massive production line now runs smoothly for even longer.

Smooth giant

"With the Voith SmoothLite transfer belt, installation is much easier."

Luo Yunlong
Director of Paper Machine, Hainan PM 2, China

The Hainan PM 2 for coated board is a giant. Not just for its size. Designed by Voith and in operation on Hainan Island, China, since 2010, it still holds the title for the largest paper machine in the world. Thanks to continuous innovations from Voith, it's also a giant when it comes to efficiency. At almost 600 m long with a wire width of 11.67 m, the Hainan PM 2 puts huge demands on technicians. This is especially true at the press section, where the paper web has such a high dry content. As a result, it is fitted with a transfer belt in the second shoe press instead of the more common press felts. These tend to be stickier, which could ultimately damage paper with such properties. In contrast, a transfer belt allows easy and fast sheet release.

However, not every transfer belt has the same functionality, as Wilson Xie, Head of Product Management Fabric & Roll Systems at Voith Paper China, explains. "Our process knowledge, fabric technology and polyurethan casting expertise meant that our team could optimize our transfer belts to meet the highest demands," he says. "Our solution is SmoothLite, a lightweight, flexible transfer belt that is more stable by design."

With SmoothLite, installation time at Hainan PM 2 has been reduced by two hours, and fewer technicians are now needed for the changeover. On top of these key productivity benefits, SmoothLite ensures the production line runs more efficiently for longer. Thanks to the perfect and unique bonding of fabric and polyurethane, delamination is practically impossible. The belt's base structure provides better dimension stability, which increases the potential lifetime of the belt and thereby reduces downtimes. The result: a giant of a transfer belt – 24 m by 11.67 m – that performs on every level from day one. Which is exactly what the giant paper machine needs. "Due to the width and length of the transfer belt, changing the belt used to be very challenging. With the Voith SmoothLite transfer belt, installation is much easier," confirms Luo Yunlong, Director of Paper Machine, Hainan PM 2, and adds: "This advantage, combined with the high quality and outstanding continuous performance over the entire expected running time, convinced us."

24 m by 11.67 m

The right size: Designed for stability and service life.

The insider

A world-class spare parts inventory management system is the impressive goal of Green Bay Packaging in the U.S. Enter Amber Wiesner. The Voith Paper Senior Customer Care Specialist is part of the dedicated team who is making it happen.

Amber Wiesner: proud to support the ambitious goals at Green Bay Packaging from the inside

Amber Wiesner, you work for Voith, but your workspace is at Green Bay Packaging. Why is it important for you to be on the customer's site?
Green Bay Packaging is committed to building a world-class spare parts management system. Being close to the customer means I see the operations better from the inside, which helps Voith to be more responsive to Green Bay Packaging's needs and ambitious goals. For over a year now, I have been working closely with Terry Pecor, who is a Maintenance Planner at Green Bay Packaging. We sit together, work together and troubleshoot together. As I'm here every day, I've also become the go-to person for anyone with questions about spare parts.

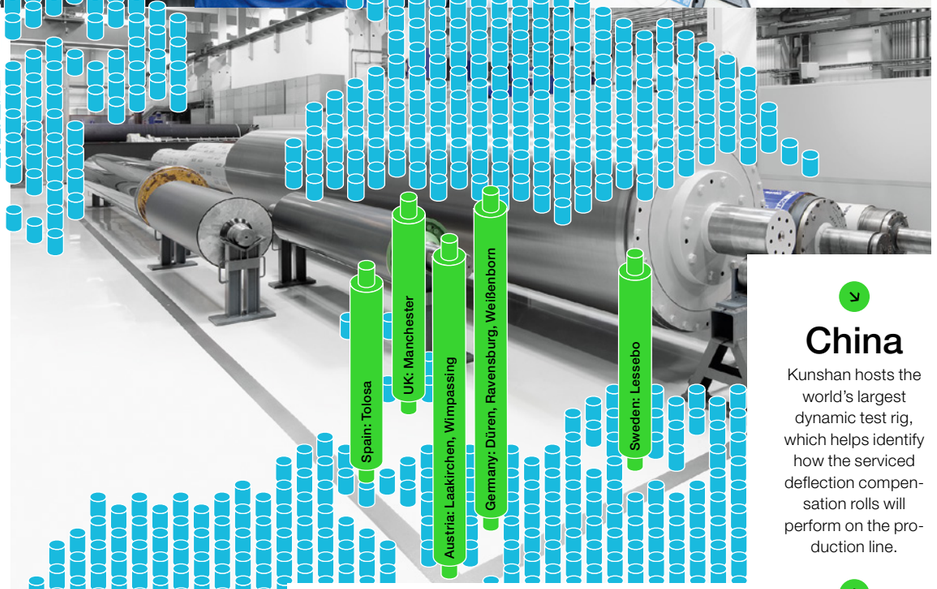
What is your role?
At the start of such a massive undertaking – a brand-new production line – there are a lot of moving pieces. It's hectic. Initially, in the run-up to a smooth start-up, the priority is on the identification and supply of critical spare parts. Now that the production line is up and running, my focus is on helping Green Bay Packaging maintain the optimum inventory balance and on coordinating the best possible delivery of the necessary spare parts. The main goal is to maximize machine availability while also minimizing inventory holding costs and meeting Green Bay Packaging's highest standards in efficiency and sustainability.

How do you do that?
There are many ways! Together with Terry, we are working our way through the production plant line by line, identifying the parts that are needed on site, and ordering them as necessary. We use the Voith OnCare.eDoc application to access relevant machine manuals and documents. At the same time, with the support of the Voith OnCare team, we're optimizing the application to meet the mill's specific needs. I also sit in on the weekly shutdown meetings, which are held in the run-up to the scheduled maintenance work. As I listen to the jobs that are planned, I'm checking whether all the necessary parts are in stock or on order. If needed, I can work with the local Voith team to expedite missing items. Together, we're completely focused on ensuring Green Bay Packaging can keep to their maintenance schedules, which helps secure the shortest possible machine downtimes.

What's the key to success?
Teamwork. Thanks to the incredible support of the Green Bay Packaging team at the mill and the Voith experts in Appleton, I'm able to provide a unique kind of service. Success comes down to the key relationships that we have built from the inside across the departments at both companies. I'm proud to be part of the team who is creating this world-class system.

One partner: full-line expertise

Green Bay Packaging entrusted Voith as a full-line supplier partner with the complete PM 4 production line in Green Bay, Wisconsin. Located at one of the most high-tech mills in the world, the modern XcelLine testliner machine started successful production in March 2021. To match the highest standards of the plant, Green Bay Packaging is building a world-class spare parts inventory management system. Voith's strong service operations in the region, advanced digital solutions and personalized support ensure the company's ambitious goal is achieved with the highest degree of efficiency and sustainability.



Voith's worldwide network of Mechanical Roll Service Centers and dedicated engineers ensure its customers enjoy a tailored, personal service and fast turnaround in state-of-the-art roll maintenance, repairs and upgrades.

Keep it rollin'

North America

Industry-leading quality, advanced products and technical support in five MRS centers ensure that Voith is the market leader in the region.

China

Kunshan hosts the world's largest dynamic test rig, which helps identify how the serviced deflection compensation rolls will perform on the production line.

Indonesia

The Karawang Service Center, located at the heart of the Asia-Pacific region, is a one-stop-shop for all MRS services for every type of roll and the production site for Voith high-quality roll covers.

With laser-like precision, Voith technicians zoom in on the areas that need their expert eye for troubleshooting and meticulous attention to detail. "We make sure that every paper machine roll that passes through our hands performs at its highest level," explains Andreas Weis, Senior Vice President Global Product Management Fabric & Roll Systems at Voith Paper. "It takes domain expertise, extensive experience and the best mechanical and digital tools in the industry to get such consistent results."

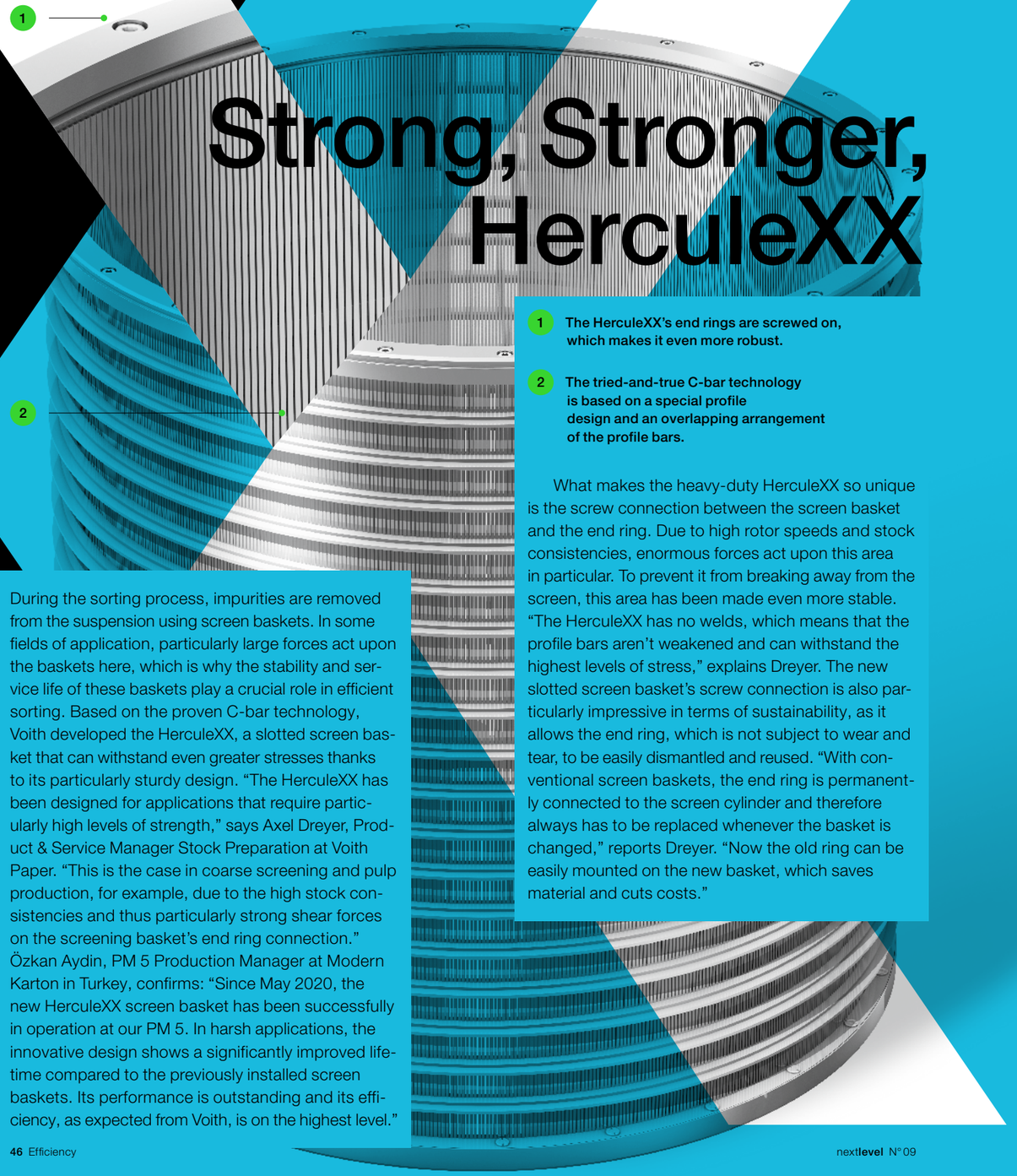
Weis is based in Germany, but his words apply to every Voith Mechanical Roll Service Center around the globe. And there are 22 of them. From Kunshan, China – which hosts the world's largest roll test rig – through to São Paulo, Brazil, where the Sales and Application Engineer Tiago Chiaratti works. "Our proximity to the paper centers of the world means we bring efficiency to the process as a whole," notes Chiaratti. As well as ensuring speed and quality in execution, Voith's geographical footprint promotes close collaboration and mutual trust. Thorough quality inspections and diagnostics both on site and in the centers provide transparency around the work that is undertaken on the rolls, and the reasons for it.

"We get to understand the inner workings of our customers' production lines and their specific needs," he adds, citing a personal highlight with Suzano, one of the largest paper manufacturers in South America. In this case, Suzano and Voith worked together to implement identification tagging for rolls. Relevant information on the history, use and maintenance of the rolls is then fed into OnCare.pmPortal, the Voith inventory management system, and displayed in a way that makes it easier to monitor, identify and schedule service needs. Such insights enable proactive measures to avoid costly disruptions to the papermaking process.

Michael Fürst, Senior Product Manager Mechanical Roll Service at Voith Paper, points to the unrivaled service that comes from the extensive know-how of the teams. "Our focus is not on the rolls in isolation but on the performance of the entire production line," explains Fürst. "With our full-line supplier expertise and the innovative products at our disposal we can extend runtime and service life of any machine roll – which ultimately maximizes the availability and efficiency of the paper mill."

An even sturdier design that can withstand even more stress – the latest member of Voith's tried-and-true screen basket family stands out for its unique stability and ruggedness.

Strong, Stronger, HerculeXX



1 The HerculeXX's end rings are screwed on, which makes it even more robust.

2 The tried-and-true C-bar technology is based on a special profile design and an overlapping arrangement of the profile bars.

What makes the heavy-duty HerculeXX so unique is the screw connection between the screen basket and the end ring. Due to high rotor speeds and stock consistencies, enormous forces act upon this area in particular. To prevent it from breaking away from the screen, this area has been made even more stable. "The HerculeXX has no welds, which means that the profile bars aren't weakened and can withstand the highest levels of stress," explains Dreyer. The new slotted screen basket's screw connection is also particularly impressive in terms of sustainability, as it allows the end ring, which is not subject to wear and tear, to be easily dismantled and reused. "With conventional screen baskets, the end ring is permanently connected to the screen cylinder and therefore always has to be replaced whenever the basket is changed," reports Dreyer. "Now the old ring can be easily mounted on the new basket, which saves material and cuts costs."

During the sorting process, impurities are removed from the suspension using screen baskets. In some fields of application, particularly large forces act upon the baskets here, which is why the stability and service life of these baskets play a crucial role in efficient sorting. Based on the proven C-bar technology, Voith developed the HerculeXX, a slotted screen basket that can withstand even greater stresses thanks to its particularly sturdy design. "The HerculeXX has been designed for applications that require particularly high levels of strength," says Axel Dreyer, Product & Service Manager Stock Preparation at Voith Paper. "This is the case in coarse screening and pulp production, for example, due to the high stock consistencies and thus particularly strong shear forces on the screening basket's end ring connection." Özkan Aydin, PM 5 Production Manager at Modern Karton in Turkey, confirms: "Since May 2020, the new HerculeXX screen basket has been successfully in operation at our PM 5. In harsh applications, the innovative design shows a significantly improved lifetime compared to the previously installed screen baskets. Its performance is outstanding and its efficiency, as expected from Voith, is on the highest level."

Q&Å

Dr. Thomas Walther is an expert in the field of wood research and technology and spent many years working as a product development manager at IKEA Industry AB in Malmö, Sweden. Today, he is responsible for the industrial introduction of sustainable adhesive systems and holds an IKEA-funded adjunct professorship at Linnaeus University in Växjö. His areas of expertise include the development of innovative solutions, wood-based materials, sustainable adhesives and lightweight furniture.

Dr. Walther, you're active in a number of different product development areas at the world's largest furniture manufacturer. What are you currently working on?
We're focusing on three major future fields in order to make our furniture more sustainable: replacing fossil raw material sources in furniture and wood-based materials, recycling of our products, and developing innovative lightweight solutions. Our goal is to offer at least 50 percent of our furniture as lightweight or sandwich designs by 2030.

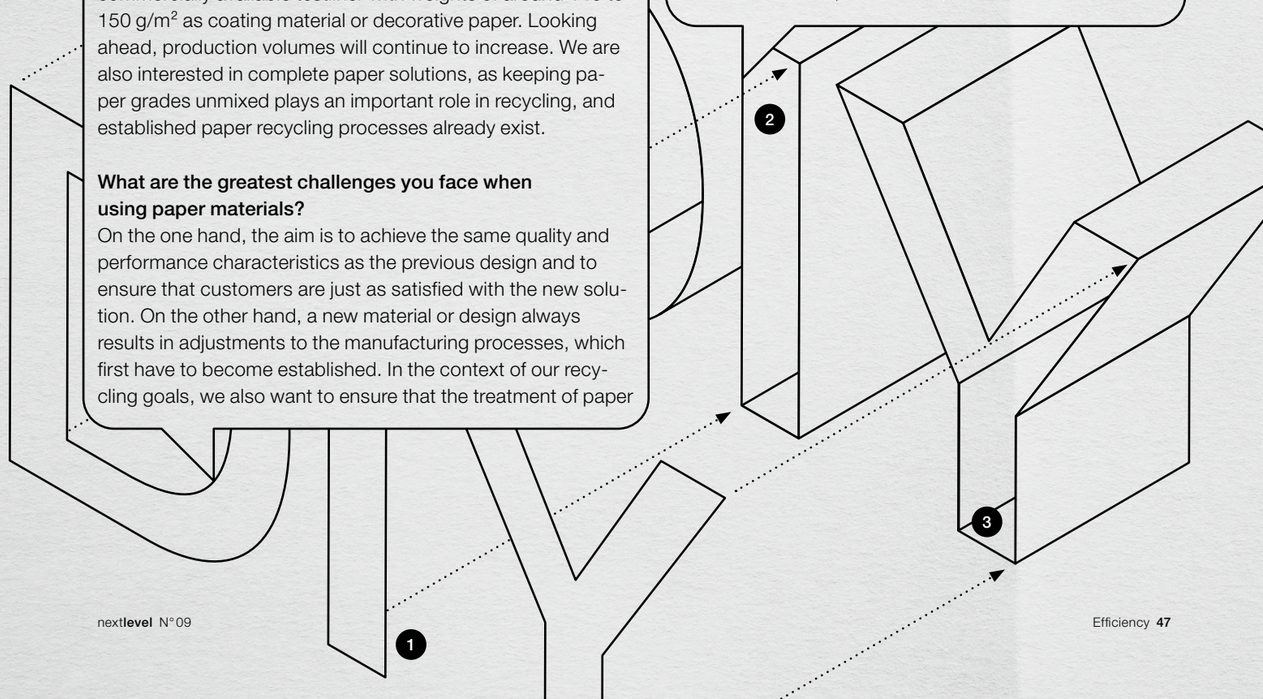
What role does paper play in your activities today?
Paper is an important lightweight material and thus a means of achieving our goals. We use around 50 million m^2 of commercially available testliner with weights of around 140 to 150 g/m^2 as coating material or decorative paper. Looking ahead, production volumes will continue to increase. We are also interested in complete paper solutions, as keeping paper grades unmixed plays an important role in recycling, and established paper recycling processes already exist.

What are the greatest challenges you face when using paper materials?
On the one hand, the aim is to achieve the same quality and performance characteristics as the previous design and to ensure that customers are just as satisfied with the new solution. On the other hand, a new material or design always results in adjustments to the manufacturing processes, which first have to become established. In the context of our recycling goals, we also want to ensure that the treatment of paper products, such as the impregnation of the honeycomb structures, is sustainable. To this end, we are researching the use of bio-based and biodegradable additives and adhesives.

Do innovative 3D paper structures also play a role in your development work?
We see great potential in the use of folded structures. The potential here lies in the ability to create completely new customer experiences. The structures can be used to deliver furniture to our customers either flat or folded. Consumers would then have the experience of unfolding their furniture at home. A seasonal patio chair that could later be recycled as waste paper would also be conceivable.

To what extent is Voith's expertise important in this field of development?
Voith's expertise in engineering, systems technology, paper and fiber know-how, simulations and calculations are extremely helpful in this field. The quality of the packaging papers will also play a decisive role in achieving an optimum fold structure. In addition, we will require Voith's expertise in the area of recyclability.

Dr. Thomas Walther looks into the fields of lightweight furniture, sustainable adhesives and innovative paper structures at IKEA Industry AB in Sweden.



When it comes to sustainable and efficient paper-making, our after-market service is a crucial enabler.”

Dr. Jürgen Abraham
President Products & Services and
Digital Business Officer, Voith Paper

VOITH