A dynamic splash of clear water against a light blue background, with the water falling from the top and creating a sense of movement and freshness. The water is captured in mid-air, with droplets and streams visible.

twogether

Paper Technology Journal

Water for life requires inventiveness | Daio Paper Mishima
– from a single source | Saving with Voith Paper products



4 Water for life requires inventiveness.

10 Daio Paper Mishima PM-N10 – from a single source.

74 New Chief Executive Officer of Voith AG, Dr. Hubert Lienhard.

Report

- 4 Water for life requires inventiveness
- 72 Premium paper with a handcrafted look

New Plants

- 10 Daio Paper Mishima PM-N10 – from a single source
- 12 One Platform Concept meets customers' wishes

Rebuilds

- 18 German newsprint PM becomes SC-B paper machine in China
- 20 Modernization of two deinking lines at Steinbeis Temming Papier

Products

- 22 New steam technology concept improves drying process
- 26 Up to 25% energy savings with IntensaPulper
- 28 Field instruments added to product portfolio
- 31 LunaFilm and SolarCoat roll covers for successful film coating
- 34 Energy savings up to 30% due to TerraGloss
- 36 WebTense – replacement of conventional spreader rolls
- 38 PrintForm HS – forming fabric for high-speed former
- 42 PrintForm HR – forming a quality sheet on a robust fabric
- 45 Cell Platform – clothing for pulp drying machines
- 48 Nipco roll in successful use
- 50 Prevo – the new threading process technology
- 53 Atmos: fresh wind for tissue paper

Service

- 56 With pre-engineering to the Perfect Fit mill
- 58 EduCAT – new computer training program
- 62 RollCare, RollRep and RollUp Solutions lower costs

R&D

- 66 OnV FlocSpotter measures formation already on the forming wire
- 68 SafeTailing – reliable transfer even safer
- 70 AirEx AT-V – optimizes coating color air removal

News

- 74 Change at the top of Voith AG
- 75 News from the Voith Group



*Dr. Hans-Peter Sollinger,
Member of the Corporate
Management Board Voith AG
and President of Voith Paper.*



Dear customers and readers,

“Water for life requires inventiveness“ – that's how we headed our title report. At the same time, it is the third report in a series in which we concern ourselves with the raw material problem in our industry. Voith Paper has clearly made it a goal to develop technologies, products and systems that effectively reduce water, energy and fiber consumption in paper production.

In the report, this is impressively demonstrated with the example of our new company, Voith Paper Environmental Solutions (pages 4-9). But also the maturity phase of our Atmos process will draw attention to the steps we are taking towards sustainability in the paper industry. With Atmos, we can produce high-quality premium products for the tissue market in a more environmentally friendly and cost-effective manner.

We report on the commissioning of the Mishima PM-N 10 at Daio Paper in Japan on pages 10-11. A completely new production line from a single source has come into being there.

You can read on pages 12-17 about how you can produce the highest quality papers with considerably

more cost-efficiency thanks to Voith Paper's One Platform Concept.

But our core business includes more than just new systems. The successful restart of the earlier Maxau PM 6 in Dongying, China (pages 18-19), or the modernization of two recovered paper preparation systems in Glückstadt, Germany, are important projects for Voith Paper.

The topic of saving energy runs like a red thread through this edition of twogether. With the Value+ concept in the drying process, the IntensaPulper for recovered paper dissolutions or the TerraGloss thermo-roll coating, high energy savings are possible.

I would like to recommend our cultural report on the Gmund handmade paper mill (pages 72-73) to all friends of traditional paper production. Gmund Paper opened an exceptional paper shop in Munich - a pleasure to go shopping there.

Get in on the latest technologies and developments from Voith Paper. Have fun while reading!

H. P. Sollinger

On behalf of the Voith Paper team

Water for life requires ...





... inventiveness



The blue planet must remain in balance.

Darkness surrounds the astronauts in space and then a fascinating blue planet appears before them: Earth. Described by Apollo 14 astronaut Edgar Mitchell as a sparkling blue and white jewel, almost two thirds (71%) of the surface of this planet is covered in water. It sounds paradoxical that for the people living there, however, water is an extremely scarce resource. In fact, only about 1% is available as vital drinking water.

Most of it is salt water or water that is attached to the poles as glacial ice. Sustainable use of this precious resource is all the more important. Water-intensive industries such as the paper industry, are already making enormous progress in this respect. The international decade for action “Water for Life”, proclaimed by the United Nations, began in 2005. Therefore, when it comes to conservation of resources, topics such as water scarcity, wastewater treatment or sustainable water use will be the focus of global interest time and again up until the year 2015. In addition, “Water for Life” should promote sustainable forms of water use and reduce by half the number of people without access to safe drinking water.

Water shortage is getting worse

Today, half a billion people in 31 countries around the world already suffer from a lack of water. They have too little clean drinking water at their disposal or none at all. Water could become even scarcer in the future.

The Intergovernmental Panel on Climate Change fears that this number will increase to three billion by 2025. And this is not because there will be less water but because the per-capita consumption is continually rising and more and more people have to share the fresh water supplies.

The example of New York illustrates what impact several small measures towards more efficient and, therefore, sustainable use of the valuable resource water can have. In 1990, there was a water shortage in the megacity, which forced the entire city to save water. The present balance proves that a great deal can be achieved in private households. Measures including flushing the toilet with less quantity, repairing pipes or flow restrictors for fittings resulted in each resident using 100 liters less water per day than in the previous ten years. The paper sector in particular proves that industry also sees its responsibility and takes it seriously. For years, they have been working on doing justice to the resource water by



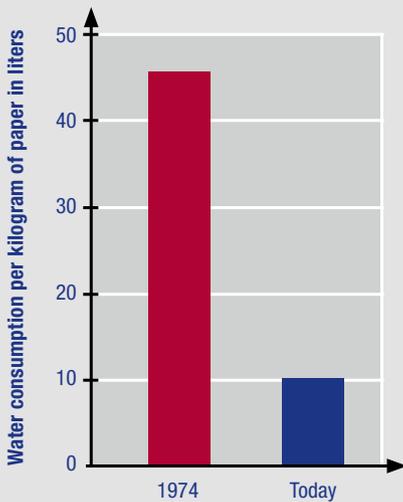
The paper industry can reduce white water loops and save water.

In 1990, there was a water shortage in New York that forced the entire city to conserve water on a long-term basis.

developing new process technologies and continually reducing consumption.

Less water per kilo of paper

Two figures illustrate what the efforts in the paper sector have already achieved. Back in 1974, 46 liters of fresh water was used to produce one kilogram of paper in Europe. Today, while the average consumption is just ten liters. In the same period, the water requirement for pulp production fell by 75%. Voith Paper Environmental Solutions (VPES) is working on a paper production that uses even less freshwater and produces even less wastewater. The Voith Paper group of enterprises, which is still in its early years, has found a solution for reducing the specific water consumption per kilogram of paper even further:



Water consumption on average for the production of 1 kg of paper in Europe.

The Voith R2S Reactor at SCA Packaging in Lucca, Italy, takes care of the anaerobic treatment of all the factory's water. This produces biogas corresponding to the heat consumption of more than 1,700 German households per year.

by recirculating recycled wastewater. If you consider that approximately 8,000 paper mills produce around 383 million tons of paper, board and cardboard worldwide, you get a clear picture of the scale of sustainable production in this sector. What lies behind the solution by VPES is a system technology that enables sustainable use of the precious resource, water.

Wastewater goes back to where it came from

The innovative R2S Anaerobic Reactor technology combined with the Lime Trap opens up new possibilities. It makes the lime problem manageable and therefore opens up new possibilities for closing the white water circuit further. It enables biologically treated and decarbonized water to be

recirculated into the production process. It is precisely this kind of water recycling that ensures the average water consumption can be reduced further. VPES has therefore succeeded in coming a step closer to the “zero liquid effluent mill” it has been striving for since the 1990s.

In the R2S Anaerobic Reactor the suspended organic load in the wastewater is converted into biogas with a high calorific value by a digestion process.

This degrades around 80% of the COD load (chemical oxygen demand). The biogas that is created can be used to generate e.g. “green energy” in the mill in a combined heat and power station. This goes in line with the costs for sludge treatment and disposal. Furthermore, energy consumption for the aerobic stage, which

is downstream from the anaerobic treatment step, is reduced.

“Water, a shared responsibility”

The VPES example makes it clear that Voith Paper is supporting the paper industry’s commitment to deal with the resource water in a sustainable manner with its new integrated water treatment concept.

The classic view of wastewater treatment as the “end of pipe” is undergoing a radical change. Recycling wastewater moves this last stage in water clarification closer to the production process and therefore requires a comprehensive process control system. The “World Water Development Report”, which is published every three years since 2003 under the guidance of UNESCO, provides information

about the current situation of water reserves. “Water, a shared responsibility” is the name of the latest report, which leaves no doubt that proactive technologies to counter further water shortages must be implemented throughout the world. And this means beyond the “Water for life” decade too.

These kinds of technologies are essential to ensure the blue planet, the view of which leaves not only astronauts spellbound, remains in balance and that paper will be able to be produced in greater harmony with nature in the future.

The Lime Trap at Leipa paper mill in Schwedt, Germany, daily removes about 3 tons of lime from the wastewater.





The new paper production line at Daio Paper in Japan.

Mishima PM-N10 at Daio Paper in Japan

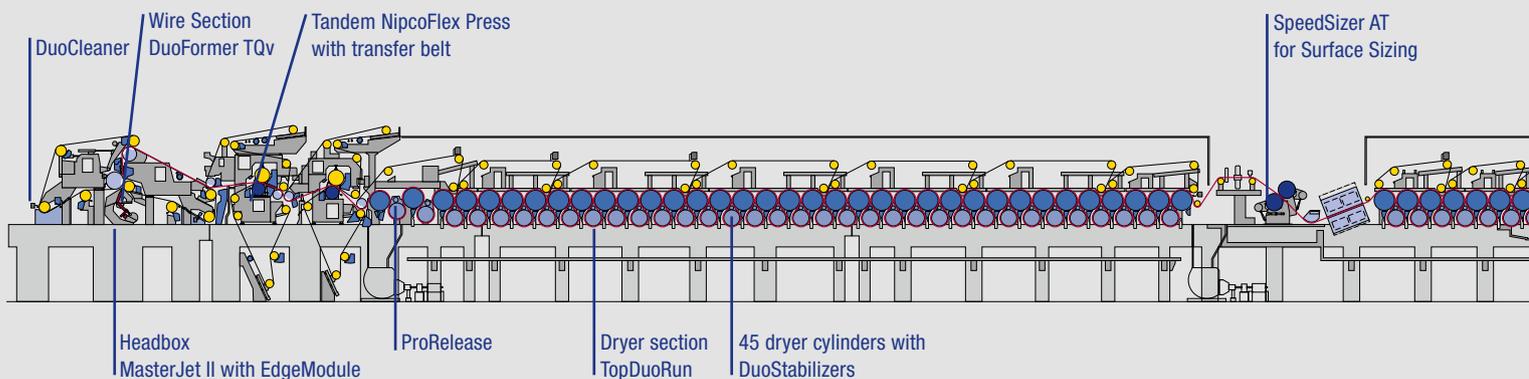
New paper machine from a single source

Daio Paper Corporation started in the summer last year the new production line Mishima PM-N10 in Shikoku Chuo City in the Ehime Prefecture on Shikoku Island. This order was the first installation of a complete new paper production line out of one hand in Japan.

Daio Paper's PM-N10 "on-machine-coater" is a high-speed machine with online coating and online calendaring for lightweight coated papers. All production aspects incorporate leading-edge technology from Voith

Paper and Voith IHI Paper Technology. The Mishima PM-N10 will be run with a crew of only 9 persons compared to a coated paper production line with a crew of 16 people for example on Daio Paper PM 8 with

the C3-OMC and Super Calender. That means the labor costs at full production will be reduced by 50%. The PM 8 producing 730 tons/day compared to PM-N10 producing 800 tons/day.



Layout Mishima PM-N10.

Project milestones

- Ground breaking ceremony – The official ground-breaking ceremony was in June 2006.
- Building – The building was closed and ready for the start of installation of the sole plates for the paper machine in January 2007
- End of mechanical installation with start of commissioning commenced beginning of June 2007
- Start Up – The first roll of paper was produced on August 5, 2007 at a start up speed of 1,452 m/min with a basis weight of 58 g/m².

Delivery, installation and start up of this new line was possible in record time because the responsibility for the whole paper machine including the reel and the main interfaces came out of one hand. The peripheral machine items installed by Daio Paper were also monitored through Voith Paper. Success factors in this project were the close cooperation with Daio Paper, where the long lasting cooperation and relation between the Voith Paper divisions and Voith IHI Paper Technology in Japan was a decisive advantage.

Daio Paper

Daio Paper produces the full range of papers, from newsprint, coated papers, tissue papers to paperboard as well as paper-processed products such as corrugated cardboard and sanitary products, is active in the timber and forestry industries and has its own fleet for the shipment of their raw materials and goods from and to the different locations worldwide.

The company owns three paper mills with an annual capacity of approx. 3.2 Mio. tons of paper with approx. 2,700 employees and operates today more than 40 subsidiary companies.

Contact



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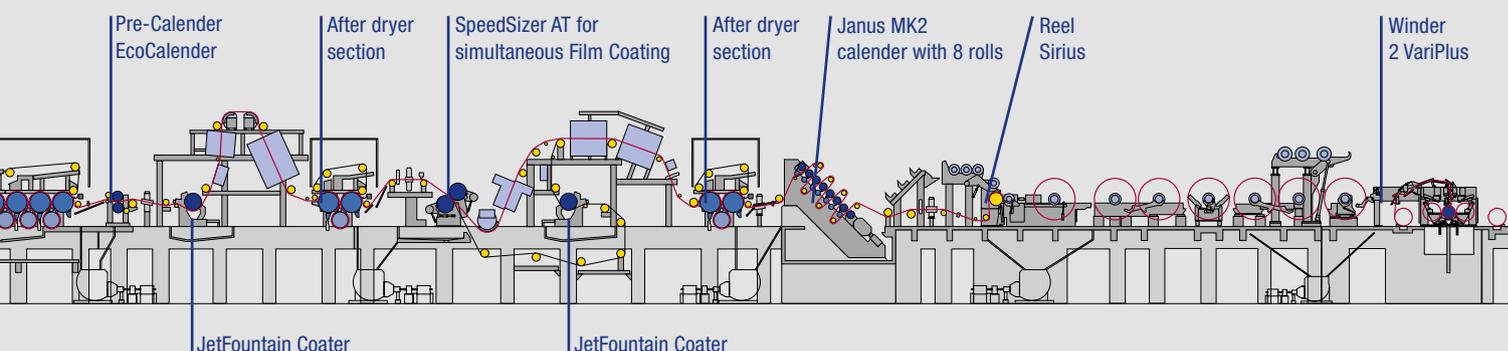
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Paper Machines Graphic
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Customer Comment

Akira Nomura
General Manager Papermaking
Department

“Our N10 machine can be utilized in two ways, as film- and as blade coated, this unique on-machine-coater is also equipped with an on-line Janus calender. Through trials at the Voith pilot machine, intensive discussions with us regarding the machine layout and considering all technical details in the specification, this machine reached a high level of perfection and is now running in stable operation.

Automation is highly advanced and is superior in monitoring operation data, quality data as well as in reproducibility. The product quality obtained high evaluations from our end users especially regarding stiffness and printability. As it was our expectation, we are very satisfied with N10 machine's smooth operation.”



Up to three sizes for every paper grade

One Platform Concept meets customers' wishes

Since introduction of the One Platform Concept in 2001, Voith has delivered over 50 new paper machines according to the One Platform Concept. In order to make the advantages of this innovative concept available also for medium-size production facilities, three sizes were developed for all graphic paper grades. Due to consistent optimization of machine widths and production speeds, economic, highly modern and reliable production lines for all current customer needs can be offered.

Market requirements

Today, the paper industry is exposed more than ever to the rising costs for raw material, energy and personnel in the face of stagnating returns for its paper products. In order to be able to invest efficiently, the specific investment costs have to be in line with the market. In addition, modern paper machines offer maximum efficiency with minimal production costs.

Global trends

Today, rising paper consumption is a driver for new investments only in China, India and southeast Asia. China will continue to have large produc-

tion lines in order to satisfy the rapidly growing demand. In India and southeast Asia, projects with a capacity of 200,000 tons per year dominate. The demand for smaller machines in these regions has several reasons. Often, the supply of raw material is limited or the local market cannot absorb more paper. The financial resources in these regions often only allow total investments of up to 200 million euros.

In Europe, investments are driven not by rising needs, but rather for the sake of improvement of the paper production lines profitability. Large new production lines with optimized production costs will, therefore, continue

to exist. In eastern Europe, new medium-size lines that serve the regional market and can still be financed by the respective investor will play an important role. The dream of large production lines in Russia will for the present remain just a dream, since the rising transport costs offset location advantages such as availability of wood and low labor costs.

Customer requirements

Regardless of whether a customer from India requests a 200,000-ton-per-year line for newsprint, or a customer from China requests a 600,000-ton-per-year line for copy paper, the new One Platform Concept

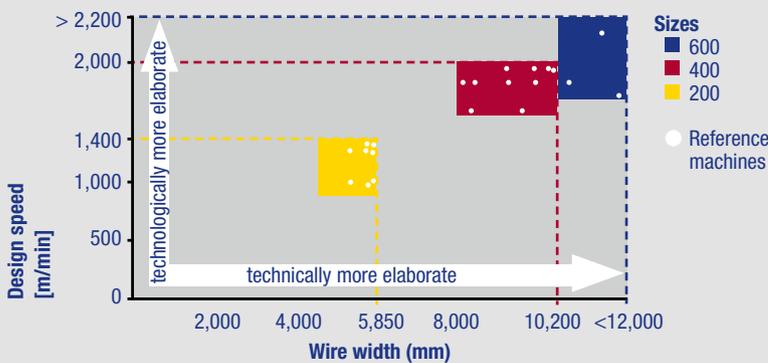


Fig. 1: One Platform Concept – References since 2003.

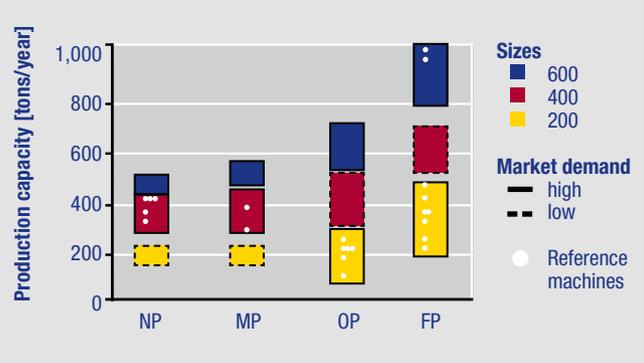


Fig. 2: One Platform Concept – Sizes.

offers the ideal solution for every customer's requirements.

That includes:

- Optimized production costs
- Attractive investment costs
- Short delivery time
- Quick start-up curves
- Consistent paper quality

Voith Paper know-how

For decades, Voith has built up and expanded its knowledge and capabilities in all areas of the paper production chain.

Beginning with the paper machine, competence was extended to all process-influencing sections: automation, fabrics, roll covers, ventilation systems, chemicals, water treatment and energy generation from waste. The One Platform Concept unites all these competences as one solution.

One Platform Concept

For the four main graphic paper grades:

- Newsprint = NP
- Magazine Paper (SC/LWC) = MP
- Office Paper = OP
- Fine Paper (wood-free coated) = FP

There are three sizes respectively: 200, 400 and 600

Using these categories, the machine concept, the machine width and the design speed are determined. Of course, the individual modules can be adapted to special customer wishes. The economical optimum is in each case at the upper limit of a size. The nominal capacity of a production line is also determined by the basis weight to be produced. Depending on basis weight (42, 45 or 48.8 g/m²) and overall efficiency, a NP 400 can thus produce between 370,000 and 430,000 tons per year. Experience shows that for some paper grades not all three sizes are in demand, but instead initially two sizes are favored by the market (Fig. 2).

- NP 400 and NP 600
- MP 400 and MP 600
- OP 200 and OP 600
- FP 200 and FP 600

Advantages of the One Platform Concept

By means of consistent standardization and optimization of the individual modules, for each of the sizes Voith is able to offer an economically optimal concept that technologically meets the highest market requirements. Not only specific investment costs, but also especially the operational costs have been optimized for each of the sizes. Minimal consumption of long fibers due to closed draw press sections, minimal steam consumption due to high dry contents, low chemical costs due to optimized process control and minimal water consumption due to shortening the circulation loops are examples of economic advantages for the paper-makers.

Added to this is the extensive experience that Voith has acquired over the last years with these lines. Thus, start-up and commissioning times can be shortened. After a short time, the production lines are running at outstanding levels of efficiency and producing the nominal output.

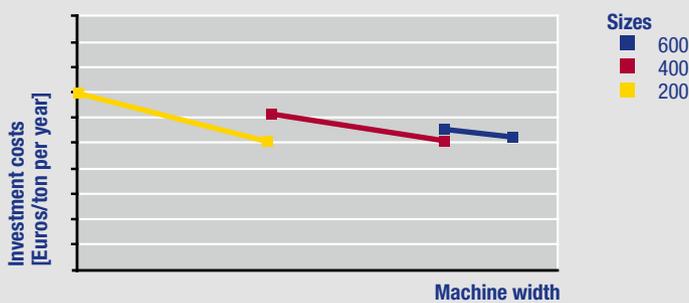


Fig. 3: One Platform Concept – Optimal investment costs for each size.

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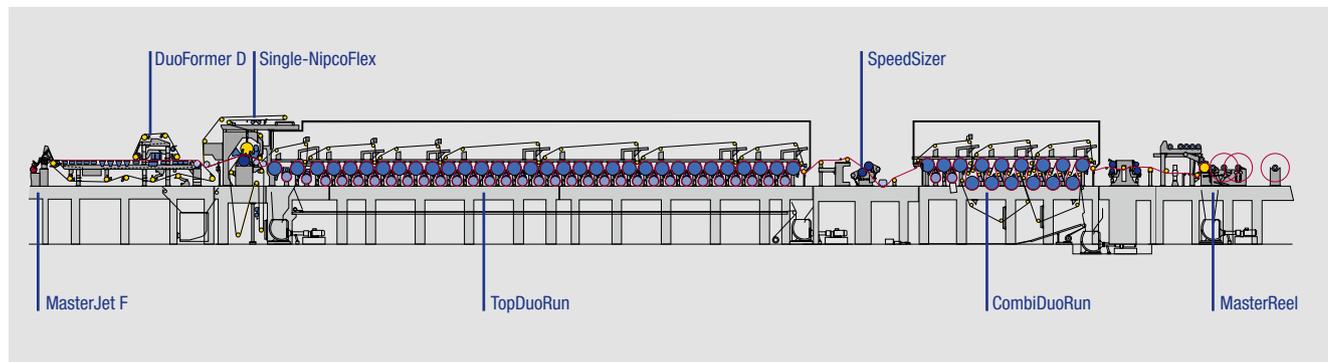


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One Platform Concept – Examples

Thanks to the One Platform Concept, Voith Paper is in a position to offer the optimal paper machine for any desired paper grade.

Office paper: OP 200



In the growth regions of India, Thailand and Vietnam, there is a large demand for high-quality printing and writing paper and also for copy paper. Predominantly short fibers from plantations, but also from annuals and even recovered paper are used as raw materials. Added to this are quality requirements for the finished product such as are familiar from European standards.

As a rule, the basis weight range extends from under 60 to over 100 g/m². Since either the raw material supply, the level of investment or the regional market is limited, the OP 200 offers the perfect machine concept.

With a wire width of 5.85 m and a design speed of 1,400 m/min, a size was determined that ideally meets the market requirements. An approach flow system with low volume for quick grade changes feeds the

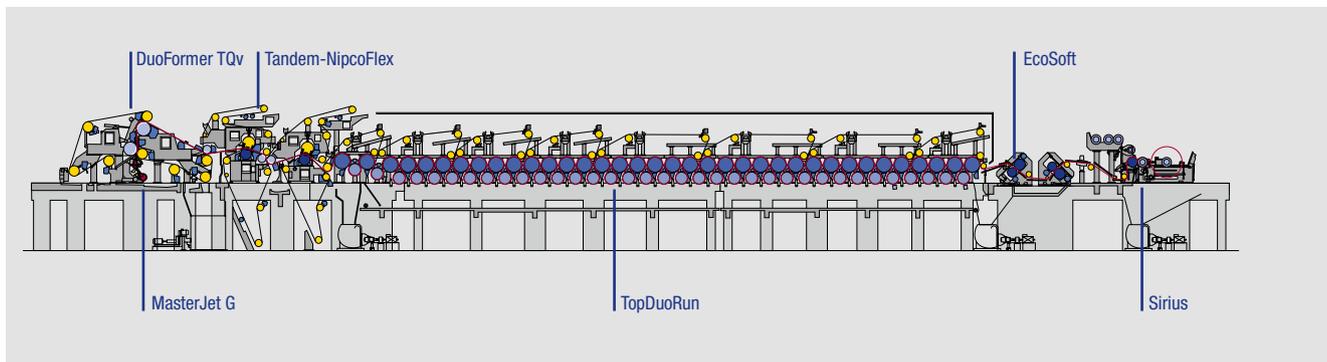
MasterJet F with ModuleJet. The DuoFormer D allows optimal formation and symmetrical sheet structure over a large basis weight range. Alternatively, a Single-NipcoFlex for standard copy paper or a Tandem-NipcoFlex for an expanded application range guarantee optimal runnability. Single-tier TopDuoRun pre-dryer sections with the most modern stabilization technology provide for nearly break-free operation. A SpeedSizer allows application of starch and coating for all applications. The after-dryer section with differential heating secures the dimensional stability. The on-machine calender creates the desired surface properties and can be either a hardnip calender or Eco-Soft. Finally, the MasterReel produces large diameter parent rolls to be processed further with a VariSprint winder.

But you recognize the particular sophistication in the One Platform

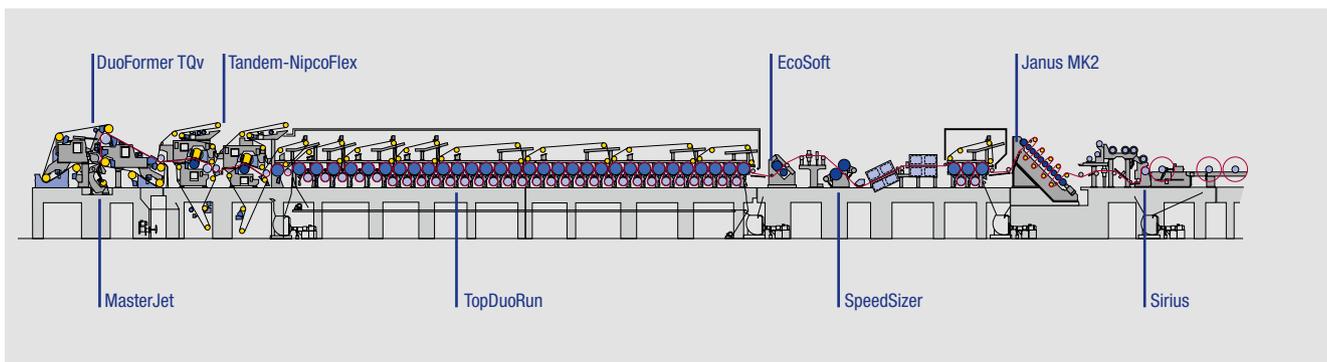
Concept OP 200 not only in the mechanical engineering, but also especially in the automation. Starting with the process control system, the medium-size machine has all the components for process stabilization that were developed for high-speed machines. A drive control developed by Voith itself (Drive Command) guarantees quick optimization and stable running. The data of the scanners are directly linked with the respective actuators so that "misunderstandings" can be excluded.

In addition, the OP 200 has virtual sensors that during grade changes and start-ups allow the target parameters to be reached and stabilized quickly. Thus, efficiency rises and more "quality tons on the reel" are produced.

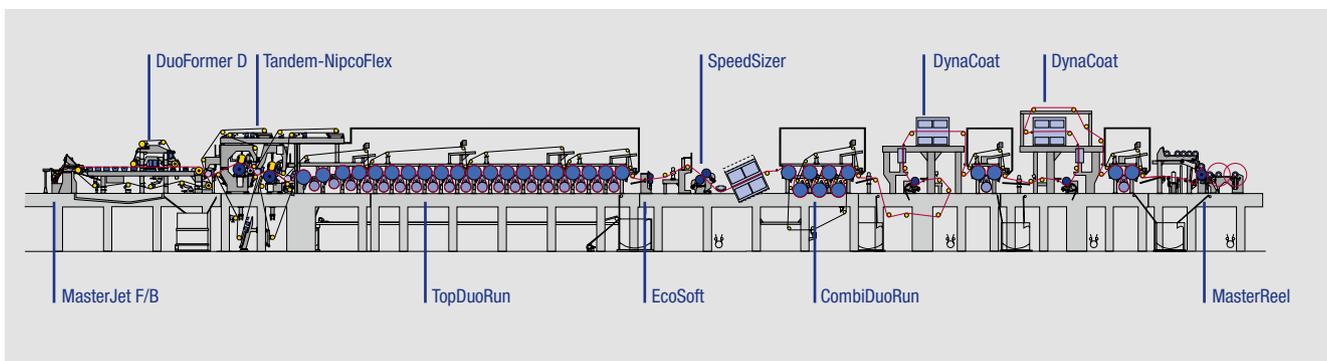
Newsprint: NP 400



Magazine paper: MP 400



Fine paper: FP 200





Kurt Brandauer

Executive Vice President
and Division Manager
Paper Machines Graphic
and Specialty Papers.

Interview about the One Platform Concept

twogether:

Voith first introduced the One Platform Concept seven years ago. What experiences have you had since then and what feedback have you received from your customers?

Kurt Brandauer:

Introduction of the One Platform Concept was a milestone for the development of ultra-modern, efficient paper machines.

The basic idea is simple: one platform for all graphic paper grades with use of standardized modules (headbox, press, dryer section, etc.). Standardization of the modules means that we can transfer operational experiences with running production lines to other lines and thus can ensure targeted research and development.

We get outstanding feedback from our customers. After all, the use of proven modules means an assurance of the investment success for the project. Quick start-ups and maxi-

mum production results with consistently high product quality are what our customers value about the One Platform Concept.

twogether:

Now you are going one step further and offer standardized sizes for each paper grade under the One Platform Concept. What advantages does this standardization have for your customers?

Kurt Brandauer:

We know that our customers are confronted with rising costs for energy and raw materials, without being able to raise the paper prices to the same extent. The specific investment costs are therefore the decisive criterion for every investment. In order to lower them, we have to systematically go one step further with standardization.

Not just the individual modules but also the sizes of the paper machines are being standardized with regard to

width and speed. We are sure that we can thus offer types of systems that signify a maximum of efficiency for our customers.

twogether:

Standardization and innovation – isn't that a contradiction?

Kurt Brandauer:

No, quite the contrary. Through standardization of the production lines, we can use our resources for research and development in a considerably more targeted fashion than previously. Experiences with operation of the production lines flow directly back into our development departments where they are constantly working to improve the efficiency of our systems of the 200, 400 and 600 series. Innovations require a systematic approach so that they don't just go up in smoke. With the One Platform Concept, we have created the framework to put innovations on course in a targeted fashion for our customers.



twogether:

Let's take an example. With the size 200, Voith has standardized paper machines with a width of 5.85 m.

Do you see a global trend towards smaller machines?

Kurt Brandauer:

We see that the "bigger, wider, faster" trend doesn't meet the customers' needs in all markets. Precisely in India, southeast Asia and eastern Europe, the market calls for smaller machines. First of all, the financial resources there are often limited, and secondly, in some circumstances the local market doesn't absorb more than 200,000 tons per year.

We have taken these basic conditions as a reason to develop the size 200. We want to be able to offer every customer a machine that gives the customer a minimum of specific investment costs – regardless of whether 200,000 or 600,000 tons per year are required.

twogether:

Can you – at a customer's request – nonetheless build a paper machine that deviates from the standards and, for example, produces newsprint at a width of 6 m and a speed of 2,000 m/min?

Kurt Brandauer:

Of course we can build machines that deviate from our standards. But we are of the opinion that with a machine of the size 200, 400 or 600, our customer gets the optimal machine regarding efficiency and minimal investment costs. Solutions that deviate are possible in principle, but as a rule more expensive.

twogether:

In many industries one sees that along with the main product line, suppliers maintain a low-performance, cheap product line under another brand name.

What is Voith's view of this product policy?

Kurt Brandauer:

We have very consciously decided against such a policy. With us, all customers get a product line that meets the highest quality standards. The name Voith stands for outstanding quality and reliability of our machines. Regardless of whether a customer purchases a newsprint machine of the NP 200 or NP 600 size – the customer can expect the same quality, both regarding our machines and systems and also regarding paper quality. We make no compromises with quality.

Successful restart of the earlier Maxau PM 6 in Dongying, China

German newsprint PM becomes SC-B paper machine in China

Is a paper machine that has been dismantled to make way for a faster new machine no longer of use? With a little innovative thinking, the answer is no! Here is the proof:

How it all started

In 2003, Stora Enso commissioned Voith to convert the 8,100 mm wide PM 6 in their mill in Maxau, Germany. The term “conversion” is something of an understatement. Looking at it more closely, it was the installation of an almost completely new production line. The 35 year old PM with an annual capacity of 140,000 tons was replaced by a state-of-the-art PM with an output of 260,000 tons per year. The old PM 6 was dismantled and initially placed in interim storage. Thus, Stora Enso gained some time to consider other possible uses. It was clear from the beginning that “continued use”

could not mean “continue as before”, that is to produce newsprint paper.

Today, machines of this type are almost 11 m wide and operate at a speed of up to 2,200 m/min. Therefore, reactivation of the PM would only be a good idea if high-quality products, for example SC-B offset paper, could be produced on it in future. China appeared to have a longterm need for such quality. However, taking into account the production line efficiency, the PM should also be able to produce high quality newsprint. While Stora Enso and Huatai Paper considered a joint venture, Voith was to examine the conversion options and, if applicable, develop a modernization offer.

What had to be done?

What had to be done to make the old PM 6 “fit” for SC-B and newsprint was clear: On the engineering side, the existing 2-roll soft calender had to be replaced by a modern multiroll calender. A Janus calender particularly lends itself to this. Its roll stack angled at 45 degrees works especially well with the sheet run.

But one particular challenge still had to be overcome: Stora Enso and Huatai Paper wanted a cost-optimized concept. Within the overall concept and taking into account the quality and safety requirements, Voith then examined the degree to which it was possible to continue using the existing equipment of the soft calender, to modify it and still meet the technological objectives. After a thorough examination of the old PM and its parts, the result was that both the deflection compensating rolls, including their hydraulics, and the thermo roll and two steam moisteners could be used again. Furthermore, Voith advised that the entire PM be equipped with a completely new web transfer system. Besides the machine components, the existing automation was also put to the test. The previous machine-orient-

Opening ceremony of the PM 6 in Dongying, China.



ted controls should be replaced by the modern OnControl system. Particular attention had to be paid to ensure the reused hardware and the new, Siemens PCS 7-based controls were optimally coordinated. In addition, it was decided to renew all pneumatic and hydraulic control components and the field devices relevant to the machine controls as part of the rebuild. As a result of the modernization, it also made sense to create entirely new documentation for the machine-oriented controls, the pneumatics, and the hydraulics. The installation of an OnQ ModuleTherm actuator was recommended for reliable control of the CD caliper profile on the Janus calender – as usual, controlled by the Profilmatic software.

The developed concept convinced the partners Stora Enso and Huatai Paper, so that Voith received approval for the realization.

How the job was done

First, the paper machine had to be unpacked at the mill site in Huatai, the components checked for completeness and condition and, in some instances, refitted. When stored in 2004, the PM was maintained but not restored. A trouble-free installation within the given tight timeframe would not have been conceivable without fastidious inspection using decadesold documentation and the specialist support of various Voith construction engineers and technicians. Voith took on the basic engineering tasks, which made a fundamental contribution to the problem-free and quick rebuild time. The close collaboration with Stora Enso Huatai and Haisum Engineering

also contributed to the success. After the automation engineering was finished, the reconstruction of the modernized PM 6 began in May 2007.

Thanks to the good preparation, the installation was trouble-free. The fact that the new Janus calender could be completely assembled in the Krefeld workshops in advance and all of its essential functions tested made a significant contribution to the smooth installation. The OnControl controls were similarly subjected to several tests before delivery and adapted to meet customer requirements. Thus, the PM 6 was able to be started ahead of schedule on 25 November 2007 in Dongying and was accepted by the operators just two months later – a result of the cooperation by the Stora Enso and Voith teams.

Today, the PM 6 in Dongying is the first and only paper machine in China on which SC-B is produced on line. And the establishment of this paper quality has also been successful, because the production line is operating at 100% capacity with the production of a high-quality SC-B product. The “old lady” is once again gleaming in her youthful splendor and the concept for the joint venture between Stora Enso and Huatai Paper has been a complete success. Thanks to their know-how and the competent and committed staff, Voith mastered this difficult assignment with flying colors and was even able to exceed the customer’s expectations. The PM 6 is the fifth Voith PM to be successfully put into operation on Huatai premises within seven years – a fantastic result.

Customer Comment



Carsten Wenk
Operational Director
Stora Enso Huatai
(Shandong)
Paper Co. Ltd.

“The early commissioning, under-shooting of the project costs, customer acceptance of the product and production clearly above the plan since commissioning make this project a success. All those involved in the project have accomplished outstanding things and Voith clearly contributed to it.”

Contact



Bernhard Häussler
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Modernization of two deinking lines in Glückstadt

“DIP on demand” for faster grade changes

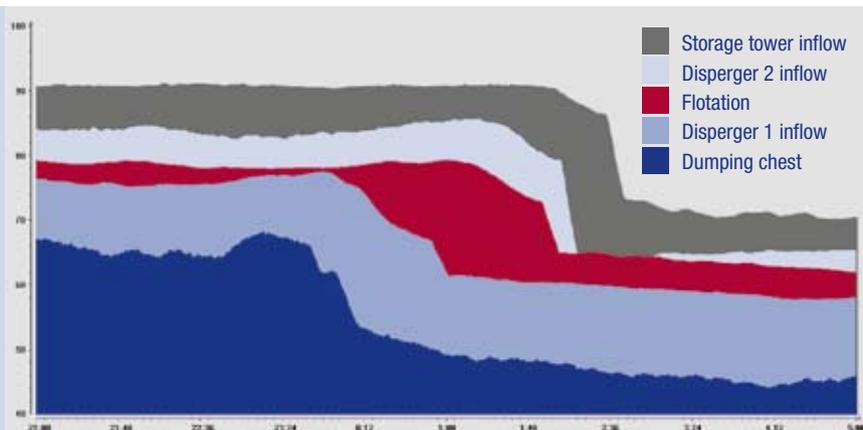
Voith Paper Fiber Systems has modernized and extended two deinking lines (AP2 and AP3) at Steinbeis Temming Papier, Glückstadt, Germany. At the touch of a key, these rebuilt lines prepare deinked pulp in various qualities for printing and copying papers. The line concept developed for this purpose enables faster and more frequent grade changes.

Voith Paper Fiber Systems has modernized and extended two deinking lines (AP2 and AP3) at Steinbeis Temming Papier, Glückstadt, Germany. At the touch of a key, these rebuilt lines prepare deinked pulp in various qualities for printing and copying papers.

The line concept developed for this purpose enables faster and more frequent grade changes. While line AP3 continuously produces deinked pulp (DIP) at about 66 to 70% ISO brightness, line AP2 must produce DIP at 60 to 90% ISO brightness

View of the DIP line in Glückstadt: screening, drainage and thickening.





Screenshot shows brightness development over the subsystems of DIP line AP2 during automated grade change.

Technological data of DIP line AP2

DIP production:	460 tons/24 h
Yield (depending on grade):	81 - 75%
Brightness increase:	> 20% ISO
Dirt speck reduction:	> 98%
Stickies reduction (Tappi):	> 98%
Specific energy consumption:	max. 565 kWh/t
Specific effluent:	max. 8 l/kg

with extremely fast grade change requirements. In other words: DIP on demand.

Based on the compact and energy-saving Voith EcoProcess, line AP2 is designed for furnishes with 20 to 35% ash content and 35 to 65 SR (118-365 CSF) freeness. All the line machinery and quality control systems can be programmed to the target values of the various grades. Only one qualified operator is required for the entire line (not including recovered paper charging), thanks to automated operation with startup/shutdown sequences programmed into the process control system.

The recovered paper furnish for these DIP lines originates both from household newspapers/magazines and from superior grade office waste with high filler content. Fiber and fines losses have been minimized by dispensing with washing, for the first time in this application area.

A production control system adjusts the line throughput according to re-

quirements. For the automated grade change program, in addition to conventional sensorics, Voith uses for the first time newly developed brightness sensors that also measure the UV component.

Thanks to intelligent bleach control (OnQ Bleach), brightness uniformity is improved nearly to perfection while at the same time reducing bleaching agent cost outlay.

Flying grade changes

To enable almost immediate grade changes, overall stock consistency is continuously determined by a new method combining fiber and fillers content measurement. Meanwhile, there are several trouble free grade changes each week at Steinbeis Temming Papier without any significant outage time.

The new line concept has greatly simplified office paper production logistics, thus eliminating the need and expense of keeping long-term inventory of each individual grade.

Customer Comment



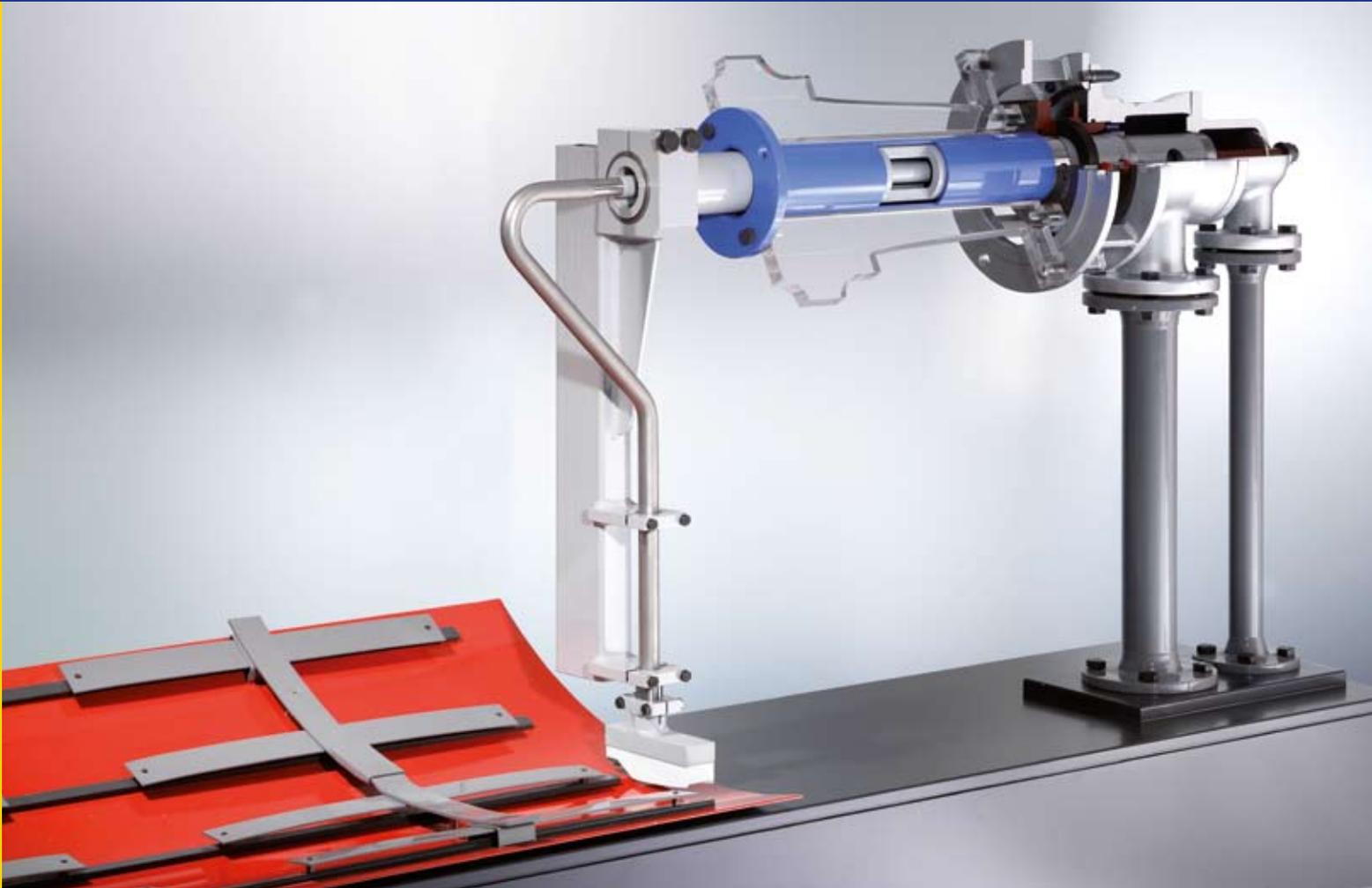
Michael Söffge
President
Steinbeis Temming
Papier

“Thanks to Voith as system supplier, we successfully realized the extremely demanding modernization of our AP2 deinked pulp line.”

Contact



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V^{Plus} Steam Joint and the V^{Plus} ThermoBars ensure optimal dryer cylinder performance.

Value+ Steam Technology Optimization Package

New steam technology concept improves drying process

A large portion of energy cost in the paper industry is incurred when drying the paper. Reducing energy consumption in the dryer section is therefore one of the most pressing tasks to increase the efficiency of paper production. The new Value+ concept makes savings of up to 20% possible, depending on the system.

Steam technology – the challenge

- Energy savings ↗
- Production costs ↘
- Environment +

Value+ Steam Technology Optimization Package optimizes the drying process

Energy savings up to 20% with Value+.

In the past the operating speed of many paper machines was increased in order to increase production. In the process, the steam technology was oftentimes not adapted to the new conditions. As a result, the specific steam consumption often increased, that is, the ratio of the number of tons of paper produced and the required quantity of steam increased and was therefore less efficient (Fig. 1).

As a holistically-minded process supplier, Voith Paper takes comprehensive consideration of all aspects involved with the paper drying process. Using this knowledge, we develop custom solutions as part of the Value+ Steam Technology Optimization Package (Fig. 2). The following V^{plus} Components make it possible to save energy, thus increasing the efficiency of the production process.

Optimizing the steam and condensate system

In order to modernize the system, first an analysis is performed on-site. This is mostly to locate weaknesses in the drying process, heat transfer of

steam to the wet paper, the drying cylinder dewatering and system instrumentation.

Here, the drying is not purely a heat conductivity problem but rather is affected by other factors such as pocket air humidity and movement in the ambient air and pressure. Based on this all-encompassing analysis, the optimum web drying is calculated and developed. The key element for designing new as well as modernized systems is the process calculation program which gives the plan of action a solid founding. The potential reflux of capital consists mainly of saved steam and/or the increased production output.

Saving steam can, for example, be achieved by reducing quantities of exhaust steam and better arranging dryer groups among each other. Further potential can also be found in steam-heated auxiliary consumers. Their consumption can be reduced through a proper recycling of heat. Depending on the system, savings of up to 20% is possible. An increase in the production output can always be

achieved where the drying process is the bottleneck in the paper production process. The drying output is determined by the average difference between the temperature of the roll surfaces and the paper web temperature. This can be increased by raising the steam pressure, making constructional alterations or using condensate turbulence generator bars, which can increase the drying output and resulting production speed at 1,000 m/min by approximately 20%.

In contrast, insufficient evaporation can still reduce the speed despite high heating. Saturated ambient air or a poor air exchange can interfere with the material transmission. The process assessment, combined with a broad range of experience and dependable hardware, makes it possible to design custom solutions that can reach amortization in less than a year.

V^{plus} Steam Joints with stationary siphons

In many current drying cylinders, the dewatering is performed by steam joints with rotating siphons. To ensure

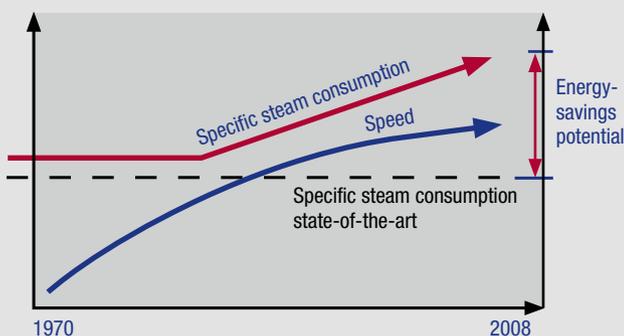


Fig. 1: Energy savings potential in steam technology.

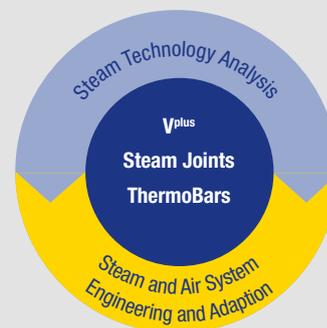


Fig. 2: Value+ Steam Technology Optimization Package – tailor-made customer solution.

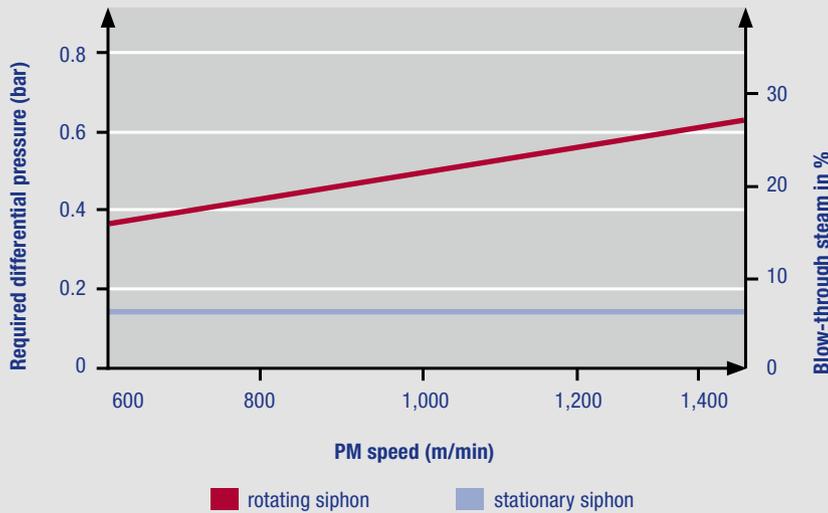


Fig. 3: Stationary siphons with low differential pressure and reduced blow-through steam provide for reliable dewatering and optimal energy requirements across the entire range of speeds.

a reliable dewatering of the drying cylinder, the differential pressure must be continuously increased with a rising PM speed. At the same time, the blow-through steam increases (Fig. 3).

Low cylinder pressures and increased production speeds often even have the result that the cylinders cannot be dewatered. As a result of the accompanying decline of the heat transfer, the drying capacity can drop massively.

Steam joints with stationary siphons from Voith offer an economical alternative. They make for reliable dewatering at the lowest differential pressure. In addition, the blow-through steam does not intensify with increasing speed and remains at the lowest level when the siphon diameter is optimized. Voith steam joints are

maintenance-friendly thanks to their light, compact design. The necessary replacement parts can be delivered quickly and inexpensively ex-warehouse.

V^{plus} ThermoBars

For production speeds greater than 500 m/min, the condensate forms a laminar ring in the drying cylinder, which reduces the relative heat transfer of the steam to the interior wall of the cylinder.

ThermoBars break up this ring by creating turbulences to create an increase in the heat transfer and drying capacity. This can increase the production speed and output.

The custom planning of ThermoBar installations in selected drying cylinders creates a precise improvement

in the heat transfer while improving the moisture profile at the same time.

Mini ThermoBars for the edge region of the cylinder have a positive effect on moist edge strips of the paper web.

Increasing energy costs reduce the efficiency of the paper industry and demand action.

V^{plus} components help to reduce energy costs, thereby securing competitive advantages.

Infobox:

- Can be used regardless of paper type, for example, with graphic papers, cardboard, packing papers and tissue papers
- For more information on Value+, please visit <http://www.valueplus.voithpaper.com>.

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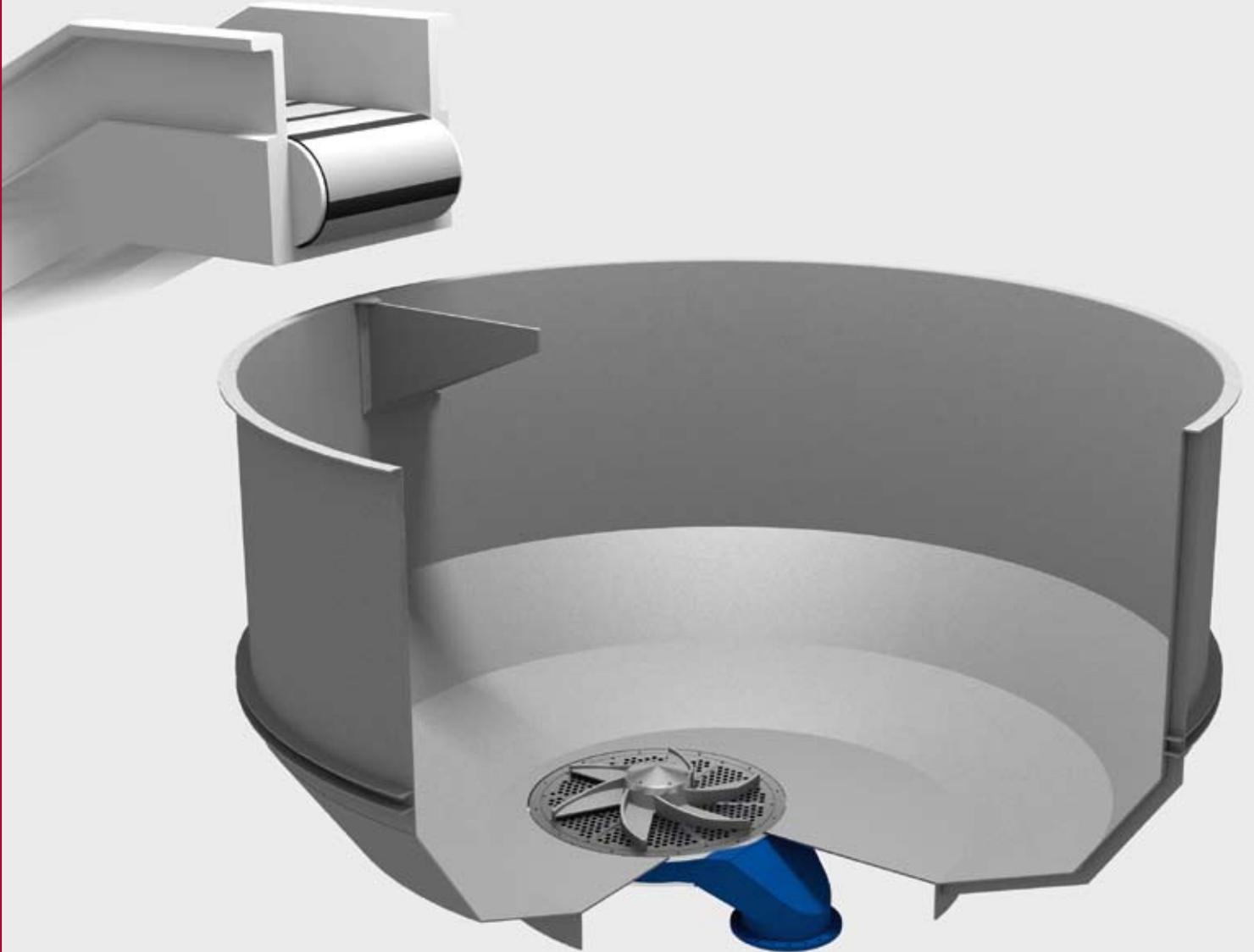
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IntensaPulper IP-V with double break bottom tank and eccentric rotor.

IntensaPulper now for recovered paper

Up to 25% energy savings without sacrificing quality

With the new IntensaPulper concept, Voith Paper has taken another step forward in saving papermaking costs. The IntensaPulper is more efficient than conventional pulpers, not only for virgin fiber furnish, but now for recovered paper as well. Furthermore, nearly all LC pulpers can be retrofitted with Intensa technology.

Up to 25% energy savings not only sounds fantastic – it is nothing short of revolutionary. Official recognition of this feat came in October 2007 when Voith Paper was awarded one of the three coveted Palmes de l’Innovation at the ATIP trade fair in Grenoble, France for the IntensaPulper design. To achieve these enormous savings without sacrificing quality, Voith Paper implemented some radical design changes in the IntensaPulper IP-V for virgin fiber furnish. These include eccentric arrangement of the rotor in the pulper tank and double break bottom tank geometry for flow-optimized transition from the pulper floor to the cylindrical tank wall. The sum effect of these measures is not only extremely intensive and faster mixing, but also less energy consumption.



IntensaPulper IP-V in operation.

Savings for virgin fiber pulping

To put energy savings into perspective, a virgin fiber capacity of 100 tons/day processed using the new Intensa concept under design conditions saves approximately 175,000 kWh per year or up to 25% of the pulping energy formerly required. Thanks to systematic application of this concept, the same technology can now be used for LC pulping of recovered paper furnish. For pulping recovered paper, the IntensaPulper flow characteristics had to be modified even more radically.

The decisive difference lies in the number and arrangement of the tank’s stock deflectors. Since every flow deflection causes energy losses, the IntensaPulper IP-R for recovered paper furnish only has one deflector

in the pulper tank instead of the four or six tank baffles normally used. This specially shaped deflector is designed to minimize energy losses while effectively directing the flow of stock. The rotor has also been technologically improved, resulting in more effective defibering and energy-saving agitation even at high stock consistencies. Intensa technology is now used very successfully in Japan for pulping recovered paper, and additional customers in Asia and Europe have already ordered an IntensaPulper IP-R for pulping recovered brown grades.

Advantages of the Intensa concept

All papermakers can benefit from the proven advantages of energy saving and optimal agitation, because Inten-

sa technology can be retrofitted to conventional LC pulpers as well. An “IntensaTechnology” upgrade kit, comprised of a rotor exchange or rebuild and flow deflector modification, soon pays for itself with a very fast ROI – thanks to impressive quality improvements and energy savings.

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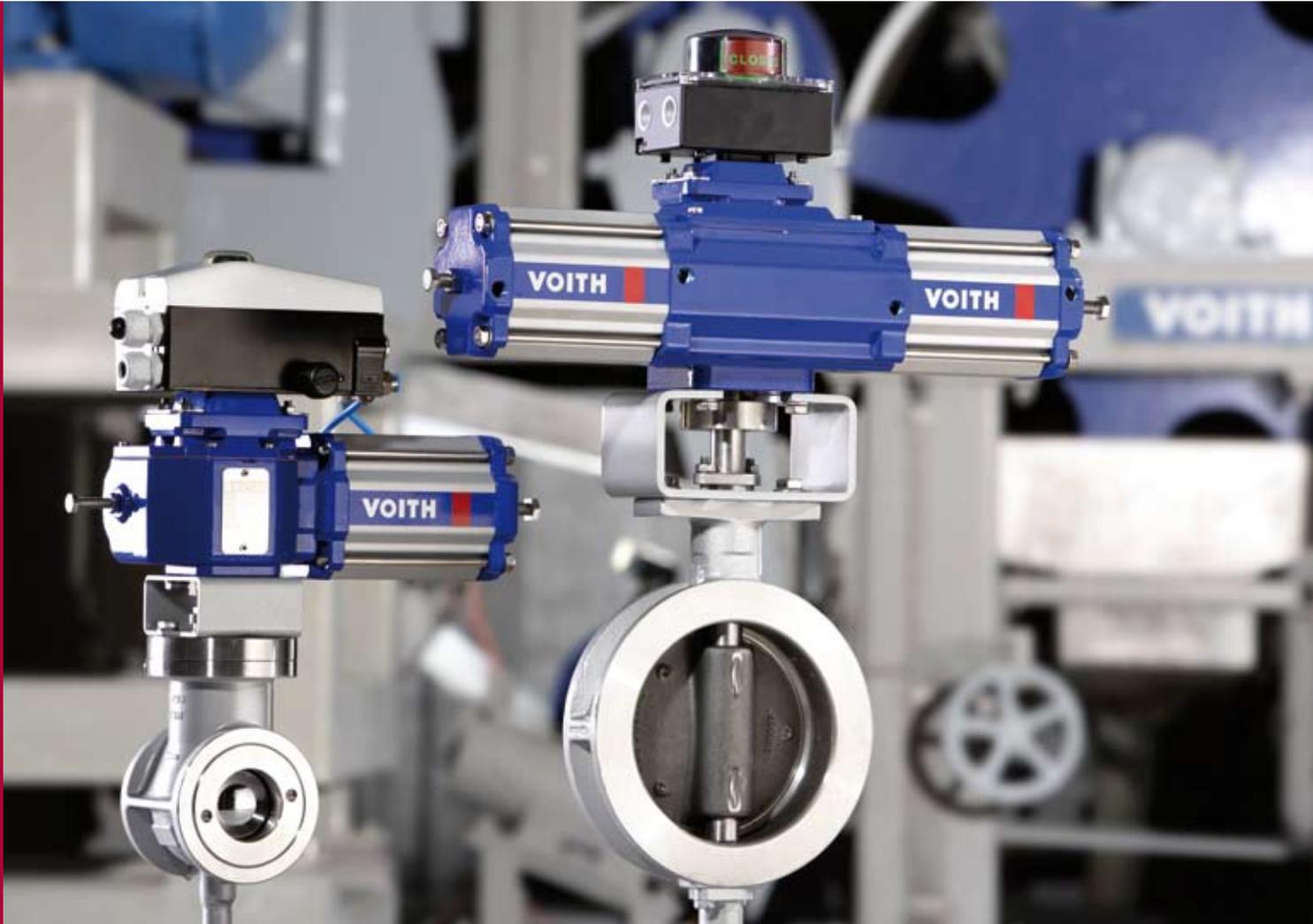
One less interface

Field instruments added to product portfolio

In the middle of last year Voith Paper Automation started the so-called Field Instrument Initiative to provide reliable support to customers and eliminate unnecessary interfaces in the area of field instrumentation.

Field instruments are integral components of every paper machine and make a decisive contribution to the perfect functioning of a mill. However,

plants are often equipped with field devices from different suppliers, making coordination very difficult for the customer. Quotations have to be



On/off & control valves are available in two models: as a ball segment valve with the name "OnC Segment Valve" (left) or the "OnC Disc Valve" butterfly valve (right).

obtained and compared, orders have to be tracked, and deliveries have to be checked: All of this uses up customer resources and leads to a high number of interfaces.

One partner for all needs

Voith Paper Automation hence expanded its product portfolio and since the middle of last year has been offering a multitude of valves and field devices. For this purpose, the company has built up partnerships with a number of firms that are all technological leaders in their respective fields. By now there are already approximately 60 products with different variants being produced exclusively for Voith and according to its design. After the customer has selected the desired field instruments, Voith performs all further steps up to product commissioning. Customers hence profit from guaranteed delivery and constant high product quality, which contribute to smooth, on-schedule start-up of the production line.

On/off & control valves

Thanks to cooperation with the Swedish company Somas Instrument AB, a manufacturer of high-performance valves, on/off and control valves are now part of the permanent product scope. The valves are offered in two different models: as butterfly valves and as ball segment valves. The latter have the advantages of being able to be installed in reject pipes as well as in pulp and water lines and working reliably up to a pulp consistency of 18%. Also, both valve types can be used for steam control and come in low-noise versions for use at high differential pressures.

Level and pressure transmitters

Through a master supply agreement with VEGA Grieshaber KG, Voith Paper Automation offers a comprehensive range of level and pressure transmitters. The transmitters have been adapted to the special requirements of the paper industry and can be used with water, steam, paper

suspensions, coatings, and chemical additives. Due to the robust measuring cell materials (special ceramics or stainless steel), the pressure transmitters can also be used at high temperature or in aggressive media such as sodium hydroxide solutions.

In addition, the special ceramics in particular feature high wear resistance, making the transmitter ideal for use in recycled paper stock preparation from pulping to the headbox. The wide selection of level and pressure transmitters, which are distinguished from each other by means of the measurement method and materials used, ensure that the suitable product can be found for every requirement.

Flow & temperature

Sensors for flow and temperature measurement manufactured by KROHNE Messtechnik GmbH are also in the product portfolio. Like all partner firms, KROHNE is a global leader in its field and is “either the

Product name	Function	Cooperation with
OnC DiscValve	On/off & control butterfly valves	Somas
OnC SegmentValve	On/off & control ball segment valves	Somas
OnC PressSens	Pressure transmitters	VEGA
OnC LevelSens	Level transmitters	VEGA
OnC FlowSens	Flow measurement (magnetic-inductive, vortex, and mass flow)	KROHNE
OnC TempSens	Temperature measurement	KROHNE



Overview of key products.

OnC FlowSens flow meter.

market leader or at least in the top three for all its main products,” according to Stephan Neuburger, CEO at KROHNE. The devices for temperature measurement integrated into Voith’s product portfolio encompass various types of sensors for use along the entire production line. For flow measurement, two measurement methods (vortex frequency and magnetic-inductive) and a device for mass flow measurement are available. Here, too, this ensures that the right device can be supplied for every possible application.

Obvious advantages

A large number of installations worldwide guarantee the reliability of the products. Initial results of use of the Voith product series confirm the success of the Field Instrument Initiative: Through clear assignment of only one contact partner for field instrumenta-

tion, the number of interfaces was reduced significantly and project completion greatly simplified. Through this, customers profit from the lower coordination efforts required, since Voith takes over this task.

Customers are additionally supported in the selection of the appropriate field instruments to ensure that these are optimally coordinated to the plant. If changes are made at short notice during the planning phase for a mill, Voith automatically adjusts the scope of supply of the field instruments. In addition, delivery times and a constant high product quality can be guaranteed. Through the instrumentation provided by a single supplier, integration of the devices into the process control system is simplified and uniform documentation enabled. Maintenance and replacement parts stocking can also be handled more efficiently.

For the papermakers, one of the most important ultimate advantages of the initiative is the combined expertise it provides. Through cooperation between Voith Paper Automation and leading producers, customer wishes with respect to new products or product changes can be implemented better and more precisely. Peter Hägg, owner and CEO of Somas, summarizes as follows:

“Thanks to Voith Paper Automation’s in-depth understanding of the papermaking processes, we will be able to advance development of our valves with focus on the paper industry and on customer needs with Voith as our partner.”

Outlook

The field instrument product portfolio will expand even further. By the summer of 2008, for example, sensors for ash measurement will also be available. A device that measures optical consistency is already included in the product scope; it was developed by Voith for use in the paper industry.



Selection, delivery, installation, and monitoring from one source: inspection of the OnC PressSens pressure transmitter.

Contact



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SpeedSizer film press with Luna roll covers provides a constant film coating process.

LunaFilm and SolarCoat: The new applicator roll covers

The key to successful film coating

The film coating application is a complex process in which many different parameters have to be considered. Applicator roll covers have to be able to run reliably and consistently for long periods of time and have to enable cost effective production of high quality end products. To fulfill these demands, Voith Paper Rolls has developed two new applicator roll cover families: LunaFilm and SolarCoat.

The paper industry employs film presses for the production of coated and sized paper in a broad speed range. The record-breaking production rates for packaging paper of 1,500 m/min and for coated paper of 1,700 m/min make high demands on the roll covers. The applicator roll covers have a strong and decisive effect on paper machine efficiency and paper quality.

Film application process

The film application process depends upon various factors. The rod pre-meters the amount of film applied on the roll cover. Hydrodynamic conditions under the rod, machine speed, rod diameter, rod pressure, rod grooves, coating color solids as well as the wettability of the cover, cover hardness and cover roughness all affect the amount of film. The surface of the roll cover has to be designed

to enable the formation of a homogeneous film which is transported to the paper in the nip. The film transfer depends on various factors, including: film coating composition, absorption behavior of the paper, dwell time in the nip and nip pressure.

To achieve an even coating color distribution and ideal runnability of the film press, the nip width should be uniform across the whole roll face. For coating applications, the nip pressure has to be lower to minimize the penetration of the film coating color into the paper. In contrast, a higher nip load is required for starch penetration.

Which roll cover is the right one?

Due to the various demands of a paper machine, it is evident that only a broad product range with different

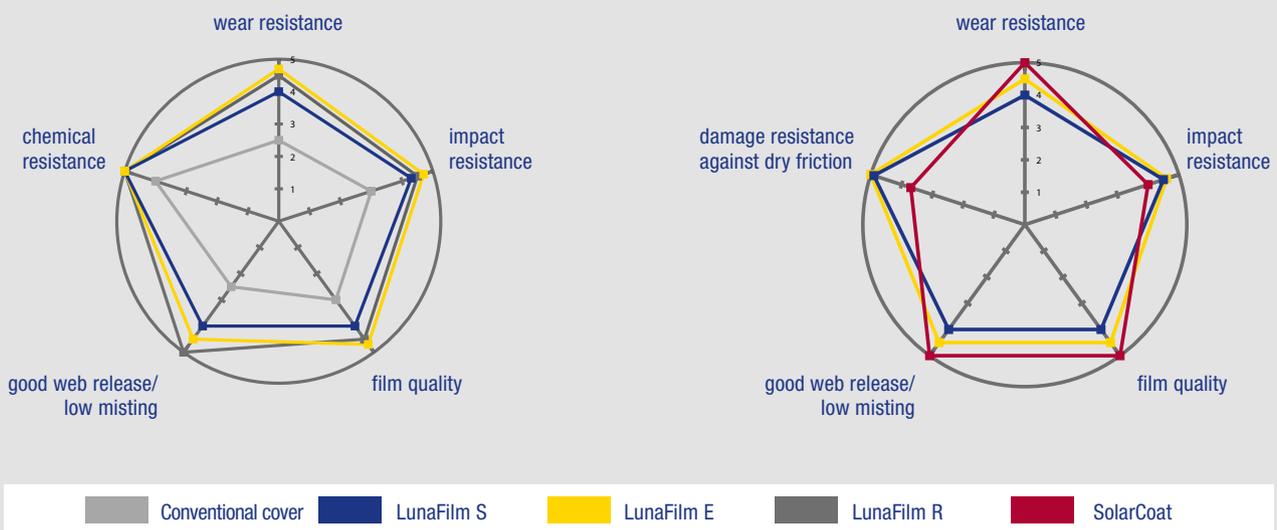
features can provide the correct selection for the roll cover.

LunaFilm

LunaFilm combines a new rubber material with high quality fillers and fibers. Thus, the durability is increased, the abrasion reduced and the roll cover surface optimized for the particular case of operation. LunaFilm is available in three different versions:

LunaFilm S is the basic product of the new fiber reinforced Luna rubber cover series, which provides additional impact/mark resistance against paper wads and wraps.

LunaFilm E is highlighted by enhanced abrasion resistance. The typical roughness value (Ra) is 1-1.5 µm. Uniform film quality and stable web run are maintained over long running periods.



Film sizing properties of LunaFilm.

Film coating properties of LunaFilm and SolarCoat.

LunaFilm R provides the highest roughness. The higher initial roughness (typical Ra = 1.5-3 µm) is retained throughout cover life cycle. It is utilized when additional coating distribution/transportation onto the roll surface is required, and/or additional control of web release is needed.

SolarCoat

SolarCoat is a polyurethane cover which is specifically designed for the film coating process. The excellent wettability of SolarCoat provides best coating film formation and splitting characteristics. Misting is minimized at very high coat weights and high machine speed. The high hydrolysis resistance maximizes hardness stability. The resulting uniform nip conditions as well as stable web release ensure a trouble-free operation during the film coating process.

Infobox: Benefits of LunaFilm and SolarCoat

- Consistent film quality without rod splitting due to optimized dynamic properties and surface conditions
- Minimized process variations due to thermal and mechanical stability during the run cycle
- Customized dynamic properties at the roll nip enabling the desired transfer of starch/coating into the substrate
- Optimized sheet release, consistent sheet run and reduced misting due to customized cover surface and roughness
- Longer runtime and less unscheduled downtime due to improved mechanical stability and abrasion resistance

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SolarCoat is a polyurethane cover with excellent wettability providing best coating film formation and splitting characteristics.



TerraGloss – the new hard calender roll coating.

The new thermal roll coating

Energy savings up to 30% due to TerraGloss

TerraGloss is the new thermal coating for hard calender rolls. Numerous field tests have shown that the assembling of TerraGloss leads to longer runtimes, partly even doubles it. Additionally, the line load and the heating energy can be reduced. This may lead to energy savings of up to 30%.

Each paper has special demands

The demands of the hard roll for calendering or smoothing of the surface differs in corresponding paper grades. Consecutively a few attributes are listed as an example:

- Packaging paper requires high smoothness and moderate gloss while maintaining the caliper.
- Coated and uncoated magazine paper requires a very smooth,

high gloss quality in a fast speed production process using an abrasive filler content material.

- For profile demanding speciality and art paper, often the caliper must be corrected with high energy transfer systems like CalCoil and Thermajet (auxillary heating systems) in the calender.
- Decor paper reacts sensitively to heavily loaded thermo roll surfaces.

The application of moisture/steam in front of the calender nip can free filler

material at the paper surface and intensely stress the thermo roll. The performance of the calender can be advanced with TerraGloss. Each desired paper property can be improved. Besides the improved paper quality, TerraGloss convinces through better durability of the factor 10 relatively to chilled cast iron roll, depending on the single case. According to the process demands, TerraGloss can be doctored intensively, but can also be driven without doctor blades.

Special production know-how

TerraGloss is the result of innovation and development: optimized material on carbide and nitride basis, highest kinetic energy during the coating process and a special grinding. Voith Paper developed a proprietary coating system, which is exclusively available to our shops. The customized hard material sizes, the selected filler matrix and the special finishing offer a compact layer of highest hardness and adhesion, which can be grinded to the highest tolerance.

Operating experience

Application engineer Kurt Landertshammer reports about the first application experiences:

“On a high speed paper machine in the LWC sector it was possible to reduce the heating energy of a thermal roll from 1,300 to 900 KW with identical calendering results. The reduction in energy usage yields a saving potential of several 100,000 euros each year.

In the Janus calender for the SC depression production, the durability of the thermal roll could be doubled with TerraGloss and the application of the micro-abrasive doctor blade Voith SkyTop T.”

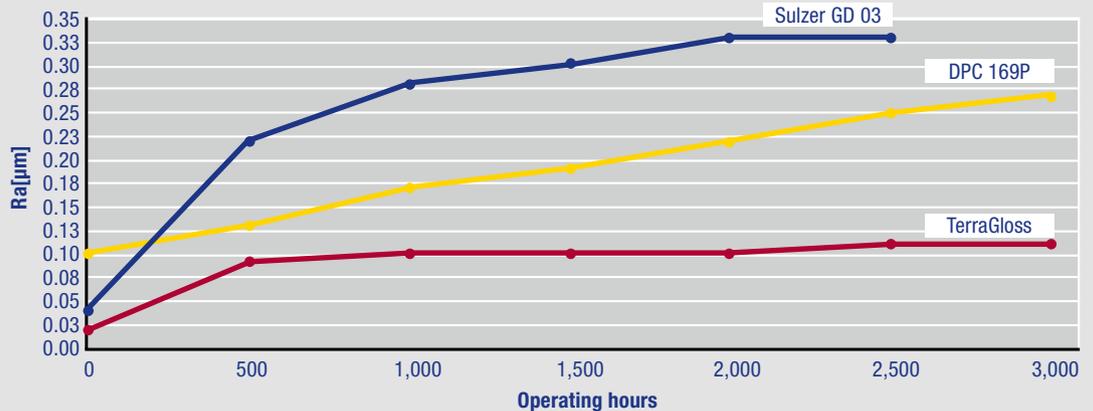
Infobox: TerraGloss benefits

- Reduced line load and heating energy at equal or improved paper quality, therefore energy savings up to 30%.
- High resistance against abrasion.
- Stability of the once adjusted surface roughness.
- High resistant to chemical and mechanical impacts.
- Due to the high hardness grade (up to 1600 HV), TerraGloss has longer runtimes.
- The state-of-the-art finishing improves the shape accuracy permanently, therefore complex energy adjustments can be minimized.
- Longer runtime of the thermal roll due to constant surface roughness and minimal abrasion.
- Positive impact on gloss and /or smoothness through wide roughness range (0.02 µm and 0.8 µm Ra).
- Micro-abrasive doctor blades (SkyTop T) can be used continuously.
- Highest resistance against contamination of the surface.
- Volume gentle calendering.
- Best profile also at the hard-/hard-nip without correction due to optimized grinding.

Contact

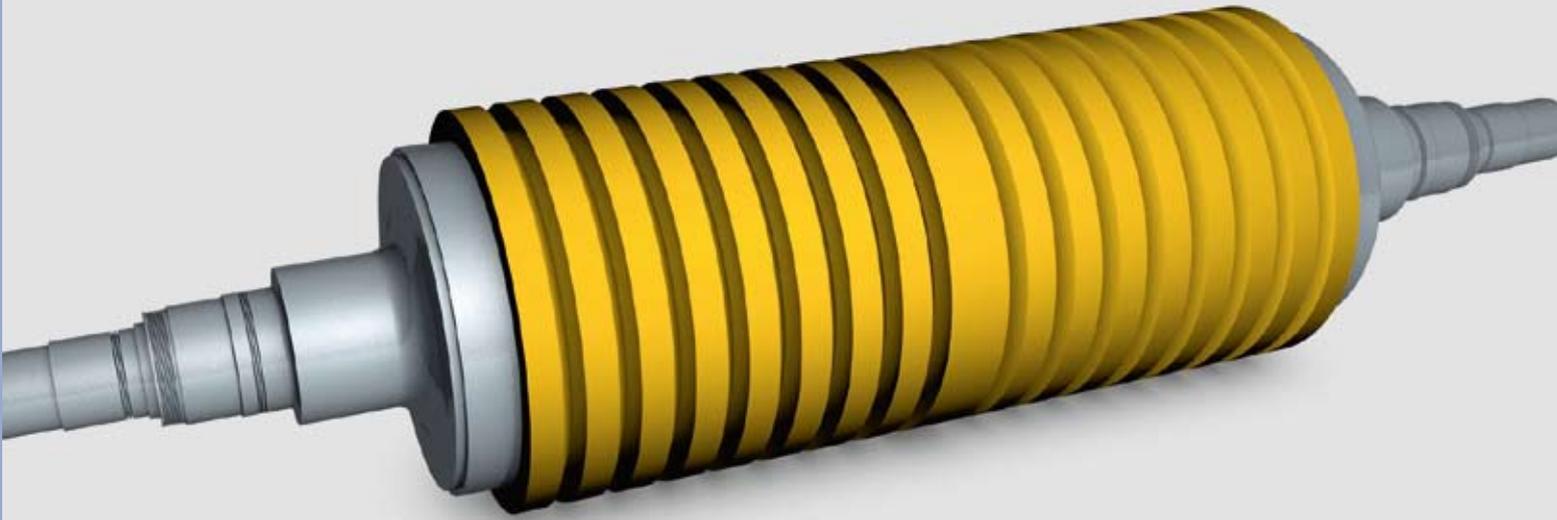


Dr. Hasso Jungklaus
Rolls
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Example of possible reduction of heating power with TerraGloss at constant paper quality.

Roughness process of the TerraGloss coating in comparison to competitors.



Web tension forces the lamellas of the WebTense roll cover to lie down and to the side – thus achieving the spreading effect.

WebTense lamella roll cover

Replacement of conventional spreader rolls in coaters and calenders

Until now, conventional spreader rolls were the only medium to prevent wrinkles in the web. Today spreader rolls in coater machines and calenders can be replaced by the lamella roll cover WebTense. The WebTense design creates new opportunities.

Papermaking is a challenging job. Massive amounts of high quality paper must be produced on a consistent basis. Ideally, the paper web in the machine is even and smooth at all times; reality shows that this is not always the case. Because the paper sheet is pressed, dried and rewetted again in the different sections of a

paper machine. The paper adapts by shrinking or expanding to variations of moisture, temperature and draw, depending on the section it is passing through. But due to the fact that the paper sheet is one single band, the width cannot be changed arbitrarily. Variations in width lead to waviness and possible wrinkles in the

worst case. Spreader rolls counteract these effects. This is a working principle, but also goes hand in hand with high maintenance and service costs.

Conventional spreader rolls can be replaced by rigid rolls

Thanks to the WebTense lamella roll cover, conventional spreader rolls in coater machines and calenders can be replaced by rigid guide rolls today. WebTense is applied to a rigid steel roll (EvoRun) or carbon fiber composite roll (CarboRun). Web tension forces the lamellas to lie down and to the side, thus achieve the effect of spreading the sheet. Depending on the specific application, WebTense can be made of rubber, polyurethane or high temperature resistant rubber.

The advantages of WebTense

There are many advantages of replacing conventional spreader rolls with WebTense.

- A simple construction – a rigid roll core instead of multiple segments

- Easy maintenance – no complex mechanical service of segment bearings
- Elimination of sealing and segment bearing leakages
- Energy saving – less drive capacity necessary
- Larger paper wrap angle (15°-180°) possible
- Less space required because the conventional spreader roll, up- or downstream guide roll, can be replaced by WebTense
- Vibrations can be eliminated with the use of CarboRun

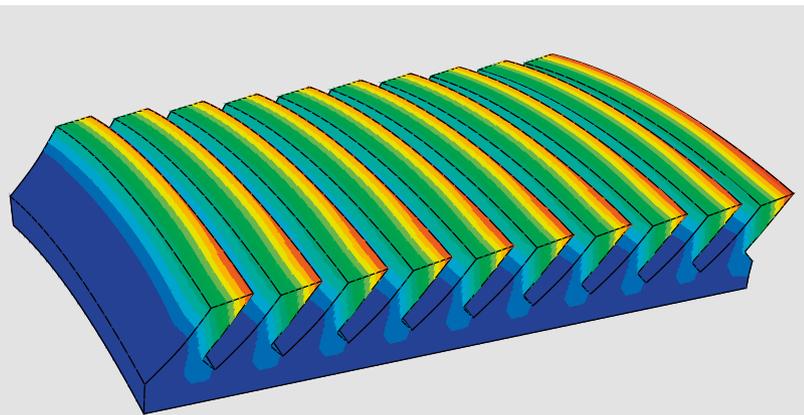
Depending on position and application, WebTense reaches a life time of one to several years. The cover must only be replaced when the lamellas lose their elasticity and thus diminish the spreading effect.

Replacing a conventional spreader roll with WebTense needs some engineering work. The web guidance and the specific demands have to be exactly analysed. The design of the roll cover has to be tailor-made for each application.

Contact

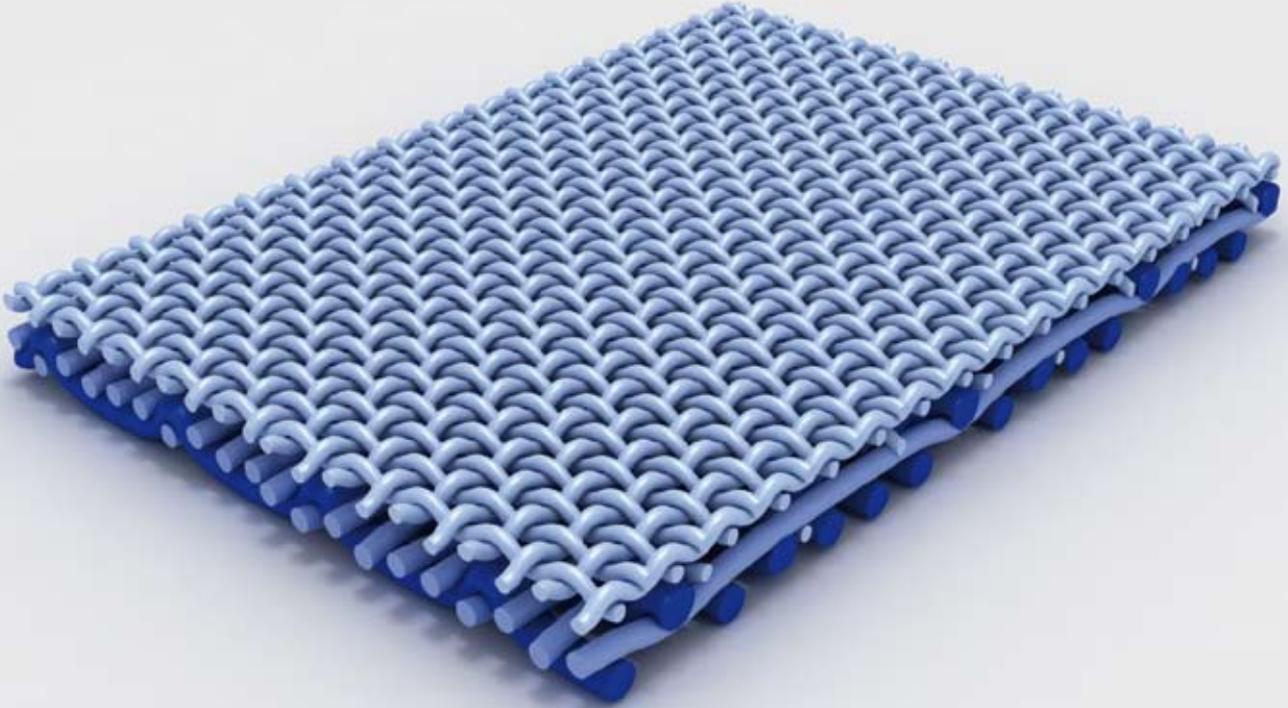


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WebTense can be made of rubber, polyurethane or high temperature resistant rubber.

Deformation of the cover in radial direction.



PrintForm HS: High paper quality at high speeds.

Newsprint paper at the highest speeds and of excellent quality

Development aimed at meeting multiple customer goals

How can the continuously increasing demands for paper quality be met? Where is there potential for optimization?

Paper manufacturers and forming fabric producers are trying to provide an answer to this question.

Decreasing growth rates in the paper market through recent years are responsible for the constantly increasing pressure for quality and cost reductions expected from paper producers. Reducing the raw material and operating costs as well as maximizing the machine speeds and efficiency are therefore the prime goals of paper makers. Today the market allows for no compromises in quality whatsoever.

On the contrary, quality demands are increasing steadily.

The forming process poses immense challenges for both machine builder and fabric producer and there are a variety of factors that contribute to this. Shearing forces and degree of turbulence must be controlled just as precisely as the filtration and thickening processes. The retention of solids

must remain stable and at adequate levels to limit the consumption of chemicals. In addition, drainage control is targeted to prevent sheet sealing or hydraulic sheet forming defects. For the ideal formation and control of two-sidedness in the counter blade of the former, the condition of the outer layers of the sheet as well as the remaining fluid core have to be adjusted carefully.

The magnitude of this challenge becomes clear when considering the time required to form the sheet. In the case of a modern, high speed paper machine, 75-80% of the stock volume is already dehydrated, that is, the water is separated from the fibers after approximately 20 milliseconds. After another 40 milliseconds, the sheet has already reached the point of immobility, meaning that the fibers have reached their final position in the sheet. The main properties of the paper, with the

exception of the outermost surface layers, are now formed.

Dewatering through the forming fabrics produces a fiber mat on the paper side of the woven surfaces: Step one of sheet formation. Here, the screen design plays an important role in the sheet forming process.

What requirements does the forming fabric have to meet?

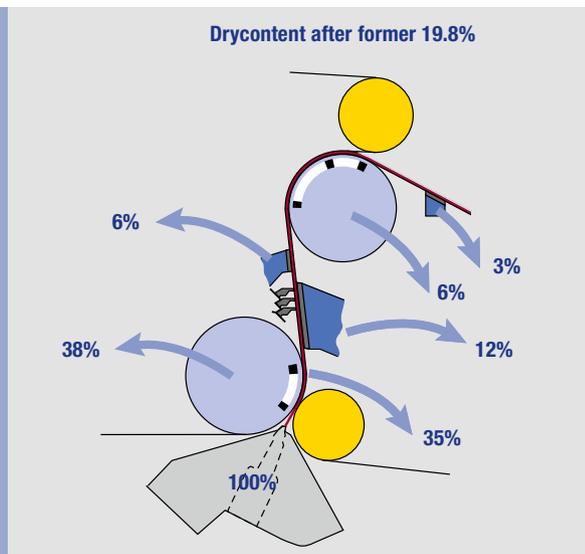
They must contribute to improved paper quality under the extreme conditions of the paper machine. For publication grades such as newsprint or LWC a high percentage of waste furnishes are used:

- Improved dye absorption or color penetration, an important quality criterion of printed paper, requires a highly symmetrical and densified sheet structure with a low porosity.

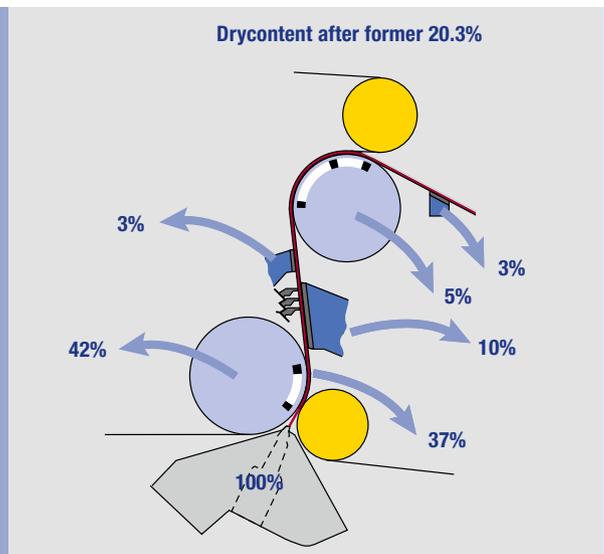
- Improved surface topography of the fabric is necessary to enhance the surface roughness and visual properties of the sheet.

Both of these quality criteria must also be considered in combination with other machine sections, which also have significant effects on the sheet.

The basic requirements for a consistent sheet structure, good formation, minimal marking by the forming fabrics have to be met in terms of sheet quality. The speed-specific requirements include the lowest possible water transport by the forming fabric and adequate lifetime. Too much water transport by the forming fabrics at high machine speeds would result in a heavy discharge of water and soiling of the machine which can seriously effect runnability efficiency.



Dewatering benchmarked with super fine SSB.



Dewatering with PrintForm HS.

PrintForm HS
a developed solution

The achievement of high paper quality at higher paper machine speeds was the goal in developing a new type of forming fabric. The result is the PrintForm HS and its impressive technical specifications. With a Fiber Support Index (FSI) of up to 235 and over 1,800 support points per cm², it is not only the finest fabric but with a caliper down to 0.58 mm it is also thinner than most two-ply fabrics.

PrintForm HS, which is used in the TQv former on both inner and outer positions, should make a considerable contribution to solving the aforementioned problems but can only be proven by practical testing. Voith Paper Fabrics tests its machine clothing on test paper machines such as the Paper Technology Center (PTC) in Heidenheim before the first deploy-

ment to a customer's machine, in order to assess a large number of operating and quality parameters. These include, on the one hand, the direct properties of the forming fabrics, such as CD and MD dimensional stability, or the water transport and associated cleanliness of the machine. On the other hand, process behaviors such as dewatering and retention, as well as the actual paper quality attributes of formation, porosity, sheet structure, surface and strength properties.

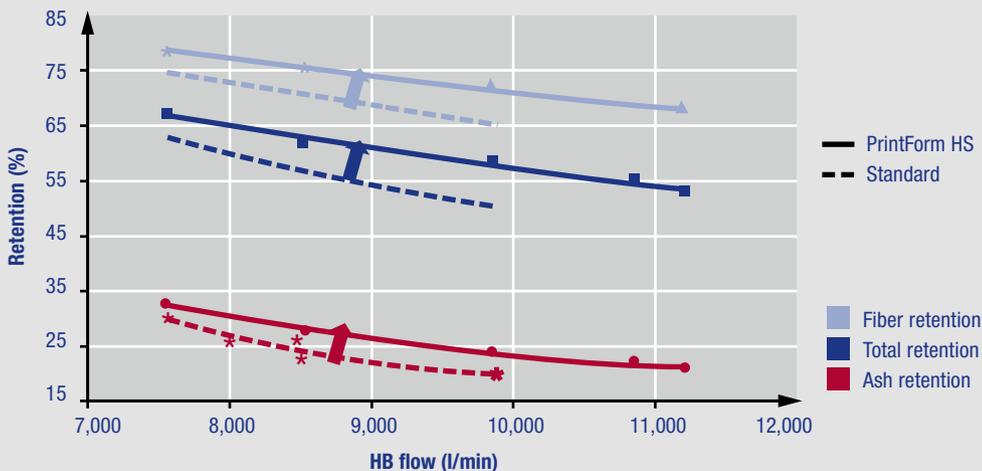
PrintForm HS was tested producing newsprint paper under different trial conditions at the PTC using 100% waste paper base. The test series was carried out on the DuoFormer TQv, for which conventional forming fabrics were used as a benchmark for the PrintForm HS. In order to test the fabrics in the entire production window of the paper machine, the trial plan included multiple

testing points with different settings of vacuum, blade pressures and jet-stock speeds.

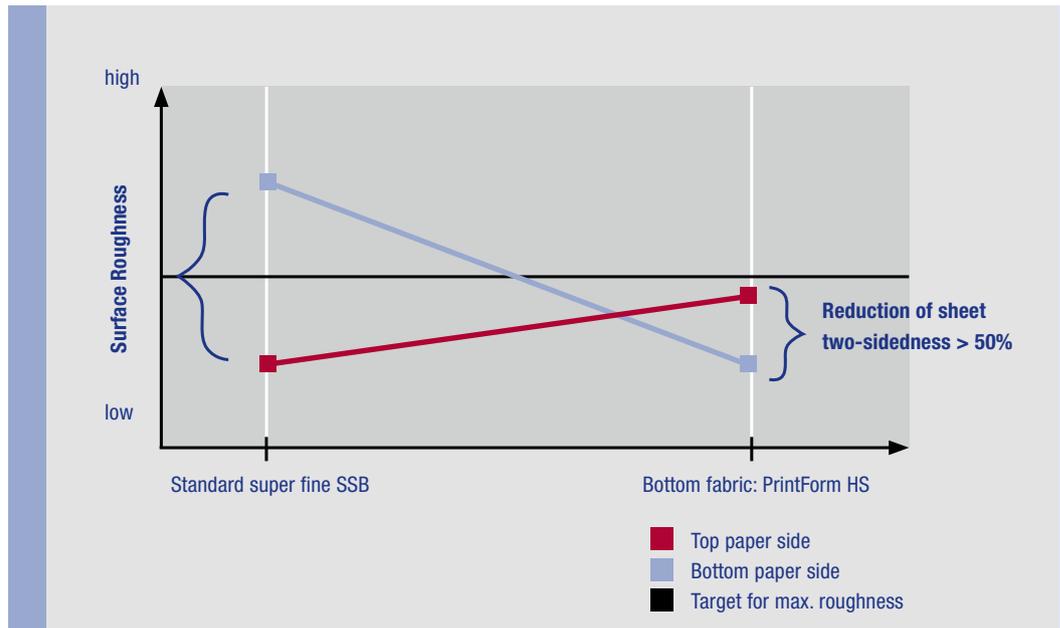
Newsprint paper trial

The machine speed was 1720 m/min on the former. The PrintForm HS and reference fabrics had identical permeability were run through all trial points.

PrintForm HS trials produced considerably better mechanical retention behavior. The retention of both fiber and ash are shown in the retention diagram below indicating potential savings in the retention chemistry, a significant advantage to the papermaker. One of the key development targets for the PrintForm HS was its ability to perform at high speed. The PTC trials included a test, producing Newsprint up to 2,500 m/min. Even at this very high speed, the dewatering behavior remained stable, the dry



Compared to standard fabric: Higher retentions with PrintForm HS and 10-40% less retention aid dosage.



Improvement of the roughness with PrintForm HS.

content after the former remained just as high and there was minimal water transport or discharge, the clear advantage of this new design. This outcome and other results for other material qualities provided the basis for the field experiments.

The ultimate test at the customer's site

Building on the experiences gained at the PTC, the application team reviewed the PrintForm HS ahead of its first test on a customer's machine. The target was to reduce the sheet two-sidedness on a fast-running gravure paper machine.

The customer traditionally ran very fine weft-bound SSB fabrics though the paper roughness was still above the required value on the bottom side of the sheet. PrintForm HS with a 30% higher number of support points, compared with the standard fabric in this

position, was the key criterion for the fabric trial. No design changes were made to the top fabric. A considerable improvement in the roughness on the bottom fabric side of the paper allowed the two-sidedness to be reduced by approximately 50% and the goal of the papermaker to be achieved.

Conclusion

The close cooperation between paper makers, paper mill suppliers and clothing manufacturers allowed for an ideal definition of the target requirements for this forming fabric. In the PTC, the PrintForm HS was able to achieve the stated goals to improve paper quality and increase machine efficiency — and this at machine speeds of up to 2,500 m/min. The application of the PrintForm HS to the customer offered impressive proof that the trial results from the PTC are transferrable to full production machines.

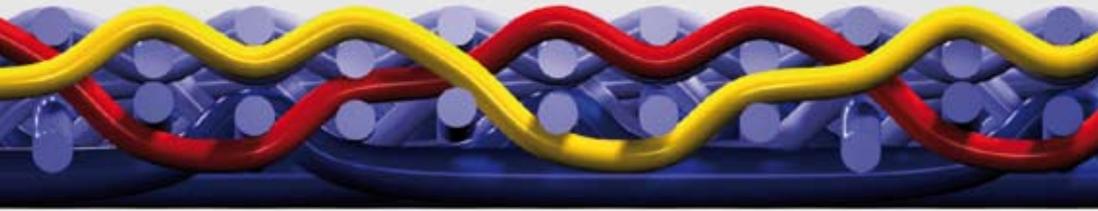
Contact



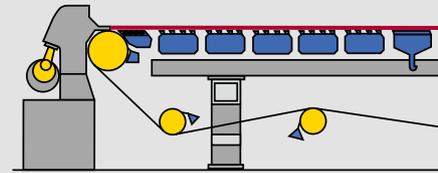
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The eight shaft structure on the machine side.



PrintForm HR – Developed for "hybrid" formers such as the DuoFormer D.

Forming fabric PrintForm/MultiForm HR

Forming a quality sheet on a robust fabric, the perfect combination

Type HR forming fabrics create new possibilities for paper and board producers: they provide long life potential and contribute decisively to paper quality.

The PrintForm HR has proven itself to be versatile in terms of the paper grades it produces and the machine configurations on which it can run. On graphical grades, its successes include a growing number of Hybrid formers, often prolonging the fabric life despite the increased use of abrasive fillers and high forming blade pressures.

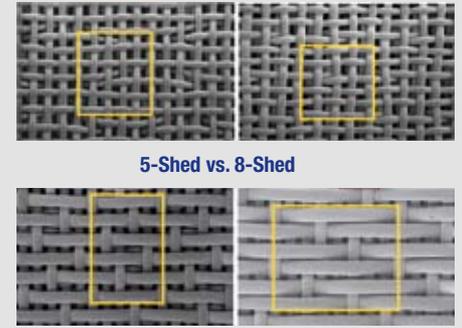
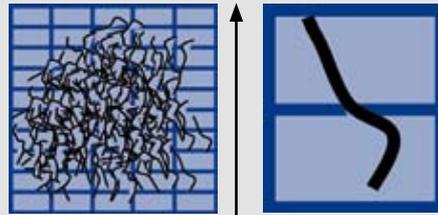
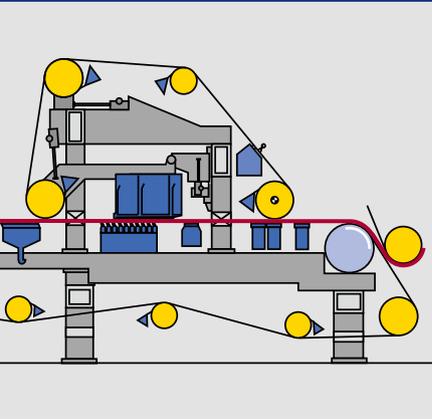
In the packaging sector the MultiForm HR has regularly performed at speeds over 1,300 mpm on gap formers, its robust structure standing up to the extreme drainage conditions. On board machines, MultiForm HR has produced some of the most critical grades in the world in terms of smoothness and visual properties.

The development process

There is a growing number of Hybrid formers used in the market. The DuoFormer D produces a wide range of graphic paper grades often with large amounts of abrasive fillers.

Visual and surface printing properties are increasingly critical in the Board & Packaging sector, for example on bleached, folding box and white lined chip boards.

High-speed gap formers, such as the DuoFormer Base, produce packaging grades that require fabrics with increased stability that also counter pressure from extreme water flows yet maintain solids in the sheet despite



Open warp structure and sheet support mechanism.

Paper side (top) and machine side (below), both as 3:2 ratio.

the increased use of shorter recycled fibers.

The industry required a robust Sheet Support Binder (SSB) fabric which provides a wide operating window for paper quality, clean running and prolonged running time. The development targets for such a fabric were:

- Increased resistance to abrasion on the machine side
- High-drainage capacity but with excellent CD stability.
- High-sheet support, similar to the levels seen on “fine” SSB designs

The PrintForm HQ is already proven on graphic machines often at world record speeds. The design concept

of an open warp and denser weft has shown that drainage can be optimized through maintaining an open surface area and that retention can be improved through improved bridging of the MD-orientated fibers. The PrintForm HR takes this concept to the next level. Maintaining an open warp structure allows increased paper side CD yarns and maximum sheet support.

The open warp structure also allows coarser yarns on the machine side increasing the stability and resistance to abrasion through improved warp burial. The use of 16 shaft structures has been used to good effect in multilayer fabrics to increase their life. Using an eight shaft structure on the

machine side, the HR has an increased the float length by 7.6% compared to the 16 shaft multilayer and 9.3% from a conventional SSB having a five shaft machine side weave.

Benchmarking the project

Benchmarked against a fine five shaft SSB design with similar permeability and machine side yarn diameter, the HR matches sheet support properties (SP & FSI) on the paper side.

The yellow colored squares show the paper-side structure of the HR is close to the benchmark whilst the machine side is more robust. The combination of larger yarns and the eight shaft structure provides increased resistance to CD bending stiffness. The

Abrasion Resistance Index (ARI) shows the potential for extended running life on the machine.

Benefits to the customer

The target features of the fabric were achieved. The range of variables includes different weft ratio and weft yarn diameters which allow the design to be considered for a wide range of applications. The benefits to the customer are:

- Exceptional retention of solids and minimum marking through the high sheet support
- Unparalleled formation through use of different weft ratios which can control the dewatering
- Long life potential through the eight shaft yarn float and larger diameters on the machine side
- Solid sheet profiles through improved resistance to CD bending stiffness

Proof of the benefits

Yanzhou Zhongtian China started up their PM 21 with a Voith DuoFormer D, in March 2007 with Voith clothing on all sections of the machine. With a

design speed of 1,300 m/min the machine produces graphic paper.

PrintForm HR provides controlled dewatering on the bottom forming position ensuring ideal stock consistency into the DuoFormer D and contributed to excellent formation results. The robust fabric structure continues to increase the life potential and the last fabric, having achieved a record life, had a further 20% remaining from the laboratory report.

The PrintForm HR on the bottom position is run in combination with the HQ on the DuoFormer.

This combination is said by the customer to provide improved two sidedness and first pass retention.

Conclusion

The demand for PrintForm and MultiForm HR continues to grow at an exceptional pace and its versatility is benefiting a wide range of applications.

Customer Comment



Jason Macreadie
Superintendent,
Amcor Botany B7

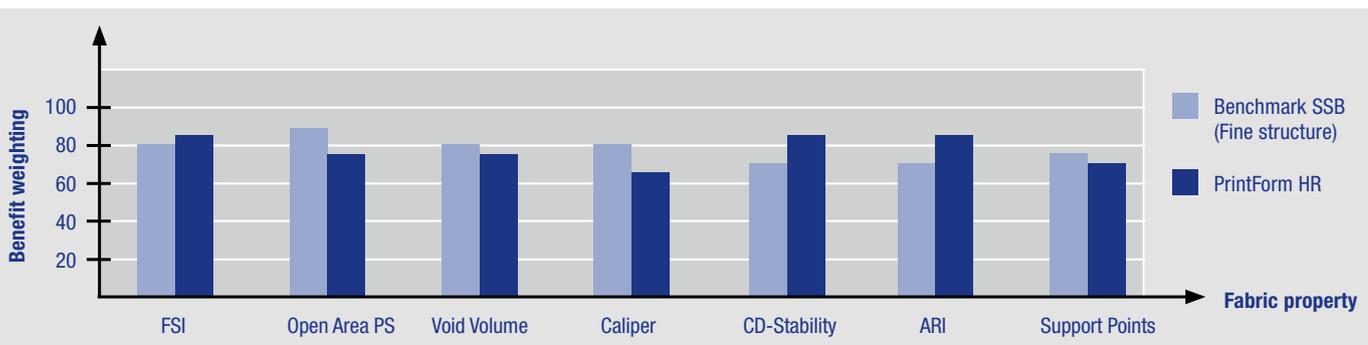
In Australia, Amcor Botany B7 is a Fourdrinier machine producing corrugating medium. It has specific needs in terms of controlled dewatering in the initial forming zone and low draws off the couch. Jason Macreadie, B7 Superintendent states, "The trial period gave improvements in all required categories, the greatest being formation. There was a step change in runability and a reduced couch draw gave the ability to go faster. The fabric was removed as planned and the life met our expectations. The technical assistance leading up to the trial ensured success of the MultiForm HR. Overall a very successful trial which has now become the benchmark."

Contact



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Development target compared to the benchmark SSB.





Wood fibers are separated and prepared.



Pulp is delivered to the paper mills as pressed sheets.

Clothing for pulp drying machines are in a different class

Definitely heavyweight!

Voith Paper Fabrics offers a complete product platform for all types of pulp drying applications from conventional forming and press sections to the most modern machines available in the market.

Did you know that more than one-third of the world's market pulp production is made on clothing from Voith Paper Fabrics?

Let's start from the beginning with some facts about market pulp. What is market pulp and how is it gained?

Pulp is wood fibers that are separated and made suitable for paper and board production. The pulping process separates individual fibers by mechanical, chemical or semi-chemical methods. Most of market pulp is chemical pulp. Pulp is mainly produced from wood but alternative materials are continually being sought, e.g.

hemp, kenaf and bamboo fibers.

The resulting substance, called pulp, is formed into thick sheets and transported from the pulp mill to a paper mill.

Side products such as chemicals and water are recycled. The "black liquor" is used for energy generation.

Optimization has reached a stage where the excess energy produced is sold to the regular market. Some chemicals are recovered for re-use in the pulping process and also for the cosmetic industry.

Market pulp production

It's important to separate market pulp from the global pulp production.

Market pulp is dried on a pulp drying machine and sold as raw material to the paper and board industry. The global pulp production on the other hand includes all pulp production, integrated mills and market pulp.

The pulp industry is still dominated by North American mills, but the strongest growth rates can now be found in Latin America and Asia with their warm climates that favor fast plant growth. Worldwide production volume reached 54 million tons in 2006, and market analysts expect continued growth of about nine million tons per year for the foreseeable future. All market pulp is not created equally; different raw materials and

Infobox: Cell Plattform-Highlights

CellForm N ...

- ... is a triple weft 14-shaft design for:
- controlled drainage for optimal function and improved retention
 - additional pulp side support yarn gives very good sheet support
 - three weft system ensures excellent CMD stability
 - high wear potential due to long weft floats on the roll side

Vector technology ...

... is a tri-axial non-woven base fabric structure. Its elasticity in all three directions is important for resisting compaction and improving fabric life.

CellFlex V3 and V4 ...

... are all mono based structures combined with single and double Vector components respectively. The concept is well-proven where high dewatering and good compaction resistance are required. The Vector component also significantly improves fiber locking which is particularly beneficial for improving the integrity of seam fabrics.

CellFlex V6 ...

... is a laminated all mono 2+2 design including double Vector structure offering exceptionally high compaction resistance and dewatering capacity. The strong construction also provides very high tensile strength. It may be supplied with double seams for safe and easy installation.

production processes result in different products, as shown in the table below. Production capacity meets the increasing demands.

The heavyweight class

The basis weight of a pulp sheet can vary from about 800 to 1,300 g/m², compared to a sheet of copy paper that is about 80 g/m², and can be produced at speeds of 100 to 230 m/min. Dewatering takes place in three stages resulting in a dryness level of about 90%: having reached 30% after the first stage, the forming section, the press section and the third stage, the air-floated dryer have to manage the other 60%. In other words, 72 kg of water per square meter have to be removed during these three stages.

The final process in pulp drying is cutting of the pulp sheets and sheet baling. A new, modern pulp drying line can produce up to one million tons of production output per year.

The Cell Platform

The Cell Platform concept offers the CellForm product group for forming fabrics, the CellFlex product group for press fabrics and the CellTech

product group for broke conveyors and threading tapes.

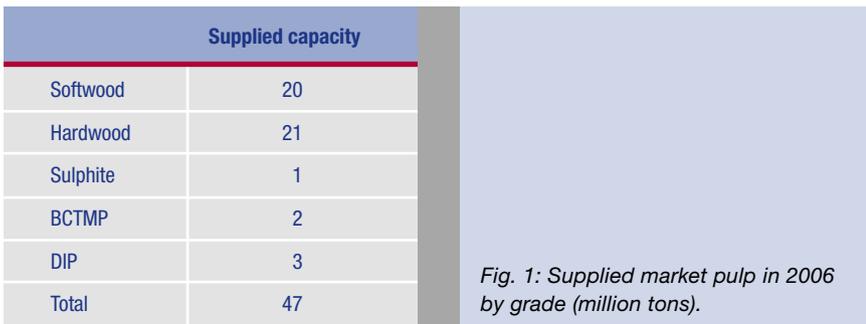
Customers have very positive results by using the full range of products available. "The Voith Cell Platform helped CMPC Santa Fé to set a new world production record for bleached eucalyptus pulp at its mill in Chile, just six months after startup. The PM 2, a 10 m wide machine, produced 2,739 tons of pulp ADMT (air dry metric tons) in a 24-hour period. The machine was clothed with CellFlex V3 and CellForm OP during the record-breaking run on 30 May 2007."

CellForm forming fabrics

The CellForm group includes well-proven designs that are capable of handling the requirements in the forming section.

Voith Paper Fabrics reduced vacuum levels that were too high, resulting in lower energy costs, and eliminated quality issues caused by uncontrolled drainage and insufficient sheet dryness. These problems were all solved to full satisfaction by applying CellForm N.

This fabric design was able to control drainage and increase sheet dryness,



while stabilizing the vacuum level and thereby reducing energy consumption. The optimized machine equipped with CellForm N achieved record production.

FormPress fabrics

FormPress refers to forming sections where a combination of forming and pressing takes place requiring special fabrics. A recent innovation has been a combination of standard twin-wire forming equipped with a pre-press and a shoe press. The bottom tandem wire in the forming section also passes through the presses.

The FormPress fabric CellFlex ZC Seam is Voith's solution for the bottom wire, the most challenging position. This type of application requires strategically engineered fabrics that can survive in the tough environment. Specially developed polyamide is used to withstand exceptionally high loadings in the shoe presses. Benefits seen with CellFlex ZC in the bottom wire position are high performance and energy savings. In daily operation the fabric achieved remarkably good dewatering, resulting in 32% energy savings and in addition, 13.8% steam reduction at the machine.

CellFlex press fabrics

The CellFlex group offers press fabrics for all types of pulp pressing applications. Voith's well-proven Vector technology – a tri-axial, non-woven base fabric structure – is the basis for meeting the challenges in the respective press section.

The Vector series for pulp includes CellFlex V3, V4 and V6 in both endless and seamed versions. CellFlex V4 is a new development including a high capacity base weave with double Vector components on each side of the woven base fabric. CellFlex V4 has improved dewatering capacity and improved compaction resistance. The open structure offers high dewatering with lower vacuum levels and requires less chemical cleaning.

Voith Paper Fabrics' new concept for pulp pressing, CellFlex V6 seam, is currently performing well in a very demanding shoe press position in Finland, with greater resistance to chemical degradation.

Customer Comment



Alan Ruiz
PDM Superintendent
from Arauco, Valdivia
mill in Chile

“We are getting important additional benefits using this new concept. Following Voith Paper Fabrics' recommendations, we reduced HPS pressure to 600 kPa and operated the showers only one hour per day instead of continuous. This resulted in an increase in fabric life from 90 days to 220 days on 2nd and 3rd press, but the most important benefit has been the reduction in water required to be processed in the water treatment plant, improving environmental conditions.”

Customer Comment



Jorge Reyes
Fiber Line Manager
CMPC Santa Fé

“Just 6 months after startup, PM 2 achieved record production thanks to Voith's clothing.”

Contact



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Nipco roll – in successful use for over 30 years

The “heart” of press and calendering technology

Fluctuations in the CD profile of the paper or board web are a thorn in the side of papermakers. In order to guarantee a consistent, high quality paper grade to be continually processed and sold, these fluctuations must be kept to a minimum. Due to the increasing requirements of processors, the correction of CD thickness variations is becoming increasingly important.

A constant, flawless production result is the basic requirement for competitiveness in the international market. For targeted profiling and leveling out of the surface, Voith offers a variety of tools in a wide range of performances. This includes profile rolls, especially the Nipco roll. The basic idea for today’s Nipco technology was developed in 1971. Just three years later, the first Nipco roll was operating in the press section of a paper machine. This started the success story of the Nipco roll, which is often described by papermakers as

the “heart” of press and calendering technology. Thousands of Nipco rolls are now in use. And the area of use for Nipco technology goes far beyond the papermaking sector.

The focus is on tailored solution concepts for operators. Modernizations of the existing Nipco technology provide a wide variety of product advantages in efficiently rebuilding existing Nipco installations with the latest technology and improved characteristics. NipcoScoop, NipcoSeal, and NipcoCool are just three of numerous upgrade options.



Hydrein roll in the rebuild to the Nipcorect roll.



The same Nipcorect roll in the rebuild to counter support elements.

Nipcorect roll

One example of constant continuing development and the resulting modernization is the Hydrein roll in a soft calender from 1989. In order to keep pace with required improvements in technology, it was converted to the first Nipcorect roll in 1995. Since then, Nipcorect rolls offer the operator an enormous correction potential in the CD profiling of the paper web, because the supporting elements in this type of roll can be individually controlled. Thus, a more precise fine profiling is possible.

In 2007, the rolls that had been converted to Nipcorect were modernized again and adapted to the current developments. The reasons for this are certain paper grades with a large percentage of recycled paper, which were run in the lower range of linear

forces. So that a high profiling potential could be guaranteed, there was a conversion to counter support sources that introduce a uniform force opposite to the working nip. To achieve the desired low line load, the supporting elements are provided with substantially higher pressures in the nip direction than the conventional Nipcorect rolls. The corresponding interaction between both supporting elements rows results in the always available correction potential between the individual zones even at low line loads.

True to the motto “engineered reliability”, the deflection compensating rolls from Voith allow a smoother and thus higher-quality production of paper or board through the correction of CD profile fluctuations and thus a crucial and reliable contribution to the productivity and efficiency of the machine operator.

Contact



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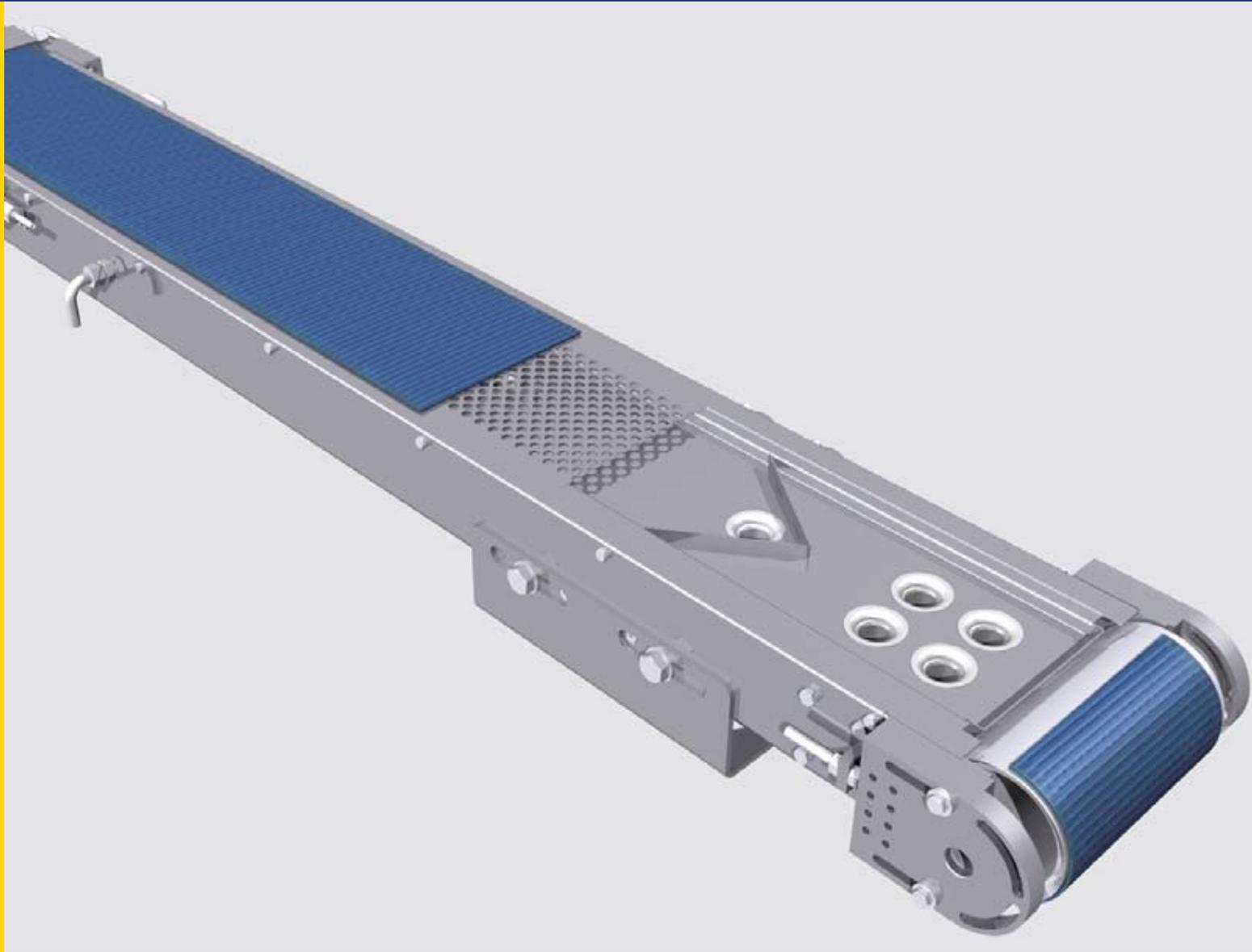


Fig. 1: New threading conveyor PrevoThread C.

Successful start-up of the new threading systems

Prevo – the new threading process technology

With the Prevo product line for threading solutions, Voith has fully integrated the know-how behind the former Fibron technology and adapted and developed the product range to meet customer needs. Due to a close cooperation between the Paper Technology Center (PTC) in Heidenheim (Germany) and the experts from Krefeld (Germany), a new product portfolio has been developed that covers every threading process in paper and board machines.

The product transfer from Vancouver to Krefeld has been successfully accomplished. Further research and development work has led to advanced and optimized design of all threading products. The threading components are now manufactured, assembled and tested in Krefeld and delivered to customers around the world. An assembly shop was opened for this purpose and the production has started in December 2007. All key components are available on stock in order to realize short delivery times. In addition, new developments and customized solutions can be tested in the PTC.

Prevo product family

As part of the product revision, a new naming structure has been defined (Fig. 2). It is divided into three levels:

product family (Prevo), function level (Fig. 3) and product level. Thus, the threading products are now uniformly and universally named.

Vacuum technology

One highlight of the new PrevoThread C threading conveyor is the creation of vacuum with Venturi amplifiers. The Venturi amplifiers create a high vacuum along the entire length of the threading conveyor at a comparably low air consumption, which can be switched off immediately. By dividing the threading area into individual vacuum zones, the maximum vacuum is achieved as soon as one zone is covered by paper. The first zone is equipped with 4 Venturi amplifiers (Fig. 1) and generates a particularly high vacuum, thus immediately stabilizing the incoming tail.

Each additional zone of the conveyor then independently fixes the tail with maximum vacuum.

- Optimum vacuum distribution for the threading process
- Significantly reduced air consumption
- Wear-free Venturi amplifier
- Significantly lower noise emission in comparison to previous vacuum sources

First successful projects

- PM speed:** 1,000 m/min
- Product:** Liner and fluting
- Basis weight:** from 90 to 220 g/m²

The first order came from Kappa Smurfit Roermond, Netherlands. The threading system to the Speed-Sizer has been upgraded in the Voith PM 3 from 1969. The new Prevo system threads the tail without any problems.

Prevo				Product family
Cut	Lift	Thread	Rope	Function level
RR	FT	C	S1-120	Product level
TR	FTE	LT	S65-90	
DC	MD	SF	H5-200	
etc.	etc.	etc.	etc.	
Example: Before: FlipTray Current: PrevoLift FT				

Fig. 2: New naming structure for threading systems at Voith.

Function level	
PrevoCut	Cutting the tail
PrevoLift	Lifting the tail
PrevoThread	Threading the tail
PrevoRope	Rope system components

Fig. 3: Elements of the function level.

PM speed: 950 m/min
(in future 1,250 m/min)
Product: Base paper for coated
wood-free printing paper
Basis weight: from 48 to 90 g/m²

Another order came from a customer in Germany. The threading systems in the SpeedSizer and End Section were equipped with the latest threading solutions in order to be able to thread through these difficult sections faster and more safely. The following products were used:

- 4 PrevoThread C (Conveyor)
- 2 PrevoLift FT (FlipTray)
- 2 PrevoCut STC (SingleWaterTailCutter)

The system of the new Prevo threading products achieved outstanding results.

PM speed: 1,750 m/min
Product: Newsprint
Basis weight: 48 g/m²

At UPM-Kymmene in Steyrermühl, Austria, a wet-end threading conveyor (PrevoThread CP) was installed between the 3rd and 4th press on the PM 4 by the customer for the first time in August 2007. The quote from Dr. Marco Lesiak, production manager on the PM 4, speaks for itself: “With the PrevoThread CW, we were able to reduce our threading times in the press section significantly. Our experience so far has far exceeded our expectations. We are absolutely thrilled with the results.”

A high cost-effectiveness for paper production is provided by the fast and reliable transfer of the paper after a machine stop or sheet break. With the Prevo product family, Voith is offering a reliable transfer concept with preci-

sely balanced components. Prevo products provide the optimum solution for lifting, cutting and threading the tail for all paper grades in any position in the paper machine. All future orders and rebuilds in existing paper machines will be equipped with the new Prevo systems.

Infobox: Prevo product family benefits

- Fast and safe threading systems
- Stable tail guidance
- Continuous threading processes

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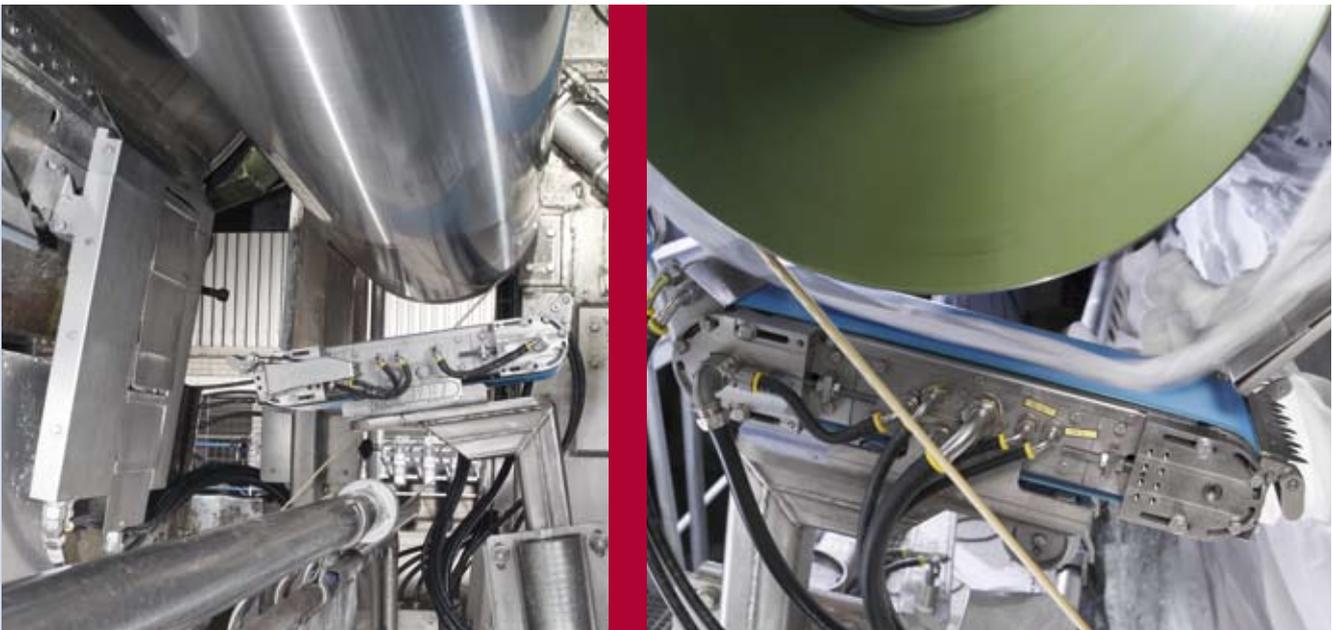


Fig. 4: Prevo threading solution on the PM in the SpeedSizer section (left: operating position; right: successful hit).



Thanks to the Atmos development, high grade premium tissue can now be produced with considerably less consumption of energy resulting in lower cost and less environmental impact.

Voith Paper Sao Paulo develops new process to production maturity

Atmos: fresh wind for tissue paper

For more than 30 years, premium tissue production depended on Through Air Drying (TAD) technology, but not any longer. Thanks to the Voith Atmos process, premium tissue can now be produced with much less energy and fiber outlay.

When at the end of November 2007 dozens of mother rolls of soft white tissue paper were loaded in Talagante tissue mill – belonging to Chile’s big-

gest papermaking concern Compañía Manufacturera de Papeles y Cartones (CMPC) – everyone was delighted. The new tissue machine had com-

pleted its last series of test runs successfully. Now the papermakers had the final proof that high grade premium products for the tissue market could be produced at lower cost, with considerably less consumption of energy resulting in lower cost and less environmental impact. The Atmos process developed by Voith Paper Sao Paulo research engineers lives up to its name – Greek for vapour – by breathing fresh air into the tissue production market. Furthermore, for the first time in almost 30 years, an innovative process has been matured to open up a new epoch in the production of soft lightweight tissue. Tissue papers have quite different characteristics to those of other grades. Paper towels have to be absorbent while at the same time strong enough not to tear when wet. Toilet paper must be soft, and paper handkerchiefs have to be even softer to

protect the sensitive facial skin. These requirements can only be met if the tissue has enough bulk but is still thin, airy and porous. With basis weights of only 10 to 40 g/m², tissue papers are the lightest grades of all. But manufacturing such soft and airy grades is certainly not easy.

Flat pressed sheets instead of airy tissue

Airiness and softness is destroyed above all by papermaking processes that press water out of the paper web. The originally voluminous and airy fiber mixture is compressed thereby – often at 30 bar or more – into a flat sheet of paper that is neither absorbent nor really soft. Although this kind of paper is creped as it comes off the Yankee cylinder to seem more voluminous, its characteristics are not changed at all. To improve tissue pa-

per quality, a process known as Through Air Drying (TAD) was developed about 30 years ago whereby hot dry air at more than 350 °C is blown through the tissue web and structured fabric on a large additional drum in the tissue machine. Since however hot air alone does not make the tissue soft enough, the paper is first sucked on to a structured fabric while still wet. This imparts it with 3-dimensional structure before being dried in hot air. Pressing is largely avoided thereby, so that the paper remains soft and airy. Above all the absorptive capacity of TAD tissue was much higher than ever achieved previously: paper towels made of this tissue were able to absorb fifteen times their own weight in water, twice as much as conventionally produced tissue.

Although TAD technology has been continuously improved since then, energy cost rises above all in recent times have made it too expensive. As a result, tissue mills using TAD machines are faced with shrinking profitability. For this and other reasons, Voith already decided some years ago not to manufacture TAD tissue machines. Instead, the Voith Paper São Paulo development engineers followed another path. Their goal was to produce high quality tissue with much less energy and fiber usage. Together with their Voith Paper Fabrics colleagues, they finally reached this goal with the Atmos process.



Atmos test runs successfully completed. Beaming faces surround the tissue machine in the Talagante mill in Chile.

Talagante paper mill belongs to Chile's biggest papermaking concern: Compañía Manufacturera de Papeles y Cartones (CMPC).



Vacuum instead of hot air

The key element of this system is a vacuum roll over which runs a specially developed fabric named AtmosMax supporting the tissue web. As in the TAD process, this fabric is structured to impart a 3-dimensional structure to the tissue web. But instead of hot air drying, the tissue web runs over the vacuum roll, which sucks out the water at about half atmospheric pressure. The structured fabric and the tissue web are also accompanied over the vacuum roll by two additional fabrics. Underneath runs a dewatering fabric named AtmosFlex that increases the dewatering effect of the vacuum, and on top is an open tensioning fabric named AtmosBelt that additionally presses water out of the web. To reduce the viscosity of the water, hot and humid air from the Yankee hood exhaust is blown over the fabrics, tissue web and vacuum roll. The structured fabric and gentle pressing prevent the paper from being squeezed and losing its bulky character.

Tissue made by the Atmos process

saves more than 20% fibers compared with tissue produced on conventional machines. Nevertheless, its absorption and strength are the same. And since the Atmos process does not need large quantities of extremely hot air, it consumes considerably less energy. Furthermore, capital investment costs are much lower than for TAD machines because no big components (burners, blowers and large piping) are required for providing hot air. TAD tissue machines can only achieve superior quality with exclusively virgin fiber furnish. Atmos tissue machines, however, can also achieve such high quality using mainly recovered paper furnish. As an example, CMPC Talagante uses more than 80% recovered paper furnish.

Conversion in less than eight hours

Atmos machines also have another advantage over TAD machines: the fabrics can be arranged so that they completely bypass the Atmos components. Then the same machine can be used for producing conventional

tissue. This flexibility is very valuable to CMPC, because so far the demand for particularly soft premium tissue in South America is not nearly as high as in North America or Europe. And it only takes less than eight hours to convert the machine.

Not only the Voith engineers are enthusiastic about this new development, but also our customers. In the opinion of Talagante mill manager Arturo Celedon, Atmos is such a revolutionary development in premium tissue production that TAD machines will no longer be a cost-effective option for papermakers in future.

Contact



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Customer benefit at a fixed price

With pre-engineering to the Perfect Fit mill

Pre-engineering is the basis of a well-founded project budget and ensures that all sub-processes of paper production are optimally coordinated with one another at an early stage. And that pays off:

- **Lowest possible specific investment costs**
- **Highest possible productivity and stability**
- **Smooth project courses with the shortest possible project running times**

In the course of further increase in cost efficiency in paper production, optimal coordination of all sub-processes is gaining more and more significance. The foundation stone for that is already laid an early stage of a large investment: with the preparation of the feasibility study, i.e., with the planning of the entire system with paper machine, auxiliary systems, building and infrastructure.

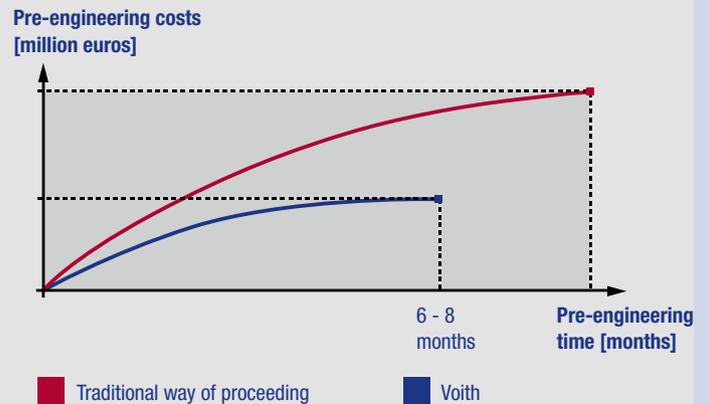
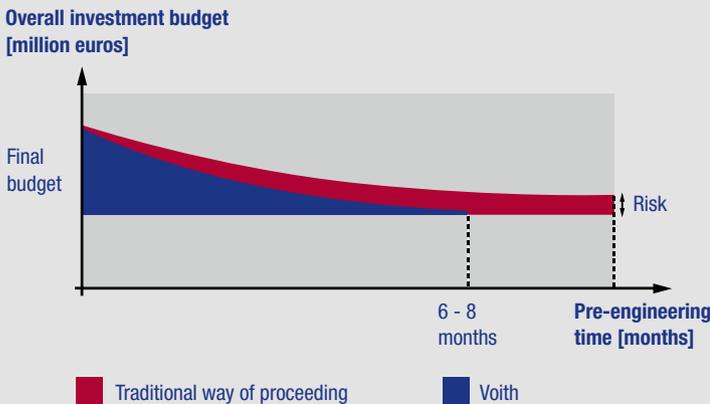
As process supplier, Voith contributes more than 50% to the overall investment volume. The influence is accordingly large. Consistent orientation to

the customer's goals is the decisive precondition for the Perfect Fit process. Ideally, the intensive coordination between customer and Voith takes place within the framework of a preliminary project in which the planning documents, process layouts and building and mill plans are prepared. These documents are the basis for determining the overall budget and the project schedule with high precision.

With large projects, the pre-engineering project typically lasts six to eight months. After that, the project has been worked out to the extent that all

Fig. 1: Increase of engineering reliability in shorter time.

Fig. 2: Cost advantages through integrated engineering of all sub-processes in shorter time.



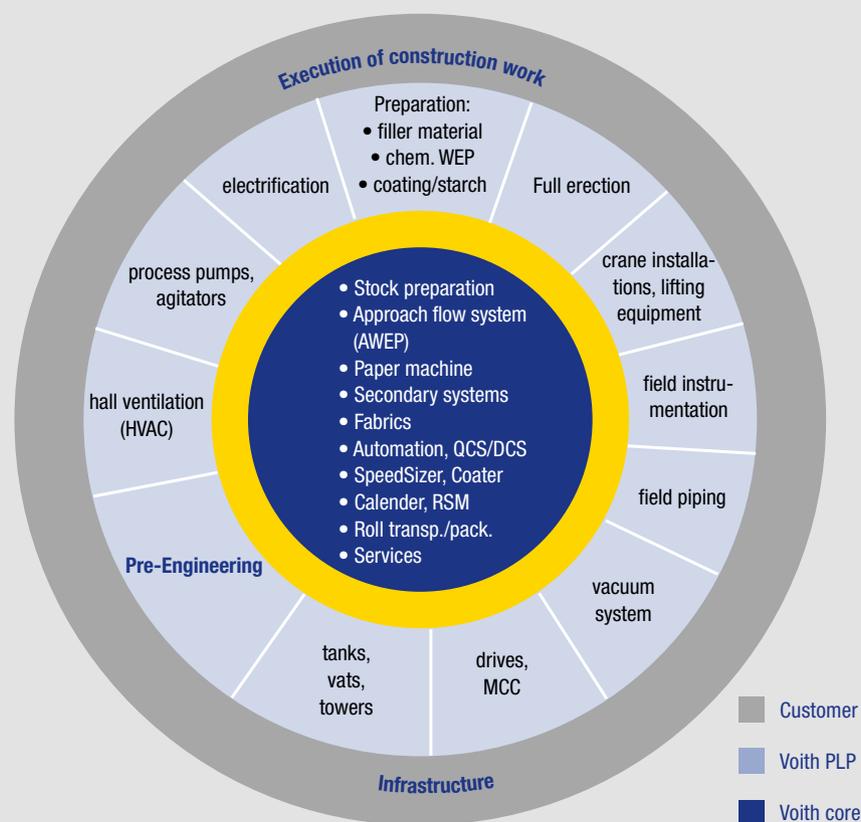


Fig. 3: Typical supply limits with PLP projects.

sections are specified in detail and the implementation can begin. In contrast to large projects in which, according to the traditional way of proceeding, a project was planned without integration of the process supplier, now considerable timesavings result with simultaneously more precise budget planning (Fig. 1).

On the basis of the extensive wealth of experience from numerous projects, the short coordination paths between specialized departments and key personnel and the overall planning of all sub-processes, considerable cost advantages of the pre-engineering project result. For Voith pre-engineering projects, the maxim is to create customer benefit at a fixed price and thus to make an essential contribution to lowering pro-

ject costs. Along with that, the positive influences on operating costs and consumption such as energy costs and fresh water are becoming more and more important. Especially when Voith assumes responsibility for delivery and commissioning of the Process Line Package (PLP) including detailed planning, the advantages can be seen. The further overall project running time from the start of project implementation to the beginning of commercial paper production is shortened by up to two months. Along with core processes, Voith takes over with engineering, planning and delivery the responsibility for the sub-processes and sections all the way to fulfillment of guarantees. With this manner of proceeding, risks for interfaces and unforeseen things on the customer's side can be consi-

derably reduced. The project successes of various customers confirm the path taken. In the past three years, Voith processed eight extensive pre-engineering projects for new systems in various regions and for various paper grades. But along with pre-engineering projects for new machines, audits and pre-engineering projects for larger rebuilds measures on existing production lines are also gaining significance. Risk minimization and cost optimization through Perfect Fit measures are the precondition for lasting competitiveness.

Contact



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Inspiring – an environment far different from a traditional classroom setting.

Computer training programs allow a free choice of time and place

One EduCAT and an espresso, please!

The progress of computers is not to stop. They have been employed in paper machines for many years and are now increasingly used for training purposes. Independence is the magic word. One could learn to run a machine from just about anywhere – why not on a beach or in the mountains?

Learning how to make paper was still quite easy some decades ago.

A newcomer followed the advice of senior employees and worked his way through – “Learning by Doing“.

In today's paper mills, such an approach is hardly possible anymore. A modern paper machine can have tens of thousands of single parts and some hundred computers alone to control it. Learning and practising every possible situation on the paper machine is not feasible anymore. It is too expensive, too dangerous, too time-consuming – just to mention a few reasons.

Indeed, there is a need

When starting new paper machines or machine sections, several skills are required, in particular for process, control, and for papermaking. Nowadays, only computer-based training offers the possibility to learn all these

aspects simultaneously and also make mistakes safely.

In earlier times, the start-up of a new paper machine took several months. The machine supplier's experts trained the employees, and crucial issues were discussed directly at the machine. This method is good and frequently used, but not always the best.

Finding qualified people is not easy everywhere, either. If skilled manpower or on-site training facilities are not available, the customer is highly dependent on the supplier's know-how. More and more greenfield projects are realized, and extremely tough time schedules are set. Furthermore, due to the very high degree of automation, experts are needed to operate a paper machine.

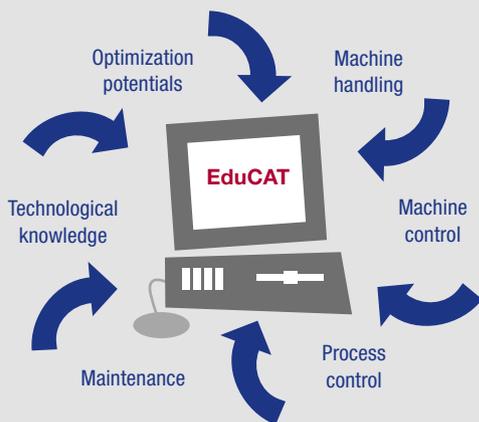
So, where to find these prodigies? Since they are rare, Voith Paper offers a wide range of training classes that

can be done around start-up. The new packages are called EduPACKs (Educational Package), featuring interaction and control of success as its most essential functions and using EduCAT (Educational Computer Assisted Training), which is a clever e-learning software to combine know-how transfer and testing of learning progress.

Independent of time and place

Controlling something complex is not easy to learn from a handbook or from some slides only. For the younger generation growing up with computers, interactive learning is already routine. Everybody else, never fear! No special program skills or particular computer requirements are needed.

E-learning has several notable advantages: Learning is not restricted by time or place. The modules can be trained as many times as needed and



Demands on training.

	Learn	Qualify	Improve
Safety			
Technology		Test	
Components			Feedback
Operation		Certificate	
Maintenance			

Components of EduCAT.

are diverse, containing presentations, animations, text, videos and interactive exercises.

Since the customer needs are varied, several training packages are available. The keywords for EduPACK Basic are conventional training and e-learning with EduCAT. EduPACK Advanced offers an additional knowledge test for control of success. A web portal for e-learning is planned to be realized in the near future. Each trainee will have personal access to the portal, where his/her additional questions will immediately be answered by experts. On the Internet, you can evaluate your learning success online at any time. And if necessary, go through it all over once again ...

If a fair amount of answers is correct, the trainee can print a certificate as a

proof of successful training done with EduCAT.

Joachim Schipp, training developer at Voith Paper St. Pölten in Austria, is one of the brains behind EduCAT. According to him, the goal is to provide complete, standardized computer-based training. However, having one module ready will not be enough. Since every paper machine is unique, all modules are tailored according to the respective customer's needs. Operators or technologists have other needs than maintenance people. But no matter who is learning, there is one subject they all have in common: safety.

All the machine sections and functions can be trained on the computer. No matter, if a single part rebuild or a complete new machine is concerned – everything is possible. Moreover,

the training modules can be updated and adapted to existing machine sections.

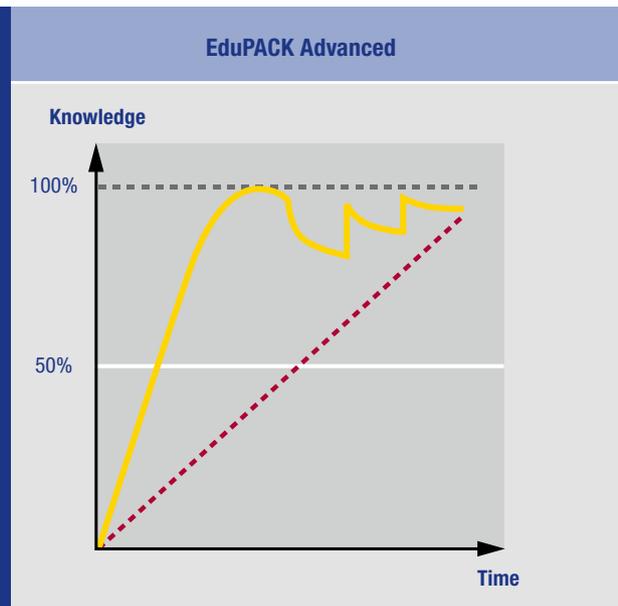
EduCAT can also help solving tricky questions. “Especially if the problem is of technological nature, a special training module can be programmed for it“, the developer remarks.

Blending is the answer

Even if Joachim Schipp's job is to develop e-learning, he believes that a perfect training does not consist of computer-based learning only. “We would never just send the interactive training CDs to the customer and then let him alone with them“, he emphasizes.

The best alternative would be “blended training“ with EduPACK Advanced. Personal training on site, inter-

	EduPACK			
	Conventional	Basic	Advanced	Student
Functionality	Presentations, handbook, Training on site	EduPACK Conventional + interactivity	EduPACK Basic + control of success	EduPACK Advanced (not project-oriented)
Conventional training	■	■	■	
Interactive training with EduCAT		■	■	■
Examination mode with EduCAT			■	■
E-learning Webportal*			■	■
				* planned



Interactive training with EduPACK Advanced helps to deepen and evaluate what has been learned so far. Thanks to repeatable training modules, the goal of 100% know-how is within reach!

EduCAT - Educational Computer Assisted Training

VOITH

Speedliner

Learning pattern
Multiple choice

"Concerning misting, which of the statements apply?"

Click at the correct answer(s)!

- Misting only occurs when the coat weight per side exceeds 20 g/m².
- Misting is always the same, irrespective of the starch formulation.
- The higher the machine speed, the greater is misting.
- On small applicator rolls the risk of misting is not so great.

4/12

After learning you can test your knowledge.

EduCAT - Educational Computer Assisted Training

VOITH

Speedliner

Learning pattern
Listbox

"Complete the free fields with the correct name of the component or the correct value!"

7/12

The right answers are green, the wrong ones are red.

active learning with the computer, followed by a face-to-face discussion, are the perfect combination. Computer-assisted training is never unilateral. "The trainees' feedback is highly valued in order to enhance the contents of training", Joachim Schipp reminds us.

The computer is a patient teacher and a just and reliable examiner. However, the customer can perform additional tests to evaluate the training success. E-learning can also be used as a test tool to measure the success of other learning methods.

Made for long-time use

Unfortunately, the training does not always have the highest priority and shrinks quite often to a minimum out of cost reasons. An e-learning tool is made to last a long time and to be

used constantly. Deepening and repeating are the keys to effective learning!

Individual aspects should also be taken into account. People differ in learning speed and previous knowledge. EduCAT helps to effectively balance these differences.

"Luckily, more and more customers are getting very interested in the most successful training methods. Fortunately, the selection of EduPACKs available is big enough to fulfill anyone's needs – no matter how large or small they are", Joachim Schipp remarks.

Customer Comment



Theofil Krantz
Training Coordinator
Stora Enso, Fors mill,
Sweden

Stora Enso Fors was one of the first users of EduCAT training module. After accomplishing the final test, Fors Training Coordinator Theofil Krantz sent his enthusiastic remarks to Joachim Schipp.

"I must congratulate you and Voith on producing this material. I hope to see more of this kind of material in the future! Overall it is very well done and once again, I salute you for your good work."

Contact



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RollCare: Ultrasonic testing of a roll cover.

Tailor-made mechanical roll service

RollCare, RollRep and RollUp Solutions lower costs

Rolls have a huge impact on machine efficiency and a mill's profitability. By reducing unscheduled downtime due to roll problems and increasing the roll change interval, a mill can significantly lower the total cost of operation. To get the most effective and fastest service, Voith has developed tailor-made mechanical roll service modules, which are classified by three steps: RollCare, RollRep and RollUp Solutions.

In fact, one could compare a roll to a car and easily grasp the understanding between car and roll maintenance. Like cars, rolls need periodic maintenance, occasional repairs, and if necessary, upgrades to ensure maximum reliability. Proper maintenance always results in maximum performance.

RollCare

It is essential to clean and inspect bearings, as well as inspect for any wear or damages that may be developing, such as cracks in journals or in the shell. In addition to the bearing assembly work, suction rolls require cleaning of the suction box, replacement of seal strips and air loading

hoses, flushing of shower headers and nozzles, replacement of lip seals and other wear items. Deflection compensated rolls require replacement of seals and testing for leaks. Generally speaking, a lot of small, yet important, details secure the runnability of your paper machine.

RollRep

Like cars, as rolls get older, the components corrode or wear out, and occasionally parts get damaged. Voith, as a manufacturer of rolls, has the experience and know-how to recommend the most appropriate repairs that will be cost effective yet provide reliable service. Some of the roll repairs include: head fit sleeving, ther-

mal spray build-up, re-machining, journal replacement, parts replacement, shell ID honing.

RollUp Solutions

Occasionally, high-tech products need a technology update, to ensure top performance. Voith can upgrade existing rolls to provide improved performance. For example, there may be some weaknesses that need to be taken care of, or there are some possibilities to incorporate the latest engineering concepts and improve the existing rolls. Through analysis of reliability records and design reviews, the weak areas of a roll can be precisely identified and design enhancements can be implemented.



RollCare: Bearing inspection.



RollRep: Thermal coating of a journal.



RollUp Solutions:
InsiderJet installation.

Examples of Voith RollUp Solutions:

- Short bearing life can be costly. Water may be getting into bearing housing, or oil may be leaking out. Machine speed has been increased, it may be necessary to convert from grease to oil lubrication. **The solution:** Bearing housing can be re-designed for improved reliability.
- A broken end deckle on a suction roll can cause unscheduled downtime. **The solution:** An upgrade solution is available to strengthen the deckle mechanisms, and also give visual feedback of the deckle position for easy adjustment of vacuum zone width.
- Suction roll's seal strips may be wearing out too fast; this may cause frequent roll change intervals. Or seal strips have an imprecise position, this may provoke web edge problems and sheet breaks. **The solution:** The shower headers and nozzles can be re-engineered to improve the shell lubrication and enhance seal life, thus producing longer roll change intervals.

With Voith's RollUp Solutions, every upgrade project is tailored for the specific need, while ensuring to get the maximum results for a minimal investment. As a result, the ROI can be very attractive.

Voith has a dedicated team of engineers and craftsmen specializing in paper machine rolls. By partnering with Voith, and effectively utilizing these three modules, RollCare, RollRep, and RollUp Solutions, reliability will be improved, downtime reduced, machine availability obtained, and better performance from the paper machine rolls are acquired.

Contact



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Infobox: Overview of the benefits

RollCare:

- Periodic maintenance & service
- Suction rolls
 - Deflection compensated rolls
 - Press rolls, wire/felt rolls, reel spools, etc.
 - Shell, head, journal inspection & NDT
 - Grinding, conventional and 3DG
 - Balancing, conventional and multi-plane

RollRep:

- Repair & restore rolls to original design
- Head fit repair
 - Any kind of Machining
 - Journal repair & replacement
 - Parts replacement
 - Shell ID honing

RollUp Solutions:

- Upgrade old rolls with new engineering concepts
- Bearing housing improvement
 - Grease to oil conversion
 - End deckle redesign
 - Shower improvement
 - InsiderJet installation (High pressure oscillating shower)
 - SeaLencer installation (Noise-reducing sealings)
 - Seal strip upgrades

A low-angle photograph of a modern building's facade. The building features a large, curved, white structure with a prominent yellow circular opening. Below this opening is a red triangle. The building's facade is composed of dark, horizontal slats and a white, ribbed section. The sky is a clear, bright blue.

**News from
Research and
Development**



Tested: OnV FlocSpotter already successfully measures the formation at the headbox at Voith Paper Technology Center in Heidenheim, Germany.

Uniformity right from the start

OnV FlocSpotter measures formation already on the forming wire

The latest image-processing innovation from Voith Paper Automation is the OnV FlocSpotter. This is the first system that enables the evaluation of the paper web uniformity already in the wire section.

Formation is one of the most important quality parameters in the papermaking process. It is decisive for constant paper quality, since fluctuations here have an effect on a number of other parameters. Accordingly, sufficient strength and good printability are only obtained with very uniform paper. Voith has now succeeded in developing a sensor that already measures the formation on the forming wire. This enables the papermaker to intervene in and regulate the process at the earliest possible stage: after sheet formation. In the production of multi-ply products, it also enables to determine reliably the formation of individual layers (Fig. 1). This is not possible with the so far common formation measurement at the reel.

Faster than lightning

To enable the formation to be measured at speeds of more than 1,700 m/min (nearly 5,600 feet/min),

a camera delivering high-resolution data at a shutter speed of less than 10 microseconds had to be found for the OnV FlocSpotter.

For the sake of comparison: This is faster than an electrostatic flash discharge. To ensure adequate exposure at such a short shutter speed, OnV FlocSpotter was equipped with a powerful LED illumination system (Fig. 2). The OnV FlocSpotter camera housing was also adapted to the harsh conditions of the wire section. It was designed to prevent accumulation of dirt particles.

Thinking software

With the help of a software program, the images taken by the OnV FlocSpotter can be classified into familiar formation categories (e.g. normal, coarse, and fine) and evaluated. Together, these recorded images form a "formation map" that can be used for rapid and simple

comparison of the formation values for different machine operational statuses by operators. The program enables a visual representation of the formation to be linked to the respective operational status. Therefore, the formation can be optimized in a targeted way during production.

Infobox: Formation

Uniformity of paper web determined by distribution and alignment of fibers in the paper.

Contact



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Fig. 1: On multi-ply cardboard machines, measurements can be made on the different headboxes.

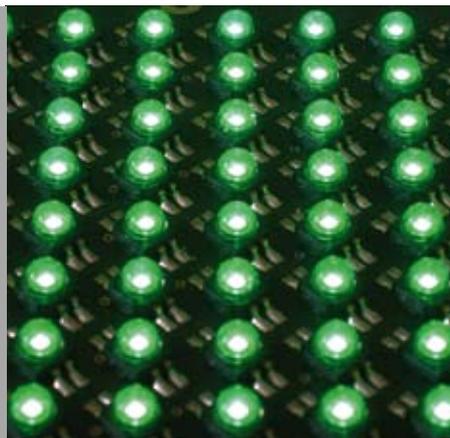


Fig. 2: Good exposure performance is achieved thanks to LED flash system.

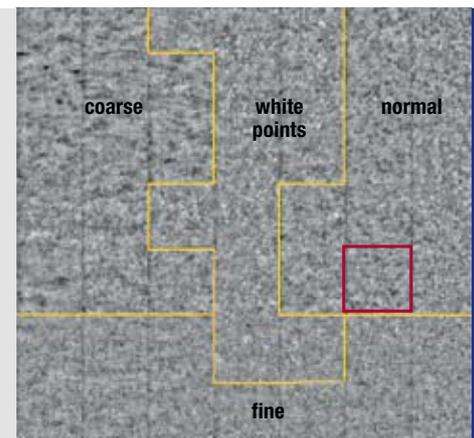


Fig. 3: The formation map puts the current measurement (red field) into a historical perspective.

New concept in the dryer section

SafeTailing – reliable transfer even safer

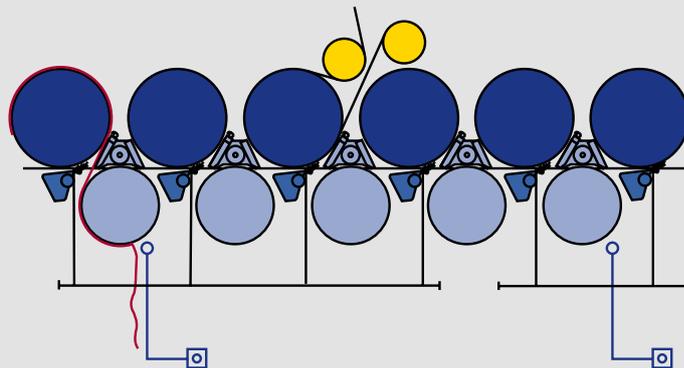
A valuable development of ropeless transfer in the dryer section is SafeTailing. Operation is safer and compressed air can be saved.



New transfer concept SafeTailing provides for more safety and compressed air savings in the dryer section.



*Pilot installation SafeTailing
– dryer section with safety barrier.*



SafeTailing in the TopDuoRun dryer section – tail cutting with pushbutton or with controller by means of vacuum sensor.

In TopDuoRun dryer sections, tail transfer has been done “ropelessly“ for almost 20 years. Only with this technology was it possible to properly master the considerable speed increase of the paper machines during transfer as well. The tail is peeled off the cylinder by means of blast nozzles at the doctor and then follows the dryer fabric or the stabilizer roll to the next dryer cylinder. The tail is thus transferred through the entire dryer section in a few seconds.

Nonetheless, it happens from time to time that the tail gets stuck on a cylinder during transfer and doesn't go any further. In the past, the operator had only two possibilities in this case: Either to interrupt the entire transfer process and start over from the beginning or to manually assist with the air blast hose so that the tail is peeled off the dryer cylinder on the second attempt. The second variant is by far the more favoured, but requires some skill and is not without

danger. In the future, tightened safety regulations will hardly still allow manual intervention.

New transfer concept

SafeTailing is just the right thing. The new transfer concept functions independently of the operator even with small interruptions and thus offers a high level of safety. At the same time, it is just as effective as manual intervention. And in addition, you save compressed air.

How SafeTailing works

Blast pipes for cutting off tails are installed in the various dryer groups. If an interruption occurs during transfer, the cutting blast pipe located before the imperfection is activated. The tail is briefly stopped by it. The transfer blast pipes are then switched on again beginning with where the stop occurred and the tail continues running through the dryer section

without any problems. Activation of correct tail cutting is done in the semi-automatic version by the operator via a pushbutton. In the fully automatic version, the tail is monitored via vacuum break sensors. Interruptions are thus independently detected and eliminated by the system. In addition, the transfer blast pipes on the doctors are only switched on if the tail is also in this group. That saves up to 50% with all transfers.

The pilot installation has been successfully in operation for almost a year. Until now, it was semi-automatic with pushbuttons. Lately, the system has been equipped with vacuum break sensors for the tail.

Contact



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Curtain coating with optimum coating color air removal

The AirEx AT-V lets the air out of coating colors

Curtain coating has been drawing more and more attention over the last few years. It has become clear that perfect coating quality can only be achieved with a completely deaerated coating color. At the Paper Technology Center (PTC) in Heidenheim (Germany), a new air removal system for high-viscosity coating colors has been developed. The AirEx AT-V achieves a residual air content of less than 0.1 vol.%.

The excellent quality of the curtain coating is primarily due to its outstanding uniformity. However, nearly every air bubble in the coating color leads to a defect in the paper coating.

If the air contents are compared before and after air removal for the classic film and blade coating processes and the curtain process (Fig. 1), the higher air contents, even after air removal, are found for the film and blade processes. This is mainly due to the equalization elements, including the blade and the rod, under which air bubbles are squashed. Whereas cyclone deaerators with efficiencies of 50% to 70% are fully adequate in

the classic processes, the curtain coater requires more efficient air removal systems to achieve gas contents of less than 0.1 vol.%. The state of the art in specialty paper production, which is currently the main application area for the curtain coater, is a vacuum deaerator used in the chemical and food industries. For pigment coating colors with higher solids contents and viscosities, these deaerators quickly reach their limits. However, air removal is the key to the success of the curtain coater in the graphic paper segment. For this reason, Voith decided to take the development of an air removal system for the specific requirements of the paper

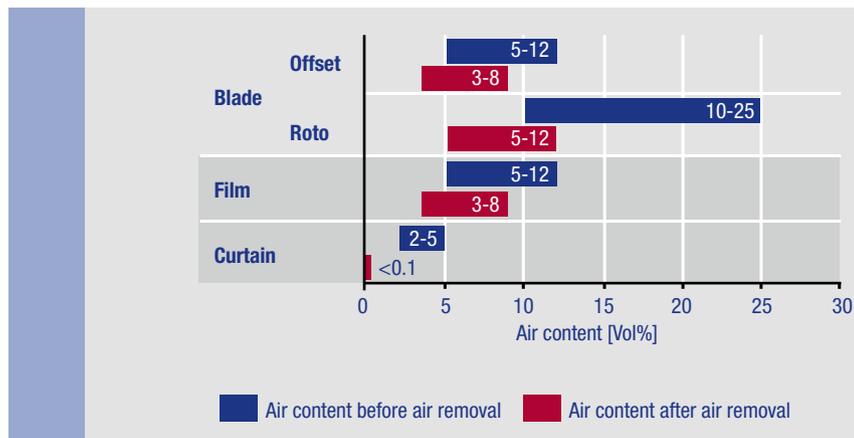


Fig. 1: Comparison of air contents before and after air removal for blade, film, and curtain processes.

industry “into its own hands.” The AirEX AT-V was designed and already drew the interest of a customer in early 2007 during the development phase. The prototype of the air removal system was tested at the PTC in the summer of 2007, and two units were already successfully put into operation for the customer in December, resulting in a development time of just twelve months!

Advantages of the cascade principle

A key feature of the AirEx AT-V is the cascade principle, which, in comparison with the vacuum deaerators from the competition, generates three times more surface for the same outer dimensions (Fig. 2). The coating color supply to the air removal system was optimized to distribute even high-viscosity coating colors completely uniformly in the system. This has a positive effect on the air removal result. Besides the air removal performance, the ability to be cleaned quickly during a grade change is a

key requirement of the air removal system. This problem was solved through use of an automated cleaning device in combination with the smart construction of the cascade elements. Cleaning can be performed by one person and requires approx. 70% less time than for other vacuum deaerators.

Compact design

The compact design of the AirEx AT-V is important for rebuilds in tight spaces. With the multilayer curtain coater, a separate supply line with air removal system is required for each coating layer. This clearly illustrates how important a space-saving air removal installation is.

Visual evaluation impressively demonstrates the results of air removal: When applied to a glass plate and viewed in transmitted light, the coating color has run out of air in the AirEx AT-V (Fig. 3).

Improvements extending beyond the pure mechanical development of the

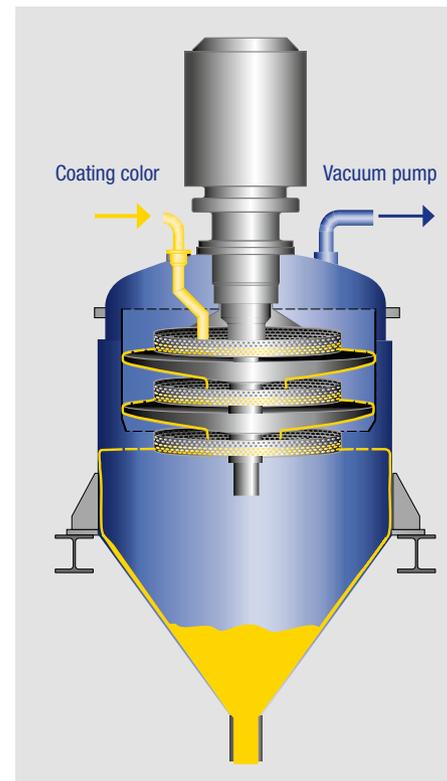


Fig. 2: The cascade principle of the AirEx AT-V provides for three times the surface.

application unit are being made to the curtain coating process. Removal of air from the coating color is a key element in the generation of optimum paper properties in the overall process. With the right components, the curtain coater will become in the paper industry what it has always been in other industries: the easiest and thus most efficient coating process.



Fig. 3: Glass plate test before ...

... and after air removal.

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Reflecting the exclusiveness – the interior of the retail store.

Büttenpapierfabrik Gmund opens first store in Munich

Premium paper with a handcrafted look

Last September Büttenpapierfabrik Gmund opened an exclusive retail store in Munich, allowing end consumers to buy small quantities of the one-of-a-kind Gmund paper grades for the first time ever. Especially popular are the paper grades that look like they are handmade.

The door opens, and Birgit Liebe beams. We are in “her” paper store, which is right behind the Bayerischer Hof in Munich. This is not just any old paper store. “We are specialized in exclusive premium paper, paper you can’t find anywhere else”, says store manager Birgit Liebe.

The company behind the nice store with the fascinating paper grades is Büttenpapierfabrik Gmund. Steeped in tradition, the paper mill has been

producing specialty papers since 1829 in Gmund am Tegernsee, Germany. Today the papers are delivered to more than 70 countries. With two paper machines, papers can be made in 60 different colors with up to six different basis weights. One of the machines, a Fourdrinier machine with a maximum width of 1.60 m (5.25 feet) and a length of 40 m (approx. 130 feet), has been in use since 1883 and is hence the oldest machine still running in Europe.

“We are not a museum,” states Florian Kohler, owner and CEO of Büttenpapierfabrik Gmund. “Our old paper machine runs at a low speed, but that’s exactly what we need to make our premium papers.” Thus arises paper with a handmade character. With 110 different calender rolls, diverse paper surfaces can be produced in Gmund. Whether it has a linen structure or a leather grain, each paper has its own feel. The second paper machine is from Voith.

Originally built as the PM 407 in 1930, the Voith machine was rebuilt in 1979/1980 and installed in Gmund. It is one of the most modern premium paper machines of its kind in the world and enabled Gmund to add larger formats and basis weights to its product range.

One-of-a-kind papers

The secret to Büttenpapierfabrik Gmund’s success is the continuous development of unique, high-quality paper grades. A special creation is a paper with feathers incorporated into it. It is like velvet to the touch, nearly like a fabric. “The papers in the Naturals series are the most popular here at the store,” claims Birgit Liebe. They have high cotton contents and inclusions of plant-based raw materials such as straw, turf, bark, or feathers. Despite their felt marks and authentic deckled edges, they can even be used in inkjet printers.

“Paper fascinates me,” the shop manager says with a smile. “The quality one feels and the aura of a paper can transport many emotions.” Before working as a paper salesper-

son, she worked in the textile industry. “The road from textiles to paper is not long at all. Both industries are all about the characteristics of materials, about beautiful and high-quality products,” according to Liebe. She was involved in the creation of the Gmund paper store in Munich right from the start. July 2007 marked the beginning of the store planning, which also involved a well-thought-out architectural design.

Exclusiveness already reflected in the architecture

The store, designed by the Huchlers, an Austrian architect couple, exudes a cozy lounge atmosphere.

The architects decided to use the noble, dark bog oak wood furniture for two reasons:

“First, we are close to nature and have regional roots. Bog oak wood is common to the Bavarian and Alpine regions,” according to Birgit Liebe. Secondly, Kohler, Liebe, and their team spent a long time looking for a suitable basis for the presentation of the papers. The structure of the wood could not take away from the structure of the paper. The matt black-

brown surface is decent and noble – and without a red tinge, since this could disturb the color impression of the paper. They had been playing with the idea of establishing a retail store for a long time already.

“We were contacted by a number of interested parties who wanted to purchase our paper in small quantities as private customers,” reports Florian Kohler.

The small shop at the mill in Gmund at the Tegernsee first proved to be a success. Initially it was only open three afternoons a week. Now it is experiencing brisk business six days a week. The Gmund store in Munich was the next logical step in serving the many private customers and paper fans. Two-thirds of store visitors are private individuals who stock up on Gmund paper for high-quality wedding invitations, exquisite writing paper, or unique Christmas cards. The rest are commercial customers wishing to design their company stationery exclusively and individually. The concept is catching on. Since establishment of the store in September 2007 business has been outstanding, and more stores are being planned for major German cities.



Whether linen or leather structure, every paper feels different.



Store Manager Birgit Liebe offers unique papers.



Dr. Hermut Kormann was bid farewell on the occasion of a customer event with an impressive ambience on the Voith premises in Heidenheim, Germany.



Management trio – Three generations of Chief Executive Officers: Dr. Hermut Kormann (center) with his predecessor Dr. Michael Rogowski (left) and the new Voith CEO Dr. Hubert Lienhard.

Farewell of Dr. Hermut Kormann, Chairman of the Board of Voith AG

Change at the top of Voith AG

Effective at the end of March 2008, Dr. Hermut Kormann has, at the age of 66, stepped down from his position as President and Chief Executive Officer of Voith AG. Precedingly, the Supervisory Board had approved the proposal submitted by the Shareholders' Committee and unanimously appointed Dr. Hubert Lienhard, member of the Board of Management of Voith AG and Chief Executive of Voith Siemens Hydro Power Generation, as his successor.

During his tenure as CEO of Voith AG, Dr. Kormann has made a name for himself primarily as a consistent and capable corporate strategist. In his position as Chief Financial Officer, he, together with Dr. Michael Rogowski, today the chairman of the Voith supervisory board, was instrumental in steering Voith safely through a division of ownership in the 1990s and subsequently driving Group

business from 1.2 billion euros to today's volume of 5 billion euros. Dr. Lienhard began his service to Voith AG in 2001, when he came from ABB and was appointed to the Board of Management. A year later, he assumed the role of Chief Executive of Voith Siemens Hydro Power Generation GmbH & Co. KG, while also shouldering additional functional responsibilities for strategic procurement and

risk management. Dr. Lienhard is a member of both the Administrative Board of Sulzer AG and the Supervisory Board of SGL Carbon AG. He also serves as India Liaison Officer for the Asia Pacific Committee of the Association of German Industry, and is a member of the German-Indian Advisory Group.

“His breadth and depth of industry experience, his commitment to the concept of the 'family-owned company' and his history of successful service among his peers make Dr. Lienhard a worthy choice as President and Chief Executive Officer,” Dr. Rogowski told. Since April 1, 2008, Dr. Lienhard is leading the Voith Group in this new capacity. “I am pleased at the trust placed in me by the shareholders, the Shareholders' Committee, the Supervisory Board and the Advisory Council,” Dr. Lienhard said. “I will devote all my energies to sustaining and shaping the success story that is Voith.”



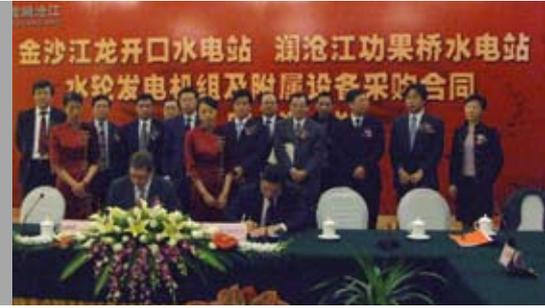
Dr. Hubert Lienhard has been the new CEO of Voith AG since 1st April 2008.



Ming Ming Liu, President Voith Paper China Co., Ltd. and Jialin Wu, Chairman of the Board of Yueyang Forest & Paper Group, after the contract signing.



The largest Vorecon (33 MW) so far on the test bench in Crailsheim.



Contract signing for the Longkaikou hydro power station in China.

Voith Paper

Large order received from Yueyang Paper

Yueyang Paper, one of China's ten largest paper and board producer, has given Voith Paper the order to deliver the PM 9 and PM 10 as part of the 400,000 tons/year project.

"We have full confidence to accomplish the project with Voith Paper as our major partner", stated Jialin Wu, Chairman of the Board of Yueyang Forest & Paper Group.

The new machines, PM 9 and PM 10, are identical and will be built according to the one platform concept and feature state-of-the-art technology. With a wire width of 5.85 m and with the design speed of 1,400 m/min, both machines will produce 200,000 tons of printing paper per year.

The start-ups are scheduled in the third quarter of 2009.

Voith Turbo

Energy for new coal-burning power plant in South Africa

Voith Turbo has received a large order from the South African electric power company Eskom for the delivery of 18 Vorecon. The adjustable planetary gearings will be used in a new coal-burning power plant. The national energy supplier is investing in the first new coal-burning power plant to be built in Africa in 20 years because of rising energy demand. "Medupi" will be larger than any power plant in Germany with 4,749 MW of power.

Voith Turbo will deliver the 18 Vorecon with 17 MW power each between 2009 and 2011. The machines will be custom-made. However, there will be no changes to Vorecon's operating mode, after all the gearing is being used successfully worldwide with 99.97% reliability (calculated based on machines in operation) – for example, in compressors, pumps and blowers in power plants or also in the oil and gas industry as well as the petrochemical industry.

Voith Siemens Hydro

Generators for hydro power plant at the Yangtze

Voith Siemens Hydro Shanghai will supply five 400 MVA generators for the Longkaikou hydro power station in the Chinese province of Yunnan. The volume of the contract awarded by operator Langcangjiang Hydro amounts to more than 65 million euros. The generators will be manufactured in the workshops of Voith Siemens Hydro in Shanghai.

Upon completion, Longkaikou hydro power station, located on the upper reaches of the Yangtze River in the southwest of China, will have a total installed capacity of 1,800 MW and generate 7.8 million MWh of electricity on an average per year.

Besides Longkaikou, Voith Siemens Hydro is currently also supplying equipment for two more hydro power stations of Langcangjiang Hydro: Xiaowan and Nuozhadu.

Voith Paper

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