VOITH

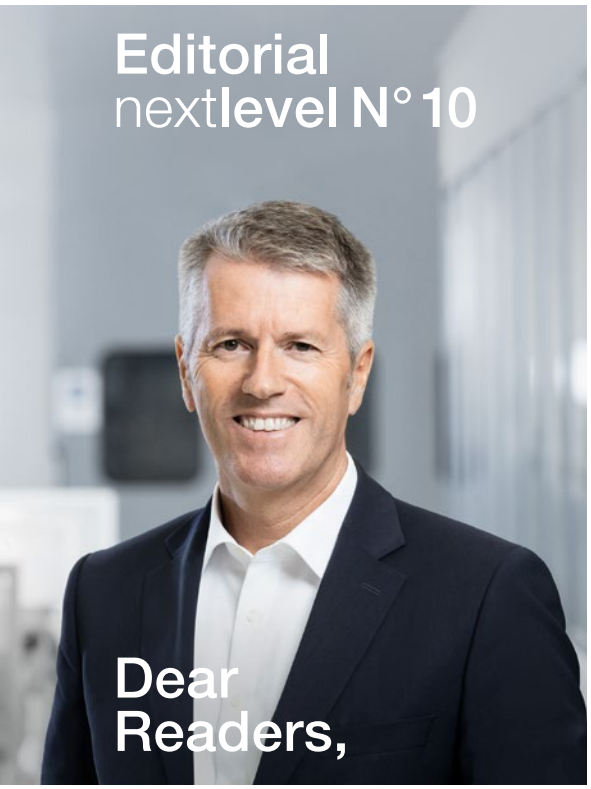
nextlevel

by Voith Paper — N° 10

Full dimension

Securing customer benefits along the entire production line

Editorial nextlevel N° 10



Dear Readers,

In particular during challenging times, value-adding solutions can make a difference. Throughout this issue, we highlight concrete customer benefits that our product innovations and forward-thinking approach to papermaking bring. I am confident you will be interested in the tangible impact our commitment to sustainable, efficient and digitalized papermaking is having across the industry and around the world.

Our cover story takes you inside the SCA Obbola Mill in Sweden, which houses the world's largest kraftliner production line, to reveal the success factors to this long-term and future-oriented partnership. Discover also groundbreaking innovations that set industry standards, such as our InfibraFiner DG, record-breaking start-ups in China and cutting-edge wireless sensor technology that is easy to implement for fast returns. Above all, enjoy reading our in-depth overview of what we see as the inevitable shift toward the autonomous paper mill.

I hope you find the articles both informative and inspiring.

Andreas Endters
President & CEO Voith Paper

10
The full-line supplier solution covers the entire production process for SCA

Contents

Zoom

News

Full-line supplier

56
AR for suction rolls simplifies and maximizes inspections

Sustainability

Efficiency

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On the cover:
The SCA Obbola Mill in Sweden, a high-tech production facility for renewable packaging material.

On the back:
Yalin Chen, Data Analyst Expert at Voith Paper, who is one of the many PaperHeroes at the global organization.

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As fiber characteristics directly impact the final paper quality, it's crucial for papermakers to have a deeper understanding of their raw materials. For Stora Enso, this is possible with the Single Point Morphology analyzer, SPM-5550.

Know your fiber

BTG
A Voith Company

Customer Benefits+

- Easier and rapid alignment of paper machine parameters to the fiber characteristics
- Reduced costs for fiber, energy and chemicals
- Consistent final product quality

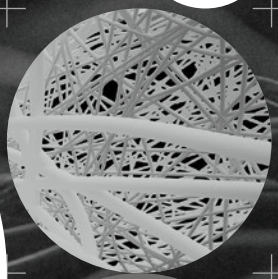
Highlights of fiber insights:

- Fiber length and width distributions
- Fiber shape
- Fines content
- Fibrillation
- Shives content

The Single Point Morphology analyzer (SPM-5550) is an essential building block of many solutions in the areas of pulping, graphic paper, packaging and tissue. Developed by BTG, a Voith company, the online morphology analyzer continuously measures pulp quality at a single point. The fully automatic system covers integrated sampling, dilution and measurement all in one unit. The resulting data lake is then used to correlate operational parameters along the production line. Crucially, these insights feed into keeping automated processes within tight boundaries and ensuring the final quality is on target, which is key for transitioning to the autonomous mill.

Typically, the SPM pulp quality results are updated in under five minutes, whereas conventional systems can require anything between 15 and 60 minutes. Any variations in quality are therefore identified more rapidly. This matters at Stora Enso's Skoghall Mill in western Sweden, where two SPM-5550 analyzers are installed in the chemi-thermomechanical pulp (CTMP) production line, as Ann Lundqvist, Section Manager, Fiber & CTMP, at Stora Enso, explains. "The high frequency measurement of fiber quality data will be used to achieve a further improved process control and optimization, and, ultimately, to support Stora Enso's ambition to remain the world-leading producer of renewable packaging solutions." Magnus Konradsson, Production Engineer, CTMP, at Stora Enso agrees, adding, "We are very happy with the availability and low need for maintenance as well as the performance of the analyzers."

The SPM-5550's high-speed camera captures, measures and visualizes the physical characteristics of the raw material.



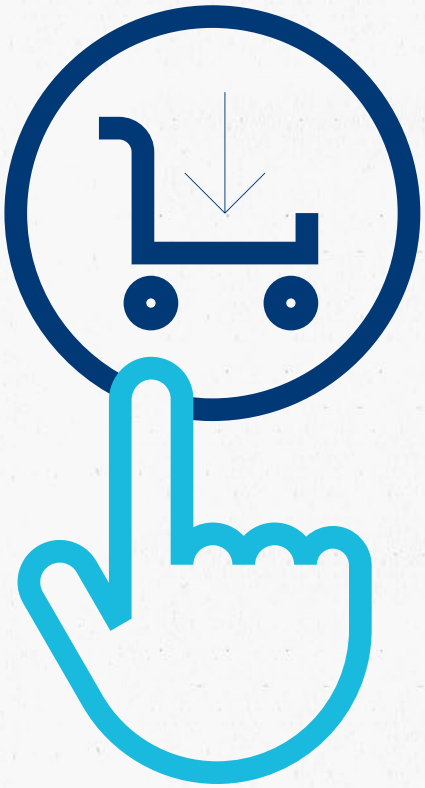
SPM 5550

Step inside world-class facilities

Koehler Paper has invested over 300 million euros in the cutting-edge production line 8 in Kehl, Germany. Now, the world's most powerful XcelLine specialty paper machine, an offline coating machine and BlueLine stock preparation line from Voith are open for online viewings – via a virtual 360° tour. Visitors are guided through the entire plant and get to zoom in on individual sections of the impressive machinery and learn about Koehler's commitment to sustainable papermaking.

Take a virtual 360° tour.

News from the world of Voith Paper



Voith Paper Webshop upgrades

The Voith Paper Webshop has been upgraded to improve the user experience and expanded to offer a broader portfolio of products and services. Changes at the backend ensure the Webshop loads faster. Furthermore, all the product-related information is conveniently summarized in a product detail page, such as product description, technical data and installation points on the machine, which now includes images and 3D models of the parts. Using the 3D viewer, it's possible to zoom in on and rotate the 3D models, which considerably simplifies part identification. In addition, the range of products available has been extended to include the rolls and roll covers as well as the Toscotec portfolio of recommended spare parts. Another new feature allows customers to share certain information with colleagues and partners who are not registered. This can speed up verification of the parts or services needed and encourages closer collaboration across teams. Popular features remain, such as the personalized area "My Shop," and the 24/7 access to live prices, inventory and delivery status.

"Shopping shouldn't be a chore, even when you're doing it for work purposes. We've livened up the Voith Paper Webshop with features that improve the user experience and ensure the right parts are delivered on time to where they need to be."

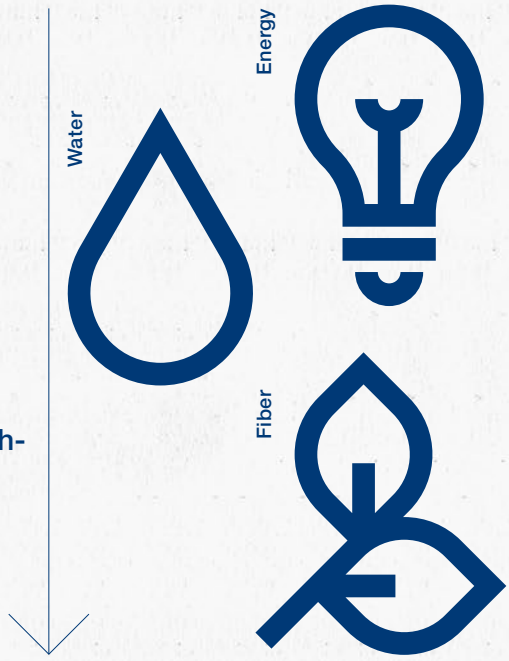
Batima Mustafina
Operational Product Manager Webshop, Voith Paper

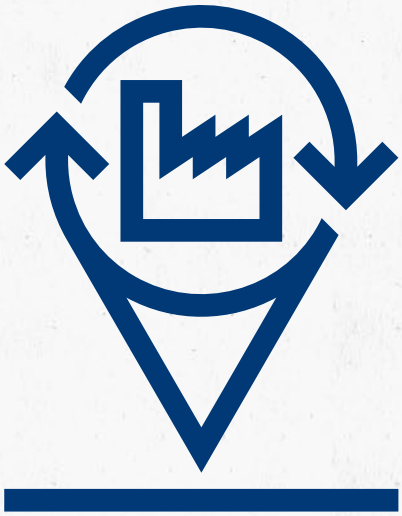
Browse the new Voith Paper Webshop in nine languages.

Visit the Voith Paper Webshop in China.

Saving energy, water and fiber

Graphic Packaging International (GPI), a leading fiber-based consumer packaging provider, has commissioned Voith to supply multiple stock preparation lines as well as integrated reject handling and wastewater pre-treatment system for its new mill in Waco, Texas. Rusty Miller, Senior Vice President Engineering and Technology at GPI highlights the reasons for the decision: “Voith’s proven and innovative pulping technology and wastewater pre-treatment solutions are key to reaching our high product quality targets and improving efficiency and sustainability.”





Multiple rebuilds around the globe

Voith’s reputation as a full-line supplier secures multiple rebuild projects around the globe. For Enstra Paper, a member of the Corruseal Group and one of the largest producers of recycled containerboard grades in South Africa, Voith is to rebuild its PM 6 for packaging paper in Springs, close to Johannesburg, to enable a much more efficient and sustainable production. As well as supplying a new BlueLine OCC stock preparation line to improve efficiency, runability and paper quality, substantial rebuild measures of the forming, press and dryer sections will be undertaken on the existing paper machine that was converted from newsprint to packaging papers in 2015.

Technologically complex

In another major rebuild project for a global packaging and paper manufacturer, Voith is to comprehensively rebuild the company’s production line into a state-of-the-art facility for the sustainable production of recycled packaging papers. The customized solution includes a resource-saving BlueLine stock preparation system, the rebuild of the existing machine into an efficient XcelLine paper machine as well as comprehensive service agreements and a fabrics package. The project also involves the technologically complex rebuild of the existing winder for processing packaging papers.

> “In Voith, we have found a partner committed to long-term collaboration that at the same time offers the most modern solutions in the sector. We have been won over by Voith’s flexibility and its adherence to project budget and deadlines.”
>
> Nic Campher
> Head of Paper, Enstra Paper

BM 13 key to Asia Symbol's sustainability drive

"Thanks to Voith's full-line package, the Rugao BM 13 achieves excellent results in terms of product quality, production efficiency, and operating and maintenance costs, which further strengthens our competitive advantage in the market."

Eric Xu
General Manager Rugao BM 13, Asia Symbol

In October 2023, Voith successfully started up Asia Symbol's BM 13 at Rugao, 180 km north of Shanghai, China. For Asia Symbol, a global leader in pulp and paper production, the BM 13 strengthens their position in the paper industry and marks another significant milestone in the long-standing, strategic and trustful partnership with Voith. The full-line solution includes the BlueLine stock preparation system, an intelligent XcelLine paper machine, resource-saving technologies and digital applications.

To support Asia Symbol's sustainability and efficiency drive, the scope of delivery covered the energy-efficient EcoHood dryer hood and qDry Pro non-contact drying solutions that use HelioX high-performance infrared emitters as well as a comprehensive wear parts package and Voith's OnControl automation technology (MCS, DCS), OnQuality quality control system (QCS) and the OnCare.Health condition monitoring system.

The BM 13

Wire width:
8,160 mm

Production capacity:
one million tons

Design speed:
1,400 m/min

Production quality:
folding boxboard with basis weights of 170 to 400 gsm

Voith defines safety standard for nonwoven production lines

Voith ensures high-performing nonwovens production lines meet international state-of-the-art technical and safety standards. In an initiative to define the first-ever international safety standard for nonwoven machines, Voith collaborated with Trützschler, the nonwoven experts, to further develop Voith's internal safety standard for nonwoven machines to the international ISO standard (ISO 22291). In another first, since August 2023 this ISO standard has also been adapted and listed as a harmonized standard for wet-laid nonwoven machines in the Official Journal of the European Union. Manfred Gloser, Senior Vice President Quality at Voith Paper, notes: "We are very proud that, due to our expertise, we were able to define the international safety standard for nonwoven fabric manufacturing facilities. This allows us to guarantee our customers a high level of plant safety and secure competitive advantages."

Plant Detail Engineering phase successfully completed for Laakirchen Papier

A key first step in Voith's comprehensive rebuild of the PM 11 for Laakirchen Papier AG, the Austrian papermaker, is now complete. Using modern tools, 3D scans and a 3D model, the detail engineering phase kicked off with an in-depth study of existing mill conditions. "Voith uses the latest 3D technologies for basic and detailed engineering, which significantly simplifies the work for our team," confirms Florian Burkhart, Project Manager for Laakirchen. With Voith's extensive full-line supplier expertise, the team drew up detailed plans to complete the rebuild, reduce the environmental impact of the site, improve the working conditions and help Laakirchen reach its ambitious production and sustainability goals. The exhaustive nature of the plant detail engineering phase ensures the smooth, timely and resource-efficient conversion of the PM 11 from an annual production capacity of 350,000 tons of graphic paper to 500,000 tons of containerboard.

from an annual production capacity of

350,000 tons of graphic paper to

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of containerboard

09 Page 26

#full line supplier

Discover the potential of holistic papermaking solutions.

The full dimension

The SCA Obbola Mill houses the world's largest kraftliner production line designed, delivered and optimized by Voith's full-line supplier domain experts. The highly efficient plant is a trailblazer in the sustainable production of low-carbon packaging material.

The XcelLine machine from Voith ensures SCA can increase production capacity in a sustainable, future-oriented way.

Everything about the SCA Obbola Mill in Sweden revolves around one ambitious vision. And that's to build and operate the world's largest containerboard production line for renewable packaging material in a sustainable, safe and highly efficient way. As the full-line supplier partner for the project, Voith is responsible for the whole equipment and digitalization scope for the high-tech facility. As a result, Voith plays a pivotal role in creating a centerpiece of technological excellence and efficiency that ensures SCA meets the increasing demand for sustainable packaging solutions. Mats Nordlander, President Paper of SCA, sums up the achievement: "In Voith, we found a partner that understood our priorities and the direction we want to go. And we jointly developed a concept that we feel is both unique and will set the benchmark for a long time to come."

At the heart of the SCA Obbola Mill stands the PM 2, which replaced the 50-year-old PM 1 in a perfectly timed and expertly coordinated operation. With a wire width of 10,200 mm and a design speed of 1,400 m/min, the XcelLine machine is the most productive of its kind. To avoid any interruption of SCA's production, PM 2 was constructed while the PM 1 was kept running in parallel. Despite the ever-changing restrictions imposed by the Covid-19 pandemic, the construction period was smooth, taking 25 months from the ground breaking ceremony to the start-up of PM 2. Production was seamlessly transferred to the PM 2 on schedule in November 2022 and the PM 1 was shut down.

But that wasn't the end of the groundbreaking upgrade. For PM 2 to reach full capacity – a projected annual production of 725,000 tons of kraftliner compared to the previous 450,000 tons – the old corrugated containers (OCC) line would have to be replaced. At first, SCA's OCC line fed into the new PM 2. In the background, another major construction feat was underway, that of Voith's new BlueLine stock preparation system. In July 2023, the final switch was made, again on schedule.

The production line in full swing

What makes this plant so remarkable? The size, scale and scope of the plant are unrivaled. From the PM 2, the world's largest XcelLine kraftliner machine, to the single pulper that can handle the full capacity of 1,700 tons of OCC stock

1 **PM 2, the world's largest XcelLine kraftliner machine, is at the heart of the SCA Obbola Mill.**

XcelLine paper machine

The state-of-the-art kraftliner machine features a design speed of 1,400 m/min and a wire width of 10,200 mm. Once full capacity is reached, PM 2 is expected to increase SCA's annual production capacity from 450,000 tons to 725,000 tons.

Papermaking 4.0

At the Obbola PM 2, more than 10 innovative digitalization and automation solutions from the Papermaking 4.0 portfolio of Voith and its subsidiary BTG are at work, including AI-enhanced solutions from the OnEfficiency family.

2

Spare and wear parts

The scope of delivery covers 100 percent of the necessary spare and wear parts within a comprehensive, customized package from Voith and its subsidiary Meri.

every day, Voith's IntensaPulper. The pulper is one of the most important pieces of equipment for a robust OCC line, and Voith's model from the BlueLine portfolio is the industry benchmark for energy-efficient pulping.

"As SCA will be producing a wide range of kraftliner and Eurokraft of various basis weights on the PM 2, with fluctuating proportions of recycled and virgin pulp, the BlueLine OCC stock preparation line was designed to handle a large variation in recycled cellulose fiber stock consumption," explains Thomas Jocham, Sales Manager at Voith Paper. "We developed a parallel line concept where unneeded machines are flushed and stopped for lower OCC demand, which ensures an easy and trouble-free operation over a wide product range."

The variations in pulp feed made balancing out the water system between PM loop, pulp mill and OCC plant a challenge. Here Voith's expertise and Meri's highly efficient water and wastewater management system combine to save up to 30 percent fresh water consumption compared to the previous production and ensures stable operating condition at the paper machine. In addition, Voith's EcoMizer cleaner technology minimizes the energy consumption by optimizing the consistency and pulp flow of the BlueLine OCC plant. Compared to conventional mills, the BlueLine stock preparation plant saves up to 40 kWh for each ton of stock produced. Johan Westman, Project Manager at SCA, summarizes the key benefits for SCA: "The OCC plant aligns perfectly with our sustainability goals, as it promotes efficiency and resource optimization in our production processes."

2

Holger Sartorius, Project Manager at Voith Paper, checks out the digitalization applications with Niclas Ahnmark, Paper Mill Manager at SCA.

As high production line availability was a key target for SCA, the scope of delivery also covers 100 percent of the necessary spare and wear parts within a comprehensive, customized package from Voith and its subsidiary Meri that was delivered before start-up. "It was very good that we started the spare parts process so early. Everything went smoothly and efficiently," Per Asplund, Senior Project Manager at SCA, notes. "In addition, the good documentation from the technical teams helped us a lot. Now we have a perfectly matched package that also meets the highest standards in terms of safety."

→

"The OCC plant aligns perfectly with our sustainability goals as it promotes efficiency and resource optimization in our production processes."

Johan Westman
Project Manager, SCA

Close, collaborative, long-term

A comprehensive service package and efficiency partnership covers an extensive preventive maintenance program as well as a long-term optimization strategy. As a result, the scope of supply for SCA includes the most innovative full-line supplier package in Voith history and ensures the whole plant, service and digitalization solution is delivered from one source.

The partnership kicked off in November 2019 with value-add Voith audits at the SCA site, which involved three separate dedicated teams who analyzed the situation at SCA in detail and defined the scope of delivery in depth. “From the outset, our services were tailored precisely to SCA’s specific circumstances and requirements,” explains Benjamin Schembera, Solution Manager Service EMEA at Voith Paper. “Our common goal is to ultimately generate as much added value as possible for the long term.”

As well as committing to a minimum standard of machine performance, Voith provides ongoing future-oriented improvement services. From the design to start-up, close support and cross-organizational teamwork have been crucial to the success of the project. By securing exceptional added value along the entire production line and life cycle of the machines, both SCA and Voith will benefit. Schembera succinctly sums up the commitment: “Our common purpose fosters a collaborative team spirit and builds a trustful partnership. We win together, we lose together.”

Added value with digitalization

“With the PM 2, we will take our next steps in the digitalization journey,” explains Niclas Ahnmark, Paper Mill Manager at SCA. More than 10 innovative digitalization and automation solutions from the Papermaking 4.0 portfolio of Voith and its subsidiary BTG will be installed at the Obbola PM 2.

As the SCA Obbola Mill will have fluctuating proportions of recycled and virgin pulp, the BlueLine OCC stock preparation line was designed to handle a large variation in recycled cellulose fiber stock consumption.

BlueLine stock preparation line

“The applications provided by Voith will help us to monitor the process and make the right decisions.”

Niclas Ahnmark
Paper Mill Manager, SCA

3 **The BlueLine production line ensures an easy and trouble-free operation over a wide product range.**

For instance, BTG’s Lifecycle program, which includes preventive maintenance checks and regular calibration, will improve consistency accuracy and control. BTG Field Service Engineers assist in the planning, implementation and coordination of the various maintenance services, maximizing machine uptime and stability while maintaining SCA’s high safety standards.

“The applications provided by Voith will help us to monitor the process and make the right decisions,” continues Ahnmark. The OnEfficiency family will contribute to more sustainable and resource-saving paper production, while the OnCare family will help SCA to monitor productivity and take optimization measures quickly. The Voith Paper Webshop enables fast ordering of spare and wear parts as well as services. Michael Thoma, Director Remote Operations at Voith Paper believes the SCA Obbola Mill will become a flagship site: “Every solution is aligned to SCA’s ambitious long-term goals to ensure the plant has a competitive and sustainable edge,” explains Thoma. “As our digital portfolio is made available on Voith’s IIoT dataPARC cloud platform, we can also secure the highest security standards.”

The training effect

As soon as SCA and Voith joined forces, Voith's PapermakingAcademy set about creating a customized training program that would equip the SCA team with the skills and knowledge needed to maximize the performance of the PM 2 production line from start-up. The training program was expertly designed to ensure everyone working on the PM 2 and Voith's BlueLine OCC system would be in a position to continuously improve the mill's performance curve after takeover. As a result, every aspect of the program was created with this goal in mind and tailored to SCA's specific requirements. What's more, it was constantly adapted over time as new needs or knowledge gaps surfaced.

This flexibility was a program highlight, believes Charlotta Engman, Production Manager at SCA. Success can be attributed to the detailed preparation and the close collaboration between SCA and Voith. "In my opinion, Voith has been responsive in finding the best ways for our teams to collaborate," Engman notes. "The Voith team has also acted on feedback on what works best within the SCA organization regarding training."

Lisa Lundström Hämälä, Process Engineer at SCA, is also enthusiastic about the positive training effect. "A key factor to the successful start-up here in Obbola has been the training given to the employees."

> **"A key factor for the successful start-up here in Obbola has been the training given to the employees."**
>
> Lisa Lundström Hämälä
> **Process Engineer, SCA**

surpass," concludes Holger Sartorius, Manager at Voith Paper. "Our trusted part- continues to create added value at pportunity and will continue to do so for g term."

tomer efits+

h full-line supplier scope ensures the whole d digitalization solution is delivered from rce. Comprehensive engineering and on-site s provided in full by domain experts.

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h/t savings

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Watch a behind-the-scenes video with SCA and Voith.

Close, collaborative, long-term

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BlueLine stock preparation line

Upskilling for performance

The PapermakingAcademy sets the stage for a successful and productive partnership. "By designing a customized training program for SCA, we were able to create a positive learning journey that got everyone up to speed and equipped the team with the skills needed to operate their paper machine and stock preparation line successfully and boost performance over the long term," says Christian Hitzler, Head of Training & Documentation at Voith Paper. "As the leading provider of expert training in the paper industry, we believe in the added value of a customized training program and make our PapermakingAcademy available for all our customers."

Key features

The PapermakingAcademy offers comprehensive, effective and future-oriented training:

- **A wide range of scheduled courses on every aspect of papermaking throughout the machine lifecycle**
- **Target group-specific training programs tailored to the customer's specific needs**
- **A mixture of theoretical and practical training sessions designed for three levels of experience and knowledge**
- **Face-to-face sessions for in-depth support**
- **E-learning options for self-paced development**
- **Interactive training with virtual reality for a more powerful learning experience**

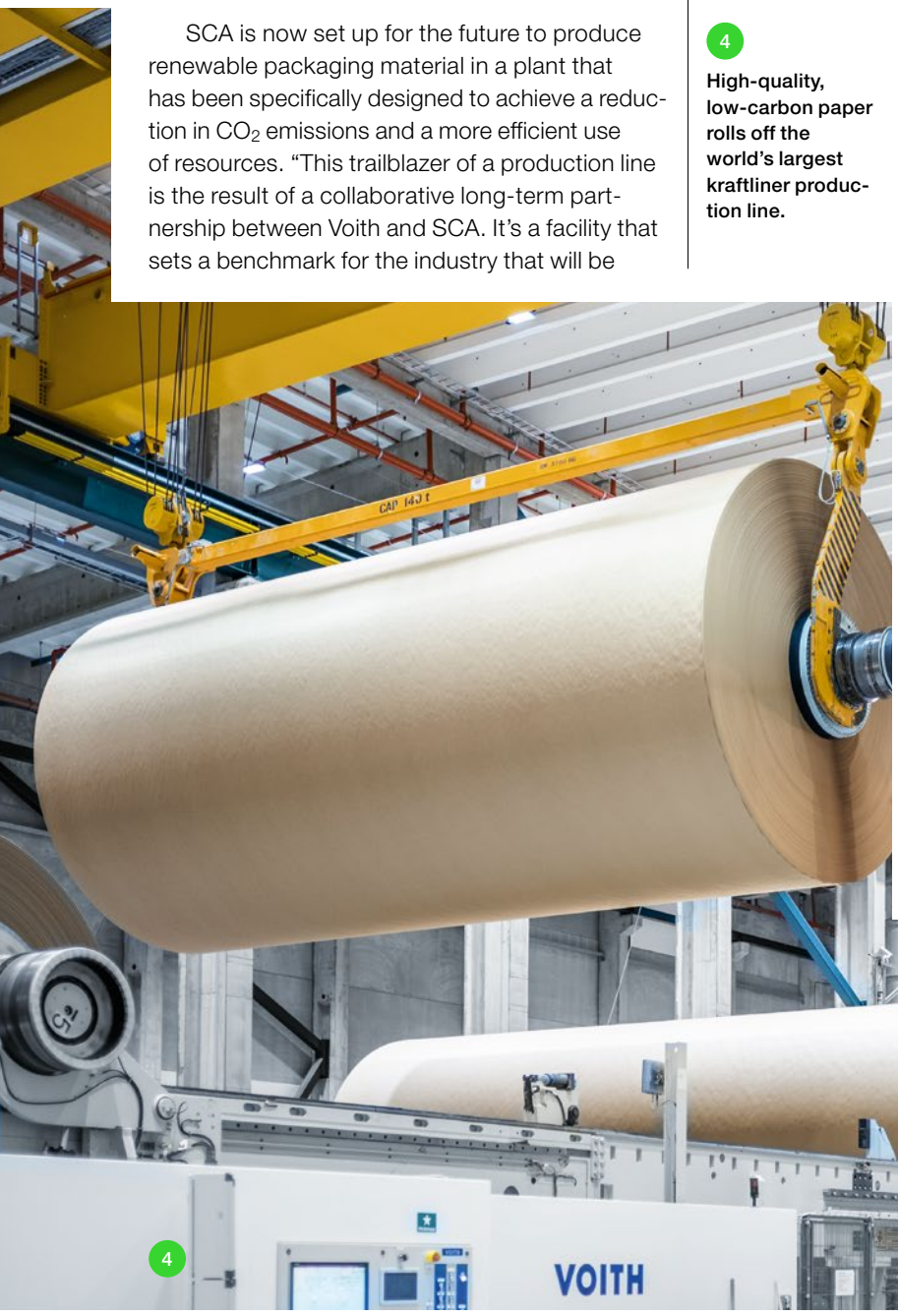
The PapermakingAcademy resources help customers understand how to operate, maintain, troubleshoot and maximize the performance and availability of their machines and production lines. The training modules include all aspects of Voith's portfolio and cover its entire lifecycle, which ensures customers get the training precisely where and when they need it.

Explore the training modules at Voith's PapermakingAcademy!

Long-term service agreement

A comprehensive service package and efficiency partnership covers an extensive preventive maintenance program as well as a long-term optimization strategy.

SCA is now set up for the future to produce renewable packaging material in a plant that has been specifically designed to achieve a reduction in CO_2 emissions and a more efficient use of resources. “This trailblazer of a production line is the result of a collaborative long-term partnership between Voith and SCA. It’s a facility that sets a benchmark for the industry that will be hard to surpass,” concludes Holger Sartorius, Project Manager at Voith Paper. “Our trusted partnership continues to create added value at every opportunity and will continue to do so for the long term.”



4

High-quality, low-carbon paper rolls off the world’s largest kraftliner production line.

Customer Benefits+

The Voith full-line supplier scope ensures the whole plant and digitalization solution is delivered from one source. Comprehensive engineering and on-site service is provided in full by domain experts.

From 450,000 tons to 725,000 tons

Projected increase in production thanks to XcelLine paper machine and BlueLine stock preparation line.

40 kWh/t savings

The fully automated start/stop system embedded in the BlueLine stock preparation line in combination with bypass possibilities ensures constant high stock quality with lowest energy consumption. Compared to conventional plants, the SCA set-up delivers up to 40 kWh/t savings.

30% less fresh water

Compared to the previous production line, the new set-up saves 30 percent on fresh water consumption.

1,700 tpd OCC production

Just one pulper, Voith’s IntensaPulper, can handle the full capacity of raw material to produce 1,700 tons OCC pulp production.

Flexible capacity: 800–1,700 tpd

The parallel line concept at the SCA Obbola Mill ensures unused machines are flushed and stopped for lower OCC demand (kraftliner), allowing a flexible daily production capacity of various grades of sustainable, low-carbon packaging material.

Watch a behind-the-scenes video with SCA and Voith.

People matter

The supportive, innovative and ever more diverse culture at Voith leads to high-performing teams that customers consistently value. Every day, Kerstin Klein empowers people and leaders to shape that unique culture. The Senior Vice President Human Resources at Voith Paper explains how an agile, future-focused approach to leadership ensures every team can go above and beyond customer expectations.

Who is Kerstin Klein?
Kerstin Klein is Senior Vice President Human Resources (HR) for Voith Paper, voluntary judge and mother of two young schoolchildren. She was promoted to the position in February 2022, having joined the company 12 years before. Leadership opportunity at Voith Paper came early. In 2011, Klein became Senior HR Business Partner/Head of HR Ravensburg and then Head of HR South Germany in 2013. In 2018, she took over the Local Management Representative role for the Ravensburg site. Throughout, she has been driven by her passion for helping people identify and fulfill their full potential as well as making good things happen for Voithians and, as a result, for Voith's customers.

Kerstin Klein, what do customers value most about the culture at Voith Paper?
Two mottos best summarize our spirit and the value we bring to the paper industry. The first, "We never let a customer down," has been our motto for longer than I've been at the company. It captures our determination to best serve all our customers, whatever it takes, whatever the challenges. The second is a more recent addition that helps instill a sense of belonging, purpose and direction in our people. It ties into our innovative culture, core values and commitment to foster high-performing teams that help our customers achieve their ambitious goals. And that motto is "We make the difference."

How do you instill the spirit of both mottos in such a global organization?
We work hard on this every day, and it's a challenge to get right. It's a constant, multifaceted process that focuses on developing people and leading them well. For instance, our goal is to foster a collaborative culture in multinational and multigenerational teams across regions and departments. We are breaking down silos, so we can work better together in more diverse teams. By encouraging everyone to take ownership of responsibilities and by doing our utmost to instill an open, transparent and collaborative culture, no one is left behind or alone. What we do well internally ultimately supports our customers and their success. This approach helps embed our first motto into our culture: "We never let a customer down."

Our leaders carry a huge responsibility with respect to the mottos. We have therefore developed a comprehensive set of tools to help them form a clear understanding of the "why," "what" and "how" of leading people and high-performing teams, including our 3x2 Leadership Framework. This helps build the leadership skills that contribute to improving the performance of every individual, every team and the whole company. At the same time, as we improve, we help our customers perform at their best. These activities tie into our second motto: "We make the difference." →

You need inspiring leaders to attract, develop and retain the best talent in the industry. How do you provide the necessary support for people in such roles?
Becoming a leader is a journey and a challenge. We have a lot of support in place, including training courses, mentoring programs, peer coaching and recap sessions. Support is never one off. Instead, it's an ongoing, flexible and often very personal process that is designed to help our people find, define and work on their own leadership styles.

One thing we do focus on continually is psychological safety. I strongly believe it's essential to take care of the individual needs of employees to be able to create a trusting, reliable and high-performing workforce. When we feel safe, we become more open-minded, motivated and resilient. If I feel safe, I can do my best work. Here again, our 3x2 Leadership Framework helps us create a supportive working environment that allows everyone to openly share their ideas and concerns. A feeling of psychological safety is the basis for setting goals, giving honest feedback, encouraging self-reflection and fostering honesty in leaders as well as across the entire workforce. And it's crucial for an innovative company such as Voith. For example, in R&D people need to feel safe to experiment, within the right parameters of course. It's why we are known for our breakthrough technologies and digital innovations.

A safe and attractive workplace also allows people to establish strong bonds, which makes everything much easier. Strong bonds are what define the trustful partnerships with our customers, by the way. As I've said earlier, what we do well within the company we carry over to our customers.

> **"What we do well within the company we carry over to our customers."**
>
> Kerstin Klein
> Senior Vice President Human Resources, Voith Paper

How do you prepare the next generation of leaders?
We have great examples of how many of our employees determine their own individual pathway and career success, such as the young assistant who showed great potential early on. I supported her development in a targeted manner, encouraging her to recognize and build on her strengths. Currently, she is the training manager for an entire site. And then there's the apprentice who successfully completed a university degree with Voith and went through one of our talent programs, ultimately progressing from technician to head of a department. This flexibility and range of our talent activities is a reason why many of our employees joined us and choose to stay with us. Their loyalty, reliability and many years of experience are central elements that bring added value for our customers.

Many in the paper industry are grappling with the same issues – how to attract and train top talent for the future of papermaking. How do you tackle this?
The paper industry is an incredibly exciting and interdisciplinary field. It spans physics, chemistry, engineering, industrial manufacturing, digitalization and more. At Voith, we offer a vast range of opportunities for people from all backgrounds and experience. There's a home for everyone.

What sets us apart is our commitment to provide opportunities for personal and professional development. We are proud to support women in tech and to provide attractive career pathways that also support dual career couples. We make it easier to combine a professional career with family life, for instance through job-sharing opportunities, childcare support and flexible working options. What's more, we are making the world better with paper. Paper is intrinsically sustainable, and we are driving sustainable business practices. Papermaking for Life is Voith Paper's important sustainability program, but it also describes our corporate culture. This approach constantly pushes and allows the company to perform at new levels, and we bring our customers with us.

We make papermaking sustainable.

We make the difference

We help customers achieve their ambitious goals.

We ensure everyone performs at their best.

How do you support your customers in this area?
We make sure we secure our unique know-how and domain expertise within the company so that our customers can continue to benefit from our experience and skills in the future. This is where our talent activities come in, but we also achieve it through forward planning and the fostering of intergenerational teamwork and networks. As for the future, we like to plan ahead. We have dedicated programs and cooperations at universities around the world, as well as awareness-building projects for schools and even kindergartens. In addition, we are open to collaborating with our customers on a local level to create initiatives that attract more people to papermaking. We are already exchanging ideas on inspiring and best preparing future generations of papermakers with a regional customer.

How do you see the future?
There is a war for talent right now, but I believe we have the right support in place and the best attitude to come out on the winning side. I am passionate about achieving this. In fact, I see the same kind of passion and determination in my colleagues who are working hard to make a difference to the paper industry, often behind the scenes. In future, we will highlight their activities more publicly. Our goal is to make their impact at Voith, their dedication to our customers and their role in making papermaking sustainable much more visible. This is one of the reasons why we launched our PaperHeroes program, which features on the back of this magazine. We want to show just how committed everyone is to making a difference and ensuring we never let a customer down.

Knowledge transfer
Get in touch if you would like to be part of a knowledge transfer initiative between Voith Paper and our customers.

“We make sure we secure our unique know-how and domain expertise within the company so that our customers can continue to benefit from our experience and skills in the future.”

Kerstin Klein
Senior Vice President Human Resources, Voith Paper

As the leading full-line supplier, Voith is no stranger to celebrating records with its customers. In China, the records keep piling up. Is there a secret formula?

A recØrd formula

Leading athletes around the world are never satisfied with just one record. Or even two. Sun Paper, a leading figure in the paper industry in China, has turned breaking records into a company tradition. In fact, as Sun Paper is now so well known for working at a rapid pace, it's known as "Sun Speed." And when Sun Speed teams up with Voith's full-line supplier expertise, the results are impressive. "Together, we are a fighting force," says Andy Zhang, Project Manager at Voith Paper China.

Nanning PM 3:
→ **one hour from stock on wire to paper on reel**
→ **two weeks to achieve production quality**

Nanning
China

PM 2
PM 3

In 2023, PM 2 and PM 3, two advanced XcelLine packaging paper machines in the latest industrial design, started up ahead of schedule and in record time at Sun Paper's Nanning paper mill. What's more, for Nanning PM 3, it took only one hour from stock on wire to paper on reel. That's not just a Sun Paper record, but a new world record for start-ups of this kind of superior packaging paper machine. On top, Nanning PM 2 set a record in reaching production quality within three weeks of start-up, only to immediately cede the record to Nanning PM 3, which achieved production quality within two weeks. Zou Liliang, Vice Project Director of Nanning PM 2/3 at Sun Paper, sees several factors as crucial for the rapid start-ups. "The Nanning PM 2 and PM 3 achieved the outstanding world record-breaking results thanks to the strict monitoring of project milestones and the dedication and commitment of team members from both Sun Paper and Voith."

Nanning PM 2:
→ **three weeks to achieve production quality**

Nanning PM 2 and PM 3

wire width
7,300 mm

design speed
1,200 m/min

"These records are an incredible source of pride for the Voith and Sun Paper teams," explains Zhang, who has worked on every Sun Paper start-up. "But breaking records is only one small part of the story. These ultra-efficient machines will further strengthen Sun Paper's strong market position for packaging material. From the very first batch, our machines produced A-grade quality paper."

Understandably, Fu Guoling, Project Director of Nanning PM 2/3 and Production Director of Zoucheng PM 36/37 at Sun Paper, is very satisfied with the results. "Voith's machines have superior performance. At the same time, excellent management on both sides has significantly shortened the length of the project, bringing even quicker economic returns."

Long-term success

Voith supplied the entire production line, from headbox to winders, for Nanning PM 2 and PM 3. Each has a wire width of 7,300 mm and a design speed of 1,200 m/min. PM 2 mainly produces high-quality packaging paper between →

Double the strength: two ultra-efficient paper machines.

"Years of cooperation with Voith have taught us that a good working relationship is built not just on a single event of success, but also on mutual support and growing together for the long term."

Li Lu
Chairman, Sun Holdings Group

140 and 250 gsm and has an annual capacity of around 520,000 tons. PM 3 mainly produces high-quality packaging paper between 100 and 160 gsm and has an annual capacity of around 480,000 tons. The left- and right-hand dual machine set-up of the Nanning PM 2 and PM 3 is the fourth repeat order of this kind, following closely after the successful start-ups of PM 31 and PM 32 in Zoucheng, PM 36 and PM 37 in Yanzhou, and PM 1 and PM 2 in Laos.

"The cooperation between Sun Paper and Voith has gone beyond a simple commercial relationship to become a deep partnership reaching the corporate strategic level," says Ying Guangdong, Vice General Manager and Chief Engineer of Sun Paper. "The highly efficient implementation and speedy start-up of the Nanning project is just one example of this successful long-term strategic alliance. Not only does it strengthen the cooperation between Sun Paper and Voith in the packaging paper sector, but it also demonstrates our determination in jointly seeking sustainable and innovative solutions."

Carlos Lin, Senior Vice President, Order Execution & Operations of Voith Paper China, has similar views on the world record-breaking partnership. "The shared understanding between the two teams not only greatly helped us to work more efficiently together, but it also pushed this partnership model to a new level," says Lin, concluding: "We always try to surpass ourselves, which is the best expression of Voith's spirit and Sun Speed."

Huaqiao PM 6

wire width
7,920 mm

design speed
1,400 m/min

annual production capacity
about 400,000 tons

The BlueLine stock preparation line in Guanghan with a production capacity of 2,200 tons a day.

A new customer, new records

From the very first project with Voith, Sichuan Huaqiao Fenghuang Paper started setting new records. The largest coated paper manufacturer in Sichuan, which has a total production capacity of one million tons per year, now runs the largest OCC stock preparation line in the Asian market, a BlueLine stock preparation line with a production capacity of 2,200 tons a day. The stock feeds into the PM 6, a state-of-the-art XcelLine packaging paper machine, at the company's Guanghan site. PM 6 has a width of 7,920 mm and a design speed of 1,400 m per minute. It mainly produces high-quality packaging paper in the range of 90 to 170 gsm and has an annual production capacity of about 400,000 tons. Huaqiao Fenghuang also holds the current record for the fastest start-up for this type of paper machine. Only six months lies between installation and successful start-up, which was also two months ahead of schedule.

"The very good performance of PM 6 is the excellent result of the continuous efforts and close cooperation of both teams," notes Yang Lichang, Director of Project Management, Huaqiao Fenghuang in Sichuan, who was impressed by the mutual hard work and technical innovation. "The high performance reflects the outstanding efficiency of the Voith paper machines. The successful start-up will further increase Huaqiao Fenghuang's production capacity and create a solid foundation for our future development."

Full-line supplier: the secret formula?

Although the solutions for Sun Paper and Huaqiao Fenghuang have been customized according to the specific circumstances and requirements of each customer, there are strong common elements that run through both. For instance, as a full-line supplier, Voith covered the full scope of delivery for both sites, which reduces integration and coordination efforts for customers. Voith's strong local presence and technical expertise ensure the support is at the highest level of competence and availability. This lowers operational risk and ensures product quality, which provides the customer with a long-term competitive edge. The centerpiece for both projects is the new industrial design of Voith's proven XcelLine paper machine, which safeguards easy operation and maintenance. Voith's Papermaking 4.0 automation and digital portfolio, such as OnQuality MCS, QCS and OnCare.Health condition monitoring solutions, enables complete control and continuous monitoring of the production lines. In the case of Huaqiao Fenghuang, Voith's advanced digital solutions enable full automation of the production process, ensuring stable product quality, a reliable process and lower operating and maintenance costs.

> “The very good performance of PM 6 is the excellent result of the continuous efforts and close cooperation of both teams.”
>
> Yang Lichang
> Director of Project Management, Huaqiao Fenghuang in Sichuan

Huaqiao:
→ **six months from installation to start-up**
→ **two months ahead of schedule**

Breaking records that matter

For Li Lu, Chairman of Sun Holdings Group, the longstanding partnership is one key aspect of the record-breaking series of start-ups. “Nanning PM 2 and PM 3 are the 13th and 14th paper machines in the Sun Paper-Voith partnership. Years of cooperation with Voith have taught us that a good working relationship is built not just on a single event of success but also on mutual support and growing together for the long term. We and Voith have demonstrated through real action that a true partnership is built on deep mutual trust and shared values.”

What sets Voith apart is also a determination to meet and surpass customer expectations, whatever the challenges or unexpected events along the way. Despite the Covid-19 travel restrictions and supply chain disruptions caused by geopolitical events, for instance, the Voith teams delivered on time, to scope and to the full satisfaction of both Huaqiao Fenghuang and Sun Paper. Xiaodong Gong, Project Manager at Voith Paper China, who was responsible for the project with Huaqiao Fenghuang, summarizes Voith’s unique approach. “This ambition to excel whatever the circumstances is really what drives the Voith teams to set new standards in papermaking. We are used to making sure that customers break records that matter.” Where might the next one be?

The centerpiece: a state-of-the-art XcelLine packaging paper machine.

Customer Benefits+

- Full-line supplier expertise and portfolio provides unrivaled insights and support
- Strong local presence reduces integration and coordination efforts for customers
- Long-term partnerships ensure greater understanding of individual needs
- Papermaking 4.0 digital solutions secure stable production and minimize downtimes

1

The future-oriented rebuild

> **“We are doubling production capacity from 500 to 1,000 tons per day in a way that minimizes waste and reduces fiber, energy and water consumption.”**
>
> **Maciej Skupinski**
> Project Manager, Schumacher Packaging

Sustainability and utmost efficiency are the focus of the major rebuild of PM 2 for Schumacher Packaging in Myszków, Poland.

“With Voith Paper’s successful rebuild of PM 2 in Myszków, Schumacher Packaging has taken another crucial step toward achieving our ultimate goal of company-wide, climate-neutral production from 2035,” says Maciej Skupinski, Project Manager at Schumacher Packaging. “We are doubling production capacity from 500 to 1,000 tons per day in a way that minimizes waste and reduces fiber, energy and water consumption.”

In an unprecedented scale of commitment to sustainable papermaking, Schumacher Packaging, one of Europe’s largest manufacturers of customized corrugated and solid board packaging, invested in Voith’s best-in-class equipment and process technology to produce low-emission, recyclable and increasingly biodegradable packaging from natural and renewable raw material. State-of-the-art machine concepts, including a new MasterJet Pro headbox and a DuoShake DG, ensure the best possible quality for profiles and paper strength. A fully automatic VariFlex NG high-performance winder rounds off the major rebuild. Already in 2018, Voith modernized the OCC stock preparation line. To align with the PM 2 rebuild, the OCC line has now been further extended with technologies from the BlueLine portfolio.

1 Securing best all-around performance: the PM 2 rebuild.

2 A committed team: Szymon Zawada, Philip Schnellinger and Maciej Skupinski.

Customer Benefits+

- **Full-line supplier approach ensures fewer interfaces and less risk for customers**
- **Doubling of production capacity from 500 to 1,000 tons per day**
- **Lowest possible energy balance for the plant**

“Drawing on our expertise as a full-line supplier, we were able to perfectly align all processes from stock preparation to approach flow and paper machine to secure the best possible process stability and machine availability,” notes Philip Schnellinger, Process Technology Manager at Voith Paper. “Both the BlueLine stock preparation line and the PM 2 fully rely on optical consistency transmitters from BTG, Voith’s subsidiary, which has a positive impact for the process,” adds Schnellinger. Szymon Zawada, Production Director Myszków at Schumacher Packaging, confirms. “In our experience, the equipment from Voith and BTG is designed for a long lifetime and shows excellent reliability,” says Zawada. Finally, to ensure a smooth and rapid start-up and long-term efficiency, tailored training in the operation of the new production line was carried out on site with the support of Voith’s PapermakingAcademy. “The cooperation across all teams was excellent,” adds Zawada, “We’re particularly impressed by the depth of knowledge and local support.”

27 Page 40

#sustainable paper making

Discover the potential of sustainable papermaking.

The smarter refiner

The SmartLight on the award-winning InfibraFiner is not only eye-catching but also cutting-edge. By providing instant insights on the status of the machine, it's an innovative visual guide for operators. This sophisticated communication system is just one of the many new features of the new InfibraFiner refiner. Together, they reduce energy consumption and maintenance effort and make the refining operation more efficient, safer and sustainable.

Customer Benefits+

Sustainable refining
No-load power control and gentler refining operation minimizes energy consumption and reduces CO_2 emissions

Longer lifetime
Mechanical Wear Protection and torque control by servo motor maximizes service life of refiner fillings

Reduced maintenance effort
Minimalist design ensures maintenance efforts are kept to a minimum

Greater efficiency
Higher throughput and improved mechanical properties increase refining efficiency

Maximum safety
Innovative rotor changing device simplifies and reduces maintenance effort and secures maximum safety for operators

Note: The combination of the InfibraFiner with the Voith Pluralis refiner fillings allows particularly gentle refining with reduced energy consumption

Smart support
The eye-catching SmartLight on the front of the InfibraFiner is a sophisticated monitoring and communication system that provides instant insights on the status of the machine in three areas: Operating status, Maintenance and Performance. A flashing blue-white light for maintenance or performance is a sign that a warning limit has been exceeded.
In an alarm state, the respective segment lights up red.

1

Operating status
In normal circumstances, the operating status light is green, and both the maintenance and performance lights are blue.

2

Maintenance
The current maintenance status is visible at all times.

3

Performance
The SmartLight guidance system highlights key values during the refining operation.

The smarter approach to refining

Is a machine smart enough to communicate with humans? The next generation of Voith refiners, the InfibraFiner, most certainly is – visually at least. Behind the eye-catching SmartLight on the cover of the InfibraFiner is a sophisticated monitoring and communication system. “A simple glance at the SmartLight provides instant insights into the machine’s operation, performance and maintenance status,” explains Philipp Schimmelpfennig, Global Product Manager Refiner/Deflaker at Voith Paper.

“We’ve designed and programmed the SmartLight to keep the operator informed of the status of the refiner at all times,” continues Schimmelpfennig. “By improving the visibility of potential issues and flagging them in a speedy and attention-grabbing way, the operator can take any necessary action in good time.” The SmartLight is therefore a key feature that improves the process reliability and machine runability of the InfibraFiner. That’s on the outside. On the inside there are many more innovative features, including up to 15 latest-generation I/O-Link sensors, a proven industry-standard technology, for the InfibraFiner DG (Digital Generation). These are essential for machine and process monitoring and for optimizing the operation of the refiner. Strategically located throughout the refiner, they continuously monitor and evaluate temperature, pressure and vibration profiles as the InfibraFiner works. Of particular value for operators is the unique contact detection system, which identifies and proactively counteracts filling collisions. In addition, the wear condition of the fillings is constantly measured, so that the next filling change can be scheduled at the ideal time. The benefits of this digital approach for customers are compelling, as Klabin, the leading paper manufacturer and exporter in Brazil, has learned to its advantage.

Proven benefits for Klabin

No-load power control ensures up to 25 percent idle power can be saved during the service life of the filling.

25 %
energy savings

Increased window of operation

New stator guidance for accurate gap adjustment.

The experienced refiner specialist at Klabin is impressed: Ênio Antônio Dos Reis.

“The InfibraFiner DG is a great fit for us, and we are proud to have started up one of the very first machines at the Otacílio Costa mill. It has a robust design and is state of the art in terms of remote connection and onboard sensors and control systems.”

Ênio Antônio Dos Reis
Process and Engineering Consultant, Klabin

Reducing energy consumption, increasing paper quality

Klabin is one of the first papermakers to enjoy the far-reaching benefits of the InfibraFiner. Since early November 2022, the company has been successfully operating the pilot installation of the new InfibraFiner DG at the Otacílio Costa mill. Ênio Antônio Dos Reis, Process and Engineering Consultant at Klabin, is enthusiastic about the results: “The InfibraFiner DG is a great fit for us, and we are proud to have started up one of

the very first machines at the Otacílio Costa mill," says Dos Reis, who has many years of experience in the field of refiners. "It has a robust design and is state of the art in terms of remote connection and onboard sensors and control systems."

The innovative design allows a more productive, energy-efficient and safer refining operation, as Dos Reis can confirm: "We are excited about the new InfibraFiner DG from Voith as it marks an important milestone in refiner technology for safety and efficiency," he notes. "Already, it allows us to increase the paper machine speed and thereby our production by an average of 4.5 tons a day. Besides this, we achieved an increase of the Burst Test result due to better pulp refining quality and process stability."

In summary, installing the new InfibraFiner DG for Klabin has improved stability in the refining process, increased production capacity and runability, and improved the physical properties of the paper. What's more, switching to the InfibraFiner DG was a straightforward process for the operators and one that they welcomed for several reasons. First, the SmartLight provides an instant overview of the status of refining operation at all times. Second, the user interface on the screen is designed to be easy to read at a glance and ensures the operator is informed immediately of any potential issues in the refining process. As all relevant information is displayed directly on the control panel next to the machine and in the control room, the operator can easily intervene in the process at any time if required.

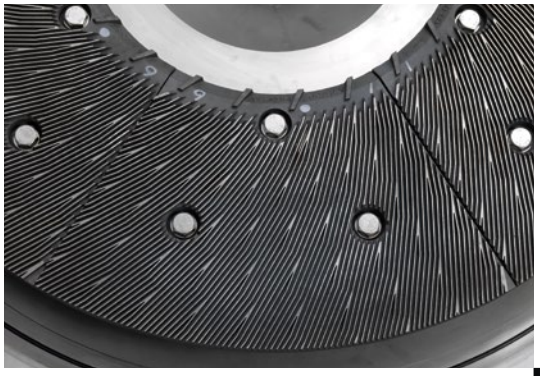
Increasing safety, reducing maintenance effort

Crucially, the refiner is designed with maintenance in mind. As well as needing minimal spare parts, the maintenance effort for the new InfibraFiner is far easier. In contrast, performing maintenance on conventional refiners can be more demanding. That's not the case with the InfibraFiner. Every model is fitted with a new rotor changing device that ensures maximum safety and minimum effort during maintenance. "Using this tool, the rotor can be secured, removed and put back into the machine without the operator ever having to use manual force or exertion. The benefits for the operators cannot be overstated," adds Schimmelpfennig. "It makes their work much safer, simpler and far more efficient."

In addition, a secure data connection enables reports on the machine status to be created and sent. There is also the option of remote support and updates from the Voith stock preparation experts. Under the guidance of Voith domain experts, the customer is sure to be in a better position to exploit the benefits of the InfibraFiner to the full.

"More than 60 years of R&D have informed the design and operation of the InfibraFiner as well as the real-world experience of over 1,000 successful installations of its predecessor, the TwinFlo Refiner," notes Schimmelpfennig. "We're incredibly proud of the energy-efficient, operator-friendly and optimally digitalized result."

Safer, faster, easier
The innovative user-friendly rotor changing device makes light work of heavy parts.



A broader portfolio

In response to customer demand, other sizes of the InfibraFiner are in the pipeline.

Scan the QR Code to see the InfibraFiner up close.

Higher hydraulic capacity
The optimized flow secures an additional production capacity of up to 28 percent, compared to conventional refiners of a similar size.

+ 28 % production capacity

Meet the analyzer

1
The camera module allows images to be taken of the fabric surface from the paper side and, when mounted on the bottom plate, from the roll side.

2
The scanner can operate automatically, measuring the permeability in 500 mm steps, or via remote control.

Voith's Dryer Fabric Analyzer captures all images at the exact same angle and position, ensuring repeatability of results.

3
The wheels in the top and bottom of the device grip the fabric and ensure a controlled movement across the fabric.

4
The permeability range is 50–600 cfm, which ensures remaining dryer fabric lifetime is accurately calculated.

With the launch of Voith's Dryer Fabric Analyzer, inspections are now safer, easier and more precise. More accurate data analysis helps identify optimization opportunities and improves cleaning procedures in the dryer section.

There's an optimal Voith dryer fabric – the right combination of material, design and permeability – for every kind of application and production goal. Now, with the launch of Voith's Dryer Fabric Analyzer, there's also an optimal method for scanning and analyzing the dryer fabric. "Our remote-controlled scanner is a game changer for data capture and safety in the dryer hood," says Carl Taylor, Global Product Manager Drying at Voith Paper.

The traditional inspection of manual spot checks and measurements across the width of the dryer fabric during a planned shutdown invariably involves some guesswork and a lot of risk. The gaps between each measurement are often irregular, which can lead to missed areas and an incomplete picture of the dryer fabric condition. In addition, service engineers need to enter the dryer section, often climbing over stationary cylinders and guide rolls to inspect the dryer fabric. This creates a high safety risk.

Repeatable images, accurate assessments

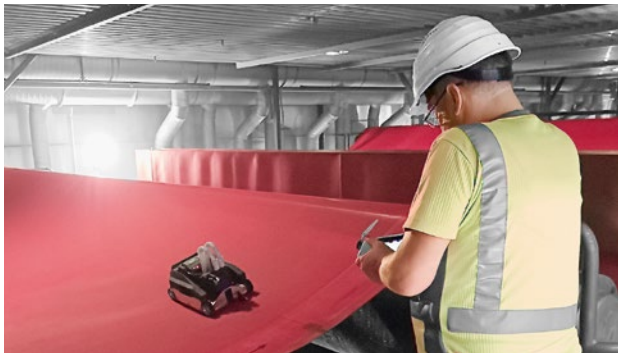
"During manual checks, critical areas of the fabric, for example the seam, cannot be accessed. However, an accurate assessment of the seam is crucial to determine the life expectancy of the fabric under abrasive conditions. Measuring the fabric permeability at repeatable intervals ensures repeatable comparisons of each dryer section," Taylor explains. "Repeatable surface images and permeability measurements are key to assessing the run time of a fabric and to accurately determining whether cleaning devices are working correctly."

As any build-up of contamination in the dryer fabric negatively impacts the entire production and paper quality, it's essential to have a true picture of the fabric condition. "Voith's Dryer Fabric Analyzer captures precise images of surface wear on both the paper and roll side and air permeability at accurate intervals across the fabric width," continues Taylor. "Armed with this data, our experts can not only predict the remaining service life of a fabric, but also recommend how to optimize cleaning procedures, improve maintenance tasks or upgrade the dryer section to ensure better and more efficient runability of the entire machine."

Eliminating risk, improving analysis and efficiency

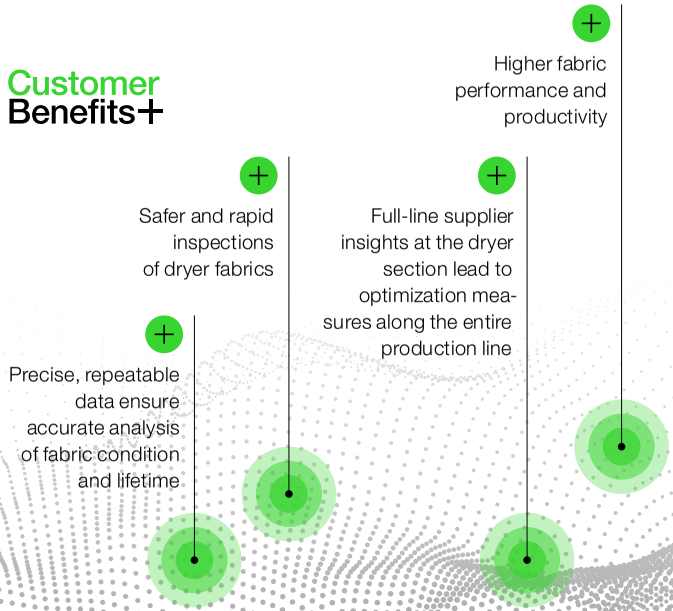
The dryer section consumes on average 75 percent of the energy needed to run the paper machine, so any optimization measures can improve resource efficiency at the paper mill. "As a full-line supplier, Voith engineers have a unique perspective of the issues that impact dryer fabric contamination and dryer section performance," adds Taylor. "And we know what issues a contaminated dryer fabric can trigger further down the production line and how best to deal with them."

What's more, inspections are much easier and far safer to perform, as Voith's Dryer Fabric Analyzer is operated via remote control. In developing this tool, one major goal was to end the archaic manual spot checks and eliminate the potential risk of serious accidents.



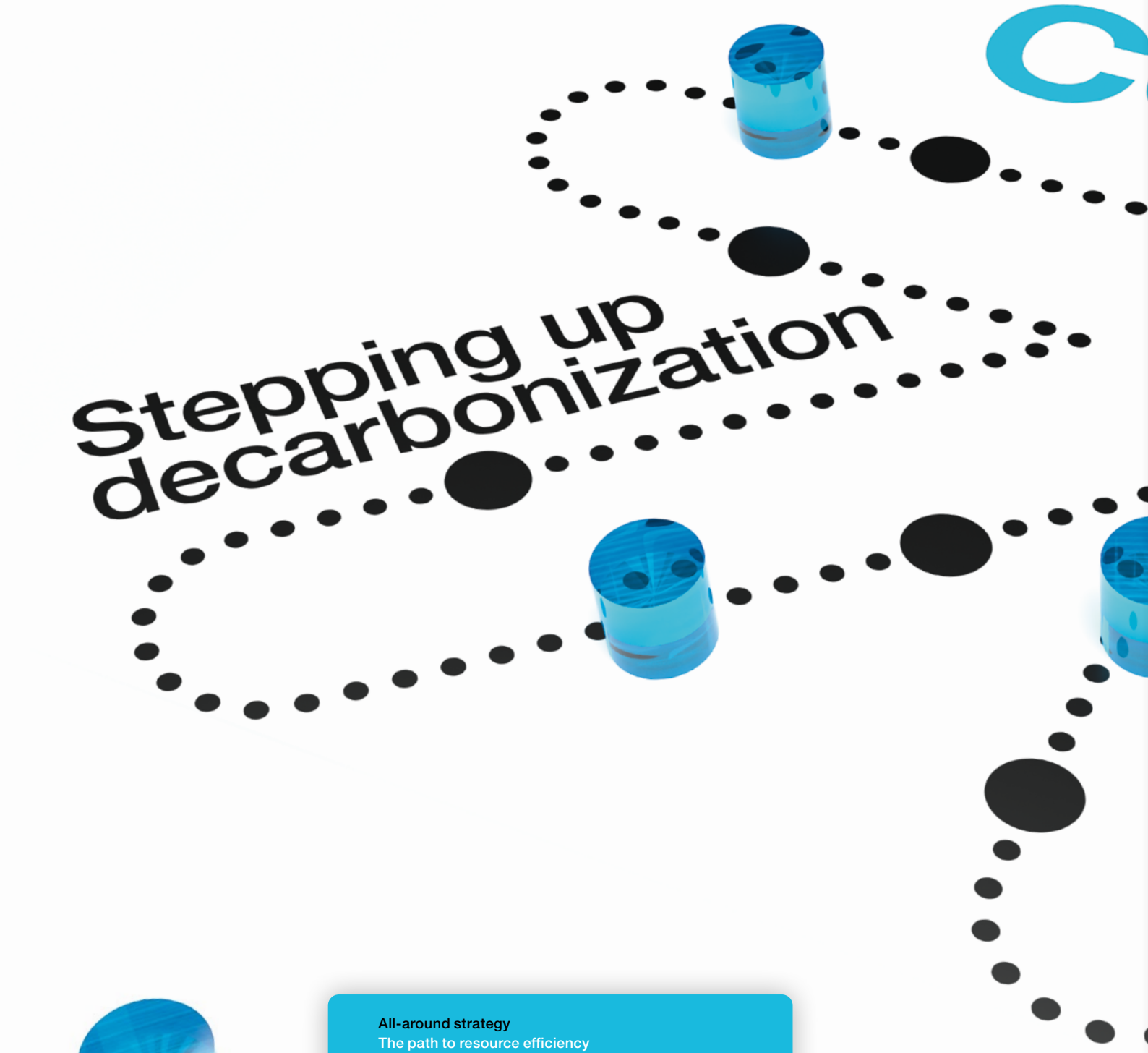
Safety first via remote control:
a less risky way to take dryer fabric measurements.

As Daniel Vogel, Sales & Service Engineer EMEA at Voith Paper explains, Voith has achieved this. "The Dryer Fabric Analyzer makes my work much safer. I can now stand outside the danger area and still carry out complete visual inspection and permeability measurements," says Vogel. "This device brings significant progress in terms of occupational safety and measurement data comparability."



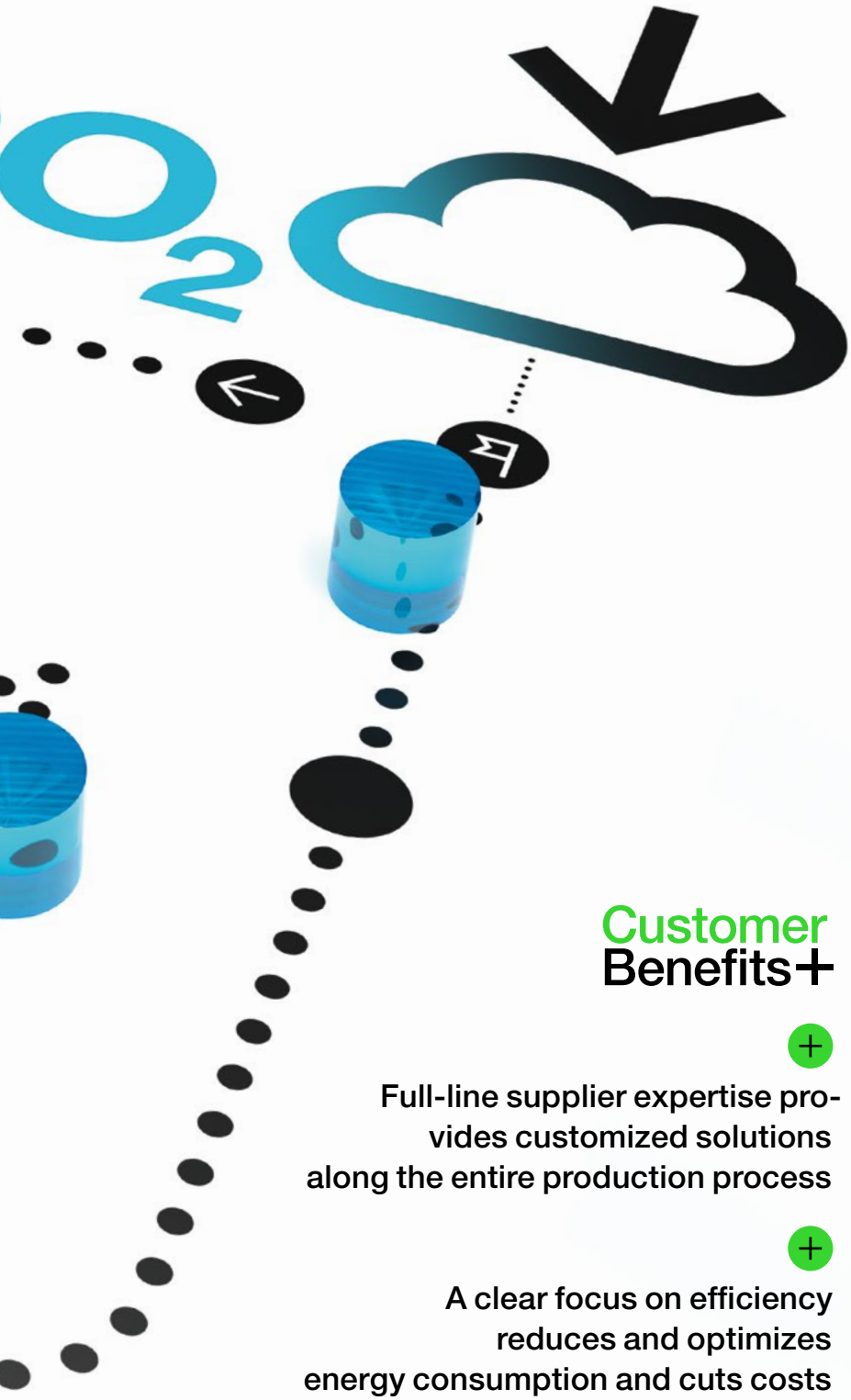
Voith's Forming Fabric Analyzer also operates via remote control, which allows precise data on forming fabric tension to be captured and analyzed in a more precise and safe way.

Voith is working across multi-level focus areas to advance the company's mission to decarbonize papermaking.



All-around strategy
The path to resource efficiency

- ↗ Papermaking for Life
- ↗ Decarbonization partnerships
- ↗ Innovative technologies
- ↗ R&D initiatives



Customer Benefits+

Full-line supplier expertise provides customized solutions along the entire production process

A clear focus on efficiency reduces and optimizes energy consumption and cuts costs

A firm commitment to sustainability paves the way to low-carbon mills

ve technologies

he entire process chain, Voith is mplementing systems and solutions that d generate energy.

ll-line supplier for all paper grades, Voith mized energy audits of the entire paper These allow paper manufacturers to better ig picture of their energy consumption r ways to reduce it. Following such audits, duced gas consumption by 30 percent t 18 percent in electrical energy.

naking 4.0 digitalization and auto- increases transparency, boosts mill duces energy consumption. With akProtect, for instance, customers iden- nd eliminate breakage causes, which d production with the same energy con- l, there are more than 300 digital instal- e, most of which have paid for themselves ear.

paper mill

plexities in operations and contextualiz- digital and automation solutions ensure deeper understanding of the health of the ded to the most energy-efficient settings lant performance.

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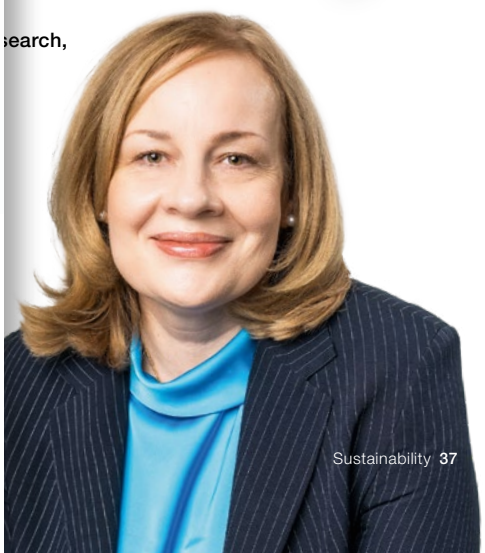

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"Sustainability is at the heart of our research and development activities. We use our skills, experience and innovative spirit to research, develop, test and implement breakthrough concepts that will drive decarbonization of the entire papermaking processes."

↗ Papermaking for Life

Keep up to date with the Papermaking for Life sustainability initiative from Voith Paper.

↗ Decarbonization partnerships

By working closely with papermakers and industry leaders around the globe, Voith is driving energy efficiency on the ground.

Customer-centric collaborations

Our resource-efficient technologies as well as the use of renewable energies in papermaking are the focus of our discussions with customers. Together, we are exploring ways to optimize contactless drying, increase the use of heat recovery and exploit the potential of heat pumps, hydrogen and other decarbonization technologies. Each collaboration set-up is customized to the needs and demands of the customers and their paper mills.

Pilot trials with Essity

In close collaboration with the hygiene and healthcare company Essity, Voith is working on a disruptive papermaking concept to achieve CO_2-neutral paper production, secure fresh water savings of up to 95 percent and enable energy savings of up to 40 percent. Following the promising results from laboratory trials, Essity and Voith are now working intensively on the concept at a pilot plant in Heidenheim, Germany.

Customer workshops

With innovative products, smart digital tools and entire production lines, Voith is transforming paper mills into low-carbon mills. During tailored workshops, Voith presents proven solutions and shares R&D projects with customers.

Energy summits

A two-day energy summit in Melbourne, Australia, in 2023 was an ideal platform to share expertise and explore innovative technologies that further drive energy efficiency. The summit was jointly hosted by Voith and Visy, a global packaging and resource recovery company and long-term Voith customer, and supported by Appita, the leading Australasian pulp and paper technical association.

Dr. Bernd Güldenberg
Senior Vice President
Research & Development,
Voith Paper

↗ R&D initiatives

In keeping with Voith's commitment to support independent research into CO_2 emission-free papermaking, Voith is an active member of several multidisciplinary R&D initiatives.

Commitment to Modellfabrik Papier

Voith is a driving member of the Modellfabrik Papier, where leading scientists and paper specialists are working together to save 80 percent of the energy required in papermaking and achieve CO_2 emission-free paper production by 2045.

FOREST research

Voith recently launched the FOREST research project together with the Modellfabrik Papier and leading industry and research partners. The goal is to develop a digital framework for optimizing energy and material flows (FOREST stands for "Framework fOr Resource, Energy, Sustainability Treatment"). Pilot installations are next on the agenda.

4evergreen alliance

As a leading technology partner of 4evergreen, a cross-sector industrial alliance founded in 2019 by the Confederation of European Paper Industries, Voith shares expertise and insights, including from the company's Fiber Technology Center. While the focus is on achieving a 90 percent recycling rate of fiber-based packaging by 2030, the research invariably incorporates energy-efficient solutions.

ZELLCHEMING

Voith is both a member of ZELLCHEMING and a frequent host of their Technical Committees. Recently, the Committees for Paperboard and for Coating were guests at the Voith headquarters in Heidenheim, Germany, for a lively exchange of ideas on the technology and processes for the sustainable production of board, cardboard and coated grades.

↗ Innovative technologies

At every step of the entire process chain, Voith is developing and implementing systems and solutions that save, recover and generate energy.

Energy audits

As the leading full-line supplier for all paper grades, Voith carries out customized energy audits of the entire paper production line. These allow paper manufacturers to better understand the big picture of their energy consumption and identify clear ways to reduce it. Following such audits, one customer reduced gas consumption by 30 percent and saved almost 18 percent in electrical energy.

Digital solutions

The Voith Papermaking 4.0 digitalization and automation portfolio increases transparency, boosts mill efficiency and reduces energy consumption. With OnEfficiency.BreakProtect, for instance, customers identify, understand and eliminate breakage causes, which enables increased production with the same energy consumption. In total, there are more than 300 digital installations worldwide, most of which have paid for themselves in less than one year.

The autonomous paper mill

By reducing complexities in operations and contextualizing data, Voith's digital and automation solutions ensure customers gain a deeper understanding of the health of the plant and are guided to the most energy-efficient settings that best boost plant performance.

"We act with full-line supplier ingenuity to support our customers in decarbonizing their papermaking operations around the world. Our unique portfolio of technologies and digital applications is a key to resource-efficient papermaking, and so too are our long-term, collaborative partnerships and our continuing commitment to groundbreaking research initiatives."

Dr. Lada Bemert
Vice President
New Business & Research,
Voith Paper

Fit for the future

The board portfolio is incredibly broad. For Billerud, Voith designed and built the versatile XcelLine board machine KM7 to produce a wide range of cartonboard and containerboard. Following a record-breaking certification process, high-quality, low-impact liquid packaging board is now also produced on the same machine in a cost-efficient and sustainable way.

Customer Benefits+

Versatile concept
The KM7 reliably and efficiently switches between grades

Certification in record time
Liquid packaging board certification achieved within six months.

Board packaging needs to be versatile and sustainable to meet the evolving demands of today's harsh logistics operations and complex food supply chains. Versatility and sustainability are key features of KM7, the world's most modern board machine. Cost-efficiency is a bonus on top. Located on Lake Vänern in Gruvön, Sweden, the XcelLine board machine has a mechanical design speed of 1,200 m/min and web width of 8,800 mm at the headbox. "With our KM7 machine, we produce products with very high and incredibly stable quality in all product segments. With KM7's flexibility, we can produce top-class cartonboard that offers great opportunities in several markets," says Niklas Jansson, Senior Director Board at Billerud Gruvön.

This achievement is the result of an ongoing, multi-year close collaboration between Voith and Billerud (formerly BillerudKorsnäs), a leading manufacturer of sustainable, premium quality packaging material using raw material from responsibly managed forests. From the outset, the focus of the collaboration was on designing a production line that could be easily adapted to the ever-changing market for board in the most cost-effective and resource-efficient way. The solution would need to consider the entire manufacturing process and use Voith's full-line supplier ingenuity to create an end-to-end solution. The close cooperation and mutual concept evaluation provided Billerud with a distinctive competitive-edge solution.

Aiming high for quality, low for environmental impact

"On day one of our collaboration, we understood that a flexible machine concept was needed," says Günther Kriechbaum, Product Manager Process Technology Paper at Voith Paper, who has been heavily involved in the development of the project concept and optimization processes of KM7. "Our machine would have to produce high-quality, low-impact cartonboard, folding box board and white kraftliner for customers, while already from the very beginning

Full-line supplier ingenuity
The world's most modern board machine in Gruvön, Sweden.

be ready for making samples of liquid packaging board for the certification process during shorter production cycles."

What's more, once the certification process was completed, KM7 would have to switch between grades reliably and efficiently. Voith's winning approach ensured that KM7 was commercially viable before the certification was awarded – and had a future-oriented design. Although there are many components that contribute to the machine's success, important highlights include a three-ply wire section with a DuoFormer D II hybrid former and two state-of-the-art DuoShake shaking units. Voith's Fiber Orientation Measurement and Control solution, which is part of the OnQuality family, ensures the standards for high quality liquid

→

"With KM7's flexibility, we can produce top-class cartonboard that offers great opportunities in several markets."

Niklas Jansson
Senior Director Board, Billerud Gruvön

Superior results
Uniform and stable quality across the full width.

packaging board are met, as Marc Stampfer, Global Product Manager Quality Control Systems at Voith Paper, explains: "Thanks to our Slice Blade Actuators at the headbox and our advanced control strategy, Billerud can reliably and precisely control the fiber orientation profile of every run." This combination enables an excellent adjustment of MD/CD-ratio for each individual ply and a uniform and stable quality across the full width. In addition, the Papermaking 4.0 solution OnControl.Dewatering stabilizes and coordinates dewatering during board production, which also helps machine stability.

Furthermore, the OnEfficiency.Strength digital solution can balance basis weight, jet/wire ratio and refining energy to achieve stable board qualities with minimized energy and fiber consumption.

Papermaking 4.0
Advanced digital applications secure resource-efficient processes.

A stable machine with a promising future

Today, Billerud produces various types of board as well as liquid packaging board on KM7 and is assured of a stable quality at every switch. "A big advantage of KM7 is the repeatability," says Jansson. "With well-developed machine settings, the same quality is obtained in every product cycle."

In a welcome turn of events, the liquid packaging board certification process was rather fast. In fact, Billerud achieved the certification in record time – in around six months, which is much faster than any board producer to date. "Billerud deserves our recognition for this achievement," says Kriechbaum. "We're proud that our machine concept contributed to their success." It's such a resounding success that Billerud considers Voith to be the preferred partner for future projects.


41
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paper
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Discover the potential of efficient papermaking.

Our way

The science and art to the autonomous paper mill.

Heiko Held
Director Product Management Digital,
Voith Paper

Six myths and the reality of the autonomous paper mill

1

Myth 1: The autonomous paper mill will be a lonely place, empty of people.
The reality: Highly skilled operators will work in safer, collaborative and more attractive workplaces.

Discover why tailored pathways are the best way forward to the autonomous paper mill, and why autonomous processes are already making an impact around the world. Voith specialists debunk the myths and reveal the true opportunities of the mill of the future.

Voith's multidisciplinary and multinational teams are constantly focused on increasing customer productivity as well as on enhancing workplace safety and appeal. Essentially, paper production needs to be smooth and sustainable, and downtime minimized. As the average paper mill now deals with increasingly complex processes and demands, as well as a shortage of skilled personnel, reaching these goals requires a new level of digitalization. It's no wonder there's still a lot of uncertainty around decision-making and troubleshooting in many mills. Could the key to the future lie in rolling out the autonomous paper mill? And what would it involve if it did?

It's true that the more autonomous papermaking processes become, the less people will need to intervene. However, this does not mean that future mills will be empty of people. As Renan Fusco, Head of Digital Solutions Sales at Voith Paper, notes, even autonomous paper mills will require human oversight. "The autonomous paper mill will find ways to take care of monotonous, repetitive, labor-intensive tasks, which will allow skilled technicians and engineers to focus on more complex, creative and value-adding activities," believes Fusco. "While it's feasible that in future unpopular night shifts will likely run on a skeleton staff or even remotely, papermaking is likely to become more collaborative and creative, enabling the crew to steer the operation to higher efficiency and therefore better competitiveness." Whatever the level of automation, highly skilled operators and well-trained personnel are required to ensure that all processes continue to run smoothly. To encourage knowledge transfer and retention, skilled personnel can expect to work in cross-functional and collaborative teams.

2

Myth 2: Going autonomous is cost intensive.
The reality: Autonomous processes bring increased efficiency, sustainability and machine availability.

While there is a cost to implementing autonomous processes, the long-term benefits will outweigh any initial investment. Heiko Held, Director Product Management Digital at Voith Paper has the details. “Highly automated processes that are supported by artificial intelligence lead to more stable operations. We have already proven that AI-enhanced tools and processes reduce energy and fiber consumption, fiber losses and production costs.”

Myth 3: Data overload is inevitable and costly in an autonomous mill.
The reality: High-quality, meaningful data availability enhances papermaking processes.

In fact, autonomous mills are certain to prevent information overload, as the right solutions will reduce system complexity for operators. “As the bulk of work shifts away from more intensive and solitary monitoring tasks toward collaborative, data-driven decision-making that optimizes output and quality, autonomous paper mills will be a less stressful and more attractive working environment,” notes Ulf Grohmann, Director Product Management Autonomous Mill at Voith Paper. “The autonomous paper mill will provide the necessary guidance for data-driven decision-making in operations. Such guidance systems show only what matters to the operator in a timely manner, thereby helping to avoid operation errors. By flagging potential issues early and providing contextualized data, operators can become more efficient in their roles and free to concentrate on defining and improving outcomes.”

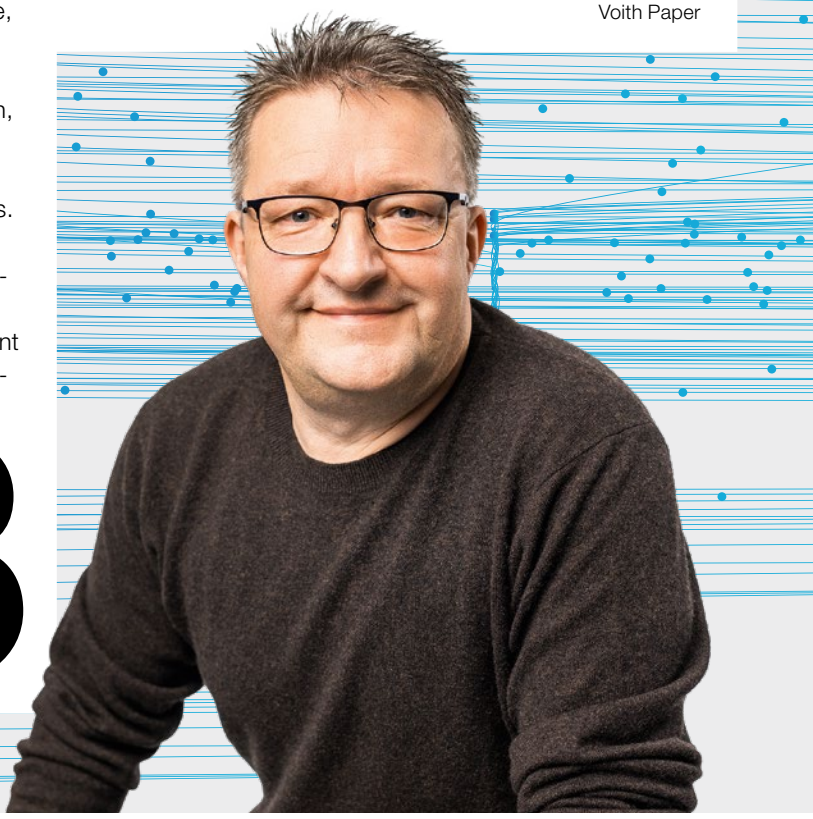
3

Myth 4: Legacy mills cannot reach an autonomous status.
The reality: Many existing mills are already undergoing upgrades to enable autonomous processes.

It’s a fallacy to think that existing paper mills are incompatible with autonomous technologies. Voith has already developed and implemented a range of automation and digital solutions that work seamlessly along existing production lines, as Fusco explains. “While one customer in Europe is already running sections of its BlueLine stock preparation in near-autonomous mode, another customer optimized the operation of its older machine with automated process control powered by Voith. Beyond reliable sensors and analyzers, which are provided by Voith and BTG, a Voith subsidiary, the prerequisites for this are mainly the connection between operational requirements and hurdles with our innovative digital solutions from the Voith Papermaking 4.0 portfolio.” →

4

Ulf Grohmann
Director Product Management Autonomous Mill, Voith Paper



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Myth 5: The autonomous paper mill is still many decades away.

The reality: The shift to autonomous papermaking is already underway.

"In many respects, autonomous assets are already here and increasing at pace," says Grohmann. "As new technologies continue to mature, I fully expect the autonomous paper mill to be up and running worldwide before 2035." Voith is ensuring this timeframe is achievable through its comprehensive, full-line supplier approach to providing equipment, tools, support, training and services that are aligned across the entire papermaking process. Essentially, operators will shift their focus from process monitoring and manipulation to data-driven business decisions. "We are already building a seamless ecosystem to address the most common current issues, as well as the challenges of the future. This involves increasing mill autonomy step by step and supporting operators as they transition from working on and optimizing one process at a time to increasingly taking on the role of the exception handler supported by intelligent solutions that ensure efficient and smooth operations." Ultimately, autonomous systems across the mill will be designed to be self-optimizing.

Renan Fusco
Head of Digital Solutions Sales,
Voith Paper

6

Myth 6: There's only one pathway to the autonomous paper mill – and it's long and complicated.

The reality: The journey toward autonomy is flexible and customizable.

While the start of the autonomous journey might look very similar for all papermakers, as internal reviews and in-depth audits are invariably involved, the path that is ultimately taken won't be. "The journey to the autonomous paper mill will be customized for each customer and each paper mill," explains Held. "There is no one-size-fits-all solution." The freedom to customize a solution is exactly what makes the future so interesting and challenging. As the autonomous paper mill is expected to be more efficient, more productive and sustainable, it also has the potential to become a hub of learning and innovation. "It is our role to expertly guide our customers along the best pathway for their specific circumstances," concludes Grohmann. "And to provide the necessary long-term support and future-oriented solutions even when the destination is reached."

OnCare.Health

Wireless Solution

Robust, scalable and simple to install.

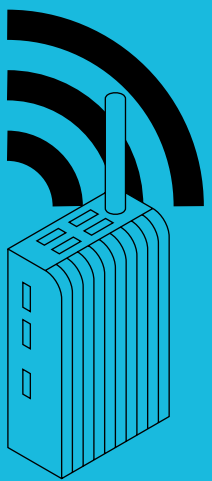
The cutting-edge predictive monitoring system for all paper mills.

With minimum investment and effort, every paper mill can benefit from Voith's highly professional predictive monitoring system. As zero cables are needed for the OnCare.Health Wireless Sensors, state-of-the-art, predictive monitoring is simple to implement along the entire papermaking process on existing machines, rebuilds and new production lines. "We can pinpoint the critical areas where papermakers benefit from our solution," says Lena Hofmann, Global Product Manager Condition Monitoring Systems at Voith Paper. "Our proven and intuitive OnCare.Health software brings all data to one place in a consistent concept. It enables papermakers to monitor the behavior of their assets more easily, and customers have the option to extend the system step by step." In addition, Voith's OnPerformance.Lab provides remote expert services, which helps to increase the overall equipment effectiveness. By providing necessary information early on, unplanned downtimes can be avoided, and maintenance activities can be planned more efficiently.

Self-charging advantage
Voith's self-charging sensors work with integrated energy-harvesting units, which eliminates cost-consuming sensor or battery replacements.

"Our OnCare.Health Wireless Solution detects potential damage or emerging malfunctions and their causes – even months in advance."

Lena Hofmann
Global Product Manager
Condition Monitoring Systems, Voith Paper



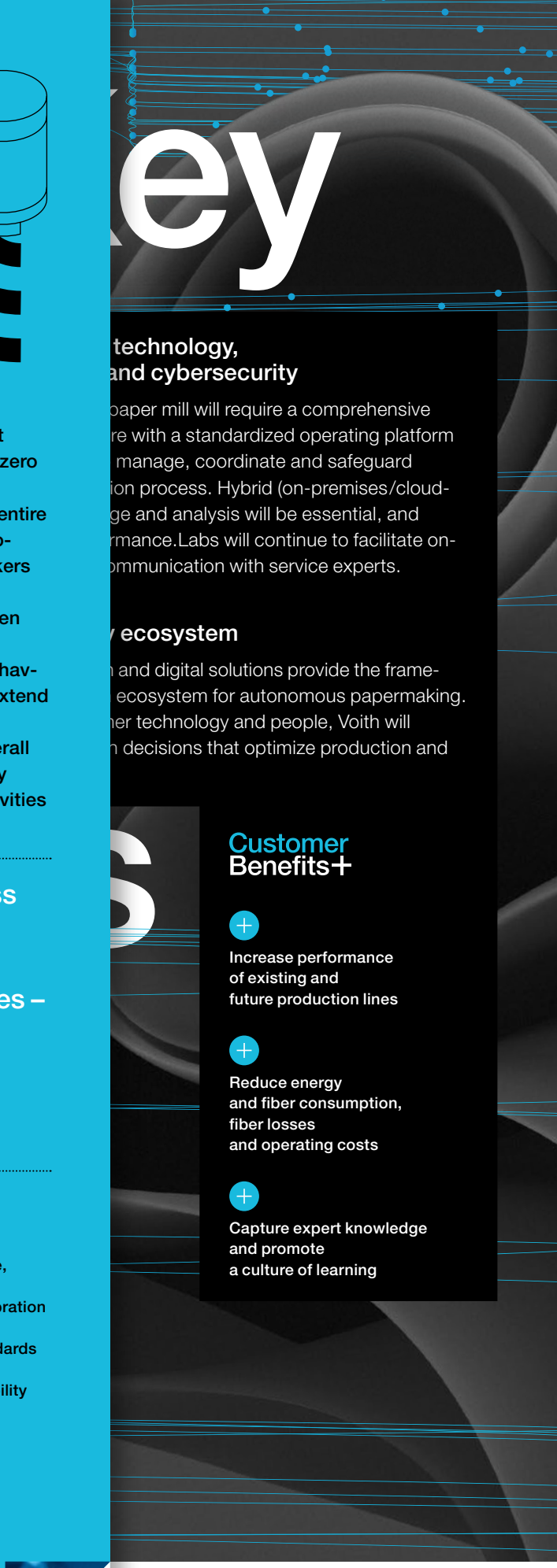
Key features

- Long service life, lowest operating costs
- High radio transmission range of 300 m minimizes gateways required, saving installation costs and effort
- Robust, heat resistant up to 120°C, allowing installation along the entire production line

Customer Benefits+

- Cost-competitive, ready-to-use starter kits for vibration monitoring
- Voith's high standards ensure maximum reliability, availability and quality

What's the deal with AI-powered monitoring?



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Customer Benefits+

- Increase performance of existing and future production lines
- Reduce energy and fiber consumption, fiber losses and operating costs
- Capture expert knowledge and promote a culture of learning

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Renan Fusco
Head of Digital Solutions Sales,
Voith Paper

OnCare.Health

AI-powered monitoring

The OnCare.Health Wireless Solution keeps a constant eye on real-time machine health information, allowing deviations to be automatically identified long before they can turn into critical incidents. OnCare.Health therefore supports timely, effective and cost-efficient maintenance. "The next step involves unleashing the power of AI to leverage process data from all sources, including historical and operational data," says Lena Hofmann. "With our OnCare.Health AI-powered monitoring solution, data-driven prediction and decision-making around maintenance and troubleshooting becomes reality."

With our OnCare.Health AI-powered predictive monitoring solution, papermakers can monitor diverse assets without the need to install sensors. "Instead, we exploit data that already exists and run the monitoring with intelligent algorithms. This innovative way enables a comprehensive predictive monitoring solution, covering your entire machine for an attractive and affordable price," adds Hofmann.

How does AI-powered monitoring work?

- Within Voith's OnCare.Health AI engine, historical data is used to build self-trained AI models for defined assets and asset types.
- The intelligent algorithm learns the normal asset behavior and detects irregular patterns in real-time by analyzing operational process data.
- Anomalous behavior of defined assets can be automatically identified, which sets off immediate alarms with information about causes and related recommendations.
- Through intelligent, incremental learning of the AI models, papermakers can fine-tune their models on different grades and machine modes directly within the intuitive user interface.

Learn more about the benefits of Voith's OnCare.Health Wireless Solution and AI-powered predictive monitoring.

Key take-aways

Kick-starting automation

Explore Voith's intuitive solutions that support tailored journeys to the autonomous paper mill.

A culture and mindset shift

The next generation of papermakers are tech-savvy and have high expectations of the workplace environment and working experience. Investing in employee training and development is essential to ensure everyone has the skills, knowledge and mindset to implement, maintain and benefit from autonomous systems.

A new level of technology, digitalization and cybersecurity

The autonomous paper mill will require a comprehensive digital infrastructure with a standardized operating platform for all functions to manage, coordinate and safeguard the entire production process. Hybrid (on-premises/cloud-based) data storage and analysis will be essential, and the Voith OnPerformance.Labs will continue to facilitate on-the-spot, direct communication with service experts.

A future-ready ecosystem

Voith's automation and digital solutions provide the framework and an open ecosystem for autonomous papermaking. By bringing together technology and people, Voith will enable data-driven decisions that optimize production and business results.

Digital and automation solutions

As a full-line supplier and innovation leader, Voith provides a broad portfolio of digital solutions to optimize efficiency throughout the production process, while the dataPARC cloud serves as a central platform for the ever-expanding AI-enhanced portfolio. The overarching goal of these innovations is to provide operating teams with relevant information that enables targeted process optimization. For instance, for stock preparation, there are solutions to enhance the process performance, as is the case of OnControl.SmartProtect and OnControl.Pulp. Likewise, OnEfficiency.Pulp, a joint solution with the Voith subsidiary BTG, can optimize fiber yield, chemical consumption and other important KPIs. For the paper machine, OnEfficiency.Strength – which can automatically adjust process and machine settings according to mill requirements – has proven its worth by increasing resource efficiency, reducing the consumption of raw material and cutting CO_2 emissions for many papermakers around the world.

Customer Benefits+

- **Increase performance of existing and future production lines**
- **Reduce energy and fiber consumption, fiber losses and operating costs**
- **Capture expert knowledge and promote a culture of learning**

Total data integration drives continuous improvement.

Data-driven production

The Golden Run

dataPARC's centerlining tool provides grade-based ranges for process settings driving consistency of operation across shifts. By flagging best, or "golden" runs, operators can fine-tune and optimize production, efficiency and quality.

Data integration

- Decrease downtime
- Reduce reject paper
- Increase speed
- Improve throughput

Customer Benefits+

46%

Increase in production achieved within five years for a major integrated U.S. paper mill.

By integrating all data sources into one application, dataPARC enables real-time data-driven decision-making on the plant floor, across operations and throughout the enterprise, driving continuous improvement to production, efficiency and quality.

"By providing the most user-friendly and powerful tools for data-driven decision-making, dataPARC enables peak mill performance and fosters a culture of continuous improvement," says Jason Myers, Business Director of dataPARC, citing the example of one major integrated mill on the west coast of the U.S. In this case, dataPARC turned an underperforming mill into a high performer. Within five years of adopting dataPARC across the operations, the mill realized an impressive 46 percent boost to production without any major capital expenditures.

"When dataPARC is used to monitor and analyze processes, we eliminate data silos and make all data, no matter the source, readily available to everyone in the company," adds Myers. "Total data integration drives visibility of all relevant information from every process in every mill." This approach empowers mill operators to quickly identify small changes in process, so they can take action before major issues occur, driving proactive process management. Increasing visibility to mill-wide and company-wide data allows a better alignment of all resources.

"Data visibility and analysis facilitates continuous improvement," notes Myers. "Being able to overlay information from multiple data sources enables process learnings and understanding, which are then operationalized. Overlaying data from one mill to another to compare key performance indicators, metrics and best practices allows subject-matter experts to make data-driven recommendations on how to run processes more efficiently." Empowering people with the best tools and fast access to all data ensures people and processes are aligned and working towards a common goal, and that's maximizing production at the lowest cost while improving quality. By bringing in dataPARC and using a solid data-driven philosophy, the mill in question was able to align resources to increase efficiency and production, while shutting down less efficient production units. "dataPARC acted as a culture-change agent for the mill and the whole organization," adds Myers. "The user-friendly, powerful solution was a key enabler, as now the entire mill embraces data-driven decision-making to unlock value and boost production, efficiency and product quality."

All-inclusive service

Customized maintenance services for pulp dryers and paper production lines optimize machine performance for Suzano, the world's largest pulp producer.

For Suzano, the world's largest pulp producer, Voith specialists are providing a variety of high-quality tailored services that lead to longer machine service life and superior machine performance at two of the company's plants in Brazil. The all-inclusive Slitter Care Service for Suzano B, for instance, that is performed on both Voith and third-party machines, brings clear benefits, as Marcelo Cesar, Roll Manager at Suzano confirms: "We are always seeking new solutions and strategic partnerships that add value to our processes. The operational and technological excellence that Voith provides pays off."

And it pays off across the entire production process. At the Suzano's plant in Aracruz, for instance, Almir Cordeiro, Account Manager at Voith Paper, Brazil, has developed customized headbox maintenance and fourdrinier alignment services to optimize performance of the pulp drying machines. "Our regular planned maintenance of the headboxes increased the running time from 15 to 18 months," says Cordeiro. "We brought in reliability in equipment maintenance, so our customer feels comfortable and confident throughout the 18 months."

The services are the result of Cordeiro's personal dedication to Suzano's specific needs – and his constant presence on site. "What Suzano appreciates is that we understand the whole papermaking process and all the equipment," adds Cordeiro. "We take a broader, holistic and full-line supplier view of the production process, which means we can identify unique opportunities for optimization at any step."

Francisco Auer Brandão, the Maintenance Manager at Suzano Aracruz, is impressed by the quality of service: "Our collaboration with Voith is strategic for Suzano," Brandão notes. "It enables our company to focus on disruptive technologies and ensure effective and reliable solutions."

Cordeiro took the same passion and full-line supplier expertise to Suzano's B mill in the Suzano region with the development of a customized slitter management program. The result optimizes cutting performance at the winder and also reduces maintenance and replacement frequency of the slitters by more than 15 percent, which extends their service life. This is even higher than the original commitment in the service agreement. "Our high level of expertise, local presence and advanced technology set our service solutions apart," explains Cordeiro. "We go the extra mile to make sure Suzano avoids unscheduled shutdowns and unexpected costs."

Customer Benefits+

+ running time of 18 months
The service contract brought reliability in equipment maintenance and increased runability for the headboxes, from 15 to 18 months.

+ longer service life and 15% less maintenance
The Voith customized Slitter Care Service reduces maintenance and replacement frequency of the slitters by more than 15 percent and extends their service life.

Going the extra mile for customers in Brazil.

1 Suzano's B mill benefits from Slitter Care Service.
2 Suzano Aracruz enjoys customized maintenance services.

> "We are always seeking new solutions and strategic partnerships that add value to our processes. The operational and technological excellence that Voith provides pays off."
>
> Marcelo Cesar
> Roll Manager at Suzano

Unlocking value at the winder

Winder performance is a pivotal success factor for Hamburger Containerboard. At the Pitten site in Austria, Voith Paper's comprehensive winder technology services and unrivaled winder expertise eliminates bottlenecks, maximizes capacity and minimizes loss in production.

What's the secret to ensuring the winder is never the reason to slow down production or reject the final product? For Andreas Prenner, Head of Work Preparation at Hamburger Containerboard, part of the Prinzhorn Group, the long-standing partnership with Voith Paper is behind the fully optimized winder on the PM 4 at the company's site in Pitten, Austria. "For sure, the most crucial part of our partnership is the profound expertise and experience of our Voith colleagues," says Prenner. "The combined know-how of automation and technology is of the highest quality."

As a full-line supplier, Voith's deep knowledge and technological expertise spans the entire paper production process, from pulper to winder, which is a huge advantage when it comes to optimizing winders for customers. Most notably, as the original equipment manufacturer (OEM) of leading winders, Voith's know-how is highly specialized and unrivaled. It feeds directly into the company's extensive winder technology services that ensure the continuous improvement of winder performance. Fabian Köberle, Global Product and Service Manager at Voith Paper, explains: "Both paper machine and winder need to work in perfect harmony to deliver the high-performing production lines and high-quality paper our customers expect," says Köberle. "When we boost speed, efficiency and availability of the paper machine, we make sure that the winder can keep pace and deliver optimal performance throughout its life cycle."

"Over the years, this strong partnership has really helped us to maximize capacity and cutting quality."

Andreas Prenner
Head of Work Preparation,
Hamburger Containerboard Pitten

Watch the interview with Andreas Prenner for more insights on the winder technology services from Voith.

Customer Benefits+

- Expert support in areas where customers lack experience
- On-site services improve customer training and skills
- No more production loss from winder bottlenecks
- Expert services secure higher winder availability
- Reduced total maintenance costs

Winder KPI boost

Capacity upgrade

Quality upgrade

Safety upgrade

The value of relevant KPIs

Several key performance indicators (KPIs) play a vital role in the winder technology service. The close monitoring and analysis of these relevant KPIs help maximize winder productivity, as Köberle highlights. “We have identified several KPIs that help align our optimization measures for any winder. The main one is average winder speed. However, this KPI is dependent on other subcategories of KPIs, such as set change time, format change time and acceleration,” notes Köberle. “All need to align for the winder to perform at optimal capacity.” Prenner confirms this approach brings best results for Pitten: “Over the years, this strong partnership has really helped us to maximize capacity and cutting quality.”

On-site and remote expert support

Voith’s winder specialist for the Pitten plant, Bernhard Düllings, has more on the long-term service agreement with Hamburger Containerboard. For many years now, Düllings has been the single point of contact for the Pitten site. Every March, Düllings performs in-depth audits to identify potential issues around capacity, quality and safety. Subsequently, incremental optimization measures are carried out throughout the following months, and any necessary upgrades are planned for the annual scheduled shutdown later in the year. Prenner describes the support as invaluable. “With a small team like ours, it was always crucial to avoid capacity bottlenecks in our production,” says Prenner. “The winder services are a key component of our winder maintenance strategy.”

The 24/7 remote support is another principal component of the winder service agreement. Designed to provide easy access to winder experts for rapid emergency help, it has proven immensely popular with customers, as Prenner confirms: “No matter what happens, Voith’s experts are always just one call away. Remote diagnostics as well as subsequent software or parameter adaptation online have allowed us to drastically reduce our machine downtimes. This super-fast emergency help has been incredibly valuable to us.”

Multiple advantages

Other customers have similar praise for the winder technology service agreements, including the Swedish papermaker SCA. For Urban Marklund, Production Technician at SCA Munksund AB in Sweden, Voith’s comprehensive support is essential for improving winder performance. “The biggest benefit of our winder service partnership with Voith is the fact that it can’t be simply narrowed down to a single advantage – it’s the complete package that makes it so valuable to us.”

Voith's expanding network of remote service hubs, the OnPerformance.Labs, offer customers key opportunities to boost machine availability, efficiency and performance.

Voith's global network of OnPerformance.Labs (OPL) offers tailored service to customers who want to step up machine availability, efficiency and performance. These regional remote service hubs are a key part of the company's digital transformation. "At every OPL, Voith domain experts provide continuous, collaborative and trusted support," says Ulrike Welp-Wallenmaier, the Senior Manager Business Development OnPerformance.Lab at Voith Paper.

As the remote service support blends seamlessly into the customers' own operations, there are important benefits. "We provide effective problem-solving support when it's needed and, crucially, we are proactive. Working together, we mitigate the risks of unplanned shutdowns and boost machine performance and efficiency," says Welp-Wallenmaier. "Using advanced digital tools and our Papermaking 4.0 portfolio, we combine remote data evaluation with our papermaking expertise to find the best way forward for our customers. We bring production lines to the next level and prepare the way for autonomous papermaking."

The South Korean paper manufacturer Moorim Paper is convinced of the value of the OPL support. "We use the condition monitoring system as well as the remote service to keep our machines running at optimal levels," says

"The whole project was like working with a colleague – just remotely."

David Wötzel
Engineer Automation QCS,
Hamburger Containerboard

Worldwide network
Our OnPerformance.Labs are located in Heidenheim, Germany; Kunshan, China; Tokyo, Japan; Tolosa, Spain; and São Paulo, Brazil. A U.S. hub in Appleton, Wisconsin, is in the pipeline.

B regional support

€2.9 million

Annual savings in fiber and starch consumption for one European papermaker.

KwanJu Lee, Automation Team Manager. “It’s why we would like to continuously develop automation and our existing system together with Voith.”

The digital transformation has proven so successful with customers that the OPL network has been expanded to meet growing demand. In a sign of the company’s commitment to long-term digitalization support Voith has opened remote service centers in Tokyo, Japan; São Paulo, Brazil; and Tolosa, Spain – in addition to the first hubs in Heidenheim, Germany, and Kunshan, China. And there’s a U.S. hub in the pipeline for Appleton, Wisconsin. Through this global network, customers gain easy access to specialist know-how around the globe.

There are good reasons for the regional hubs. “To help our customers optimize their processes and operate production lines that are stable, efficient and sustainable, you need to speak the language of your customers and be close to their culture and time zone,” believes Welp-Wallenmaier. “This means knowing how people work on a day-to-day basis and adapting to their needs and the demands of their market. And having a single contact person who is local and highly familiar with the mill helps build a trustful relationship.”

For a European paper manufacturer, the OPL service has highly optimized the production line at one of its plants. By implementing the solution OnCare.Health in one workstream, machine availability was boosted through better condition monitoring and early identification and rapid mitigation of potential critical issues. In another plant, after integrating Voith’s advanced process control solution OnEfficiency.Strength, starch consumption was massively reduced, saving the company €2.9 million per year.

Working with the OnPerformance.Lab secured better quality and grade change times for one German paper manufacturer. David Wötzel, Engineer Automation QCS at Hamburger Containerboard in Spremberg, explains: “Choosing the OnPerformance.Lab for support was definitely the right choice. With competence and a holistic approach, the OPL expert defined continuously individual and reliable countermeasures that stabilized our process and finally led to this great reduction in grade change time.” The OPL support resulted in an increase in the annual production to the value of €150,000.

Such a successful outcome is no surprise to Welp-Wallenmaier. “Our OPL experts have solid training in paper manufacturing, digitalization and automation. When they’re on the line, they really do have the expertise to identify opportunities for optimization.” For Wötzel, the trustful relationship was a highlight. “The whole project was like working with a colleague – just remotely,” he says. “The benefits are clear and support our decision to continue this service with Voith.”

Go behind the scenes and meet the international team!

sting

Customer Benefits+

- Continuous support from our highly skilled experts
- Local teams, global expertise
- Fast access and secure set-up
- Real-time collaboration and troubleshooting
- Implementation of advanced digital solutions
- Less coordination effort required on the customer side
- In partnership preparing the way for the autonomous mill

Two Toscotec TT SYD MG Steel Yankee Dryers are on the way to Chandpur Enterprises Ltd. in India. The advanced technology is set to boost dryer performance and production capacity of machine-glazed paper.

Machine-glazed (MG) applications cover an incredibly wide range of specialty papers – from food-safe wrapping paper to high-quality transparent paper as an eco-friendly alternative to plastic bags. This is why the TT SYD MG Steel Yankee Dryer from Toscotec, a Voith subsidiary and the pioneer and market leader in steel Yankee dryers, is a complex component. And why Chandpur Enterprises Ltd. has chosen two such dryers to replace the local steel cylinders installed on the PM 1 and PM 2 that produce MG paper in the basis weight range from 40 to 70 gsm at the company's manufacturing facility in Uttar Pradesh, close to New Dehli, India. Designed specifically for MG applications and a maximum steam pressure of 10 barg, both TT SYD MG Steel Yankee Dryers feature Voith's TerraDry thermal coating, which ensures high wear resistance and optimal paper gloss and smoothness. The start-up is scheduled for mid-2024.

"These projects are an integral part of Chandpur's expansion strategy," says Amit Mittal, Executive Managing Director at Chandpur Enterprises. "We expect to achieve a strong boost in production output to secure the increasing number of orders we are receiving. Toscotec's advanced technology will allow us to be well equipped to reap the benefits of the current positive growth trend of MG papers in India."

From Italy to India: the best possible turnkey solution for producing high-quality machine-glazed paper.

For over 20 years, Toscotec has been designing, installing, monitoring and servicing steel Yankee dryers that operate in various conditions around the world. In the case of Chandpur Enterprises, to produce the sensitive MG paper, the drying cylinder needs to run at lower speeds compared to the common 2,000 m/min for producing tissue paper. In addition, the surface coating has been specially designed to fulfill the challenging MG paper quality requirements. Given these constraints, specialist knowledge is required to optimize the MG drying process. "Chandpur Enterprises benefits from our unique expertise, unrivaled technology and rebuild record," says Giancarlo Gianlorenzi, Area Sales Manager at Toscotec. "We deliver the best possible turnkey solution to secure the necessary boost to production capacity, paper quality, energy efficiency and mill safety."

"Toscotec's advanced technology will allow us to be well equipped to reap the benefits of the current positive growth trend of MG papers in India."

Amit Mittal
Executive Managing Director, Chandpur Enterprises

TOSCOTEC
A Voith Company

Experience counts

Toscotec's TT SYD Technology Center in Massa, Italy:
Fabio Bargiacchi, Sales Manager, Toscotec;
Amit Mittal, Executive Managing Director, Chandpur Enterprises;
Simone Pieruccini, Pressure Vessel Technical Manager, Toscotec;
Andrea Bertolucci, Massa Site Manager, Toscotec;
Dhawal Singhal, Technical Director, Chandpur Enterprises;
Giancarlo Gianlorenzi, Sales Manager, Toscotec.

Safer process faster results

Over 1,000 successful installations

With its full range of patented technology, regional service support and advanced automated systems, the Voith Prevo portfolio ensures the complete machine threading process – from former to reel – is fast, reliable and safe for operators.

When it's time to rethread the paper machine after a shutdown or sheet break, the process needs to be fast, efficient and safe for operators. While conventional systems could put operators in harm's way, the Voith Prevo portfolio ensures the process is a breeze.

"Our full-line supplier expertise and decades of experience feed into our fully automated threading and cutting solutions," says Sebastian Meuthen, Product & Service Manager Paper Machine at Voith Paper. "In more than 1,000 successful installations, we have implemented the Prevo best-in-class solutions and patented technology for our customers, enabling the shortest possible threading time. We provide the hardware, the software and the personalized regional services necessary to ensure the tail-threading and cutting process is smooth and safe along every section of every type of paper machine, from former to reel."

The Prevo portfolio includes wet end and dry end conveyors with patented zone-controlled vacuum technology for the best tail control at world record-breaking levels for all paper grades and speeds. While in the dryer section the Prevo TailStabilizer enables ropeless threading even above 300 gsm.

"We are constantly upgrading our portfolio with products that exceed customer demand, such as advanced edge-cutting products for the forming section, new solutions for press sections with narrow installation areas and Prevo 4.0," says Meuthen. Prevo 4.0 visualizes the entire threading and cutting process along the paper machine and highlights process, performance and equipment issues. These can be dealt with immediately, avoiding any loss in production.

"As ropes are a safety issue and can negatively impact machine runability, our goal is the ropeless paper machine," adds Meuthen. "We're replacing rope equipment with innovative threading solutions that reliably minimize downtime and increase productivity." By investing in R&D and leveraging new technology, threading is about to get even faster. Expect shorter downtimes, less energy waste and more world records in the future.

Customer Benefits+

+ Fully automated systems keep operators safe
+ Faster threading reduces production loss
+ Shorter downtimes waste less energy

Explore the full range of Prevo solutions.

Voith uses augmented reality to transform suction roll inspections and operations, enabling a safer and more precise way to check and adjust settings.

When augmented reality (AR) is used in a targeted way, it brings an unmatched depth of vision into suction rolls that are up and running. “By tapping into the strengths of AR, we can now reveal hidden components and vacuum issues at the heart of a suction roll in real time,” says Halim Takhedmit, Digital Product Manager Fabric & Roll Systems at Voith Paper. What sounds like magic is made possible with Voith’s AR for suction rolls toolkit.

Essentially, AR works by combining the digital with the real world. In this instance, Voith’s AR solution overlays a one-to-one precise interactive 3D model of the operator’s real-world view of their suction box. On a mobile device, the real-time position of key components under the roll shell is revealed, including the edge deckles, suction box and seal strips. Without AR, these elements are invisible, which makes their optimal positioning a challenge to get right. When it’s not right, the paper quality will not be up to standard, and raw material and vacuum are invariably wasted. “Traditionally, an embedded light system in the suction box can help, but it’s difficult to install and does not work on heavier paper grades,” explains Takhedmit. “Operators are therefore often forced to rely on experience – or gut feeling – when changing settings.”

In contrast, the AR-enhanced view allows any operator to easily inspect and perfectly adjust the positioning of the suction zone components based on real-time conditions. Grade and roll changes are therefore much faster and more straightforward. Voith’s AR assistance and diagnostic tool also allows the identification of the root cause of quality issues, as well as the solution. “In eight pilot installations, this AR tool has proven to be a cool, safe and efficient way to inspect and adjust the entire suction zone,” notes Takhedmit. “With the perfect setting, we maximize dewatering for a high dry content. When the suction rolls perform at optimal levels, tension is maintained, and the paper web is guided accurately through the machine. Better runability of the suction rolls ultimately improves energy efficiency and boosts machine availability.”

Inside view with AR

1 Real-time positioning of sealing strips is visible with the AR tool.

2 Checking and adjusting settings is simple, straightforward and precise.

Customer Benefits+

- Maximize dewatering and ensure better runability of suction rolls
- Diagnose root cause of quality issues more rapidly
- Perform inspections faster and secure knowledge retention
- Improve dry content of the paper web by up to two percent and save resources
- Set up easily with Voith’s expert support and sharing of best practice

</Q&A>

Since 2021, as Product Security Officer, Ulf Grohmann has been driving OT security forward for Voith Paper. He works intensively with his team to ensure cybersecurity is at the heart for every product development and customer relationship.

<title> Focus on cybersecurity </title>

Organized cybercrime is costing billions worldwide. The increased cyberthreat is attributed, in part, to a growing professionalism among cybercriminals and the rapid digitalization of the paper industry.

<Ulf Grohmann, how important is cybersecurity for paper manufacturers and papermaking?>

<response = The future of papermaking is digital and autonomous. Paper and machine manufacturers must therefore work intensively on their data security and the IT and OT security of their systems and processes to ensure availability and operation.>

<In which areas is Voith taking measures to increase cybersecurity?>

<response = Cybersecurity is an integral part of our product development, and we provide customers with comprehensive support on their journey to digital and autonomous paper manufacturing. Our goal now is to support our customers even more intensively. To this end, we offer a variety of customer workshops and training programs and have adapted our workflows. Throughout, ensuring the utmost security of both customer data and our own internal data, processes and systems takes top priority. Over many years, Voith has built up extensive expertise in IT security. We also advise external customers, for example through our subsidiary ditis. On the OT side, we have a specialized team that contributes this expertise to customer projects.>

<In concrete terms, what form does this support take?>

<response = With our automation and digital portfolio, we not only enable our customers to significantly increase efficiency, quality and availability, but we also support them in all issues relating to data security and cybersecurity. All products and solutions leaving our company are free of known threats at the time of delivery and are continually monitored for potential risks over their entire life cycle. In line with statutory requirements and applicable standards, we provide security updates to consistently close any gaps resulting from new threats. Within the scope of software maintenance agreements, we also implement these updates and patches for our customers. With the help of a global support organization and our OnPerformance.Labs, we ensure reliable remote support around the clock.>

<How do you help customers get started?>

<response = As the path to digital and autonomous paper manufacturing is influenced by different conditions and situations, the process for handling cybersecurity is often also individualized. Through cybersecurity audits, for instance, we help our customers establish their own security architecture. We also evaluate its technical and organizational sophistication and recommend specific improvements. Unlike pure IT service providers, we can also help with the technical implementation and establishment of a corresponding organization.>

Customer Benefits+

+ **IT and OT security:** central point of contact covers both the IT and OT security over the entire life cycle

+ **Long-term support:** updates and patches are made available and can be implemented to mitigate cybersecurity risks

+ **Maximum security:** all software solutions meet leading international standards for cyber and data security


Meet the
PaperHeroes!
make our
world better
with paper.
VOITH