

**VOITH**

PAPER TECHNOLOGY JOURNAL

# TWOGETHER

#33 | 2012

COVER STORY

## CLOSE TO THE CUSTOMER

NEW PLANTS

DONGHAE PM 1: RESOURCE-SAVING  
AND ECONOMICAL





**Cover picture:**  
When you are in the business of  
supplying products and services,  
it pays to be close to your  
customers.

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## DEAR CUSTOMERS, DEAR READERS,

Having a local presence in order to provide fast solutions and develop trusting relationships with customers is something we regard as key to success, particularly in the product market. In our cover topic, our eight examples from North and South America, Europe and China illustrate how, particularly in this era of globalization, market expertise and a local presence are important to operate successfully in the market (p. 6).

The development of new and improved technologies is an integral part of our work. For example, the DuoDry CC drying concept significantly reduces the tendency of paper to curl (p. 43). The SØNAR roll management program provides roll data around the clock in a clearly presented format (p. 48). In Germany, folding box board producer Mayr-Melnhof shows how the right combination of forming fabric and measuring technology in the wet end achieves better board quality and a substantial reduction in drive output (p. 60). Our new CompressPlus press concept for the wet end can raise machine speed by up to 150 m/min without any loss of quality (p. 63).

Our recently modernized and reopened Tissue Innovation Center (p. 30) in São Paulo is working on resource-saving technologies for tissue production. The center offers customers from all over the world the opportunity to test the latest tissue developments on a high-speed machine. It is possible to switch between conventional and ATMOS technology in a very short time. ATMOS can provide energy savings of up to 60% compared with other premium tissue production processes.

I hope that you will enjoy reading this issue of the twogether magazine in our brand new design.



On behalf of the Voith Paper Team

**Dr. Hans-Peter Sollinger,**  
Member of the Voith GmbH  
Management Board and  
CEO of Voith Paper.





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Wherever you call home, you'll find Voith.

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# CLOSE TO THE CUSTOMER



To understand your customers' needs, you must have a presence in the specific market. When your business is about products, physical proximity really pays off; it allows faster delivery of components and better service by experienced Voith technicians who can be on site in a very short time. The following eight success stories illustrate how local presence benefits customers around the world. >

**01** When you are in the business of supplying products and services, it pays to be close to your customers.

**A paper machine in Chile needs a roll change.** Since the function of the roll has a major impact on machine efficiency, its replacement cannot be delayed. But a roll change in the press section alone will entail a machine downtime of several hours, and that costs money. However, even if a replacement is not urgent, rolls still have to be reground and recalibrated at regular intervals. This is why the location of service and sales facilities are important strategic decisions that Voith needs to make in many countries such as Chile. For a long time, paper mills in Chile have either had to maintain their machines themselves, engage small local workshops to do it, or have the work carried out in another country. Voith established a service center site in 2006 and provides know-how in design, fabrication and maintenance of machines in the Chilean market.

In China too, the benefits of Voith having its own production facility for thermal coatings have long been demonstrated. In China, Voith is able to supply paper producers throughout Asia with high-quality thermal roll coatings with very short delivery times. The decision to also locally produce an increasingly larger proportion of what is needed in a market, tailored to local requirements and developed by local engineers and specialists, has proved to be a highly successful business model. It makes Voith a supplier with a genuine local presence through organizations embedded in their local communities. It is all about having the know-how available in the region in which a project is to be planned and realized. This means that the workforce at the particular location is familiar with the local market and technological conditions and knows the needs of the various customers. This includes providing the appropriate products and maintaining facilities over their entire service life.

Despite globalization, being close to customers turns out to be a distinct advantage, especially as Voith Paper is able to offer its customers in all countries integrated solutions from a single source. And it does so consistently with uniform standards and common procedures for each of the regions. Customers too profit from this proximity, as demonstrated for example by the halving of energy consumption in a plant in North America (p. 11), the increase in dry content at International Paper's Luiz Antônio mill in Brazil (p. 9) or the 20% higher capacity at Shanying Paper in China (p. 12).



# DRYNESS IMPROVEMENT IN BRAZIL

The story of Voith Paper Brazil started in 1964 with the foundation of Voith S.A. Máquinas e Equipamentos, the first production subsidiary set up by the group on the South American continent. The São Paulo plant is the competence center for tissue paper machines and a specialist in the production of drying cylinders. Voith Paper set up the Tissue Technology Center in Brazil so tissue producers could verify the compatibility of their processes and raw materials with equipment they were planning to acquire.

## South America



Land mass: 17.7 million km<sup>2</sup>  
Population: 393 million  
No. of employees: 851

**Service work on the headbox with short downtimes.** The pulp mill Fibria Celulose S.A. is located in Aracruz, the Brazilian state Espírito Santo – 70 km from Vitória. It comprises three fiber lines with an annual capacity of 2.3 million metric tons of bleached pulp. As Voith supplied the dryers for PDMs 1-4, Voith, in turn has been given responsibility for the dewatering line main shutdown.

In 2011 Voith was called to rebuild the considerably corroded PDM 3 headbox. Especially the bottom part had to be changed. Therefore, a new bottom part, completed according to the original drawings, had to be designed and installed in the headbox during the main shutdown service within five days. It is always a big challenge and great responsibility to stop a dewatering machine and to rebuild one of the most important sections like the headbox. It is essential to return to normal production without changing its parameters. The harmonic service was supported in perfect cooperation with the production and maintenance staff from Fibria. This rebuild also included the longitudinal beam for the fourdrinier, which was also supplied for PDM 4 and installed at the same shutdown. Moreover, during the same year Voith was called upon again to provide exactly the same rebuild for PDM 3.

**Increased dryness with product combinations.** In Brazil, International Paper's Luiz Antônio mill produces uncoated

woodfree copy paper on PM LAN2. In 2011, this mill began the implementation of a project for optimizing the press efficiency of its PM LAN2. Voith offered a complete press analysis with specialist measurement tools and knowledge to collect and analyze the necessary data. With the analysis results, a water reduction was performed followed by engineering recommendations for fabric designs, roll cover material and surface geometry. By this means, a combination of Voith products such as SolarFlow suction roll cover, PrintFlex V4L fabric and G2000 press roll cover together with PrintFlex S3 in the third press helped.

The high water storage capacity of the Voith polyurethane covers along with the press fabrics resulted in a 2.7% increase in dryness from 41.12% to 43.85%. Another benefit was that the machine reached record reel speeds of 1,180 m/min, exceeding its previous speed by 10.4%. Consolidating those results, through process adjustments and machine crew development, will generate a potential production increase of 19.3 t/d. Production Manager Eurípedes L. Valadão Junior of IP's Luiz Antônio mill states: "This development was a clear demonstration that, with the combined efforts of the supplier and customer, motivated people can enhance efficiency and quality in the production process." //

## Europe



Land mass: 10.1 million km<sup>2</sup>  
 Population: 740 million  
 No. of employees: 5,557



03 Rome, Italy.

## ENERGY SAVING AND PRODUCTIVITY GAIN IN EUROPE

Europe, the second largest producer and consumer of paper and board, is still a region where quality is a very decisive factor. European paper production is now increasingly being driven by ecological objectives, which require technologies that help save energy and increase productivity.

**New quality control system and service contract.** Since December 2011 the new quality control system has been running at the BM 4 at the Cavanella Po plant of the papermaker Cartiere del Polesine in Italy. Two Voith LSC scanners, 5.60 m and 6.50 m wide, are included in the delivery. They have four sensors in total. In addition, the automation system was expanded to include OnQ GradeControl MD controls for basis weight and moisture. The installed OnQ Profilmatic basis weight CD profile control was supplemented with a new CD moisture profile control for the nozzle moisturizer. This ensures the required quality for the basis weight and moisture CD profiles of the machine.

Furthermore, Cartiere del Polesine has chosen to conclude a service contract for the automation systems of BM 3 and BM 4. Within the framework of the "remote diagnostics" service module, the package allows a remote diagnostic service of the systems used, if the customer so desires.

The service module also includes 24/7 telephone support by the Voith service team. This guarantees very short reaction times and allows Cartiere del Polesine to get competent advice and support any time it is necessary.

The customer is very satisfied with the Voith solution. Therefore, in December 2012, OnQ ModuleTap, an automatic control system for the metering of dilution water will be installed at the headbox of the BM 3.

**11% less energy consumption at AMS Gomà-Camps.** To save energy and increase production, the Portuguese producer AMS Gomà-Camps agreed to install a high-performing press fabric for tissue machines: Evolution by Voith Paper. Along with the advantages of improved dewatering in the nip and quicker start-up times, Evolution reduces thermal drying and provides potential energy savings of about 300,000 euros/year. Overall, the annual cost reduction is even higher due to the production increase. With Evolution, it was possible to increase the machine speed by 50 m/min.

In Vila Velha de Ródão, Portugal AMS produces a wide range of products including facial tissue, napkins, toilet tissue and towels. The plant, designed to operate with virgin pulp, will produce both jumbo reels and finished products and will supply the Iberian and North African markets. //



04 New York, USA.

## North America

Land mass: 24.9 million km<sup>2</sup>

Population: 528 million

No. of employees: 1,362

# HIGHER EFFICIENCY IN NORTH AMERICA

Voith Paper's entry into the North American market dates back nearly to the beginning of America's paper industry itself. Voith remains present today throughout the entire region, with no less than 14 facilities. So, one can easily see how the proximity to customers is essential for long term satisfactory cooperation.

**Improved press solids save more than 4 million euros.** One example of a local project with local manpower is the press optimization with a Canadian pulp mill. It produces pulp for customers in Asia, Europe and areas of North America. Voith has worked continuously and closely with this particular mill to improve productivity and lower production costs.

Voith presented a proposal to optimize the pulp machine's press performance. As a result, Voith supplied the press roll covers, press fabrics and also forming fabrics for the wet end. The scope of the project included softening the covers to increase nip retention duration and increase the void volumes in the nip to facilitate increased water removal capacity. The 3rd press roll covers were softened and blind drilling replaced grooving.

By increasing the dwell time in the nip, the dryness regularly improved, which in turn meant less steam was used in the dryers. The benefit from the optimization was a 2.9% increase in production per hour. The annual profit increase and the value-added savings from increased production totaled 4 million euros.

**50% less energy consumed.** This project, with a large board and packaging mill in the state of Washington, USA, was an

ambitious ecological challenge. The approach was to improve quality on one hand, while also lowering energy consumption on the other. The mill had a fine screening system with old screens of a competitor. Voith upgraded the existing screens by implementing a combination of the MultiFoil rotor and C-bar screen cylinders.

The C-bar Q screen basket offers a higher capacity than standard screen cylinders. Aside from improving final product quality, stickies content was greatly reduced and overall fiber loss dropped. Before the screens were retrofitted with the C-bar technology and MultiFoil rotor from Voith, the mill had four screens running. Afterwards, three screens were found to be sufficient, so there is now one less machine and a big energy saving.

According to the customer's latest information, a 50% energy reduction was achieved with the new equipment. This matches, by the way, the requirements of the Washington State Financial Incentives for Renewables and Energy Efficiency. Implementation of technologies that increase energy efficiency are eligible for support. //

# SOLUTIONS FOR CHINA'S HUNGER FOR PAPER

China's paper industry is still growing. According to the China Paper Association (CPA), production in 2010 was 92.7 million metric tons – an increase of more than 7%. Within the last ten years, the capacity of China's paper industry has tripled. Voith Paper became active in this market in 1937 with the delivery of a paper machine to Shanghai Zhong Ban Paper. Today, one of its most important locations is Kunshan. The decision to build a facility in this location was well thought out, given that the high-tech industrial park of Kunshan is one of China's fastest-growing cities.

## China



Land mass: 9.6 million km<sup>2</sup>  
Population: 1.3 billion  
No. of employees: 1,466

**Local service and advice.** It takes 3 to 4 hours by car for Voith Paper's specialists to reach Shanying Paper, located in the Chinese province of Anhui. Shanying manufactures and markets paper products including corrugated paper, paperboard, and paper boxes. The company sells its products domestically. As there were plugging problems in the initial system, Shanying decided to rebuild the board & paper machine's cleaner system in 2011. The solution was an EcoMizer Cleaner HCH5 upgrade in the OCC line. The results were quickly visible, with reduced fiber losses in the last stage, combined with high cleaning efficiency and low energy consumption. Further, useable fibers are not lost with the rejects but back-flushed to the accepts, minimizing losses. A more compact layout of the cleaner stages has also been made possible in most cases.

The customer now reports a 20% increase in capacity while using the existing feed pump. So, this first project with Shanying Paper has proved a real success story with further positive outcomes: The paper producer later ordered two whole stock preparation lines to be realized in 2012.

**Non-radioactive quality control for YinGe Paper.** China is on the way to having the world's most modern tissue machines

and the country's demand for tissue remains high. To meet this need, Luohe YinGe Tissue Paper Co., Ltd., has ordered two large tissue machines from Voith for a greenfield mill in the suburb area of Luohe City, Henan province. Both machines are equipped with a 2-layer MasterJet II T headbox, Crescent former and Voith shoe press, named NipcoFlex T. The design speed is 2,000 m/min, and the wire width is 5,600 mm. Each of the two machines can achieve annual production of 60,000 tonnes. NipcoFlex T is a technology developed by Voith Paper that is the shoe press concept applied for tissue machines. This solution requires less energy consumption for paper drying and provides excellent tissue bulk.

As also part of the scope, Voith will supply two quality control systems (QCS), including the sensor Voith LSC TecoSens that is fully integrated into the automation's system. This sensor allows simultaneous online measurement of moisture content and basis weight on an infrared sensor, saving time and money for the customer as it is a solution that minimizes costs over its entire lifetime.

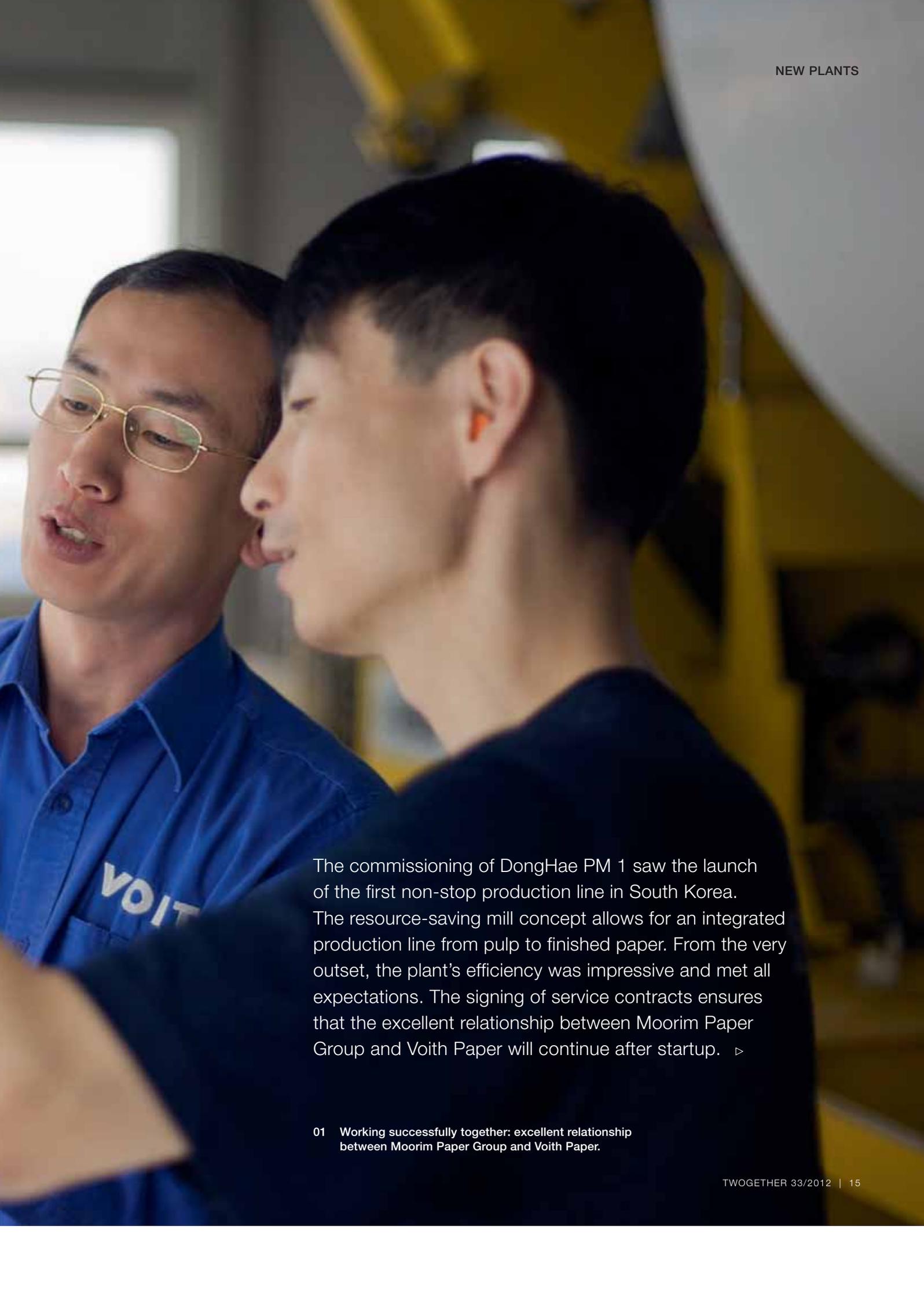
As an important component for good performance, machine efficiency and energy savings, YinGe has also selected Voith to supply the machines' clothing. //



05 Shanghai, China.

DONGHAE PM 1: RESOURCE-SAVING AND ECONOMICAL

# EFFICIENT NON-STOP PRODUCTION



The commissioning of DongHae PM 1 saw the launch of the first non-stop production line in South Korea. The resource-saving mill concept allows for an integrated production line from pulp to finished paper. From the very outset, the plant's efficiency was impressive and met all expectations. The signing of service contracts ensures that the excellent relationship between Moorim Paper Group and Voith Paper will continue after startup. ▶

01 Working successfully together: excellent relationship between Moorim Paper Group and Voith Paper.



02

▷ In March 2011, almost five weeks ahead of the contractually agreed deadline, the South Korean Moorim Paper Group's DongHae PM 1 went successfully on stream. Just five months after startup, Moorim has signed off on the final acceptance certificate for the production line. With a wire width of 9,300 mm, PM 1 produces around 450,000 metric tons of wood-free coated and uncoated papers in the basis weight range of 75–150 g/m<sup>2</sup> per year. Just three months after startup, the paper machine achieved its design capacity of 1,250 t/d and design speed of 1,300 m/min, exhibiting outstanding time efficiencies of more than 90% in the second month and more than 95% in the third month.

**No fossil fuels needed.** The integrated mill concept allows for a non-stop production line from pulp to finished product. The new PM 1 will mainly use the short-fiber pulp produced on-site. This means there is no need to dry the pulp, which can be pumped directly to the paper machine in liquid form. This

therefore reduces the total drying energy required for pulp dewatering, while also eliminating the cost of transporting the pulp to the mill. In addition, the steam yielded in pulp production can also be used for paper production. This allows the resource-saving mill system to dispense with fossil fuels under normal operating conditions.

**Services ensure plant efficiency.**

Voith Paper is providing Moorim with support in the first two years after start-up in the form of a service team available six days a week. The “Advanced Production Support” team will optimize the plant and coordinate and supervise all activities necessary for a stable operation of DongHae PM 1. The team will also train the machine operators and support and advise the customer in hydraulics, mechanical systems and the automation of the paper machine, offline coater and Janus calenders.

Moreover, a Total Roll Management (TRM) contract, that will run for an initial

period of five years, provides a fully inclusive “worry-free” roll environment. The TRM covers all rolls and the complete roll environment: It includes covers and coatings, roll servicing, drying cylinder coatings, grinding and doctor blades. This maximizes roll availability, increases machine efficiency and keeps maintenance costs to a minimum. Improving the roll running properties is an integral part of the TRM concept. This is why it is vital to focus not just on the rolls themselves but the entire roll environment – from clothing to doctors or machine. All of this guarantees optimum paper production.

Moorim will use SØNAR (see article on p. 48), Voith's proprietary roll management software, to gather data about all its rolls. Service reports for every roll, grinding intervals, running times, operating logs and special features of each roll are stored in the software's databases. These data help Voith's roll service specialists to identify and implement optimization potentials. As a result, it is possible to significantly reduce costs for maintenance in some areas.



03

02-03 DongHae PM 1 with offline coater produces woodfree coated paper in a basis weight range of 75–150 g/m<sup>2</sup>.

The spirit of partnership comes to the fore in the TRM concept: Voith and Moorim are working together to further enhance the roll inventory and improve running properties. By appointing Voith to manage its roll inventory, Moorim can concentrate fully on the production of paper. Voith ensures optimum care of the rolls through its experienced service specialists.

**The scope of supply** includes the entire paper machine, offline coater and two Janus calenders. The stock preparation unit features two IntensaPulper IP-Vs, which ensure reliable pulping in the highest quality and energy efficiency courtesy of the innovative technology used. The VariPlus and VariFlex winders also help to provide maximum flexibility when producing a wide range of roll widths in optimum winding quality. Voith Paper also supplied all clothing, roll covers and SkyLine doctor blades for machine startup. In addition, it undertook the complete basic engineering for the production line as well as assembly and start-up supervision. To ensure ideal paper quality, Moorim

Paper opted for a quality control system with a total of nine scanners. These include, for example, two Voith LSC QuantumSens optical caliper sensors for non-contacting measurement of paper thickness. In addition, Voith Paper supplied the process control system for the stock preparation unit and the ancillary systems, and the machine control system. A large number of built-in actuators and the machinery and technology monitoring rounds off the package.

One of the great challenges of this project was the large number of interfaces between the various suppliers. All participants worked in a spirit of partnership. In particular, it was through close cooperation with Voith Paper's representative in South Korea, that the common objective - the successful startup of the production line - was realized. J. K. Choi, President of Voith Paper Korea Representative Co., Ltd., explains: "The excellent and friendly cooperation was the basis for the outstanding success of this project." //

## DongHae PM 1: facts and figures

### Paper machine

Headbox (MasterJet F with ModuleJet)  
Forming section (DuoFormer D)  
Press section (Tandem NipcoFlex press)  
Pre dryer section (TopDuoRun)  
Coater (SpeedSizer AT)  
After dryer section (CombiDuoRun)  
Finishing (EcoCal calender)  
Reel (Sirius)

### Re-reeler (Sirius)

### Offline coater with 4 coating units

### Two offline Janus calenders

### Winder

VariPlus  
VariFlex

### Auxiliaries

Hood and ventilation system  
Steam and condensate systems  
Central oil lubrication  
Mechanical drives

### Automation

Machine control system  
Drive control system  
Quality control system  
Machinery and technology monitoring

### Clothing

Forming fabrics, press sleeves, dryer fabrics

### Rolls

Roll covers and SkyLine doctor blades

### Services

Basic engineering  
Installation and start-up supervision  
Advanced production support  
Total Roll Management

## Contact



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04



05

04 The locally produced liquid pulp is pumped directly to PM 1.

05 The close cooperation of all those involved assured an excellent startup for DongHae PM 1.

### Info: Moorim Paper Group

The South Korean Moorim Paper Group produces premium quality, wood-free coated and uncoated papers and specialty papers for the Asian market. With the new DongHae PM 1 production line at its Ulsan facility, about 300 km south-east of Seoul, the company will increase its total production of fine papers to more than 1 million t/y, making it the largest producer of fine papers in South Korea. This figure also includes production from the company's existing paper machines in Jinju and Daegu.



06 I. S. Park, Vice President Moorim Pulp & Paper (r.) in discussion with Joachim Huber, Sales Manager at Voith Paper (l.).

## BRIDGE TO THE FUTURE

### 1. What is Moorim Paper Group's objective in investing in the new production line at the Ulsan site?

**Park:** For Moorim, this investment represents a bridge to the future. We hope that the new paper machine supplied by Voith will help make us the market leader for premium quality papers in Asia.

### 2. What is your assessment following the successful startup of the DongHae PM 1?

Our requirements in this project were very exacting, and our expectations have been more than satisfied due to the excellent professional cooperation with Voith Paper. Even just a short time after startup, the efficiency of the plant was out-



**I. S. Park,**  
Vice President of  
Moorim Pulp & Paper  
aims to become  
market leader for  
premium quality  
papers in Asia

standing. We are also going to continue this excellent cooperation with Voith in the future.

### 3. What form will this future collaboration take?

Since startup of the machine, the fabrics supplied by Voith Paper have proven effective. This is why we are also going to rely on them in the future. In addition, we will continue this partnership with a Total Roll Management contract for the next five years to maintain machine

efficiency at this high level and reduce running costs. All these activities are targeted towards our goal of becoming the preferred supplier of sophisticated, premium quality papers in Asia. //

CASCADES TISSUE GROUP BANKS ON ATMOS TECHNOLOGY

# PREMIUM TISSUE GOES GREEN



**Suzanne Blanchet,**  
CEO of Cascades  
Tissue Group

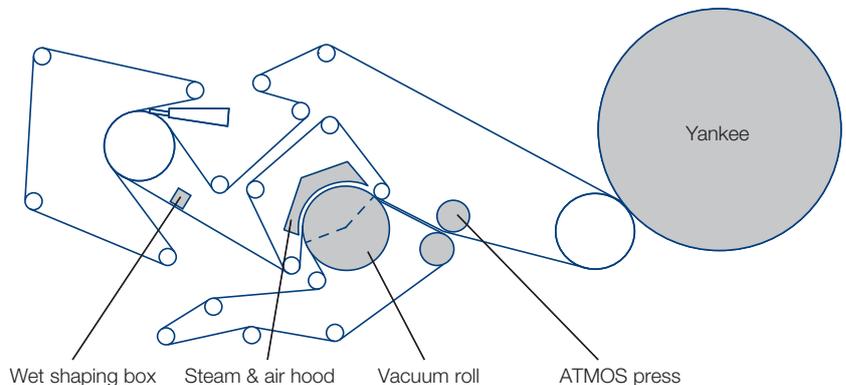
The Cascades Tissue Group has upgraded its TM 2 from a conventional tissue machine to an ATMOS system. This has not only allowed the Canadian producer to manufacture premium tissue with considerable energy savings since the autumn of 2010, but has also made the Group the first manufacturer in North America to produce premium and ultra quality tissue from up to 100% secondary fibers.

“Long before it was in fashion, Cascades believed and invested in sustainable development.”

With its investment in the TM 2 rebuild in Candiach, Canada, the Cascades Tissue Group is not just meeting consumer demand for high-quality

tissue products in North America, it is also demonstrating its commitment to sustainable solutions. All these requirements were met by Voith Paper's

## 01 ATMOS principle





03



02 04

02-04

Excellent quality and resource conservation are no contradiction: Premium and ultra quality tissue produced from up to 100% secondary fibers and with considerable energy savings.

ATMOS technology. Compared with other available manufacturing processes, the new system allows resource-conserving production of premium tissue paper using up to 100% secondary fibers and with energy savings of up to 60%. Suzanne Blanchet, CEO of the Cascades Tissue Group, explains: "Long before it was in fashion, Cascades believed and invested in sustainable development, so it only made sense for us to look for technologies that would enable us to produce top quality tissue paper with a reduced environmental footprint."

**Customized rebuild.** Working together, Voith and Cascades carried out a detailed technical analysis of the

existing tissue machine during the project planning phase, to ensure that the rebuilt machine could operate in both ATMOS and dry crepe modes. This allows Cascades to adapt production to market demands and gives it the competitive edge in both conventional and premium tissue markets. In addition, it was important to re-use as much of the existing equipment as possible in the rebuild to reduce the overall costs of the project without compromising the ATMOS process.

In the wet section, the rebuild included the installation of a new MasterJet Pro T headbox and a crescent former. An ATMOS module comprising of ATMOS

suction roll and ATMOS press, as well as a new calender for producing premium toilet tissue, were also installed. A new center wind reel was also part of the scope to ensure optimum reeling of the bulky tissue.

In October 2010, the Cascades Candiatic TM 2 went back on stream after the ATMOS rebuild. Since then it has been producing conventional and premium tissue at a speed on reel of more than 1,800 m/min in conventional mode and 1,200 m/min in ATMOS mode. The successful startup of the second ATMOS machine installed worldwide illustrates the benefits of the technology: ATMOS is regarded as the most up-to-date solution for >

**Info: Cascades Inc.**

Cascades Inc., founded in 1964, manufactures, processes and sells packaging and tissue products. These products are comprised mainly of recovered fibers. Cascades employs almost 12,500 people worldwide at 100 sites in North America and Europe.

▷ producing premium and ultra premium tissue in a way that saves resources and at the same time enhances the competitiveness of the producer. Suzanne Blanchet can confirm this: “This investment gives evidence of our commitment to the growth of the Cascades brand in the top tier segment.” Blanchet is extremely satisfied with the outcome of the project: “The investment started a new era in the production of high-quality premium tissue paper in North America and worldwide and confirms Cascades position as a leader in sustainable manufacturing of premium and ultra premium tissue paper.”

**The ATMOS principle.** In conventional tissue manufacturing, the press stage has an adverse effect on volume and softness of the paper. The initially bulky, open fiber mixture is often compressed to a flat sheet in the nip between press section and Yankee cylinder at pressures of more than 30 bar. As a result it is neither particularly absorbent nor really soft. Although this tissue then undergoes creping on leaving the Yankee cylinder to give it a fuller appearance, the definitive properties of the paper scarcely change. Voith has achieved a significant improvement in tissue paper quality through its development of ATMOS technology at the Tissue Innovation Center in São Paulo, Brazil.

The key to ATMOS technology is the ATMOS suction roll and its specially developed AtmosMax clothing for supporting the web run. The AtmosMax fabric lends a three-dimensional texture to the web, which is gently dewatered by the ATMOS suction roll at a vacuum of 0.5 bar. In addition, the AtmosMax clothing and the paper web are sup-

ported by two other fabrics as they pass over the suction roll. There is a dewatering felt named AtmosFelt under the paper web that reinforces the suction effect of the vacuum. On top is the open tensioning fabric AtmosBelt that gently presses water out of the web. To reduce the viscosity of the web to be dewatered, and thus increase the dry content of the tissue, hot, damp exhaust air from the hood of the Yankee cylinder is blown through the clothing fabrics and paper web into the ATMOS roll. A short press nip located directly at the outlet to the ATMOS module removes more water from the tissue web to increase its dry content and also the fiber bonds resulting in higher tensile strength.

In tissue manufacture, the largest cost factors are fibers and energy. Using ATMOS technology, up to 30% fewer fibers are required than in conventional tissue machines. This tissue paper nevertheless still has the same strength properties and very high water absorption capacity necessary for kitchen and hand towels, and it also offers a first-class “hand feel” and bulkiness for toilet tissue. In addition, up to 100% secondary fibers can be used depending on application without prejudicing quality: An ATMOS tissue produced with secondary fibers has a quality comparable to or even better than the leading premium tissue products available on the market. Along with the benefits relating to paper quality, ATMOS also offers impressive energy savings, with consumption up to 60% lower than other premium tissue production processes. Voith’s ATMOS technology therefore allows ecologically compatible production of tissue papers in the premium segment. //

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05 “The investment started a new era in the production of high-quality premium tissue paper in North America and worldwide, and confirms Cascades position as a leader in sustainable manufacturing of premium and ultra premium tissue paper,” explains Suzanne Blanchet, CEO of Cascades Tissue Group.





01 In the last eight years, the German paper mill Varel has invested more than 300 million euros in its plant. With two paper machines, Varel plans to produce an impressive 600,000 metric tons of packaging paper every year.

02 The new PM 4 combines a multi-product capability with high productivity and cost-efficiency.

PAPER MACHINES THAT CAN DO ALMOST ANYTHING

# A SHOWCASE PLANT BY THE NAME OF VAREL

The Varel PM 4 may not be the biggest or fastest packaging paper machine in the world, but when it comes to flexibility it is surely at the top. There is hardly a paper grade or grammage that the machine, which was completely converted into a multi-product machine, could not produce.

The Varel paper and board mill and Voith Paper can look back on a long collaboration. The most recent project is already the fourth in a series that the German papermaker has entrusted to Voith, and this time it was a particularly complex task.

The stock preparation systems for the PM 4 were optimized to reach the new production quantities and achieve the required qualities. Another goal is to reduce the energy input and save

resources. Along with the complete new construction of stock preparation lines 2 and 3, the existing line 1 was upgraded and optimized. All three lines process all required raw materials, from mixed brown recovered paper to graphic recovered paper. On the basis of preliminary tests at the Voith Paper Fiber Technology Center in Ravensburg, Germany, unique and customized stock preparation concepts for optimized operation were developed together with the customer.



Fine screening in all lines was fitted with MultiFoil rotors and C bar Q screen baskets, and the centralized fiber after-treatment was equipped with the latest generation of refining fillings. This has resulted in an exemplary overall solution that is both technologically sophisticated and economical. Line 1 has been in operation successfully since July 2011. Lines 2 and 3 started up in March and July of this year.

**The future is becoming white.** The paper machine was equipped with new approach flow systems, two new headboxes and both Fourdrinier wires were extended. A DuoFormer D hybrid former was installed on the back ply, while the top ply received a DuoShake shaking unit. The dryer section was built completely new, and the old size press was replaced by a SpeedSizer film press with contactless web run and a high-performance drying hood. In addition, the PM 4 received a soft calender and a MasterReel rewinder, and a new unwind station for larger full reel spools and a Gecko size application system for start and end gluing were installed at the winder. After the extensive rebuild, the machine was restarted in mid-July 2011. Likewise, the

entire paper machine control system was upgraded and equipped with a CD profile control system, among other things. Voith also supplied the roll covers, clothing and doctor blades.

Varel is an investment-friendly, family-owned business and is open to new things. This pays off in paper production: Thanks to its extraordinary flexibility, the PM 4 is very competitive. There are not many machines that can handle the basis weight range from 100 g/m<sup>2</sup> to 220 g/m<sup>2</sup> and produce so many different packaging paper qualities. Usually the PM 4 produces corrugated medium and test liner, but in the future up to 50% white linerboard will be produced. Products that can replace kraft liner are also planned. Since the 1950s, recovered paper has been used exclusively as the raw material.

The PM 4 was out of operation for about three months due to the rebuild. Already in the first months after start-up, the machine was running above the planned start-up curve.

**More, better and more versatile.** The PM 4 now has a net trimmed operating

width of 5.25 m and is designed for an annual capacity of 300,000 metric tons. The enlargement of the paper web by 200 mm was a special aspect of the rebuild – the new components were designed for 5.45 m. With some modifications, it will be possible in the future to enlarge the stock jet by 200 mm, for example.

But the increase in production capacity and expansion of the product range are not all. Efficient use of energy and environmentally friendly paper production are just as important for Varel. These guidelines have strongly influenced the selection of new equipment.

For example, the new MasterJet Pro headbox is even more energy efficient than its predecessor model. The hybrid former in turn brings savings due to the increase in dry content. A film press instead of the size press saves energy if the web is not so intensively remoistened and the amount of size in recirculation is reduced. Since the film press is suitable for pigmentation, Varel is well positioned for the future. Higher wire tensions are now possible in the dryer section, and if they are combined >

▷ with the innovative ventilation concept (ProRelease and blow doctors), consumption of steam is reduced.

But it is not just on the paper machine where energy is saved. The CycloMech deaerator in the approach flow system reduces energy consumption through the functional separation of deaeration and stock transport. The amount of stock is reduced, the formation is also improved and higher strength values can be attained.

Many ideas and implementations come from Varel itself. Nowadays it is rare that a paper mill independently performs the engineering and planning work. At Varel, however, the company has its own engineering office. With the support of external advisors and Voith Paper, the customer carried out the plant engineering. The piping alone amounted to 30 km, not to mention the 420 km of wiring.

**Energy from sun and water.** The Varel paper mill wants to produce environmentally friendly products in the most resource-conserving manner possible. The goal is a clear reduction of CO<sub>2</sub> emissions throughout the entire paper production process. To best measure up to the claim of environmentally friendly paper and board products, all areas of production are ecologically optimized. This applies not only to the preparation of raw materials but also to water treatment and energy production.

The plant's entire energy requirement for steam and power is produced in its own power plant, and the excess electrical energy is fed into the public grid. Natural gas and biogas are exclusively used as primary energy, with the biogas coming from Varel's own wastewater treatment system. About 5 million m<sup>3</sup> of biogas are produced annually in the process water treatment system. Varel is trying to keep water consumption to

a minimum. Thus process water is re-used as often as possible and prepared using three stages in the process water treatment system. Varel also gets energy from the sun: A photovoltaic system is installed on the roof of the storage buildings.

The paper and board mill has taken on a trailblazing role in both energy efficiency and paper manufacturing. Production capacity has clearly increased due to the rebuild, and Varel has become one of the biggest packaging paper manufacturers in Europe. //

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03



04

03 Sven Schindler, machine operator in Varel, monitoring the system.

04 Starting in mid-2012, white covered grades can be produced.

NEW REEL CHANGE SYSTEM FOR COATER AT UPM

## REEL CHANGES ON THE FLY

Anyone who witnesses a reel change taking place at full production speed on coater 11 at UPM in Plattling, Germany, will be astonished to see how smoothly this procedure runs. It has been made possible by the retrofitting of the cutting-edge reel change system, EcoChange W, to the existing Sirius reeler in June 2011. This system uses high-pressure water jet technology and offers distinctive features such as an innovative arrangement of cutting nozzles and the gluing of the web end on the reel core. ▶





01-04

**New reel change system impresses UPM: Rebuild improves production capacity of coater 11.**

▷ UPM Plattling had a clear objective in mind when it came to retrofitting an EcoChange W reel change system to coater 11: to improve reel change efficiency and reduce winding broke. However, there was a special challenge involved, as the existing knife-cutter reel change system was to be retained as a fall-back solution. This represented new ground for Voith's specialists. In addition, only minor modifications to the existing equipment would be possible due to the short downtime period available for installation and commissioning.

Thanks to the self-contained control package, the new reel change system could be fully tested outside of the coater before being integrated into the Sirius. This resulted in a substantial reduction in installation time and meant that the coater could be restarted ahead of schedule. The new EcoChange W worked superbly even on the first reel change. During subsequent reel changes, the system's individual operating parameters were optimized. After just two days, commissioning could be successfully concluded.

**Increasing production capacity.** Just two months after startup, reel change efficiency was more than 99.5%, while the volume of reel change rejects had been reduced by 80%. Working in combination with a rubber-lined reel drum supplied by Voith there was even an increase in overall production capacity.

UPM was naturally very pleased with the outcomes. "Our objectives – to increase reel change efficiency and reduce broke – could be met in full just a few days after startup. The entire project could be realized in just four months from award of order to commissioning, thanks to the excellent teamwork of all those involved," explains Alois Leeb, Head of Technical Planning at UPM Plattling. And he continues: "Installation and commissioning could be carried out in just one day due to a well-prepared and thought-out pre-assembly phase. The collaboration between all project participants was exemplary, very agreeable and highly focused."

**Highly efficient reel changes and reduced volume of broke.** The offline coater 11 in Plattling mainly produces LWC papers with a basis weight of 39 g/m<sup>2</sup> to 85 g/m<sup>2</sup> at an operating speed of up to 1,570 m/min. Particularly in the case of



offline coaters, a reliable reel change helps to ensure optimum machine efficiency, because after a web break the paper web has to be threaded manually again at crawling speed. A special feature of the offline coater is that the separate raw paper reels have to be “glued” together to form a continuous web again before the coating process. This is done fully automatically at production speed using flying splice in the coater’s unwinder. The joined section then runs through the individual coating and drying units to the Sirius reeler, where it is wound into the outside layers of the full reel spool. As a result of the timely reel change close to the joining point, the EcoChange W system reduces the volume of outer layer broke.

Along with outer layer broke, the broke from the core is also significant. Some of the reel change systems on the market create a large amount of core broke. Belt-type reel changers, for example, cause a pressing through into the inner layers and in some cases an oval winding profile in the reel core area. In the case of reel change systems using knives or compressed air, the web often folds over in the core, and there is a risk that shreds of paper flying around will get back into the core layers or that the reel change will not be completed. This was also sometimes seen in the existing reel change system at the Sirius of coater 11.

**Cutting on the empty reel.** As soon as the full reel has reached its change position, the EcoChange W reel change system uses two high-pressure water jet nozzles to cut a triangular tip out of the paper web by making an intersecting cut starting from the center and moving outward. The cut is made directly on the empty reel around which the paper web is already partially wrapped.

At the same time, a dosing nozzle is used to briefly apply a small amount of water-soluble adhesive agent onto the empty reel in the area of the web tail. This helps to thread the web tail reliably onto the new reel without creasing, while the two cutting nozzles completely separate the web up to the edge. Because the web is cut downstream of the nip between empty reel, paper web and reel drum, the web is guided accurately throughout the entire change sequence. It is generally no longer necessary to make a temporary adjustment of winding parameters for the reel change (reducing web draw). //



**Alois Leeb**, Head of Technical Planning at UPM Plattling

“We were able to reach our goal in full – increasing reel change efficiency and reducing broke – just a few days after startup.”

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REBUILDS



01 02



03 04



TISSUE INNOVATION CENTER OPENS WITH FULLY RENEWED MACHINE

# TISSUE GOES HIGH-SPEED

In the presence of a large number of customers, Voith Paper recently opened its new Tissue Innovation Center (TIC) in the Brazilian city of São Paulo. At the TIC, a completely renewed pilot facility will now allow conventional tissue paper to be produced at up to 2,500 m/min and premium paper at up to 1800 m/min. Therefore, customers from all over the world can trial the latest tissue technologies on a high-speed machine.



05 06



01 Nestor de Castro Neto, President of Voith Paper South America, welcomed around 150 customers from all over the world.

02-04 There were lots of interesting facts to take in, along with interesting things to touch and watch.

05-06 Undoubtedly the highlight of the 3-day program: viewing the pilot machine.

At the end of November 2011, the official opening of the Tissue Innovation Center following its major rebuild and renaming was accompanied by a three-day program of events. An innovation workshop, in which Voith Paper experts presented the company's latest technologies and strategies, took center stage. Around 150 company owners, managing directors and lead engineers from customers in Asia, Europe, North and South America took part in the event.

"We won't just be doing research here on better quality and a faster, more efficient production process," explained Nestor de Castro Neto, President of Voith Paper South America, in his opening remarks. "As in other areas, the R&D focus in tissue production is also about exploring how we can improve raw material and energy efficiency by means of new machine technologies and thus enable our customers to produce conventional and premium tissue for daily use in a cost-efficient and resource-saving manner."

**High-speed tissue.** Following the comprehensive rebuild from pulper through to reel, the Tissue Innovation Center now houses one of the fastest tissue machines in the world. It enables maximum production speeds of 2,500 m/min for conventional dry crepe mode and 1,800 m/min in ATMOS mode. This was achieved by increasing drying capacity as a result of installing a new Yankee cylinder and new drying hood.

The Yankee cylinder now has a diameter of 5.5 m (compared with 3.6 m previously). The larger size raises its drying capacity accordingly. Air systems and heat recovery units were also renewed. In addition, the tissue machine is fitted with a Voith Ultra Hood drying hood that allows temperatures of up to 650°C. This enables considerably higher production capacities than standard hoods and reduces power consumption.

For the first time, the pilot machine offers a fast and simple configuration change between its conventional mode and ATMOS technology that requires 60% less energy and 30% fewer fibers than conventional processes to make premium tissue. In addition, for greater paper softness, thickness and tensile strength, the headbox can be configured for one, two or three layers. The reel can be operated in conventional mode or with center wind reel, which ensures a uniform winding of premium tissue and maximization of bulk.

**Practical tests.** The benefits for tissue manufacturers are convincing: They can test the latest technologies on the pilot machine at the highest possible speeds. There has been particular interest in the application potential offered by ATMOS technology. The facility also offers the opportunity to carry out tests with conventional dry crepe technology at high speeds and to compare a multi-layer with a single-layer headbox in terms of softness and thickness. Moreover, tests can be run with the new NipcoFlex T shoe press, which reduces energy consumption for the production of conventional tissue paper by 20%.

The pilot machine has been fully booked since startup through August 2012. Most bookings come from international customers from Asia, Europe or North America. They are enthusiastic about the new machine and the support services provided by the TIC, such as the associated laboratory. Voith Paper itself is also using the renewed tissue machine for R&D work.

**A wise investment.** The new TIC is testimony to Voith Paper's confidence in the tissue production sector. According to current forecasts, global demand will grow at an average of 4% in the coming six years. The investment in the center is therefore money well spent in terms of strategy and market dynamics. This is also borne out by some successful sales figures. For example, in the last three years Voith Paper sold more than 20 new tissue machines and performed several rebuilds.

Voith has always invested in innovative and sustainable technologies that become market leaders. The engineers at the R&D Center in São Paulo, which was established in 1994, have already developed numerous new components and processes. Their latest achievements include ATMOS technology and the NipcoFlex T shoe press, both of which help to achieve sustainable tissue production using fewer resources. //

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01 View of wet section PM 1.



02 Reel scanner with sensors for basis weight, moisture, caliper, ash and color.

TOTAL COST OF OWNERSHIP MAKES ALL THE DIFFERENCE

# NEW QUALITY CONTROL SYSTEM AT SALZER PAPIER

With a view to future maintenance costs, St. Pölten-based Austrian papermaker Salzer Papier GmbH decided to replace the old quality control system (QCS) on its PM 1. With the new system from Voith, Salzer will save costs for spare parts and maintenance in the long term.

As quality control systems age, the costs of maintaining them rises significantly as obsolescent parts wear out and become scarce. Worse still, increasing quality control system (QCS) downtime can cause serious and costly production halts

and quality issues. This is why paper producers usually replace their quality control systems after about 15 to 20 years in service. Modern systems offer considerably better measurement resolution, process and paper quality information accessibility and control capabilities. Quite simply, a new QCS can offer a better return on investment (ROI) than an older one that is near the end of its lifecycle.

**Reducing future costs.** Rather than concentrating only on reducing current costs of service, papermakers are now looking at the future costs of maintaining a system. This also plays a key role in the choice of QCS supplier, as it is crucial to long-term cost effectiveness.

For staff at Salzer Papier GmbH, these were precisely the criteria that mattered

when it came to choosing a supplier for the new QCS. The QCS installed on the PM 1 book paper machine in 1988 was scheduled for replacement. Following a technical analysis, the company opted for a QCS from Voith. The new system was installed in early 2011.

According to Thomas Salzer, CEO of the company, Voith's proposal was far superior to that of other vendors. "We looked at the running costs of the new system over a period of four years. The differences in TCO were largely attributable to the direct maintenance costs of the system manufacturers – including local support, telephone help, defined response times and costs for spare parts. In a comparison of TCO for the project, the Voith system ranked very well, even though the initial purchasing cost was not the cheapest."



“It is important to have a partner like Voith that will continue to develop systems technology and remain active in the paper industry for many years to come.”

Thomas Salzer, CEO of Salzer Papier GmbH

#### Facts & figures Salzer Papier PM 1

- + Paper grades: book printing paper (bulky, wood-free uncoated paper)
- + Paper volume: 1.2 to 2.2 times volume (cm<sup>3</sup>/g)
- + Basis weight: 60–220 g/m<sup>2</sup>
- + Production speed: depending on paper grade up to 440 m/min

**Technical and practical benefits.** Salzer Papier staff were impressed by both the technical features and operation of the Voith quality sensors. One example is the fast replacement of sensors via plug-and-play, taking less than a minute. The QCS is designed for simple maintenance by paper mill personnel, so that there is no need for on-site servicing by the manufacturer as was usually the case with previous systems. In addition, the comprehensive diagnostic functions also allow problems to be quickly isolated by Voith personnel. The service contract includes scheduled preventive maintenance operations on site, as well as telephone and remote diagnostic support with a specified reaction time and emergency on call service.

Thomas Salzer emphasizes that the decision was influenced by Voith’s reputation in the paper industry as a leading technology developer and reliable partner. “It is important to have a partner like Voith that will continue to develop system technology and remain

active in the paper industry for many years to come,” he adds.

**Fast, well-executed startup.** The new QCS includes three scanners: one O-frame scanner before the reel with basis weight, moisture, caliper, ash and color sensors, as well as one single-sided scanner with a moisture sensor before the machine calender and one before the size press. In addition, the QCS comprises all MD paper quality controls and CD profile control of an existing actuator system at the headbox. A CD moisturizing profiler after the size press is also included, to regulate the moisture profile at the inlet to the calender. The QCS is linked to the existing process control system, with monitors for operating staff installed in the control room opposite the dryer section. Additional monitors are also provided next to the wet section and in the shift foreman’s office.

The QCS was commissioned quickly and efficiently in January 2011. As Michael Griessler, Project Manager for Automation

at Salzer Papier relates: “The project planning phase incorporated thorough preparation for the actual installation, during which minor problems could then be readily resolved. Even in the first weeks and months of operation of the new system, there was excellent cooperation between Voith and Salzer, which has resulted in the optimized system we have now. Of course there is always room for improvement, but we are looking forward to full optimization of the system with Voith’s support.” //

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THREE NEW PRODUCTS FEATURING VOITH SCREENFIT TECHNOLOGY

# SUCCESSFUL FORMULA FOR EFFICIENT SCREENING

Inferior raw materials and increasing cost pressures have caused a dramatic rise in screening requirements over the past few years. Modern screening systems must provide a high degree of efficiency in a cost-effective manner. It is critical that the screen baskets and rotors work in perfect harmony to assure optimum screening efficiency. As experienced system designers, Voith offers the successful formulas required for all modern screening processes.

01 Final quality inspection of a C-bar screen basket.



Unused process potentials are the most frequent cause of inefficient screening systems. Having several decades of experience with the most varied customer systems, Voith Paper has the specialized knowledge necessary to make use of these potentials. With a product portfolio that spans all stages of the manufacturing process, Voith Paper is in a position to utilize free capacities in the screening process. Included here are both coarse and fine screening within stock preparation, as well as broke screening and screening in the approach flow system. The following products in the area of rotors and screen baskets particularly deserve special attention: the MultiFoil rotors in the Economy series, the EclipseRotor series and the C-bar M slotted screen baskets.

**Optimal ScreenFit Upgrade Kit.** In order to give paper manufacturers a quick overview of the optimal rotor/

screen basket combination for their own operating parameters, Voith has developed the ScreenFit program. In illustrations 05 and 06 on the next page, all possible combinations of Voith screen baskets and rotors are shown. Using this, paper manufacturers can put together a ScreenFit Upgrade Kit tailored to their needs. Voith's recommendation is in each case marked with a blue circle. It stands for excellent screening results with the rotor/screen basket combination shown.

**Online tool creates great feedback.** The recently introduced ScreenFitNavigator is another useful tool for optimizing existing screening systems. The free online benchmark test provides a quick, no-obligation energy assessment of the fine screening system (slot screening) in stock preparation. Only a few weeks after the introduction of the ScreenFitNavigator,

paper manufacturers all over the world used this online tool at [www.ScreenFitNavigator.com](http://www.ScreenFitNavigator.com) for a review of the energy use in their system. After inputting a few parameters and indicating the importance of screening quality to their process, immediate evaluation takes place in the form of a PDF document that is sent via email to the customer. If unused process potential is ascertained, the ScreenFit doctors can then come into play, if required. Taking into account the individual customer objectives, the measures proposed aim at long-term optimization of the screening systems. //

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**02 MultiFoil Rotor Economy series**

Thanks to its unique patented foil blade concept, the new MultiFoil rotor reduces energy consumption up to 15%. This increases efficiency accordingly and enhances wear resistance. The MultiFoil E series rotor can be used in stock preparation for all raw material grades.



**03 EclipseRotor series**

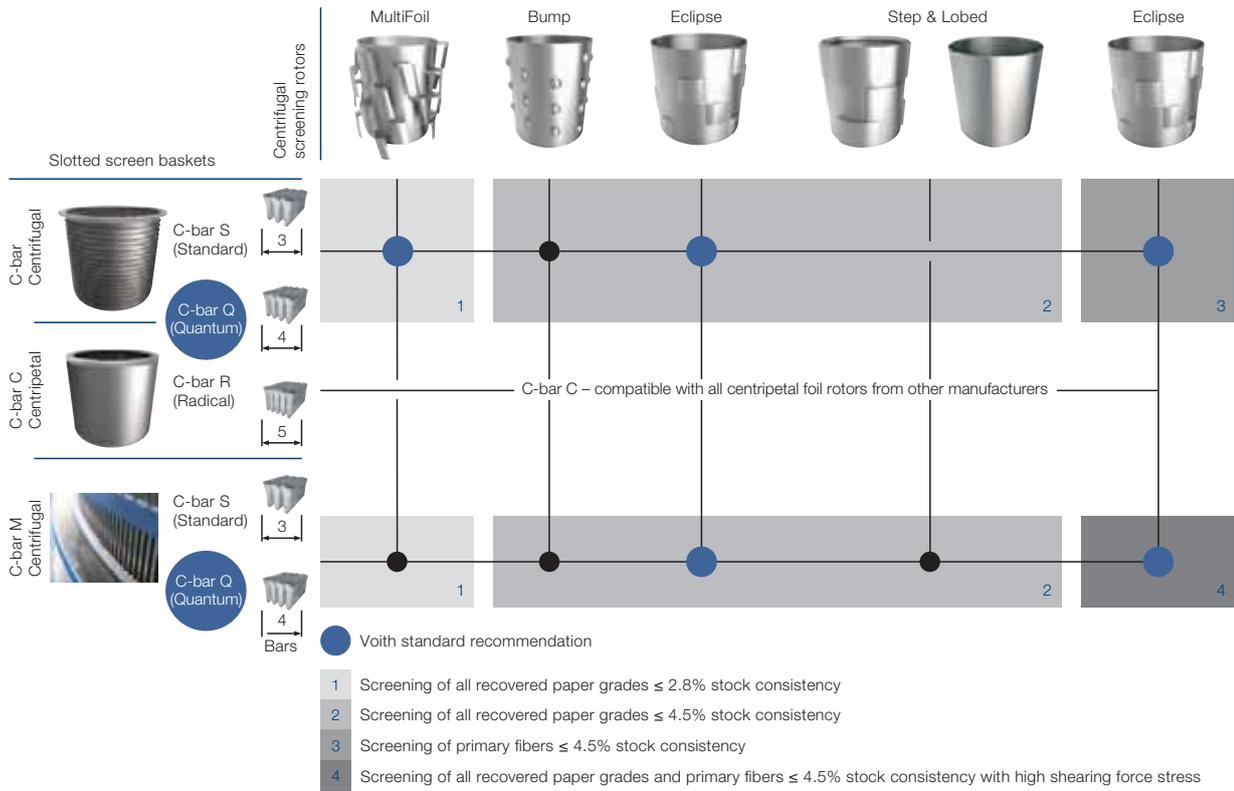
With its novel hydrodynamic foil shape, the EclipseRotor reliably screens heavily contaminated stock in the high-consistency range. The foil creates a uniform pressure and a powerful suction zone that increases production capacity up to 25% and correspondingly lowers energy consumption. The EclipseRotor series is ideal for use in stock preparation of all possible recycled paper and for screening primary pulps.



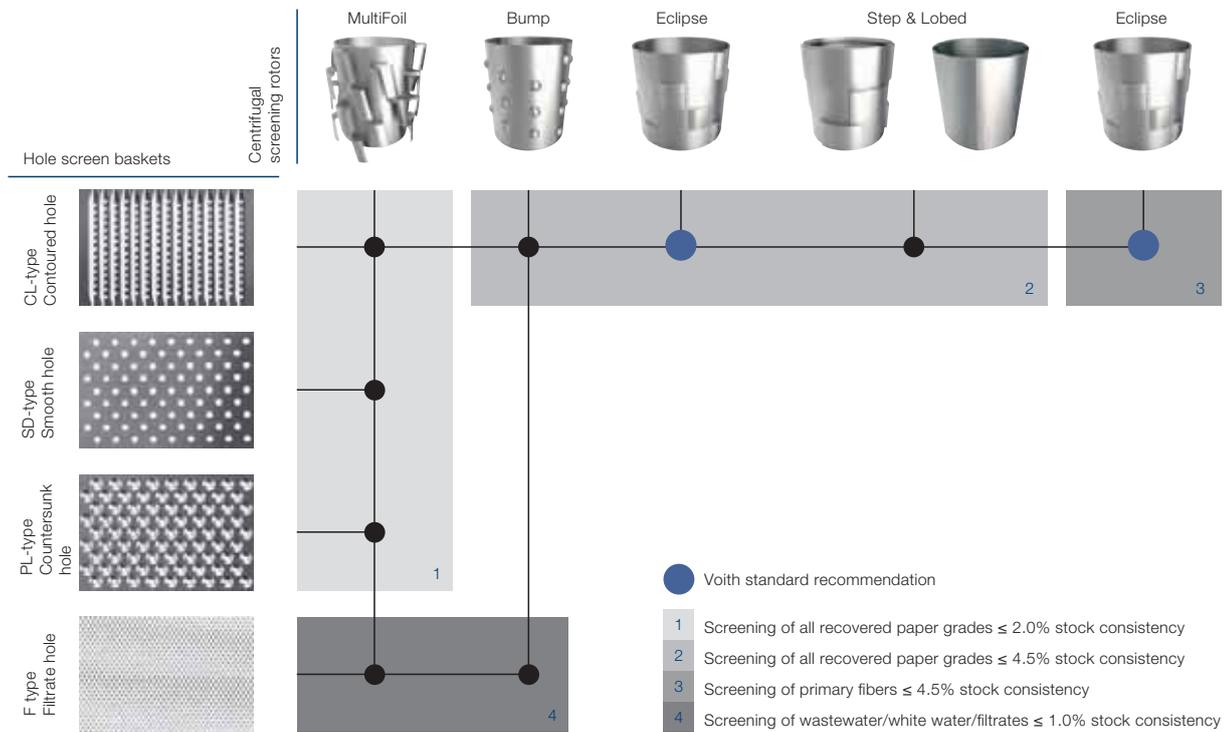
**04 C-bar M slotted screen baskets**

The exceptionally stable C-bar M slotted screen basket has nearly twice as much open screening surface compared to milled slotted screen baskets and was developed specifically for high shearing force stress and high-consistency applications. The C-bar M is suitable as a replacement for conventional weld gap or milled slotted screen baskets and is an alternative to replaceable basket models of other manufacturers in stock preparation and in pulp screening.

05 Portfolio of slotted screen baskets and rotors



06 Portfolio of hole screen baskets and rotors



EARLY FAULT DETECTION USING  
ONV CONDITIONMONITORING

# MONITORING SYSTEM SAVES COSTS

Unplanned paper machine shutdowns and quality fluctuations can cost a papermaker a lot of money. This is why mechanical faults have to be identified during production in good time and their condition monitored, so they can be dealt with promptly. The OnV ConditionMonitoring system can prevent unplanned shutdowns and detect quality variations immediately, and thus save costs.

**01** The switch cabinet is part of the OnV ConditionMonitoring system and contains computers, data recording electronics, voltage supply and the interfaces with the sensor system.

Bearing damage on rolls, gearing, drives and other units, as well as wear and material fatigue on other mechanical components in the production line, can often result in a production outage and poor paper quality. This is where OnV ConditionMonitoring, with its customized range of sensors adapted to machine type and customer requirements, comes into play. The sensors provide processed data from the entire

paper manufacturing process – from stock preparation to finishing. OnV ConditionMonitoring is a professional data logging system with a comprehensive software tool that compiles analyses and diagnoses for production optimization, troubleshooting and maintenance planning. It therefore supplies all important information needed to make the appropriate decisions relating to all aspects of paper production. >



▷ **Numerous benefits.** Thanks to the OnV ConditionMonitoring system, there are fewer unplanned shutdowns and therefore enhanced higher machine availability. Maintenance shutdowns can be better planned and preventive maintenance initiated. This avoids more extensive damage on rolls, their covers and clothing, to bearings or also on the drive train, and as a result prevents high repair costs. Quality fluctuations can also be identified directly online during the production process, assigned to a cause and rectified as quickly as possible.

**Optimal condition monitoring.** The purpose of machine monitoring, which is one module of the OnV ConditionMonitoring system, is to detect bearing damage at an early stage. This is done by installing sensors at a wide range of sections on the paper machine, stock preparation and other machine and auxiliary units in the paper mill. These sensors record the oscillation signals of the respective bearing. The signals are then filtered, digitized and stored in a database. The data on bearing type and the velocity and/or bearing rpm of the machine part can be used to calculate the bearing fault frequencies. These are compared automatically with the measured signal. If a signal changes, it triggers a corresponding alarm. The trends and frequency ranges produced are used to provide definitive information on the type of bearing damage, imbalance, alignment errors and the current damage propagation.

The second module of the Voith OnV ConditionMonitoring system – technology monitoring – complements the bearing monitoring process by providing the papermaker with machine status data that are useful for optimum production.

Due to the high production speeds and quality demands in paper manufacturing, the technology used has to meet stringent requirements. There are a large number of parameters and wide-ranging influences impinging on the machine components used in key processes such as the headbox, press, coater or calender.

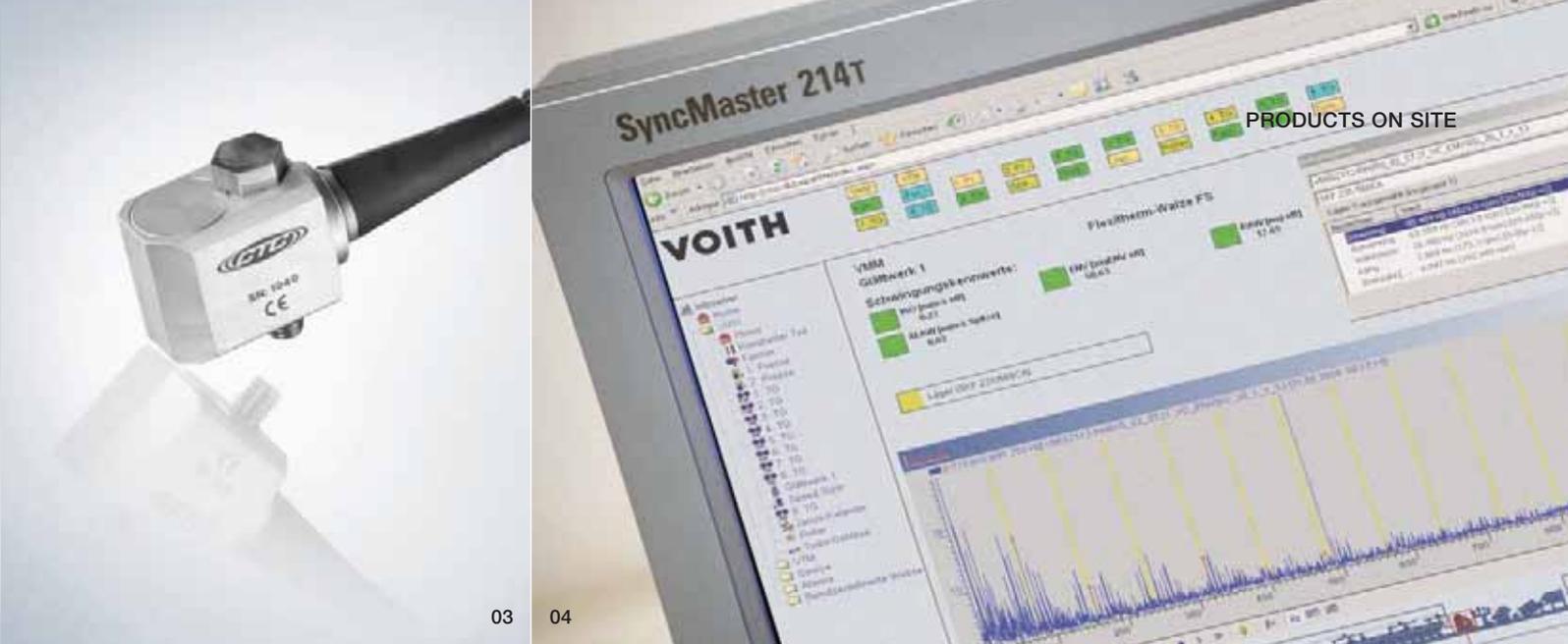
These factors can quickly impair the production process and paper quality itself. In the event of any anomalies such as vibrations or pulsations in the process, the causes are identified in good time by means of synchronous time averaging (STA).

Rapid, periodic fluctuations in basis weight or moisture are also evaluated online and automatically assigned to originators such as the screen separator and headbox pumps in the approach flow system. Measured data thus provide feedback during production and indicate what is causing the malfunctions. This means that there can be a quick response to quality variations, and action can be taken in good time to prevent a greater loss of profit due to quality deficiencies.

**Integrated user interface.** The user interface of the OnV ConditionMonitoring system is web-based. This allows the data to be represented simultaneously at different locations, without having to install additional operator stations. The modular structure of the measuring equipment and sensors allows additional measuring points to be incorporated into the system retrospectively at low cost. More than 2,000 sensors can be connected to a single condition monitoring system, depending on the customer's monitoring requirements.

In addition, a user-defined diagram display can be installed that is fully tailored to customer specifications. This provides a quick overview using an alarm log book and summary pages showing group alarms. The system offers further advantages such as automatic alarms and comprehensive documentation as well as a representation of the damage trend.

Moreover, as a result of additional communication interfaces with drives, lubrication system and extra sensors for measuring temperature, pressure and flow, a comprehensive monitoring system is provided. This means that over the years a wide range of information is collected, allowing fast and accurate error diagnosis.



03 04

If required, customers can opt for a service feature consisting of a comprehensive report with diagnoses and recommendations. Remote maintenance can also be provided.

**Monitoring systems in use.** When building its PM 4 in 2004, the Leipa Georg Leinfelder GmbH paper mill in Germany also opted for a vibration monitoring system. The 78 sensors in the technology module and the 401 sensors included in machine monitoring are used all over the machine from the stock preparation unit to the rewinder station. The system is much appreciated by maintenance and production staff, as it is simple and user-friendly. According to Michael Gebauer, plant engineer for technical diagnostics at Leipa: "Initially we had our doubts as to whether the system would actually be beneficial. But Voith gave us such good support from the very outset that our concerns quickly vanished. The system is simply indispensable for identifying bearing damage or roll barring early on and therefore saving costs."

And Leipa still trusts in OnV ConditionMonitoring, as shown by its 2007 order for the monitoring of special vacuum pumps. This involved installing another 17 measuring points for bearing monitoring.

The Indonesian customer Asia Pulp and Paper (APP) has also shown confidence in the monitoring system. Large paper machines such as Dagang PM 3 (1,200 sensors) and Hainan PM 2 (more than 1,500 measuring points) have already been fitted with the Voith system. The measuring system was also installed at the OMC 2 coater in Dagang which was equipped with 230 sensors and a stock preparation unit with around 170 sensors. The next big project, the Guangxi BM 1, will be installed in 2012 and will use 1,800 sensors. //

**02 The bearings of a paper machine, installed on rolls, pumps, drives and other rotating machine parts are monitored by the OnV Condition-Monitoring system.**

**03 Bearing monitoring of the OnV ConditionMonitoring system provides vibration data of the entire paper manufacturing process.**

**04 The figure shows how damage to a bearing on a Flexitherm roll could be detected in good time using the cumulative trend of oscillation acceleration and a frequency spectrum of the measuring point.**

## Contact



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TISSUE MILL DEWATERS PULP WITH INNOVATIVE DISC FILTER

# HICONBAGLESS – EFFICIENTLY THICKENED

Thanks to the installation of the new HiConBagless disc filter, the AMS Gomà Camps tissue mill in Portugal was able to reduce its use of standard pulp bales. Today's raw material – bleached pulp suspension – is now thickened by the new HiConBagless disc filter and directly transported to the tissue machine's stock preparation unit. The installation saves energy as well as money.



01 New HiConBagless disc filter, installed on the stock tower of the AMS Gomà Camps tissue mill in Vila Velha de Ródão, Portugal.

The AMS Gomà Camps tissue mill in Vila Velha de Ródão, Portugal, was opened in 2009. Primary markets for its products are the Iberian Peninsula, North Africa and the Portuguese-speaking countries of Africa. The centrally situated location in Portugal – close to eucalyptus and pine forest stands – provided direct access to high quality pulp suspension. There was an immediate need for a compact, flexible and reliable machine for dewatering the pulp, which at the same time had to ensure a filtrate quality of under 50 ppm solid content. The new HiConBagless disc filter presented itself as the solution.

Dewatering high freeness virgin pulps using disc filters has always been a challenge. The rapidly dewatering and strongly flocculating virgin pulp makes a safe pulp discharge difficult, whereas severe thickening in the vat might indeed threaten the integrity of the whole

machine. With the introduction of the HiConBagless disc filter, these problems are now a thing of the past.

**Expanded operating window.** The installation of the HiConBagless disc filter allows AMS Gomà Camps a high level of flexibility: Without mechanical alterations to the disc filters, the mill can now vary its production from at least 25 metric tons per day to up to 150 tons per day.

The HiConBagless even handles the switch between the pulp grades of short fiber eucalyptus and long fiber Portuguese pine. Future production increases are also possible so that up to 250 tons per day can be processed. The clear filtrate produced by the disc filter has a solid content of only 20-25 ppm. This filtrate is recycled in order to pick up new, fresh fibers for the tissue machine – and the loop is closed.



“Thanks to the good cooperation with the Voith team, all the installation goals were met on time. Compared to a conventional virgin pulp bales pulping system, the energy savings achieved in processing and pre-thickening of a pulp suspension with the HiConBagless disc filter is approximately 30%.”

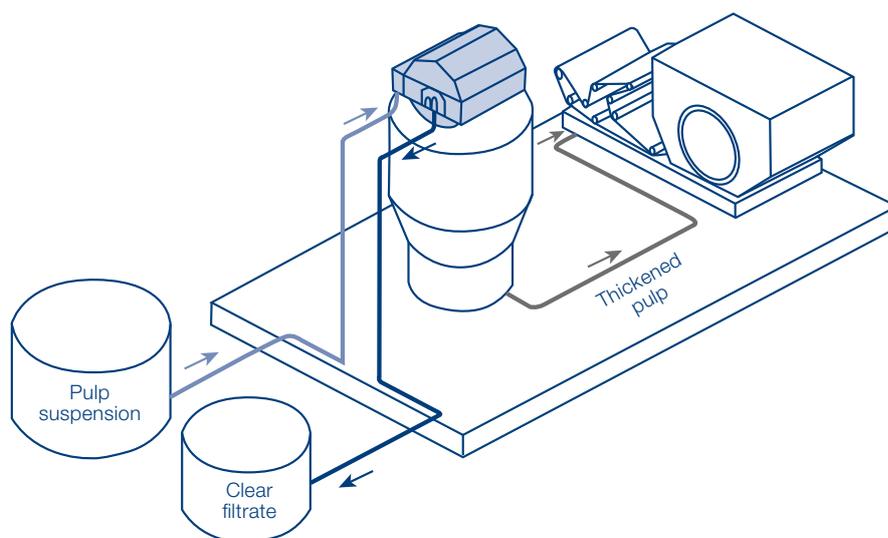
José Miranda, General Manager of AMS Gomà Camps

**Guided discs.** The rugged and unique Voith Bagless discs last longer than any dewatering disc on the market. In the new HiConBagless disc filter, the trouble-free operation of the disc filter is taken a step further by the help of a guiding feature for the Bagless discs. Low-friction guiding blocks located at the periphery of the discs travel through a track in the vat. A collision between sectors and chutes at elevated consistencies in the vat is now avoided at all times.

To enhance the performance of the machine at increased feed consistency, a special HiCon version of the Bagless sectors has been developed. These sectors promote a targeted agitation of the fiber suspension. In combination with the corrugated stainless steel surface of the Bagless, the elevated forces exerted by the pulp do not jeopardize the operating lifetime of discs. The HiCon can also be installed as an upgrade-kit on existing disc filters in combination with the Bagless discs. This is a particularly attractive way to increase capacity of the machine. Up to 30% higher capacity can be reached in some cases. //

## 02 HiConBagless disc filter – mode of operation

The pulp suspension thickened by the new HiConBagless disc filter is transported to the tissue machine. The clear filtrate is fed back into the circuit to pick up new pulp for tissue production.



### Contact



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# NEW CLEANER TECHNOLOGY SAVES 40% IN COSTS



01 The patented, flow-optimized head of the new HiClean (in blue) allows operation at considerably higher stock consistencies.

Poor Cinderella may have had to sort out the good from the bad by hand, but in a paper mill, this job is performed by the stock preparation unit, which removes impurities and recovers usable fibers. In the process, cleaning stages ensure quality in the low stock consistency range. HiClean, Voith Paper's new cleaner, is capable of processing substantially higher stock consistencies at the same level of efficiency.

What is special about the HiClean (HCL5) is its patented, flow-optimized head. In combination with the EcoMizer rejects dilution system, HiClean achieves efficiencies of more than 95% in fine sand removal, even with stock consistencies in the 3% range. In a comparison test, a cleaner without the new head could achieve the same efficiency with a process consistency of only 2%.

The combination of HiClean and EcoMizer has proven ideal not just for new systems but also for upgrading existing cleaners in stock preparation systems. Just adding EcoMizer technology alone allows cost savings of around 25% to be achieved. But the full potential is only realized when combined with the HiClean headpiece. Using both technologies together makes savings in operating and investment costs of up to 40% possible.

There are already two dozen plants with 4,000 individual HiClean model cleaners successfully operating worldwide, including 3,000 in Asia. An excellent example in Europe is the PM 7 at Perlen Papier's paper mill in Switzerland, where the new HiClean cleaners are used in the approach flow system. The higher stock consistency allows a completely new

process mode. The benefits are lower energy costs and greater flexibility with respect to grade changes.

The latest HiClean development also allows the additional removal of lightweight contaminants such as wax and polystyrene, but also air. This new generation model, the HiClean Combi (HCL5-C), successfully went into operation for the first time in the USA in July 2011. //

## Contact



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02 The new HiClean facility in the approach flow system of Perlen Papier's PM 7 in Switzerland results in lower energy costs and enhanced flexibility with respect to grade changes.

NEW DRYER BIDS FAREWELL TO CURL

# CURL IS HISTORY

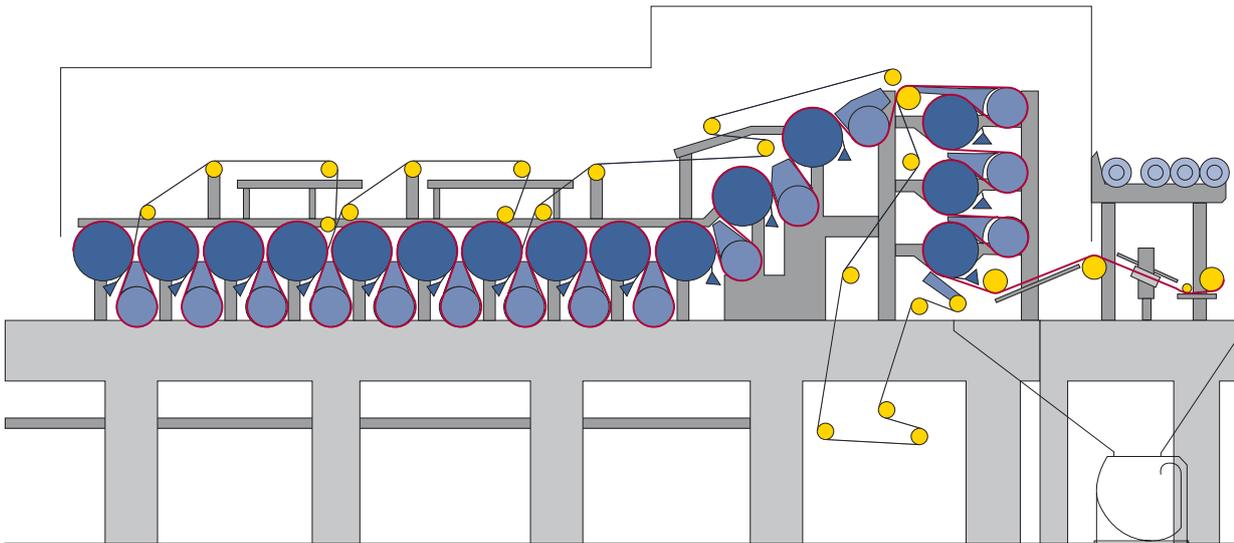
The best inventions are usually the simplest. And this is exactly the case in the fight against curl. The new DuoDry CC reliably reduces curl, saves energy costs and enhances runability. ▶

- ▷ Voith Paper's latest drying concept is the DuoDry CC, with the CC standing for curl control. It effectively reduces the curl that occurs in single-tier dryer sections. While it is not an issue for corrugating medium, it can be a serious problem for testliner, for example. In most cases, curl has to be reduced to prevent difficulties in converting. The means used to do this depend upon the paper grade.

Although a conventional double-tier dryer concept is effective against curl, tail threading can become more challenging as machine speed increases, and runability is impaired. In the event of a web break, it is time consuming and often difficult to remove the paper. As a result, the limits of the double-tier concept are quickly reached.

With the advent of very high-speed machines, single-tier dryer sections were established in the market. In terms of runability, this concept is very reliable, but the paper does tend to curl due to the single-sided drying. The unwanted curl can be counteracted by using a moisturizer, but in terms of energy efficiency it does not make sense to remoisten the dry web if this can be avoided.

**Simple but good.** The basic idea behind the DuoDry CC concept is simple and reliable: a vertically inverted single-tier dryer group installed as the last group. It can replace the usual double-tier curl correction group, thus improving runability thanks to the continuously supported web run.



**01 Lower energy consumption, enhanced runability – the DuoDry CC meets these challenges.**

And not only this, but it can also replace the single-tier dryer group combined with moisturizer and reduce thermal energy. This improves the CO<sub>2</sub> balance and cuts energy costs.

The concept comprises only proven components, such as drying cylinders or web stabilizers. Ropeless threading through the DuoDry CC also functions smoothly. The steam and condensate system is identical to those used in other dryer groups, and no additional heating medium is necessary. Although the DuoDry CC is arranged vertically, it is not higher than the press section, thus ensuring unimpeded crane movement.

The matching hood design was developed in conjunction with Voith Paper Air Systems and takes detailed account of the requirements of machine operators. Basic prerequisites, such as easy access, effective ventilation, and an acceptable climate for operation and maintenance, have been met.

The occupational safety of the operating crew was also a decisive factor in the development of the DuoDry CC. The removal of broke from the pockets of the double-tier dryer group can be very difficult and even dangerous, particularly in the case of very wide paper machines. The new concept eliminates the risk of paper accumulating in the pockets in the event of a web break, with the paper falling safely into the pulper or basement.

**Reduced energy costs and CO<sub>2</sub>.** In paper production, energy efficiency is playing a major and increasingly significant role. Compared with a single-tier dryer group with a moisturizer, valuable thermal energy and CO<sub>2</sub> emissions can be reduced, as the web does not have to be remoistened and dried. The DuoDry CC is powered by steam, the least expensive heating medium. Compared with solutions driven by gas or electricity, this therefore keeps running costs at a much lower level.

The first DuoDry CC will go into commercial operation in the first quarter of 2013 on the Narew PM 5 at Stora Enso's mill in Ostroleka, Poland. //

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RELIABLE ROLL COVERS FOR SIZING AND PIGMENTING

# CONSISTENTLY GOOD QUALITY

A new rubber polymer matrix makes it possible: eVen roll covers are specially developed for applying high-quality pigments and starches in size and film presses. They provide consistent performance and high machine availability.

In field trials the new eVen roll cover demonstrated consistent and reliable runability. In some cases, service life was double that of previous cover materials. Customers have benefited from the physical properties of the new rubber matrix through its improved resistance to tear, abrasion resistance and lower hysteresis, which contributes substantially to reduced paper machine downtime and application quality.

The superior resistance to surface tearing results in consistent paper quality by maintaining sheet profiles. In addition, eVen covers demonstrate a lower risk of thermal barring, which can occur primarily through a combination of speed, cooling and nip load. The result is a longer machine service life and lower running costs. More than 30 field tests have confirmed that eVen roll covers are stronger and

more resistant to impact damages caused by paper wraps after a sheet break and are less sensitive to thermal influences.

Voith designed the eVen roll covers to be flexible, having a wide operating window. eVenFilm is developed for film presses and eVenSize for puddle size presses. The cover can be used for sizing and pigmentation, sometimes on the



01 Voith specialists on site. Paper producers demand high performance from their machines. This means that application know-how and process expertise are key factors in meeting expectations of service life and paper quality.



“We managed to double the roll service life outright, without any grinding.”

Paulo Santos, Superintendent of PM 2, Portucel Soporcel Group

same machine based on paper grade requirements. The unique fillers provide the cover with consistent surface roughness and abrasion resistance ensuring consistent application of the sizing and pigment structure. This could be clearly seen from the field trials where eVen demonstrated that the cover does not tend to swell.

**Extended service life at Soporcel PM 2.** In a recent field test on the PM 2 of paper manufacturer Soporcel in Portugal, eVen roll covers successfully demonstrated their performance in the production of uncoated wood-free paper (copy and offset grades). The roll cover was used at a machine speed of 1,450 m/min and width of 8.60 m. The results clearly demonstrated the benefits of the new covers: improved paper quality and running times that were doubled, due to longer intervals between grinding and a correspondingly lower number of roll changes. “We could immediately double the running time of the roll without grinding,” explains Paulo Santos, the manager of the PM 2, who is satisfied with the performance of the eVenFilm roll cover. In another paper mill, a similar outcome was achieved when producing label paper with a basis weight of 50 g/m<sup>2</sup> at a speed of 950 m/min: Using the eVen roll

cover allowed operating costs to be reduced. In Indonesia too, the new eVenSize was a success on a board machine with a puddle-type sizing press running at a speed of 350 m/min where double life was achieved on a position that traditionally had limitations due to surface tears. The new cover also exhibited excellent resistance to deterioration in this challenging application. Previously, service life had been limited due to surface tears. //

#### The benefits of eVenSize and eVenFilm at a glance

- + Runability of machine:
  - Longer grinding intervals
  - Greater mechanical strength
  - Higher abrasion resistance
- + Consistent performance:
  - Minimal swelling
  - Low hysteresis
  - Stable surface condition
- + Savings in maintenance costs:
  - Longer service life
  - Higher machine efficiency
  - Low maintenance requirement

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01 Screenshot with graphical navigation.



02 Screenshot of a roll tab.

ANYTIME, ANYWHERE ACCESS TO ALL THE ROLL INFORMATION YOU NEED

# ROLL MANAGEMENT MADE EASY

SØNAR provides all available data for all of a paper machine's rolls, right around the clock. From now on, maintenance personnel and papermakers just need a few clicks of the mouse to see the status of their rolls, when the next roll change is scheduled and the scope of servicing required.

Rolls are an indispensable part of a paper machine. They are key components without which the paper machine would not function and whose failure can be very expensive. The greater the number of rolls on a machine, the more difficult it is to keep track of them. This is why documenting the history of the rolls is very important, as it helps those responsible to make the right decisions, which can affect machine efficiency, at the appropriate time. Very often therefore, maintenance or production teams keep separate, manually compiled lists providing information about when a roll was installed, when it has to be changed, the scope of servicing necessary after the change or under what specific circumstances a roll has to be replaced prematurely. However, maintaining these separate lists is not only time consuming, they are often not available to everyone involved and so it is easy to lose track – and this is precisely where SØNAR comes in.

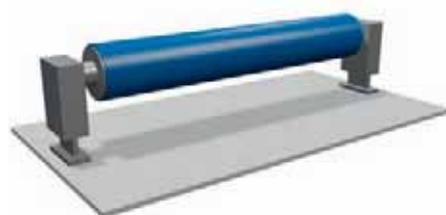
SØNAR is a roll management software program, a database providing roll data around the clock in a readily accessible framework. The papermakers themselves enter the data into the system. It then only takes a few clicks of the mouse to determine, for example, whether a sizing press roll will soon need to be re-covered,

or if and when a wire guide roll requires a service. SØNAR can be used by all customers, regardless of the number of rolls installed on their machines. They simply log on with user name and selected password to access the machine via an encrypted Internet connection. Its graphical user interface makes SØNAR very easy to operate, as the user navigates through the machine by means of symbols. The navigation process is very simple, moving through the entire machine to the specific section and from there to the individual roll position or installed roll (Fig. 1).

**Status at a glance.** It is possible to see at a glance whether a roll is installed, in service or currently available for use (Fig. 3). General information such as year of construction, potential operating locations and spare rolls available for this location, is provided for every roll. In addition, the system provides details of roll length and diameter as well as residual cover thickness in the case of covered rolls. Scheduled running times, roll change and servicing dates can be input for each roll, thus allowing a downtime schedule to be compiled, for example. This option helps those responsible to optimally schedule downtimes and coordinate them with the targeted roll running times. At a glance, it is ▷

## 03 Roll status at a glance

Installed



In service



Ready for use



▷ possible to schedule a roll change, reserve the crew needed for it and inform the respective service center if necessary. Specific details for each roll can be saved in comment fields, with around 300 data fields available for each roll (Fig. 2).

**All logs and reports included.** The roll histories are also enormously important to Voith's service specialists. The ready availability and coherent structure of the roll data help them provide a good service. For example, weak points in a roll can be identified and rectified. For preventive maintenance in particular, the roll history is very important. Voith also offers the option of having all data resulting from the roll service saved in that particular roll history. Grinding and balancing reports, spare parts lists and drawings are also included with the roll data as well as detailed service logs. This allows customers to easily keep a complete track of all servicing operations performed on a roll. In addition, it is easier and quicker to exchange various documents. Thanks to SØNAR, all relevant documents for each roll are available at all times in one location and from a standardized and readily

comprehensible system. The program therefore offers a complete range of options for easy management of the complete roll inventory – for all machines and all roll types.

**Available as an app for smartphones and tablet PCs.** SØNAR is not just available as an online version, but also comes as an app for smartphones (Fig. 4) and tablet PCs. As with the conventional Internet version, the customer logs on with a user name and password. In the app, the menu interface has been adapted for typical intuitive app navigation. This allows a quick glance at the most important data. Moreover, the SØNAR app is also available offline. This is necessary due to the poor reception frequently found at paper machines. The app can be used by customers to view and modify data. As soon as reception improves again, the app automatically synchronizes with the database.

Furthermore, the option of fitting the rolls with RFID chips is already available. Via an RFID antenna plugged into the smartphone or tablet PC, the SØNAR app can then use digital information to clearly identify the available rolls. This means that it takes just one click to immediately retrieve the respective data for the selected roll. This system offers the customer the additional advantage of associating the standard RFID with its own applications such as a maintenance management program. //

### Benefits at a glance

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- + Comprehensive roll management tool
- + Intuitive GUI
- + Available in multiple languages (English, German, French, Spanish, Polish)
- + No more scattered lists stored in different places; everyone has the same information status
- + Overview of the history of all rolls on a machine
- + All reports and measurements for the respective roll
- + Fast access to planned roll running times
- + Simple planning of roll changes and servicing
- + Overview of residual cover thicknesses, important for maintenance budget planning
- + Available at all times: online and also offline as an app
- + Expansion capability, e.g., SØNAR app and RFID identification

### Info: Radio Frequency Identification

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RFID (Radio Frequency Identification) is a wireless process for identifying products or objects. The exchange of data over certain distances is based on a non-contacting, electronic wireless signal communication. The system consists of a data carrier (known as an RFID tag), an antenna and a read/write device. Major advantage: The RFID tag does not have to be directly in the line of sight of the reading device, and readability is not affected even by severe contamination.

### Contact

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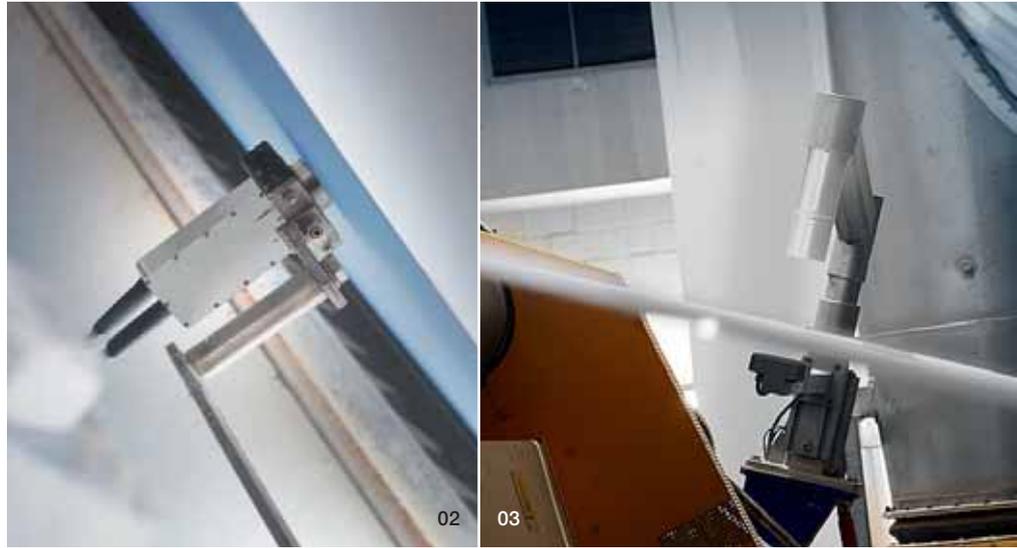
04 SØNAR app for smartphones.

SENSORS BRING TRANSPARENCY TO CHEMICAL AND PHYSICAL DATA

# HIGHER PROCESS STABILITY, FEWER CHEMICALS

Many manufacturers would like to have greater clarity than they do at present in monitoring levels of dissolved substances in the paper machine wet end. Because the consequences of inadequate laboratory data are greater levels of broke and costly overdosing of chemicals. But now there is a solution: the new Advanced CT Control System. Its Online CT Diagnostics module continuously monitors the precise chemical and technical status of all processes in the wet end and provides data for automatic control of individual sub-processes. This therefore allows the addition of chemicals in real time to be improved and significantly reduced. ▶





**Jörg Michel,**  
Member of the Board  
of Management of  
Perlen Papier AG

“We would never have thought that the interaction between the CT sensors could be so consistent and reliable. But we have been totally convinced by the online CT diagnostics, which represent an ideal addition to the Integrated EcoMill.”

In a situation where a machine may have been stopped for an hour due to a web break, there are a number of questions to be answered prior to restarting the process. For example, how much anti-foaming agent is now necessary for the next few hours? How much fixing agent will be needed at short notice in the higher amount of broke? How many bacteria have been generated in the vats in the meantime, to what extent has the pH value been lowered and how much oxygen consumed? How quickly does the stock now need to be processed to avoid discoloration? It is not just in these situations that the chemical and physical baseline values have to be available during the production process itself so as to adjust chemical feed in real time. This is equally crucial when using recovered paper and in the event of grade and grammage changes.

The new Advanced CT Control System is the answer. As the latest component of the Integrated EcoMill (IEM), it provides a new basis for chemical feeding: a demand-driven dosing using accurate readings instead of approximate empirical values. To do so, the online CT diagnostics module continuously measures the current values of individual chemical and physical parameters in the paper machine wet end and represents them in a readily comprehensible format. As a result, paper producers obtain data that would take 120 man-years if collected manually by laboratory personnel.

On the basis of the transparent measured values, the amount of chemicals used can be adjusted immediately to fit the process. This not only avoids incorrect dosing of chemicals, but also prevents the production of broke. By adapting the chemical feed to the respective baseline values, considerable amounts of chemicals can often be saved, protecting the environment and reducing costs as a result. At the same time, the quality of the paper improves thanks to consistent process parameters.

**For the first time, future process characteristics can be predicted.** But the new analysis system offers even more. Apart from the current status, it also shows the situation from four hours ago and the likely process characteristics in four hours' time. To do so, it calculates future development based on the previous pattern and deduces the process water quality from the corresponding chemical and physical values. To this end, Voith quantitatively recorded several hundred measured values and correlated them with the corresponding paper quality. This sophisticated forecasting technology is unique to date and allows the timely adjustment of chemicals. In addition, the online CT diagnostics store the data for a period of one year so that subsequent complaints about paper quality can be processed and dealt with more easily.



02-04

Seamless sensor integration:  
OnQ FormingSens,  
OnV FlocSpotter and  
OnC ConSens 700  
(left to right).

The seamless integration of a large number of established CT sensors into the existing mill data network suitable for industrial use supplies measured data for control purposes around the clock. At Perlen Papier AG, a large European papermaker, the sensors have been in operation for approximately one year. “We would never have thought that the interaction between the CT sensors could be so consistent and reliable,” says Jörg Michel, member of the Board of Management of Perlen Papier AG, Switzerland. “But we have been totally convinced by the online CT diagnostics, which represent an ideal addition to the Integrated EcoMill.”

**Ideas for the paper mill of the future.** The Integrated EcoMill is Voith’s holistic concept for an economic and ecologically compatible paper mill, in which all relevant sub-processes inside and outside the paper mill are integrated to save resources and reduce costs. This approach also includes the entire fiber, energy and water systems. The Advanced CT Control System is the latest component of the IEM. Using real-time measurements and stored process data it determines trends, allowing events caused by chemical and technological influences to be accurately predicted for the first time. This enables paper manufacturers to avoid problems before they occur and to intervene in the process without waiting on laboratory results, or to have this done by controllers specially developed by Voith for the system. In the unlikely event of problems, Voith offers comprehensive support for all systems from a single source, including remote maintenance.

These services are complemented by CT Service, individual system analysis of the chemical system and advice on how to use it efficiently. In addition, Voith’s FlowJec system offers a high-performance, system-compatible dosing device. “Thanks to FlowJec and CT Service, our sheet formation has improved. At times we can save up to 10% retention agent and improve PM uptime,” explains Jochem Meier, Head of Production at Smurfit Kappa Zülpich Papier, Germany. And he goes on: “In an integrated paper mill it is extremely important to use optimal chemical mixing with a reliable dosing technology. This allows the additives in the approach flow system to deliver the required results and prevents them from causing picking in a downstream machine section such as the dryer section.”

Voith is working systematically on expanding the systems and on fundamental issues of chemical use. In future, for example, controllers that are even better coordinated with one another should be available and will automatically add the ideal amount of chemicals – yet another step towards efficient and sustainable paper production. //



**Jochem Meier,**  
Head of Production  
at Smurfit Kappa  
Zülpich Papier

“Thanks to FlowJec and CT Service, our sheet formation has improved. At times we can save up to 10% retention agent and improve PM uptime.”

#### Contact



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NEW ROLL COATINGS FOR THE DRYER SECTION

# HARD AGAINST DIRT

Higher productivity and less downtime? New roll coatings from Voith move papermakers one step closer to this target. Newly developed coatings for cylinders, guide and vacuum rolls in the dryer group minimize dirt deposits, improve corrosion and wear resistance. In addition, these new coatings can be applied directly inside the paper machine.

Dirt, stickies, slime deposits and chemical fall out can have a negative effect on machine efficiency from within the dryer section. Contamination of rolls and dryer fabrics continually harm the roll surfaces during operation. Rising demands in productivity, higher machine speeds, a larger variety of chemical additives and lower quality of raw material require improved roll surfaces. Cleaning devices can also have a strong influence on the corrosion of rolls. The move towards shorter first dryer groups and the use of harder particles such as sand in the pulp necessitates the need for better wear resistance of the roll surface.

**Repellent and resistant.** The coating experts from Voith have developed a new generation of coatings for guide rolls and drying cylinders. Their work has focused on evaluating all the influencing variables to combine properties such as dirt repellence, wear resistance and corrosion protection into the correct ratio. Each coating characteristic has to be adapted to the respective requirements of the dryer fabrics and cleaning systems.

Together with external scientific support, Voith Paper has developed a method for investigating the interaction between roll surfaces and stickies, dirt, dust, glue and starch. In contrast to other materials and

methods, the new coatings can then be tailored to the special requirements of the paper industry.

On completion of the development stages, preliminary field trials were introduced on demanding applications with selected customers. The results achieved higher levels of coating performance than in laboratory tests.

The interaction between release forces and surface energy clearly shows that an

improved “anti-stick” performance can be achieved compared to existing products in the market. In addition, the successful trials demonstrated that a higher wear resistance could be realized with the unique Voith coating system.

**Roll coating inside the paper machine.** Another main target was to apply the coatings directly inside the paper machine – since the disassembly of dryer cylinders and the associated downtime normally incurs enormous costs and loss in



01 The new coatings stand for corrosion prevention and contamination resistance.

production. The new coatings can be applied on site by a skilled service team to significantly reduce the time needed for a machine shutdown (“Express” in product name). In order to achieve this goal, the method of application has upgraded to avoid a high temperature treatment in an expensive oven, so coatings can be applied at lower temperatures without affecting its performance (Figure 02). Those machines having temperature sensitive materials, such as carbon fiber reinforced roll bodies, can also benefit from this new method of coating.

The new roll coatings will be available in the beginning of 2012. //

**Info: The Terra coating family is now available for cylinders and rolls in the dryer group**

In response to customer feedback, Voith Paper is introducing a generic name for all coatings in the dryer section of a paper machine. The established hard coatings in the press and calender sections (TerraSpeed and TerraGloss) form the basis of the new “Terra Family” for cylinder and rolls in the drying section incorporating the thermal spray coating processes. The Terra family name is also used for the demanding on-site coatings of Yankee and MG cylinders.

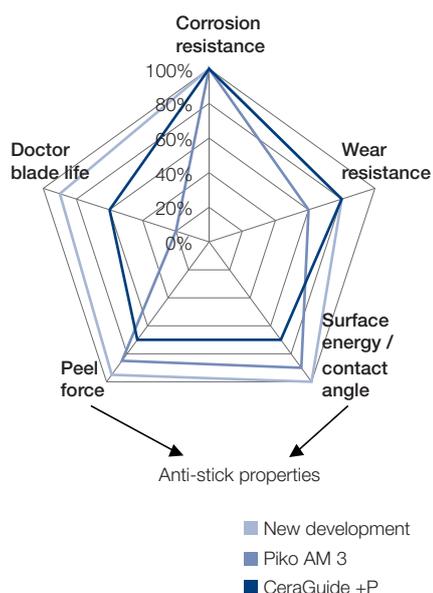
The product naming and description is included in Table 03. The new developments as described are part of the Terra range, which contain a thermal spray coating base, and according to the location and the respective position of installation, best fit to the existing requirement.

**Contact**



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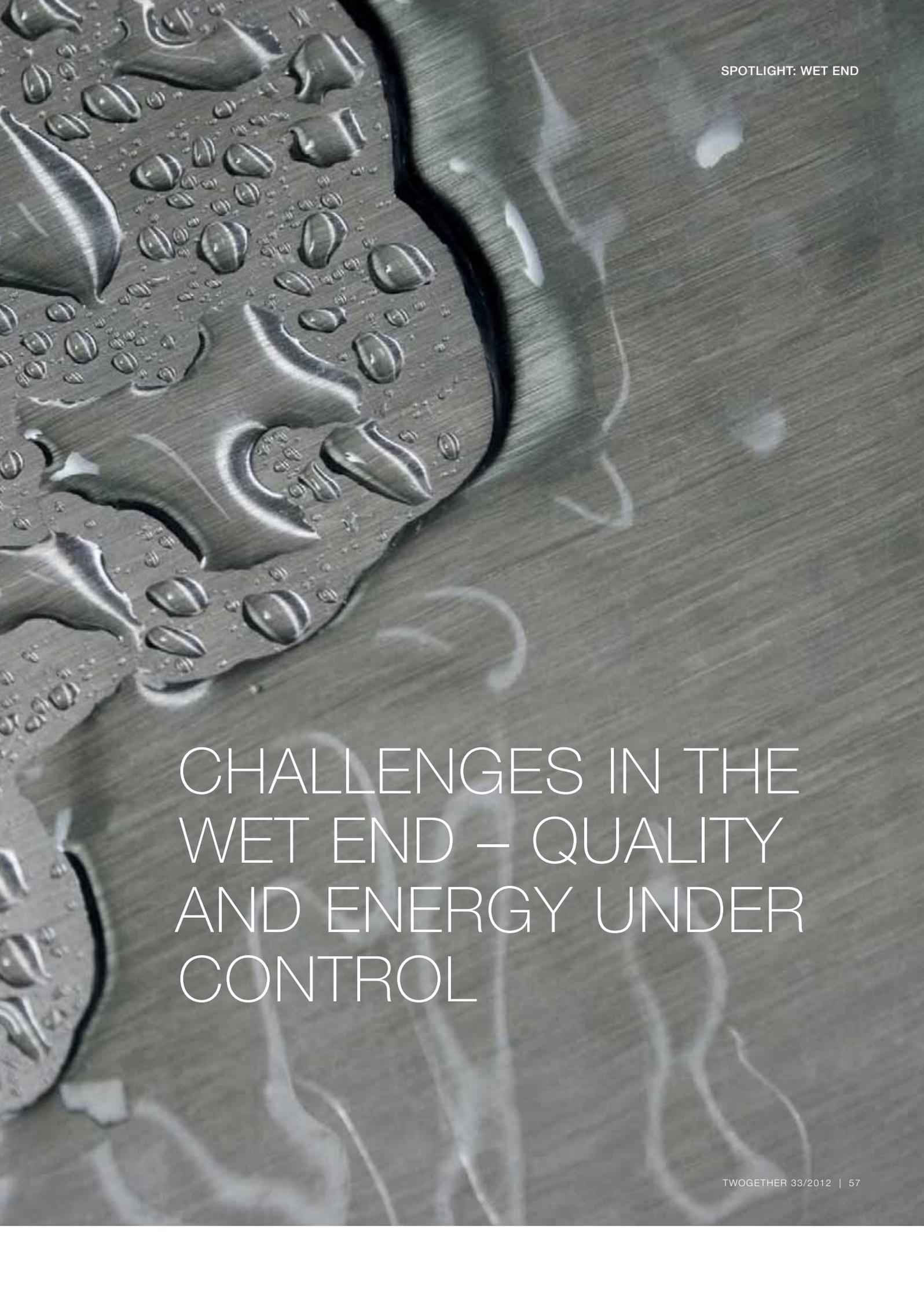
**02 Comparison of the characteristics of the new roll coating with standard versions**



**03 New Terra coating family**

Application	Coating property	New coating name
Fabric guide roll	Dirt repelling Exceptional dirt repellency	TerraDry G / TerraDry G Express TerraDry GR / TerraDry GR Express
Paper side stretch roll	Dirt collecting	TerraStick
Paper guide roll	Dirt repelling Exceptional dirt repellency	TerraDry PG / TerraDry PG Express TerraDry PR / TerraDry PR Express
Cylinder	Dirt repelling Exceptional dirt repellency and toughness	TerraDry C / TerraDry C Express TerraDry CT / TerraDry CT Express
Stabilizer rolls	Wear and corrosion resistance	TerraDry V / TerraDry V Express
Yankee	High wear resistance Improved wear resistance Improved wear resistance & thermal conductivity	TerraDry HC Express TerraDry HC+ Express TerraDry LL Express
MG cylinder	Improved glazing surface	TerraDry MG Express





CHALLENGES IN THE  
WET END – QUALITY  
AND ENERGY UNDER  
CONTROL

### Info: I-Series forming fabrics

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I-Series forming fabrics were presented for the first time in twogether magazine in 2009 and were launched on the market as PrintForm IS and PrintForm IT. In 2010, issue 31 of the magazine then introduced MultiForm IC, the forming fabric for board and packaging papers.

The high-shaft weaving technology developed by Voith has so far been used exclusively in SSB standard fabrics with a 1:1 warp ratio, such as PrintForm HQ. The article "High-shaft technology – a weaving innovation breaks new ground in forming fabric design," which appeared in twogether issue 21 in 2006, provided a detailed description of this technology.

HIGH-SHAFT WEAVING TECHNOLOGY FOR I-SERIES FORMING FABRICS

## IDEAL SUPPORT

The new PrintForm IQ forming fabric combines two technologies – high-shaft weaving and a 3:2 warp ratio – to create a new member of the I-Series product family. High stability, fineness and dewatering performance are familiar requirements from previous forming fabric developments. The innovation in PrintForm IQ is that these features are now combined for the first time without having to make compromises. As a result, savings of more than 150,000 euros per year are possible.

The I-Series is based on the proven warp ratio of 3:2 (three top side to two bottom side). The ratio of warp thread diameters is therefore greater than in the usual 1:1 ratio. This makes the combination of an even finer paper side and a more stable wear side possible. The finer paper side helps to improve mechanical retention and sheet formation, while the stable wear side ensures better CD profiles. In addition, the high-shaft weaving technology used in PrintForm IQ offers a proliferation of binding options. With more than 50 shafts, it has more than double the number of shafts required to produce standard SSB fabrics. This allows for a binding system that can use discontinuous diagonal patterns, for example, which reduces the marking tendency of fabric designs.

Because PrintForm IQ uses the benefits of both technologies it offers much higher fiber support, leading to better mechanical retention and more uniform sheet formation. The main area of application for PrintForm IQ is in paper machines with very high quality requirements and/or high machine speeds. In a product comparison with standard fabrics, PrintForm IQ is considerably thinner and features 25% more fiber support points.

Results from paper machines show that PrintForm IQ has a higher initial dewatering capacity for wood-free paper grades. In several trials on the pilot machine with a TQv former, a PrintForm IQ was used that was denser than the reference fabric. The test program covered a wide operating window with basis weights of 40 g/m<sup>2</sup> to 110 g/m<sup>2</sup> in the mid- to high-speed range. Tests were conducted with extensive variations in former settings, ranging from headbox volume through various vacuum settings to different former strip pressures. This enabled dewatering behavior and thus the operating window of specific fabric pairs to be analyzed and defined.

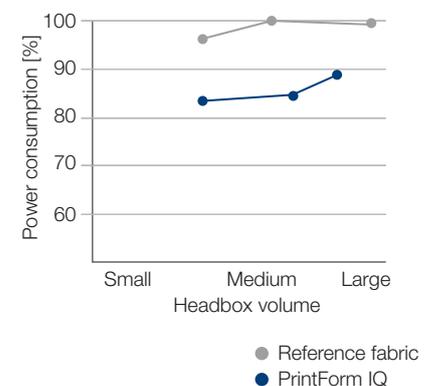
Thanks to its denser design, PrintForm IQ achieved a controlled dewatering. Apart from excellent paper quality parameters, such as formation, MD/CD tensile ratio and lower susceptibility to marking, the new fabric also allowed energy consumption to be reduced. At the same headbox volume setting, power consumption could be lowered by up to 15% using PrintForm IQ. In a modern production plant running at 1,600 m/min, this reduction represents savings of more than 150,000 euros per year. //

### Benefits at a glance

- + High fabric stability for good CD profiles
- + High level of fiber support
- + Very good dewatering performance
- + Less marking on paper
- + High mechanical retention
- + Improved sheet formation
- + Good MD/CD tensile ratio
- + Lower power consumption

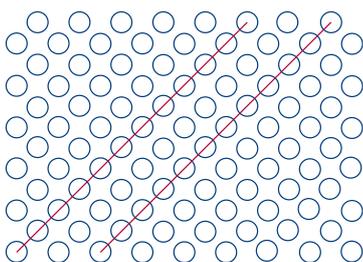
### 03 Power consumption of drives at various headbox volumes

Process parameters identical

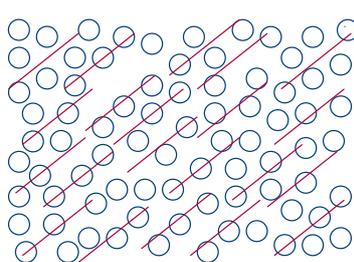


### 02 Discontinuous diagonals prevent marking in paper

Continuous weave pattern



Discontinuous weave pattern



### Contact



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AN IDEAL COMBINATION: ONQ FORMINGSSENS AND PRINTFORM HR

# HIGHER QUALITY PLUS ENERGY SAVINGS

A familiar scenario: moisture fluctuations downstream of the former, and as a result, problems in the press. What is the answer? The folding box board producer Mayr-Melnhof Karton AG (MM) worked with Voith to find the ideal solution for its plant in Neuss, Germany. Two OnQ FormingSens units and four PrintForm HR forming fabrics are now giving improved board quality on the BM 5. In addition, installing these products allowed the required drive output in the forming section to be reduced by 13%. This alone represents a cost saving of 87,000 euros per year.

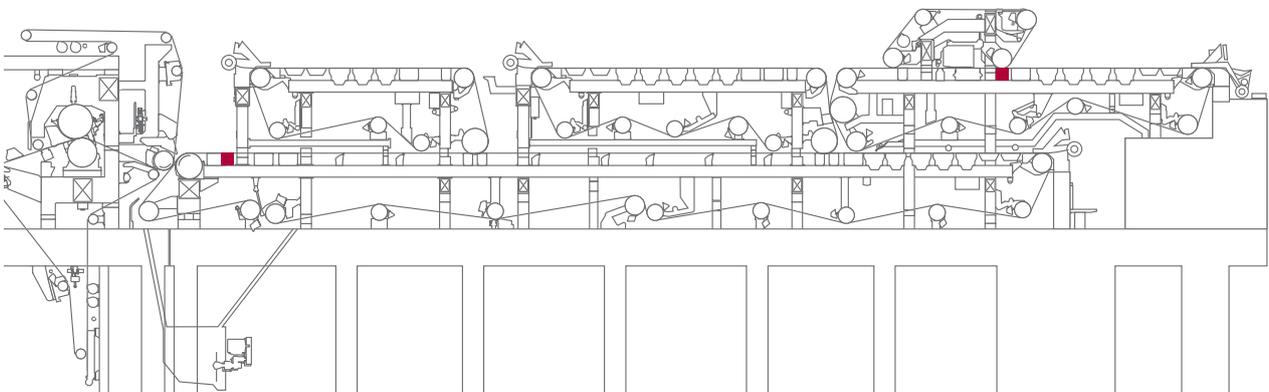
Following a successful startup of the two OnQ FormingSens sensors upstream of the DuoFormer D and suction couch roll, and of the four PrintForm HR forming fabrics, MM and Voith's forming specialists jointly carried out a series of tests, including adjusting the vacuum at various dewatering elements. The aim was to improve board quality and reduce drive power, while maintaining the dry content. The results of all tests were impressive:

- + Output of main drives reduced by 180 kW, equivalent to a cost saving of 87,000 euros/year
- + Dry content downstream of former increased by 1%
- + Formation improved by 7.5%
- + Bursting strength increased by 5%
- + Tensile strength improved by 7% in MD and 2% in CD
- + Reduced fabric wear
- + ROI in less than six months

The tests focused on dewatering of the filler ply and back ply, as this is where the highest absolute water content is introduced to the board. Consequently, these areas have the greatest potential to reduce energy consumption and improve quality. One quality parameter that is particularly significant is board formation. The formation of the filler ply has a decisive impact on the formation of the entire board, so the decision was made to install an

## 01 Multiply board and packaging machine with two OnQ FormingSens sensors

OnQ FormingSens sensors shown as red squares





“Thanks to the new sensors and forming wires from Voith, we were able to improve our board quality even further and at the same time save costs and energy.”

Dieter Garztecki, Production Manager BM 5 in Neuss, Mayr-Melnhof Karton

OnQ FormingSens there, before entry to the DuoFormer D unit.

In an initial test, the vacuum in the crucial dewatering elements in the back ply was reduced by 15% on average. In the case of the filler ply, the flat suction box was switched off altogether and the vacuum in the OrthoFlow suction box reduced by 50%. Dry content was consistent during this test. The underliner was then included in a second test. In this case the relevant vacuum levels could be reduced by 30% on average with a constant dry content.

**Two sensors for optimum results.** As every forming wire has different features, repeated resetting is always necessary in order to achieve consistent results. In addition, it takes time to achieve an accurate alignment of all dewatering elements. Thanks to real-time measurement of dry content by the OnQ FormingSens sensor, operating personnel can accurately set and

control the former. A complex forming section with a very large number of dewatering elements always needs at least two sensors to optimize individual dewatering elements and control the entire dewatering performance. OnQ FormingSens has a very compact design, allowing the sensor to be positioned at almost any location in the former.

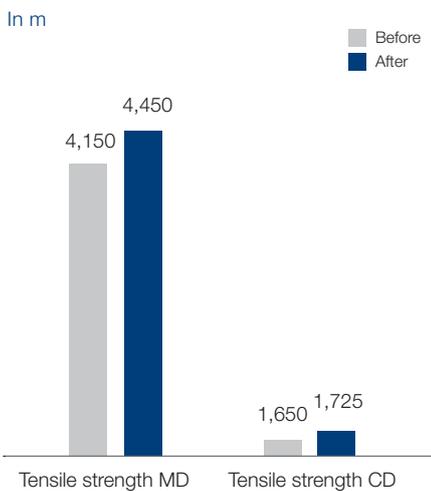
**Other applications successfully mastered.** At Koehler Kehl GmbH, Germany, OnQ FormingSens was installed downstream of the HiVac, the last dewatering element on the PM 2 thermal paper machine. By reducing the vacuum at a relatively early dewatering element – in this case the wet suction box – the water weight at the end of the former could be reduced. A lower water weight means a higher dry content, and in this case a higher production speed. By reducing the vacuum at the wet

suction box by 20%, the dry content at the end of the former could be increased by 0.4%. This reduced the required drive output and the amount of wear on the forming fabric.

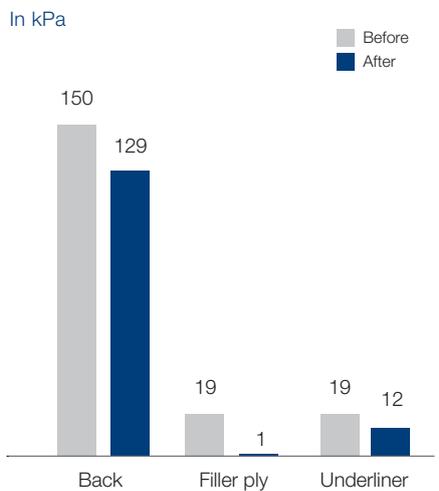
**Perfect product combination.** By using OnQ FormingSens units and PrintForm HR forming fabrics, Voith was able to offer its clients an ideal solution from a single source. The customers benefitted from having just one point of contact and enjoyed further advantages as a result of Voith’s combined process expertise in clothing and automation:

- + Improved dewatering
- + Less maintenance and wear
- + Improved formation
- + Higher strength qualities
- + Better couching of multi-ply board
- + Reduced power consumption of vacuum pumps and drives
- + Enhanced occupational safety //

## 02 Tensile strength before and after optimizing vacuum elements



## 03 Vacuum reduction at various dewatering elements



## Contact



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01 There will be no need for these dangerous manual measurements in the future thanks to Voith online measuring devices.

RISK-FREE ONLINE MEASUREMENTS IN THE WET END

# IMPROVED SAFETY ON THE PAPER MACHINE

Safety of personnel is a critical element for all paper mills. When performing technical services on a paper machine, field personnel are exposed to a dangerous and sometimes unfamiliar environment. Online measurement systems from Voith eliminate this risk.

Above all, service work on running paper machines often holds real potential risk including measurement procedures in all sections. The existing procedure is in many cases manual and exposes the service representative to real danger. For this reason, Voith has developed online measurement systems that greatly reduce the risk of accidents, as they eliminate the need for manual measurement in the machine. Examples of this are OnQ FormingSens and OnV FeltView as well as the newly-developed ProTect, a self-traversing carriage.

**Precise water weight measurement.** The OnQ FormingSens sensor is equipped with high-frequency microwave sensor technology and measures the water weight online in the former

with the highest accuracy. Manual measurements are no longer necessary and the safety risk for the service personnel is practically eliminated. Radioactive sources, such as those used in many manual measuring devices, are not required with OnQ FormingSens. With the continuous data supply, the sensor is ideal for optimizing the dewatering performance and energy consumption in the former.

**Dewatering in the press section in view.** The OnV FeltView analysis system is suitable for continuous online measurement of fabric moisture and permeability of press section clothing. OnV FeltView also eliminates the need for manual measurements, a great benefit especially on fast-running machines. Continuous measurement supplies

valuable data in order to map dewatering in the press section and to optimize it accordingly.

**Press felt measurements with self-sufficient carriage.** Thanks to the new development ProTect, the safety of online measurements can be increased noticeably in the future. The system allows automated press felt measurements without service personnel having to enter the danger zone of the paper machine during operation. ProTect essentially consists of a self-traversing, self-sufficient carriage, into which measuring devices can be inserted outside of the fabric run. The system is operated by simply pressing a button; no more manual measurements. With the new ProTect system, fabric measurements will be possible at inaccessible places and without safety risks for the service personnel.

After the successful series of tests at the Voith Paper Technology Center (PTC), a prototype of the ProTect system is currently undergoing field trials. The system is expected to be available to the market mid 2012. //

## Contact



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INCREASE IN PRODUCTIVITY WITH BEST QUALITY

# COMPRESSPLUS CREATES ADDED VALUE

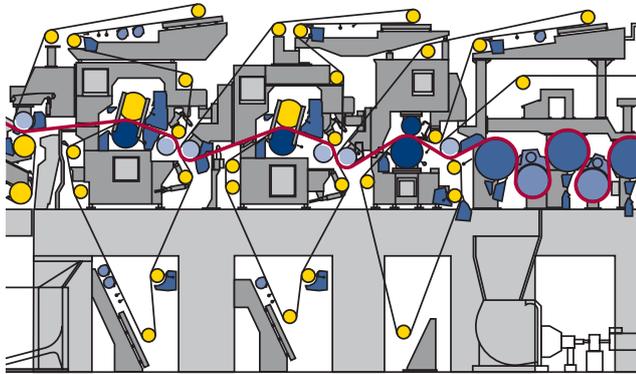
The CompressPlus press concept developed at the Paper Technology Center (PTC) allows a machine speed that is up to 150 m/min higher without any loss of quality compared to conventional concepts. The highest dry content is achieved, not least because the clothing is specifically designed for use with the concept. ▶



01–02 From the PTC into the PM: prototype on the pilot paper machine (left), the first customer installation in Asia (right).

03 CompressPlus press

Schematic layout of the new press concept



Coated paper has to meet the highest quality requirements. The use of high-end graphic grades on the one hand requires very good optical characteristics such as brightness and whiteness; on the other hand, great importance is attached to surface quality, i.e., smoothness, gloss and uniform densification. As a consequence, the characteristics of the base paper come into focus, since defects – e.g., cratering – cannot be completely eliminated in subsequent process steps (e.g., pre-calendering, coating and/or calendering).

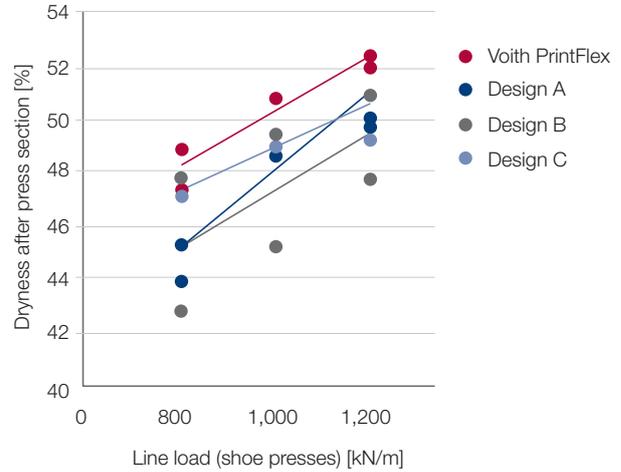
The press concept newly developed by Voith, in which the paper web is continuously supported by clothing from the forming section to the pre-dryer section, allows production of this high-quality paper at high speed while significantly reducing the frequency of breaks.

**High speed with closed draw web run.** Efficient operation of a paper machine at high speed requires high dry content and a completely supported web run in the press and dryer section. Presses that are state of the art, such as many well-used and proven newsprint paper machines, do indeed deliver high dry contents but have the disadvantage that the base paper quality – in particular, the surface quality – does not reach the highest quality level. Illustration 03 shows the schematic layout of the new press concept.

The first and the second press nip are designed as NipcoFlex shoe presses, double-felted. Two top felts and two bottom felts symmetrically dewater the web and achieve the highest dry

04 Comparison of felt sets on the PM: Dryness after press as a function of line load

Increase in dryness compared with standard clothing



content. The maximum possible press loads and shoe lengths (press impulses) are individually determined from application to application.

The third and last press nip is formed by a roll press with a special top felt and a transfer belt. In complete contrast to a conventional offset press or a straight-through press, the web is continuously supported in the press. By means of felt suction rolls and a patented guiding of the web, a trouble-free web run is thus ensured over a large basis weight range. The pressure profile of the roll press, the particular surface structure of the last top felt and the smooth transfer belt, mean a very good initial surface is created and the compaction is uniformly increased. CompressPlus – it’s all in the name.

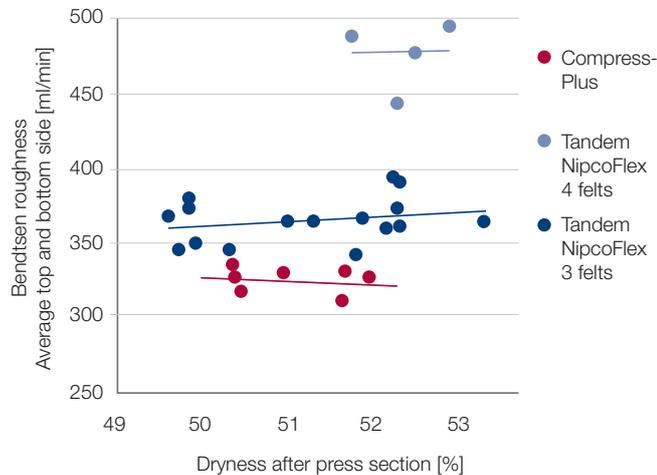
The pilot results were so convincing that an Asian manufacturer of premium paper did not hesitate to choose the CompressPlus concept for its new graphic line.

**Innovative clothing.** In order to be able to get the best out of the new technology, extensive and elaborate pilot tests were planned and carried out at the Paper Technology Center. The aim was to find the optimum clothing for the new press concept so as to support a quick startup of the new PM respectively to ensure the best quality output from the first hour of production.

For this new press concept, the press felts of the PrintFlex series were specifically adapted for each position. The felt

## 05 Roughness as a function of dryness after press

The additional benefit is a maximum speed increase of approx. 150 m/min without loss of quality.



designs for the second and third press are special highlights. Low-void designs were used here so that through optimal saturation in the felt the highest dewatering flows and thus the highest dry contents are achieved. Figure 04 shows the considerable potential of the developed clothing (Voith PrintFlex in Fig. 04) in comparison to standard clothing (curve A to C in Fig. 04) on the PM.

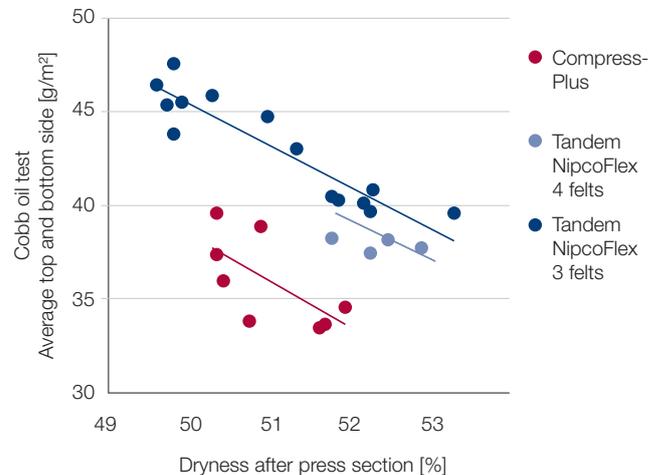
Of course, the surface characteristics are of interest, as is the goal of achieving the highest possible uniform densification of the surface for this grade – wood-free coated paper. Figure 05 shows the advantage of CompressPlus in roughness (Bendtsen) as a function of dry content in comparison to other press concepts and Figure 06 shows the higher surface densification.

When compared to the Tandem press with three or four felts, the new press concept delivers lower roughness values and noticeably higher compaction of the base paper with very good dry content. The concluding tests during commercial printing clearly showed the advantages in printability. The results are also comparable with the DuoCentri NipcoFlex with fourth press (straight-through press).

Such press types are still the first choice for very demanding applications such as SC-A qualities. Thanks to the new technology it is now possible to replace these press types. The additional benefit is a maximum speed increase of approximately 150 m/min without quality losses.

## 06 Surface densification (oil absorption test) as a function of dryness after press

Higher surface compaction due to CompressPlus



After just one year of operating the first installation, the high basis weights consistently run with the best quality and without an appreciable number of breaks. Dry contents of more than 50% were achieved immediately, and the web run, felt life and start-up behavior all fully met the customer's expectations. //

## Contact

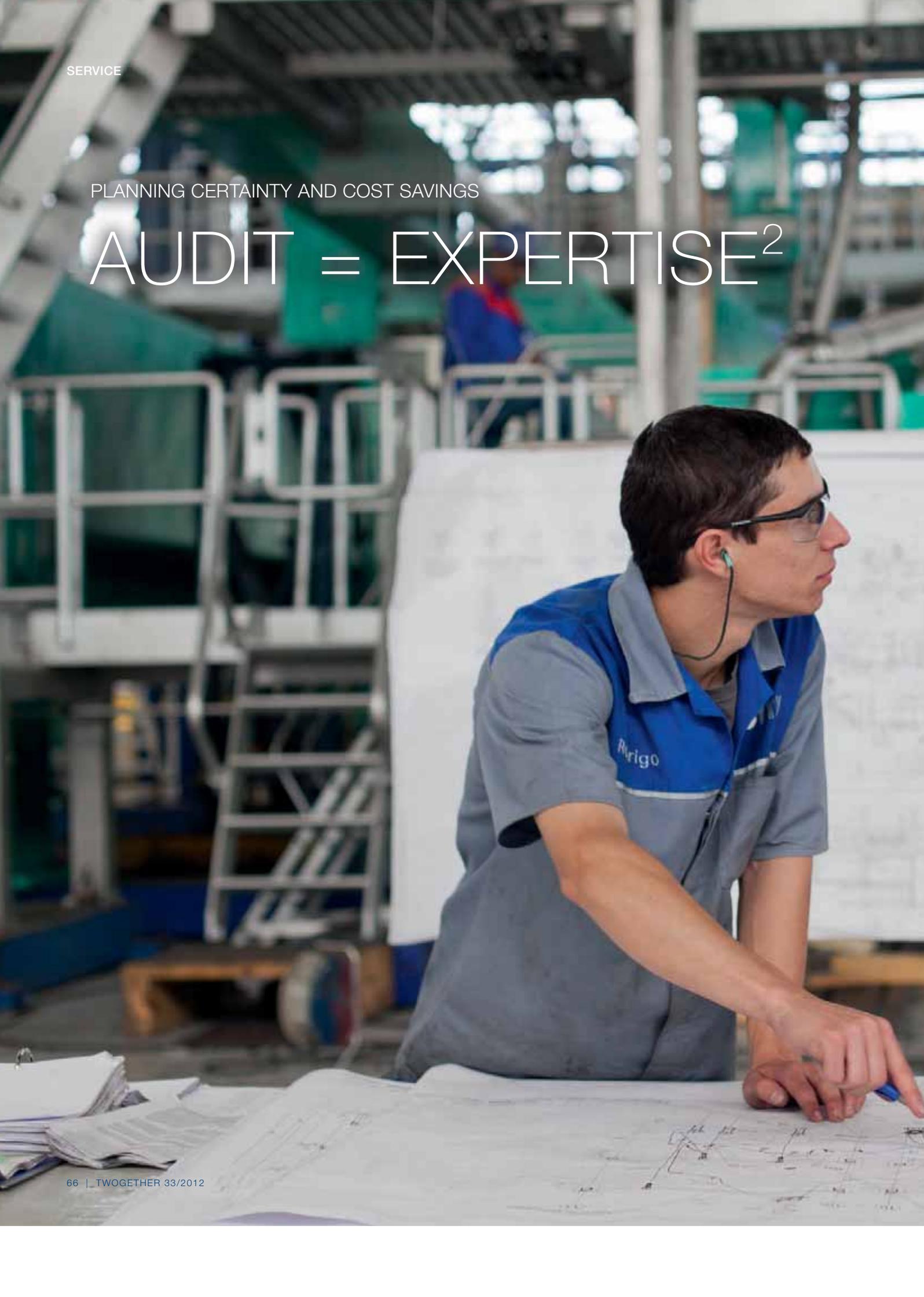


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SERVICE

PLANNING CERTAINTY AND COST SAVINGS

AUDIT = EXPERTISE<sup>2</sup>





Performing an audit in the run-up to a project provides planning certainty. The aim of the audit is clear – it has to help the customer make improvements. Regardless of whether it involves a single component, a machine section or the entire process, a customized audit can be carried out in all cases and is always useful.

For every project there are a large number of options available, and the need to examine these drives up project costs. Nevertheless, paper producers have to make informed investment decisions quickly. This is why it is crucial to obtain detailed information about market, products, processes, technology and existing equipment.

It can often help to have an outsider's perspective in identifying those details that can get overlooked in the course of the daily routine. This is where there is synergy between the experience of Voith and that of the customer. A successful audit is always one that is carried out jointly and makes use of the expertise of both parties.

As a result of its project experience all over the world, Voith Paper has sound know-how of technology, products, services and processes and is a much sought-after partner for optimization projects, being involved in around two-thirds of paper machine upgrades worldwide. It has its own experts and trained specialists for all machine sections and paper grades. Its know-how is growing steadily, not just as a result of training but also due to ongoing R&D activities to improve products and processes.

**Audits help to save costs.** In the run-up to a rebuild project, an audit gives planning certainty for the investment to be undertaken. The aim is to jointly work out the best possible solution.

An audit is a systematic, independent process that documents how goals can be reached. Voith Paper offers the following four

audits: safety, energy, process (including chemical technology) and maintenance. Depending on requirements and objectives, needs-driven reports and follow-up proposals are compiled. What is particularly interesting about this process is that many improvement proposals entail only minimal investment or can be carried out for the customer at no additional cost.

**Wide range of different audits.** Every paper producer faces a wealth of different safety regulations. It is here that Voith Paper can particularly support its customers with relevant specialists, especially in the case of rebuilds.

An energy audit calculates energy consumption and prepares a concept for saving energy. Voith Paper can also survey the energy requirements of an entire production line, and on this basis, elaborate on a concept for optimally integrating systems such as a power plant, steam network, incinerator or waste water treatment.

An important tool in this process is OnV EnergyProfiler, a software that monitors energy consumption and obtains the necessary information from the existing process control system. The most cost-effective solution for the case in hand is then determined from the results. The best solution can be implemented quickly and effectively together with Voith Paper.

**Informed investments.** Detailed surveys are necessary in order to provide proposals that are appropriate and tailored to customer requirements. Through an audit, the most attractive rebuild solutions can be identified more quickly and be adapted



02

to the respective situation. The desired design criteria are checked against the existing components and elaborated on in an offer. This means that investments can be made in such a way as to minimize the scope of the project and keep total costs down.

This also applies to maintenance issues, where there is always scope for improvement. An intelligent maintenance program, such as one using a Computerized Maintenance Management System (CMMS), can uncover a great deal of hidden savings potential.

Audits are not just done for new investments. They can also help a customer to compare existing processes with the standard market requirements and thus align itself even better to the market. //

### Example of an audit

In the last two years alone, Voith Paper has performed far more than one hundred audits. One of the customers is Iggesund Paper in Workington, Great Britain. An audit of the coating section was carried out in Workington during the winter 2010. This audit pointed out a high potential to reduce time and material losses in the coated board production.

From the investment point of view, quite many of the recommended tasks can be completed by the paper mill internally. According to the audit, minor investments are required in the areas of coater edge deckles, edge sealings, coating colour screening and tools for coater head's set-up. Expected improvements in profitability and quality stability are significant.

The remarks were divided to different categories. If recommendations of the A-category (critical issues) are accomplished, the losses are expected to be reduced by 8 to 12%. If additionally the recommendations of the B-category (issues required to reach all goals) were executed, an additional cutback of 2 to 3% is to be expected.

The next step is to jointly define which actions are to be realized and in what time frame.

### Contact



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AUTOMATION SUPPORT: ANYTIME, ANYWHERE

# SERVICE AROUND THE WORLD

Any failure of automation components has major repercussions, as paper quality and the performance of the entire paper machine depend on them. You then need to call in experts who are familiar with the complex systems and can support your team on site. Voith's automation specialists offer a comprehensive service for complete systems. Our service personnel are deployed all over the world to ensure that installed technology runs smoothly. A few of these professionals will now describe some aspects of their work.



**Country:** North America  
**Service specialist:** Larry Hall  
Senior Manager Automation Services  
**Customer, location:** Sonoco Products Co.,  
Hartsville, South Carolina  
**Paper machine:** Nine production sites in the USA  
and two in Canada, packaging papers

"We have been looking after Sonoco's 11 production sites in the USA and Canada for more than 10 years. During this time we have been able to forge a very good relationship with our customer. At Sonoco we offer a comprehensive service for all paper mills, including on-site service for measuring systems and remote maintenance via a VPN connection. This allows us to quickly restore system availability in an emergency and also maintain the facilities at a high standard over the long term.

This combination of automation and process know-how provided by Voith is probably unique in the paper industry and is no doubt the reason why we scored so highly for our availability, expertise and effectiveness in Sonoco's recent vendor evaluation."



**Country:** Brazil  
**Service specialist:** Ricardo Chinji Iguti,  
Technical Specialist  
**Customer, location:** International Paper  
do Brasil Ltda., Três Lagoas, Mato Grosso do Sul  
**Paper machine:** IP Três Lagoas PM 1,  
wire width: 5.85 m, length: 120 m,  
wood-free copy paper

"Directly after startup in February 2009 we carried out a six-month 'babysitting program' for the PM 1 at IP Três Lagoas. For some time afterwards we were contracted to provide preventive maintenance of the system at two-monthly intervals, during which we also rectify any faults in direct consultation with customer. In the process we regularly optimize the MD and CD controls and service the hardware and software for the OnQ Quality Control System, either during the service itself or by online remote maintenance. This is how we guarantee high system availability and machine performance.

In addition, we offer ongoing training for the machine operators and maintenance team. This reduces the risk of failures and ensures that in the event of an emergency the customer's team can resolve the problem itself or obtain immediate support from Voith specialists."

## Service package overview

### OnS OnCall

**Remote Diagnostics:** This service package enables remote maintenance of the installed automation systems via online connections, to check the current status, rectify faults if necessary, or carry out optimizations.

**Emergency on Call:** In the event of technical problems that cannot be resolved on the telephone or via remote support, the Emergency on Call service provides for a Voith service technician to be on site within a contractually guaranteed response time (usually 2-8 hours) in order to avoid long downtimes.

### OnS PreVide

**Babysitting:** In the event of start-up problems with a new PM, the 'babysitting' service includes the presence of an automation service engineer at the customer's premises during work days. This ensures ongoing training and support for the operating and maintenance crew plus help with monitoring.

**Preventive maintenance:** On contractually agreed days a qualified service engineer undertakes preventive maintenance tasks, testing and scheduled replacement of parts and thus supports the customer's team on site.

### OnS AllRound

**Resident Service:** This service module consists of ongoing maintenance by a Voith service engineer including basic system support, preventive maintenance and troubleshooting around the clock.

### Service on Demand

Even in the absence of a service agreement, the customer can always consult Voith in an emergency. Service requests received during normal working hours are passed on to the first available technician, although we cannot guarantee to reply to your call or provide support within a certain time period.

### Contact



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**Country:** Switzerland

**Service specialist:** Bernd Armbruster, Field Service Engineer

**Customer, location:** Perlen Papier AG, Perlen, Switzerland

**Paper machine:** PM 4 and PM 7, wire width: 5.9 m and 10.45 m, length: 115 m and 129 m, LWC offset and newsprint

"Since the end of the commissioning and optimization phase for the PM 7 in September 2011, we have been looking after the automation components of Perlen Papier's new PM 7 and the existing PM 4 as part of a service agreement. This comprises the preventive and remote maintenance of the installed automation systems and a 24/7 on-call service by the Voith service team with a contractually guaranteed response time.

All these services are covered by the Remote Diagnostics service package. Regardless of where in the system the fault occurs, the customer always has access to the relevant person. Apart from the areas I specialize in myself, such as the quality control system or the field instruments, technical specialists are also available around the clock for MCS and DCS including system technology and for automation components on the winder or wrapping system. This means that we are able to give Perlen Papier prompt and direct assistance in all areas."



**Country:** China

**Service specialist:** Higen Chen, Automation Service Manager

**Customer, location:** Asia Pulp and Paper (APP), Yangpu

**Paper machine:** PM 2, wire width: 11.8 m, length: almost 600 m, fine papers

"For the PM 2, APP took out a two-year contract with us, what is known as a 'babysitting agreement.' Since commissioning in May 2010 a Voith service team has always been on site to respond quickly and directly and to provide all-round support to the APP Hainan maintenance crew through a Resident Service Agreement.

We are responsible for all automation components, from the ten scanners to the process control system with its 14,000 inputs and outputs. Our aim is to achieve high production capacity with optimum paper quality. Given that it is a 'Greenfield' project with a brand new team of papermakers, operators and maintenance personnel at the mill in Yangpu on Hainan, an important factor is the training of personnel on site to establish long-term product know-how and process understanding among the customer's workforce."

LARGE ORDER IN THE NETHERLANDS FOR VOITH INDUSTRIAL SERVICES

# RELIABLE TRAMS

The 45 trams in the Dutch region of Utrecht will be serviced over the next eight years by Voith Railservices. The tram operator, the Greater Utrecht Authority (Bestuur Regio Utrecht, or BRU), made the decision after a public tendering process.

In the Utrecht area, 12 million passengers use the light-rail train line annually. The Greater Utrecht Authority is the owner and operator of the tramway tracks, the depot, the tram stops, and the 45 trams. The maintenance contract for the trains was tendered in the summer of 2011 according to the European open tender procedure. The Greater Utrecht Authority attaches great importance to maintenance – including repair of damage and overhauling – being done well and in a manner that is operationally reliable and cost effective. In addition, most of the trams will come up for a general overhaul in the next few months.

The tram operator decided in favor of a tendering process in which the

quality of the contracted service has high importance. Evaluation of the bids was done on the basis of the documents submitted and discussions with employees of the tender participants who would be responsible for the maintenance work. This led to the decision in favor of Voith Railservices.

Voith submitted an ambitious and specific bid with a clear emphasis on maintenance. In the meantime, the bid has been developed into a specific project plan. The Greater Utrecht Authority is convinced that maintenance over the next few years is in good hands with Voith. In 1983, 27 light-rail trains were delivered to the Greater Utrecht Authority and in the coming months will be

subject to a general technical overhaul. They will also receive a new design.

The philosophy behind the service contract is that all parties – client and contractor – take on the tasks for which they are best suited. The goal consists in finding a contractor who minimizes risks and at the same time uses opportunities to improve maintenance. The client indicates which goals have to be implemented, but their detailed implementation is the business of the contractor. According to experience, this approach benefits the quality of the processes and results. //



01 In the future, Voith will service trams in the Dutch region of Utrecht.

VOITH TURBO: WORLD'S FIRST SECONDARY WATER RETARDER

## IT DOESN'T ALWAYS HAVE TO BE OIL

Safe, economical and sustainable – the first secondary retarder in the world that brakes with water. Unlike the classic oil retarder, the Voith Aquatarder SWR uses the coolant of the motor as its operating medium.

Why an extra operating medium for a truck brake system, if there is already one there that you could use? The answer is a new retarder technology that Voith Turbo developed for the Actros long-distance transport trucks from Mercedes-Benz.

It's the Aquatarder SWR, the first secondary water retarder in the world that uses the coolant of the motor as its operating medium. A noticeably more compact design and the omission of the otherwise required oil-water heat exchanger result in a combined weight reduction of about 35 kg. In addition, the maintenance-free retarder is environmentally friendly since it only oper-

ates with cooling water. A weight saving of 35 kg is, on the face of it, no big deal for a long-distance transport truck, but each kilogram of weight saved means a higher payload. And for most carriers, payload is the decisive factor for economical operation of their vehicles. Those 35 kilograms also help at least partially compensate for the additional weight of the coming Euro-6 technology. Voith developed the Aquatarder SWR in close collaboration with Mercedes-Benz. Voith began series production for the new Actros in the fall of 2011, a model change that will already meet the exhaust maximum permissible values of the Euro-6 legislation coming into force in 2014. //



01 The new environmentally friendly Aquatarder SWR.

VOITH HYDRO: FIRST COMMERCIALY ACTIVE WAVE POWER PLANT WORLDWIDE

## WAVE ENERGY WINS AWARD

Voith Hydro Wavegen, the Scottish Voith subsidiary specializing in wave energy, has won an award for outstanding achievements in the utilization of renewable energy.



01 The first commercially operating wave power plant is in Mutriku, Spain.

With the award, the Scottish Council for Development and Industry recognized the delivery of the first commercially operating wave power plant worldwide in the northern Spanish town of Mutriku. Sixteen wave turbines were installed in the wave breaker there. They have a total output of 300 kilowatts and produce enough power for 250 households.

The Scottish Prime Minister Alex Salmond presented the award in November of 2011 in Glasgow. In the commendation it was said that Voith has raised the entire industry to a new level with completion of the wave power plant connected to the power grid. The facility in Mutriku is the first wave power plant to offer all guarantees required for commercial operation. //

QUICK INFO

# DANDY ROLL

A dandy roll is a wire spanned roll, which is used to improve sheet formation on fourdrinier wire machines. Moreover, genuine watermarks can be produced with a dandy roll. The key to every Voith dandy roll is the self-supporting honeycomb body with its large open surface. The fabric-covered dandy roll body is immersed into the free-flowing suspension in the wire section, and stock water penetrates its interior. As a result, fibers in the suspension reach the dandy roll fabric where they are deflocculated, thus improving formation. //

# DID YOU KNOW?

Voith's website has a completely new look: [www.voith.com](http://www.voith.com)

# PUZZLE CORNER

Put these letters into the correct order to find four technical terms from paper manufacturing.

SEDRCTERYNIO  
XHOEBAD  
GFNOIRMLROL  
TPLREEFSS

Solution:

Dryer section, headbox  
forming roll, press felt



QUICK SNAPSHOT

# AWARD FOR MINGMING LIU

MingMing Liu (2nd from right), President of Voith Paper Asia, has won the award "Asia's Most Innovative Woman Entrepreneur 2012." This award is bestowed annually by the Women in Leadership (WIL) Forum as part of the Asia Awards. It is designed to recognize the performance and successes of women who break new ground and have asserted themselves in their industry. The second Asia Awards took place in Kuala Lumpur under the patronage of her Excellency Datin Paduka Seri Rosmah Mansor, wife of the Prime Minister of Malaysia. //



A QUICK GOOGLE

# "PAPER CAMERA"

Amateur photographers can become real artists using an app called "Paper Camera." The paper camera app turns uninteresting photos into pictures, sketches, cartoons and water colors. The thickness of the lines, contrast and brightness can be adjusted individually. This is art on paper without the hard work and paint splatters. //

Download:  
<http://itunes.apple.com>

TWOGETHER TIP



## LIVING WITH PAPER

Items of furniture made out of paper, such as screens, lampshades and magazine racks are familiar and popular objects all over the world. But bookcases, tables, chairs and chandeliers made from paper and cardboard are more of a rarity.

Designers of innovative furniture are no longer just using the traditional wood or metal, but are increasingly working with strong cardboard. Thanks to its honeycomb structure, cardboard is extremely stable and is also ecologically appealing: Produced entirely of recovered paper, the construction material itself can also be completely recycled. As long ago as 1968, industrial designer Professor Peter Raacke launched his "Otto" armchair from the "seats for the dispossessed" range. The chair is one of the first industrially produced pieces of furniture to be made from cardboard and has been exhibited in various museums such as the Museum of Modern Art in New York, the Guggenheim in Bilbao and the German Museum of Technology in Berlin. It was resurrected in 2007 by "pulpo," a German company supplying functional homewares and furniture. //

A QUICK WORD

## INTERVIEW

**Marcelo Karabolad dos Santos**



Area: Pulp dewatering  
Location: São Paulo

The engineer has been employed by Voith for over 25 years in the engineering, sales and application sectors.

### What do you like about Europe?

That there are so many countries! You don't have to travel far to find different cultures, food and languages.

### What interests you about paper?

The interest is in our family's genes. My grandfather had a small paper and pulp company. Voith Paper, which enjoys a good reputation among engineers in São Paulo, was looking for trainees when I was a student.

### What is special about Brazil?

People are very creative and flexible. If customers have problems or a machine needs to be rebuilt, Voith staff see that as a challenge and immediately attempt to solve the problem. //

TWOGETHER CULTURE TIP

## THE UNOFFICIAL CAPITAL OF BRAZIL

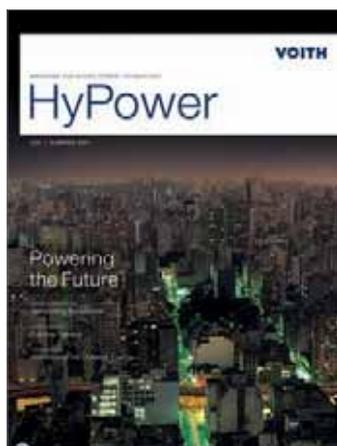
São Paulo is Brazil's biggest city and its most important economic, financial and cultural center. With around 12 million inhabitants, it is the largest industrial conurbation in South America and the most populous city in the Southern Hemisphere. At its heart: Voith Paper's second-largest production facility.

São Paulo offers immense cultural diversity. The famed Teatro Municipal theater or Independence Park are as much part of

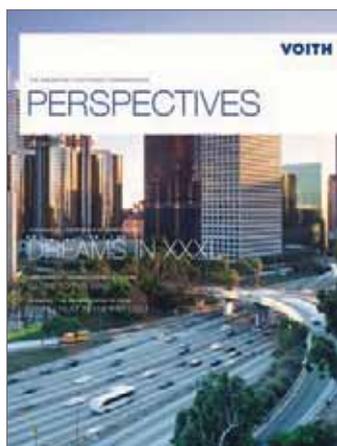
it as the numerous museums. Well worth visiting are galleries such as the Museu de Arte, and for lovers of contemporary art the Museu de Arte Contemporânea, with their collections of western and Latin American art including works by Picasso.

Close to the city center is the "Mercado Municipal," a must for lovers of fine food. The market halls offer a huge selection of local products such as Brazilian spices and exotic delicacies. This is also where the locals, the "Paulistanos," like to shop. //

For more information about us, please go to:  
[www.voith.com](http://www.voith.com)



The magazine for hydro  
power technology



The magazine for  
drive technology



The magazine for  
Voithians

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