
32nd International Munich Paper Symposium

PROGRESS IN BOARD AND PAPER TECHNOLOGY

19 - 21 March 2024

ADDRESS

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31st International Munich Paper Symposium 2023

Welcome

Dear Participant:

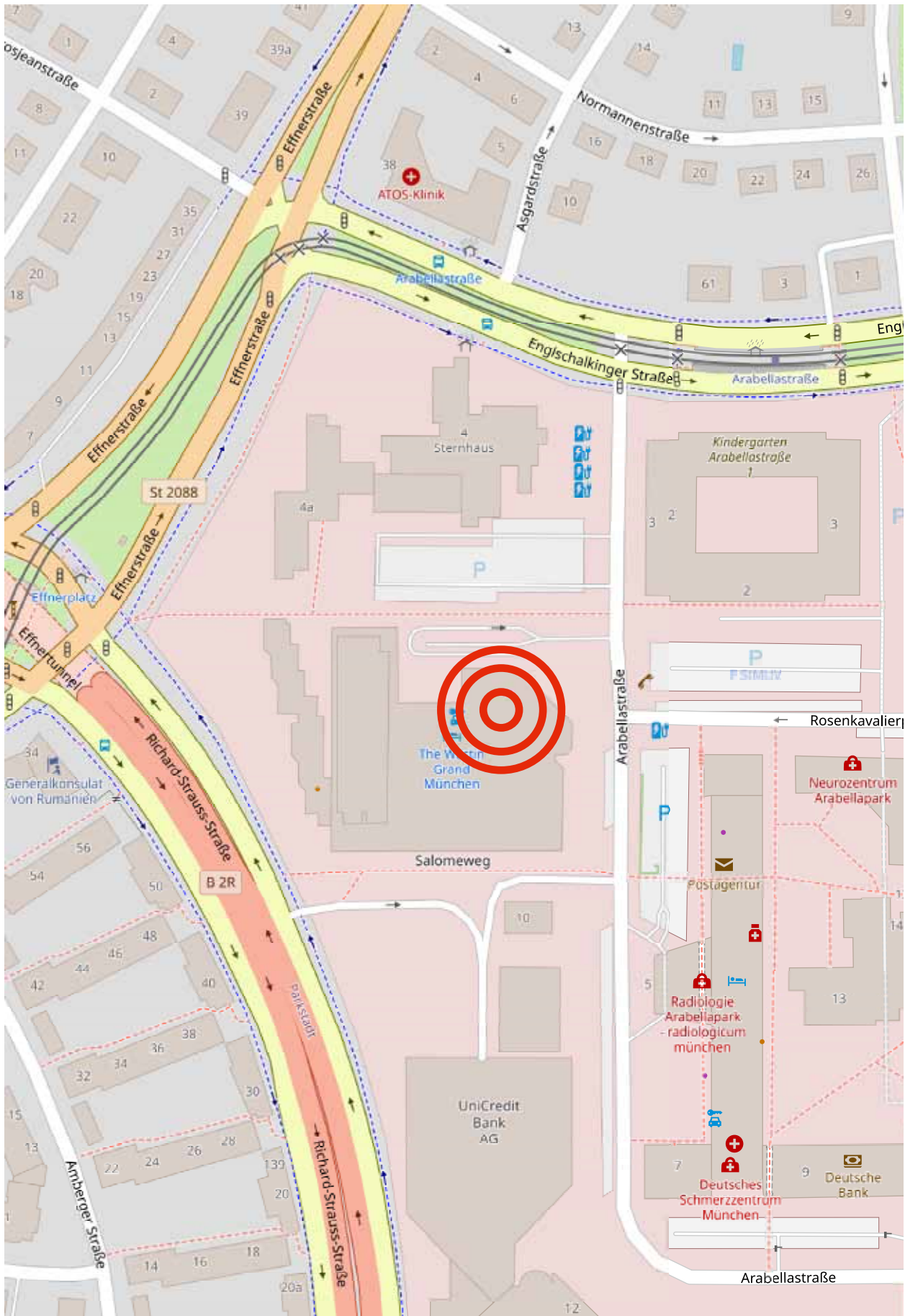
I would like to welcome you to the 32nd IMPS - International Munich Paper Symposium. This year's IMPS will once again focus on developments that optimize paper and board manufacturing processes and improve product quality. An unusually large number of reports come directly from paper mills, underlining both the credibility and the feasibility of the opportunities presented. The speakers come from various suppliers and the following paper mills: Model, Model Papier Eilenburg, Norske Skog Bruck, Landqart, Progroup, Sappi Maastricht, Munksjö Paper, Sofidel, Mondi, Mondi Frantschach, SAICA, Paper+, Kabel Premium Pulp & Paper, Maxauer Papierfabrik, Smurfit Kappa Roermond Papier, Moritz J. Weig, LEIPA and Klabin.

As part of the exhibition, you will meet well-known and new companies with their products and services in the immediate break area of the conference. These include ABB with a complete portfolio of state-of-the-art sensor technology for detecting process deviations. Deublin is known as a leading company for rotating unions and siphon systems and is the company with the longest history of exhibiting at IMPS. Emco manufactures and supplies a wide range of measuring devices and automatic testing machines used for testing paper, board and pulp. emtec Electronic develops, manufactures and distributes measuring devices for the paper, board and tissue industry worldwide, for both wet and dry production and converting. fipptec offers solutions and products to make paper production more efficient, competitive and of better quality. Frank-PTI presents itself as a partner for highest quality, customer-oriented solutions and uncomplicated and fast service in material testing. GAW technologies will be exhibiting and once again sponsoring the Cultural Evening and is an expert in the industrial preparation and production of chemicals and coating compounds, automation and digitalization of industrial processes. Gloning is one of the leading specialist crane suppliers, e.g. for the Palm PM5. As a specialist company for all questions relating to paper machine cleaning, Hatton will be presenting its capabilities and experience. Ircon Solaronics develops and supplies customized, non-contact drying and heating solutions based on air drying technologies and infrared dryers. KPNB will once again be exhibiting with topics on efficient production and potential savings, as will MAUEL Sicher Arbeiten with seminars and training courses on safe working practices. N.C.R Biochemical expands the exhibition with an experienced supplier in the field of enzymes. PaCon offers information on the optimization and measurement of scraper contact pressures and profiles. PTS is a well-known research and service company for the German paper industry with an extensive cooperation network. Together with Techpap, Petax is partnering with several companies to showcase their versatile products for the paper industry. REGUPOL is a leading global processor of recycled elastomers and manufactures individual products for various markets, e.g. anti-slip mats for load securing. Servophil supports the paper and process industry with advanced chemical, biological and physical products and comprehensive service. Siemens Fiber Industry is globally known for solutions for drive applications, power distribution, automation and process electrification in the pulp and paper industry. TKM supplies industrial knives, machine knives, doctor blades, saws, machine elements and spare parts and offers a wide range of services for your knives and tools. Trimble will be showing Wedge, a powerful data mining software that can be used to improve the efficiency of industrial plants. Wolf Heilmann will be showcasing a wide range of its products for paper production and will be giving an exciting presentation on waste optimization. Wöllner is one of Europe's leading suppliers of soluble silicates, process chemicals and specialty additives for industrial applications. You know X-Rite as an experienced specialist for all questions of color measurement and color control.

I wish you exciting practice-oriented presentations, lively discussions and an interesting exhibition.


Prof. Dr. Stephan Kleemann

MAP OF THE SURROUNDING AREA



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A map of the surrounding area. The red circles mark the conference location..

CONFERENCE PROGRAMME

Tuesday, 19 March 2024

Morning Session

09:00

Welcome to the IMPS and Exhibition

S. Kleemann · Institute of Paper Technology · Munich / Germany

Planning and commissioning of Model Papier Eilenburg

Dirk Schwarze · Model Papier Eilenburg GmbH · Eilenburg / Germany

Juergen Lemke · Model AG · Weinfelden / Switzerland

Conversion of a newsprint machine to packaging grades

Enzo Zadra and Klaus Eibl · Norske Skog Bruck GmbH · Bruck / Austria

Erich Kollmar · Bellmer GmbH · Niefern / Germany



Discussion and Coffee Break

11:15

Optimization of the internal water cleaning system and commissioning of a filtration plant

Verena Speckle and Andreas Paech · Landqart AG · Landquart / Switzerland

Kevin Klassen · Cellwood GmbH · Dueren / Germany

Ultrafiltration for the post-treatment of biowater from process water treatment plant

Thomas Boehme and Rudolf Graefenstein · Progroup Paper PM3 GmbH ·

Sandersdorf-Brehna / Germany



Lunch at The Westin Grand Munich conference hotel

Afternoon Session

14:00

New cleaning concept and digital contamination determination for suction rolls

Tjerk Boersma · Sappi Maastricht B.V. · Maastricht / The Netherlands

Marc Erkelenz · J.M. Voith SE & Co. KG · Heidenheim / Germany

Experience and success with the installation of a vacuum blower

Jan Sedlacek and Jens Haessner · Munksjö Paper GmbH · Aalen / Germany



Discussion and Coffee Break

15:45

Optimization of stability in the production process

Matteo Notini · Sofidel S.p.A. · Porcari / Italy

Stephan Wenzel · Valmet GmbH · Tampere / Finland

AI-Powered computer vision reshaping processes at Mondi

Angelika Hofer-Orgonyi and Guenter Roehrich · Mondi AG · Wien / Austria

Florian Latzelsperger · Mondi Frantschach GmbH · St. Gertraud / Austria

Successes at SAICA with predictive and AI based monitoring

Lucas Ortego · SAICA S.A., El Burgo de Ebro · Zaragoza / Spain

Lena Hofmann · J.M. Voith SE & Co. KG · Heidenheim / Germany

20:00



Gala-Dinner at The Westin Grand Munich conference hotel

Wednesday, 20 March 2024

Morning Session

- 09:00 **Production of bactericidal paper with improved surface properties**
George Barnovi · "Paper+" LLC · Tbilisi / Georgia
Vladimer Tsitsishvili · Georgian National Academy of Sciences · Tbilisi / Georgia
George Khutsishvili · Ivane Javakhishvili Tbilisi State University · Tbilisi / Georgia
- Real-time microbial monitoring in a paper mill**
Christian Lübke · Kabel Premium Pulp & Paper GmbH · Hagen / Germany
Marisa Silva and Samuel Wüthrich · onCyt Micobiology AG · Zürich / Switzerland
- Probiotic water treatment**
Moritz Fessenmayr and Thomas Achtermann · Maxauer Papierfabrik GmbH · Karlsruhe / Germany
Dominik Stumm and Jörg Alles · Woellner GmbH · Ludwigshafen / Germany
- ☕ **Discussion and Coffee Break**
- 11:15 **Significant dry content increase in the press section**
Bas Noldus · Smurfit Kappa Roermond Papier B.V. · Roermond / The Netherlands
Caio Penteadó · J.M. Voith SE & Co. KG · Heidenheim / Germany
- Innovation to reduce energy consumption and CO2 emissions during paper drying**
Timo Pisbach · Moritz J. Weig GmbH & Co. KG · Mayen / Germany
Roman Klug · AutomationX GmbH · Graz / Austria
- 🍴 **Lunch at The Westin Grand Munich conference hotel**

Afternoon Session

- 14:00 **First results with a new refiner type at Klabin**
Ênio Reis · Klabin S.A. · Harmonia / Brazil
Philipp Schimmelpfennig · J.M. Voith SE & Co. KG · Ravensburg / Germany
- Challenges in the development of a soft sensor**
Hanna Schwandt · LEIPA Georg Leinfelder GmbH · Schwedt / Germany
Paulina Hahn and Jürgen Belle · Munich University of Applied Sciences · Munich / Germany
Felix Hake · Consultingtalents AG · Walldorf / Germany
- Cost reduction with new reject pelletizer**
Arne Krolle · PROPAKMA GmbH · Bietigheim / Germany
Wolf Heilmann · Wolf Heilmann Produkte für die Papiererzeugung · Augsburg / Germany
- ☕ **Discussion and Coffee Break**
- 16:10 **Reduced CO2 footprint without loss of quality**
Thomas Staehrfeldt · Omya International AG · Oftringen / Switzerland
- Fuels from flue gas - biogenic advantage for pulp and paper mills**
Engelbert Schrapp · Siemens Energy AB · Stockholm / Sweden
- Summary**
Stephan Kleemann · IVP - Institute of Paper Technology · Munich / Germany
- 19:30 👑 **Cultural evening - Invitation to the famous Circus Krone**

Monday, 18 March 2024 and / or Thursday, 21 March 2024

Excursions

| | |
|-----------------------------------|--|
| Monday Departure time: 14:15 | Laboratories, Pilot Paper Machine and Coating Units at the Munich University of Applied Sciences in Munich / Germany |
| Thursday Departure time: 08:30 | UPM Paper Mill (Graphic Paper) in Schongau / Germany |
| Thursday Departure time: 09:00 | Leading-edge cluster MAI Carbon at the Augsburg Technology Center in Augsburg / Germany |

All buses leave from in front of The Westin Grand Munich conference hotel and return there afterwards.

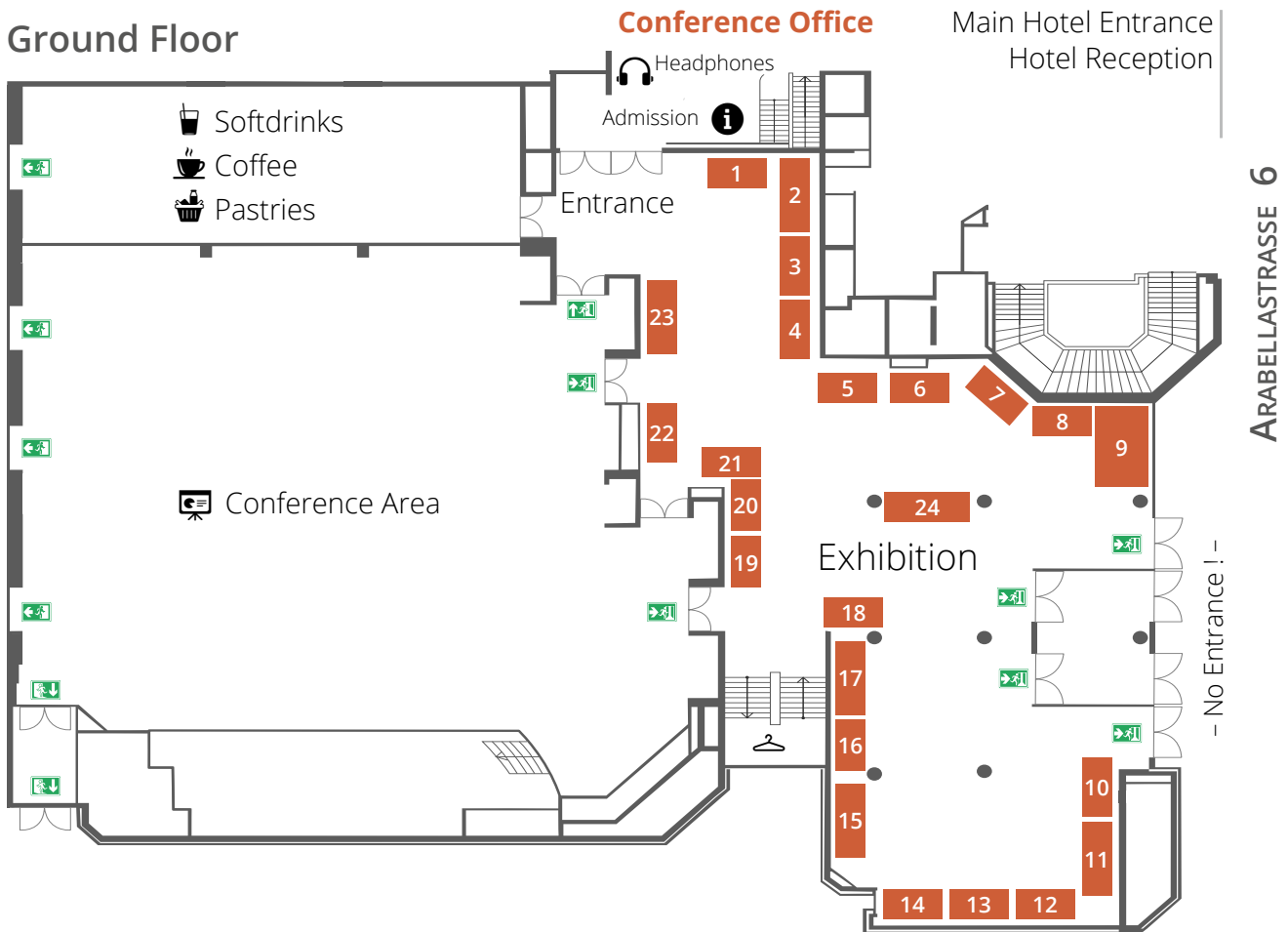


Prof. Dr. Stephan Kleemann (IMPS Organiser) · 27th International Munich Paper Symposium 2018

EXHIBITORS

Conference and Exhibition Area

Ground Floor



| | | | | | |
|---|------------------|----|--------------------|----|------------------|
| 1 | X-Rite | 9 | Siemens Energy | 17 | Wöllner |
| 2 | ABB | 10 | Trimble | 18 | TKM |
| 3 | Emtec | 11 | Regupol | 19 | Petax / Techpap |
| 4 | KPNB | 12 | Servophil | 20 | GAW |
| 5 | Gloning | 13 | N.C.R. Biochemical | 21 | fipptec |
| 6 | Emco | 14 | Wolf Heilmann | 22 | Deublin |
| 7 | PTS | 15 | Hatton | 23 | MAUEL |
| 8 | IRCON SOLARONICS | 16 | Frank-PTI | 24 | HM / IVP / PaCon |

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Data status: Wednesday, 06 March 2024







31st International Munich Paper Symposium 2023

ABSTRACTS

Welcome to the International Munich Paper Symposium

Stephan Kleemann · Institute of Paper Technology (IVP) · Munich / Germany

This year, the IMPS is once again focusing on developments that optimize paper and board production processes and improve product quality. An unusually large number of reports come directly from paper mills, underlining both the credibility and feasibility of the optimizations presented. The speakers come from various suppliers and the following paper mills: Model, Model Papier Eilenburg, Norske Skog Bruck, Landqart, Progroup, Sappi Maastricht, Munksjö Paper, Sofidel, Mondi, Mondi Frantschach, SAICA, Paper+, Kabel Premium Pulp & Paper, Maxauer Papierfabrik, Smurfit Kappa Roermond Papier, Moritz J. Weig, LEIPA and Klabin.

During the International Munich Paper Symposium (IMPS), participants will have the opportunity to visit various exhibitor areas directly in the center of the conference within the general coffee break area. Each exhibitor will be briefly introduced during the introductory welcome. Further information can then be obtained at the respective exhibition stand.

In addition to the conference and exhibition, the IMPS is an ideal opportunity to get in touch with the students of the international and in Europe unique Master's degree program Paper Technology at Munich University of Applied Sciences, which is taught only in English. The students come from many different countries and the common ground for all of them, apart from the English language, is their interest in technology and the paper and board industry. Approach the more than 30 students present and perhaps you will find your future application engineer or long-sought country-specific sales representative among them.

For future contacts, you can contact Munich University of Applied Sciences at papertec@hm.edu at any time regarding job offers or interesting internships. Further information about the bachelor's degree program, the dual paper technology program in Munich and the master's degree program in paper technology can be found on the Internet at hm.edu/smb and mpt.hm.edu as well as paper.university.

In addition to training around 50% of all paper engineers for Germany, Austria and Switzerland, the Biofibers and Paper course at Munich University of Applied Sciences is involved in contract studies and research on current topics in biogenic fibre technology and process optimization as part of its affiliated institute IVP (Institut für Verfahrenstechnik Papier) www.ivp.org.

I hope you enjoy the exciting, practice-oriented presentations and an interesting exhibition so that you, as a participant, can discuss your own problems with colleagues and make contact with the exhibitors and our many German and international students of paper technology.

One of the many differences between the IMPS and other conferences is that the IMPS does not send out public "calls for papers". The presentations at IMPS are always selected based on the experience and knowledge of the organisers and are about successful first-time installations and ongoing optimisation processes. The focus is particularly on new developments applied for the first time and optimisations of existing units or products. It should primarily deal with technical aspects. If possible, we would also like a paper or board or tissue producer to be an author or co-author. Spontaneous presentation offers are certainly possible and also welcome.

Planning and commissioning of Model Papier Eilenburg

Dirk Schwarze · Model Papier Eilenburg GmbH · Eilenburg / Germany

Jürgen Lemke · Model AG · Weinfeldten / Switzerland

Sachsenpapier Eilenburg paper mill, formerly owned by Stora Enso, was completely shut down in June 2023 and is scheduled to start-up production in the second quarter of 2024.

First, the presentation will explain why Eilenburg is so interesting as a location for the Model Group and its corrugated board sites. It will then show why and how the Eilenburg site is being consistently converted to lightweight (corrugated board, CO2 footprint, development of corrugated board qualities in the USA and China) and describe the initial results of the approach: Rethink corrugated board... What are the key components to be able to produce lightweight efficiently and quickly?

In the second half of the presentation, practical experiences and impressions from the conversion period will be presented. The audience will not only be presented with specific details relating to this conversion, but also with reference to organizational experiences that may be of interest for other projects / conversions.

Topics concerning the organization are safety issues, employee training - use of a "virtual image of the new PM", project logistics and a reference to costs.

The presentation will also use photos and a short film to describe the actual construction process at Model Sachsen Papier GmbH.

Rebuild of a paper machine for packaging papers

Enzo Zadra · Norske Skog Bruck GmbH · Bruck / Austria

Klaus Eibl · Norske Skog Bruck GmbH · Bruck / Austria

Erich Kollmar · Bellmer GmbH · Niefern / Germany

Two paper machines are operated at the Norske Skog site in Bruck an der Mur. PM3 has been producing up to 125,000 tons of newsprint paper for around 70 years and has been converted to produce 210,000 tons of corrugated base paper. PM4 has been producing up to 265,000 tons of LWC paper annually since 1989.

The site is part of Norske Skog ASA, one of the world's leading producers of publication papers with sites in Europe and Australia.

Following the rebuild of a second newsprint machine at the sister company in Golbey, France, Norske Skog will become one of the leading independent packaging base paper manufacturers.

At the plant in Austria, the decarbonization of the site was consistently driven forward in a multi-stage process. Investments in a new energy plant and the expansion of the existing wastewater treatment plant with an anaerobic pre-treatment stage ensure significant reductions in fossil CO₂ emissions while at the same time expanding production capacities.



The production of corrugated base paper is Norske Skog's entry into a new business segment.

The core of the investment is the construction of an OCC pulp preparation plant for the preparation of brown waste paper grades and the conversion of paper machine 3 for the production of corrugated base paper.

The new systems were fully integrated into the existing plant, making the best possible use of the existing infrastructure. The technical challenges and the corresponding implementation of the demanding brownfield project are shown.

Thanks to a highly motivated and qualified team, the project goals were achieved in record time, both in terms of quantity and quality.

The investments initiated efficiency and environmental improvements that will have a lasting positive impact on the future of the site and the number of jobs.

In addition to paper, Bruck also supplies district heating to the surrounding communities, supports the stability of the electricity grid by actively balancing the demand for electricity and produces ash for use in road and dam construction.

Conversion of the circulation water purification system and commissioning of a drum filter system

Verena Speckle · Landqart AG · Landquart / Switzerland

Andreas Paech · Landqart AG · Landquart / Switzerland

Kevin Klassen · Cellwood GmbH · Düren / Germany

Landqart AG has been producing banknotes and high-security paper for the speciality paper sector since 1978. The company is a supplier to more than 50 countries worldwide. Paper production is followed by further finishing steps on various systems.

The presentation will describe the current situation and challenges with micro flotation. The reasons for the conversion of the recirculating water treatment system will be explained. The focus is on the problems that arose during the conversion and commissioning. K. Klassen goes into more detail on the technical part and the functioning of the ALGAS AMF45.

- The objectives of the rebuild are primarily:
- Increase fibre / filler and M-feature recovery.
- Reduction of rejects due to less contamination and slime.
- Significant reduction in the surface area available for microorganism activity and biofilm formation by reducing the total volume in the constant part.
- Cost reduction for biocides.
- Improvement in paper machine efficiency and increased availability of the system.

Commissioning of the drum filter system is scheduled to start at the beginning of January 2024.

Ultrafiltration for the post-treatment of biowater from process water treatment

Thomas Böhme · Progroup Paper PM3 GmbH · Sandersdorf-Brehna / Germany

Rudolf Gräfenstein · Progroup Paper PM3 GmbH · Sandersdorf-Brehna / Germany

Since 2020, Progroup Paper PM3 has been producing corrugated base paper at its Sandersdorf-Brehna site in a closed water circuit with an internal recirculating water treatment system - ProAquaPlus - and uses BAT to keep the overall process as stable as possible. In fact, Progroup fully implements the BAT and does more than it recommends - e.g. complete extraction of the stripping tanks. At the ProAquaPlus, the highly contaminated process water is cleaned anaerobically and then decalcified and freed of solids by means of short-term aeration and flotation. The efficiency of the recirculating water treatment plant is approx. 75%.

With a view to further technological optimisation of process water treatment, an ultrafiltration technology established in open water circuits was tested for biowater treatment. The main objective of the project was to reduce the organic and inorganic load of the recycled biowater using a test plant and to determine the capacity of this technology. The constituents and the fibre content of the water to be filtered are decisive for the success, in order to be able to assess the effect, a filtrate containing fibres was temporarily added to the biowater.

The test showed that ultrafiltration technology can also be used for biowater. The system coped well with the water. The membranes had to be rinsed alkaline and acidic twice a week. In the open circuits, once a week is usual. The filterable substances in the permeate could be reduced by approx. 75%. The COD content and the content of organic acids could be reduced by 20-30%. The experiment was less successful in the area of inorganic pollution, the conductivity (sum parameter for the salts) remained unchanged, only the sulphate concentration could be reduced by 5-10%. The yield from the inlet was > 70 %, with a capacity of approx. 80-100 litres/h/m² membrane.

From a technological point of view, ultrafiltration is suitable for the post-treatment of the biowater in a partial flow. The point in the process at which the purified permeate can be used must be considered on an individual commercial basis.

New cleaning concept and digital contamination determination for suction rolls

Tjerk Boersma · Sappi Maastricht B.V. · Maastricht / Netherlands

Marc Erkelenz · J.M. Voith SE & Co. KG · Heidenheim / Germany

The suction roll is a central and complex subsystem in the paper manufacturing process. Often, it is not the first point of focus when runability and profiling problems arise. Nevertheless, a large number of influencing factors can have a considerable effect on production. In particular, there is a tendency to underestimate the influence of suction hole contamination on production. Here again, a number of factors play a role. On the one hand, the clogging of the suction holes is a gradual process whose negative influence builds up over time. Secondly, there is no reliable and reproducible method for determining clogging and, above all, its intensity.

Many paper manufacturers use cleaning systems to counteract the problem of contamination. Conventional systems available today, such as the Voith InsiderJet or similar, are designed to clean the suction holes from the inside to the outside. However, these systems are very expensive to purchase and unfortunately prone to failure due to their complex design and many moving parts. Furthermore, such a system is available to a limited number of customers, as the installation space required in the suction rolls is often not sufficient for these conventional systems.

Voith has taken on the challenge to develop a cost-effective, robust and reliable solution. This could only be achieved by breaking new ground and thinking in a fundamentally new way. This involved not only the development of a new type of cleaning system that eliminates the weak points described but also the development of an objective measuring method that can clearly, reproducibly and reliably determine the degree of contamination of a suction roll. These two complementary products are now being used for the first time at Sappi Maastricht, helping the professional production and maintenance teams to develop new approaches to optimizing runability and downtime planning.

Experience and success with installing a vacuum blower

Jens Haeßner · Munksjö Unterkochen GmbH · Unterkochen / Germany

Jan Sedlacek · Munksjö Unterkochen GmbH · Unterkochen / Germany

In times of growing sustainability awareness, resource conservation and simultaneously rising energy costs, the “PM1 vacuum system conversion” project was created. To date, five water ring pumps have been used for the various suction points in the wire and press sections. These have proven over the years to be a reliable and easy-care means of generating vacuum. Rising operating costs combined with improvements in efficiency and high resource consumption have prompted the company to rethink the drainage strategy on the PM1 and replace the previous complex installation with a vacuum blower.

As a basis for the conversion, a detailed vacuum audit was carried out by Runtech at the beginning of the project. As a result, this confirmed the project's great potential for improvement with significant energy savings. In addition, a positive side effect was shown in terms of water consumption and waste heat transfer into the operational wastewater. The decision to implement the project was made quickly due to the expected benefits and a positive economic assessment.

During the project phase, Munksjö and Runtech worked hand-in-hand from kick-off to commissioning. The very limited space on site presented the project team with major challenges. The final installation location was therefore defined with the help of 3D scans of the existing building structure and the fan model was integrated into the 3D scan. This was necessary because the limited space made it very difficult to insert the individual components and required a change in the design of the separator. The separator was redesigned into several individual pieces so that it could be transported to the later operating location and reassembled there.

In addition to increased installation effort, the project was fraught with a certain amount of risk and was “doomed to success” because redundant installation was not possible due to the space available. All five existing water ring pumps were completely dismantled before installing the blower. There was therefore no convenient fall-back option. However, the positive experiences during a recent installation at a sister factory allayed any concerns in this regard.

Careful detailed engineering in advance and a successful conversion phase ultimately guaranteed smooth commissioning of the turbo blower - similar to a plug-and-play installation. After just a few hours of operation, the papermakers were able to see for themselves the advantages of the unit, which led to a number of improvements; Above all, the extremely efficient operation of the vacuum system, which has not yet been consistently pursued with the large range of decorative papers.

Significant improvements were achieved shortly after the blower was put into operation. In further optimization steps, the vacuum levels were successively adapted to the requirements of the production spectrum, which resulted in savings of around 60% compared to operating with water ring pumps.

Optimization of stability in the production process

Matteo Notini · Sofidel S.p.A. · Porcari / Italy

Stephan Wenzel · Valmet GmbH · Tampere / Finland

Valmet Industrial Internet solutions are developed to optimize tissue production and reduce quality losses and operational costs.

Sofidel has innovated by adopting a digital transformation project with Valmet. The project uses real-time prediction of quality parameters, such as tensile strength, to reduce raw material usage and improve process insight for operators.

Valmet and Sofidel collaborated to create a predictive real-time model based on process analysis, testing, and verification. The model provides real-time information on tensile strength to operators through the Valmet interface. This solution reduces the variability of quality parameters, which could result in downgrading or higher production costs.

Additionally, the project incorporates a predictive monitoring service as a development stream to optimize the performance and reliability of the production assets. The predictive monitoring service uses software, asset management best practices, and Artificial Intelligence to reduce costs, increase availability and lifespan of assets.

Sofidel, during this collaboration, tested the service to understand better its potential: a new way to monitor and assess the health and condition of their assets, prevent failures, and enhance efficiency and productivity.

AI-Powered computer vision reshaping processes at Mondi

Angelika Hofer-Orgonyi · Mondi AG · Vienna / Austria

Florian Latzelsperger · Mondi Frantschach GmbH · St. Gertraud / Austria

Günter Röhrich · Mondi AG · Vienna / Austria

In the paper industry, similar to numerous other industrial sectors, process automation is increasingly gaining importance. This development results from the necessity to adapt to changes in the labor market as well as to meet increased demands for quality and efficiency. The integration of software solutions in the field of Computer Vision (CV) plays a central role by serving as an essential tool for automation and support.

Research in CV has made significant progress in the last years especially through the democratization and enhancement of the underlying technologies. This development opens a plethora of applications along the chain of production from incoming goods to final quality checks. The broad tool kit of CV poses enormous potential for a wide range of applications in the industrial field from process control to workers' safety.

Particularly, functionalities such as classification, object recognition, and image segmentation are often considered highly promising, but also less popular use cases like classic anomaly detection are increasingly coming into focus. The use of CV can take pressure off operators and support them in their tasks. Especially monotonous, repetitive tasks, that are therefore prone to human error can be supported very well with CV. With new technologies conventional tasks around product or process inspections are becoming easier to tune to specific problems, which leads to more precise results in problem detection, less errors and in return to higher tolerances for users.

Another crucial aspect lies in the flexible adaptability of CV algorithms to specific work processes as well as the utilization of existing infrastructure. This last point, in practice, allows for the adaptation and utilization of existing camera systems, often avoiding the need for new equipment acquisitions.

Successes at SAICA with predictive and AI based monitoring

Lucas Ortego · SAICA S.A., El Burgo de Ebro · Zaragoza / Spain

Lena Hofmann · J.M. Voith SE & Co. KG · Heidenheim / Germany

A reliable predictive monitoring system is key when it comes to machine availability and maintenance planning. Voith's predictive monitoring solution OnCare.Health Paper is an online monitoring, analysis and diagnostic solution, combining Voith's expert know-how in papermaking, analytics and artificial intelligence.

In 2022, SAICA decided to upgrade its existing condition monitoring systems of three machines in Spain with the Voith OnCare.Health predictive machine and technology monitoring solution, following with two more machines in 2023. By continuously collecting and analyzing data on the machine condition, SAICA can now automatically detect deviations and anomalies. Timely response to malfunctions can be triggered to prevent unplanned machine downtimes.

Nevertheless, at diverse positions within the paper mill, it is not possible or costly to install sensors. In addition, experts must still investigate and analyze the root causes of issues at physically monitored components. Therefore, SAICA and Voith began a joint development project to enable overall machine monitoring and analytics based on existing machine data. This approach can facilitate both condition and behavior monitoring of different component and processes.

- Self-trained AI models for mechanical and electrical components were set up based on SAICA's historical process data.
- The running of AI models is designed to identify anomalous behaviors across diverse mechanical components.
- SAICA, with consulting from Voith, is independently executing incremental learning of the AI models and fine-tuning its models to different machine modes and grades.
- Automatically generated insights about the most common causes of the anomalies are enabling SAICA to take immediate actions.
- In 2024, the joint development project will be enhanced with the new intelligent pattern recognition function, allowing SAICA to generate automatic recommendations for action on errors identified by the AI.

The presentation will showcase Voith's data-driven monitoring approach and provide insights into the AI and associated technical solution. In addition, the results achieved at SAICA will be shown and the possibilities and limitations of AI-based predictive monitoring in paper production discussed.

Production of paper with bactericidal and improved surface properties

George Barnovi · "Paper+" LLC · Tbilisi / Georgia

Vladimer Tsitsishvili · Georgian National Academy of Sciences · Tbilisi / Georgia

George Khutsishvili · Petre Melikishvili Institute of Physical and Organic Chemistry, Ivane Javakhishvili Tbilisi State University · Tbilisi / Georgia

In the context of the coronavirus pandemic, not only the demand for various disinfectants has increased, but also the interest in obtaining new antibacterial and antiviral materials, especially paper packaging for food and agricultural products. Changing the properties of paper and cardboard, including giving them antibacterial properties, is possible with the help of special fillers, among which zeolites containing biologically active metals (silver, copper, zinc, etc.) are recognized as very promising.

The essence of the project supported by the Shota Rustaveli National Science Foundation of Georgia is the production of paper with bactericidal and improved surface properties using zeolite fillers containing bioactive silver, copper and zinc ions. For the preparation of bactericidal fillers, natural zeolites of Georgia have been used, in particular, heulandite-clinoptilolite of the Dzegvi-Tedzami deposit.

We offer simple and cheap technology to produce bactericidal wrapping paper with improved surface properties. The technology is based on introduction of zeolite material enriched with biologically active metals (silver, copper, zinc) into the paper web. It is believed that only silver has high bacteriostatic activity, but its use increases the cost of the product, so this technology is not widely used, therefore we suggest to use cheaper metals, copper and zinc.

We have found that the introduction of these bactericidal metals prevents the formation of mold, as well as the growth of fungi and other microbial contaminants on the surface of paper and cardboard, in addition, the introduction of copper-containing compositions makes the paper waterproof; on the other hand, the use of such paper/cardboard meets modern environmental requirements to reduce the share of synthetic polymers in the assortment of packaging materials and to return to "paper bags" and "cardboard boxes".

The most important expected result of the project was the preparation of packaging paper with bactericidal properties, not only in laboratory conditions but also in production. Paper with activity against *E. coli*, as well as waterproof paper active against staphylococcus, have been produced on the production line of the paper mill of the Limited Liability Company, "Georgia Paper Production Ltd" (126, Beri G.Salosi str., Tbilisi, Georgia, identification code: 206165424, director Ramaz Gvalia), both technologies will be used by the company in the future. It should be noted that the raw material for producing paper is secondary raw materials - waste paper. Our team of scientists, together with the paper manufacturing factory, is successfully working on this project. [...]

Working on a project is a group of scientists from the Petre Melikishvili Institute of Physical and Organic Chemistry, I. Javakhishvili Tbilisi State University, under the leadership of the Member of Georgian National Academy of Sciences Vladimer Tsitsishvili. The team includes Prof. N. Dolaberidze, PhD N. Mirdzveli, PhD M. Nijaradze, PhD Z. Amiridze, PhD B. Khutsishvili, G. Khutsishvili, O. Chudakova.

In 2020-2021, with the support of the International Bank of Reconstruction and Development (IBRD), the team worked on the project of the CARYS 19-442 "Bactericidal zeolite fillers for paper production "Successful implementation of the project may become a factor in reviving the paper industry in Georgia and creating new jobs.

This work was supported by Shota Rustaveli National Science Foundation of Georgia (SRNSFG) [grant number AR-22-610, Project Title "Production of paper with bactericidal and improved surface properties"]

This summary has been slightly abridged. You can find the complete edition on the Internet at www.paper-online.de/en/imps-2024/abstracts/

Real-time microbial monitoring in a paper mill

Christian Lübke · Kabel Premium Pulp & Paper GmbH · Hagen / Germany

Marisa Silva · onCyt Microbiology AG · Zürich / Switzerland

Samuel Wüthrich · onCyt Microbiology AG · Zürich / Switzerland

A fully automated in situ sampling and measurement device offers process analytical data for microbes in process water streams. Sensor data that is available 24/7 and in real-time makes trends in bacterial concentrations and the effect of biocides on bacterial viability directly accessible and fully quantitative.

With such information at hand, it becomes much more feasible to anticipate microbially induced quality and operational problems (e.g., odour, paper brakes, slime formation). Hence, countermeasures and preventive maintenance can be refined and optimised. More targeted and reduced biocide consumption is economically and environmentally beneficial. Importantly, financial losses due to downtime and faulty products can be minimised. Preventive maintenance rather than emergency shutdowns reduces strain on infrastructure and personnel. Efforts and cost for inefficient sampling and external analysis of infrequent microbial analyses of very little information content can be avoided.

By closing the “microbial gap” in process analytics and adding these crucial parameters to the process management system, the highly complex art of making paper becomes a touch less challenging and more controllable.

Probiotic water treatment

Moritz Fessenmayr · Maxauer Papierfabrik GmbH · Karlsruhe / Germany

Thomas Achtermann · Maxauer Papierfabrik GmbH · Karlsruhe / Germany

Dominik Stumm · Wöllner GmbH · Ludwigshafen / Germany

Jörg Alles · Wöllner GmbH · Ludwigshafen / Germany

Biocides and biodispersants are the classical approach to solve microbiologically induced problems in the paper industry, mostly caused by biofilms and their effects such as bad odours and acidification.

In recent years, the approach of biological cleaning with probiotic bacteria has become a promising alternative to the chemical, antimicrobial treatment of industrial water circuits in the paper industry, including the peripheral water circuits of cooling equipment, air scrubbers and wastewater treatment plants. The focus is on environmental considerations, sustainability, user-friendly functionality and work safety.

In past few years, Wöllner has succeeded in establishing and successfully operating applications with its Waropure® products in all areas of paper production, from hygiene paper and packaging paper to speciality and printing paper, as well as in other industries.

In addition to improving hygiene in production processes, the probiotic microorganisms in Waropure® showed surprising metabolic properties with regard to catalase formation in our own laboratory tests.

During the same period, the biocide glutaral, which has been used for decades to control catalase, was classified first as SVHC candidate and finally as SVHC substance.

Together with our partner in graphic paper production, Maxauer Papierfabrik GmbH, we were looking for an SVHC-free alternative in order to operate the deinking systems successfully and economically.

For more than 4 years now, the stock preparation has been able to supply biocide-free deinking stock to both paper machines.

The next step was to work together on the biological treatment of the paper machines in order to transfer the good process hygiene achieved in stock preparation to the paper machine. Of particular interest here is the way in which the probiotics spread on the machine.

Significant dry content increase in the press section

Bas Noldus · Smurfit Kappa Roermond Papier B.V. · Roermond / Netherlands

Caio Penteado · J.M. Voith SE & Co. KG · Heidenheim / Germany

The process of pressing paper significantly contributes to the overall energy efficiency of paper manufacturing. In order to further improve the ecological footprint of this process, there are ongoing activities to optimize the efficiency of the mechanical dewatering process, which would provide increased dryness content of the web after the press section.

Within a modern press section, a shoe press applies a pressure gradient in the z-direction, which is the driving mechanism of the mechanical dewatering. Theoretical considerations show that the dewatering efficiency can be improved with a tailor-made pressure gradient that takes the specific paper grade and boundary conditions into account. To obtain the desired pressure gradient, an optimized adjustment of the mechanical components and press fabrics is crucial, as the dynamic properties of the fabrics will considerably affect the resulting system compression behavior.

Using advanced simulation tools, laboratory experiments and pilot machine trials, we developed a novel dewatering system consisting of both mechanical components and fabrics to provide the desired pressure gradient for optimized dewatering with respect to the operating conditions of a paper machine. This was achieved through an integrated approach of mechanical and fabric development. After testing it on a small-scale pilot shoe press, the system was installed at the Smurfit Kappa Roermond mill, focusing on testliner and corrugated medium. After a successful preparation and start-up, and because of great cooperation between Voith and Smurfit Kappa, the initial results show an increase in dryness content after the press section of >1% immediately after starting the new pressing system.

In addition to the economic and ecologic benefits, implementing the novel pressing system can increase production when the dryer section is the limiting factor of the paper machine. Furthermore, the higher dryness content after the press section further increases the runability of the paper machine. These benefits can be achieved without time- and cost-intensive rebuilds, as the novel pressing system requires only minor adaptations to the shoe press roll and press fabrics, making it a very economical solution for paper manufacturers.

Innovation to reduce energy consumption and CO2 emissions during paper drying

Timo Pisbach · Moritz J. Weig GmbH & Co. KG · Mayen / Germany

Roman Klug · AutomationX GmbH · Graz / Austria

The simulation-supported optimisation technology for drying a paper machine enables a significant increase in energy efficiency with a sustainable reduction in CO2 emissions. A modern paper/cardboard machine consumes almost 80% of the total energy requirement of a paper mill and causes almost half of all CO2 emissions. The main reasons for avoidable energy losses are, on the one hand, insufficient measurement data quality or unavailable measurement sensors for relevant process variables and, on the other hand, control loops that operate independently of each other but are linked in terms of process technology.

Current systems use process values from field instrumentation to control production. However, many important process variables are difficult or impossible to measure (e.g. dry content of the paper web after the press section, temperature of the drying cylinders, evaporation rates, air humidity, efficiency of heat exchangers and much more). This is state of the art, a limiting factor of current control technologies.

AutomationX combines measured values with physical process dependencies and device functions and maps the real drying process as a virtual system. The digital representation of the real sub-processes is carried out with the help of rigorous models from the field of thermodynamics. This results in a remarkable improvement in the quality and quantity of process information.

Using "What If" scenarios, i.e. virtual validation of modified process operating modes that cannot be carried out on the real machine for safety or production-related reasons, significant potential savings in terms of energy (steam, electrical) are identified in an offline simulation. AutomationX ePM DryEnd integrates the virtual representation of the real drying process into the model-based optimisation solution and enables online closed-loop control of the system.

Thanks to the high quality of the calculated optimum process operation, the system can be operated close to the physical and process-related limitations and enables the existing energy-saving potential to be maximised.

The solutions already implemented, including at Moritz J. Weig GmbH & Co. KG in Mayen, show savings of more than 4.5% live steam over the entire drying process.

First results with a new refiner type at Klabin

Ênio Reis · Klabin S.A. · Harmonia / Brazil

Philipp Schimmelpfennig · J.M. Voith SE & Co. KG · Ravensburg / Germany

Philipp Schimmelpfennig, Global Product Manager Refining and Deflaking, presents the new Voith refiner, while Ênio Antônio Dos Reis, Process and Engineering Consultant at Klabin, will report on his experiences with the first InfibraFiner DG that has been started up.

The InfibraFiner DG (Digital Generation) is a combination of solid mechanical design based on decades of experience with double-disc refiner, smart features and the latest sensor and control technology on the market. Its SmartLight combines industrial design with innovative functionality.

With the new InfibraFiner, throughput and usable performance are increased. At the same time, load power consumption, maintenance effort and the machine's space requirement are reduced. Ease of operation and work safety also played a major role in the development, which is why the InfibraFiner is equipped with a new rotor changing device.

This completely new refiner concept stands out significantly compared to other refiners available on the market today in terms of both design and performance values.

Challenges in the development of a soft sensor

Hanna Schwandt · LEIPA Group · Schwedt / Germany

Paulina Hahn · Hochschule München · Munich / Germany

Jürgen Belle · Hochschule München · Munich / Germany

Felix Hake · Consultingtalents AG · Walldorf / Germany

As part of the "KIBAPap" project, a soft sensor is being developed to determine the dry content after the press in order to identify possible potential for increasing the dry content. The development of the soft sensor is being carried out by project partners from Munich University of Applied Sciences, Leipa Group GmbH and Consultingtalents AG at PM 5 in Schwedt and will be utilised together with the Institute of Textile Technology at RWTH Aachen University. The "KIBAPap - AI-based operator assistance system in the paper recycling loop" project aims to significantly reduce resource consumption in the production process by adapting process parameters to the quality of the raw material. The basis for this is data collected along the value chain, which is used for process optimisation with the help of comprehensive analysis methods and artificial intelligence. Leipa Group GmbH is providing the industrial equipment for the paper production side of the project. Leipa is focussing on the production of packaging paper from 100% waste paper. Uncoated corrugated base paper has been produced at PM 5 in Schwedt, which is being used for trials, since 2018.

Saving raw materials and energy is currently more important than ever and is therefore one of the main objectives of the project. In order to achieve this, measurements and sensors to visualise the current status play an important role. However, as measurement technology reaches its limits in some places, cannot be procured for cost reasons or cannot be safely installed in the paper machine for space reasons, soft sensors offer a good alternative.

In this presentation, the methodology for developing a soft sensor to determine the dry content after the press will be examined and possible challenges in the development process will be highlighted. A system analysis of the equipment serves as the basis for the soft sensor. In a further step, parameters are determined based on theoretical approaches and experience from everyday production, which have an influence on the desired target value. With the help of correlation analyses and evaluations, dependencies can be determined based on historical data. The number of influencing parameters that serve as input for the soft sensor can thus be limited to the relevant parameters. Machine tests are carried out to confirm individual parameters that have been determined by process engineering knowledge in order to determine their influence. Identified and validated influencing factors can then be used as input for the selected modelling approach. The equation and AI-based models are optimised and validated using historical data. The selected model can be continuously checked using comparative values from laboratory and retrofitted online measurements, ensuring constant optimisation and further development. A soft sensor is implemented as soon as it can be ensured that the model reliably represents the real-life conditions. In future, this can be used to simulate theoretical conditions without having to intervene in production. This will make it possible to find optimum operating windows, for example. Using the example of the dry content after the press, it will be possible to draw conclusions about optimisation options for steam consumption and thus about potential for reducing energy costs.

Cost reduction with new reject pelletiser

Arne Krolle · PROPAKMA GmbH · Bietigheim / Germany

Wolf Heilmann · wolf heilmann produkte für die papiererzeugung · Augsburg / Germany

The German paper industry produces around 2.5 million tons of rejects and sludge every year, which must be disposed of. Some factories can burn it in their own power plant if this is suitable for RDF. However, depending on the water content, this requires additional firing, which makes thermal utilization more expensive. On average, however, they are transported 170 kilometers for disposal. The costs are typically between €80 and €140 per ton.

Two companies in Europe and Asia have independently developed presses for mixed plastic waste and have been operating them successfully for many years. The plastic waste can be sent for thermal recycling, achieving calorific values that far exceed the amount of electricity used.

Both have independently developed the equipment to dewater the typical waste from paper mills and form granulate or pellets from the plastics.

During dehydration, the rejects reach a temperature between 70°C and 95°C, so that most microorganisms are killed - similar to pasteurization of the rejects. Due to the low moisture content, the rejects are no longer colonized by microorganisms. Unpleasant odors are thus eliminated.

The lecture will present the results of the scientific monitoring of the market launch. A large number of samples have already been processed on the pilot plants in Asia and Europe. A large number of samples have already been processed at the pilot plants in Asia and Europe. The samples were analyzed before and after processing. The increase in calorific value and other important characteristics are presented for a cross-section of different rejects and sludges, and the feasibility of the process is demonstrated. In particular, the increase in calorific value to the level of lignite and hard coal shows that paper mills can not only elegantly solve a major waste problem, but also significantly reduce the need for fossil fuels.

Reduced CO2 Footprint without Loss of Quality

Thomas Staehrfeldt · Omya International AG · Oftringen / Switzerland

During recent years, the consideration of carbon dioxide emissions became the focus of global initiatives and national regulations. As the paper and board producing industry is among the main six emitters of greenhouse gases of the industrial sector, greenhouse gas reduction regulations triggered many initiatives among which the replacement of raw materials with high carbon footprint is seriously considered. Mill trial results on a commercial scale paper machine show that the careful choice of functional pigments can support the carbon footprint reduction of paper and board. This article demonstrates that improvements of the environmental footprint of paper (board) can be done without compromising on quality – and that carbon footprint reductions and quality considerations are not contradicting each other.

Acknowledgement: Ramon Rohe, Dr. Cathy Ridgway, Omya International AG

Fuels from flue gas - biogenic advantage for pulp and paper mills

Engelbert Schrapp · Siemens Energy AB · Stockholm / Schweden

Green methanol is a driving force for industrial decarbonisation, and as a major emitter of biogenic CO₂, the pulp and paper industry has an opportunity to reuse biomass-based (biogenic) CO₂ for methanol synthesis. This methanol synthesis is based on green hydrogen and CO₂ from biomass-based flue gas and is an enabler to increase the prospect of a carbon-neutral industrial system in pulp and paper mills or combined heat and power plants.

Methanol synthesis based on green hydrogen and CO₂ from biomass flue gas offers the prospect of a carbon-neutral industrial system. As a fuel for mobility applications and a feedstock for the chemical industry, green methanol can make a significant contribution to the decarbonisation of shipping and other industries. At the same time, the integration of green methanol production into existing industrial facilities, such as pulp mills or combined heat and power plants, creates an opportunity to reuse a valuable resource such as biomass-based (biogenic) CO₂, where the pulp and paper industry, as a major emitter of biogenic CO₂, can play an even more important role in the transformation of the transport industry.

The potential of this method lies in the fact that the biogenic CO₂ emitted from, for example, biomass boilers or a lime kiln, can be recovered via a carbon capture process. This process avoids the emission of further climate-damaging carbon dioxide and uses it as a valuable resource and raw material for a new green energy carrier, such as eMethanol, a sustainable energy and, most importantly, generates the use of a biogenic CO₂ sustainability loop, unlike if we were to use fossil-based CO₂ emissions.

In addition, methanol synthesis produces water, oxygen (from the electrolysers) and waste heat, which can be used in a closed-loop system in the pulp mills. Oxygen is a valuable raw material in the pulp and paper industry, e.g. for the bleaching process, wastewater treatment or to increase the efficiency of other processes. Oxygen must either be produced on site at a high energy cost or purchased as a raw material from the market. Demineralised water from the pulp and paper process can be used in the electrolysis process as a feedstock for further hydrogen production.

Finally, due to highly efficient processes and state-of-the-art technology, modern pulp mills produce much more electrical energy than is needed for pulp production. Today, the surplus is either used in integrated pulp and paper mills or sold on the energy market for sometimes more, but usually less, profit.

Liquid Wind, a Swedish power-to-fuel development company, together with Østed as investor, is currently building the world's first large-scale industrial roll-out of an e-methanol production plant, FlagshipONE. In addition, 100,000 t/a plants such as FlagshipTWO in Sundsvall, FlagshipTHREE in Umeå and FlagshipFOUR (2x 100,000 t/a) in Haapavesi/Finland are in the process of implementation and will be joined by 10 more Flagship plants in Europe by 2028, in partnership with CHP plants, waste incineration plants, bioethanol plants and hopefully soon also pulp and paper mills. The eMethanol produced will be used to power all types of vessels, replacing marine fuel oil.

The scale-up of the flagship projects will be supported by the Design & Performance Centre (DPC), which was inaugurated on 22 February in Hørsholm, Denmark. Liquid Wind and all OEM partners such as Siemens Energy. In the DPC, the Flagship "product" will be further modularised, standardised and enhanced with the latest technologies from the OEM partners, thus contributing to rapid scale-up, with the aim of developing and deploying 500 plants worldwide by 2050, helping to meet the much larger global demand for eMethanol.

This summary has been slightly abridged. You can find the complete edition on the Internet at www.paper-online.de/en/imps-2024/abstracts/



31st International Munich Paper Symposium 2023

CULTURAL EVENT



Circus Krone in Munich

Wednesday, 20 March 2024

Start of the show at 19:30

In 1905, amidst the bustling heart of Munich, a dream unfolded. Gebrüder Krone, two enterprising brothers, envisioned a permanent circus structure – a haven for wonder and artistry. Thus, Circus Krone was born, not as a nomadic tent but a majestic brick-and-mortar palace fit for royalty...and audiences alike.

From the outset, Krone wasn't just a circus; it was an experience. Grand chandeliers bathed the audience in a warm glow, plush red seats awaited eager eyes, and the aroma of popcorn mingled with anticipation. The inaugural performance? A dazzling spectacle featuring elephant ballets, daring aerialists, and rib-tickling clowns. Munich was spellbound.

Over the decades, Krone became synonymous with excellence. Renowned animal trainers like Carl Krone captivated crowds with their lions and tigers, while acrobats defied gravity with their death-defying feats. Charlie Rivel, the world's most famous clown, made the rafters shake with laughter, his infectious energy echoing through the generations.

Today, the legacy lives on. The majestic Kronebau, adorned with a life-size statue of Charlie Rivel, continues to enthral audiences. The 2023/24 winter season, themed "Farbenspiel" — a German word that translates to "Play of Colours" — promises a mesmerizing blend of tradition and innovation, with dazzling LED displays, world-class acts, and of course, plenty of laughter.

Details

18:30 Bus departure from the conference hotel

19:30 Start of the show

Event duration approx. 2.5 hours incl. break

Event Location

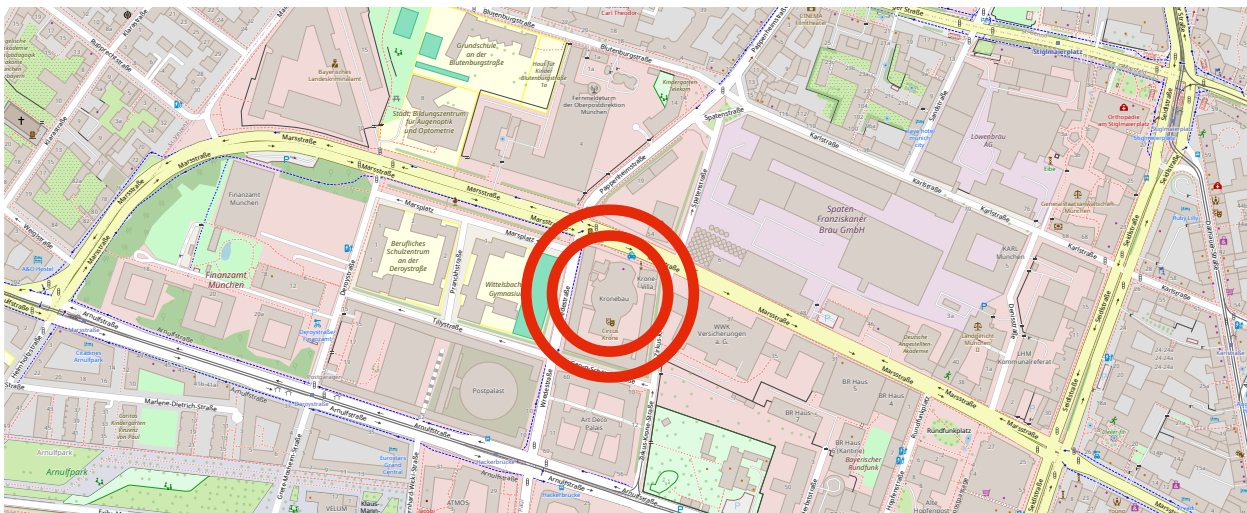
CIRCUS KRONE

Marsstrasse 43

80335 Munich

Germany

Tel. +49 (0)89 – 54 58 000



A map of Munich around the Circus Krone. The red circles mark the location of the Circus Krone building.

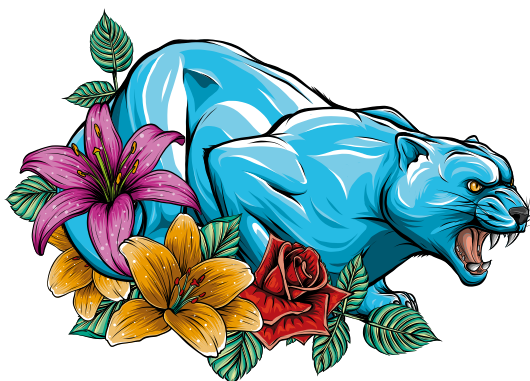


The winter programme "Farbenspiel" roughly translates to "Play of Colours". Image: © Circus Krone

Play of Colours

From 25 December 2023 to 7 April 2024, circus air will once again be blowing through Munich's Circus Kronebau. The traditional premiere is on Christmas Day with two performances at 2.30 pm and 6.30 pm. A completely new circus show with world-class attractions will be presented until the beginning of April. True to the motto "play of colours", you will experience artistic highlights and circus highlights with the largest LED show in Europe. Celebrated world stars and award-winning newcomers, many magnificent animals and hilarious entertainers welcome you LIVE in the circus ring. However, the animals - the true "stars of the ring" - take centre stage with funny sea lions and dogs, magnificent horses and majestic cats of prey. You can look forward to lots of laughter, amazement and pure thrills.

In short - Krone also offers great circus in this programme. A successful mixture of traditional and modern circus art, true to the Krone motto "Your favour - our ambition". Live entertainment for the whole family.





The pilot paper machine at the Munich University of Applied Sciences

EXCURSIONS

Excursion I

Munich University of Applied Sciences

on Monday, 18 March 2024

Lothstr. 34
80335 Munich
Germany

www.mpt.hm.edu

The Munich University of Applied Sciences, one of the biggest paper and packaging faculties in central Europe, has been educating paper engineers for over 60 years. Since 2007, the faculty of paper technology offers a bachelor degree in 7 semesters. Since 2004, it is possible to continue after the bachelor with the „Master of Engineering (MEng) in Paper Technology“ which takes 1.5-2 years. All lectures in the master's programme are held only in English, which makes this study course particularly interesting for international students. The excursion provides an overview of the study courses and educational programmes at the Munich University of Applied Sciences, and includes a guided tour around the modern laboratories of the university. The well equipped facilities include a Siemens PC-S7 controlled pilot paper machine and several coating machines.

Programme

- 14:15 Departure from the main entrance of The Westin Grand Munich conference hotel
- 14:45 Meeting at the Info-Point by the entrance in Lothstr. 34
- 15:00 Welcome and information on the study courses
Guided tour through the laboratories
- 17:00 Return to the hotel
- 17:30 Arrival at the hotel

Travel time approx. 30 minutes

Distance approx. 8 km

Excursion II

UPM GmbH Schongau Mill

on Thursday, 21 March 2024

Friedrich-Haindlstr. 10
86956 Schongau
Germany
upmpaper.com

The Bavarian mill was founded in 1887 and today the UPM Schongau paper mill produces newsprint, high-filler uncoated papers and uncoated magazine papers for newspapers, brochures, books and catalogues. With two modern paper machines and around 400 employees, the site has an annual production capacity of up to 575,000 tonnes of web printing paper. The paper consists of up to 100 per cent recycled paper. Other fibre raw materials used are TMP (pulp for special applications, BCTMP) and fillers such as kaolin, GCC and PCC.

UPM Schongau is one of the world's largest recyclers of recovered paper.

Programme

- 08:30 Departure from in front of the main entrance of the Westin Grand Munich conference hotel
- 09:50 Welcome and company presentation
- 10:45 Guided tour through the paper mill
- 12:00 Invitation to a snack and discussion
- 13:00 Return to Westin Grand Munich Hotel
- 14:30 Approx. arrival at Westin Grand Munich Hotel

Travel time approx. 90 minutes

Distance approx. 100 km

A bus to the Munich central railway station and the Munich airport (MUC) will depart at 15:00 from in front of the main entrance of The Westin Grand Munich hotel.

Excursion III

MAI Carbon - Composites United e.V. (CU)

on Thursday, 21 March 2024

Am Technologiezentrum 5
86159 Augsburg
Germany

Internet: composites-united.com/cluster/mai-carbon

The leading-edge cluster MAI Carbon of Composites United e.V. (CU) is the Bavarian division of the CU and was established in 2012 as part of the BMBF's leading-edge cluster funding programme and is still funded today by the Bavarian State Ministry of Economic Affairs, Regional Development and Energy. Since then, MAI Carbon has developed into an internationally renowned network with a focus on multi-material lightweight construction and fibre composite technology and brings together around 110 members from various industries. Through its intensive activities in the field of research and development, MAI Carbon and its partners have succeeded in developing the region into a globally visible driver of innovation. Other important fields of activity are internationalisation, education, marketing and public relations work for the members.

Programme

- 09:00 Departure from in front of the main entrance of the Westin Grand Munich conference hotel
- 10:00 Welcome and company presentation
- 10:05 Augsburg Innovations Park
- 10:20 Leading-Edge Cluster MAI Carbon
- 11:00 Fraunhofer Institute for Casting, Composite and Processing Technology (IGCV)
- 12:30 Invitation to a snack and discussion
- 13:00 Return to Westin Grand Munich Hotel
- 14:00 Arrival at Westin Grand Munich Hotel

Travel time approx. 60 minutes

Distance approx. 90 km

A bus to the Munich central railway station and the Munich airport (MUC) will depart at 15:00 from in front of the main entrance of The Westin Grand Munich hotel.



Cultural event of the 31st International Munich Paper Symposium 2023

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| Weber, Volker | FM Insurance Europe S.A. | Germany |
| Weber, Sebastian | Gloning Krantechnik GmbH | Germany |
| Weickart, Thomas | Buckman Laboratories GmbH | Germany |
| Weise, Ulrich | fipptec | Germany |

| Name | Company | Country |
|------------------------|---|---------------------------|
| Welt, Thomas | Laakirchen Papier AG | Austria |
| Wenig, Frank | Steinbeis Papier GmbH | Germany |
| Wenzel, Stephan | Valmet GmbH | Germany |
| Westerkamp, Moritz | Hochschule München - Biofibers & Paper | Germany |
| Westphal, Jörg | Feldmühle GmbH | Germany |
| Wilms, Michael | Model AG | Switzerland |
| Wittmann, Ernst-Ulrich | Withers & Rogers LLP | Germany |
| Wollschläger, Jan | Hochschule München - Biofibers & Paper | Germany |
| Wüthrich, Samuel | onCyt Microbiology AG | Switzerland |
| Yarmohammad, Farshad | Tagin Kaghaz Iran | Iran, Islamic Republic Of |
| Yuan, Huaqian | IVP - Institut für Verfahrenstechnik Papier | Germany |
| Zadra, Enzo | Norske Skog Bruck GmbH | Germany |
| Ziegler, Wolfgang | MWN in Niefern Maschinenfabrik GmbH | Germany |
| Zollner-Croll, Helga | Hochschule München - Biofibers & Paper | Germany |
| Zopf, Matthias | BTC Europe GmbH | Germany |

Data status: Thursday, 07 March 2024



Pictures of the 31st International Munich Paper Symposium 2023

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The background of the entire page is a close-up, high-resolution photograph of a large roll of paper. The paper is tightly wound, creating a series of concentric, overlapping layers that create a rich, textured pattern of light and dark brown tones. The lighting is dramatic, highlighting the edges of the paper layers and creating deep shadows in the creases.

European IP specialist firm
Withers & Rogers will be
attending International Munich
Paper Symposium (IMPS) 2023.

Looking for advice on patent, designs
and trade mark registrations in Europe
and further afield?

To get in touch email:
ewittman@withersrogers.com



ON-SITE DRYING-SECTION-TRAINING

The **paper product training** takes place at your premises considering your shift planning and can directly address local tasks.

Our focus is your experience. We analyze your installed components & systems and compare them directly with best practice. Drawings, cut-away-models, mechanical seal components and a variety of different condensate pick-up shoes will show you the possibilities.

Areas covered in the training

- › Steam and condensate behavior inside drying cylinders
- › Rotary Unions in paper machines
- › Selection of the Siphon System
- › Optimization with Turbulence Bars and Mini-Bars
- › Cooling Systems
- › Steam & Condensate Systems

The Deublin Drying Cylinder rotary model is the highlight of the training where each participant will see and learn about the advantages of stationary siphons installed in our drying cylinder model by studying the condensate behavior while changing production speeds and differential pressure.

The model shows the Turbulence Bar effects, which

- › increase production
- › improve moisture profile
- › optimize paper quality
- › improve paper machine runnability
- › increase heat transfer

by generating „turbulence“ breaking the laminar condensate layer, they reduce energy costs for production.

Deublin Rotary Unions and siphon systems have been successfully used on paper machines worldwide for many decades.

Our dryer-section training as a roadshow informs you about the installation, maintenance and optimization of the rotary union, in order to achieve the optimum production performance and at the same time the maximum service life of the components.

For operators and machine designers:
Trade fair activities 2023 business unit paper:

Paper Product Workshops please email for information
International Munich Paper-Symposium, 19.-21. March
Zellcheming-Expo, 18.-20. June, Wiesbaden

Catalogue download:
Deublin fair data:

<https://www.deublin.eu/download-catalogues>
<https://www.deublin.eu/fairs>

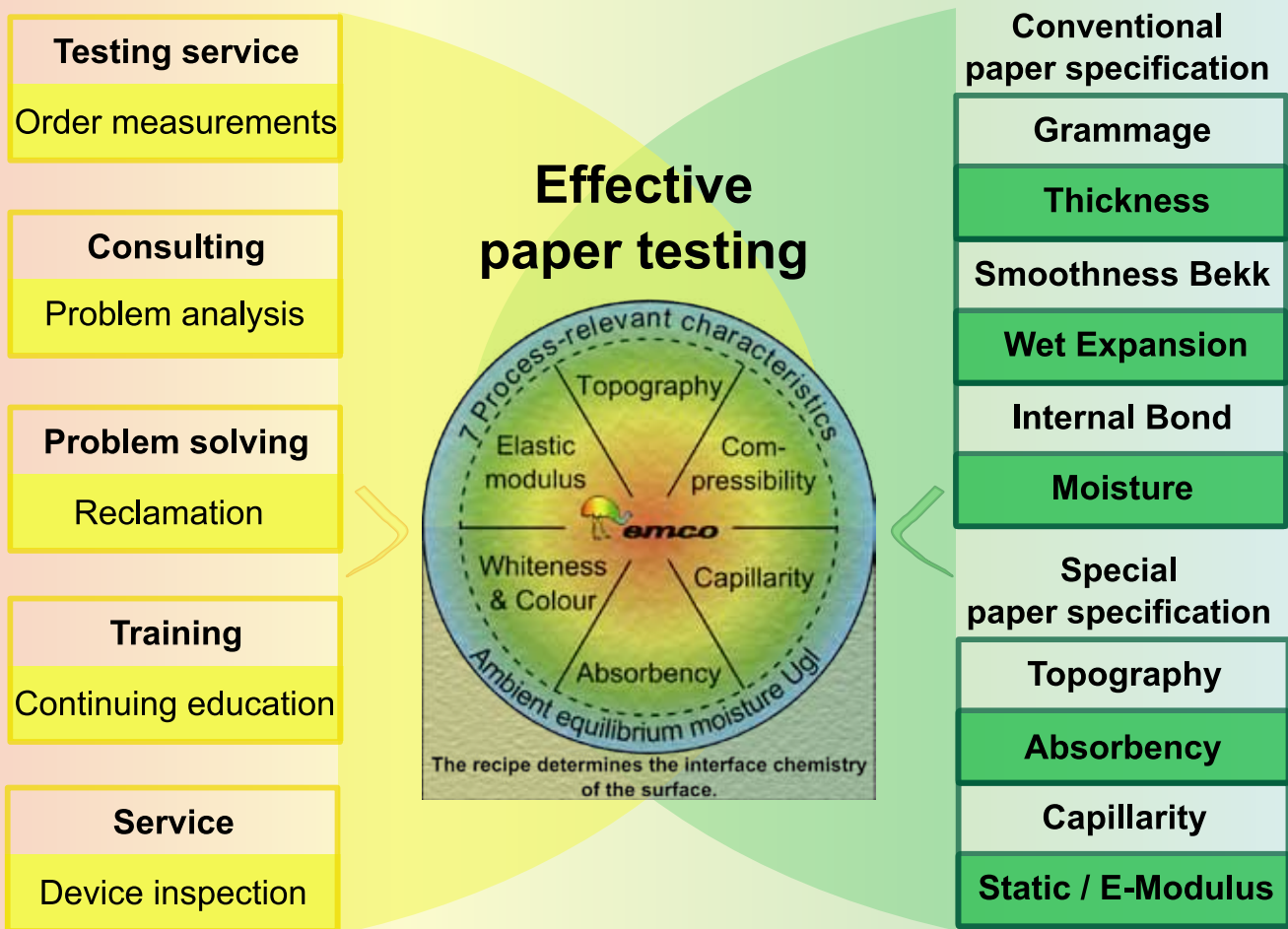


▼ Learn more about Paper Energy Optimization (PEO)



* More than 30 years emco GmbH *

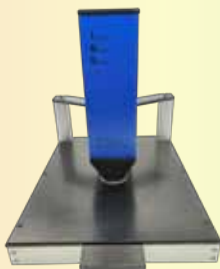
Identification of the process-relevant characteristics
for all applications



emco measuring technologies reduce costs with better quality!



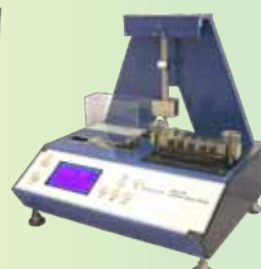
DPM66



Topography



Testing automat



Internal Bond



Wet Expansion

strategical • innovative • sustainable

Automated management system for the determination of water content



non-destructive • mobile • quick
 automated • web data base



Waste paper - AP 500-M6



Pulp sheets - CMM

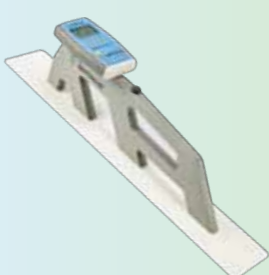


Running roll - MP 5



Paper stack - Dolphin P

Knowing the nature of paper makes paper processing calculable!



Moisture of PfR



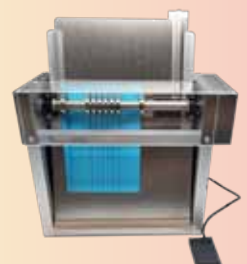
Pulp sheet moisture



Paper moisture



Paper testing



Sample cutter

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Zeta Potential determination online -
fully automatic, process integrated and digitized

Ready for industry 4.0
with low
maintenance effort



FPA | FIBER POTENTIAL
ANALYZER

CAS | CHARGE
ANALYZING SYSTEM



ASH CONTENT ANALYZER | **ACA**

Percentage of individual fillers &

total mineral filler content

accurate
and reliable results
within seconds



typical fillers are calcium carbonate, titanium dioxide, clay/talcum, barium sulfate, iron oxide and many more

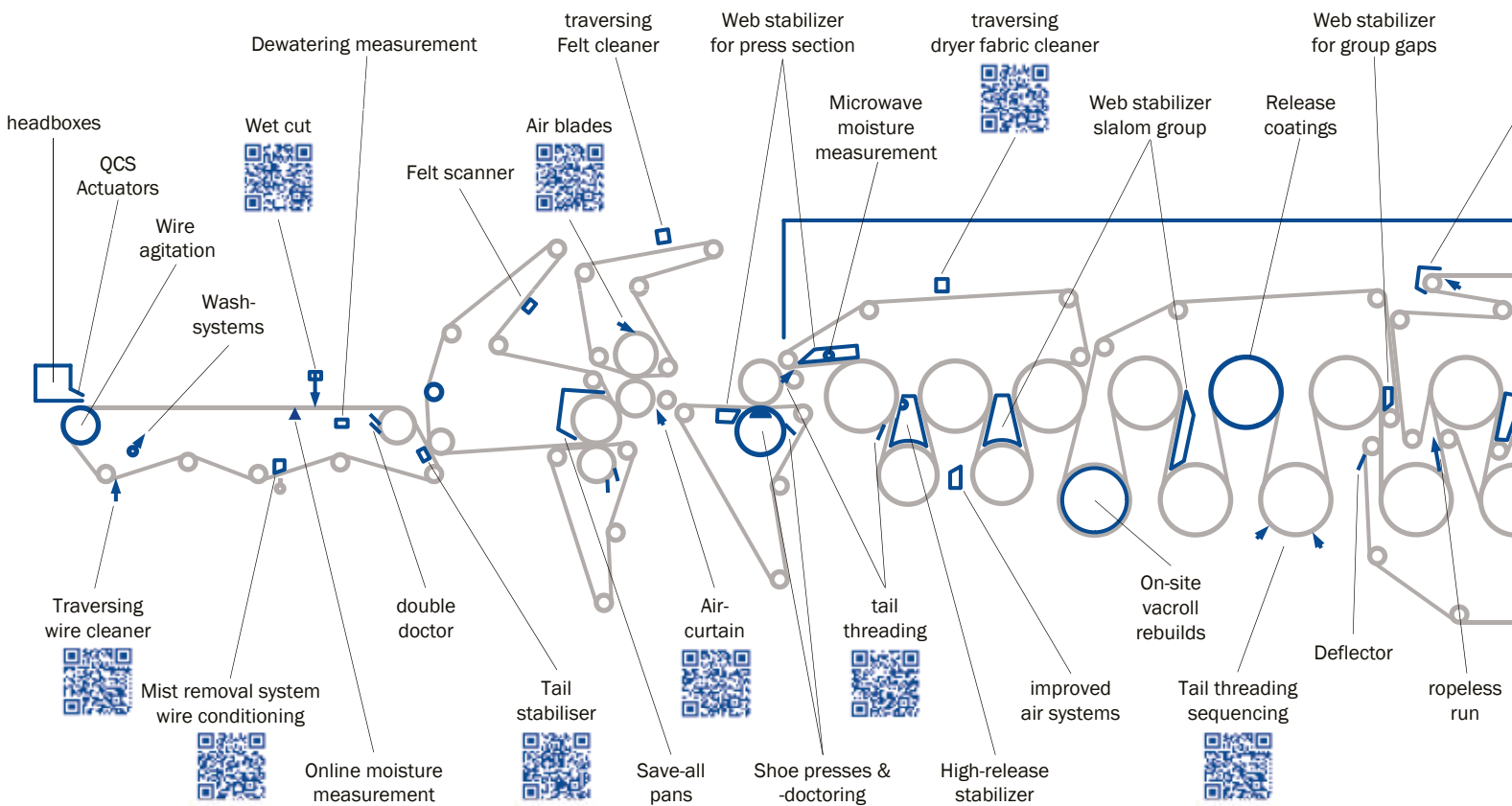
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Take out, switch on, start measurement

zeta potential & particle charge measurement in the lab

FPA touch! & CAS touch! -
smaller & lighter than ever
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fresh innovative Paper&Process Technologies

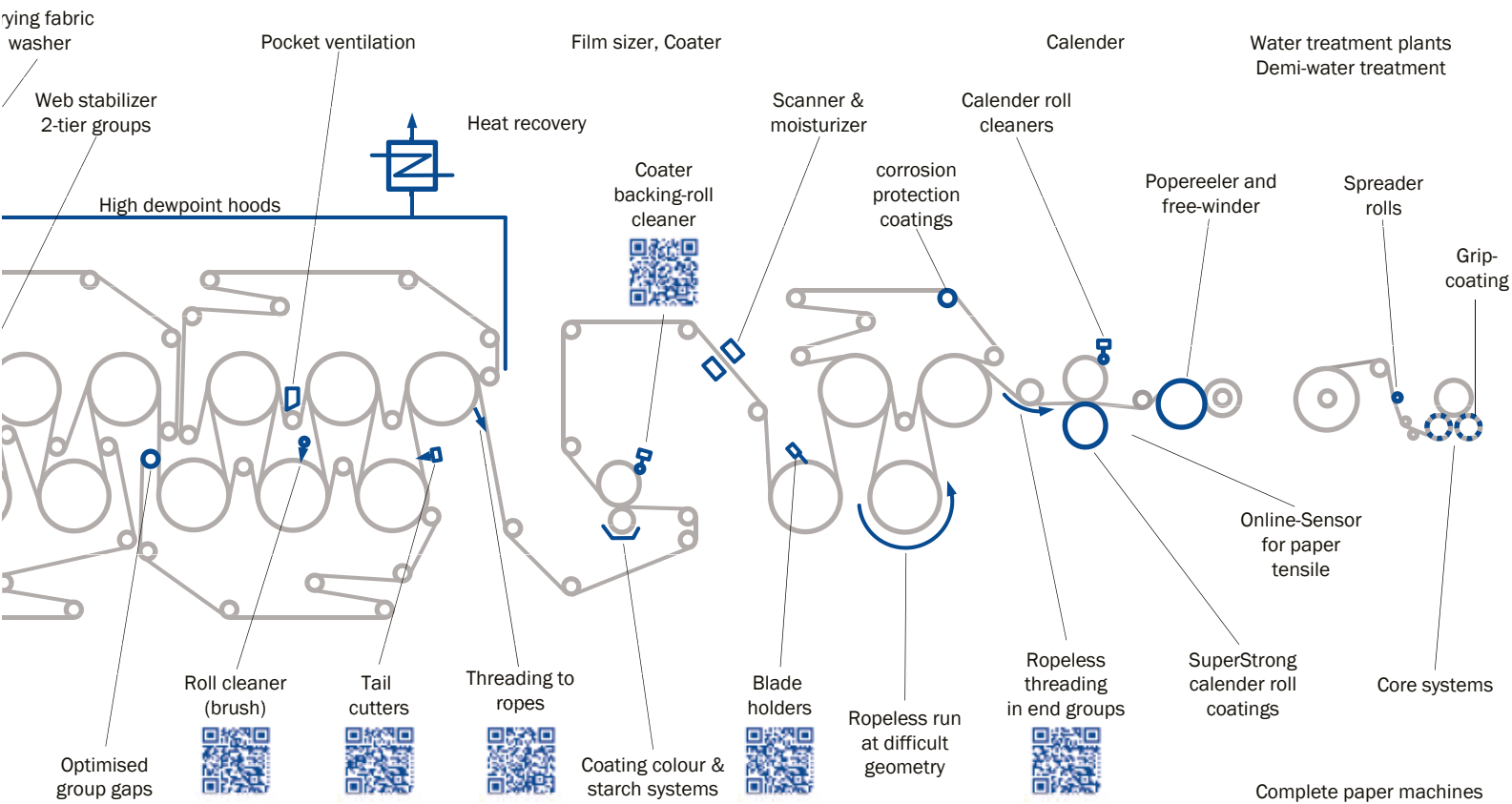
The **fipptec** platform presents innovations and novel solutions for the European paper industry. With the aim of making you:

- more efficient,
- more competitive, and
- deliver always superior quality.

fipptec partners combine:

- their high level of expertise based on a strong technical focus,
- own patents and developments,
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- Web stabilizers
- Ropeless threading
- Press section optimization

Allimand

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- Spreader roll maintenance
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- Resonance measurements
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- Microwave sensors for online moisture measurements
- Felts scanner online

Weise PPC

- Consulting the paper industry
- Audits & expert services
- Project management

FRANK-PTI NOVELTIES 2023/24



Braindl Fiber Classifier

Product group: S40176

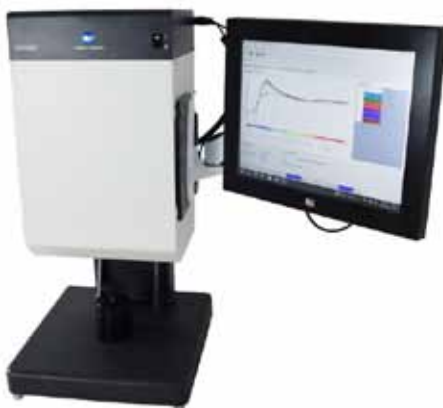
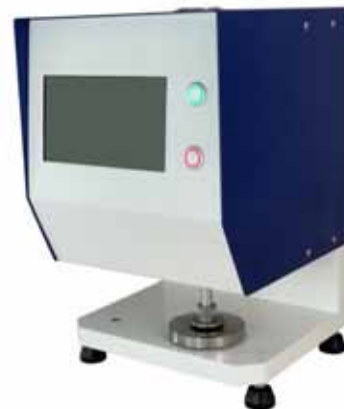
- 2 in 1 combi device consisting of Haindl and Brecht Holl
- For analyzing recyclability
- For fiber fractionation



Micrometer

Product group: S16502

- Newly designed and revised micrometer
- New software based on the proven FRANK-PTI layout
- Easiest and most customizable handling thanks to a new access settings
- New difference measurement mode
- Learn more on our website



Spectro Analyzer

Product group: S40606

- Two-beam spectrophotometer with $d/0^\circ$ geometry
- Modular touch screen unit
- Camera system for precise target acquisition
- Measurement compatibility with the previous model



FRANK-PTI NEWS

New Concora with inovative wave segment coating

The Concora Medium Fluter for producing corrugated samples consists of a base and a corrugated housing. Both the motor and controls are installed in the basic housing. The corrugation and heating segments are located behind the protective cover of the corrugation housing. At the top there is a slot for sample feeding. The temperature of the corrugated segments is controlled and displayed via the thermostat integrated in the basic housing. The standard device with exchangeable and pinned segments is available for all common flute types and enables the segments to be changed quickly while still maintaining a tight fit. The corresponding "third hand" and the rubbing block are used to glue the previously formed flute sample.

The new surface coating results in the following advantages:

- Adhesion-proof coating prevents the sample from jamming.
- Changed surface roughness ensures perfect wave formation



Sample preparation has never been so easy and problem-free!

Product type: S95936 Concora Medium Fluter



GAW technologies, a member of the GAW Group, is a guarantor of technological competence in international industrial plant engineering and construction.

With more than 70 years of experience, we are the experts for industrial

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- automation & digitalization of industrial processes
- water & wastewater treatment solutions



Coating



Digitalization



Water

Preparation

Optimization

Recycling



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GREAT APPLICATIONS WORLDWIDE

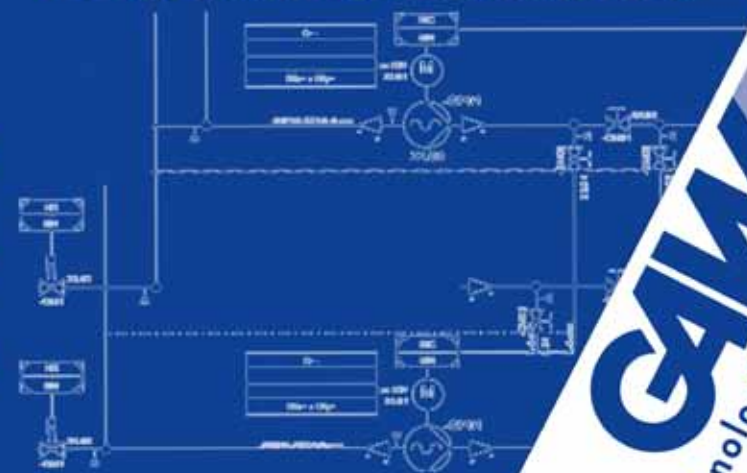


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The STARARCH SAVER creates a customized starch size with the required viscosity and molar mass distribution.



est. savings >5%

no starch losses

wastewater-free

GAW technologies supports paper- and board producers to **achieve their sustainable development goals**. We also help to **lower the carbon footprint**.



With more than 70 years of experience, we are the worldwide leading experts in the areas of **saving of energy / water / resources**.

- **preparation of coating compound and additives for the refinement of paper and board** (coating colour/starch/chemicals etc.)
- **digitalization und automation**
- **water- and wastewater treatment**





TRADITION OBLIGES, INNOVATION DRIVES US!

Gloning Krantechnik GmbH is one of the leading and most experienced suppliers of specialised cranes in Europe and is also an established supplier of standard cranes in southern Germany. We are your reliable partner for standard crane systems of all kinds as well as for the conversion of existing systems. Our strengths lie in precision, quality and many years of experience.

Gloning Krantechnik GmbH has established a firm place for itself in the day-to-day work of a wide range of industries and sectors by offering customised solutions in the field of materials handling technology.





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As one of the leading suppliers of specialised cranes in Europe, Gloning Krantechnik develops concepts, components and solutions for complex special systems.

In recent years, Gloning Krantechnik GmbH has realised impressive projects in the paper industry. Our highly qualified team has designed and realised crane systems for paper machines as well as fully automatic crane systems for handling pulp.

Repair and maintenance work for crane systems of all makes is one of our strengths, and a well-equipped service team completes our range of services.

Put your trust in Gloning Krantechnik - more than 40 years of experience ensure a competitive edge.

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Im Lachfeld 1
73495 Stöttlen
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WE TAKE ON EVERY CHALLENGE

With thorough planning and maximum precision, we have equipped mega projects such as the new Palm paper mill (PM5) as well as smaller and medium-sized companies in the region with customised crane technology. Efficient paper production thanks to powerful cranes from Gloning, which carry impressive lifting capacities of 72 tonnes and are positioned at the paper machine. Our robust and reliable cranes ensure smooth handling of heavy loads, optimise production processes and thus make a significant contribution to increasing efficiency in paper production.



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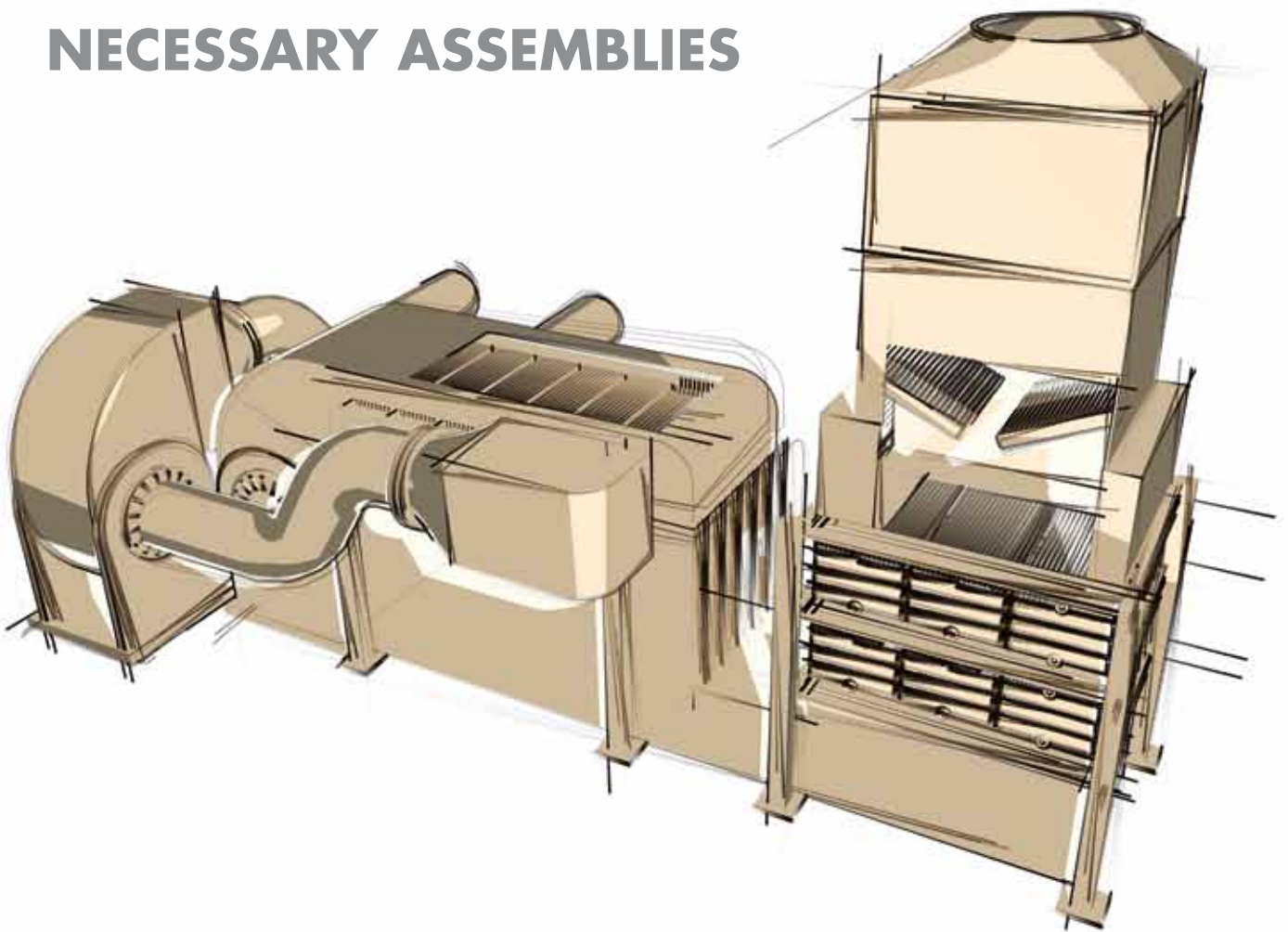
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CLEANING OF

- **VAC ROLLS**
- **BLOW BOXES**
- **HEAT RECOVERY SYSTEMS**
- **SCREENING-, PRESSING AND DRYING SECTIONS**
- **SHUTDOWN PLANNING AND NECESSARY ASSEMBLIES**



High-Tech meets Sustainability



The art of paper manufacturing is as old as our calendar. Even in the age of the internet, paper is by far the most important information carrier, and it will remain so in the future. New paper machines are bigger, more expensive and even more complex than jumbo jets; they produce paper with a speed at 100 km/h, with a paper width of up to 10 meters and a thickness of only 0.1 mm.

Such a machine produces more paper in one minute than you would need to cover two football grounds. The paper industry is making an increasingly greater use of recycled paper as raw material.

World-wide, Germany is leading with a recycling rate of over 75%, and provides the paper industry all over the world with the technology required to produce high quality paper and cardboard from 100% recycled fibers.

Contact and Information

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T +49 89 1265-1547
papertec@hm.edu

Coordinator

Nina Kohr
T +49 89 1265-1597
kohr@ivp.org

Department of Technical Systems,

Processes and Communication
Lothstraße 34, 80335 München
Room G 1.03, T +49 89 1265-1501
sekretariat-fk05@hm.edu

Website



Instagram



Munich's University of Applied Sciences is Bavaria's largest university for applied sciences: Over 80 attractive and future-oriented degree programmes form the basis for a successful career. In addition to professional skills, the university promotes sustainable and entrepreneurial thinking and behaviour as well as international and intercultural experience, e.g. through international exchange programmes.

The departments prepare students to contribute to their professions and society with vision, creativity and a sense of responsibility. Close contacts with companies in the high-tech location of Munich ensure practical experience already during the studies. And don't forget: Munich's attractive cultural and leisure activities offer plenty of variety.



Master of Engineering,
M.Eng.

Hochschule
München
University of
Applied Sciences

Department of
Technical Systems,
Processes and
Communication

Paper Technology



Master Programme – Paper Technology



The Master Paper Technology in Munich is a unique study course conducted entirely in English, attracting students from over ten different nations. As part of this international and capital-intensive sector, you will learn about the various aspects of paper and cardboard manufacturing while covering a wide range of industry-related topics.

Customize your learning experience by choosing from an array of elective subjects, with support from the industry and the Institute for Paper Technology (IVP).

Engage with up-to-date technology and equipment in well-resourced laboratories, creating an environment that fosters creativity and innovation. Create your own newspaper on a pilot paper machine, while developing your skills through hands-on laboratory work and research projects.

Expect small class sizes and a supportive academic atmosphere. Benefit from an excellent network of well-known companies in the industry and international partner universities.

The Master Paper Technology equips you for leadership roles within the global paper industry.

Study Programme



Degree: Master of Engineering (M.Eng.)
Language of instruction: English

3 semesters for students with a degree in Paper Engineering (or 6 semesters part-time, including Master Thesis)

- Chemical Engineering
- Minerals
- Intercultural Communication
- Scientific Writing
- Recycled Fibres
- Automation Fundamentals
- Fundamentals of Coating
- Coating and Barriers
- General Management
- Paper Chemistry
- Paper Machine Technology
- Automation and Digitalisation
- Design of Experiments and Statistics
- Circular Economy

- Master Thesis



4 semesters study for students without a degree in Paper Engineering (or 8 semesters part-time, including Master Thesis)

- In addition**
- Paper Technology Fundamentals
 - Stock Preparation
 - Paper Physics
 - Biofibers
 - Practical Research Training

Electives (may vary)

- Specialty Papers
- Tissue Papers
- Clothing

- Data Literacy and Industry 4.0
- Product Development
- Printing Technology
- Project Management
- Patent Law
- Innovation Management

Job Prospects

First class job prospects are available for graduates of the Master programme. Graduates have very good chances of an interesting career in the world of paper and board.

The paper industry offers many opportunities in production, research and development, as well as in the engineering and supply industry. A Master in Paper Technology provides a wide range of possibilities including mill manager or member of the board of executives.

Those careers are not only reserved for men, as has been proven by a number of very successful female students in the past.

The paper industry is becoming increasingly global, thus favouring our highly international study at Munich University of Applied Sciences.



Admission Criteria

Consecutive Master

- Bachelor from a university, in a Paper Engineering course of study
- Proof of English language skills in speaking and writing (e.g. IELTS/TOEFL test)

Post-graduate Master

- Bachelor from a university, Bachelor of Engineering or a Bachelor of Science degree
- 1 year work experience after degree
- Proof of English language skills in speaking and writing (e.g. IELTS/TOEFL test)

Further conditions for admission may apply.

Costs

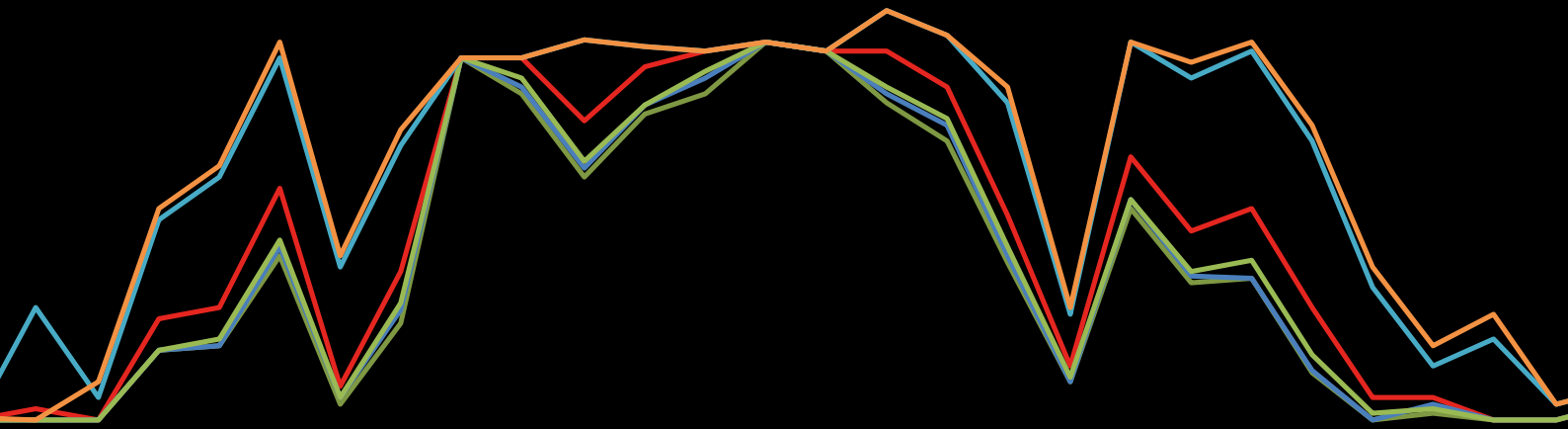
- Consecutive Master: Student Union fees and semester ticket fees
- Post-graduate Master: Tuition fees, Student Union fees and semester ticket fees (not including accommodation). Tuition fee can be paid on a semester-basis. For details please see homepage.

Important Dates

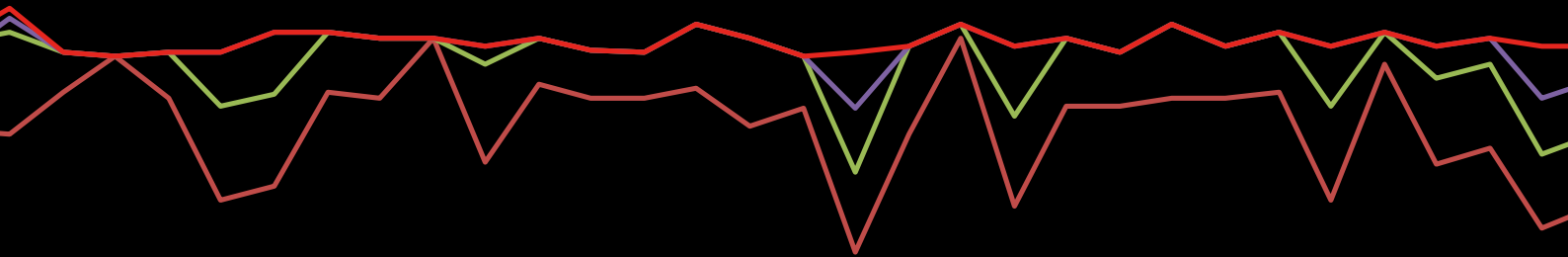
- The consecutive Master starts biannually, on March 15 and October 1, the post-graduate Master starts only in Winter semester, October 1
- For application period and details on the application process please see: <http://www.mpt.hm.edu/>
- Completed applications should be submitted as early as possible, in order to ensure a place in the programme.

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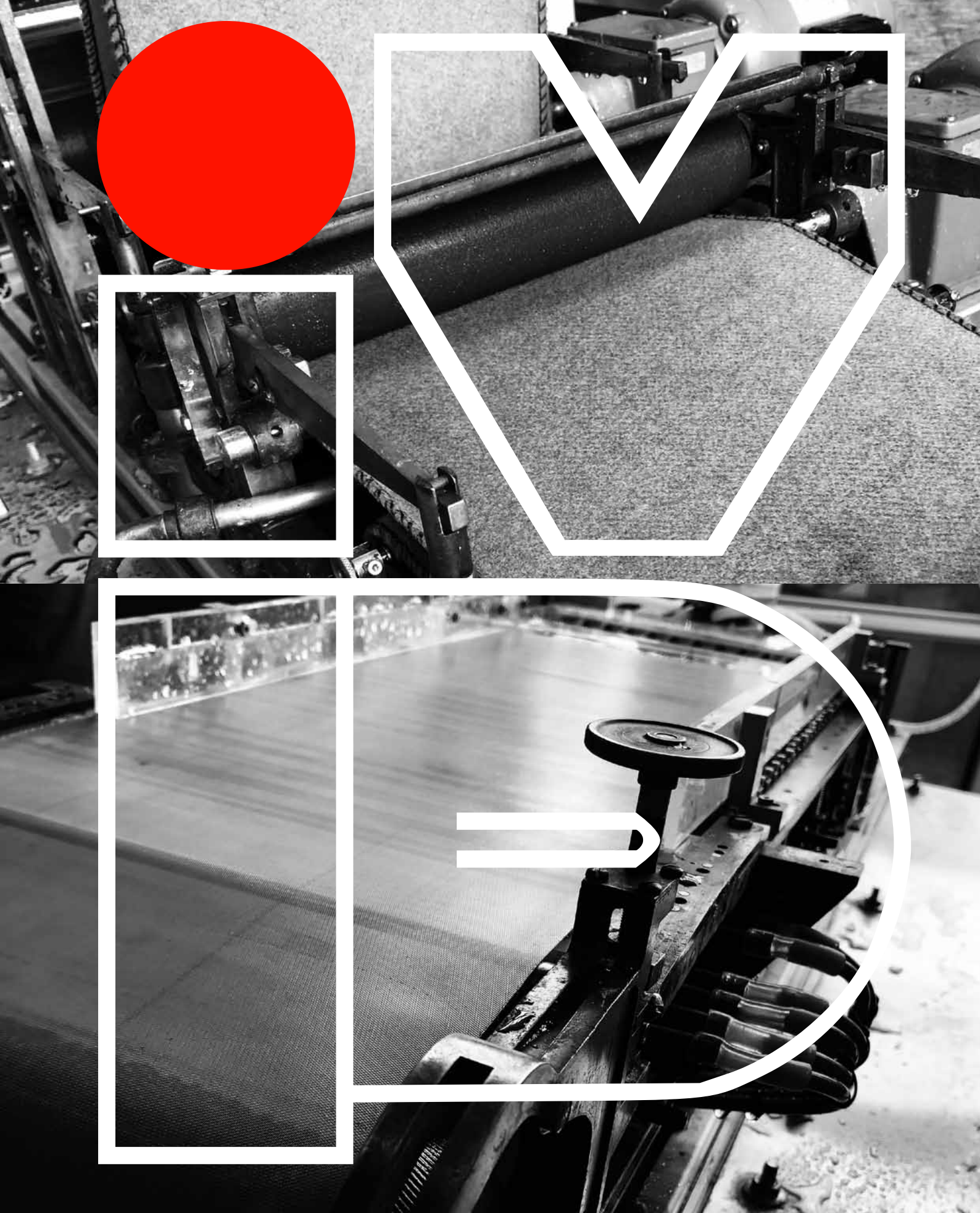


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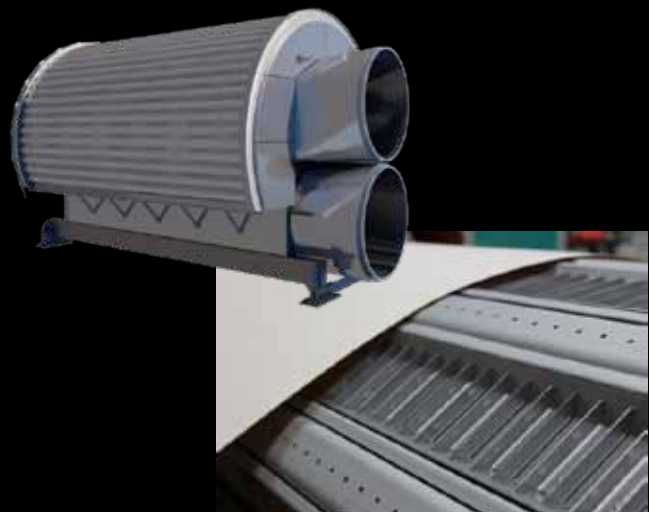
- **Electric IR**
 - DryMaster
 - Profiling
 - EdgeMaster



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 - Elec, Gas or Steam heated
 - Floatation or Impingement



- **Web support**
 - TurnMaster
 - TurnBooster circulation air up to $D = 4,2 \text{ m}$





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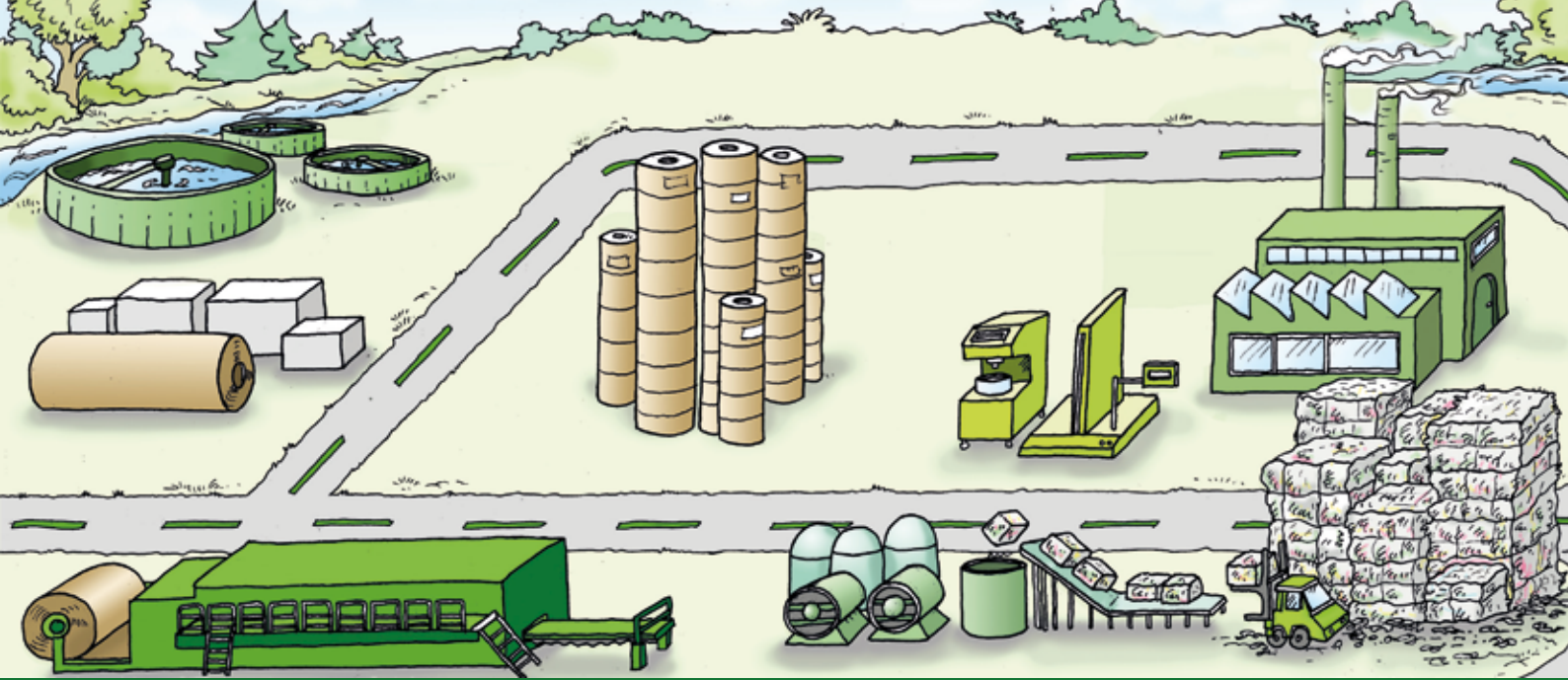
Increased production performance



Raw materials & energy savings



Optimized paper uniformity and quality



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- 
- Creping technologies
 - Defoamers
 - Retention and drainage
 - Biocides
 - Wire and felt conditioning
 - Pitch and Stickies control
 - Recovery of Fibres
 - Drying section conditioning
 - Scale inhibitors
 - Enzymes
 - Softeners
 - De-inking
 - Complete water treatments (primary water, boiler, cooling tower, waste water)





Fibre-based solutions for tomorrow's products.



Fibres & Composites

- Pulp analysis and raw material selection
- Bio-based paper additives
- High-performance materials produced by paper technology
- Chemical modification of fibre materials



Smart & Circular Solutions

- Circularity of fibre based products
- Recoverd Paper Management
- Optimizing stock preparation processes
- Quality management of fibre stock and end product
- Innovative measurement: PaperBaleSensor (PBS), DOMAS, RCP Monitor



Material Testing & Analytics

- Accredited laboratory according to DIN EN ISO/IEC 17025:2005
- Testing of physical and chemical properties
- Packaging coding, printability & processing
- Evaluation of food conformity
- Assessment of the recyclability of fibre based materials
- Methods for simulation and modelling
- Document Security, CEPI Round robin tests, Test equipment service



Pilot plants

Paper, wet laid fibre, coating

- Pilot paper machine with stock preparation
- Wetlaid technology with spunlace bonding
- Trial coater and curtain coater
- Reactive extrusion of fibre materials



Functional Surfaces

- Surface analytics
- Development, optimisation and application of functional coatings (development of barriers)
- Functional application of bio-based materials
- Classification of coating colours



Events & Further Education

- Events on current topics from the research areas
- Combining know-how from companies, science and associations
- Formats: Symposia and conferences, workshops & seminars, online and Onsite

Papiertechnische Stiftung (PTS)

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01809 Heidenau

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Testing Services



Industrial Solutions



Research



Events





The device for upcoming ISO 15360 – 3

Macrosticky determination according to DIN-Spec 6745

Determination of sticky and non-sticky macroscopic particles in paper with NIR camera technology

The new NIR imaging measurement method enables the determination of macrostickies, but also of nonadhesive polymers without a separation step directly in laboratory sheets of fabric samples or in finished paper. The objects are determined by number, size and area. In addition, it is possible to classify the detected impurities according to their chemical composition.

Advantages over previous determination methods:

- Direct measurement in the dry paper sheet without sample preparation
- No fiber sorting and staining required
- Significant savings in time and personnel and therefore thus cost reduction. The only effort required sampling and, if necessary, making laboratory sheets for stock suspensions
- NIR classification module enables differentiation between adhesive and non-adhesive as well as the identification of all other substance classes of polymeric impurity particles



Technical details:

The measuring system DOMAS Macrosticky is a complete system, consisting of a NIR measuring station, a PC and a measuring and operating software. The components are compactly enclosed in a 1 x 1 x 0.8 m structure. The core component, an NIR line scan camera, has a resolution of 120 x 120 µm per pixel, which is equivalent to over 200 dpi.

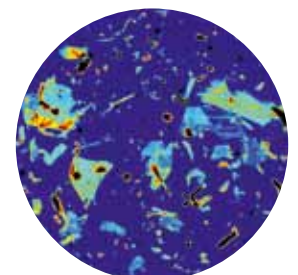
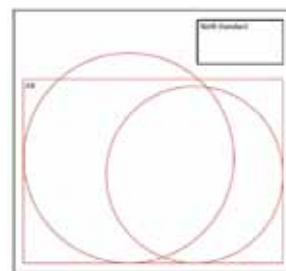


Measurement procedure:

The sample table contains a complete DIN A4 sheet of paper, but also a typical RK sheet and larger groove sheets. After closing the cover, the fully automatic measurement begins. No pre-setting has to be made. The measurement itself takes up to 5 minutes, depending on the size of sample and ends with a visualization, quantification and classification of the polymeric objects.

Evaluation:

The NIR raw data are assigned to the individual chemical components within a decision tree, combined into objects and statistically processed.



Contact person



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REGUPOL CARGO MAT FOR LOAD SECURING



REGUPOL CARGO MAT 7210®

- Reusable, long-lasting, resilient
- Defined load ranges, reliable friction coefficient
- Contamination-tolerant, easy disposal
- Suitable for unit load handling



REGUPOL CARGO MAT 1000®

- Reusable, long-lasting, resilient
- Defined load ranges, reliable friction coefficient
- Suitable for extreme weather conditions
- Contamination-tolerant, easy disposal
- Suitable for heavy-duty transport



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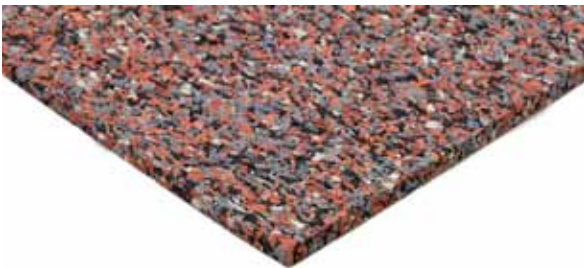
REGUPOL CARGO MAT

FOR LOAD SECURING



THE ADVANTAGES OF THE REGUPOL CARGO MAT

REGUPOL anti-slip mats can save lives in an emergency by reducing the risk of accidents caused by cargo slipping during transportation. In addition, the focus is on the safety of the goods being transported in order to prevent damage during transportation. These aspects should be seen in terms of cost reduction, among other things. Thanks to their specific features and properties, they offer a reliable solution for various requirements, whether for maximum loads, sensitive loads, heavy loads or under extreme weather conditions.



REGUPOL CARGO MAT 9510®

- Reusable, long-lasting, resilient
- Defined load ranges, reliable friction coefficients
- No black streaks or stains
- Contamination-tolerant, easy disposal
- Suitable for sensitive load



REGUPOL CARGO TOOL GBS

- Protect lashings straps from premature wear and tear
- Ensure that the lashing force of the belt is optimized
- Adjust perfectly to the edges of the loading unit
- Reusable, long-lasting, resilient
- Smooth, low-friction surface
- Easy disposal

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productivity



Innovative chemical, biological
& physical technologies:

- Preservation
- Slime control
- Odour control
- Cleaning
- Sticky and pitch control
- Scale inhibition
- Defoaming, deaeration
- Flocculation, precipitation, dispersion
- Dry strength
- Alternatives to biocide treatment:
Functional bacteria & ultrasound



Success story with Functional Bacteria!

Environmentally friendly odour & deposit control in water systems

For more than 5 years now, we have been successfully using our innovative functional bacteria S-BACPRO instead of biocides:

- Clean water cycles
- Significantly less odour
- Removes/reduces organic deposits
- Prevents acidification
- Process optimisation without chemicals
- Biological & sustainable
- Harmless to humans and the environment

• • • S-BACPRO - patent pending • • •

Are you interested? Contact us and find out more

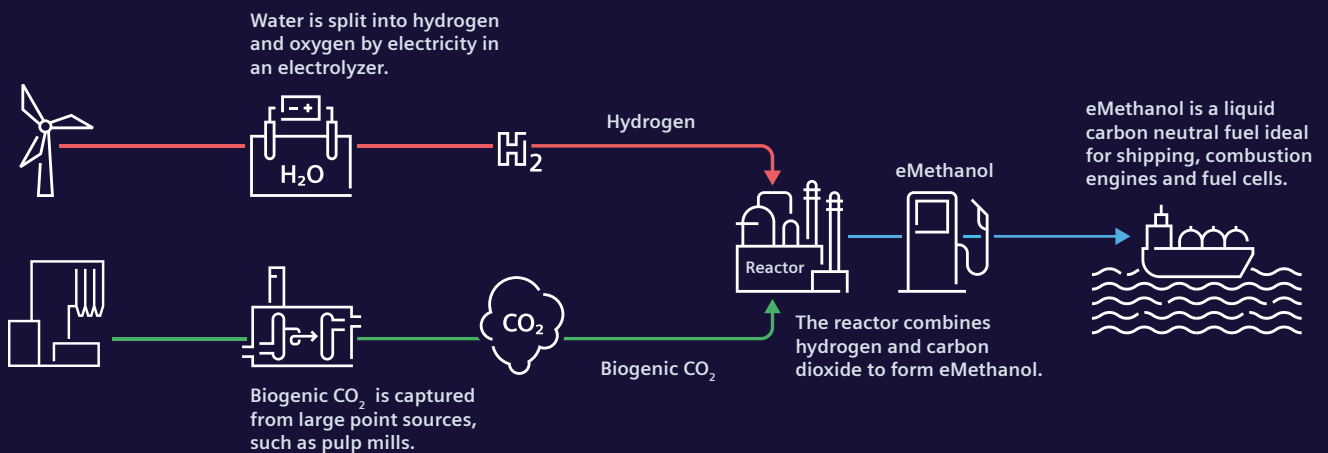
The fiber industry of tomorrow

With the new fiber trends towards new bio based products and fuels within the fiber industry the process to produce pulp and paper is gaining a lift to higher yield and value. Besides new fiber production for other industries e-fuels are getting more and more into focus.

The pulp mill production process represents a perfect application to combine renewable energy and a biobased carbon dioxide source to produce e-methanol for mobility purposes i.e. marine industry.

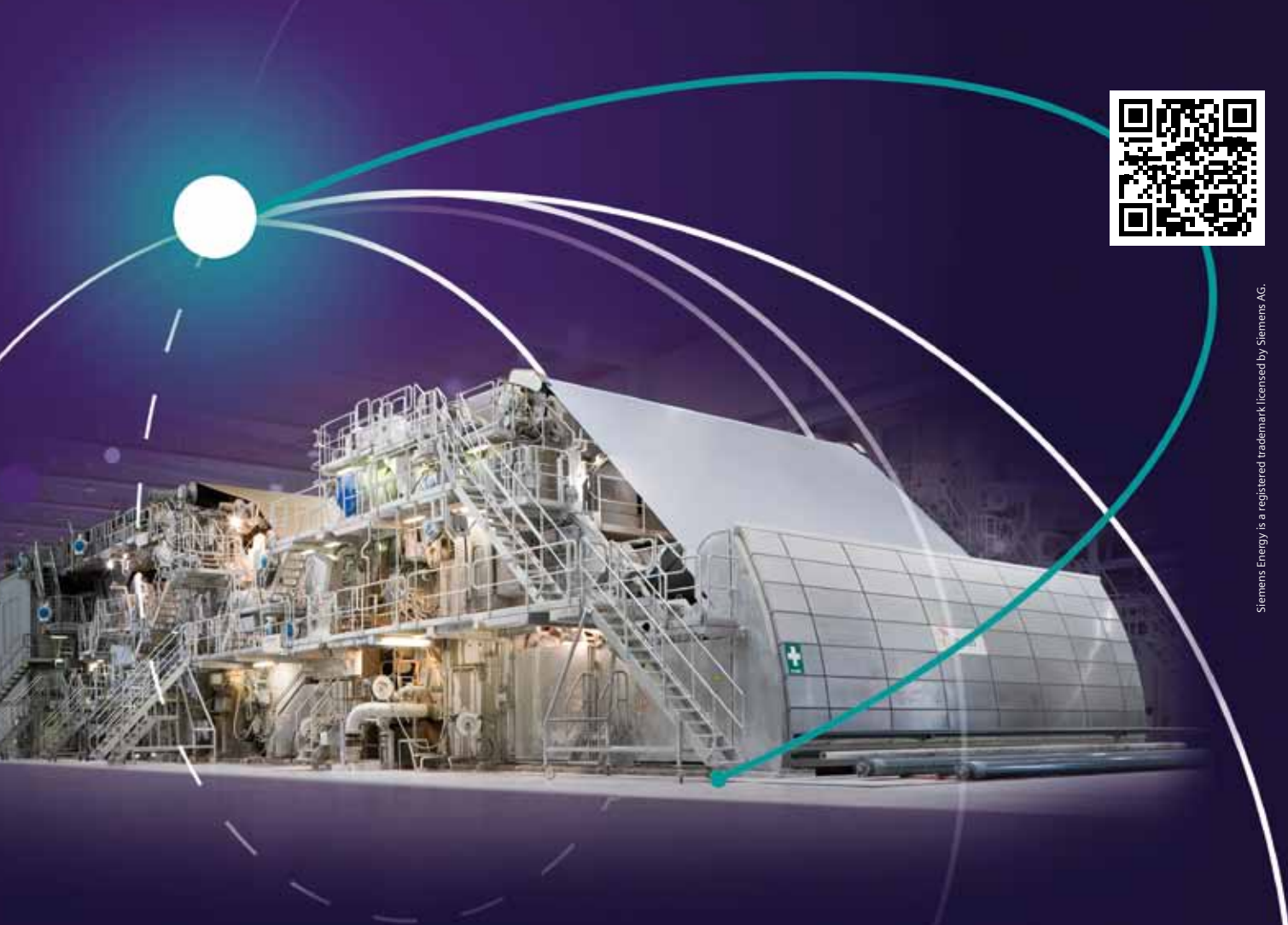
Producing carbon neutral fuel

Upcycling bio based CO₂ into carbon neutral eMethanol





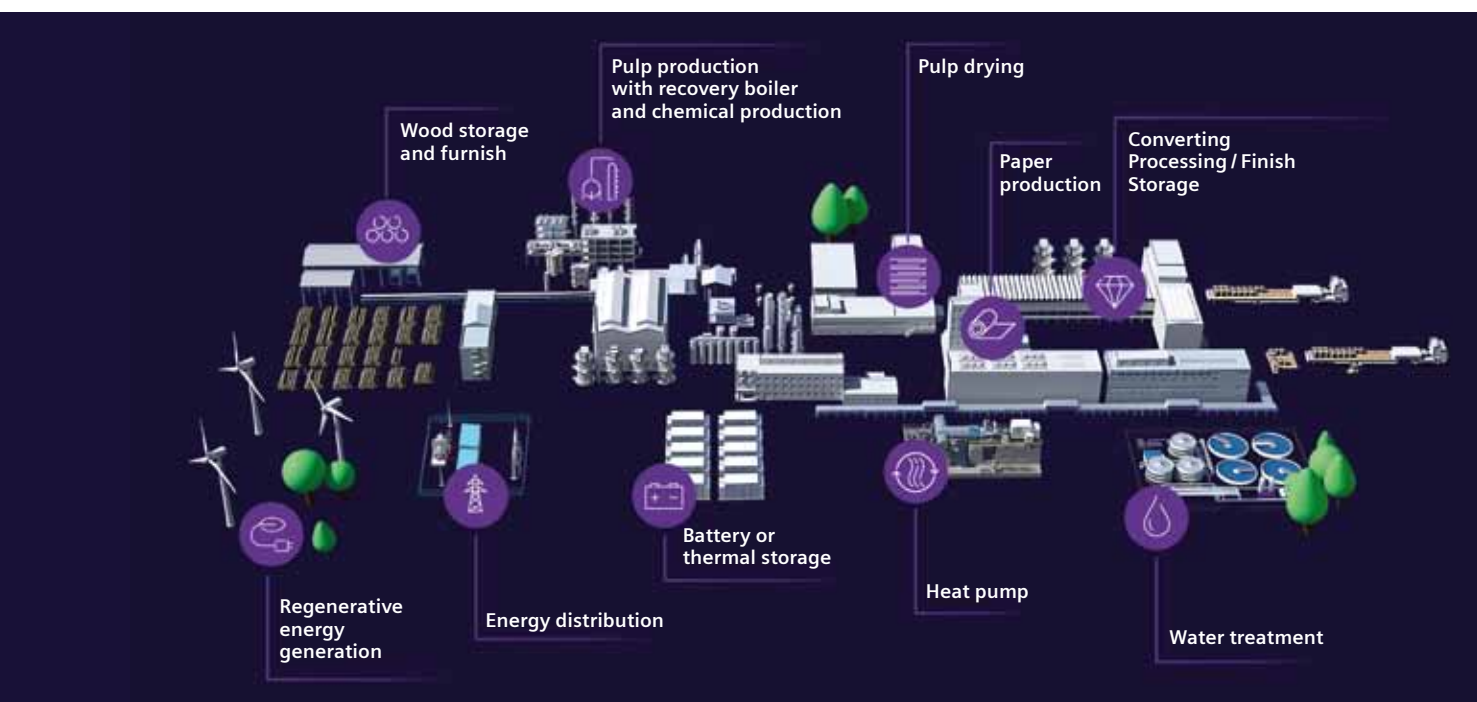
Siemens Energy is a registered trademark licensed by Siemens AG.



Decarbonization is the force to push the shift to more sustainable energy efficiency.

Integrated renewable energy generation in combination with smart heat generation and storage, offers the path to a new Pulp & Paper production.

We would be happy to become a partner with you on the way to a carbon neutral aera in our Pulp & Paper Industry.



www.siemens-energy.com/sipaper



USER FRIENDLY SOFTWARE

- > Runs on standard controlling PC with Windows OS
- > Measurement window
 - Individual investigation of each detected dot
 - Configurable results table displays results for last test and average of tests done
- > Configuration window
 - 11 configurable classes for size and contrast
 - Different configuration settings may be saved (e.g. ISO 5350, TAPPI T213, T437, T563 for simple change of measuring reference standard)

RELIABLE AND POWERFUL

- > High resolution linear camera with 12.288 pixels
- > Adjustable according to sheet dimensions, up to 83cm width and no limit for sheet length
- > Resolution, pixel size 67µm for max. width (83 cm)
- > Analysis time < 1 minute for a 80 x 80 cm sheet
- > Repeatable and reproducible

DIRT LABORATORY ANALYSER FOR LARGE SIZED PAPER SAMPLES AND PULP SHEETS

- > Quick analysis of dirt in pulp and paper large sheets.
- > Accurate dirt counting on :
 - paper sheet by reflected light
 - pulp sheet by transmitted & reflected light
- > Powerful led illumination system
- > Performs digital scan of individual pulp or paper sheets either by reflected light or by transmission according to ISO standards
- > Detects any contrasting impurities such as shives, metal, plastic, grease, sand, etc
- > Sorts detected impurities as black dots, gray dots and shives according to its color and shape
- > Calibration of the measuring system according to the EFPG standard (CEN/TC 172)



Fully automated sheet scanning

MORFI NEO HR

High resolution module

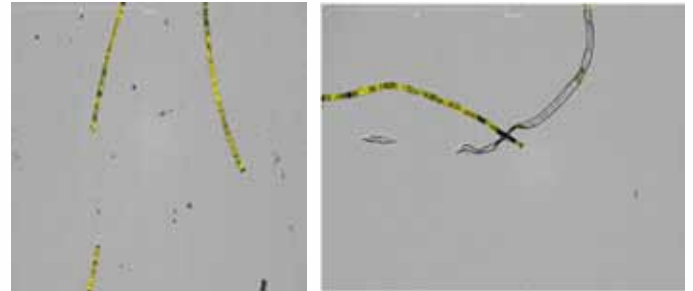


HARDWARE EXTENSION TO MORFI NEO

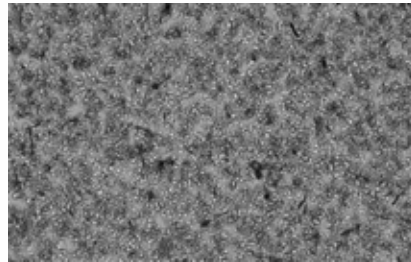
- > Mounted on backside as a separate module
- > Fully controlled by MorFi Software
- > High resolution camera:
 - Resolution down to 0,5 μm
 - Adjustable cell gap
- > MorFi HR Software can be used separately or incorporated into MorFi Neo interface

APPLICATIONS

- > Fiber wall thickness true optical measurement:
 - Typically ranging from 3 to 9 μm according to the several different wood types used worldwide for pulp production
 - Wall thickness values are integrated among the standard fiber morphology results to MorFi Neo
- > Hydroseg Index : exclusive CTP* index to determine the fractionality of fiber by Hydrocyclone.
- > MFC behaviour:
 - Determination of flocculation index for example



Wall Thickness images by MorFi HR



MFC image by MorFi HR

ANALYSIS DURATION

- > MorFi fiber cycle

MEASUREMENT PROPERTIES

- > Wall Thickness distribution (10 classes)
- > Wall Thickness Average and Standard deviation
- > Width Average and Standard deviation
- > Hydroseg Index

*CTP : Centre Technique du Papier



TECHPAP SAS

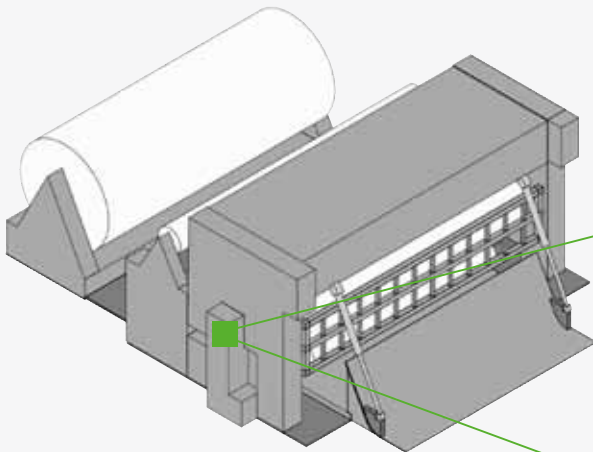
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 **techpap**
innovation for pulp & paper

Machine knives for the Paper Processing Industry



Top and bottom slitter knives



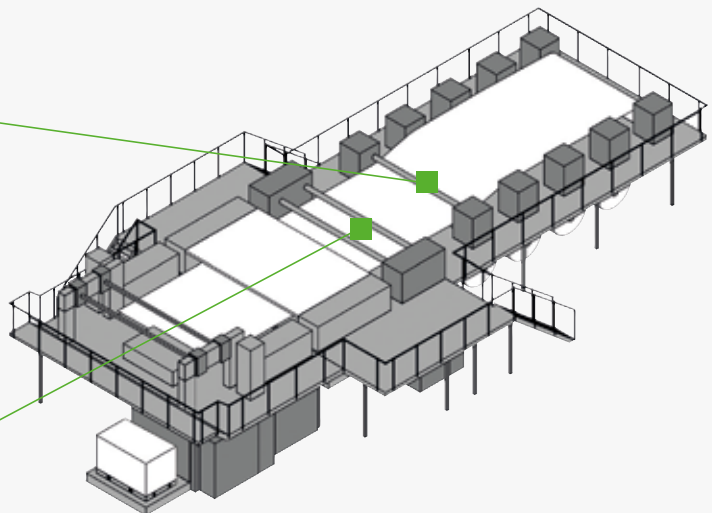
Multi-groove knife blocks



Top and bottom slitter knives



Sheeter knives



- Circular knives
- Sheeter knives
- Multi-groove knife blocks

- Circular dished knives / Anvils
- Reel Split knives
- Core Cutter knives

Slitter knives

Top slitter knives

- Preliminary bevel 30°
- Main bevel 15°
- Recess bevel 3°
- Surface roughness
Ra 0.03 µm / Ra 0.10 µm
- Axial runout 0.01 mm
- Radial runout 0.02 mm

Lower knife features

- Carbide tipped
- Solid steel
(chrome steel, HSS or PM steel)
- Surface roughness Ra 0.10 µm
- Recess bevel 4°
- Axial runout 0.02 mm
- Radial runout 0.03 mm
- Parallelism 0.01 mm



Knives for cross cutting

- Sheeter knives made of PM steel or other steel grades
- Carbide-tipped sheeter knives
- Straightness of cutting edge
0.1 / 1000 mm or 0.04 / 300 mm
- Parallelism across length 0.03 mm
- Parallelism across width 0.03 mm
- Parallelism across thickness 0.025 mm



Your contact:

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+49 2191 969 327
umiddendorf@tkmgroup.com



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In der Fleute 18
42897 Remscheid
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Optimize industrial operations



Wedge digests all the process data including QCS profiles, from multiple sources, for analysis and diagnosis. It uncovers and suggests possible root causes and consequences of process events before they escalate into big problems.

Wedge is the perfect tool for the pulp and paper industry with 30 years of high user satisfaction.

in use in over
20
countries, worldwide

used in more than
200
production lines

thousands
of users



Visualize process
& quality data



Cleanse and
focus the data,
compensate for
process delays



Analyze your
data



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dependencies
and root causes

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The **benefits** of the Wedge process diagnostics system:

Increase process transparency.

Save costs by addressing issues rapidly.

Perform a week's data-analysis work in only 10 minutes.

Shift your mental resources from processing data to solving problems.

Enable data- and knowledge-sharing, and unlock collaboration with colleagues.

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Guy Lacey, Next Generation
Technology Director at DS Smith

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We support you

producing paper and board more efficient, less costly and with improved quality.

We possess sound knowledge and many years of experience in the paper industry.



We offer solutions regarding

- **runnability** and **performance improvement**,
- **energy efficiency optimisation**,
- **profiling** and **drying**,
- Converting waste to **energy**
- **colouring** and **tinting**,
- **chatter marks** and **creping**,
- **sticky scavenging** and **water treatment**,
- **deaeration**, **defoaming**, and **cleaning** as well as
- **Decarbonisation** of the paper making process.



With our partners we provide the best tools for solving your challenges:





Compact Engineering supplies to you the world's most energy efficient and powerful infrared emitters for drying and profiling. Ideal for capacity increases and retrofitting, the XenTec emitters typically evaporate per square meter emitter surface at least the threefold amount of water, compared to standard infrared emitters. Compact develops its lamps and is the only supplier with in-house manufacturing of infrared lamps. These lamps are specially suited for drying the coating from inside out, from the initial sedimentation layer to the surface, where films forms last – ideal for barrier coatings as well as specialty papers. XenTec emitters are ideal for profiling the base board prior to the pre coat for optimising the coating hold out and thus improve the quality of the finished paper. They are ideally suited for retrofitting, to increase significantly evaporation performance due to their high efficiency and small footprint.

NCR Biochemical is the Italian technology leader for creping chemicals. The novel concept of the coating is insensitive to wet streaks and allow perfect creping even with increased moisture content. Cytreat and Cylube allows reducing the creping ratio or improving the elongation maintaining high mechanical strength of the finished sheet.



The performance of your paper machine can be enhanced using Clean and Bioclean, which allow cleaning the felts during production and thus maintaining constantly optimum dewatering of the sheet. Our deaerators and defoamers Biofoam improve the efficiency through reduced sheet breaks. The **NEW** range of enzymes help the paper maker to improve strength of recycled paper based products, reducing refining energy on virgin fibre based paper and fight stickies.



We're supplying with partners special bentonites for sticky scavenging and treatment of the water loops. Our customers experiences improved runnability , reduced cost, and significantly lower salt loads in small or closed paper machine circuits.

Klass designs and manufactures filters for water recovery and filtration of suspended, sedimentary and floating particles in the range of 10µm up to 1.000µm. They are used to improve the quality of the white water as well as for fiber recovery



Steiner supplies the paper and other industries with dyes and colorants. Short supply distances from the heart of Europe with very competitive costs are the advantages Steiner offers you. Development as well as Application labs allow supplying you the optimum dyes for your application.



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Process chemicals and industrial silicates

- Family-run enterprise
- Based in Ludwigshafen, Bad Köstritz (Germany) and Gratwein-Straßengel (Austria)
- Founded in 1896 – over 125 years of experience

High-level application expertise and innovative solutions

Wöllner develops innovative solutions, which are specially geared towards high quality, eco-friendly products and application systems. We are committed to the worldwide Responsible Care initiative to ensure continuous improvements in the protection of health and the environment.

In a constantly changing market, we flexibly respond to the specific needs of each customer. In-depth expertise in applied chemistry and intense application-focused research is enabling us to develop efficient products and processes.

You will benefit from our strengths

- Own laboratories for R & D, analytics and microbiology to develop new formulations and application technologies
- Outstanding support by a professional and well trained technical sales force
- In house support with operating tests in our own laboratories

Wöllner's practical solutions will help you to optimise your products and processes. Together, we make sure that you will benefit from our advice. Hence, you can implement the best possible solution in your application, so you can save costs, time and energy.



Process chemicals for industrial water circuits

Warosit®

Our process chemicals in the Warosit® range are highly efficient for a smooth production. We place great emphasis on eco-friendly technologies, quality assurance and cost-effectiveness in different applications.

Waropure®

- Environmentally friendly, sustainable, bio-based cleaning management in water circuits and deinking plants
- Green technology

Warosit®, Warocid®, Warostat®

- Preventing and controlling of inorganic and organic contaminants/deposits with classical biocides
- Preventing of microbial growth (industrial water systems, auxiliaries)

Warozym®

- Enzymes for starch degradation, fibre modification and other applications

Warodisp®, Warospense®, Waroclean®

- Cleaning and dispersing agents for water loops, machine parts, machine periphery & paper machine clothing
- Treatment of wires, felts and central rolls

Warofoam®

- Defoamers and deaerators for pulp and paper production and waste water treatment

Warofloc®, Waropol®

- Coagulants and polymers for process- and wastewater treatment



Waropure® – Probiotics for the conditioning of water circuits



Own laboratories for R & D, analytics and microbiology



Special Silicate products for recycling paper

Special products for recycling paper and pulp bleaching

Verisil® (Sodium Silicates)

- Increased stabilization effect in peroxide bleaching systems
- Optimized alkali and buffer properties
- Reduced COD load

Sapetin®

- Additives for reducing or eliminating soaps and fatty acids in the deinking process

Your Reliable Partner for In-Line Color Measurement and Closed Loop Color Control

The X-Rite In-Line systems are used worldwide for white paper (with and without OBA), colored paper (including deep shades), laminate paper (measurement in the pulp and before drying section), packaging paper and liner board. More than 800 In-Line installations in the paper industry prove the reliability of the systems and provide a good reference.

Sales, engineering, installation and service worldwide provided from one hand. Our turn-key solutions include:

- In-Line color measurement
- Automatic Closed Loop Color Control
- Connection to any process control system and other external signals like reel change or paper break
- Dye pump interface
- Dye pump stations in various configurations (Bran+Luebbe, Watson Marlow, Grundfos, ...) including vacuum pumps for initial filling of the dosing pumps
- Separate transport water lines (anionic/cationic)

The system is working as a standalone unit but can easily communicate with any process control system.

Short transition times are realised by the automatic Closed Loop Color Control. It also helps to reduce dye consumption and take the “guess work” out of the production by calculating the correct dye adjustment. The independent turnkey system is installed within 3 days, only two hours machine shut-down are necessary.

This guarantees a very fast return on investment (typically 3 to 6 months) and a very low cost of ownership.

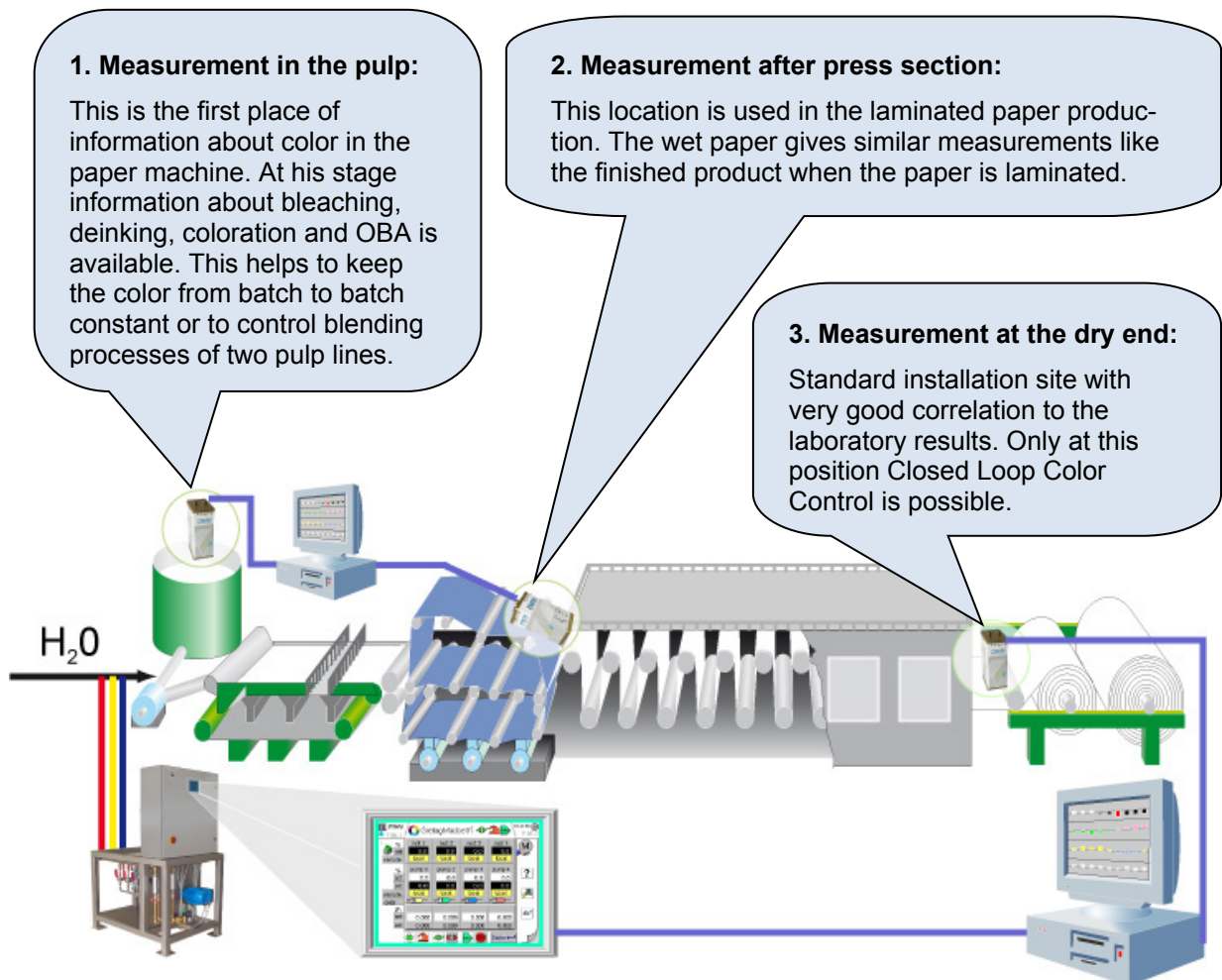
X-Rite GmbH

Fraunhoferstr. 11b
D – 82152 Planegg

Telephone: +49/ 89 – 8 57 07 -0
Telefax: +49/ 89 – 8 57 07 -111
E-Mail: inline@xrite.com
Web: www.ERX50.com



Range of Application for In-Line Color Measurement in Paper Machines:



Closed Loop Color Control

- ✓ Control of up to 3 different colors and one optical brightener in automatic mode, more colors can be controlled manually
- ✓ Cost reduction by:
 - Shorter transition times
 - Minimum colorant loading by dying on the lighter limits
 - Less waste
- ✓ Better quality by more stable color of the paper
- ✓ Manual and automatic pump control possible
- ✓ Connection to your control system possible
- ✓ Turnkey systems

X-Rite GmbH

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