PTS FIBRE based solutions

PTS SYMPOSIUM

PTS Coating Symposium 2025

September 22 – 24

www.ptspaper.de/en/events

Did you know?

During the 11th century, in the heart of the medieval era, Emperor Heinrich proclaimed Bamberg as the *centre of the world*. This declaration, highlighting its significance during that time, adds an unexpected layer to the city's history.

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Did you know?

Often referred to as the *Franconian Rome*, Bamberg shares an intriguing similarity with the Italian capital. Just like Rome, Bamberg is built on seven hills, each crowned with a distinctive church. These hills – *Cathedral Hill*, *Michaelsberg*, *Kaulberg/Obere Pfarre*, *Stefansberg*, *Jakobsberg*, *Altenburger Hill*, and *Abtsberg* – add to the city's charming topography.

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Welcome to the 32nd PTS Coating Symposium!

It is a pleasure for us to welcome you at the PTS Coating Symposium 2025, the international industry meeting for coating and surface finishing of paper and cardboard materials.

Once again industry experts and scientists come together to the historic city of Bamberg to discuss the latest developments and future trends in the industry.

The 32nd PTS Coating Symposium combines practical insights and real-world solutions. Dive in and immerse yourself into market trends, discover new coating materials, get experience with the latest coating equipment and techniques!

Take a chance to expand your network at the accompanying exhibition, where such leading companies as Cargill NV, GAW technologies, Wolf Heilmann, TSE Troller, Kemira, CeraSleeve, Frank-PTI an PTSV showcase their latest products and technologies.

We are pleased to announce our sponsors this year: Koehler Innovation & Technology, Siegwerk and Omya International. Thank you for shaping the future of coating and surface technology with us!

In addition to the sessions full of interesting discussions, special highlights await you. On the first evening, join us for a guided tour of Bamber's Old Town, a UNESCO World Heritage Site, and enjoy a relaxed get-together at the "Exhibitors' Evening" – with pasta and beer.

On the second evening, you are cordially invited to a festive conference dinner with pub quiz in a relaxed setting with live piano music.

Be a part of the international coating event that connects the industry!

Bamberg City Tour
September, 22, at 6:00 p.m.

Exhibitor Evening & Get Together with pasta and beer
September, 22, at 7:30 p.m.

Symposium dinner with Live Piano Music
September, 23, at 7:00 p.m.

Pub Quiz
September, 23, at 8:30 p.m.

Photobox
September, 22 & 23

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Your Team in Bamberg

Dr. Martin Zahel

Dr. Annika Eisenschmidt

Dipl.-Ing. Ina Greiffenberg

Celine Farr

Lea Stelzig

Kristina Levchuk

Debora Zahel

Did you know?

An interesting episode in Bamberg's history is the "Beer War" of 1907. Triggered by a mere 1 pfennig increase in beer prices due to taxation, the citizens staged a successful boycott, leading to the reversal of the price hike. A remarkable example of collective action for a beloved beverage.

PTS FIBRE based solutions

Greeting

by Dorothee Bär, German Federal Minister of Research, Technology and Space

Dear Sir or Madam,

It is a great pleasure for me to have this opportunity to address a few words to the dedicated professionals of the paper industry. Although I am unfortunately unable to be here in person, I was delighted to receive your invitation. I would therefore like to take this opportunity to express my appreciation for the hard work and commitment that you all bring to this industry every day.
The paper industry is one of the oldest and most dynamic sectors of our economy. It combines tradition with innovation and plays a central role in our everyday lives – whether in education, business, art, or environmental protection. Paper is more than just a material; it is a medium that enables communication, creativity, and sustainability.
We have seen remarkable developments in recent years. The industry faces a wide range of challenges, from raw material procurement to increasing environmental requirements. But these challenges are also opportunities. They drive innovation, promote sustainable production methods, and open up new markets. Investments in environmentally friendly technologies, recycling processes, and sustainable forestry are proof of the paper industry's commitment to acting responsibly and with a view to the future.
In addition, digitalization plays an important role. Paper remains an indispensable medium, even in an increasingly digital world. It offers a tangible, sustainable alternative and complements digital solutions. The combination of tradition and innovation makes the paper industry a future-proof sector that is constantly evolving.
Science, business, politics, and society can work together to develop sustainable solutions and overcome challenges. The exchange of ideas, the promotion of innovation, and joint commitment are the keys to a successful future.
Finally, I would like to express my gratitude to all employees, researchers, entrepreneurs, and partners in the paper industry. Special thanks go to Dr. Voß, Dr. Zahel and Dr. Eisenschmidt for this exciting symposium. Your contributions are essential for the economy, the environment, and our society. I am convinced that the industry will continue to play an important role in creating sustainable, innovative, and high-quality products.
Thank you for your commitment and willingness to actively shape the future of the paper industry. I look forward to our continued cooperation and the positive developments we will achieve together.

Sincerely,

Day 1

www.ptspaper.de/en/events

Notes

PTS FIBRE based solutions

Day 1, September 22

1:00 p.m.	**Opening** *Dr. Martin Zahel, Dr. Annika Eisenschmidt, Ina Greiffenberg – PTS*
1:15 p.m.	**Keynote: Plastic dreams in paper? What fits everything rarely fits well.** *Prof. Marek Hauptmann – Fraunhofer IVV*
2:00 p.m.	**Requirements for functional surfaces on fiber-based material for dairy products** *Gwendal Prigent – Danone Global Research & Innovation Center*
2:30 p.m.	**Fibre-based products: made for recycling?** *Jonathan Scheck – Interzero Recycling Alliance GmbH*
3:00 p.m.	**Coffee break**
3:30 p.m.	**The Paper Revolution – Highly Effective Barriers Against Water – Yet Still Recyclable?** *Dr. Johannes Zipfel – DELSCI GmbH*
4:00 p.m.	**Technical Innovations in Fibre-Based Packaging: Addressing Sealing and Recyclability Challenges** *Annika Sundell – Walki Group*
4:30 p.m.	**Exhibitor Pitches**
5:15 p.m.	**Overview and Development Outlook of China's Pulp and Paper Industry** *Zhenhua Liu – China Pulp and Paper Magazine Publisher, China National Pulp and Paper Research Institute (CNPPRI)*
6:00 p.m.	**City Tour**
7:30 p.m.	**Exhibitor Evening & Get Together**
10:30 p.m.	**End of the Day**

Did you know?

Nestled in the heart of "beerconia", Bamberg is located within the region (Franconia) that boasts the highest density of breweries worldwide. With 11 historic breweries just in the city (roughly one for every 7,000 residents) Bamberg has earned its title as the Kingdom of a Thousand Beers.

Keynote: Plastic dreams in paper? What fits everything rarely fits well.

Prof. Dr.-Ing. Marek Hauptmann

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Fraunhofer IVV

Head of Department of Packaging and Processing Technologies

Since 2022	Additional position as board member of Polygraph Leipzig e.V., stakeholder of the Sächsisches Institut für die Druckindustrie
Since 2020	Head of Department of Packaging and Processing Technologies, Fraunhofer Institute for Process Engineering and Packaging (IVV)
2018	Appointment as Professor of Packaging Machines and Packaging Technology at Steinbeis-University
2010 - 2018	Head of scientific group „Forming of fibre-based materials“ at the Chair of Processing Machines and Processing Technology of Technische Universität Dresden
2010	Ph.D. student at the Chair of Processing Machines and Processing Technology, Technische Universität Dresden

Requirements for functional surfaces on fiber-based material for dairy products

Danone, a company committed to bringing health through food to as many people as possible, operates two research and innovation centers located in Utrecht and Paris-Saclay. These centers support the development of its three main product categories: specialized nutrition, dairy and plant-based products, and natural mineral waters. This diverse portfolio entails a wide range of packaging performance requirements, particularly in terms of barrier properties, food safety, and compatibility with production lines.

Danone's ambition is to make all its packaging reusable, recyclable, or compostable by 2030, while halving the use of virgin fossil-based packaging by 2040, with a 30% reduction by 2030.

Coatings are central to this transformation. They must meet multiple constraints: ensuring food safety, preserving the organoleptic properties of products, maintaining compatibility with existing production lines, and enabling effective recyclability within industrial infrastructures. The presentation explores the technical solutions under consideration, the current limitations of recycling processes, and the potential impacts on consumer experience.

Understanding the interactions between packaging and product, the barrier requirements (water, oxygen, light, vapor), and the risks of compound migration is essential to ensure the integrity of Danone's products. The implications across the value chain—from manufacturing to logistics, usage, and waste management—are also addressed.

This industrial context opens the door to collaborative thinking: how can efforts be pooled across industries, research institutes, startups, and suppliers to overcome technological barriers? What concrete synergies can be envisioned to accelerate innovation in the field of coatings and fiber-based packaging?

This session is intended for experts seeking to understand real industrial needs, implementation constraints, and opportunities for collaboration to foster the emergence of sustainable and high-performance solutions.

Gwendal Prigent

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Danone Global Research & Innovation Center

Fiber-based Materials Manager

Gwendal Prigent is a packaging and biomaterials engineer currently serving as Fiber-Based Materials Manager at Danone's R&I center in Gif-sur-Yvette. In this role, he leads with his team the development of innovative fiber-based materials for packaging, with a strong focus on improving barrier properties and machinability, directly aligned with industrial challenges around recyclability and performance.

Prior to this, Gwendal worked as a technical consultant at (RE)SET, within the framework of the European R3PACK program, which brought together over 20 industrial partners. He coordinated industrial trials aimed at replacing plastic packaging in the food industry with functionalized cellulosic substrates. His work covered barrier properties, durability, machine compatibility, and full support from lab testing to market launch. He also managed the sourcing and evaluation of packaging suppliers, machinery, and materials worldwide to meet the specifications of industrial partners.

Fibre-based products: made for recycling?

The new EU Packaging and Packaging Waste Regulation (PPWR) presents manufacturers and processors of packaging materials with fundamental changes – particularly with regard to recyclability and the mandatory use of recycled materials in plastic packaging. But how should this regulation be assessed in the context of barrier papers?

In practice, barrier papers often pose challenges for material recycling – especially when the plastic content impairs the legal requirements for recyclability or violates design-for-recycling principles.

In our presentation, we will look at the specific requirements that the PPWR places on barrier papers and the extent to which they are compatible with the objectives of the regulation – recycling, use of recycled materials, and reduction of packaging waste. We will discuss practical solutions for improving the recyclability of barrier papers, such as innovative material concepts, separable barrier coatings, or recycling-friendly design alternatives. We will also examine whether and how recycled plastics can be used in barrier papers at all – or whether other strategies are needed to meet the PPWR requirements.

Jonathan Scheck

Jonathan Scheck is a dedicated and qualified expert in the field of packaging recycling with a master's degree in packaging technology. Since 2022, he has been working as a Packaging Engineer at Interzero in the renowned “Made for Recycling” department. There he devotes himself with great care and technical sensitivity to the evaluation and optimization of recyclability and the sustainable recycling of packaging materials.

With a keen interest in the circular economy and a deep understanding of regulatory and technical requirements, Jonathan Scheck supports brand manufacturers and packaging producers in realigning their packaging portfolios not only ecologically, but also in a legally compliant and market-oriented manner. His work thus makes a valuable contribution to the promotion of sustainable packaging concepts and the transformation towards a functioning circular economy.

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Interzero Recycling Alliance GmbH

Packaging Engineer

The Paper Revolution – Highly Effective Barriers Against Water – Yet Still Recyclable?

Paper is increasingly recognized as a promising packaging material, combining renewable resources with high recycling rates to meet growing demands for circularity and sustainability. However, enhancing functional properties—particularly barriers against water vapor, oxygen, and grease—without compromising recyclability remains a significant challenge.

This challenge can be effectively addressed through a "Design for Recycling" approach. A central element of this work is the early integration of recyclability testing into the product development process. Utilizing the 4evergreen recyclability evaluation protocol in combination with Cepi's laboratory recycling method provided detailed insights into barrier material interactions within standard recycling processes. This enabled the identification of critical points in the recycling chain—especially during coarse screening—where barrier components can be efficiently removed, thereby minimizing unwanted issues such as stickies and sheet adhesion.

This method was crucial for excluding barrier candidates that, despite strong barrier properties, exhibited poor recyclability. Early-stage testing ensured that only materials offering a good balance between barrier performance and recyclability were advanced.

The ongoing development of these materials remains challenging, especially regarding compliance with the Packaging and Packaging Waste Regulation (PPWR). A key aspect is meeting the upcoming Design for Recycling tables, while simultaneously ensuring that these materials are compatible with Europe's diverse sorting and recycling mill infrastructures. Furthermore, achieving compatibility at an industrial scale is essential to support Europe's high recycling rate of paper and board, intended to reach 90% by 2030.

Targeted innovation and close collaboration between material developers and recycling experts remain critical for the successful realization of next-generation sustainable packaging solutions.

Dr. Johannes Zipfel studied Chemistry with a focus on Physical and Macromolecular Chemistry, followed by doctoral studies at the Faculty of Macromolecular Chemistry (Marie Curie Fellow of the European Commission, including a three-year stay at the Institut Laue-Langevin in Grenoble, France).

He began his industrial career at Henkel as R&D Manager for new ingredients in adhesives, beauty care, and laundry & home care. After holding key positions in the development of dishwashing products and brands such as Persil, Somat, Pril, and others, as well as senior R&D roles in Vienna, Düsseldorf, and Amsterdam, he became Head of Global Quality Management.

In 2019, he was entrusted with establishing DELSCI GmbH in Traun (Austria) as the exclusive research entity of delfortgroup AG. As Managing Director, he is responsible for all business, strategy, and research activities of DELSCI GmbH, as well as for building a unique business model that supports customers in transitioning from plastics to paper for sustainable packaging solutions.

From early 2024 to 2025, he co-led the WS1 Recyclability Evaluation Protocol within the 4EG initiative. Since 2025, he has been serving as a delegate for the Austrian Standards Institute (ASI) in the CEN working group TC261/WG3/SG2, contributing to the design of the Packaging and Packaging Waste Regulation (PPWR) for paper.

delsci

Dr. Johannes Zipfel

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DELSCI GmbH

Managing Director

Technical Innovations in Fibre-Based Packaging: Addressing Sealing and Recyclability Challenges

The transition to sustainable, fibre-based packaging is accelerating, driven by regulatory initiatives such as the EU's Single Use Plastics Directive, PPWR and increasing demand for environmentally friendly solutions across industries.

However, achieving both high recyclability and effective heat sealability in fibre-based packaging remains a significant technical challenge, particularly as the industry shifts away from conventional plastics toward new types of polymer-based coatings.

This presentation explores the technical innovations in fibre-based packaging, with a special focus on the interplay between recyclability and heat sealability for various new coating types. Drawing on recent research and development, we examine the properties and performance of coatings derived from especially natural polymer, these coatings offer superior biodegradability and are sourced from renewable, often side-stream, resources, supporting the circular economy.

We compare the processability, barrier properties, and sealing performance of natural polymer coatings with conventional polyolefin and acrylate-based systems. The findings highlight the importance of a holistic approach to material selection and process design, ensuring that advances in sealability do not compromise recyclability. By deepening our understanding of the relationship between these critical properties, the industry can accelerate the adoption of truly sustainable, high-performance fibre-based packaging solutions.

Annika Sundell

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Walki Group

Executive Vice President

Annika Sundell is Executive Vice President, Consumer Packaging and Innovation at Walki Group, where she leads the company´s packaging transition agenda.

With a degree in Polymer Technology and a long-standing career at the intersection of R&D and business, Annika is recognized for driving change in the packaging industry.

She is an active participant in industry alliances and consortium projects that promote the circular economy, collaborating across the value chain to accelerate the adoption of recyclable and compostable solutions. Her approach combines technical expertise with strategic business insight, enabling her to bridge the gap between scientific advancement and commercial success.

Overview and Development Outlook of China’s Pulp and Paper Industry

Papermaking is one of the four great inventions of ancient China. After more than 2,000 years of development, China's paper industry has maintained the world's leading position in production and consumption since 2009.

This report introduces the industrial landscape and development history of China's paper industry, focusing on the current fiber raw material structure, machinery equipment status, technological advancements, product market, and import-export situation.

It also looks forward to future trends from perspectives of raw materials, products, technology, and green and low-carbon development.

Zhenhua Liu, Senior Engineer, Director of China Pulp and Paper Magazine Publisher, China National Pulp and Paper Research Institute（CNPPRI）, Executive Director of the China Technical Association of Paper Industry (CTAPI), Secretary of the Paper-based Green Packages Committee of CTAPI. She is engaged in industry research in the fields of green paper-based packaging materials, pulp molding, green manufacturing system evaluation and consulting services, as well as academic journal publishing.

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China Pulp and Paper Magazine Publisher, CNPPRI

Director (China Pulp and Paper Magazine Publisher)

Notes

Day 2

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Notes

PTS FIBRE based solutions

Day 2, September 23

9:00 a.m.	**Welcome Speech** *Dr. Martin Zahel – PTS*
9:15 a.m.	**Geopolymer-based coating** *Dr. Andreas Geißler – PTS - Institut für Fasern & Papier gGmbH*
9:45 a.m.	**Development of recyclable barriers for paper using nanocellulose** *Paula Goderbauer – Fraunhofer IVV*
10:15 a.m.	**Controlling surface porosity for barrier coatings – Coating and mineral aspects** *Janet Preston – Artemyn Minerals Ltd*
10:45 a.m.	**Coffee break**
11:15 a.m.	**Panel discussion: Is diversification in the packaging sector the key to a sustainable paper industry?** • *Dr. Annika Eisenschmidt – PTS* • *Dr. Martin Zahel – PTS* • *Alexander von Reibnitz – DIE PAPIERINDUSTRIE e.V.* • *Jin Wang – KINGDECOR* • *Lorena Rodríguez – Graphic Packaging International* • *Prof. Frank Miletzky – fm innovation*
12:15 p.m.	**Lunch**
1:45 p.m.	**A recyclable and barrier solution for packaging adapted to the food industry markets** *Dr. Laurent Lyannaz – Centre Technique du Papier*
2:15 p.m.	**Sol-Gel Functionalization and Barrier Coatings for Paper and Molded Pulp Packaging** *Dr. Claus Bischoff – Danish Technological Institute*
2:45 p.m.	**Roll-to-roll spray and gravure coating of bio-based barrier coatings on paper** *Watti Lehtimäki – KCL Oy*
3:15 p.m.	**Coffee break**
3:45 p.m.	**Paving the way towards "paperization" with Cargill™ Barrier Coatings** *Dr. Diego Fort – Cargill GmbH*
4:20 p.m.	**CareTips® by Lactips: the natural coating revolutionizing paper packaging** *Dr. Jean-Laurent Pradel – Lactips*
4:50 p.m.	**Generation of bio-based coatings using a novel atmospheric pressure plasma source based on a dielectrically impeded discharge** *Martin Bellmann – Hochschule für Angewandte Wissenschaft und Kunst (HAWK) Göttingen*
5:20 p.m.	**Development of Multilayer Biobased Biodegradable Barrier Coatings** *Dr. Jinghuan Chen – CNPPRI*
7:00 p.m.	**Symposium dinner & Pub Quiz**

Geopolymer-based coating

FIBRE based solutions

Conventional paper coating systems contain, in addition to mineral components, synthetic polymers of petrochemical origin that primarily serve as binders to connect inorganic pigments and fix them to the substrate. From the perspective of recycling and biodegradability, these materials are increasingly being questioned, as they cannot be further utilized and do not degrade when released into the environment.

By employing purely inorganic coating formulations, petrochemical binders can be replaced, enabling the production of high-quality papers with extended property profiles. For this purpose, so-called geopolymers based on soluble silicates and metakaolin are applied as inorganic binder systems. In geopolymers, the reactive aluminosilicate phases contained in metakaolin partially dissolve under alkaline activation with potassium silicate.

During subsequent hardening, the characteristic inorganic, amorphous network of SiO_4 and AlO_4 tetrahedra typical of geopolymers is formed. These materials are usually employed as high-performance construction materials due to their excellent mechanical, chemical, and thermal stability, which also makes them particularly attractive for paper-based construction applications. In this context, the multifunctionality of geopolymer coatings makes it possible to address not only optical aspects but also mechanical and fire-safety requirements.

Dr. Andreas Geißler

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PTS – Institut für Fasern & Papier gGmbH

Project Manager

Dr. Andreas Geißler is project manager at the Department of Functional Surfaces, PTS – Institute for Fiber and Paper Technology in Heidenau, and group leader for “Paper based construction” at the Chair of Macromolecular Chemistry & Paper Chemistry, TU Darmstadt. He studied Forestry (B.Sc.) and Wood Science and Technology (M.Sc.) at TU Dresden and received his doctorate in 2016 from TU Darmstadt on cellulose fatty acid esters and their colloidal systems. Since 2020, he has also been teaching pulp & paper chemistry and paper production at the Baden-Wuerttemberg Cooperative State University Karlsruhe.

Development of recyclable barriers for paper using nanocellulose

The presentation describes the content of the IGF project CoatNanoCell, in which a barrier coating for paper is to be developed that is resistant to oxygen and mineral oils. The main component of the coating is nanocellulose, which offers advantages in terms of recyclability due to its own fiber content.

CoatNanoCell aims to establish a recyclable paper composite packaging in line with a circular and sustainable economy and current legislation. This will provide industry with an approach for substituting flexible plastic packaging with paper. To this end, the project is developing packaging concepts for paper composites with nanocellulose coatings.

For this purpose, commercially available nanocellulose products are being systematically investigated in coating formulations on different paper substrates. In addition, the extent to which a primer can further improve the application of the nanocellulose is being investigated. All experiments are supported by in-depth characterizations, showing that our coated papers provide effective barriers against grease, oil and mineral oils (MOSH/MOAH). Therefore, the coatings offer the added possibility of being used as a functional barrier for recycled paper.

A key step to create nanocellulose barrier coatings on paper is to develop a continuous coating process for a roll-to-roll application up to a TRL of 5-6. The experimental work in the project is supported by modern simulation methods to model the coating and drying processes to ensure a comprehensive understanding of the process steps. This is done in close collaboration between the Fraunhofer Institute for Process Engineering and Packaging IVV and the Chair of Systems Process Engineering at the TUM School of Life Sciences.

The findings from the simulation processes are then considered in the scaled-up coating process at Fraunhofer IVV. In a further step, the paper composites that are performing best will be used for demonstrator production and finally evaluated for their recyclability.

Fraunhofer IVV

Fraunhofer Institute for Process Engineering and Packaging IVV

Paula Goderbauer

Paula Goderbauer holds a bachelor's degree in Nutritional Science and a master's degree in Food Technology from the Technical University of Munich. Since 2020, she has been working at the Fraunhofer IVV as a research associate and project manager in the Materials Development department. Her research group works on topics related to bio-based materials, including the functionalization of paper through wet-chemical coatings or deposition of inorganic layers via PVD, but also the thermoplastic processing of biopolymers.

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Fraunhofer IVV

Project Manager Materials Development

Controlling surface porosity for barrier coatings – Coating and mineral aspects

Barrier coating of fibre based substrates is of great interest to several markets today, as there is a strong push for sustainability and to reduce the single use plastics with recyclable fibre based solutions, and to improve the recyclability of coated fibre based packaging. Obtaining good barrier functionality to a range of substances (oil, water, O2, vapour, etc.) remains a challenge which is under much debate and study.

In this presentation we focus on the coverage aspects of fibre based board and paper and discuss with respect to 2 areas:

- The importance of coater type including particle alignment
- The impact of mineral particle shape and loading level in a formulation and its resultant surface porosity. Here the surface refractive index is utilized to probe changes in surface air content, which is related to both roughness and surface pores.

We finish with a case study which shows how a mineral rich precoat can give improved barrier coating hold out efficiency. A second case study concerns the comparison between a blade and curtain coater for providing a double coated barrier layer coating, which shows that with the correct formulation it is possible to achieve a good barrier using a blade coater. Finally the potential improvements in smoothness and gloss when adding kaolin to a precoat are demonstrated.

Janet Preston

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Artemyn Minerals Ltd

Senior Scientist

Janet Preston now works for Artemyn minerals, and has previously worked in Imerys Minerals for over 30 years in the areas of coatings and minerals research, including paper coating, paper filling, paints and inks and in printing science.

Whilst working at Imerys Janet graduated from University of Plymouth with an honours degree in Applied Chemistry. She then gained a PhD in Chemistry with the Interface Analysis Centre, University of Bristol, where she studied ink and coated paper interactions. Janet has over 100 publications in this area. She is currently a senior scientist in Artemyn R&D and is working in the areas of paper, board, pulp & printing.

In 2007 Janet was appointed as an Adjunct Professor (Docent) at Abo Akademi University in Finland. She is a Chartered Chemist & Member of the Royal Society of Chemistry. Janet has been awarded a position as a Tappi Fellow in 2024.

A recyclable and barrier solution for packaging adapted to the food industry markets

The food packaging industry is currently in a huge transition and under pressure, as the global food demand is continuously rising due to the increase of the population, and is expected to increase by 110% in 2050[1]. Therefore, the increase in the food production will lead to an increase of the food packaging production as takeaway food is one of the most growing sectors[2].

Currently, most of the solutions are made of conventional thermoplastics (PE, PET...) coming from fossil-based resources. The extensive use of those material is explained by their high barrier properties, the well-established technological innovations and their relatively low cost[3]. For instance, plastic rigid food containers (trays, clamshells...) represent more than 46% of the total market[4].

Nowadays, many regulations in Europe such as Single Use Plastic Directive (SUPD) and Packaging and Packaging Waste Regulation (PPWR) drive the market towards new materials that would be more sustainable, recyclable and biodegradable.

Cellulose is the most abundant polymer worldwide and seems to be a suitable option to meet those criteria and to fit with the packaging market volume. However, cellulose on its own lack of barrier properties because of its natural porosity and its hydrophilic behaviour. Therefore, thermoplastics are still used with conventional processes such as extrusion coating or lamination on board.

However, those solutions consist of composites that are still difficult to sort in conventional sorting systems and then difficult to recycle, which leads to a massive dumping in landfill sites. A solution to avoid thermoplastics is to apply water soluble polymers such as polyvinyl-alcohol (PVOH) to paper & board leading to excellent barrier to grease and oxygen. However, as PVOH is water soluble, there is a lack of barrier properties to liquid water and water vapour, which is a drawback for the use of such material in food packaging market.

A solution has been developed by combining a PVOH coating and grafting using Chromatogeny technology, which brings hydrophobic properties. Recently, this solution has obtained food contact approval from BfRXXVI, which gives bright perspectives for the spreading of this material into the market.

This presentation will emphasise the ongoing industrial transfer of this recyclable and homecompostable solution as well as different demonstrators such as trays for fish, meat or cheese products and trays for takeaway sales. It will focuses on the production of those demonstrators (production of reels, printing and converting steps) and the characterization of the barrier performances by the end user will be specified.

Dr. Laurent Lyannaz

Laurent Lyannaz, Project Manager in the Functional Products division, 63 years old. He joined the CTP in 1986 within the Product Quality team. He has more than 30 years of experience in the development of surface treatments for paper and cardboard materials with extensive expertise in layer formulations, different coating processes and calendering in the field of printing/writing or barrier markets.

He has coordinated and participated in several industrial projects, developing products from the laboratory to industrial scale. He is also co-inventor of a patent related to chromatography grafting technology. Project manager of the BioCup Indus project (CITEO partnership) for a recyclable and barrier solution for packaging adapted to the food industry markets.

Laurent.Lyannaz@webCTP.com

Centre Technique du Papier

Project Manager in the Functional Products Division

Sol-Gel Functionalization and Barrier Coatings for Paper and Molded Pulp Packaging

DANISH TECHNOLOGICAL INSTITUTE

The food packaging industry is rapidly evolving to meet increasing demands for circularity, cost-effectiveness, reduced carbon footprints, and enhanced production efficiency. Fiber-based materials, such as paper and molded pulp, are gaining preference due to their sustainable profiles. However, their advantages are often compromised by the use of fossil-based polymer laminates or liquid polymer dispersion barrier coatings, which significantly increase the packaging material weight and hinder recyclability. Additionally, PFAS-containing barrier coatings and pulp additives, known for their health risks and banned in most EU countries, continue to be used due to a lack of suitable alternatives. This study addresses these challenges by developing innovative high-barrier paper and molded pulp packaging solutions. A water-based organic-inorganic hybrid nano-composite sol-gel coating (approximately 2–3 gsm) was applied as a primer to 70 gsm paper, followed by a secondary solvent-based sol-gel coating of similar grammage, resulting in a total coating weight of 4–5 gsm. The coated paper demonstrated decent barrier properties, including KIT level 9, Cobb1800 < 5 g/m², an oxygen transmission rate (OTR) of 18 ml/m²/day, and a water vapor transmission rate (WVTR) of 26 g/m²/day at 23°C and 50% relative humidity. These coatings are compatible with conventional paper coating techniques and can be cured using standard processes, making them highly suitable for industrial applications. Moreover, the solvent-based sol-gel coating was successfully applied to unsized molded pulp trays, with a coating weight of less than 2 gsm, using an automated spraying system equipped with either airless or high-volume low-pressure (HVLP) spray nozzles. The resulting trays exhibited exceptional grease resistance (KIT 8–9) and water repellency. With a modest total coating weight below 5 gsm and adhesion based on hydrogen bonding to cellulosic fibers, the developed coated paper and surface-treated molded pulp products are more easily recyclable than current fiber-based barrier packaging. These advancements improve material circularity and align with the sustainability goals of the packaging industry.

Dr. Claus Bischoff

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Danish Technological Institute

Senior Consultant

Dr. Claus Bischoff, from Danish Technological Institute, has specialized in development, analysis, and scaling of advanced functional coatings for industrial uses. With a M.Sc. in Chemistry and a Ph.D. in Molecular Epidemiology from the University of Aarhus and over two decades of multidisciplinary research and innovation, Claus has made significant contributions to sol-gel coatings and nanocomposites designed for diverse sectors including offshore oil production, corrosion protection, packaging, and medico-industrial applications. At DTI, he has held leadership roles such as Head of Section, R&D Manager, and Director, guiding both the strategic and practical aspects of coating technologies—from laboratory R&D to pilot production, quality analysis, and industrial upscaling.

Claus's expertise covers a wide array of coating functionalities—wear and corrosion resistance, antifouling, freezing point depression, and ice repellency—combined with thorough knowledge of application techniques such as HVLP spray, dip, and flow coating methods. He is also highly experienced in leading international industrial collaborations and managing large-scale research projects, including several EU Horizon 2020 initiatives. A recognized author/co-author of over 30 scientific publications, Claus is committed to bridging innovative material science with practical industry solutions, supporting clients and partners in bringing advanced coatings from concept to application.

Roll-to-roll spray and gravure coating of bio-based barrier coatings on paper

Spray coating has picked up a lot of interest over the past few years as a coating method for paper and board. One reason for this is the benefit of a contactless method providing a barrier layer with constant thickness. Spray coating also offers wide versatility in the used raw materials and a large degree of freedom to formulate coating recipes. Another reason for the increased interest is the use potential in applying functional coatings onto rigid 3D packaging made from molded pulp.

In order to reduce reliance on fossil raw materials and toxic forever chemicals, the paper and packaging industry works to replace plastics and fluoropolymers in the packaging of food. Bio-based barrier coatings can be used in their place to provide the required barrier properties and thus allow the cellulosic materials to be used for effective packaging of foodstuff.

In this project, three different bio-based barrier coatings were applied onto an uncoated barrier base paper using spray coating, gravure coating and a combination of the two. The coatings used were an aqueous carnauba wax dispersion, a hydrogenated rapeseed wax dispersion as well as dissolved sodium alginate. The goal was to compare the barrier and surface properties of the materials coated using the two coating methods to observe differences caused by the coating method. Also, a multitude of spray coating process parameters such as atomizer air pressure, spreader pressure, nozzle distance and feed pressure were tested to see the impact of them on the coating result and barrier properties.

A combination of the two methods was tried in a two-in-one wet layer coating system to coat reactive coatings, in this case crosslinking of sodium alginate. The same setup was also used to coat multilayer wet coatings to combine the different functionalities of sodium alginate and wax.

The achieved coating results were determined by measuring barrier properties such as water resistance, moisture vapor transmission rate and grease resistance and surface energy. Coating results were also studied by microscopy to find visible differences caused by the coating method and the spray coater settings.

Lehtimäki is currently working as a coating specialist and customer service manager at KCL, a Finnish piloting and laboratory services provider for the forest industry. He handles projects related to coating, both in laboratory and pilot scale. Themes often cover formulation development, improvement of barrier properties and incorporation of new biomaterials into coating formulations. He has many years of experience working in research and development as well as production for paper and board manufacturers. Most of his work has revolved around developing dispersion barrier coated specialty paper and board grades. He has a master's degree in chemical engineering from Åbo Akademi University and is currently pursuing a doctoral degree. In his free time he enjoys cooking and cycling.

KCL
piloting knowledge

Watti Lehtimäki

watti.lehtimaki@kcl.fi

KCL Oy

Coating Specialist & Customer Service Manager

Paving the way towards “paperization” with Cargill™ Barrier Coatings

The Oil and Grease Resistance (OGR) bio-barrier market is on the rise with companies seemingly investing in more sustainable packaging solutions. Innovation in material science and coating technologies are expected to help drive this growth, making starch-based and other biodegradable barriers likely more competitive with traditional materials. Regulatory changes and rising consumer demand for eco-friendly products will continue to shape market dynamics.

Starch-based materials are emerging as viable alternatives for OGR in paper packaging. These materials offer several advantages over traditional synthetic barriers (e.g. fluorochemicals), which may pose environmental and health concerns according to the European Chemical Agency.

This presentation will detail our latest findings in barrier coatings and focus on our new Cargill™ Barrier Coatings product range. These coatings are based on modified starch and demonstrate medium to great resistance to oil and grease. Cargill™ Barrier Coatings are bio-based and biodegradable, as well as non-toxic and safe for food contact applications. This makes them effective and more sustainable packaging solutions compared to traditional synthetic barriers.

Dr. Diego Fort

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Cargill

Senior Scientist

Dr. Diego Fort is a Senior Scientist in the Industrial segment at Cargill. Born in Uruguay, he studied chemistry and pharmacy at the “Universidad de la Republica” in Montevideo. In 2006, he began his Ph.D. at the “Consejo Superior de Investigaciones Científicas (CSIC)” in Seville, Spain, with research stays at FU Berlin (Germany) and The Scripps Research Institute in San Diego (USA).

After earning his doctorate, Dr. Fort pursued postdoctoral research in photochemistry at the Technical University in Munich (Germany) and later worked for Roche in Basel, Switzerland. In 2014, he returned to Germany to work as a Principal Chemist in product development for Ecolab. Since 2018, Dr. Fort has been part of Cargill's Center of Expertise Renewability, focusing on bio-based products for the Paper and Packaging industry, aiming to replace petrol-based ingredients.

Dr. Fort’s work bridges academic research and industrial innovation, with a strong focus on the development of sustainable materials. His expertise includes packaging, biopolymers, and the chemical modification of biomass. He holds several patents and inventions, and has presented his work at numerous international conferences, particularly in the areas of packaging, specialty papers, and sustainability.

CareTips® by Lactips: the natural coating revolutionizing paper packaging

A pioneer in the field of natural protein-based polymers, Lactips develops, produces, and markets a plastic-free material that is 100% bio-based, fully biodegradable in all environments, and water-soluble without leaving any microplastic residues. Thanks to its unique properties, this material provides an ideal and tailored solution to environmental challenges, particularly in the packaging market.

At a time when concerns about PFAS and their risks to both the environment and human health are rising, and when packaging recycling has become essential—requiring ever higher performance and standards—Lactips is eager to rapidly and globally deploy its CareTips® solution in the flexible paper packaging market.

Lactips focuses its expertise on enhancing paper and cardboard through a coating process, replacing fossil-based plastic currently used in paper packaging. This coating provides grease barrier properties and heat sealability, enabling packaging to maintain technical characteristics from traditional food packaging.

The water solubility of our material also facilitates its recyclability within the paper industry, where nearly 100% of the fibers can be recovered. Finally, this solubility goes hand in hand with the material's complete biodegradability, ensuring no release of toxic particles into water, and thus no plastic or microplastic pollution.

Jean-Laurent Pradel, engineer and holder of a PhD in Polymer Materials, has more than 30 years of experience as Head of materials and formulations R&D Laboratories in chemicals groups, SME and Start-up companies.

Thanks to his background, he is an expert in thermoplastic formulations, compounding and reactive extrusion, having boosted his skills in particular in the twin screw extrusion process and industrialisation. His knowledge of the structure/property relationships of materials led him to refine his approach to transformation methods, such as blown extrusion, injection molding, and film converting. Since 2021, he has joined the Lactips adventure to take over the R&D management and strategy, where he puts his know-how at the service of future developments.

Dr. Jean-Laurent Pradel

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Lactips

Directeur R&D

Generation of bio-based coatings using a novel atmospheric pressure plasma source based on a dielectrically impeded discharge

HAWK Faculty of Engineering and Health Göttingen

Generation of bio-based coatings using a novel atmospheric pressure plasma source based on a dielectrically impeded discharge.

Bio-based surface finishing with the aid of atmospheric pressure plasmas offers great potential for future packaging applications. A wide range of coating properties can be achieved thanks to the diverse plasma parameters. The chemical and topographical properties of the material to be coated also play a crucial role in determining the final coating characteristics.

This presentation will provide a concise overview of the possibilities offered by this novel coating approach, particularly in relation to the challenging substrate paper.

Martin Bellmann

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HAWK

Development and application of plasma-based solutions in the plasma technology

Martin Bellmann earned his degree in precision manufacturing technology (Dipl.-Ing. FH) from HAWK Göttingen in 2007, followed by a Master of Engineering (M. Eng.) in precision mechanical engineering from HAWK Göttingen in 2010.

He began his professional career as a research assistant in the plasma research group headed by Prof. Viöl at HAWK Göttingen, where he worked from 2007 to 2013. His research focused on plasma applications for surface activation, functionalization, and coating, and he participated in several projects dealing with innovative modification approaches.

Since 2013, Martin Bellmann has been working as a research assistant at the Fraunhofer Institute for Surface Engineering and Thin Films (IST) – Application Center Göttingen. In this role, he is actively involved in industrial and academic collaborations, focusing on the development and application of advanced plasma technologies.

In March 2017, he also took on the role of project manager in the FH-Impuls partnership “Plasma for Life,” where he coordinates interdisciplinary research projects at the interface between science and industry. Throughout his career, Martin Bellmann has authored and co-authored several scientific publications and has been involved in the development and application of plasma-based solutions in the field of plasma technology.

Development of Multilayer Biobased Biodegradable Barrier Coatings

The growing demand for sustainable packaging calls for alternatives to conventional aluminum–polyethylene laminates widely used in liquid food packaging. While these laminates provide excellent oxygen, moisture, and light barrier properties, they rely heavily on non-biodegradable, petroleum-based materials. This presentation introduces the development of multilayer bio-based and biodegradable barrier coatings designed to fully or partially replace polyethylene layers while achieving comparable or superior barrier performance. The multilayer architecture consists of a pre-coating base layer, an intermediate barrier-functional layer, and a top modification layer. To ensure a total bio-based content of no less than 95%, non-petrochemical additives were primarily employed in the pre-coating formulations, supplemented with small amounts of non-metallic mineral pigments to enhance barrier performance. The intermediate layer exploited the dense network structure of nanocellulose, providing the fundamental basis for high oxygen and water vapor resistance. The top layer, based on a polylactic acid (PLA) emulsion derived from biomass, further reinforced the overall barrier properties. After three-layer application, the coated liquid packaging board achieved an oxygen transmission rate below 15 $cm^3/(m^2 \cdot 24h \cdot 0.1MPa)$, a water vapor transmission rate below 25 $g/m^2 \cdot 24h$, and a bio-based content above 95%. The suitability of nanocellulose-based coatings for curtain coating was also evaluated. Flow field analysis within the coating head was performed, followed by practical curtain coating trials. On the basis of optimized bio-based formulations, additional adjustments with surfactants and auxiliaries were explored to enable one-pass multilayer curtain coating. Overall, this study establishes a scalable pathway to replace non-degradable polyethylene/aluminum laminates in paper-based packaging with renewable and biodegradable alternatives. The findings align with the goals of the circular economy and demonstrate great potential for sustainable applications in beverage and liquid food packaging.

Dr. Jinghuan Chen

Dr. Jinghuan Chen is a Professor-level Senior Engineer specializing in the research and development of nanocellulose, regenerated cellulose, and paper-based functional materials. Her work focuses on the design and fabrication of biobased, biodegradable coatings and composites with enhanced barrier and functional properties, particularly for packaging applications. She has participated in multiple major national research programs and international scientific projects. Dr. Chen has published over 40 peer-reviewed articles in leading international journals, including ACS Applied Materials & Interfaces, Carbohydrate Polymers, and Cellulose. She has co-authored one English monograph and holds five authorized invention patents. Her expertise bridges fundamental nanocellulose science with practical applications in multilayer barrier coatings, providing sustainable alternatives to conventional polymer-based packaging solutions.

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CNPPRI

Senior Engineer

Notes

Day 3

www.ptspaper.de/en/events

Notes

PTS FIBRE based solutions

Day 3, September 24

9:00 a.m.	**Welcome Speech** *Dr. Martin Zahel – PTS*
9:15 a.m.	**DarkWave – the new generation of dryers for water evaporation** *Holger Zissing – Duo-Technik GmbH*
9:45 a.m.	**Drying simulation of barrier papers: A Case Study on PVOH Coatings** *Dr. Thomas von Langenthal – Voith Paper*
10:15 a.m.	**Coffee break**
10:45 a.m.	**Product optimization through adapted processes and quality control** *Andrea Glawe – KROENERT GmbH & Co KG* *Joonas Kääriäinen – Valmet Oyj*
11:15 a.m.	**Innovative Sensors and Control Solutions: precision and efficiency for coating, drying and more** *Dr. Jürgen Thoms – PLEVA GmbH*
11:45 a.m.	**Closing Words** *Dr. Martin Zahel – PTS*

Did you know?

Bamberg is the final resting place of the only Pope that was buried north of the Alps. In the 11th century, Pope Clemens II chose to be laid to rest here, making it a particularly remarkable historical connection.

DarkWave – the new generation of dryers for water evaporation

DUO-TECHNIK
PRODUCTS FOR PRINT

The DarkWave development is driven by the motivation to save energy and to take the sustainability of industrial companies to a new level by using green electricity instead of gas-powered systems. To reach that goals the physical drying of water was investigated in detail.

The solution is an interaction of components available on the market which were put together in a completely new dryer concept. The keys to increase the efficiency are the following:

- Reducing of one power source to create hot air and radiation in one step
- Quartz free radiator, no filter of radiation > 4mµ
- Emission close to the main water absorption peak
- Smart design with no piping for external air management.

DarkWave is already tested together with development partners and the results are promising:

- Energy savings of at least 25% were proven!
- Compared to hot air dryers and infrared thermal dryers even greater than 40%* .

24 years' experience in UV curing and infrared drying. Patent inventor of several application patents of electromagnetic emitters and process engineering. 4 years' experience in process optimization for water based drying applications. Designing and inventor of a new drying system in this phase.

Holger Zissing

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Duo-Technik GmbH

Industrial master in printing technology

Drying simulation of barrier papers: A Case Study on PVOH Coatings

The drying of barrier coatings is a process that requires a well-designed non-contact drying system to achieve optimum results. A key tool for determining appropriate drying strategies and designing the necessary equipment is numerical drying simulation. This presentation will discuss the drying of polyvinyl alcohol (PVOH) coatings and illustrate how a combination of laboratory research, modelling techniques and pilot trials can accurately describe the drying behavior of these coatings.

The presentation will begin with detailed laboratory studies of the drying characteristics of PVOH. These studies will provide important insights into how water is distributed within the polymer film under different conditions, highlighting key differences from traditional coating materials. Following the laboratory studies, the focus will shift to the development of a numerical model that captures the diffusion limited drying process of PVOH. This model is based on Fick's law of diffusion and incorporates temperature and concentration dependent diffusion coefficients to improve its accuracy. The robustness and accuracy of the model is thoroughly validated by experiments carried out on a pilot coater, ensuring its reliability for practical applications.

In the final part of the presentation, the validated model will be used to explore specific design considerations for non-contact drying units. Topics such as the effects of infrared (IR) and air dryers, film thickness variations, evaporation rates and other critical factors will be discussed in detail.

Dr. Thomas von Langenthal

Dr. Thomas von Langenthal serves as Senior R&D Manager for non-contact drying equipment at Voith Paper. He completed his studies in Mechanical Engineering at the Technical University of Darmstadt, followed by a Ph.D. in Chemical Engineering from the Karlsruhe Institute of Technology. Prior to joining Voith in 2021, Dr von Langenthal conducted research in combustion technology, with a particular focus on emissions from jet engines.

In his current position, he leads the R&D team at Voith's competence center for non-contact drying in Mönchengladbach. He is responsible for overseeing the development of new infrared and air-drying technologies, with a strong focus on improving efficiency and reducing carbon emissions. As an integral part of optimizing the design of contactless drying, his research focuses on studying the drying behavior of barrier coatings and developing new models to physically describe the barrier drying process.

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Voith Paper

Senior R&D Manager for non-contact drying equipment

Product optimization through adapted processes and quality control

Coating technologies for paper applications play a crucial role in enhancing the functional properties of paper products, especially in packaging. Water-based coatings have become prominent for producing high-functional packaging with effective barrier properties against moisture, grease, and oxygen, supporting sustainable and eco-friendly production. Different coating methods—such as gravure, smooth roller and curtain coating require precise adjustment of coat weight to ensure optimal performance. Factors like coating viscosity, application speed, and equipment setup influence the coat weight, which must be carefully controlled for consistent quality. Additionally, is the drying process a critical step affecting product quality and residual moisture content. Parameters such as temperature profiles and air speed must be optimized to ensure proper drying without damaging the coating or substrate, maintaining the integrity and barrier properties of the final product.

Valmet provides advanced inline quality control solutions tailored for barrier-coated paper products. These include thickness measurement technologies, moisture sensors, and vision-based defect detection systems, enabling real-time monitoring and ensuring high product quality. A closed-loop control system integrating cross-direction (CD) and machine-direction (MD) feedback allows precise regulation of coating thickness and moisture levels. This automation ensures uniformity across the paper web and enhances process stability. →

Andrea Glawe

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KROENERT GmbH & Co KG

Regional Sales Director for the Asia-Pacific market

Andrea Glawe graduated from Chemnitz University of Technology in 1992 with a master's degree in “Technical Textiles and Process Engineering.” She began her professional career as a research assistant and project manager at the Textile Research Institute Thüringen-Vogtland e.V. in Greiz, where she worked until 2001. From 2001 to 2011, she was deputy sales director with responsibility for technical sales and project management at Coatema Coating Machinery GmbH in Dormagen. Between 2011 and 2012, she took on responsibility as head of the research and development department at DRYTEC GmbH & Co KG in Norderstedt.

From February 2012 to September 2015, Andrea Glawe was head of the research and development department for all R&D activities of the KROENERT Group in Hamburg and was also responsible for business development. Since October 2015, she has been Regional Sales Director for the Asia-Pacific market at KROENERT.

Product optimization through adapted processes and quality control

→ High automation levels in paper coating machines, incorporating sensors, actuators, and sophisticated control software, facilitate improved consistency, reduced waste, and higher production efficiency. The integration of these technologies marks a significant advancement in paper coating processes. In summary, combining advanced coating techniques, optimized drying methods, inline quality control, and automated closed-loop systems leads to superior paper coatings with enhanced functionality and consistent quality, meeting the demanding requirements of modern packaging applications.

During the presentation, KROENERT and Valmet will introduce modern coating machines with closed-loop quality control and explain their applications.

Joonas Kääriäinen is a seasoned business leader with extensive experience in the paper and board converting industry, specializing in specialty papers, self-adhesive laminating, packaging solutions, and extrusion coating. With a strong background in product and portfolio management, technical services, and operational leadership, Joonas has played a key role in driving innovation, customer value, and profitable growth across global markets.

Throughout his career, he has held leadership roles in business management, product development, and technical customer service, with a deep focus on coating technologies and their application in high-performance paper and board products. His expertise spans the full value chain—from raw material handling and production to market-driven product development and commercialization.

Joonas is passionate about bridging market needs with technical capabilities, and he actively contributes to cross-functional collaboration, strategic planning, and industry knowledge sharing. His insights into coating and laminating processes, combined with a strong commercial mindset, make him a valuable voice in advancing sustainable and competitive solutions in the specialty paper sector.

Joonas Kääriäinen

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Valmet Oyj

Business Manager

Innovative Sensors and Control Solutions: precision and efficiency for coating, drying and more

PLEVA
Sensors and Controls

The precise monitoring and control of process parameters is crucial for efficiency and quality in industrial coating and drying. In this presentation, PLEVA GmbH, a leading manufacturer of innovative sensors and measuring systems, will present state-of-the-art solutions for real-time monitoring and control of coating and drying processes.

The focus is on non-contact sensors for determining material moisture and monitoring water-based coatings, air and fabric temperatures, exhaust air humidity and contact-based residual moisture measurement. These technologies enable more precise control and optimization of production processes, which leads to a significant reduction in energy consumption and an improvement in product quality.

By using sensor technology and controlling relevant process parameters, production companies can not only increase their efficiency, but also achieve their sustainability goals by saving resources and minimizing emissions.

The presentation will use concrete application examples from industry to show how PLEVA technologies contribute to process optimization.

Benefits for the participants: Insight into state-of-the-art sensor and control solutions for coating and drying; opportunities for process optimization through precise real-time measurements; reduction of energy consumption and emissions by assessing relevant process parameters; practical use cases from various industries.

This presentation is aimed at coating and drying industry professionals who want to make their processes more efficient and sustainable.

PLEVA shows how innovative sensor technology is helping to transform industrial production.

Dr. Jürgen Thoms

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PLEVA GmbH

R&D Director

Dr. Jürgen Thoms was born in Albstadt-Ebingen in 1972. In 1992, he graduated from the natural sciences high school in Balingen.

From 1992 to 1998, he studied physics at the University of Fridericiana in Karlsruhe and wrote his thesis at the Karlsruhe Research Center.

From 1998 to 2003, Dr. Thoms completed his doctorate at the University of Stuttgart. He has been working for PLEVA GmbH since 2003, initially in the Development & Technology and now in the Development Management.

Since 2012, he has been a lecturer in mathematics at the Baden-Württemberg Cooperative State University (DHBW) and, since 2019, also a lecturer in sensor technology.

Sponsors

Did you know?

Bamberg is often referred to as the “Venice of Germany” due to its extensive network of canals and rivers. The resemblance to Venice comes from the intricate network of waterways that not only enhances the city’s beauty but also highlights its historical importance as a medieval trading center.

Sponsors of the event

Cargill NV

Since 1856, Cargill has been a leader in starch production. Today we have 9 production plants across Europe and a full portfolio of products for the paper and board industry. We offer native and modified, corn and wheat-based solutions for wet-end (C☆Bond™, C☆iBond™), spray and surface sizing (C☆Flex™, C☆Size™, C☆iSize™), coating (C☆Film™, C☆iFilm™, C☆iCoat™) and corrugated (C☆Gum™, C☆iGum™).

CeraSleeve®

CeraSleeve® develops and supplies functional additives that enable the recycling of wet-strength and water-repellent papers in standard paper recycling processes. These papers, commonly used across hygiene, food, and industrial applications, are currently considered non-recyclable due to synthetic additives. CeraSleeve's patented, silica-based technology replaces these synthetic resins without compromising performance, making circularity possible for a previously problematic paper segment. Our solution addresses increasing regulatory pressure on single-use and non-recyclable materials, while supporting paper manufacturers in meeting sustainability goals. Developed and industrially tested in collaboration with leading European producers, CeraSleeve® offers a unique combination of performance, environmental compatibility, and scalability. We are currently preparing for market entry and are open to partnerships with manufacturers, converters, and brand owners.

FRANK-PTI – Precision in Every Test

FRANK-PTI is a leading manufacturer of high-precision testing instruments for paper, pulp, and packaging materials. With over a century of engineering expertise, we specialize in systems for both wet and dry testing, designed to meet international standards (e.g. ISO, TAPPI, DIN). Our devices ensure traceable, reproducible, and comparable results—backed by robust mechanics, intuitive software interfaces, and modular system architectures. All instruments are developed and manufactured in Germany. We support our customers worldwide through expert consultation, calibration, retrofitting, and maintenance services. Whether for quality control or R&D, FRANK-PTI provides reliable solutions for high-demand testing environments.

Sponsors of the event

GAW - Great Applications Worldwide

COATING & PREPARATION | DIGITALIZATION & OPTIMIZATION | RECYCLING & WATER TREATMENT

GAW technologies, a member of the GAW Group, is a worldwide operating family owned company for industrial plant engineering and construction, with a special focus on the pulp & paper industry.
With 75 years of experience, we are the experts for industrial
- preparation and production of chemicals and coating compounds
- automation and digitalization of processes
- water and wastewater treatment solutions
- plastics recycling (CreaSolv® process for multilayer packaging films)

Tailor made solutions and savings of precious resources to cut costs in production processes is our daily business.
GAW is your innovative, efficient and sustainable Life Cycle Partner with 5 subsidiaries and worldwide representations.

Kemira Chemicals

Kemira is a global leader in sustainable chemical solutions for water-intensive industries. We deliver tailored products and services to improve the product quality, processes, and resource efficiency of our diverse range of customers. Our focus is on water treatment, as well as on fiber and renewable solutions – enabling sustainability transformation for our customers.

Koehler Innovation & Technology

The Koehler Group was founded in 1807 and has two mainstays with its 2,500 employees worldwide: The production of high-quality specialty papers and the generation of renewable energy. With Koehler Innovation & Technology, the Group researches materials as well as products and processes for sustainable and recyclable paper-based solutions for the future.

More information is available here: www.koehler.com

Sponsors of the event

Omya

Omya is a leading global producer of essential minerals and a worldwide distributor of specialty materials. Founded in Switzerland in 1884 and privately owned, we employ 9,000 people across 160 plants in 50 countries. Omya provides added-value products and services from responsibly sourced materials to meet the needs of current and future generations.

Customers rely on us for a comprehensive range of sustainable, high-quality products, backed up by exceptional customer service, regulatory advice and quality control.

Our focus on 'Thinking of Tomorrow' leads to the development of innovative, reliable solutions that help customers solve their challenges.

PTSV

Papiertechnische Service- und Vertriebs GmbH (PTSV GmbH) was founded in 2019 as a subsidiary of the Papiertechnische Stiftung (now Forschungsstiftung der Papierindustrie) and became one of the leading suppliers of measuring devices developed and produced by PTS for the paper industry worldwide.

The product portfolio of PTSV GmbH includes the innovative image analysis system DOMAS multispec, the manual waste paper bale inspection PBS (PaperBaleSensor) as well as the automatic quality control stations for baled paper for recycling developed according to individual requirements.

The services around the devices such as training, calibration and installation, enable PTSV GmbH to offer its customers innovative solutions that contribute to the optimization of production processes.

Siegwerk

Siegwerk is one of the leading global manufacturers of printing inks and coatings for packaging applications and labels. Based on 200 years of expertise, we provide customized solutions for all types of packaging needs - from functional and eye-catching to safe and sustainable. As a seventh-generation family business, we have long been aware of our responsibility for future generations. Under the motto "rethINK packaging", we are therefore actively driving the transformation to a circular economy by developing eco-friendly solutions that enable packaging circularity. Here, 30+ country organizations and ~5,000 employees worldwide ensure consistent high-quality products and customized support around the world. Learn more at www.siegwerk.com

Sponsors of the event

TSE Troller

With over 60 years of expertise in developing and producing premetered coating dies, TSE TROLLER is a global leader in applied coating technology. The company delivers advanced solutions that shape the future of coating processes. Using highly precise equipment for manufacturing and measuring die plates, TSE ensures maximum quality and performance. Beyond precision and surface finish, cavity design is key to outstanding die performance. TSE's extensive knowledge in modelling various liquids enables innovative solutions. Its dual cavity distribution system achieves a uniform cross profile of coated films across a wide range of products—without adjustments—ensuring consistent, high-quality results.

wolf heilmann

wolf heilmann GmbH is a representative office for suppliers to the paper industry in Central Europe with focus on energy savings, decarbonisation, reject cost reduction as well as runnability.

Besides, we are consulting paper mills in Europe and Asia.

PTS Events & Team

Did you know?

Bamberg was one of the filming locations for the action-adventure film “The Three Musketeers” (2011) based on Alexandre Dumas’s novel. The production utilized the city’s historical architecture to recreate 17th-century France, showcasing the city’s versatility as a filming location.

Save the Date!

OKT

Method training on Recyclability Laboratory Test Method – Part I: Recycling Mill with conventional Process
Seminar · 21. – 22.10.2025 · PTS Heidenau

Recyclability of paper & board based packaging
Seminar · 28. –29.10.2025 · Online · English

NOV

Prüfung von Papier, Karton und Wellpappe
Seminar · 03. – 06.11.2025 · PTS Heidenau

Auswahl und Bewertung von Altpapier
Seminar · 25. – 26.11.2025 · PTS Heidenau

FEB

PTS Forschungsforen · 03. – 05.02.2026 · PTS Heidenau

MÄR

Introduction to compliance work and quality assurance for paper and board in contact with food (FCM) · Seminar · 10.03.2026 · Online · English

PTS Conference "Paper & Board for Food Contact“
24. – 25.03.2026 · Online · English

MAI

PTS Wellpappe Symposium · 05. – 06.05.2026 · Dresden

JUN

PTS Netzwerktag · 09.06.2026 · PTS Heidenau

Die PPWR für Papier- und Kartonprodukte sicher anwenden
Seminar · 30.06.2026 · Online

SEP

PTS Fachtagung "Kennzeichnung von Verpackungen - Zwischen Innovation und Regulatorik“ · 22.09.2026 · PTS Heidenau

NOV

PTS & ZELLCHEMING Faserstoffsymposium
25. – 26.11..2026 · Dresden

Registration & Information:

www.ptspaper.de/en/events

PTS: Fibre-based research & development

Fibres & Composites

- Fibre analysis and raw materials selection
- Bio-based paper additives
- High-performance materials from paper technology
- Chemical modification of fibres

Materials Testing & Analytics

- Laboratory accredited according to DIN EN ISO/IEC 17025:2005
- Examination of physical and chemical properties
- Coding of packaging, printability & processing
- Food compliance verification
- Simulation and modeling methods
- Technical service for documents, CEPI ring tests, equipment testing

Functional Surfaces

- Surface analysis
- Development, optimization and application of functional coatings (development of barriers)
- Functional use of bio-based materials
- Characterization of coating colors

Smart & Circular Solutions

- Recyclability of fibre-based products
- Recovered Paper Management
- Process optimization in stock preparation
- Quality management of pulp and end product
- Evaluation of the recyclability of fibre-based materials
- Innovative measuring devices: PaperBaleSensor (PBS), DOMAS, RCP Monitor

Pilot Plants Paper / Wetlaid / Coating

- Pilot paper machine with stock preparation
- Wetlaid technology with hydroentanglement
- Pilot coater and curtain coater
- Reactive extrusion of fibrous materials

Training Programme

- Symposia for subject-specific knowledge expansion & intensive networking
- Seminars and workshops on recent topics in the areas of fibres and composites, packaging, printing and coating as well as analysis, measurement and testing technology
- Specialized in-house training on all aspects in paper production and processing
- Online seminars, workshops and PTS Insights on current topics

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Notes

Did you know?

The Bamberg Old Town Hall (Altes Rathaus) is built on an island in the middle of the Regnitz River. According to the legend, the Bishop of Bamberg refused to donate the necessary land for the town hall, so the townspeople decided to build an artificial island in the river, on which they built the town hall. Construction began in 1386, and the Old Town Hall was completed in 1455.

Testing services

Industrial solutions

Research

Events

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