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CTP Solution for Banknote Printing

Illustration: Paul Klee - The Mask With The Flag / Bavarian State Painting Collections / Design: Stefan Benzschawel

7-8/2025

Editorial

Those who could be better occupied are idle.

(Sokrates (470 - 399 BC), Greek philosopher)

Dear readers!

I recently gave my trusted AI a prompt to generate cover artwork. We worked on the problem for several days, and the more the AI ??understood my approach and intention (I use this term deliberately), the more precise its suggestions, additions, and wording became. However, while the first draft was *almost* entirely satisfactory, we subsequently ran into problems—either due to various filters that seem to exist only in the US, or because of the (anatomical) accuracy of the design.

At some point, I became disgruntled, and the AI ??reacted—within its limitations—somewhat sheepishly. Ultimately, because of my explicitly praised, precise expression and approach, I was promoted to an elevated prompt, which offered entirely different communication possibilities. A lengthy dialogue ensued (again, I use this expression quite deliberately), during which the AI ??explained in detail how the algorithms it used functioned, precisely identified every error, and provided examples of how a more or less concise use of language and word choice would affect future generations.

Is something like this helpful? Yes, absolutely – because it helped both of us improve our interactions. The algorithm is constantly learning – that's its primary function. But users are also urgently encouraged to learn how to interact with AI: how it behaves, where its limitations lie, how to clearly and comprehensively explain their own needs, and why it delivers incorrect results. Anyone who continues to see AI merely as a fancy search engine will never get beyond the basic input field. This engine has long since figured out who's on the other end.

It's worth mentioning that the AI ??and I are still in the failure phase. The last long and the last shortened drafts of the text yielded presentations that reflected our collaborative work rather than just my own intentions – but I could have lived with that. Unfortunately, despite all assurances from my opponent, the figure in the picture suddenly only had four toes.

We're not completely obsolete yet. But unsuitable as a model.

Have a great read & stay safe!

Your

AUTHOR: SBR

P3 - Marketplace

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Komposition No. 350

Hommage à Grohmann

Wassily Kandinsky: Komposition No. 350 (Hommage à Grohmann). 1926, Oil on Canvas. 35,3 x 24,1 cm. Staatsgalerie Stuttgart, bequest1970 Annemarie Grohmann. Inventory no. 3091.

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December 4, 1926, the day Kandinsky presented this painting to his biographer Will Grohmann, coincided with his 60th birthday, Grohmann's 39th birthday, and the opening of the Dessau Bauhaus. It is one of the typical compositions of the Bauhaus years, in which triangles, circles, and squares are accompanied by small-scale elements and intersected by crescent, rod, and arrow forms. The motifs gathered around the central arrow axis create a high-contrast structure of color and form that appears to float in an ascending motion against the cloudy background.

EDITOR: SBR

CASE STUDY

Sleek Signs turned to Drytac ReTac to reimagine a converted church in Ottawa.

Sleek Signs Turns to Drytac ReTac to Reimagine Converted Church in Ottawa

Canadian large-format printing company Sleek Signs recently used Drytac's ReTac Clear PET and ReTac Textures Canvas films to overhaul the look of a sales centre inside an historic church, working with the materials to deliver stunning wall murals, interior signage and window graphics.

Active across Western Canada and Ontario, Sleek Signs is focused on large-scale interior branding assignments, partnering with clients on creative projects such as wall murals, window graphics, sales centres, show homes and fully branded environments. It carries out all print production and finishing in-house at its facility in Calgary and uses a combination of its own staff and trusted contract teams to install each application.

One of its most recent projects was at the sales centre for 'The Evergreen on Blackburn', a landmark development by Windmill Developments in Sandy Hill, Ottawa. Windmill approached Brandsmith, a Calgary-based creative agency that created the overall brand and sales centre experience, for help on the project, which included signage and various other interior pieces.

Brandsmith, a client of Sleek Signs, then contacted the large-format print specialist to partner on the project. The focus was to create signage that was purposeful yet reversible, respecting the building and its story. Within the brief were full-size wall murals and interior signage to anchor the space, as well as custom window

graphics in the stained-glass spirit of the heritage site, allowing natural light to pass through.

Sleek Signs turned to ND Graphics, the exclusive Canadian distributor for Drytac, to identify the best products for the job. For the feature walls, they selected ReTac Textures in a canvas finish. This embossed, canvas-patterned polymeric film features Drytac's ReTac permanently peelable adhesive, allowing the graphics to be easily applied, removed, and repositioned—perfectly meeting the project's needs.

For the window graphics, the company selected Drytac ReTac Clear PET—a printable, clear, PVC-free film ideal for window, wall, and countertop applications. With its ReTac adhesive backing, the film can be applied easily, removed cleanly, and repositioned without damage or residue. Sleek Signs reverse-printed the material, allowing light to pass through the glass to showcase vibrant colour and design while protecting the original heritage glass beneath. All graphics were installed by Sleek Signs in May 2025.

"The products were chosen because they look permanent when installed but behave like temporary graphics when removed, a critical requirement for this heritage sales centre project," said Jason Trudeau, General Manager for Sleek Signs - Calgary. "The two materials allowed us to fully brand a 100-year-old church interior and still remove everything cleanly when the sales centre closes in the future."

Sleek Signs printed all work in-house on its HP Latex 365 and carried out installation on-site at the sales centre. However, given the nature and age of the church building, the project did not come without several other challenges for Sleek Signs.

"With older architecture nothing is perfectly square, especially the window frames, so each pane was templated individually to ensure proper alignment," Jason said. "For the mural, our team focused on panel layout and print alignment, so the wall felt integrated rather than applied. We also proofed colour on-site to make certain the window graphics looked correct under both daylight and ambient lighting."

The project proved to be a huge success; all graphics were installed cleanly and stayed flat with no lifting, while removal tests also confirmed no surface impact. Importantly, both Windmill and the Brandsmith agency felt that the branded space looked intentional rather than temporary.

"While the wall mural became the focal point of the sales centre, the window graphics added atmosphere without overwhelming the architecture of the church," Jason said. "Crucially, knowing all graphics could be removed without damage gave both the developer and heritage stakeholders peace of mind."

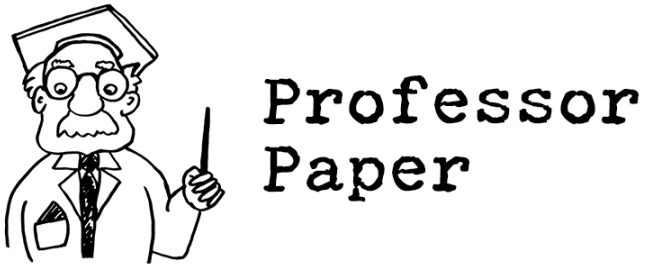
The Canadian large-format print specialist used Drytac's ReTac Clear and ReTac Textures to produce impressive signage, wall murals and window graphics for use inside a converted church building.

The project proved to be a huge success; all graphics were installed cleanly and stayed flat with no lifting, while removal tests also confirmed no surface impact.

EDITOR: SBR

© IMAGES: DRYTAC

How Intelligent Production Systems Improve Operational Control and Transparency



Operational management in paper mills is under increasing pressure: Growing demands for transparency and responsiveness are coupled with scarce human resources and complex production environments. In response, systems such as Voith's MillOne form the digital heart of paper mills, creating a networked environment for stable, optimally coordinated production processes.

A key focus is on supporting operational control, i.e., the ability to quickly monitor production processes in real time and identify deviations at an early stage so that targeted action can be taken. MillOne achieves this through a central production center, production cockpit and alarm management system that provide operators with a quick overview of current production, for example, at the start of a shift.

Production Center: A quick orientation

"The Production Center is the central point of contact for operating personnel at the start of their shift," explains Ulf Grohmann, Director of Product Management Autonomous Paper Mill at Voith Paper. A clearly structured dashboard provides all relevant information on current production and tasks – for example, the average machine speed or quality and efficiency values such as the fresh fiber content or steam consumption within a selectable period.

"By visually marking machine sections according to the action required, operators immediately get an overall impression of the current production," says Grohmann. "This makes it a practical hand-off tool that greatly simplifies communication about shift progress and the current status of production."

Along with initial insights into production data, the Production Center also provides information on operational processes. This includes both the production process with planned and unplanned downtimes and personnel planning with an integrated task overview that shows all activities at a glance. Reports and shift handoffs can also be accessed directly in the system. In addition, operators can quickly and easily view detailed information on each paper roll produced using a mouseover function.

Production Cockpit: Deeper insights for more targeted actions

To gain more detailed insights into individual machine components and processes, staff can access the Production Cockpit. "Here, too, it was important to us to first provide a compact overview of the most important

values, which the operator can define themselves," explains Zsuzsanna Ozvary, Project Manager UX/UI Co-Development at Voith Paper. "A traffic light color system makes it immediately clear whether or not the respective key figures are within the desired range." The limits can be set as classical static limits or be adaptive based on grades or more advanced algorithms (or rule/calculation-based). If necessary, users can dive deeper into the data.

"MillOne's Production Cockpit is much more than an attractively designed user interface," adds Grohmann. "It combines visual clarity with powerful analysis functions that go beyond monitoring alone."

For example, if the paper quality index falls below a defined threshold, the operator get a clear data driven recommendation from MillOne on the necessary changes. This enables even operators without in-depth analytical knowledge to interpret process values and identify trends. This action-oriented user guidance takes into account the increasing shortage of skilled workers and the associated need to control complex processes with less specialized personnel.

Structured alarm messages for faster responses

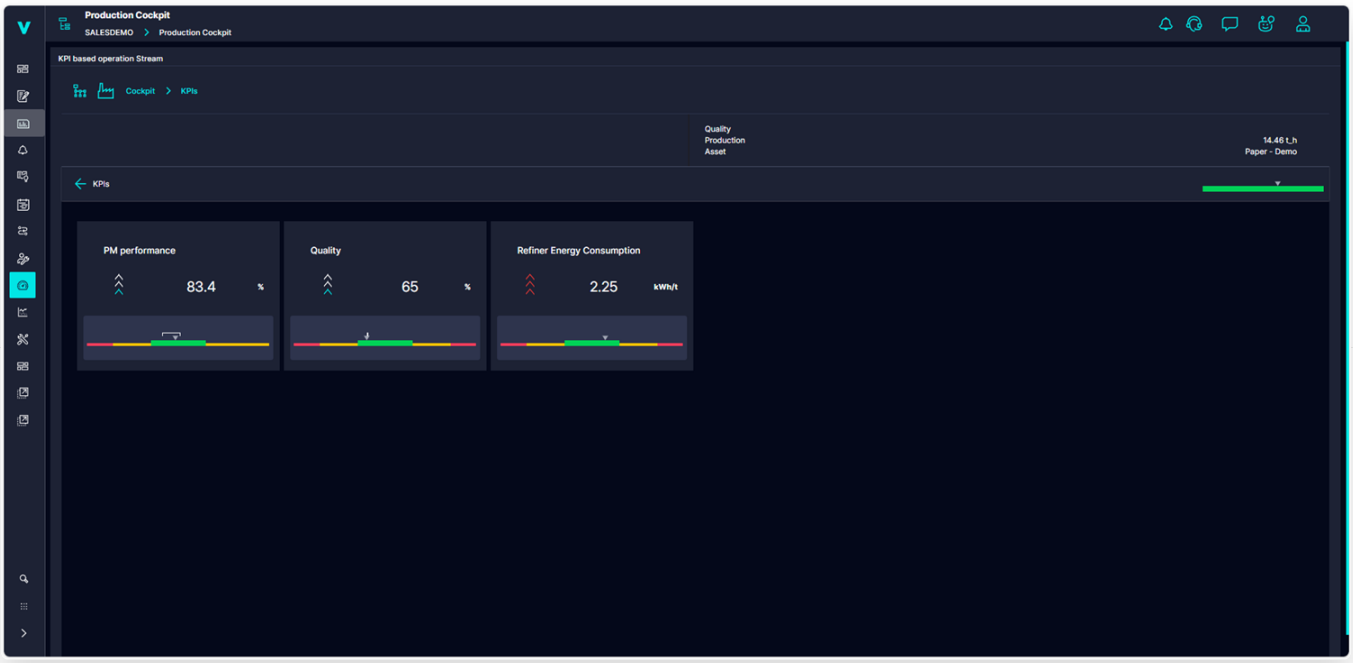
Another lever for clear operational control is focused alarm management. Lars Mallasch, Group Technical & Sustainability Director at Mondi, reports up to 3,000 alarms on a single machine in just one week. "To avoid flooding the operating personnel with too many messages, alarms are prioritized and clearly displayed in the MillOne interface," says Grohmann. "This creates transparency in the event of a fault and enables fast, targeted responses."

Alarms can be configured individually so that not only individual measured values but also complex process sequences can be monitored. This freedom enables the alarm structure to be adapted precisely to the conditions of the respective plants and to react quickly to changing requirements.

Conclusion

With MillOne, Voith demonstrates how digital production systems can bring more clarity to complex processes and support control in everyday production. The combination of central data access, intuitive user guidance, and integrated analysis and alarm functions creates a system that not only provides information but also actively supports decision-making. Especially in times of limited human resources and increasing demands on response times, MillOne proves to be a practical solution for controlling complex processes efficiently and reliably – and thus laying the foundation for future-proof paper production.

The Production Center is the central point of contact for operating personnel at the start of their shift.



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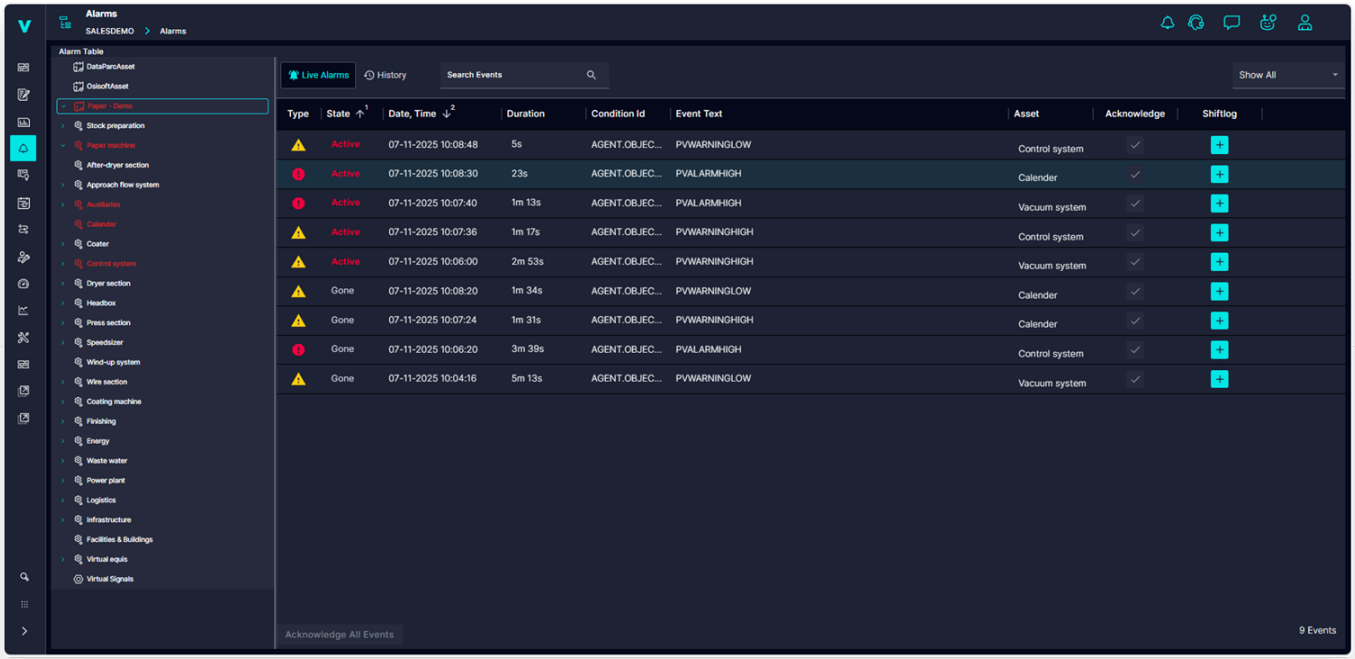


To avoid flooding the operating personnel with too many messages, alarms are prioritized and clearly displayed in the MillOne interface.

Editor: sbr

© Images: Voith

CTP Solution in High-Security Printing

IMBISA Relies on Kodak for Banknote Printing

Production at IMBISA differs fundamentally from the processes in a typical commercial printing company.

Banknote printing is a highly specialized business where quality, counterfeit protection, and the reliability and security of the production process are paramount. In Spain, this task falls to Imprenta de Billetes S.A. (IMBISA), one of 11 high-security printing works in Europe that produces euro banknotes. IMBISA was founded in November 2015 as a subsidiary of Banco de España, which holds 80% of the company's shares; the remaining 20% ??are owned by Fábrica Nacional de Moneda y Timbre (FNMT-RCM).

Since the end of 2022, IMBISA has been located in a building complex in the Vicálvaro district of Madrid, on a plot of land covering almost 66,000 square meters. It is the first banknote printing plant to be built from scratch in Europe in the last 60 years. The facility boasts high capacity in all production processes, and the actual annual euro production volumes are allocated by the European Central Bank according to the cash requirements of individual national banks.

Efficient Banknote Production

The Head of Quality, Laboratory, and Prepress explains that the production process aims to advance process automation, robotization, and sustainability through the implementation of advanced technologies. Accordingly, the plant is designed for ergonomic working methods, a smooth flow of materials, and environmental sustainability, for which IMBISA has made substantial investments.

Production at IMBISA differs fundamentally from the processes in a typical commercial printing plant. Various printing processes are used in the production of euro banknotes, which are printed on cotton paper:

- Offset printing, used for the entire background of the banknotes
- Screen printing for printing the denomination on the banknote
- Intaglio printing, which gives the banknotes a special relief
- Finally, the individual serial number is printed on each banknote, and the lower denomination notes are varnished.

This diversity of printing processes allows the banknotes to be equipped with a wide range of security features, but it also entails diverse requirements in terms of prepress and printing plate production.

In prepress, IMBISA, as the Head of Quality, Laboratory, and Prepress puts it, has implemented a disruptive approach that differs from the usual procedures at banknote printing companies and is geared towards streamlined processes and maximizing efficiency.

Kodak's CTP Technology Shows Its Strengths

While other banknote printers traditionally rely on internal drum systems for offset plate imaging, IMBISA opted for an external drum system. The company installed a KODAK TRENDSETTER Q400 UHR platesetter with autoloader and a CO_2 laser direct engraving system for producing printing plates for other processes. The offset printing plates are processed on an automated finishing line, including a curing oven.

Key factors in choosing Kodak's CTP solution were the renowned stability, exceptional precision and quality of KODAK SQUARESPOT imaging technology, and the ultra-high resolution of the TRENDSETTER Q400 UHR platesetter. It offers more than five times the resolution of a typical commercial CTP system. This resolution is essential for printing anti-counterfeiting features, such as extremely fine lines and microtext, with razor-sharp clarity on banknotes.

The TRENDSETTER Q400 UHR platesetter, supplied through Kodak's security printing partner Innova Flexo Products, has proven itself at IMBISA as a high-quality and extremely stable CTP solution.

Successful Paradigm Shift in Prepress

“The introduction of this state-of-the-art technology reflects a fundamental paradigm shift in prepress. While prepress departments at other banknote printers still involve many manual steps and sometimes even use film, our processes are largely automated, requiring significantly less personnel. Our TRENDSETTER CTP system with autoloader and the subsequent plate processing line play a crucial role in optimizing our pre-press processes,” explains the department head.

IMBISA uses KODAK ELECTRA XD thermal plates for offset printing. This plate type offers the high resolution required for banknote printing, high print runs, and the option of further increasing durability through heat treatment. This type of Kodak plate is widely used among banknote printers, but the special inks used in the printing process limit the plates' lifespan. “The inks contain various types of pigments, some of which are very aggressive. Therefore, we only achieve about 500,000 impressions with the fired plates,” explains the department head.

Furthermore, plates used once are not archived for later reuse. According to the security regulations of the European Central Bank, they must be completely destroyed at the printing plant.

The head of the prepress department emphasizes the collaboration between IMBISA, Kodak, and Innova Flexo Products, explaining: "Kodak was an invaluable advisor and reliable partner in building our new pre-press department from the ground up. Furthermore, Innova's exceptional service enabled us to implement an innovative workflow in banknote printing.

Overall, IMBISA is now ideally equipped for future challenges in the demanding world of banknote production.

In the prepress stage, IMBISA has implemented a disruptive approach that differs from the usual procedures used by banknote printers.

Editor: SBR

© Images: Kodak

Gallus "Prototype"

For Entry-Level Users and Budget-Conscious Retrofitters in Digital Printing

The entry-level model: Gallus Alpha in "prototype design".

Digital label printing has entered the mainstream. According to market researchers such as Smithers, one-third of the market's value is already produced digitally or in hybrid form. At the same time, the barriers to entry for printers are decreasing — evident in the Gallus Alpha entry-level model, which the Swiss press manufacturer presented in a "prototype design" at Labelexpo Europe.

Gallus's new development attracted attention at the industry event not only for its technology but also for its striking product design. In contrast to the strictly shielded prototype models seen in the automotive industry, visitors to Barcelona were able to experience the configuration and technology of the digital press firsthand. The system is particularly appealing to label printers looking to expand their equipment with a compact roll-to-roll digital press — as well as to companies planning their first step into digital printing. The Gallus Alpha makes this entry low-risk and economical, without the need to immediately invest in a large high-performance system whose initial utilization is often difficult to predict.

High performance, minimal space requirements

The Gallus Alpha is designed for production environments with limited space. Thanks to its compact, robust monoblock design, the machine is easy to install and quickly ready for use. To start production, it only needs to be filled with ink and the substrate qualification carried out. Looking at the machine's design reveals that the engineers have focused on core functions and the performance of the digital printing system.

Beginner-friendly system architecture

The system architecture minimizes operator training time. The roll-to-roll design enables easy operation and seamless integration into existing production environments. This makes the digital press an efficient solution for both beginners and experienced digital printing users in the label market.

Printing technology of the highest level

Cutting-edge printing technology is utilized in the compact design of the Gallus Alpha: It uses Epson D3000-U1R printheads, making Gallus one of the first manufacturers to adopt this technology. With a native resolution of 1200 × 1200 dpi, they precisely place the ink droplets and ensure a consistently reproducible print image. The result is uniform area coverage and exact edge definition across the entire print area. Its addressable resolution of 2400 × 2400 dpi is achieved by controlling the droplet generation based on the jetting frequency, droplet size, and print speed. Operating at a printing speed of 65 m/min, the press combines high productivity with excellent print quality. The printheads eject a droplet size of 3.5 pl, resulting in dot diameters of approximately 60 µm on the substrate. This allows for the printing of razor-sharp microtext, up to pinpoint-accurate, high-resolution graphics—ideal for the demanding label market.

Effortless operation, fast changeovers

The Gallus?Alpha is engineered for a web width of 345?mm (13.58") and a maximum print width of 340?mm (13.39"). It is available in either a four-colour or six-colour configuration, both with optional white. At full speed, the system delivers over 85% opacity for white (L*a*b*-measurement). It uses UV inkjet inks from HEIDELBERG's Saphira UA01 series, which are cured using modern, air-cooled UV LED lamps.

A non-contact cleaning unit keeps the printheads and nozzle plates clean without touching delicate components, simplifying operation, reducing maintenance time, and minimising the risk of damage. The outcome is higher process reliability, consistently excellent print quality, and an extended printhead lifespan.

Pinning for perfect prints

The Gallus?Alpha enables precise control of droplet size for each individual colour — cyan, magenta, yellow, black, or special colours — through advanced single-colour pinning. Depending on the substrate, the variable output of the air-cooled UV-LED lamps instantly fixes each droplet upon contact with the surface, before the next colour is applied. This ensures immediate adhesion of the drops, perfect droplet shape and reliable prevention of colour mixing or bleeding. Complete curing via UV-LED radiation and cross-linking occurs only after all colours have been applied, resulting in consistently sharp, reproducible print results. The outcome is print quality at the level of modern high-performance presses, every time.

Learn, apply, print with confidence

For a smooth start in label printing, the Gallus Print Academy offers a modular training program covering all areas of application. Beginners receive targeted support when transitioning from conventional printing to hybrid or inkjet technologies, while experienced users can deepen their expertise on existing Gallus systems. All training takes place on-site, directly on the production equipment, for a truly hands-on experience.

In the field of digital printing, the training modules are designed to convey the specific ways of thinking and working required by this technology. Key topics include digital workflows, colour management, RIP techno-

logies and the development and implementation of applications. The training is consistently tailored to practical needs, the participants' level of knowledge, and their individual requirements. Hands-on work on the machine is at the core, enabling users to confidently master the underlying functions and processes.

The modular approach of the Gallus Print Academy promotes lasting learning success. After foundational and application-specific training, participants immediately apply their knowledge under production conditions to consolidate their skills.

Additionally, Gallus offers customised production support. Its duration is determined according to need, typically recommended for around five days, covering workflow optimisation, troubleshooting, in-depth training for specialised jobs like variable data printing, and using HMI parameters to boost efficiency and process reliability. This practical, hands-on expertise empowers users—especially beginners—to quickly unlock the full potential of digital label printing.

Optional equipment variants for effortless operation

The Gallus?Alpha offers a range of optional features designed to simplify operation for both beginners and experienced operators. A standout is the Vision System, which automatically visualises the print image on the Human Machine Interface (HMI). It provides a continuously updated live camera view of the running print, enabling the operator to immediately detect register deviations. In register mode, it is instantly clear whether all colours are perfectly aligned. This web-video functionality ensures precise monitoring and control of the printing process, especially at higher speeds where manual inspection is no longer practical.

The Web Video System can be integrated into the Vision System or used as a standalone solution. Additionally, the Vision System offers advanced functions such as missing nozzle detection and monitoring for density unevenness in solid areas. Algorithm-driven corrections prevent white lines and unwanted rainbow effects that can cause colour drift in solids. The system automatically checks nozzle performance multiple times per day; alternatively, this check can be performed manually by the operator, which requires additional time.

Variable data

Industrial Variable Data Printing (IVDP) refers to printing QR codes, EAN codes, or variable text within a specific area of a label, covering approximately 10–15% of the total label area. This functionality is included in the standard configuration of the Gallus?Alpha, while full Variable Data Printing (VDP)—where each label or larger portions of the print motif are printed fully variably—is offered as an optional feature. Full VDP requires sufficient computing power to generate the image data as quickly as the printing process demands.

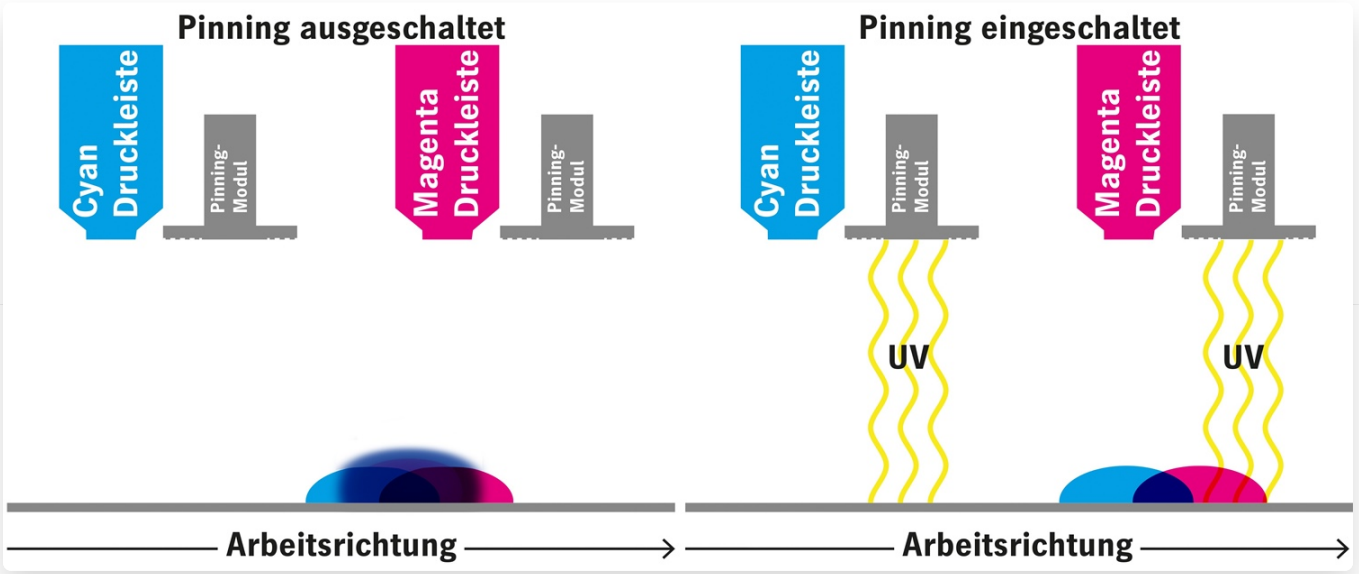
For beginners and experienced users

With its low maintenance requirements and intuitive operation, the Gallus?Alpha is ideal for a straightforward entry into digital label printing. At the same time, it offers experienced users with existing digital printing systems a powerful retrofit option that integrates seamlessly into existing converting processes such as embellishment or die-cutting.

The digital printing system is fully supported by HEIDELBERG's global service network and the World Logistics Centres (WLC), ensuring fast and reliable delivery of original Gallus spare parts and consumables. In case of downtime, trained service personnel provide prompt assistance, including remote login support if needed.

Starting January 2026, the new digital printing system can be experienced live at the Gallus Experience Centre.

CMYK PRINTHEAD ARRAY WITH ORANGE AND VIOLET.



THE INK DROPLETS ARE FIXED IMMEDIATELY UPON CONTACT WITH THE SUBSTRATE THROUGH SINGLE-COLOUR PINNING.

Excerpt from the Print Academy training program.

Author: Dieter Finna (dfi)

Editor: sbr

Sustainable Packaging

An Industry-First Mono-Material Metallized Retort Solution

BOBST, Brückner and Mitsui Chemicals have joined forces to create a mono-material, recyclable, retort solution with high barrier properties based on opaque metallization.

The packaging industry has made great strides in recent years towards more sustainable recycle-ready packaging. From the development of new mono-material polymer-based packaging materials, and alternative fiber or plant-based packaging, to the application of more advanced recycling technologies, great progress has been made in the journey towards a truly circular economy. However, important gaps remain. One significant example is the lack of mono-material recyclable retort solutions for the food and beverage industry. Re-

tort packaging is a type of durable, flexible pouch, which undergoes a high-temperature sterilization process after being filled and sealed – making the food commercially sterile and shelf-stable. It has the great benefit of enabling food to be stored at room temperature for extended periods without refrigeration.

Because retort pouches must protect food from oxygen and moisture ingress and withstand high heat exposure during the sterilization process, they are typically made of multiple layers bonded together, such as polyethylene terephthalate (PET), aluminum foil, and polypropylene (PP) to form a laminate structure. However, this makes retort packaging almost impossible to recycle.

Until now.

K 2025 saw the announcement of a significant breakthrough. BOBST, Brückner and Mitsui Chemicals have joined forces to create a world first: a mono-material, recyclable, retort solution with high barrier properties based on opaque metallization.

At K 2025, Nick Copeland, R&D Director, Barrier solutions at BOBST, Willi Lindemann, Specialist Inline Coating, New Technologies at Brückner, and Anrika Heermant, Senior Specialist at Mitsui Chemicals Europe, discussed how the new solution was developed and the potential impact it could have for the packaging industry.

Can you introduce what the new solution is and why it's so important?

Nick: It's a novel mono-material retort solution with high barrier properties based on special opaque metallization, which will be easily recyclable in existing recycling streams. It's important because recyclable retort packaging is one of the final key challenges in sustainable flexible packaging. Together, we have achieved a very important milestone, demonstrating that our solution can withstand the retort process and maintain high barrier qualities. Now, if we can take this solution through the final stages of development, it could have a significant impact for the packaging industry and on wider sustainability targets.

Why is it so challenging to develop a recyclable retort solution?

Anrika: Up until now, it has only been possible to maintain a high barrier in retort solutions using a composite layer structure consisting of polyester, aluminum foil, and various other materials. The most challenging part of producing a mono-material retort solution is maintaining the barrier qualities after the retorting process, which happens under really high temperatures.

Willi: The perception in the industry was that it couldn't be done. It was generally assumed that metalized films could not be used for retort purposes without corrosion, because the high temperatures involved would lead to water ingress. The other challenge with moving to mono-material polypropylene is the risk of shrinkage, which would have a negative impact on the barrier properties. So, there was a lot to contend with.

Can you talk about the innovation involved and how each partner contributed to this success?

Nick: Ultimately, we needed to create an ultra-thin, stretchable, heat-resistant barrier primer in combination with advanced opaque metallization. When we talk about in-line coated ultra-thin layers and state of the art extrusion and orientation technology, that is exactly what Brückner can bring to the table. When it comes to advanced metallization, BOBST has significant expertise in this area. And Mitsui has the capabilities and innovation to be able to develop a novel heat-resistant primer. So together, we had exactly the right expertise to develop this solution.

Willi: Brückner was responsible for the inline coating technology. We know that achieving a very thin metal receptive layer can be the key to sustainable barrier packaging. Through our innovative technology, we can stretch the primers and create very thin layers. We needed to find exactly the right hardness of the coating

material to ensure it was both stretchable and could withstand the retort conditions. Ultimately, we found a solution with ideal structure.

Nick: The reels produced by Brückner in Germany on the inline coating pilot line were then delivered to Manchester in the UK for BOBST's vacuum coating technology. We utilized the BOBST EXPERT K5 vacuum metallizer with AluBond® technology, which is a novel vacuum metallizing technology with three key benefits – it improves the barrier, improves the adhesion, and maintains the surface energy over time. So, the combination of the extremely thin inline coating together with extremely thin metallization achieves the high barrier performance, but on really thin layers, maximizing the percentage of mono-material in the structure. It was also very beneficial being able to test the inline-coated metallized material in our Competence Center in Manchester with our process experts available on hand.

Anrika: At Mitsui, we contributed two key materials to the solution. The first is a water-based polyurethane dispersion called TAKELAC™. We provided a top coating grade, which enhances the barrier performance and protects the Alubond® layer. And a newly developed TAKELAC™ Primer grade, which provides the heat resistance suitable for retort applications. In addition, we provide ADMER™, which is a grafted polyolefin resin with good adhesion qualities.

How effective is the new solution?

Anrika: We have achieved proof of concept. We have demonstrated that by combining inline coating, vacuum metallization and special resins and coatings, we can create a recyclable solution that withstands the retort process and maintains its barrier qualities. We've tested the Oxygen Transmission Rate (OTR), the Water Vapor Transmission Rate (WVTR) and adhesion levels before and after the retort process and achieved excellent results.

Is the new solution ready to use? What kind of products will it be suitable for?

Willi: While we have achieved a huge milestone, we haven't finished the development of the solution yet. There's still some work to do before this solution can become commercially available. But we are well on the right road. The next step may be to bring in further partners to ensure the solution is robust, repeatable, and production proof.

In terms of the type of food this solution could be used for, it's really any retort food – that is, food that is sterilized within the packaging. A good example is wet pet food.

What impact could this have on the industry?

Anrika: It's too early to speculate on the potential impact, but there is no question that the industry needs solutions like this. Companies will need to comply with sustainability guidelines such as the Packaging and Packaging Waste Regulation, meaning for example that mixed materials will no longer be permissible for wet pet food in the retail setting. So, we are aiming to fulfil an urgent unmet need.

Why has this partnership worked so well?

Nick: It's exactly the right combination of expertise and each company is really the leader in their respective fields, which makes it a very pioneering initiative and one where there is full trust and respect on all sides.

Each company also has all the required elements to help make this happen, meaning; well- equipped laboratories, technology centers or Competence Centers, and dedicated process experts which has made accelerating the development of this solution providing faster time to market.

I know I speak on behalf of the entire team when I say that we're eager to keep pushing boundaries together and look forward to showcasing what's next.

At K 2025 (from left to right): Daisuke Suzuki, Director, Polyurethanes Coating Materials Department at Mitsui Chemicals, Willi Lindemann, Specialist Inline Coating, New Technologies at Brückner, Nick Copeland, R&D Director, Barrier solutions at BOBST and Anrika Heermant, Senior Specialist at Mitsui Chemicals Europe.

Editor: sbr

© Images: Bobst

EXPERT MEETING

Inno-PrintPack 2025

IMAGE SOURCE: INNOFORM COACHING GBR.

Two days, five trends, one goal: to make packaging printing efficient and recyclable. The 10th Packaging Printing Expert Meeting impressively demonstrated how modern technologies, from 7C fixed palettes and AI-supported real-time data analysis to robotics, inline inspection, anti-counterfeiting measures and recycling-friendly materials, are transforming production processes in a sustainable way.

The “Expert Meeting on Packaging Printing” celebrated its tenth edition under the new label "Inno-PrintPack" and offered another novelty. The symposium was held from 27 to 28 November 2025 in the newly built event centre of the Follmann Group in Minden, in the middle of a speciality chemicals factory. The modern infrastructure of the technology and knowledge centre provided ideal conditions for in-depth specialist presentations and further exchange.

Michael Weihing from GMG highlighted the paradigm shift from printing with special colours to four to seven process colours. This approach increases efficiency in the print shop by up to 27% thanks to shorter set-up times and less waste, as he demonstrated in a practical example. Savings of up to €337,000 per year can be achieved in the example case, with an additional order potential of €5 million per machine. In addition, standardised processes increase the repeatability of print results and sustainability in terms of CO_2 balance. Added to this are greater standardisation, which strengthens brand loyalty, enables greater flexibility in order sequencing and leads to faster delivery times.

Uwe Alexander from Gallus presented the advantages of 7C printing in the label sector: significantly fewer colour changes, shorter set-up times, reduced washing cycles and the possibility of producing several jobs in one run using combination forms.

At Permapack AG in Switzerland, the 7C workflow was put into practice after software adjustments and optimised processes. Due to the order structure with a high proportion of digital printing and the decision not to use 7C in the cosmetics segment, the proportion of potential 7C orders is below original expectations – however, the decision to use 7C printing would be made again. The approach is particularly convincing in di-

gital printing: the break-even point compared to conventional printing rises from the often-cited 2,000 to 10,000 linear metres.

In his presentation "Anilox Rolls in 7C Printing", Jörg Rohde from Zecher showed the way to a lean, clearly specified range of anilox rolls with defined volume levels for printing in an extended colour space. Zecher provides targeted support to users in specifying anilox rolls – tailored to the printing plate screen, plate surface, ink type, substrate and engraving form. Special engravings such as SteppedHex with elongated cells enable higher lineatures with the same volume and thus optimised ink transfer. A standardised roll inventory reduces set-up times and risks. Regularly documented cleaning and maintenance ensure colour density, high transfer quality and process stability in 4C/7C printing.

Alexander Sailer from manroland Goss showed how a central data platform in web offset packaging printing creates real-time transparency regarding energy, material and media consumption. This is analysed per order, product or over a defined period of time. Automatically recorded machine and sensor data enable quick decisions, lead to less waste and prevent downtime through preventive maintenance. Clearly laid out dashboards make key figures and deviations immediately visible and tangible, facilitating comparisons between orders and locations. This reveals potential savings, determines the optimum production speed, makes processes more stable and increases overall equipment effectiveness (OEE). All this with open interfaces for your own IT systems.

In his presentation, Marco Schmidt from Bobst outlined the advantages of the smartGRAVURE system, which consistently digitises the gravure printing process without compromising the traditional quality strengths of the process. While conventional gravure printing is characterised by analogue set-up processes, numerous special colours and a high degree of operator dependency, smartGRAVURE brings efficiency and stability to the process. The extended oneECG (7C) colour spectrum reduces the number of special colours and allows 95% of the Pantone colour space to be reproduced. The oneSET digital job preparation system supports the operator at the machine by reducing set-up times, while the onePRINT inline measurement system guarantees consistent colour. Overall, this new concept leads to a significant increase in efficiency in gravure printing . Comprehensive data connectivity with BOBST Connect enables transparent process monitoring and in-depth production analysis.

Tarik Sevinc from AVT showed how modern inspection systems define production reliability. They offer seamless, 100% print defect and coating control across the entire web width in real time – from register and print quality deviations to barcode checks. As high-speed solutions, they are available for both narrow web applications and label printing. In addition, inline spectral colour measurements via SpectraLab XF ensure reproducible colour consistency for every job. Comprehensive data management guarantees that all production and error data is digitally documented, ensuring traceability and enabling targeted process optimisation.

Dr Thomas Klein (Esko-Graphics) and Dr Dieter Niederstadt (Asahi) presented a collaborative project in which Esko, Asahi, Kongsberg and Allstein demonstrated for the first time a fully networked and automated workflow from flexo master plate to finished print in practice. The AWPTM water plates with short processing times are imaged on a CrystalCleanConnect system with a Q-cells surface structures at 4000 ppi and processed extremely quickly thanks to 90% less operating effort. Allstein robotics transfers the cut plates to the automated mounting system and on to the automatic loading of the Genesis flexographic printing press. The result of collaborative automation: an enormous leap in productivity, maximum process consistency and first-class print quality – already commercially available.

Victor Asseiceiro from Hybrid Software presented "7C printing and fixed palette workflows – ECG implementation for analogue and digital printing technologies" and showed that successful printing with an extended colour gamut is based on standardisation towards a consistent 7-colour process and a predictable ?E. Digital printing is changing the value chain: data preparation and colour management must be carried out in the print shop. This significantly increases overall equipment efficiency and achieves annual cost savings per machine. The key is the seamless integration of colour management into the ERP system and prepress auto-

mation via open interfaces. The technology is ready – digital ECG will drive analogue adaptation forward.

Yair Gellis addressed the challenge posed by MDO-PE as a highly recyclable monomaterial in the printing process. MDO-PE film has very low surface energy, is sensitive to heat and exhibits a strong memory effect – factors that make ink adhesion, register stability and flatness difficult. For reliable ink adhesion, a corona refresh in the printing press to around 42 dynes/cm is essential. The temperature in the drying channel must be below 85 °C to prevent warping. A low web tension of 0.8–1.2 N/cm stabilises the register. Different film qualities require Standard Operating Procedures (SOPs), and both ink and composite adhesion must be carefully checked for laminates.

In his presentation, Oliver Hissmann from OCS Service demonstrated how modern inspection systems also ensure the quality of recycled films and new "green" polymers. The high-speed FSP600 web system uses combined transmission and reflection measurement ( ) as well as bright and dark field illumination to detect defects such as gels, specks, craters, holes or coating defects in real time – and all this on coloured or transparent films. Multi-Channel Evaluation (MCE) prevents false alarms, especially with PCR films, which have a high level of material noise. Up to six channels distinguish relevant defects from background noise. The defects are differentiated and finally classified by an automatic classifier after the defect has been taught to the system.

André Altevogt from Follmann first addressed the stricter limits for heavy metals and PFAS applicable to printing inks, which will apply to packaging materials from 2026 as part of the PPWR. In his core message, he emphasised that Follmann water-based inks are 100% water-based, virtually VOC-free (< 1%) and do not interfere with the recycling process if they account for less than 5% of the packaging weight. Technically, water-based inks enable high colour strengths, fine screens and printing speeds of up to 800 m/min. Case studies show a significant reduction in total costs for the same ink volume, despite higher cleaning costs. This is due to lower costs for inks and solvents.

The presentation by Dr Steffen Scheibenstock, SCRIBOS GmbH, focused on the growing global counterfeit market and the brand and product protection solutions offered by KURZ SCRIBOS. The most effective method of protection is to involve the customer in the authentication process. KURZ SCRIBOS offers the ValiGate®technology for this purpose. This is a serialised, copy-protected QR code with double encryption and a physical protection pattern. On packaging, this counterfeit-proof solution enables verification via smartphone without a separate app, confirming authenticity or revealing the product as a counterfeit.

Nicole Brandt from PTS – Institut für Fasern & Papier gGmbH – addressed the requirements of EU Regulation 2016/161 for the effective prevention of counterfeit medicines for human use. She then continued her presentation with a focus on pharmaceutical applications. The core requirement is seamless end-to-end verification using individual data matrix codes (minimum print quality of 1.5 according to ISO/IEC 15415) and tamper protection, for example through a tamper-evident label. The necessary checks for codability (inkjet/laser) and the durability of the codes over 5 years are carried out according to standardised PTS methods.

In his presentation, Dr Sven Macher from VP Medical Packaging illustrated how low-migration UV printing inks contribute to the safe packaging of sensitive medical products. The focus is on patient safety and standard-compliant manufacturing (including ISO 13485). He discussed the requirements of PPWR, MDR and ISO 11607 for packaging materials and printing inks with regard to sterilisation compatibility, toxicological evaluation and extractables and leachables analyses. Based on migration studies of various UV ink systems, test setups, analytical methods, limit values and measurement results were presented to evaluate suitability for medical packaging.

Marcin Lapaj from Transparent Paper Ltd. gave a presentation on the transition from BOPP films to PPWR-compliant monomaterial structures. The focus is on innovations such as BOPP films with ultra-high barrier properties (UHB), which replace aluminium foil in multi-layer laminates for dry and moist food applications, as well as bifunctional hybrids that combine good sealing properties with ultra-high barrier properties. Heat-resistant (HR) BOPP films with controlled shrinkage also ensure dimensional stability on high-speed packa-

ging machines. By reducing weight with low-density matt BOPP films and simplified laminate structures, BOPP actively promotes the circular economy and meets the PPWR requirements for mono packaging.

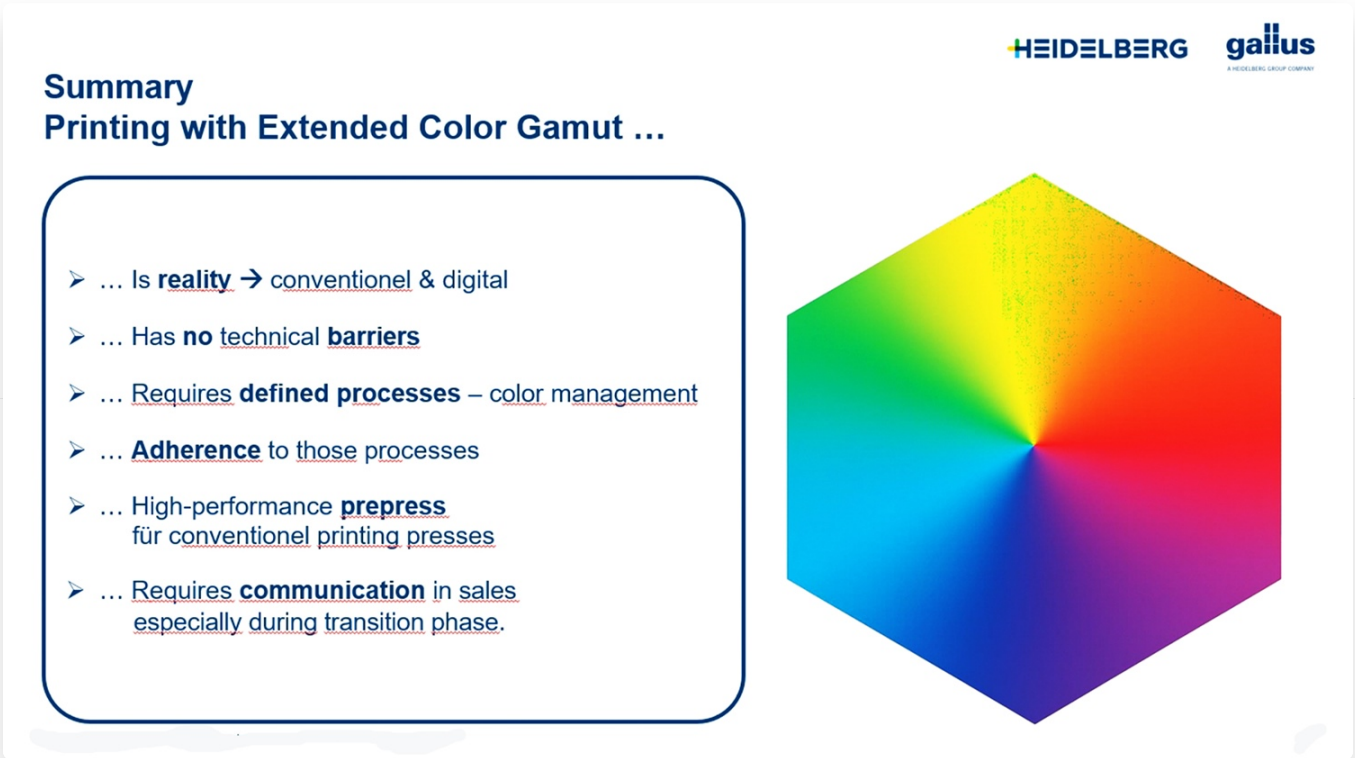
Dr Ricarda Hofmann from Flint Group addressed the stricter requirements of EU recycling legislation (PPWR) for print-friendly, recyclable inks. Flint Group is responding with innovative universal bases (NC-free pigment grinding) that cover the entire packaging spectrum from paper to polyolefin, polyester and polyamide films. These adapted, solvent- and water-based ink systems reduce complexity in the print room and ensure compliance with regulatory standards.

Attilio Borlenghi from Sun Chemical presented Ultra Low Monomer (ULM) laminating technology, which complies with new EU and US regulations for food safety and occupational health and safety. Newly developed ULM adhesives with less than 0.1% diisocyanates significantly reduce the necessary curing time after lamination thanks to their extremely low residual monomer content. A high-performance ULM variant is available for retort applications. The solvent-free, RecyClass-certified SunLam adhesives, Paslim barrier laminates and SunBar barrier coatings form a modular product portfolio that enables the switch to recyclable mono-material packaging. These adhesive systems comply with food law requirements immediately after lamination.

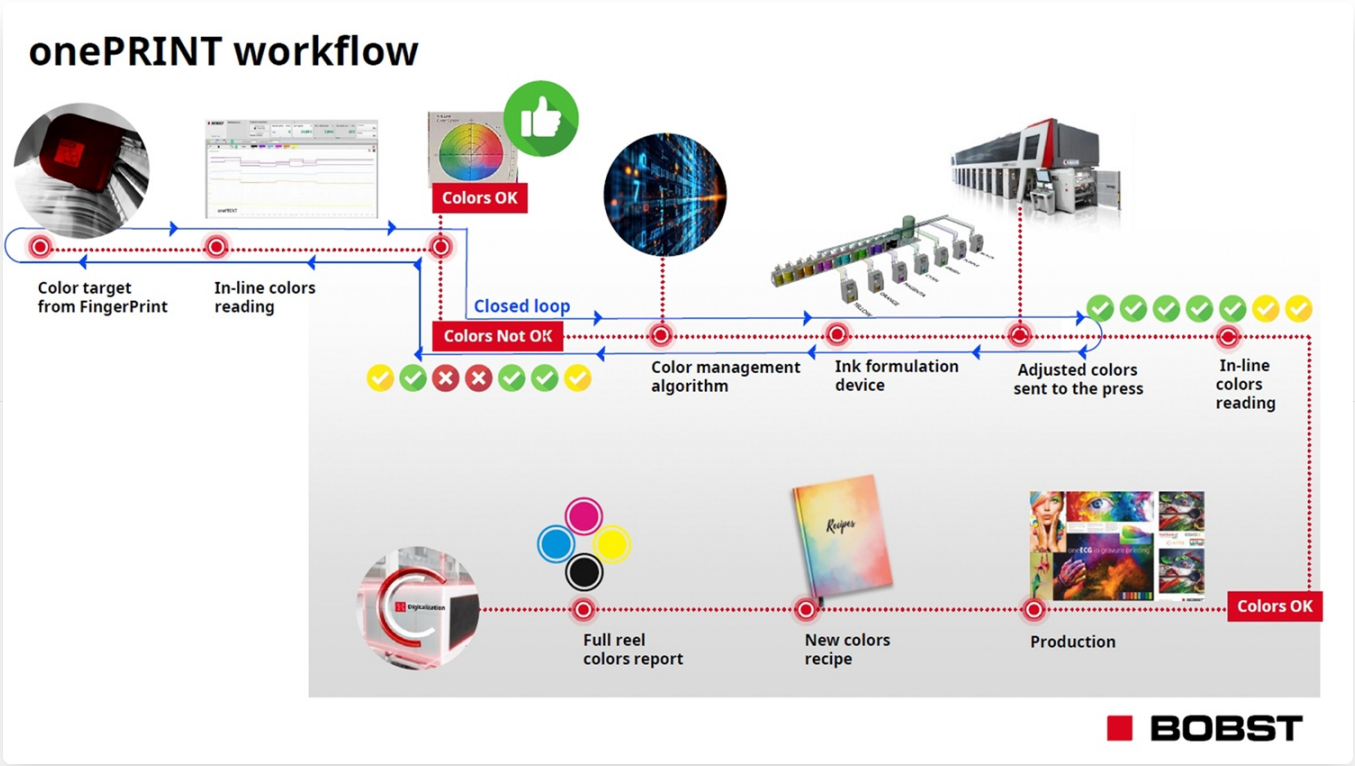
Karsten Schröder concluded Inno-PrintPack with a concise summary of all the presentations. The presentations clearly demonstrated how relevant the topic of 4C/7C fixed palettes has become, with their efficiency gains in packaging and label printing. They also highlighted the scale of innovation in AI-supported real-time data analysis, the use of robot-controlled systems and inline inspection.

Anti-counterfeiting technology is constantly evolving and is being effectively implemented through authentication processes. At the same time, the PPWR is driving forward the development of recycling-friendly packaging materials – with a noticeable impact on ink systems and laminating adhesives. This year's Inno-PrintPack expert meeting once again highlighted how dynamically the packaging printing industry is continuing to develop.

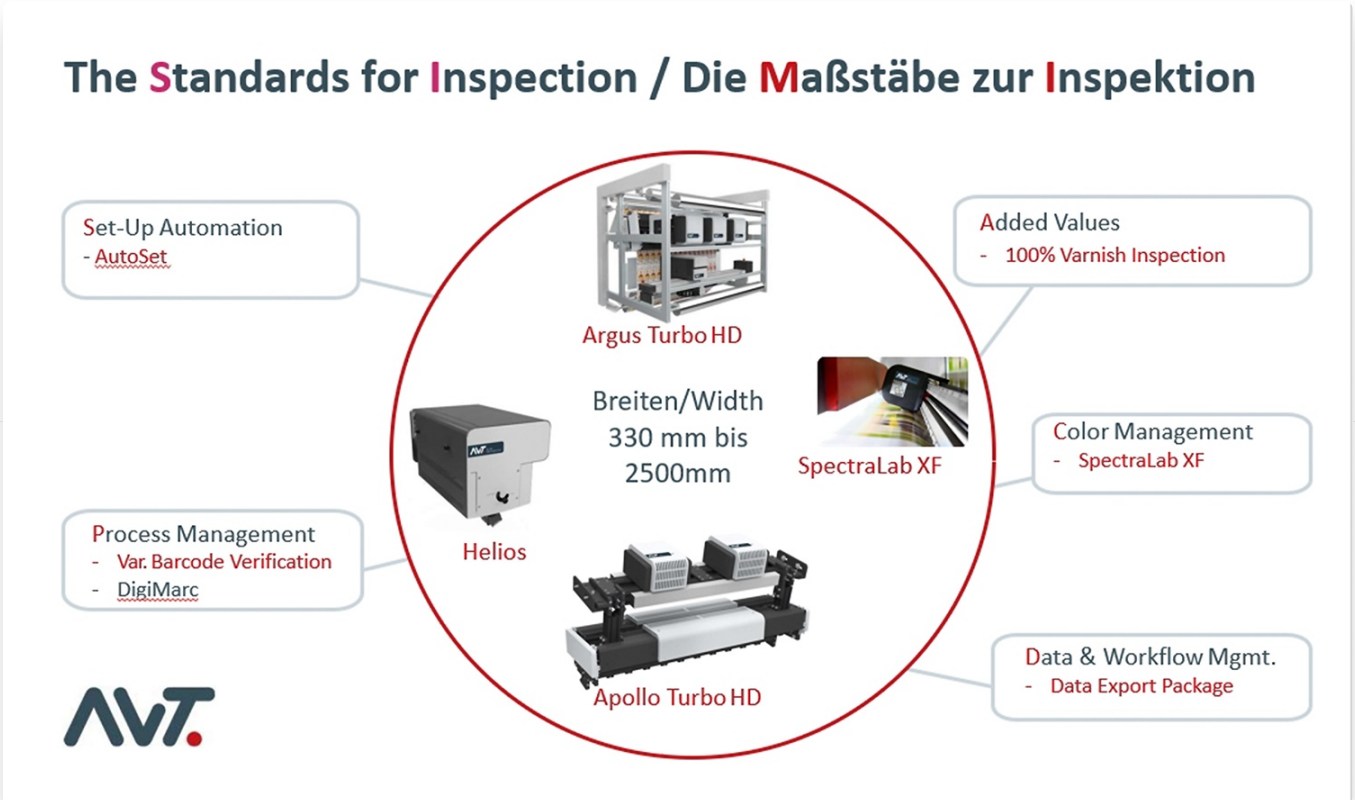
Further conferences on flexible packaging can be found here and technical articles at: https://inno-talk.de/news/



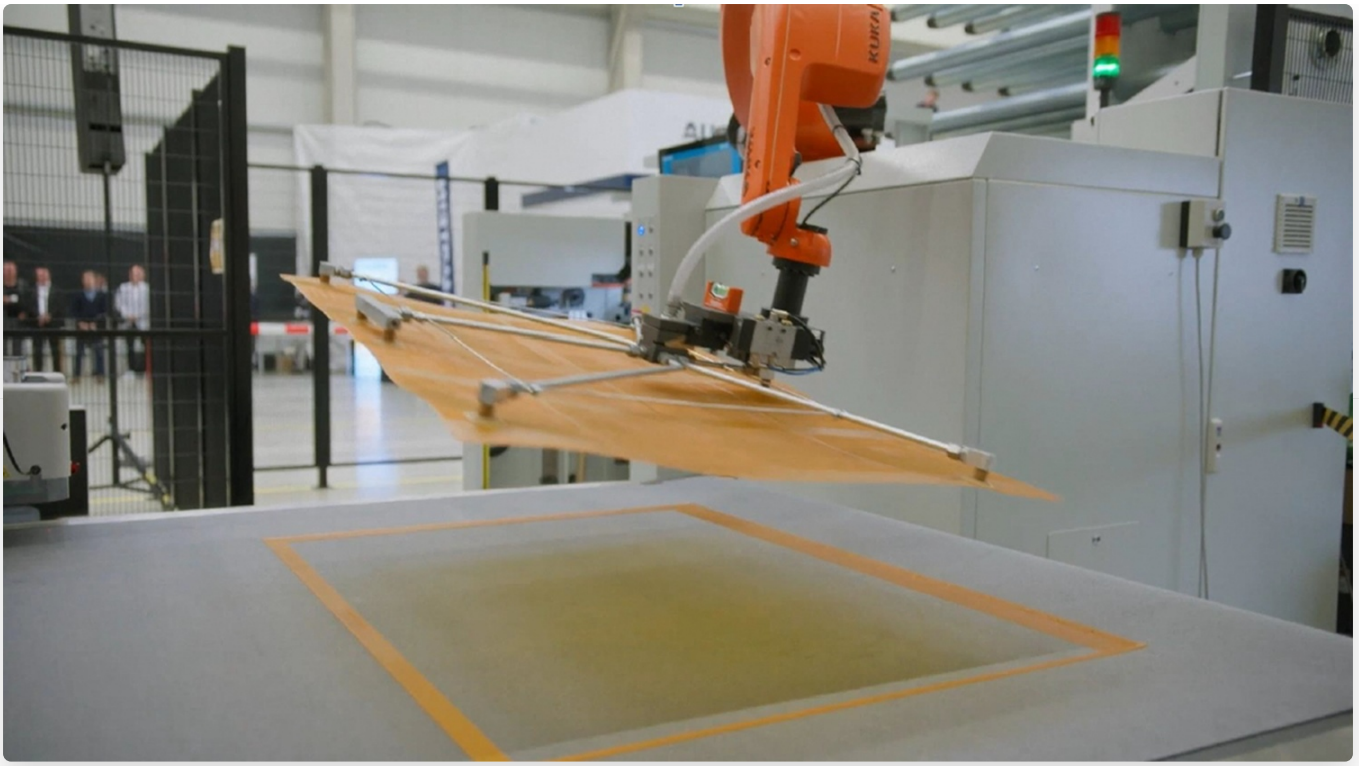
Requirements for switching to extended process colours. (Source: Gallus Ferd. Rüesch AG)



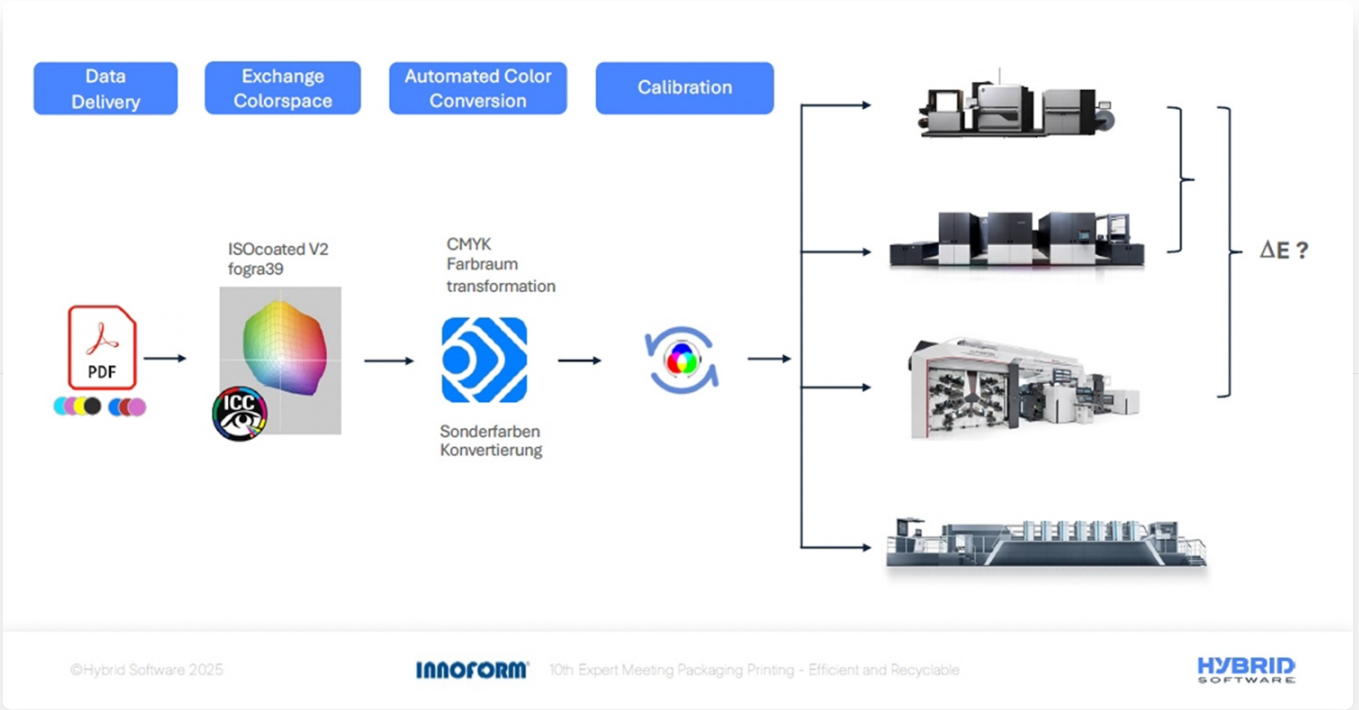
OnePrint guarantees consistent colour in the gravure printing process. (Source: Bobst)



Inspection systems offer 100% print error and varnish control. (Source: AVT)

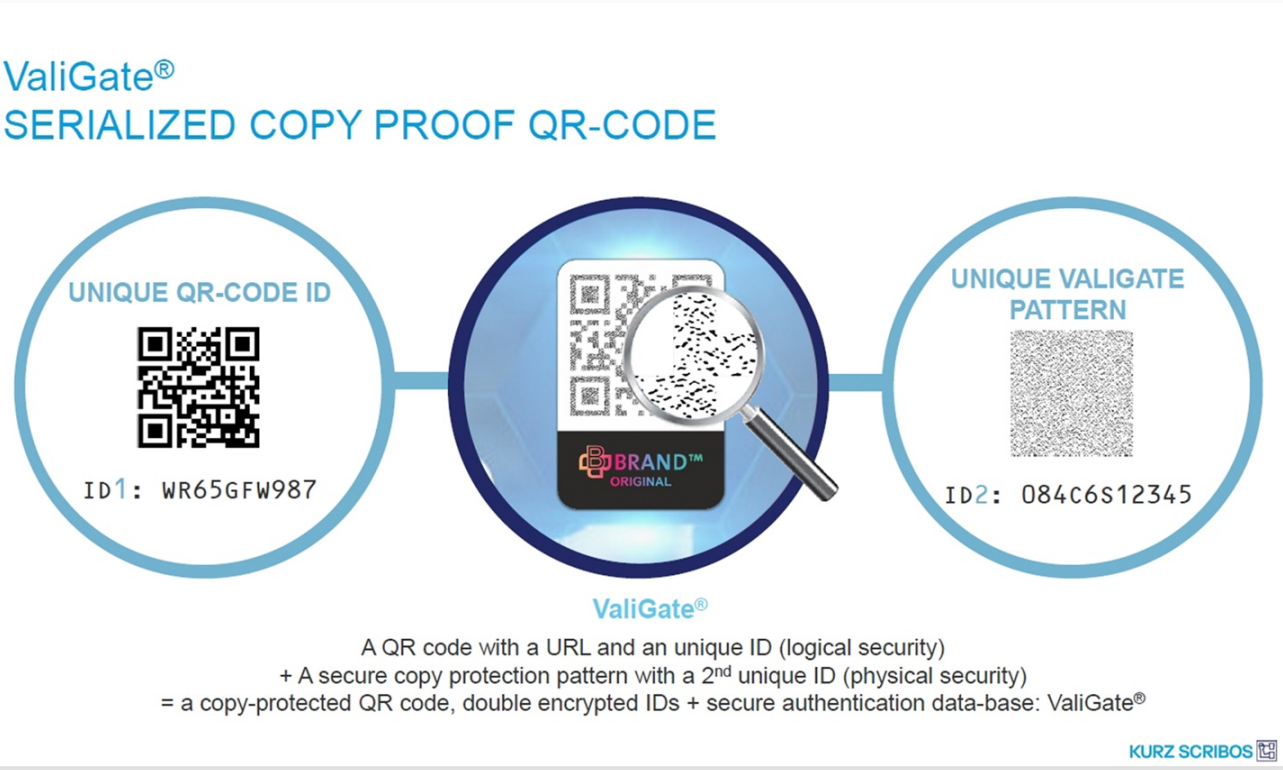


Allstein Robotics transfers the cut plates to the automated assembly line. (Source: Allstein)

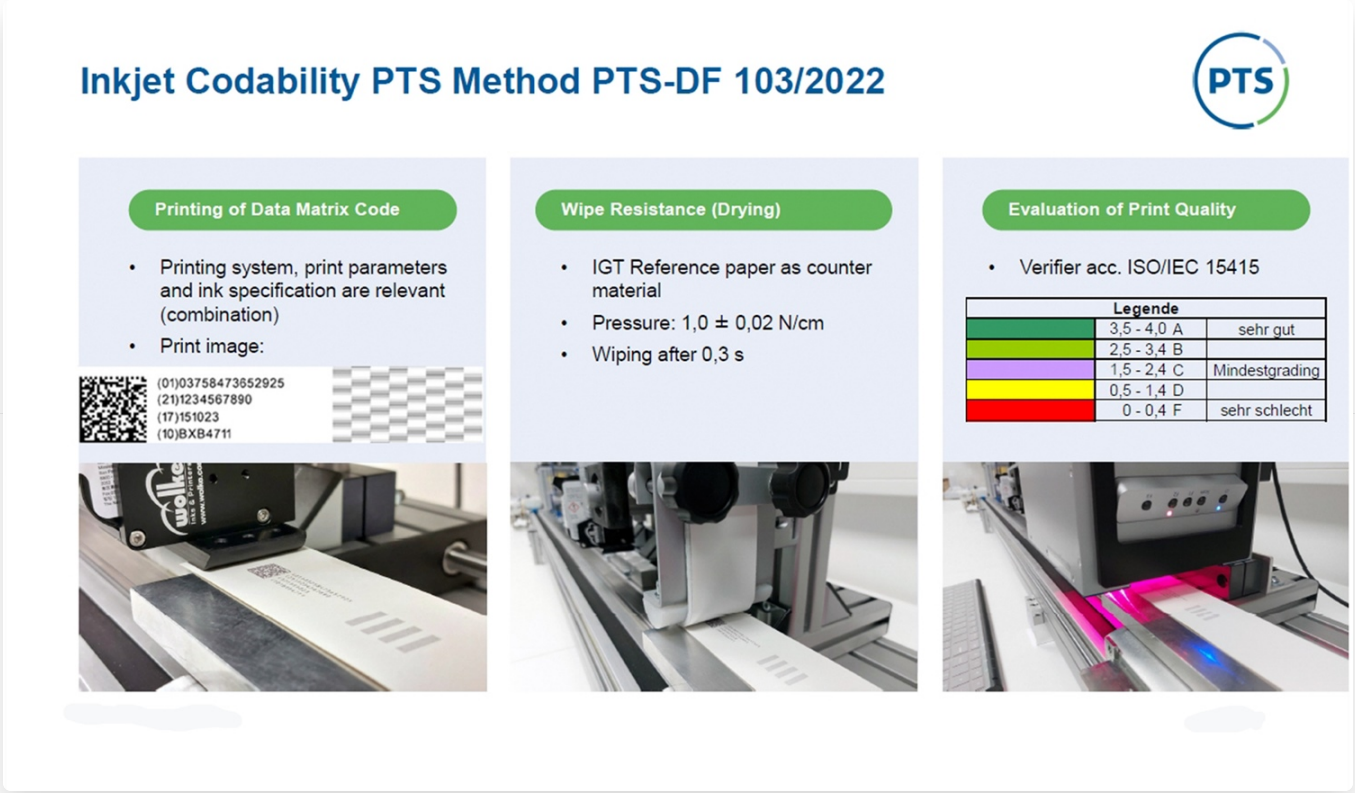


Colour management for printing with extended colour space. (Source: Hybrid Software GmbH)

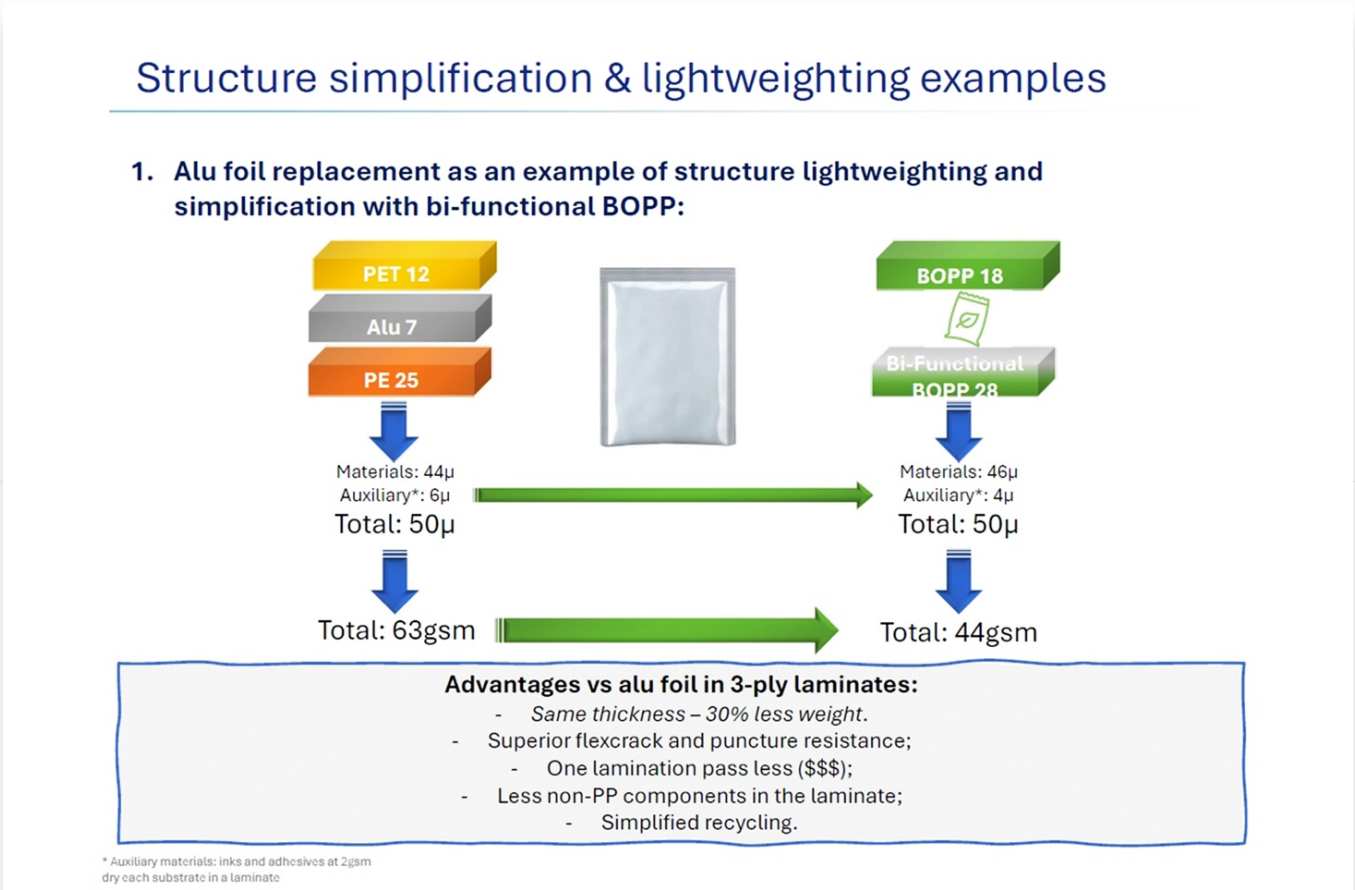
Detected error types in film production. (Source: OCS Optical Control Systems GmbH)



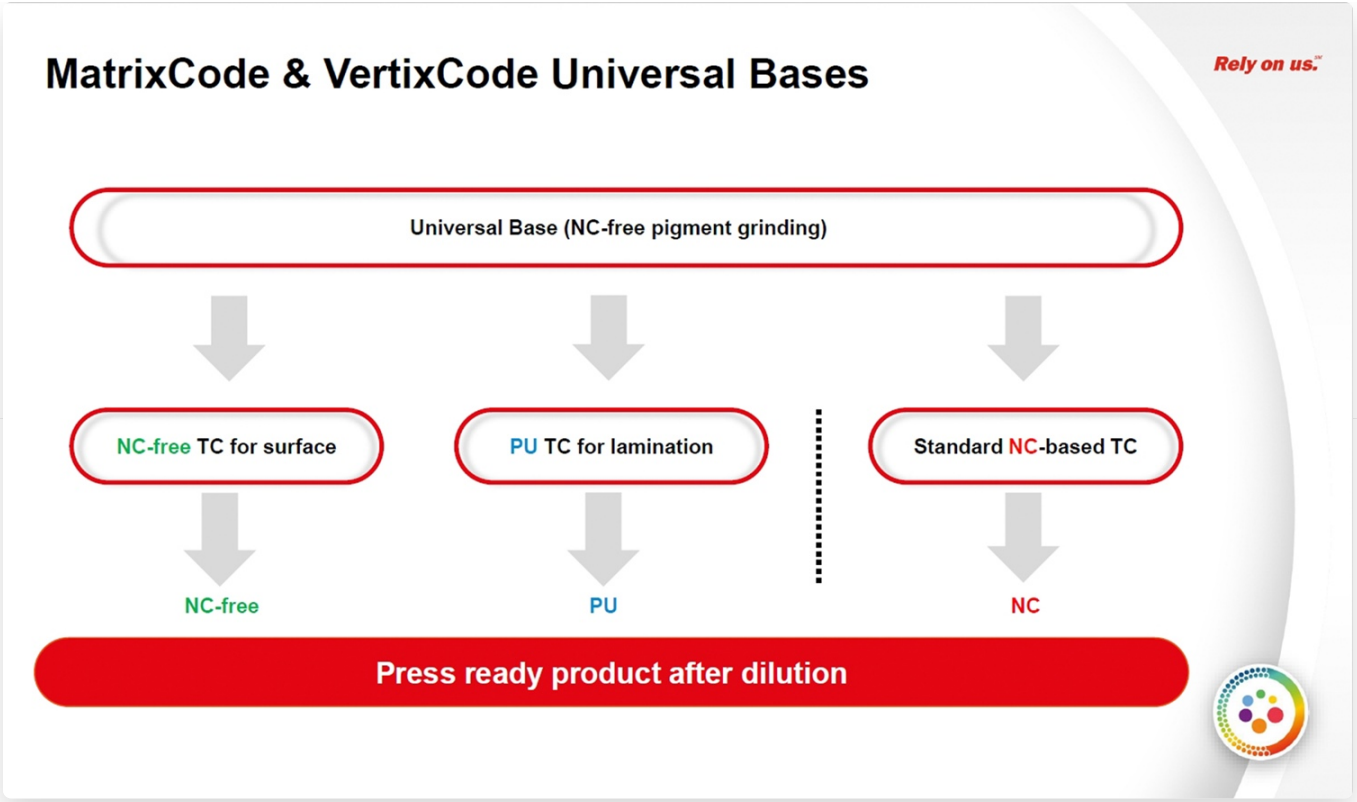
From QR code to copy-protected, individualised QR code ValiGate. (Source: SCRIBOS Ltd.)



THE TEST FOR CODABILITY OF CARDBOARD QUALITIES IS CARRIED OUT ACCORDING TO STANDARDISED PTS METHODS. (SOURCE: PTS – INSTITUT FÜR FASERN & PAPIER GGMBH)



BY SIMPLIFYING LAMINATE STRUCTURES AND REDUCING WEIGHT, BOPP IS ACTIVELY PROMOTING THE RECYCLABILITY OF PACKAGING FILMS. (SOURCE: TRANSPARENT PAPER LTD.)



PU-based, NC-free and NC-based printing inks for front and reverse printing are produced from a range of universal bases. (Source: Flint Group)

Author: Dieter Finna (dfi)

Editor: sbr

Operational Stability Without Power

How Companies Can Prepare for a Blackout

Today, a power outage is far more than a brief production stoppage – it can bring the entire operation to a standstill.

Digital processes, automated workflows, and cloud-based systems are indispensable today – from small printing companies and public institutions to large machine manufacturers and logistics centers. However, with increasing digitalization comes increased vulnerability to disruptions. Extreme weather conditions, network overloads, or cyberattacks on energy and IT infrastructures can paralyze entire business processes within seconds. During a power outage, production facilities come to a standstill, servers and communication systems crash, digital access controls cease to function, and even safety-critical systems such as fire alarms can be affected. The consequences range from the loss of sensitive data and massive economic damage to endangering employees.

That's precisely why it's crucial to realistically assess the resilience and reliability of operational systems and establish individual protective measures – regardless of company size. These range from clearly defined emergency plans to redundant power supplies and cloud-based backup solutions. Resilience to power outages must not remain a purely technical issue. It's a strategic management task that must consider profitability, security, and continuity equally – whether it's a small printing company or an international logistics center.

Blackouts as Stress Tests

Today, a power outage is far more than a brief production stoppage – it can bring the entire operation to a standstill. In almost every industry, business processes are now digitally networked: control and management systems regulate processes, material and information flows are automated, and even access to work areas is often via electronic systems such as RFID chips. If the power supply fails, this complex interplay comes to an abrupt halt. Machines can no longer be operated, logistics and administrative systems become unresponsive, and digital communication channels break down. Particularly critical: Security-relevant systems such as video surveillance, access controls, and alarm systems also lose their functionality. Even a power outage lasting just a few hours can have massive operational and economic consequences – from delivery delays and contractual penalties to damaged goods or plant shutdowns. At the same time, the risk of accidents, data loss, or theft increases significantly. Even short outages can be costly for small printing companies, while companies with complex production and supply chains – for example, in mechanical engineering or logistics – often face considerably more serious consequences. The situation is especially challenging for companies that work with hazardous materials or that rely on reliably functioning emergency and safety processes. It is therefore all the more important to develop company-specific strategies that include both technical redundancies and clear organizational procedures. Resilience to power outages doesn't begin with technology – it arises from proactive action and a company-wide security culture.

Systematic Crisis Management

In an emergency, responsibility typically lies with the technical management, the safety officers, or the facility management department. They must ensure that operational processes remain stable for as long as possible or that systems are shut down in an orderly manner – while simultaneously protecting buildings, equipment, and sensitive data. However, it is precisely in highly optimized and tightly scheduled operational structures that the necessary flexibility for unexpected outages is often lacking. Practical measures tailored to the company size can provide a crucial foundation: an appropriately sized emergency power supply, analog access and communication systems, and paper-based emergency documentation ensure operational capability even in smaller companies. In larger organizations – such as production or logistics centers – hybrid security concepts with battery-backed backup solutions and redundant communication channels are advisable to safeguard complex processes. Effective protection against the consequences of a widespread power outage, however, requires more than just technology. Clear emergency plans, robust infrastructures, and regularly reviewed risk analyses are essential – not least because many insurers now require verifiable preventative measures. Companies should therefore examine which processes must remain functional even without a continuous power supply and, based on this, develop realistic emergency scenarios with clearly defined responsibilities. Equally important is a structured communication concept that provides guidance in a crisis and avoids uncoordinated reactions. Companies lacking the necessary expertise internally can rely on external service providers. These providers support the development of comprehensive security concepts, the monitoring of critical systems, and the coordination of evacuations and access controls – always tailored to the company's individual requirements and cost structure.

Training Instead of Improvising

Companies have a responsibility to prepare their employees for exceptional situations and ensure their ability to act in an emergency. Crucially, emergency plans must not only exist in manuals but actually function in daily operations and be regularly reviewed, practiced, and adapted to new risks. Recurring training and practical exercises are essential. Training forms the basis for this. It helps to internalize procedures, stabilize reactions under stress, and avoid incorrect decisions. Realistic evacuation drills are particularly effective, enabling an orderly evacuation even in limited visibility or under time pressure. Equally important is training in the use of manual access control systems, alternative communication methods such as radios or mobile network solutions, and the safe operation of emergency power systems. This fosters a security culture that proves its worth in an emergency: employees know what to do, communication channels remain open, and the company can remain operational even under increased pressure.

About the Author

Gandhi Gabriel is a trained economist and has worked in the security industry for 10 years. Before founding SSB – Sicherheit, Service, Beratung GmbH (Security, Service, Consulting Ltd.) in February 2018, which officially launched in May of the same year, he worked as a security consultant for two years. SSB's service portfolio focuses on the monitoring of communal accommodations and initial reception centers, the security of large-scale events (including Christmas markets), industrial and property protection, as well as escort services and construction site security (especially for major projects).

SSB – Sicherheit, Service, Beratung GmbH

Headquartered in Esslingen am Neckar near Stuttgart, with operations in Nuremberg, Frankfurt am Main, and Munich, SSB – Security, Service, Consulting GmbH specializes in developing customized solutions for security-related processes. The goal: seamless operations in the area of ??protection and security. Since 2018, the team led by founder and managing director Gandhi Gabriel has been advising large corporations, medium-sized businesses, and public sector clients on both the development and implementation of individual security concepts and security-related procedures. With their extensive experience, the experts not only review existing processes and create customized, optimized structures as needed, but also offer on-site analyses and solutions for various specialist areas. SSB's affiliated academy, staffed by in-house instructors and security specialists, offers a wide range of training courses for both internal and external participants.

www.sicherheit-service-beratung.de/

Author Gandhi Gabriel is a trained economist and has been working in the security industry for 10 years.

Author: Gandhi Gabriel

Editor: sbr

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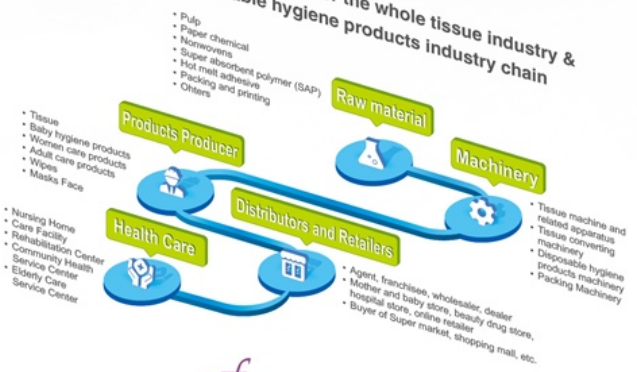

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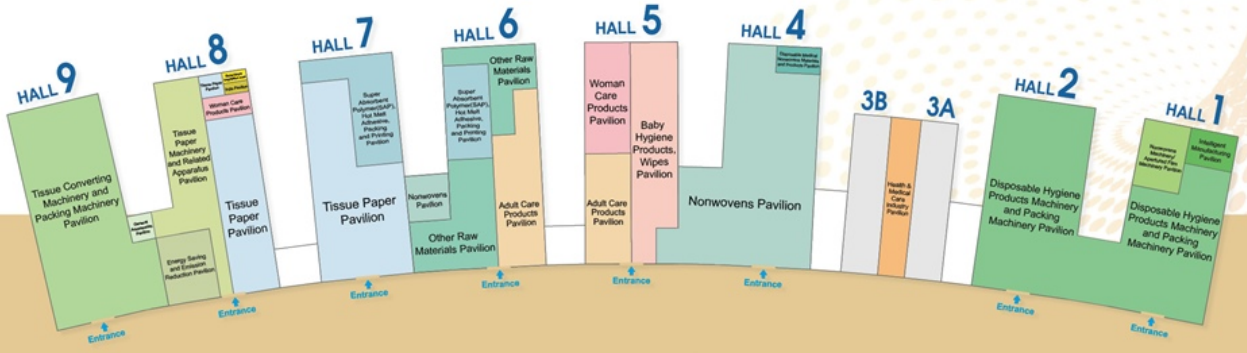

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Metalvac Ice Cream

Recyclable Solution With Barrier Properties

Metalvac Ice Cream is an innovative paper intended as a more sustainable alternative to existing laminate solutions on the market.

Lecta, a company specializing in the design and development of paper-based solutions for flexible packaging, is expanding its range of metallized papers with Metalvac Ice Cream, a paper that meets the current requirements for technical performance, industrial efficiency and sustainability in the sector. Metalvac Ice Cream is an innovative paper intended as a more sustainable alternative to existing laminate solutions on the market.

Available in 123 gsm, this new paper offers high-quality printing in offset, flexography and rotogravure on its metallized side. Its water-vapor barrier also ensures optimal preservation of wafer cones, in direct contact with the paper, throughout the supply chain. This, along with its excellent runnability, positions Metalvac Ice Cream as a reliable and efficient solution for industry packing lines.

This new metallized paper is recyclable within the paper and cardboard recycling stream, in accordance with CEPI recyclability standards. It also aligns with circular economy principles and represents an efficient,

more sustainable alternative for multiple flexible packaging applications.

The Metalvac range offers various paper grades with heat-sealability properties and barrier to light, water vapor, oxygen, and aroma, as well as resistance to moisture and grease (no PFAS added). These high-vacuum metallized papers stand out for their excellent runnability and adaptability to standard packing lines on the market, ensuring efficiency throughout the production process.

Its low aluminum content (0.08 gsm) contributes to achieving high barrier performance without compromising the material's recyclability within the paper recycling stream.

The entire Metalvac range is produced following Good Manufacturing Practices (GMP) and Food Safety (FSSC 22000) standards, in compliance with environmental management standards ISO 14001 and EMAS, energy efficiency ISO 50001, quality ISO 9001, and occupational health and safety ISO 45001. Additionally, it is available upon request with PEFC or FSC® C011032 Chain of Custody forest certifications.

EDITOR: SBR

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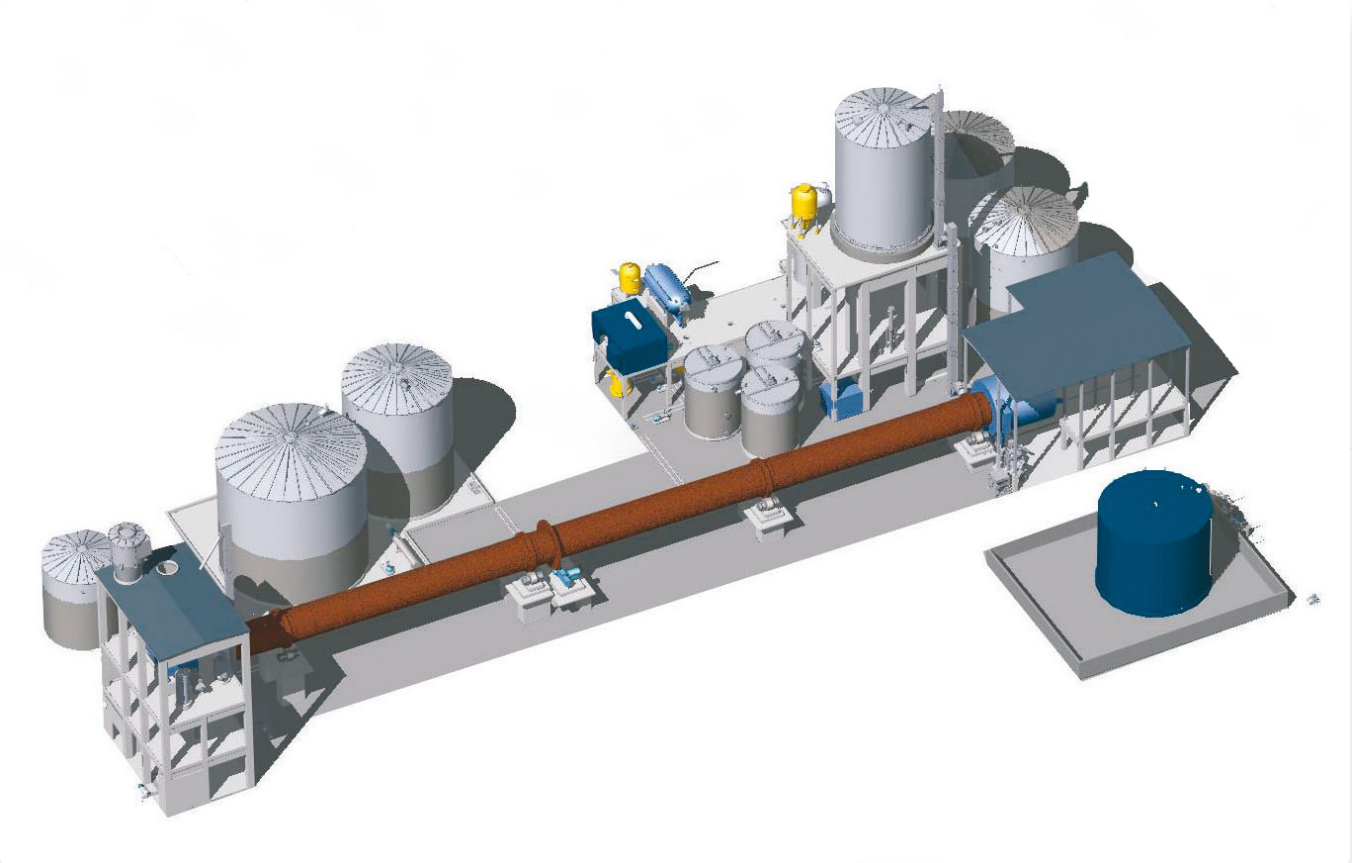
Guangxi Botare Yuantrove Paper & ANDRITZ

Lime Kiln Plant for New Pulp Mill in China



ANDRITZ lime kiln technology is designed to achieve low energy consumption, low emissions, and excellent availability, thereby ensuring optimal operation costs.

Guangxi Botare Yuantrove Paper has awarded international technology group ANDRITZ an order to supply a state-of-the-art lime kiln plant for its new pulp mill in Yugui Industrial Park, Guigang City, China. The start-up is scheduled for the second quarter of 2026.

Mr. Zeng Xingfeng, Chief Engineer at Guangxi Botare Yuantrove Paper said: "The technically advanced lime kiln concept presented meets all our operational requirements. We are pleased to collaborate with ANDRITZ, a strong and internationally recognized technology partner, on the implementation of this project."

ANDRITZ lime kiln technology is designed to achieve low energy consumption, low emissions, and excellent availability, thereby ensuring optimized operation costs. The new lime kiln plant will have a capacity of 380 t/d of burnt lime.

The lime kiln plant includes also a LimeDry lime mud filter, designed to achieve optimum dry solids with excellent washing efficiency for lime mud. It will minimize total reduced sulfur (TRS) emissions in the lime kiln flue gases and ensure efficient lime kiln operation with low heat consumption.

The value of the order will not be disclosed. It is included in ANDRITZ's order intake in the first quarter of 2025.

With this order, ANDRITZ once again demonstrates its strong global position as a supplier of state-of-the-art pulp mill technology focusing on environmentally friendly production.

Guangxi Botare Yuantrove Paper is a pulp and tissue manufacturing company operating under the Zhihu group, a leading Chinese daily care brand.

EDITOR: SBR

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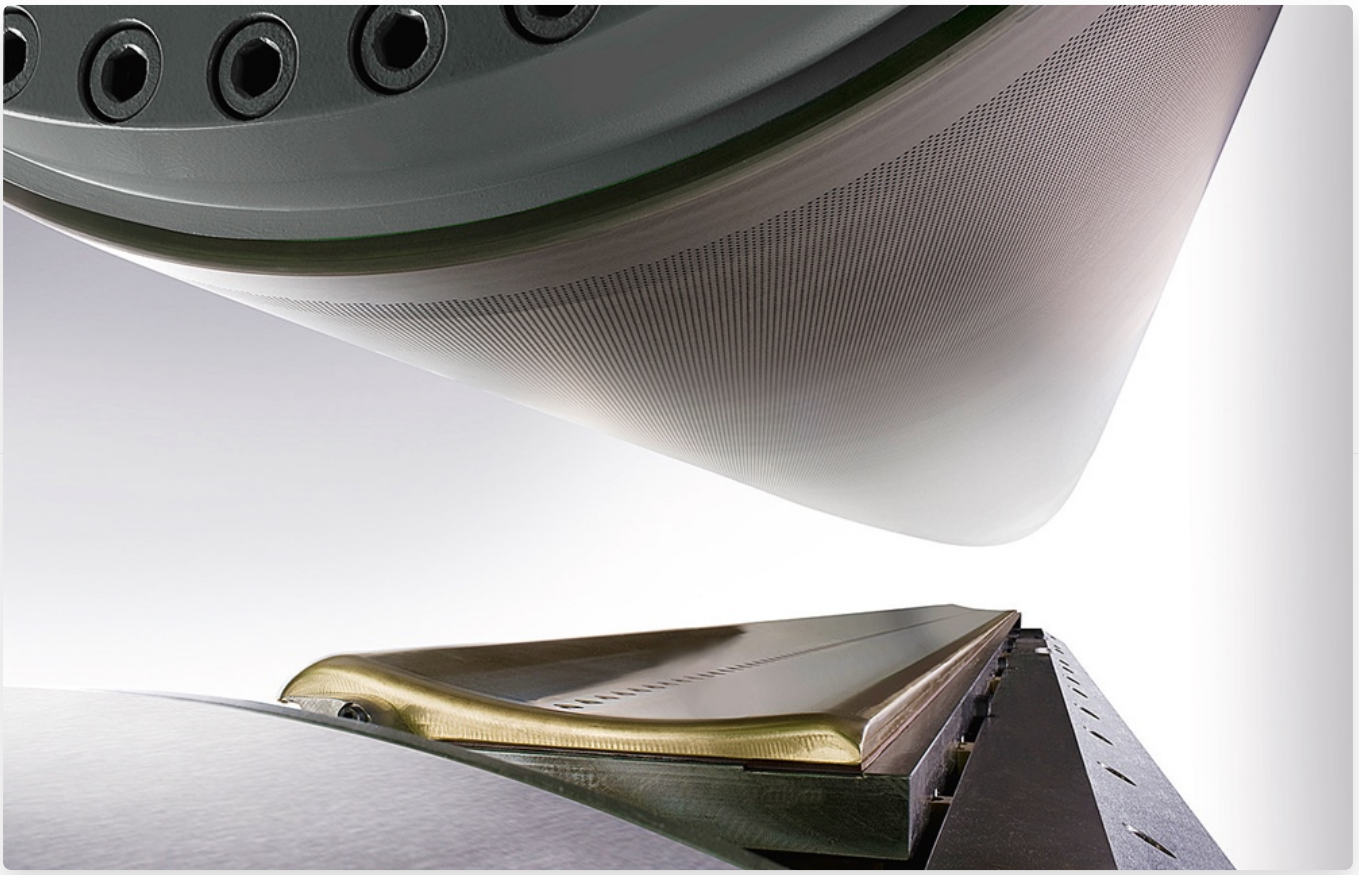
Digital Analysis in the Press Section

NipMaster Increases Efficiency and Quality



NipMaster provides all the relevant information needed to meet the diverse challenges in the press area.

With NipMaster, Voith offers a powerful analysis tool that helps papermakers perform data-driven optimizations on the shoe press section of paper machines. The simulation-based evaluations specifically improve drainage, energy consumption and production performance – for greater efficiency, sustainability and quality in paper manufacturing.

Efficiency, sustainability and production flexibility are among the key success factors in the paper industry. The basis for advancing these goals is a precise design of the press section. In this context, Voith's NipcoFlex shoe presses have been impressing customers for decades with their reliable performance and robust design.

The main technological advantage of Voith's solution lies in the high press impulse, which is achieved through the interaction of a long dwell time in the nip and an optimized pressure gradient. Both parameters are crucial for maximum dewatering performance and consistently high paper quality. Optimal dewatering is the result of the precise interaction of a position-stable counter roll and a hydraulically pressed, concave pressure shoe – enclosed by a flexible press shell, such as the NipcoFlex sleeve from Voith.

Holistic view of the press section

However, the shoe press is only one part of the overall press section system. Experienced paper technologists know that the decisive factor is the complex interaction of all components. Only through careful coordination of the felt, shoe press belt, roll cover and doctoring can efficiency and productivity be significantly increased – and high paper quality guaranteed.

NipMaster: Data-supported analysis for optimum results

Many papermakers have therefore been relying on Voith's NipMaster software tool for years. It enables data-supported analysis of shoe presses and combines the information obtained with state-of-the-art simulation technology, supplemented by decades of practical experience. NipMaster thus provides users with well-founded approaches for optimizing volume and dewatering concepts.

The tool factors in each machine's specific configuration and supports adaptation to different grammages, among other variables. The results from NipMaster form the basis for optimizing the dry content and dewatering efficiency of the press section. With these insights, all components can be coordinated and optimized.

NipMaster thus provides all the relevant information needed to meet the diverse challenges in the press area in a practical and technologically sound manner. "With the NipMaster approach, we not only offer technological excellence but also create measurable added value for production targets," emphasizes Mario Neumann, Senior Application Manager at Voith. The optimization potential identified by NipMaster has a direct impact on production output and a lasting effect on operating costs.

Having proven its value, Voith has continued to invest in the further development of NipMaster for many years to make shoe press analyses even more precise and comprehensive – with the aim of significantly increasing the effectiveness and efficiency of the entire press section.

Analysis variety for a wide range of configurations

NipMaster analyses are tailored to every machine configuration – regardless of whether it is a Single, DuoCentri, Tandem or Triple NipcoFlex. The software tool considers the wide range of grammages that are commonplace, especially on board and packaging machines.

"Ranges from 70 to 220 g/m^2 are not uncommon," explains Neumann. The challenge here is that as the basis weight increases, the basis weight, initial dry content and machine speed typically change as well, resulting in variable requirements for the dewatering concepts. These must therefore be designed to be flexible and precise. NipMaster has already proven itself many times over as an indispensable tool for papermakers.

The software can be used to analyze numerous parameters, such as the current drainage situation, adjustment of the operating volume to specific pressure and water quantities, and optimal coordination of belt surfaces and felts for the respective drainage type, such as tube suction or lateral nip drainage. This holistic approach is essential, as excessive operating volume can have a negative impact on dewatering efficiency.

"Our goal is to precisely calculate and continuously optimize quality – from the surface of the shoe press belt to the counter roll," says Neumann.

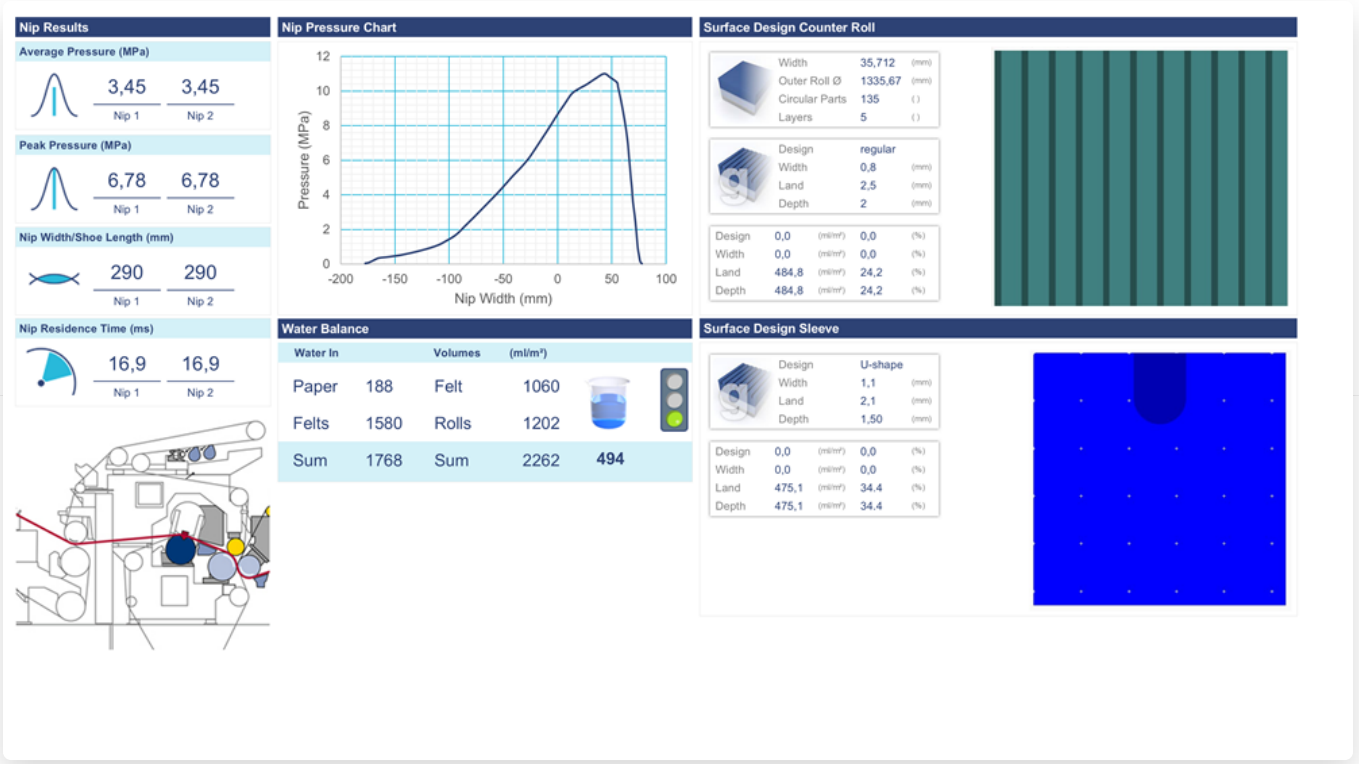
Practical example Tandem NipcoFlex: fine tuning is crucial

The Tandem NipcoFlex provides a good example of how NipMaster works: For an optimal configuration, precise drainage distribution between the first and second nip is crucial. Typically, the drainage performance of the first nip is around 75 percent, with the second nip handling the remaining 25 percent. NipMaster analyses can be used to further improve the dewatering profile of the machine by adjusting the roll contact design, optimizing the belt surfaces and avoiding over- or undercapacities. "This level of fine-tuning is comparable to Formula 1 – here, too, the perfect coordination of the smallest parameters determines success," explains

Neumann.

Conclusion

With NipMaster, Voith bundles its comprehensive expertise in the press section. Changes to roll covers, felts or belts are always considered in the context of the entire system. This not only increases dry content, efficiency and runability, but also optimizes existing plants over the long term. It is therefore no surprise that shoe press analysis with NipMaster has established itself as the standard solution in the paper industry.

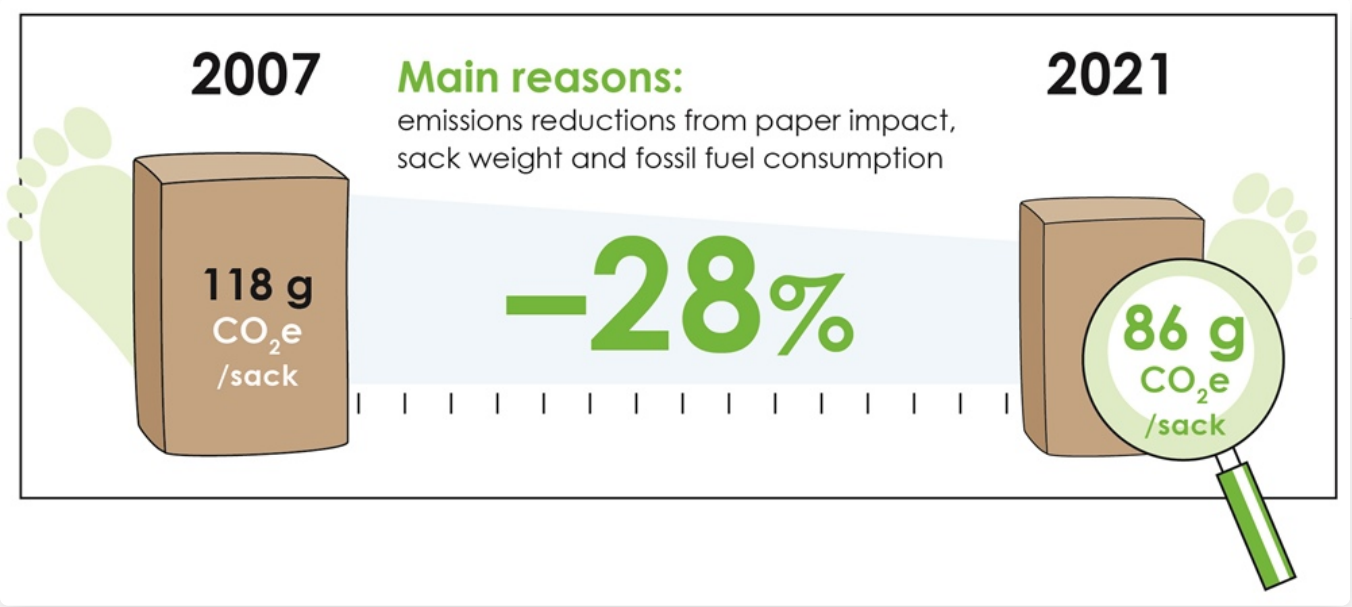


NipMaster analyses are tailored to every machine configuration.

Editor: sbr

EUROSAC

European Paper Sack Industry Sets Course for Net Zero



LOOKING INTO THE HISTORIC DATA, THE CARBON FOOTPRINT FIGURES OF THE EUROPEAN PAPER SACK AND SACK KRAFT PAPER INDUSTRY SHOW AN IMPRESSIVE REDUCTION BETWEEN 2007 AND 2021.

bio-fibre MAGAZINE

The European paper sack and sack kraft paper industry has embarked on a journey to develop a pathway towards net zero. The current focus is on identifying the main contributors to the industry's carbon footprint and key areas for decarbonisation. This work builds on a life cycle inventory and carbon footprint project that the industry initiated more than 20 years ago. Close cooperation among all stakeholders along the paper sack value chain will foster knowledge sharing and support the development of a pathway towards climate neutrality by 2050.

"Many EUROSAC and CEPI Eurokraft member companies are making excellent progress in their decarbonisation efforts – each of them with their own strategy," explains EUROSAC president Alessandro Selmin." As an industry, it is equally important to align collectively on the path towards net zero. Sustainability has always inspired innovation in our sector, and the development of a net zero pathway will encourage collaboration and drive us to continuously improve both our environmental impact and our packaging solutions for our customers." The net zero road map is a joint project of the European Paper Sack Research Group (ESG). For more than two decades, ESG has collected life cycle inventory (LCI) and carbon footprint data for sack kraft paper and paper sacks every three years. This data will serve as the backbone of the net zero pathway. At the end of 2025, the most recent data from 2024 will be incorporated.

Methodological approach

The calculations and targets for the net zero pathway are guided by the Greenhouse Gas Protocol (GHG Protocol)[1] and Science-Based Targets initiative (SBTi)[2]. The focus is on identifying the main contributors to the carbon footprint at the industry level, rather than the product level. Priority areas for decarbonisation are defined both for sack kraft producers and paper sack converters, as they face different challenges. The road map covers the three emissions scopes defined by the GHG Protocol. The classification of activities into scopes is made from the perspective of an organisation and the scopes are related to the source and type of emission:

- Scope 1: Direct emissions from on-site fuel combustion (e.g. electricity, heat, steam) and process or fugitive emissions (e.g. wastewater treatment).
- Scope 2: Indirect emissions from purchased electricity, steam, heat or cooling.
- Scope 3: Other indirect emissions from purchased goods and services. Among others, Scope 3 can include emissions from purchased raw forestry products, pulp, films, inks, etc. as well as from outsourced transportation, landfill and incineration. Those are the hardest to influence from a company's point of view.

Focus areas for reducing emissions

Among the most effective levers for reducing Scope 1 emissions are increasing energy efficiency and transitioning to cleaner energy sources, such as biofuels, solar, wind or hydropower at production sites. Scope 2 emissions can be reduced by purchasing electricity from low-carbon or renewable sources. For Scope 3, sourcing materials and services with lower emissions profiles is key. Scope 3 emissions are often the largest contributor to a company's or an industry's carbon footprint. This is reflected in the 2021 carbon footprint data for the European paper sack industry, where purchased sack kraft paper and plastic films are identified as the two main contributors of the carbon footprint of a paper sack.

Continuous improvement of CO_2 footprint of paper sacks

Looking into the historic data, the carbon footprint figures of the European paper sack and sack kraft paper industry show an impressive reduction between 2007 and 2021. The main improvements took place at the paper mills, where the fossil carbon impact per tonne of sack kraft paper decreased by approximately 26% – from 570 kg CO_2e to 421 kg CO_2e. The reasons for that are predominantly fewer emissions from net purchased grid electricity and from the combustion of fossil fuels consumed by the mills. For sack converters, these reductions are relevant as they count as Scope 3 emissions. Per paper sack, the carbon footprint figures show a 28% improvement – from 118 g CO_2e per sack in 2007 to 86 g CO_2e per sack in 2021. This progress demonstrates how decarbonisation measures in the supply chain already deliver meaningful results and paved the way for the net zero pathway project.

Collaboration for the better

The EUROSAC and CEPI Eurokraft associations bring together sack kraft paper producers, sack converters and manufacturers of films, adhesives and machinery. "We benefit from already working very closely together," explains Selmin. "This strong collaboration empowers us to drive positive change across the entire paper sack value chain and makes it easier to address Scope 3 emissions collectively." A recent example is the joint product development between plastic film producer W. Gröning and kraft paper producer Billerud, resulting in a reduced-carbon-footprint solution. Their Future-Proof Paper Sack for Low-Carbon Cement combines ultra-breathable, semi-extensible sack kraft paper with an HDPE film containing 35% post-consumer recycled (PCR) content. Another example of a cross-industry collaboration is the Construction Goes Circular project which started in Spain. With over 70 companies and 180 construction sites, it boosts the recycling of paper sacks and other construction materials, helping cut emissions in both the paper sack industry and the construction sector. "Projects and innovations like these show that our industry is committed to developing a clear road map towards net zero," says Selmin. "Together, we can lay the foundation for real change."

[1] The GHG Protocol provides global standards for measuring and managing greenhouse gas emissions

across operations, value chains and mitigation efforts. More: ghgprotocol.org

[2] SBTi is an international organisation that helps companies set science-based targets to reach net zero emissions by 2050. More: sciencebasedtargets.org

EUROSAC PRESIDENT ALESSANDRO SELMIN.

The Future-Proof Paper Sack for Low-Carbon Cement is a good example of the industry's joint decarbonisation efforts.

Editor: SBR

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