

nextlevel

Division Paper — N° 03

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Harness the power of digital tools, hubs and future-oriented platforms

Tune in to a digital future

Editorial



The rapid development of digital technology has made data, software and cloud solutions integral to all businesses. Crucial to transforming a business in this digital age is a long-term approach and a partner who is a leader in intelligent papermaking. In our unique position as a full-line supplier, we are the only partner who offers a digital ecosystem on top of proven engineering from a single source.

In this issue, we are proud to showcase a selection of successful transformation stories from around the world, across all paper grades and steps in papermaking. Throughout this magazine, we take pride in highlighting the products, platforms and people helping our partners to optimize their operations. As you will discover, it requires an exclusive combination of expertise in future-oriented engineering and customer-centric solutions to truly succeed. And a passion for digital that is hard to beat. Enjoy the read!

Andreas Endters

Andreas Endters
President & CEO, Division Paper

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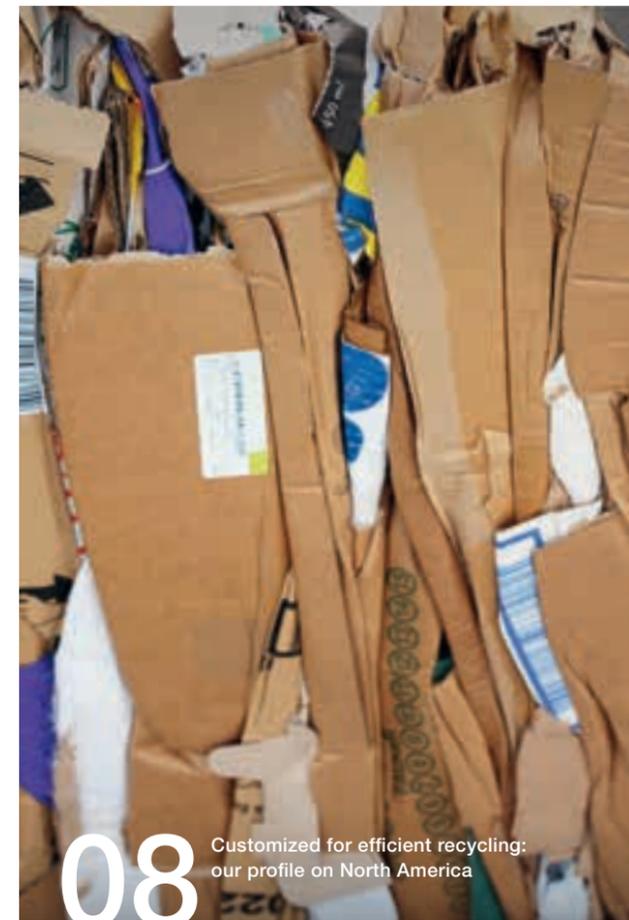
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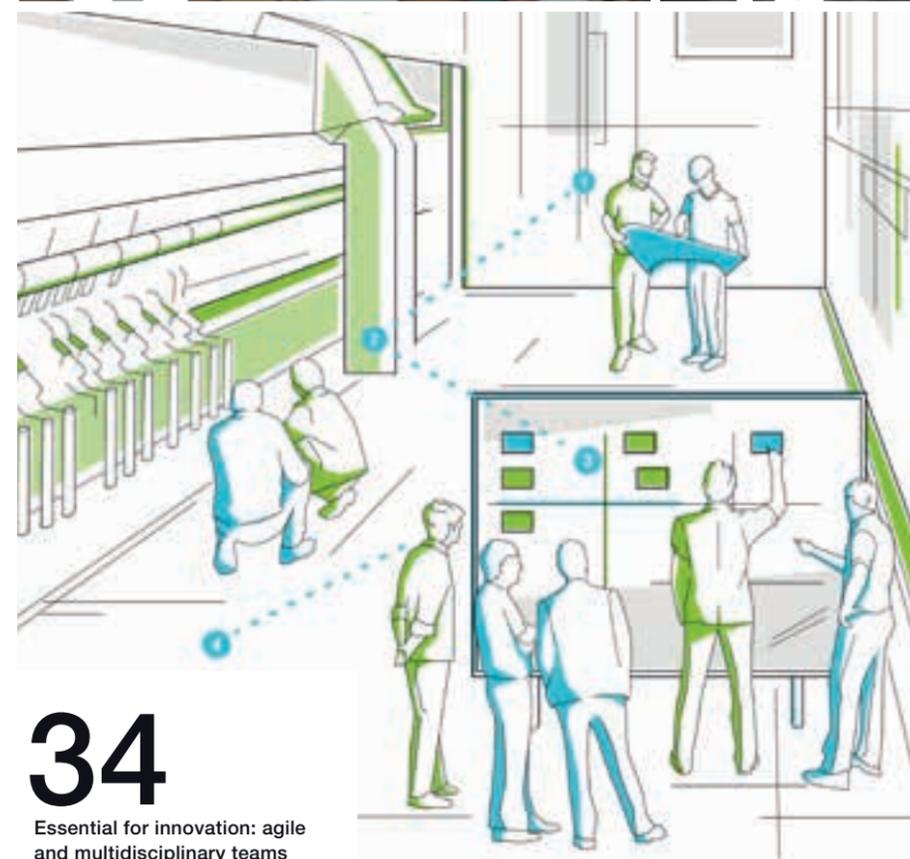
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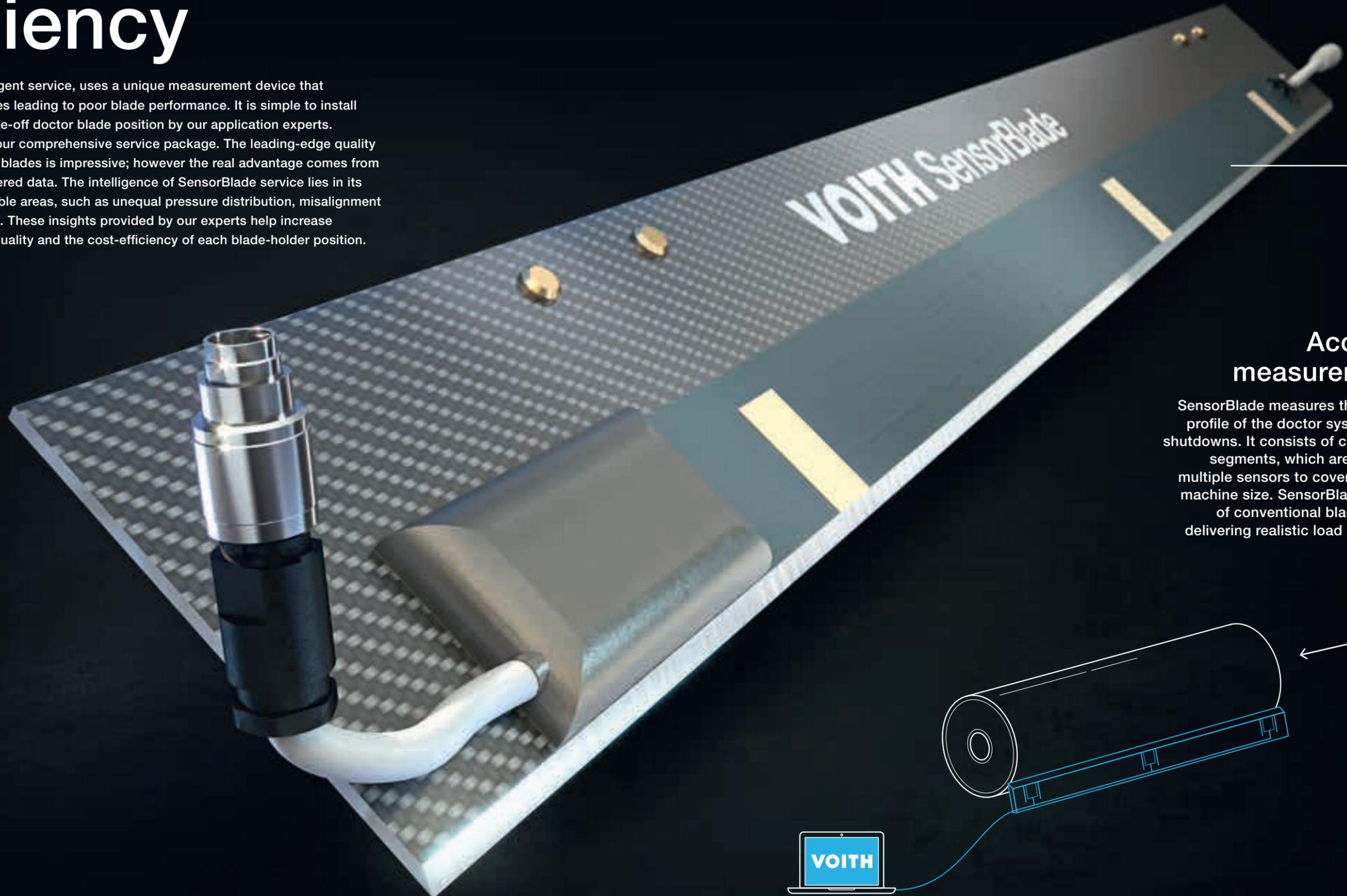


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The optimum base for banknotes

Sensor-driven efficiency

SensorBlade, our intelligent service, uses a unique measurement device that identifies common issues leading to poor blade performance. It is simple to install on any cleaning and take-off doctor blade position by our application experts. SensorBlade is part of our comprehensive service package. The leading-edge quality of the sensor-equipped blades is impressive; however the real advantage comes from the insights of the gathered data. The intelligence of SensorBlade service lies in its ability to define actionable areas, such as unequal pressure distribution, misalignment and holder irregularities. These insights provided by our experts help increase the overall production quality and the cost-efficiency of each blade-holder position.



Accurate measurements

SensorBlade measures the line load profile of the doctor system during shutdowns. It consists of connectable segments, which are fitted with multiple sensors to cover any paper machine size. SensorBlade is made of conventional blade material delivering realistic load conditions.

News

A quick round-up

Superior start-up and finish

The new Tissue XcellLine TM 7 successfully started up at the Ejea de los Caballeros mill of Gomà Camps Consumer in March 2018 in Spain. The smooth start-up was achieved through the modern and efficient XcellLine concept, equipped with the latest innovative and energy-saving Voith technology. Voith delivered the entire PLP (process line package) to Gomà Camps: BlueLine stock preparation, XcellLine tissue machine, auxiliary equipment and system accessories, including full automation, electrification and engineering systems. The entire new plant will be serviced 100% by Voith in an integrated maintenance and service concept. "From the very first minute of the project, Voith was a true and reliable partner," highlights Jordi Gomà-Camps, President of Gomà-Camps Group S.L. "With the latest Voith technologies, we ensure a competitive advantage for the best of our customers."

30

Time in minutes from stock on wire to paper on reel.

2,800

Size in millimetres of the working width.

↓
The benefits of the SmoothRun damping bearing system are compelling – and unique worldwide.

Boosts production capacity significantly across all paper grades.

Guarantees smooth machine operation at high speeds.

Improves winding quality.

Reduces maintenance requirements.

Available as compact retrofit solution for existing machines.



“Following commissioning of the new bearing system we were able to reduce vibrations for all paper grades and increase speeds.”

Michael Wolff, Line Manager Equipment at Papier- und Kartonfabrik Varel, highlighting the advantages of the SmoothRun damping system.

Goodbye vibrations

Vibration interference during the winding process will put the brakes on production. The traditional approach to minimize vibration would be to slow down production, keeping capacity beneath the maximum capable value. With SmoothRun, the Voith upgrade solution for two-drum winders, effective vibration damping during the winding process is ensured – and production can remain consistently at high speeds. The SmoothRun hydro-pneumatic damping bearings overcome effects from rough paper surfaces that result in increased vibration, thereby maximizing production speeds, acceleration rates and production capacity. Such optimal winding also reduces winding defects, mechanical stress and the risk of uncontrolled roll kickouts significantly.



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innovate

A closer look at innovative technology, people and solutions

One hub, one focus: Papermaking 4.0

The Industrial Internet of Things (IIoT) needs a central hub to capture, connect and structure the vast amount of data available today. OnCumulus is the only one-stop IIoT cloud platform tailored for the paper industry – and built on Voith domain knowledge. Developed for the shift to Papermaking 4.0 and the factory of the future, OnCumulus provides a hub for data analysis and applications in a customized, modular and scalable setup. OnCumulus: where value-driven data intelligence is coming to life.

cloud-based

RECYCLING

Ever more sophisticated stock preparation systems are required to pulp, clean, screen and refine today's recycled-based raw material for paper manufacturing. The Voith BlueLine portfolio is at the top of the global league.

REBOOTED

_____ The proportion of recycled materials used to make paper is on the increase – an undoubted win for the environment, but also a challenge for the paper industry. “It means there is less fresh or virgin fiber going into products, which results in more dirt or reject in the raw material,” highlights Andreas Heilig, Vice President Product Management Fiber Systems, Division Paper. “We used to have approximately 5% reject content in recycled paper, but it is now up to around 15%. And the paper strength potential is going down.” Such changing demands require flexible, truly →



Groundbreaking ceremony: Martin Pereira (KSH Engineering) – CEO • Martin Jauch (Voith Group) – Regional President North America, Division Paper • Andreas Endters (Voith Group) – CEO & President, Division Paper • Shawn De Voe (Green Bay Packaging) – Director Capital Projects • Matt Szymanski (Green Bay Packaging) – VP Mill Operations • Jack Williamson (Green Bay Packaging) – General Manager • Tim Kippenhahn (MIRON) – VP & COO • Patrick Nate (MIRON) – VP Industrial Operations • Jonathan Gates (Green Bay Packaging) – Project Manager.

innovative solutions – which is precisely why Voith launched its BlueLine portfolio range in 2010. Encompassing a full range of products and services from pulping to thickening, BlueLine has become a global market-leader in stock preparation systems, thanks to the sophisticated and robust BlueLine technology across every step of the process. Whatever the final paper grade or quality of raw material at the client’s disposal.

No compromise on quality

“With BlueLine, we have the product range to handle lower-quality raw materials without compromising on quality,” says Heilig. A key criterion in the current paper-industry landscape, where competitiveness may depend on the ability to extract clean fibers from sub-optimal material in an eco-friendlier process. This tried-and-tested feature is appreciated around the globe. Particularly for the

“We understand the trends and how to handle the ever-changing dynamics of the market.”

Michael Hmielewski
Vice President of Project Sales, Stock Preparation, Division Paper North America

one paper grade that is showing sustainable growth: containerboard.

The growth of containerboard

Take North America. The region has seen a substantial increase in the production of containerboard, largely due to the boom in online shopping. With this trend set to continue, it is not surprising that Voith launched merQbiz in 2017, the first-ever digital trading platform for recovered paper, to satisfy the growing demand for recycled paper. It is also one of the reasons why Voith has recently concluded five full-line projects with BlueLine stock preparation for this paper grade in the region. “Combined, these projects are an endorsement of the highly efficient nature of our full-line systems and exper-

Tailored technology



InfiltraDiscfilter is the latest generation in dewatering without filter bags. An almost maintenance-free solution. (For more information, see pages 28-29.)



The design of the IntensaMaXX pulper detaching machine prevents spinnings and every type of ragger formation.



The IntensaPulper achieves significant energy savings of up to 25%, compared with conventional pulpers.

ing with the company that has the most knowledge in processing highly contaminated furnish,” he says. “The Voith team consistently understands the needs of our projects and customizes our stock preparation systems accordingly.” Their full BlueLine stock preparation system will be completed in 2019 and will have an output of 260,000 metric tons of testliner and corrugated medium per year for use in containerboard production.

Another significant project, this time for Grupo Gondi’s Monterrey plant in northern Mexico, will feature a complete BlueLine stock preparation system with a lightweight recycled containerboard production capacity of 400,000 metric tons a year, and an XcellLine paper machine for a 2020 production start-up.

The single-source full-line supplier

The unique strengths of the BlueLine portfolio also convinced Green Bay Packaging, a family-owned US company, to choose Voith as the single-source full-line supplier for a new mill in Wisconsin. Voith will deliver the tailored BlueLine stock preparation system, and also the effluent treatment plant, an XcellLine paper machine, as well as a VariFlex Performance winder. All connected with Papermaking 4.0 →

425,000

metric tons of recycled fiber each year to be handled at the Pratt Industries Wapakoneta plant.

tools. "Partnering with a family-owned company whose North American headquarters are in Appleton, Wisconsin, Green Bay Packaging is advancing its commitment to positively impacting the local economy and becoming a more sustainable producer," says Will Kress, President and CEO of Green Bay Packaging.

Another North American highlight is the customized BlueLine solution for Pratt Industries at its new Wapakoneta plant in Ohio, which is expected to handle around 425,000 metric tons of recycled fiber each year for corrugated packaging from 100% recycled materials. This will be the second full-line solution for the company and will replicate much of the setup, performance, service – and success – of the first, in Valparaiso, Indiana. The Voith installation in Ohio includes reliable material handling with automatic wire cutting, sludge handling, water clarification and effluent treatment. In addition, Voith will be working beside the teams at Pratt to continuously enhance and align the services according to quality fluctuations in raw material.

Proven performance

That the BlueLine technology outperforms the competition is proven, confirms Michael Hmielewski, Vice President of Project Sales, Stock Preparation, Division Paper North America. "In October 2017, we were asked by a customer to participate in an audit of two of their systems for comparison purposes, one from us, one from a competitor," he explains. "The Voith system showed considerably higher performance in terms of overall fiber loss and deflokable flake content in the rejects." As a result, the customer selected Voith to equip its next stock preparation plant.

"Ultimately, what sets Voith apart is that we understand the trends and how to handle the ever-changing dynamics of the market," summarizes Hmielewski. One recent change that has impacted the market is China's decision in 2018 to severely restrict imports on recycled paper, notes Heilig, and adds: "The ability of our BlueLine technology to handle recycled materials means that this is also a change we are well positioned to meet."

"By partnering with Voith, we're working with the company that has the most knowledge in processing highly contaminated furnish."

Alonso González
CEO of Copamex

Explore the IntensaDrum

Pulping of recovered paper requires specific technology and machinery. The innovative IntensaDrum, part of the BlueLine portfolio, ensures a gentle and effective pulping and screening performance that is outstandingly reliable, efficient and safe. **See for yourself.**

↓
Customizable BlueLine portfolio

Whatever the furnish, the BlueLine portfolio offers optimal, customizable stock preparation. By combining the modular components across the whole process – including pulping, cleaning, screening, flotation, washing, thickening, dewatering and dispersion – paper manufacturers are in a position to deal with all levels of contaminants, stickies, impurities and non-recyclable rejects. The result: reduced fiber loss, energy consumption and water usage.

↓
Pulping

A combination of advanced technology ensures efficient pulping tailored to the desired parameters. The pulping technology, including IntensaPulper, IntensaMaXX, IntensaDrum and IntensaScreenDrum, reduces fiber loss.

↓
Dewatering

The pioneering technology of the InfiltraDiscfilter ensures an outstanding filtrate quality and substantial savings in fresh water consumption.



www.voith.com/nextlevel3-BlueLine



With augmented reality
Download our app to fully discover the multiple benefits of the IntensaDrum. To experience the features using augmented reality, open the app and point your camera over the image below.
www.voith.com/nextlevel3-intensadrum-app





Skilling up

In 1910, Friedrich Voith, the founder of the company, established the first training workshop in Heidenheim, Germany. He wanted to ensure that his employees would have the specific skills necessary to manufacture the highest quality of products he could envisage. He was ahead of his time. More than a century on, his training ethos and legacy remain strong. Just more extensive. The latest educational tools, technology and methodology have optimized and modernized the program significantly.

“Today, our training concept is still rooted in our needs for a highly skilled workforce. Only through a modern and comprehensive program can we ensure that our technology, our engineering and our services remain at the

Training concept

Customers benefit twofold from Voith’s commitment to training. Today, diverse programs ensure the Voith workforce is highly skilled. And that customers can participate in training, including sessions tailored to their needs. In-depth know-how is at the core.

leading edge of the paper industry,” explains Michael Neumann, Manager PaperSchool, Division Paper. “What has changed are the methodologies and the focus. And the fact that we have also become more customer-centric.” Customers can participate in scheduled courses or have their individual session adapted and tailored to their needs to ensure they have the knowledge to achieve optimum performance of Voith technology.

Future-oriented learning

In the past, the methodology was mainly focused on traditional, frontal classroom training and made up the bulk of training sessions. Nowadays, there is a wealth of training tools available that make the whole learning experience more enjoyable, motivating and successful in practice. Which translates into transferable skills.

“Conventional educational practices still have a valuable place in our program, but we also exploit the most modern of educational technology and tools. That’s why we can structure the training to suit the roles, responsibilities and existing knowledge and experience of the participants,” explains Neumann. Classroom-based activities, e-learning modules or hands-on training on-site are all part of the blended-learning mix. Thanks to the company’s adoption of new technology, training is

2,000

Total number of courses available.

20,000

Number of people trained each year.

Explore the available courses on our dedicated PaperSchool website:



www.voith.com/nextlevel3-PaperSchool

Intermediate

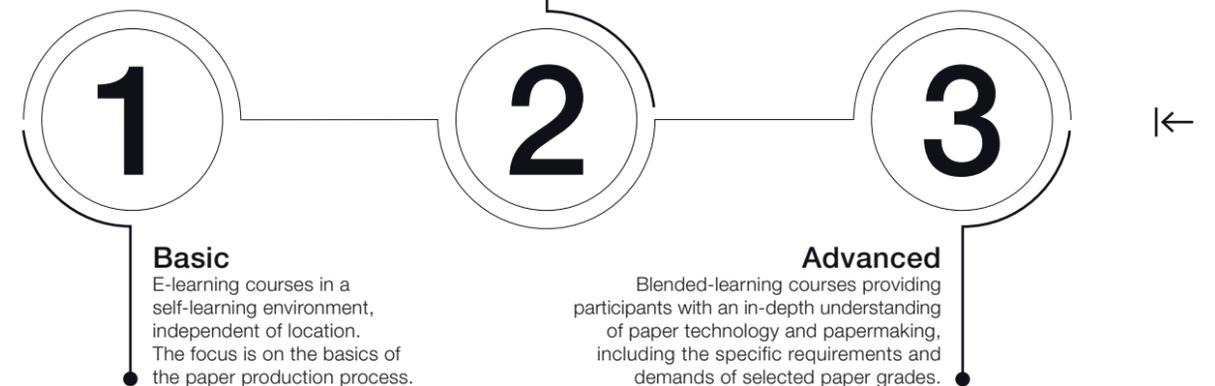
Theoretical classroom sessions and e-learning training covering many different process areas, including stock preparation, pulping, chemical recovery, bleaching and papermaking. Similar to entry level of a German papermaking school.

not restricted to the company’s modern training centers in Heidenheim and Kunshan, China. The programs developed by the PaperSchool can be accessed internally on a global scale. Online or, for instance, in the comfort of the participant’s own environment. There is even the option of using virtual reality, which gives a much more immersive learning experience. And as Voith also uses augmented reality in its Papermaking 4.0 tools, there is a place for this too.

Sharing expertise at all levels

Over the years, the training concept has developed into a multi-level modular journey that offers participants the possibility to define their own learning path to an even greater extent, as well as their own pace. In a nutshell, the program consists of three levels for customers, from Level One (Basic) leading to Level Three (Advanced).

The customer can focus on two key areas: paper technology and maintenance. At the highest level, training can include the option of roundtable discussions that focus on real-life troubleshooting issues and case studies. In a world where lifelong learning is a long-term trend and requirement, Voith is committed to ensuring that the next generation of paper experts is prepared for the future.



Fully immersed in the moment: Thomas Holzer, President Business Line Projects, Division Paper, explores a Voith virtual paper machine.

“Virtual reality is a fascinating tool. It enables complete and immediate immersion into an artificial world that feels incredibly real.”

Thomas Holzer
President Business Line Projects,
Division Paper



Pull-out poster: tear along the perforated line

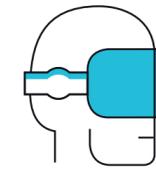
Paper goes virtual

Immersive, engaging and immediate – virtual reality has a lot to offer. Thomas Holzer, President Business Line Projects, Division Paper, explains why the trailblazing technology is a great fit for the paper industry.

Why virtual reality, why now? Virtual reality is a fascinating tool. It enables complete and immediate immersion into an artificial world that feels incredibly real, without the physical need for a factory or a machine. And the tools are all available: established gaming industry experience, hardware and data formats for virtual reality applications, an engaged industry, an enthusiastic development team, and, of course, more than 150 years of industry know-how. It is the right time to combine everything and bring the results to our customers.

What is it like to step inside a Voith paper machine, virtually speaking? You put the glasses on and, suddenly, you see the machine as if you were inside a real factory. You experience a 300-meter-long machine: the depth, the length, the height. We added sound, so you can hear the production. If you do a procedure, such as a sleeve change, the tools are at hand – you can actually take a drill to fasten a bolt. And it is fun! We’ve also included video enrichment so if, for example, a crane has to move a 50-tonne roll, this procedure is played on video to supplement the whole immersive experience.

Is it hard to adjust to the virtual environment? Not at all, virtual reality technology is very intuitive. →



Hands-on experience for customers and engineers.



A simple headset: the gateway to the virtual world. →

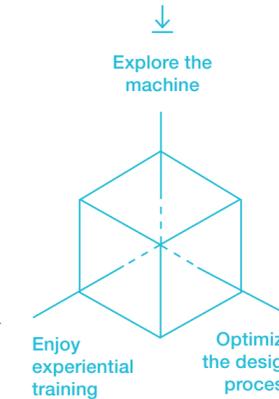
“By walking through and seeing things from the customer’s perspective, engineers have an opportunity to optimize the designs, resulting in much more user-friendly results.”



Learning how to use its functions and controllers only takes a few minutes. The biggest challenge exists in suppressing the need to walk. You see a big machine before you but, in reality, only have limited space to move, so you have to learn to jump virtually. This doesn’t take long, however, and once you know what you are doing, it is really exciting. We have had several customers experience our virtual reality applications and they all emerged with smiling faces, excited by the potential.

How do customers benefit? Virtual reality eliminates spatial and temporal challenges, offering customers unique opportunities at every stage of the process – from planning to training. When they put on the virtual reality glasses, they can see and experience their machine and take ownership of it before it is built.

Training is another important area for our clients. By using virtual reality, customers can familiarize their team with a machine and conduct maintenance and safety trainings ahead of time. In markets with an older installed base, such as North America, the training technology can be used to bring the current generation of users up to speed with the latest developments, as well as train employees who have less experience in the industry. In regions where machines are fairly new, for instance in Europe, safety applications attract the most interest.



Virtual reality provides multifaceted and multilevel benefits to the customer journey.



www.voith.com/nextlevel3-VR

Are there also benefits for Voith engineers? Of course! First of all, there is the joy in seeing and experiencing the results of your work so early on. In the past, you had to wait until the machine was built. Now, you draw it on the computer and can try it

out immediately. Virtual reality also provides insights into the customer experience. Are the bolts too high to reach? Do customers risk hitting their heads? By walking through and seeing things from the customer’s perspective, engineers have an opportunity to optimize the designs, resulting in much more user-friendly results.

How does gamification play into the equation? Traditionally, training takes place in a classroom environment, where it can be a challenge to keep people interested and motivated through longer sessions – and for them to apply their knowledge in the real world. Virtual reality removes ambiguity because users have to complete each task correctly or it won’t work, just like in reality. Gamification – including timing or problem-solving components – enriches engagement and provides a way to test the quality of training. You can build random mistakes into the training, challenge users to find them and then assess whether they were successful. As a result, the learning curve is much, much quicker than in a traditional setting.

What about augmented reality? We have both worlds – virtual and augmented reality – and both systems have their place. For augmented reality, we have OnCare, our maintenance support system. It is a great tool that can provide pertinent real-time information. For example, it can tell you



how to change a valve or offer prompts for a specific installation process. However, you still need a real object in front of you. With virtual reality, you can do things up front and in a small room, without the need for a physical factory.

If a customer has maintenance to do, it can be supported by augmented reality at the machine. If, on the other hand, a group of people need to train for a maintenance procedure in advance, virtual reality makes it possible. The two technologies complement each other.

So, what’s the next step? Everyone will eventually have a pair of virtual reality glasses at their computer. There will also be developments that make the experience more immersive: gloves with haptic feedback instead of controllers, applications that recognize real hand movements and more realistic sound.

One area that will certainly develop is how we interact, with a move away from physical and towards virtual reality rooms. The norm for future generations will be for both sides – the customers and Voith – to meet in a virtual environment instead of traveling to physical facilities. Some changes are coming faster than we can imagine right now – but we are staying on top of them. →

The digital landscape

Highlighting a selection of tools for maintenance, production management and purchasing.

Virtual Reality Solutions

An experiential learning platform – enriched by immersion and gamification – for mastering maintenance procedures and exploring more efficient new production solutions.

pmPortal

The life-cycle management and tracking system for all consumables from Voith and third parties.

OnCare

The full range of asset management and condition monitoring systems for preventive and predictive maintenance across the whole mill.

Voith Paper Webshop

The intuitive Webshop provides a unique purchasing experience customized to the individual plant, machine and order history. This enables identification and tracking of parts for secure maintenance scheduling.

OnCall

The 24/7 hotline and remote diagnostic support providing professional expertise for maintenance and production.

Augmented Reality

Combined with OnCare systems, augmented reality triggers real-time data and instant know-how, ensuring optimal timing and execution of maintenance procedures.

MyVoith

The central gateway for all digital services, applications, tools and platforms in one convenient, seamlessly structured online environment.

merQbiz

The digital end-to-end marketplace for recovered paper that makes the buying and selling of recycled-based raw material more transparent and efficient.

New DuoShake generation

The real-time data-monitoring tool for condition monitoring that optimizes and controls DuoShake operation.

OnEfficiency

The modular portfolio of highly intuitive advanced process controls for data-driven, real-time elimination of inefficiencies on site.

OnCumulus

The central, customizable and scalable IIoT hub for data capture, storage and analysis throughout the papermaking process.

SmartBasket

The asset management and life-cycle tracking tool for screen baskets with a user-friendly interface.

Seamless integration

The Voith digital space for the paper industry is key to the overall success of Papermaking 4.0 and offers solutions for all key stakeholders in the paper mills.

- Maintenance Management
- Production Management
- Purchasing

Going digital

Efficiency and availability are crucial for the new digital tools to bring real long-term benefits. Voith ensures the pathway to digital is intuitive – and comprehensive.



Increased transparency and much greater accessibility: optimized production for the long term.

The most intuitive digital tools generally have the highest take-up and success rate. On an industrial scale, the challenge is to digitalize production, maintenance and purchasing where it will bring tangible and sustainable benefits without disrupting the daily production in the process. For Voith, this challenge has been met with the development of a comprehensive and future-oriented digital package. One that offers a modular, scalable pathway to going digital. It essentially starts at one gateway point: MyVoith.

The single-sign-on gateway bundles and hosts individual Voith services and communication options such as production, maintenance and purchasing applications. Crucially, it provides a

customizable, easy-to-access dashboard to all the tools, hubs and digital services each customer requires, as Felix Holzer, Program Manager E-Business, Division Digital Ventures, confirms: “Within the comfort, convenience and security of a single central platform, customers will experience a seamlessly structured digital environment that serves their individual needs.” →

“Customers will experience a seamlessly structured digital environment.”

Felix Holzer, Program Manager E-Business, Division Digital Ventures

Improved production

Production management is the first area set to benefit. Moving through the MyVoith gateway, a simple click away, is the OnCumulus IIoT hub. This is where data can be collected and pre-structured using visualization and analytical functionalities. Customers can access their data in near real-time and take the first step towards optimizing their operating processes.

Back on the ground, the benefits are also visible. Take for instance Voith DuoShake. Wherever it has been installed, this reaction-force-free shaking unit for all Fourdrinier paper machines has led to improved formation and strength of the paper. In the future, customers with the new DuoShake generation will have access to a digital tool that will offer enhanced visualization of relevant machine data, bringing more transparency and taking condition monitoring to a new level. It is just one example of how the Voith digital world is continuously expanding. Another is SmartBasket, the life-cycle tracking tool for screen bas-

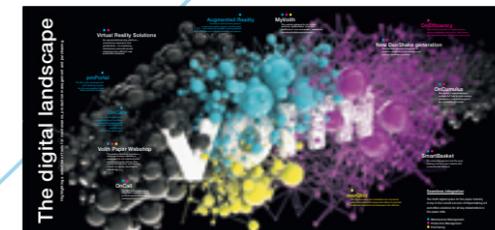
kets that provides increased transparency on the supply chain for the entire inventory.

Enhanced maintenance

Predictive maintenance and condition monitoring is the second. Any unscheduled downtimes are always immensely costly. Jochen Honold, Global Product Manager Mechanical Roll Service, Division Paper, is convinced that the sustainable way to avoid unplanned stoppages lies with pmPortal, a digital system for tracking consumables and optimizing shutdown planning. “With our newly developed pmPortal, difficult and incomprehensive shutdown planning of paper machine consumables are a thing of the past,”

he explains. Initially developed primarily as a tracking system for fabrics and rolls, pmPortal is gradually being expanded to include other spare parts and components. “pmPortal keeps track of all our customers consumables, in or off the machine, offers notifications services well in advance and helps them to keep the overview of their stock level,” he adds. pmPortal puts an end to troublesome and tiresome manual logging across different systems. Data can be maintained on one single platform, but the system offers dual visibility. Both customer and Voith have access to one database, where they can efficiently maintain each consumable across the whole paper machine. Voith can recommend timely ordering via the Webshop, the purchasing channel and e-business platform, which is the third area to benefit from digitalization.

Richard Birkhold, Strategic Global Product Manager, Division Paper, chooses his words carefully when he describes pmPortal as “comprehensive, intuitive and easy to handle.” The same also applies to Papermaking 4.0 as a whole. It is the optimum approach to ensure increased efficiency and availability of the paper machines. And the best path forward to a more digitalized landscape.



Download a screensaver of the Voith digital landscape for the paper industry.

www.voith.com/nextlevel3-digital-landscape

transform

An overview of key developments
in the papermaking industry

Out in the open

A Voith breakthrough in curtain coating technology guarantees an absolutely uniform and perfectly even coating coverage – including on recycled board and thermal paper.

DynaLayer, the newly launched curtain coater technology from Voith, is the first curtain coater to run in the open – without any enclosure whatsoever. An innovative thin air shield and precisely engineered nozzle technology and insulation ensure the coating application is of an outstanding quality. On top of the reduced total cost of ownership, the new design provides best runability for online and offline installations. What's more, the compact nature of DynaLayer makes it ideal for rebuilds.

Going global

A multinational team and the Voith NipcoFlex shoe press combined to boost production in Greece – and form long-term partnerships.



“I will certainly recommend collaboration with Voith to colleagues in the paper and board industry.”

Georgios Georgiadis
Mill Manager at MEL

Most papermaking projects and businesses are global by default. The end products are often destined for both domestic and worldwide customers, and the project activities inside the mills are increasingly based on international partnerships. The leading manufacturer of recycled cartonboard in Greece, the Macedonian Paper Mills (MEL) in Thessaloniki, is one such case in point.

Part of the renowned PAK Group, which comprises 19 companies around the globe, MEL produces high-quality recycled board and packaging for cus-

tomers across the Balkans, Europe, North Africa and the Middle East. A recent comprehensive modernization of the company’s plant was a resounding success, thanks to the involvement of a multinational team and Voith technology. At the core of the rebuild was the installation of a Voith NipcoFlex shoe press on the BM 1, which enables a higher dry content, reliably corrects deviations in the CD profile and ensures a uniform thickness across the entire 3,600-millimeter-wide paper web. Through the higher dry content after press section the BM 1 now requires less steam in the following drying groups, which reduces the overall energy consumption of the machine.

Cross-border success

The result: an impressive increase in production capacity by 15%, to 120,000 metric tons annually – and long-term cross-border business partnerships and friendships. “With the new press section we were able to improve board quality characteristics, reduce breaks and therefore significantly increase machine availability,” explains Georgios Georgiadis, Mill Manager at MEL, who is also keen to emphasize the excellent working relationships: “The atmosphere between the individual teams was excellent. The close collaboration with the colleagues from Voith Tolosa even resulted in some friendships,” he adds. “I will

in Greece



certainly recommend collaboration with Voith to colleagues in the paper and board industry.”

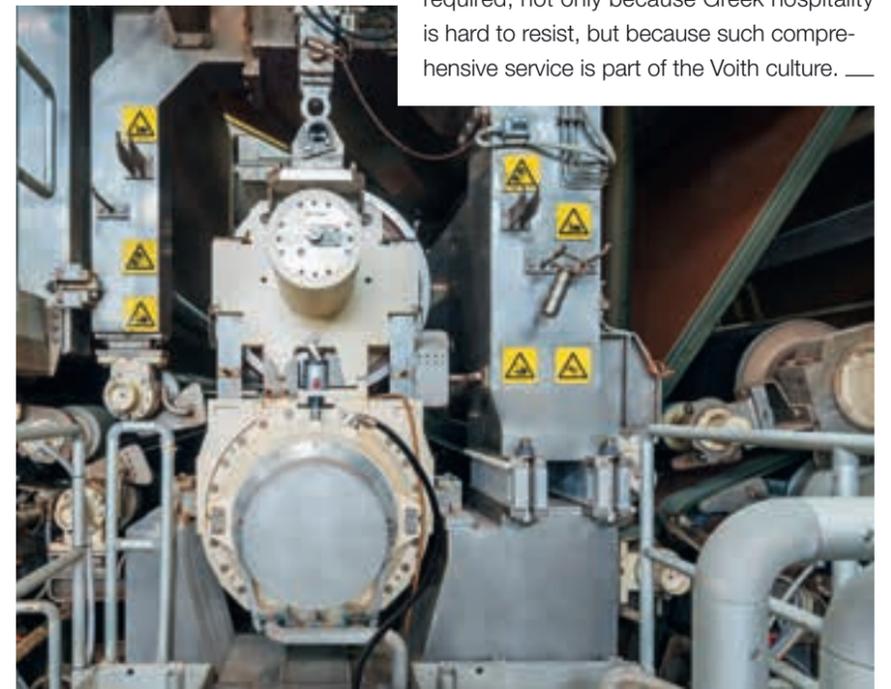
“Cutting-edge, tried-and-tested German engineering combined excellently with our personal approach to service for this project,” says Ignacio Benito, Head of Order Processing Rebuild, Division Paper Tolosa, Spain, who worked closely with MEL from the initial contact to the completion of the rebuild. “There was a very professional Voith working style throughout, which was enriched by the famous Greek hospitality.”

Such relationship-building was crucial to the smooth installation within an extremely tight time frame. The Voith service team completed the project within three weeks, without a hitch. To ensure that MEL benefits from the

The centerpiece of the MEL rebuild: the Voith NipcoFlex shoe press enables uniform thickness and a higher dry content.

15% increase in production capacity.

rebuild, comprehensive training – which included visits to similar set-ups in various locations – was carried out in the run-up. Despite the global nature of the project, a local approach is also essential to its ongoing success, and to future modernization measures. As part of the Voith Servolution initiative, Voith local and international representatives are quickly on hand if support is required, not only because Greek hospitality is hard to resist, but because such comprehensive service is part of the Voith culture. —





The 20th anniversary of the revolutionary BaglessPlus is a milestone worthy of celebration. It also marks another major breakthrough for filter disc technology.

In 1998, what was unthinkable in the industry became achievable with pioneering technology from Voith. The unthinkable was a filter disc minus the filter bags. It was achieved with the launch of BaglessPlus. The first installation led directly to a convincing 25% increase in production capacity at the deinking plant in Shotten in the UK.

“Our innovative system has proven its worth repeatedly since then,” explains Axel Gommel, Global Product Manager Disc Filter, Division Paper. “We fulfilled a promise to improve the dewatering process for the

throughout its lifetime. With over 90% of the discs installed since 1998 still in use, that lifetime goes unmatched in the industry.

Constructed of metal, this longer-life BaglessPlus technology ensures a reduction in maintenance, new bags, new sectors and downtimes. What’s often ignored in this equation is the collateral costs of poor filtrate, which leads to increased fiber loss and higher costs for sludge disposal and effluent treatment. In contrast, when the filtrate remains consistently high, less fresh water is needed. Which brings lower costs for energy, purification and pumping, as well as a more eco-friendly operation as a whole.

Improve, upgrade and lead

BaglessPlus is the most advanced sector in the industry, but there is always room for improvement. Voith R&D has led to product upgrades over the last 20 years, including the launch in 2012 of the InfiltraDiscfilter with



www.voith.com/nextlevel3-discfilter-upgrades

The next generation:
FLOWING DISCS

- Twice as strong as BaglessPlus.
- 100% compatible with existing machines.
- 30% larger active dewatering area and higher hydraulic capacity compared with BaglessPlus.

130,000
Bagless sectors installed worldwide in over:
700 installations

“We’ve led a quantum leap in filter performance and service life.”

Axel Gommel
Global Product Manager Disc Filter, Division Paper

True Pioneers

42,000 sectors in operation for over 10 years.

90% of sectors installed since 1998 still in operation.

Super clear filtrate lifetime benchmark set by BaglessPlus:
30mg/l

25% proven potential reduction in fresh water consumption.

long term. Since then, we’ve led a quantum leap in filter performance and service life.”

Filtrate, waste and the environment

The real benefits in BaglessPlus are multiple. Filtrate quality is staggeringly high – and sustainable. While flimsier plastic sectors may have a service life of three to four years with good filtrate, the quality will fluctuate considerably in their lifetime in a disc filter. When bags leak – and such leaks last until broken bags can first be identified and then replaced – the filtrate quality can drop to a solids content of 200 to 600 mg/l. The benchmark set by BaglessPlus is less than 30 mg/l in super clear filtrates, which remains constant

BaglessPlus technology with a disc diameter of 5.7 m, the IDF570. Leading papermakers rely increasingly on this type of sector for optimum dewatering. But the breakthroughs continue.

The next generation, FloWing discs, has an innovative wing-shaped filter plate that is the ideal geometry for the optimum growth of the fiber mat and knock-off behavior. Incorporating 20 years of experience and customer feedback, FloWing will push the boundaries even further. Unthinkable? Just as in 1998, it is already achievable, as Gommel confirms: “Our 20th anniversary is a milestone. We have topped our achievements and ensured our technology remains unrivaled in the future.”

A CLEAN FLUSH

_____ The magnitude of fatbergs in some of our sewage systems is both surprising and disgusting. These rock-hard blockages are a nasty blend of flushed items cemented together with oils and fats that have been washed down our sinks and drains. According to the BBC, one recently discovered beneath London was longer than the city's iconic Tower Bridge and almost as heavy as an average blue whale.

"The real culprits for these fatbergs are the unfiltered grease, fat and oil from industries, restaurants and homes. When they coagulate around items that shouldn't be there they clog up the sewage systems and pollute our waters," explains Kai Pöhler, Director Application & Business Development Specialty Paper & Nonwovens, Division Paper. Stricter regulation on disposal of industrial cooking waste could reduce these blockages. As would educating the general public. Over 90% of wet wipes, for instance, are not designed to be flushed. But even when unflushables are clearly labeled as such, consumers still tend to flush them away.

Eco-friendly: from start to end

"Our throwaway culture is an ecological challenge," says Pöhler. "That's why here at Division Paper, we focus on the big picture. By engineering a more eco-friendly production process from end to

A cutting-edge partnership results in the most advanced line in the world for eco-friendly wet-laid nonwovens:

100%

biodegradable

+

flushable

end, we can produce 100% biodegradable products from 100% renewable raw materials, using less fresh water." Most wipes manufactured using other technology contain polyester (PES) fibers, which have been found in our wildlife, oceans – and even tap water. Currently, the discussion is all-important given the upcoming EU ban on plastic in single-use products.

Pöhler is proud of the innovative wet-laid/spunlace (WLS) technology that Voith has developed together with Trützschler Nonwovens. Since 2013, the two companies have developed a manufacturing breakthrough technology for nonwovens. Within a year of the partnership, the prototype results were so convincing that they were awarded with a major contract from Albaad, a leading global manufacturer of wet wipes and feminine hygiene products. Voith and Trützschler delivered a solution to ensure a flexible, efficient and eco-friendlier production of WLS nonwovens from 100% cellulosic fibers at Albaad's new WLM1 production line in Dimona, Israel. The successful start-up of the machine was in 2017.

A breakthrough partnership

The machine uses a combination of Voith and Trützschler breakthroughs. For instance, the Voith HydroFormer ensures a homogenous fiber mat is produced in the web formation phase, while Trützschler's AquaJet technology guarantees a high

- 100%**
renewable
raw materials.
- 100%**
biodegradable
end products.
- 100%**
binder-free and
plastic-free.
- Certified
flushable.
- High tensile
strength
when wet.
- Reduced water
consumption during
production and water
pollution in use.

tensile strength and the desired textile feel without the use of any binding agents or bi-component fibers. Moreover, Voith has equipped the WLM1 with a comprehensive process and quality control system. The nonwovens are manufactured at a speed of over 200 meters per minute to the highest of quality.

"The installation and start-up of the machine went very well," highlights Gadi Choresh, Plant Manager at Albaad in Dimona. "With their professionalism and high level of commitment, the team has ensured the success of the project. Albaad appreciates the long-term commitment and support to achieve the line properties even when things were not as expected."

The breakthrough Voith technology has resulted in the most advanced line in the world for flushable nonwovens technology and cellulose-based hygiene products that are considerably more eco-friendly than those made from oil-based raw materials. Since there are other manufacturers along with Albaad already using or interested in the resulting technology, it's a long-term partnership that could help unblock our sewage systems. And avoid plastic in single-use products.



More than satisfied with the eco-friendly result: Gadi Choresh.

“With their professionalism and high level of commitment, the team has ensured the success of the project.”

Gadi Choresh
Plant Manager at Albaad in Dimona, Israel



For specialty paper grades, the key to success is individuality. Philipp Buchhold, the Strategic Technology Manager for Specialty and Graphic, Division Paper, explains why.

_____ The versatile nature of specialty papers is both an opportunity and a challenge. “Distinct in design and usage, each specialty paper requires a tailor-made machine concept in smart combination with modular systems,” explains Philipp Buchhold, the Strategic Technology Manager for Specialty and Graphic, Division Paper.

Specifically in specialty paper, quality always takes precedence. Reduction in energy, fiber usage and emissions are also top priorities. The particular requirements of each specialty paper grade, however, have to be met on top. It is this demanding diversity that makes these paper grades so fascinating for Buchhold. For over 15 years, it has been his special interest at Voith.

“To meet the demands of each paper grade’s versatility, you need both broad and specialized know-how of the paper industry,” he says. Estimates put the types of specialty papers at 2,900, each with numerous market segments and ap-

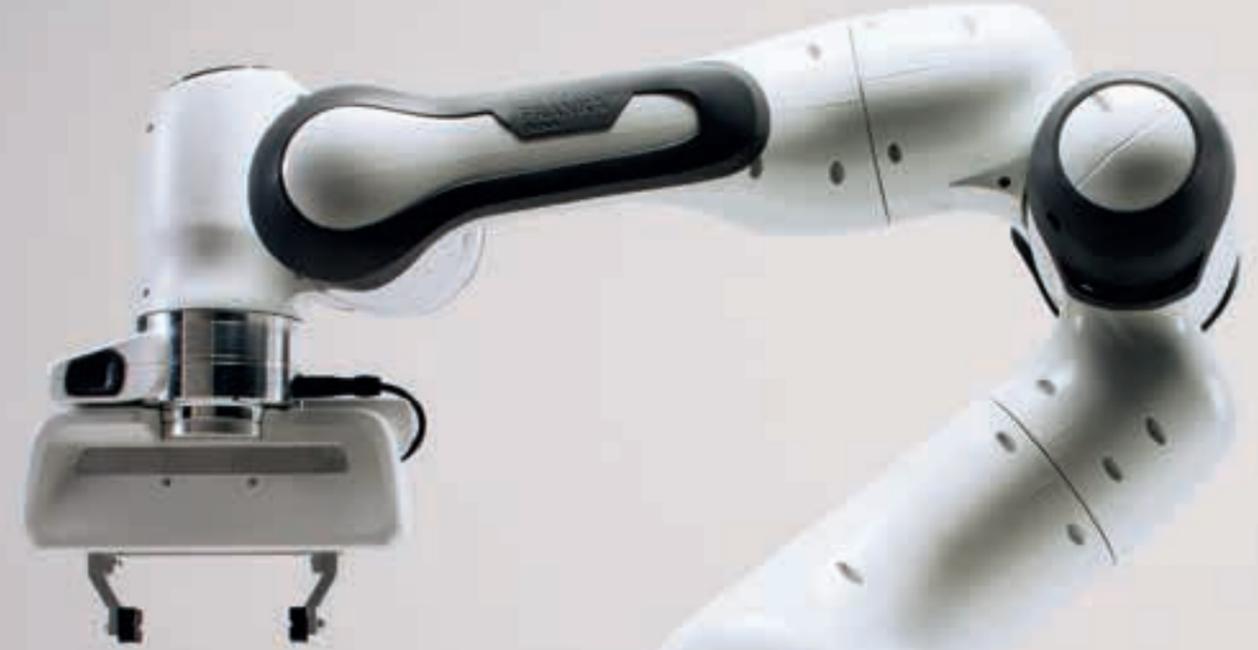
plications. This translates into 25 million metric tons a year, with a 2% compound annual growth rate. However, these are just numbers – Buchhold prefers to zoom in on individual customer cases.

Broad, yet specific

Whether banknotes in India, teabags in Germany or silicone base paper in China, specialty paper lives up to its name. The product may have to be oil- or water-resistant, non-flammable, dust-free or counterfeit-proof. A mixture of any of these characteristics – as well as others – could also be part of the sophisticated specifications. “Here at Voith, we have the expertise, both in classic specialty papers, but also in wet-laid nonwovens,” adds Buchhold. “Designing new flexible packaging, eco-friendlier alternatives for plastic, or cutting-edge separators in batteries for electric vehicles, this is what we do really well.”

Every customer can build on our quality and technology. “Regardless of the production capacity, we are passionate about creating extra added value,” says Buchhold. “It is how we have gained the long-term trust of specialty paper manufacturers. Together, we push the frontiers across all areas to meet the challenges of the market, often working on prototypes with specialist engineers in our research centers, also developing new concepts with our customers. This is why we lead the market in this field. Each solution comes completely out of one hand. And it is always one of a kind.” _____

SPECIAL interests



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reflect

A round-up of views from thought leaders on key trends and developments

Welcoming Panda, our sensitive cobot

Cobots, short for “collaborative robots,” assist their human colleagues. This is especially true of Panda, the interconnected, quick-learner cobot with ultra-rapid reaction times. Voith Robotics is a joint venture between Voith Group and Franka Emika that combines pioneers in automated production processes with intelligent robotics. Because of Panda’s sensitivity to touch, safe reflex system and human-like dexterity, this cobot easily masters intricate movements and performs finely controlled repetitive tasks, even in dangerous production settings. Martin Scherrer, CEO Voith Robotics, explains: “Based on our in-depth domain knowledge and cutting-edge robotic know-how, we now offer tailor-made automation solutions for all production needs. Making Panda a welcome, and affordable, addition to any team.”



In the scrum

Targeted innovation for individual customers is achieved at Voith with the latest methodology and tools. Voith deploys a fast-paced scrum approach for precision, speed and team spirit.

_____ Innovation is a tricky business. By its very nature, it provides only a limited amount of knowledge and experience at the outset of a project, making planning and decision-making problematic. Voith ensures that innovation can be tailored to individual customers and situations by adopting the latest generation of agile problem-solving approaches: design thinking and scrum-based development methods. A recent example is the development of the new VariFlex Performance winder for Shandong Chenming Paper Holdings Ltd., based in China.

Real-time collaboration

At Voith, it all starts with design thinking, an iterative collaborative process that puts the customer at the core and focuses directly on their individual and unique challenges and how they affect their business. The solution is then explored, developed and implemented using scrum-based methods. The term “scrum” comes from the game of rugby and describes the intense moment when a team of players huddles up and works together to win the ball. In product development, the scrum is a multidisciplinary team of people who work together to find a solution. Instead of each development phase moving through the organization from one department to the next, as is often the case, the scrum method →



Design thinking

Prior to kicking off the scrum process, design thinking in a team helps anticipate, identify, and resolve unique customer challenges and needs.

The scrum process

1

Initiate

Invite a multidisciplinary team from all stages of development and management to collaborate on a scrum-based project.



“With scrum, problems show up earlier and that means that they can be ironed out faster.”

Daniel Jürgens
Product Manager Winder, Division Paper

Fast facts

The fast-paced, efficient development of the customizable VariFlex Performance winder is a proven success for scrum-based approaches. It was a strategic decision to develop a new winder model rather than a tailor-made machine. By adopting a scrum method, the multidisciplinary team was able to meet the highly ambitious delivery deadline.

3,000m/min
machine speed.

12 VariFlex
Performance winders
sold since 2017.

25 seconds for set change
time, highly reliable
due to smart design
and minimized amount
of moving parts.

enables everyone to collaborate directly from the outset, as a close-knit team.

“The advantage of working like this is that everyone is equally responsible for the success of the project,” says Nils Matthies, Managing Director, Voith Innovation Lab, Berlin, and a specialist in design thinking and scrum at Voith. “Instead of each person working on their own little patch, there’s a high degree of commitment from every team member to ensure the whole project succeeds.”

Real-life innovation

The theory sounds great, but how do these dynamic project management processes work in practice? In short: exceedingly well. In spring 2016, Shandong Chenming Paper Holdings Ltd. ordered an extra-large winder that could handle paper widths of up to 10 meters for their mill in Shouguang. Great news! Except, existing Voith two-drum winders only went up to 8.8 meters, and the customer wanted the machine within two years. Rather than develop a tailor-made machine for Shouguang, the development team decided to create a completely new winder that could be adapted to future customer needs.

This was where Daniel Jürgens, Product Manager Winder, Division Paper, leapt into action. “The only way to meet

the highly ambitious deadline was to develop the new product based on scrum precepts,” he explains. He quickly put together a cross-disciplinary team: an eclectic mix of automation engineers, designers, buyers, sellers, assembly workers and many others. They worked in the same office, desk-on-desk, constantly bouncing ideas off each other. Each identified task was broken down into subtasks that had to be completed within a short, defined time frame, known as a sprint. Jürgens organized stand-ups – short, regular update meetings – with all project participants to check on the progress of each sprint and deal with any problems.

“The fact that everyone is involved from the outset means that possible design or development errors come to light much faster,” he says. Issues were discussed face-to-face rather than via e-mail, giving much more immediacy and cohesion to the team.

A future-oriented result

The result? The VariFlex Performance winder was delivered at the end of 2017 to Shandong Chenming Paper and started up in spring 2018. Again, great news. Especially for the customer, but also for Voith. In defining a new way of working, the scrum team had also laid the strategic foundations for a winder that could be tailored to customer needs more rapidly and efficient-



The result: VariFlex Performance winder designed and delivered on time.

ly. In fact, Voith has sold a further 12 VariFlex Performance winders since the Shouguang one was delivered in late 2017. “Scrum isn’t always necessarily a faster way of doing things, but this approach is definitely more targeted and focused,” concludes Matthies.

The success of scrum has been noticed across the company. With Voith’s commitment to customer satisfaction, efficiency and quality, the company will be expanding its use of design thinking and scrum approaches in the future. “A targeted scrum approach is also good for customers from the quality and efficiency perspectives,” adds Jürgens. “With scrum, problems show up earlier and can be ironed out faster. And scrum is also good for us. It was great fun working with people from different departments and we were amazingly productive. We had a blast.”



Success with regular stand-ups: more focused meetings lead to better communication and productivity.

2 Sprint

Focus on specific tasks, make decisions, execute and iterate.

3 Stand up

Hold regular, short stand-up meetings during each sprint to facilitate progress, updates, feedback and sprint resolution.

4 Repeat

Continue with sprints and stand-ups until project is completed to the customer’s satisfaction.



Banking on trust

Banknotes must be highly trustworthy. Thanks to advanced Voith papermaking technology all kinds of state-of-the-art security features can be embedded into banknotes, ensuring that the genuine is instantly distinguishable from the counterfeit.

It's no secret that the value of currencies is based on trust. Banknote integrity relies on their issuing banks, but also on the knowledge that what we exchange in payment is the real thing. This is only ensured with some of the best-kept secrets in the paper industry.

Such secrets are the reason why each denomination of banknote for every currency has a unique look and feel. And why national watermarks and security threads are instantly recognizable. The latest technology enables high-security visible and invisible features to pass high-tech scanner tests, machine-readable devices, and also to be accepted in everyday use on the streets. Including by the blind and visually impaired. For the public to trust a currency, everybody should be able to authenticate a genuine banknote, as well as spot a fake, through look, feel and tilt. And, nobody should be able to forge them.

Building confidence

"Anti-counterfeit security features are confidence-building tools. And as the value of currencies depends on confidence, banknotes that can be authenticated at a glance are highly trusted," says Wolfgang Neuß, Director Sales & Technology Banknote & Security Paper Machines, Division Paper. A key delegation from Voith recently returned from the official opening of a new banknote and security paper plant for Goznak at the Krasnokamsk Paper Mill in Russia. A plant that was completely supplied by Voith. Goznak produces banknotes for the Central Bank of the Russian Federation, as well as for central and national banks of a number of other countries. "Designed and constructed with Voith technology, machinery, digital tools and security paper expertise, the new production plant at Krasnokamsk is one of the most sophisticated in the world," highlights Neuß. "The scale of automation at the plant is impressive. This ensures, besides the full control

"Banknotes that can be authenticated at a glance are highly trusted."

Wolfgang Neuß
Director Sales & Technology Banknote & Security Paper Machines, Division Paper

of each process step and material handling, which is fully automatically between paper machine and finishing as well, the very latest in security standards."

The new banknote and security paper production plant was opened in the year of Goznak's 200th anniversary. According to Arkady Trachuk, the General Director of Goznak, it heralded a new stage of the enterprise development: "In eight years together with the design engineers, equipment suppliers and contractors we have created one of the leading production complexes in the world." →



An independent world leader

As the only independent supplier-manufacturer in the field, Voith takes the lead in highly efficient machinery, advanced technology and deep technological know-how of the complete production process – without being a paper producer. Which makes Voith the premium partner of choice for security paper grades that fulfill the key criteria for this market.

Secure

The production process needs to be as secure as the final banknote. The plant at Goznak is a high-security, highly automated facility, thanks to the Voith expertise and engineering. Each sheet of the final produced paper is uniquely identifiable.

Distinct

Unique and distinctive designs make forgery more difficult, and also build trust through their recognition level.



Building value and trust



A proud team:

Günter Meuser, Senior Project Manager, Division Paper, Alexey S. Sterlyagov, Chief Engineer of the Krasnokamsk Paper Mill, Wolfgang Neuß, Director Sales & Technology Banknote & Security, Division Paper, Alexander N. Birtchevsky, Director of the Krasnokamsk Paper Mill.

11,000 metric tons

Annual production capacity for security banknote paper.

The new production plant at Goznak's Krasnokamsk Paper Mill was inaugurated on September 28, 2018. The guests of honor, Alexei Vladimirovich Moiseev, Deputy Finance Minister of the Russian Federation and Chairman of the Goznak Board of Directors, and Alexey Chibisov, Deputy Prime Minister of the Perm region and Minister of Industry, Business and Trade, toured the plant together with Arkady Trachuk, General Director of Goznak.

The new production plant covers everything from raw materials storage to automated packaging. The scope of supply included a fully automated watermark wire workshop, the cotton, stock and broke preparation. This has already been set up for a second paper machine that will be integrated into the newly constructed plant in the near future. In addition, stock preparation, the processing and dosing system for various security elements and chemicals were also part of the package. Voith ensured that the complete production line, including the integration of key components from other reputable manufacturers, was delivered according to the customer's specifications from a single source – thereby securing a comprehensive full-line supply and approach to security paper manufacturing.

Secure and sophisticated

The heart of the banknote production at the new plant is the sheet-forming section, which includes the MasterVat, a unifold vat optimized by Voith, and the ShortFormer (for the sheet-forming of the first layer in the double-ply product). These components will ensure the production of high-quality and strong paper combined with an excellent multi-tone watermark and firmly embedded window security threads. And then there is design. Russian rubles are famous for their colorful and distinctive artwork. The robust banknote paper produced on the Voith machinery provides an optimal base for creative designs.

However, it's not just a matter of aesthetics. Some individual national designs make forgery more difficult, and build trust through instant recognizability.

For paper to circulate as money, the public needs to be confident that they are using a legitimate means of payment. Voith know-how and production processes give credibility to something that inherently has no real value at all, and turn it into legal tender. "The paper that is used for banknotes is the hardest thing to forge," notes Neuß. Despite the hype surrounding cryptocurrencies and cashless societies, banknote and security paper is still a growth area in population-rich regions. For instance in India, where Voith has also established complete production plants with sophisticated full-line services. "With our high-tech solutions, we contribute to producing the most sophisticated banknote and security paper, which is crucial to ensure that all kinds of currencies around the world remain secure," adds Neuß. And Voith is determined to keep it that way.

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nextlevel N°03

Q&A

questions and answers

History is clear: we want to touch and be touched. Professor David Parisi from the College of Charleston explains why haptics is so fascinating.

_____ What is haptic communication? We are constantly using touch to take information from and send information to the world around us – this is haptic communication. The science of haptics subdivides touch into different modalities (vibration, pressure, weight, movement, temperature) and expresses them as data. How much pressure is applied during a handshake? What receptors are triggered when we run a finger over a piece of paper? How do we judge the weight of an object?

_____ How can virtual environments benefit from tactile sensations? In virtual environments, vital sensations present in the physical world are gone – we rely almost exclusively on vision and hearing, becoming less effective at executing certain tasks. We also relate to each other as disembodied abstractions, rather than physical beings.

Haptic technologies allow us to, at least partially, re-embodiment these interactions by reinstating some missing tactile cues. A haptic glove can replicate the sensation of grasping an object. A haptic shirt can provide the sensation of interpersonal touch from a distance. Applications such as virtual prototyping, touch-enabled training or location-based marketing attempt to rematerialize the virtual world using touch feedback.

_____ Your book, "Archaeologies of Touch: Interfacing with Haptics from Electricity to Computing" looks at history. What does it teach us? The future isn't a clean break from the past. It involves the recurrence of cultural desires – in this case, the desire to experience sensations of touch at a distance. We want to touch and be touched. Past imaginaries, failed technologies and unrealized predictions can all be enlightening. We need to question what proved successful and what failed to catch on. For example, the simplicity of today's most widespread haptics applications might prove instructive.



“

Every company can
choose whether to lead
or follow the emerging
digital trends.

Bill Gates

”

VOITH

Inspiring Technology
for Generations