

P3

Paper Print Packaging

» Paperazzo

» Druckspiegel

» ipw *bio-fibre* MAGAZINE

5./6.2021

Ready for
Augmented
Reality?



**One
Magazine –
three
different
perspectives**



P3

Paper Print Packaging

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News powered by Druckspiegel, Paperazzo und
ipw + biofibre magazine

Those who oppose the market
will be punished by the market.

Margaret Thatcher



Dear Readers,

the subject of packaging is becoming increasingly important – from the manufacture of corrugated cardboard to various coatings and food-grade barrier papers to packaging printing and the associated low-migration printing inks and finishing techniques. This did not come by accident. Logistics and online retail have benefited from the shops that were closed in lockdown to such an extent that they do not really want to put the actual figures on the table. The skyrocketing demand for packaging material and technology caused delivery bottlenecks – thus followed by new factories and warehouses springing up like the proverbial mushrooms. It is an illusion to believe that brick-and-mortar retail can fully regain the market shares they lost to Amazon & Co. in the upcoming post-pandemic times; the already cracked position of the many small shops on the market is not enough for this. Accordingly, competitive pressure will increase in online retail – and thus in the packaging sector – because of course the growth of the last few months is on the way to slowing down a bit. New players will try to secure their piece of a cake that has actually already been distributed, innovative startups will be up for sale for the highest bidder – and packaging and its design will continue to gain in importance in the struggle for buyers. Packaging between sustainability and eye-catching – one of the main topics of this issue – will continue to concern us in the future.

Have a great read & stay safe!

A handwritten signature in black ink that reads "Stefan Breitenfeld". The signature is written in a cursive, flowing style.

Stefan Breitenfeld
Editor-in-Chief

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1. *Paperazzo* reports about diverse types of paper, discerning finishing and printing processes. It is the trade magazine for paper decisionmakers, print buyers, creative printers, agencies, publishers and producers of branded goods.



2. *Druckspiegel* is the leading trade magazine for decision makers in the print and media industry operating in the German-speaking area. It reports about the most important technical and economic developments in the industry.



3. *ipw* reports on pulp & paper producers, their suppliers and international activities as well as sustainability. *bio-fibre* magazine covers new kinds of paperlike materials and biocomposites or bioplastics based on wood fibres.

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Körber

75,000 Euros to Charity

On its 75th anniversary, Körber supports 75 local projects and organizations worldwide with a monetary donation of 1,000 Euros each. In an interactive campaign, employees submitted suggestions in support of their favorite initiatives and projects, which were then put to a vote.”

In Italy, the employees of the Group, who are part of the Business Area Tissue in Lucca and Bologna, have chosen five associations: the Primary School of Pieve San Domenico, the Enrico Fermi Institute, the foundation of the Meyer Pediatric Hospital, Fightthestroke Foundation and WWF Italy.

“You suggest, Körber donates” – this was the call with which the Körber Group kicked off its anniversary year – and it

resonated successfully with all Körber Business Areas: employees from Körber locations all over the world submitted more than 250 suggestions. In an online vote, the employees then selected 75 local projects and organizations.

The project was also very successful in Italy where the Group is present with

the Business Area Tissue and among the proposals presented, five projects were chosen: the primary school of Pieve San Domenico, the Enrico Fermi Institute, the Meyer Pediatric Hospital foundation, Fightthestroke Foundation and WWF Italy.

Körber will support organizations and projects in ten countries in Europe, South America and Asia. In addition to institutions that aim to create positive social, societal or cultural impact, Körber also supports educational projects, nature conservation and environmental protection organizations, along with humanitarian causes, some directly related to coping with the global Corona pandemic. \\\



Huhtamaki

New President, Flexible Packaging

Marco Hilty, (49), Ph.D. in Business Administration from University of St. Gallen (Switzerland), has been appointed President, Flexible Packaging and a member of the Global Executive Team at Huhtamaki as of September 1, 2021. He will report to President and CEO Charles Héaulmé and will be based in Ronsberg, Germany.

Marco joins Huhtamaki from Rubicon, a software platform that provides smart waste and recycling solutions for businesses and governments worldwide. Prior to Rubicon, he held several leadership roles with Amcor in Switzerland and in the United States. \\\

Ahlstrom-Munksjö

New Compostable Oxygen Barrier Mono-Material

Continuing its focus on global sustainability and aligned with its ‘from Plastic to Purpose’ campaign, Ahlstrom-Munksjö has released a mono-material oxygen barrier technology made of 100 percent cellulose fibers.

The PureBarrier™ technology is based on Genuine Vegetable Parchment and boasts numerous attributes including oxygen and gas barrier properties as well as natural wet strength. It is naturally grease resistant, does not contain any loose fiber or added chemicals, and can be made heat sealable with a biopolymer which makes it suitable for a limitless number of applications. Its features, including biodegradability and compostability, make PureBarrier™ a great alternative to



non-renewable oxygen barrier packaging.

“Our ‘from Plastic to Purpose’ campaign continues to raise awareness on the possibilities of fiber-based solutions as a renewable option,” said Robyn Buss, Executive Vice President of Ahlstrom-Munksjö’s Food Packaging & Technical Solutions. “By educating the marketplace on paper-based packaging options available we are encouraging global industry stakeholders to consider fiber and paper-based alternatives where plastic and non-renewable materials are used today.”

“Oxygen barrier properties present a significant technological challenge for Fibrous material as it is a porous structure by nature,” comments Dr. Noël Cartier, VP R&D for Advanced Solutions and Parchment businesses. “Our parchment R&D team pushed the limits of fiber-based materials through several years of research to develop and patent this unique oxygen barrier mono-material.”

PureBarrier™ is produced from responsibly sourced and renewable wood pulp, certified according to Forest Stewardship Council® standards and is biodegradable and certified compostable with OK Compost/OK Compost Home from TÜV.

Already commercialized as coffee capsule lids and brewing materials for espresso systems, PureBarrier™ is currently being evaluated in many other nonfood applications like Health & Beauty products. \\\

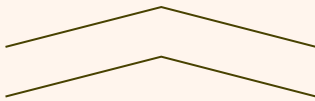


Valmet

Paper Machine Technology for Muda Paper Mills

Valmet will supply key paper machine technology, which includes several upgrading works, to Muda Paper Mills Sdn. Bhd. for its PM 9 in Malaysia. The start-up is scheduled for the second quarter 2022.

“We are very happy that Muda Paper has chosen Valmet to improve PM 9. The task has been challenging because the complete technical and commercial process was done remotely, but we are confident that with our proven hydraulic hedbox technology we will meet the customer’s goals and achieve common success,” says Joanna Hajduk, Sales Specialist at Valmet. \\\



Andritz

Start up of Stock Preparation System

Andritz has successfully started up a stock preparation system supplied to Vinda Personal Care (Guangdong) Co., Ltd., as part of its tissue production at the mill in Yangjiang, Guangdong, China. With this new line, there are now more than 20 stock preparation systems from Andritz operating in different mills belonging to the Vinda Group.

The new system comprises specific lines for NBKP (Needle Bleached Kraft Pulp), LBKP (Leaf Bleached Kraft Pulp) and bagasse as raw material. Andritz

installed the complete stock preparation system, with equipment for low-consistency (LC) pulping, low-consistency (LC) refining, high-consistency (HC) refining, the approach flow system, and broke handling. Two innovative 120 bdmt/d HC refining systems, each consisting of an Andritz Pulp Screw Press and an HC refiner, enable excellent processing of the special raw material mix and ensure superior

tissue properties at a minimized NBKP content.

Mr. Dong Yiping, Executive Director of Vinda International Holdings Limited, says: “With the new Andritz HC refining systems, we achieve better fiber quality in terms of strength, softness and absorbency compared to a conventional LC system in a similar tissue application. Our customers gave very positive feedback as to handfeel and softness of the final product – further proof that our decision to trust in Andritz again was absolutely right.” \\\



Archroma

Online Regulatory & Compliance Platform

Archroma announced the launch of The Safe Edge, an online platform for instant access to product related regulatory & compliance certificates and information.

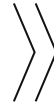
With continuously growing public awareness around the social, health and

ecological impacts of human and business activities, the need for transparency and traceability in supply chains has become essential. Time to market is equally critical, and manufacturers, brands and retailers need access to reliable information in real time. The Safe Edge platform has been designed with that in mind: It allows brands, retailers and manufacturers of textile, fashion, packaging, paper, paints, to verify with just a few clicks the regulatory & compliance status of Archroma products, including regulations, ecotoxicological information & certifications, and brand requirements.

The Safe Edge covers standards, regulations and information such as air emission factors, animal origin, halal, kosher, plant origin, food contact, Blue Angel, bluesign®, Cradle-to-Cradle, chemical inventories, Composability EN 13432, conflict

minerals, EU Flower/Ecolabel, GOTS, CONEG, ISEGA, Nordic Swan, Oekotex® Standard 100, California Prop 65, REACH, RoHS (Restriction of Hazardous Substance), Screened Chemistry, SDS, SVHC (Substance of Very High Concern), VOC (US), ZDHC (Zero Discharge Hazardous Chemicals), and brand standards (like Coats A&F MRSL, Decathlon RSL 2020, Jack Wolfskin RSL and The List IV by Inditex).

With the launch of The Safe Edge, Archroma continues to assert its leading role in driving sustainability in its industries, in line with its commitment to the principles of “The Archroma Way to a Sustainable World: safe, efficient, enhanced, it’s our nature”. The “Safe” principle in particular is at the core of the Archroma approach to sustainability, with the deeply rooted goal to protect people and the planet with products that are safe to use, and safe to wear. \\\



We do open our morgue and look back ... here an Edition of Druckspiegel from October 1951.



* „Ein Archiv für deutsches und internationales graphisches Schaffen“



.. Paperthings ..



OFF IN THE BIN

Nice hoarding with
Cardboard vessels.
www.fermliving.de



Paetrick Schmidt

„I Love to Stage Pictures“

In response to his – quite usual – question of how long he still has time to answer the questions, I can reassure Paetrick Schmidt in Berlin: There is no hurry yet.



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- 1 Paetrick Schmidt: Self-portrait, variant 1.
- 2 "Product Decay", acrylic on paper and cardboard, illustration for Bilanz Magazin, 2015.
- 3 "Rainbow", acrylic on paper and cardboard, 2021.

The answer, however, comes as quite a bit of a surprise: "Thank you very much," says the qualified designer, whose reference list includes Greenpeace, Spiegel, Focus, Burda and Ogilvy, "then I can give even more thought to developing the answers." Thunderstorm, someone is trying! This attention to detail is also reflected in his not quite everyday work, as the self-portrait on the left clearly illustrates.

Paetrick, you are known for your tactile and graphic illustrations, which you mainly produce on the basis of paper and cardboard. Tell us about your career – what was the driving force to get to where you are now?

During my communication design studies, it was difficult for me in the illustration class to draw scenes from different perspectives for a comic. I made models out of paper and cardboard intuitively, which I used as a drawing aid. When I had a stately collection together, the idea occurred to me that I could also use them illustratively. By using them as modular building blocks, I also found the opportunity to put together new images over and over again, which I then captured photographically.

It's nice to see my universe grow, and each new character created adds to my stage staff. When they go their way after an art exhibition, because they have been sold, the thought that I

cannot accommodate them all in the long run helps me get over the pain of separation.

What is the fascinating thing about dealing with paper or cardboard for you?

The material and the abundance of variants fascinate me enormously. Each of them, whether thin copy paper, corrugated cardboard or sturdy bookbinding board, has its own individual characteristics and properties. Paint can be applied to paper and cardboard extremely well. I also use construction paper, but mostly I determine the color through a specific painting. Paper and cardboard can be easily shaped by folding, tearing and cutting and can be easily bonded with glue. The hot glue gun is always ready to hand in the holster during work.

Could you imagine working purely digitally? The possibilities in digital design are immense and – so it seems – also becoming easier to handle ...

I'm divided on that. Perhaps in a future in which technology has advanced to such an extent that the virtual no longer differs from reality to the full extent of the sensations. That we are moving in this direction is evident in my eyes.



I would like to replace the badges on the Pioneer probes.



I've been using computers for creative work for almost 30 years. I experienced my initiation in my nursery on an Amiga 500 with the Deluxe Paint software. I've been familiar with Photoshop and Co and drawing on tablets for a long time and I'm enthusiastic about the ongoing development. My recently purchased iPad Pro is currently making a big impression on me. It's great how easy it is to draw with apps like Procreate.

Nevertheless, I still experience the highest level of satisfaction with the manual handling of tactile material. For me, the quickly thrown sketch on paper is the foundation of all idea generation processes. Simultaneous visibility of

workpieces is also an advantage over digital works that should not be underestimated.

Nowadays the media like to suggest that everyone can do and achieve anything without having to exert too much effort. In many cases, there is little more to it than an attack on the wallet. What sets a good, long-term successful artist apart from the crowd – the ability to be inspired or the quality of the training?

A thesis by the psychologist Anders Ericsson says that we need 10,000 hours to become a master in our field. Assuming we worked 8 hours

a day, 10,000 hours would be reached in around 3.5 years. But what use is this calculation if the job itself is not driven by enthusiasm? Without it, it's actually just an effort driven by expectations. In the state of enthusiasm that can be aroused by inspiration, however, there is neither a measure of time nor an awareness of success. We find happiness in the spontaneity of creating and learning, regardless of age.

Also thought beyond art: if everyone could do everything, we would no longer be dependent on each other. That would be a shame, because community is created when we complement each other in our individual characteristics and abilities. As a lecturer, I try to convey this attitude to the students.



Which topics do you take up in your work and when are you satisfied with a result?

Basically, I am open to all conceivable subject areas. The challenge is to find appropriate answers to a thematic question. I am satisfied when I can convey this to the viewer emotionally and in a graphic that is as succinct and pointed as possible.

What is decisive for you in order to accept a new project offer? Or the other way around: What kind of inquiries do not appeal to you at all?

I have to be reasonably convinced of the project or the product in the applied work. So far, this has been almost always the case. I only remember one situation – the request was about a greenwashing campaign for a well-known car brand. Despite doubts, I threw myself into the project, but was then happy when the contract for the final implementation went to another agency.

What's behind your Painted Songs?

My music consumption changed from physical sound carriers to digital files and online streams. I lack the deeper connection to the piece of music that arises through haptic contact with the tangible sound medium. For this reason I have been "noting" my favorite songs, which are only known digitally, for about 6 years in the form of paintings and collages. All works created so far have a square format with a size of 40 by 40 cm, alluding to the classic record cover. There are currently around 250 copies. Incidentally, the image carriers are mostly the recycling of cardboard and paper from other works. I feel infinitely free with this project, as the conceptual framework through belonging to the collection



legitimizes even the most modest implementation.

The portfolio ranges from Dusty Springfield and Frankie Valli to Kate Bush and Nils Frahm to Portishead and Aphex Twin. Is there music that doesn't captivate you or that you couldn't be creative with?

Oh yes, a lot. Only a fraction of the music that I encounter – wherever – triggers a response in me and stays with me. Why music resonates can have various reasons, e.g. the gripping rhythm and/or an appealing text, etc. If it doesn't, it can simply be because I am not sufficiently receptive at the moment of listening.

You also deal a lot with photography ...

I love to stage pictures. All the same, whether it is a crowd of my handcrafted doll people, or whether I place people in masquerade in a set

- 1 "Forest Toll", acrylic on paper and cardboard, 2010.
- 2 Neighbor", acrylic on paper and cardboard, 2021
- 3 Customer purchase", acrylic on paper and cardboard, illustration for Serviceplan, 2012.



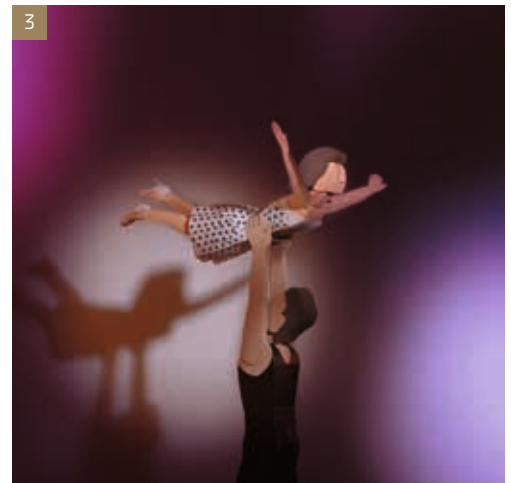


1

- 1 Paetrick Schmidt: Selbstportrait, Variante 3.
- 2 "Quarantine", acrylic on paper and cardboard, 2020.
- 3 "Dirty Dancing", acrylic on paper and cardboard, 2020.
- 4 "NGM", acrylic on paper and cardboard, illustration for Forum Gelb, 2014.



2



3



of props – it is the photography with which I capture the staging pictorially. It offers an extensive variety of designs, which I find appealing. The lighting, for example, has a great influence on the photographic result. Occasionally I use the stop-trick animation technique for film projects, which of course is also subject to the laws of photography.

Is there a project that you absolutely want to do but that has not materialized so far – for whatever reasons?

No, when I think of a project, nothing stops me from putting it into practice.

Wait, there is indeed one exception! I would like to replace the badges on the Pioneer probes. The woman would also raise her arm on mine in greeting the aliens, like the man pictured next to her. This representation needs a contemporary update.

Do you have any advice that you would like to give young, aspiring artists or talents on their way?

Solidarize yourselves! Participate in art initiatives, exhibition groups, art associations, etc. The older I get, the more I become aware of the value of the collegial community. Together we are strong.

And finally: What is the name of Schlossallee in your Monopoly?

Home sweet home and pure variety; the Gleimstrasse in the Brunnenviertel in Berlin.

Paetrick, thank you for talking to us!

Thank you for the interesting questions.

www.paetrickschmidt.de

SUSTAINABLE. CLOSED-LOOP.

DISCOVER
MORE ON
THE TOPIC
ON PAGE 40



PROMISED.
KURZ

With RECOSYS® we bridge the gap to the closed-loop economy: From the leftover carrier material at the finishing plant, our take-back system enables us to produce PET recyclate for the plastics industry. This makes us the only manufacturer worldwide to do so. Learn more: www.kurz-graphics.com/nofoil

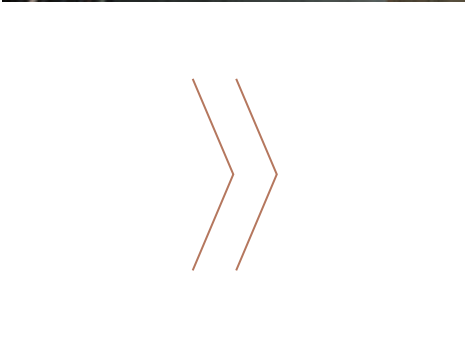


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Leipziger Typotage

Typography as a Medium of Orientation

The term “navigation”, originally a term used in nautical science, initially described steering to a destination on water, land or in the air. Today it includes a general orientation – in topographical spaces, in digital spaces, in printed works.

Typography and characters play an essential role, which is why this year’s Typotage revolved around this very topic and approached it from different directions.

“Typography and Navigation” was the title of the 26th edition, which took place on June 5, 2021 at the Museum of the Printing Arts, Leipzig, and explored how typography makes it easier to find one’s way around in everyday life, optimizes work processes, navigates the eye elegantly through texts or meets the changing demands of our world. Seven speakers from

practice and research gave an insight into their projects and invited to a discussion.

The conference began with the obvious: Typography on maps. Jana Moser (Leibnitz Institute for Regional Geography, Leipzig) reported on the tightrope walk between conveying information and aesthetics. Maps often have to reproduce a large amount of information, whereby typography plays a decisive role and must not be neglected. Often it is only the typography that creates meaning as an explanatory element.

Interdisciplinary approaches

From the two-dimensional map to the three-dimensional space, Jay Rutherford (Bauhaus University Weimar) reported on a project with students in Ahmedabad, India. There, interdisciplinary approaches were tested, on the one hand to deal with non-existent signs and on the other hand to deal with sign forests in major Indian cities. The different regional languages of India represent an additional challenge, resulting in multilingual signs: Hindi, English



- 1 View into the Museum of the Printing Arts in Leipzig.
- 2 Set cabinets in the small press room.
- 3-4 The participants of the 26th Leipzig Typotage.

and a regional language each with its own script. This aspect will play an increasingly important role in typography, as design increasingly functions internationally, i.e. has to adapt to regional writing systems and viewing habits.

In the contribution by Julian Jarosch (Academy of Sciences and Literature, Mainz), the focus was on the text itself. In his research, he deals with the eye movement when reading texts and the role that text typographic variables play in this. Specifically, he explained his experiments with fonts of equal thickness (non-proportional fonts), the influence of which on legibility and language processing he measured through eye tracking experiments. In doing so, he found that fonts of the same thickness lead to a cognitive adjustment in the recipient and that there are only minor effects on reading speed and text comprehension. Proportional fonts were recorded somewhat better by the test subjects. After a short adjustment, however, the eye can navigate successfully through the text in both font variants. However, the experiments are not yet complete.

It became very practical with Nico Wüst (Strichpunkt Design, Stuttgart), who presented various projects in the field of modular brand design. Modular and variable design is particularly interesting in the context of different output media and can optimize design processes. The topic of arti-

cial intelligence will also play a growing role; although it cannot replace the designer, it can, however, support through certain standardizations.

Benjamin Schöndelen (Deutschlandradio, Berlin) designed the visual relaunch process of Deutschlandfunk Kultur and opened the participants' eyes to the connection between typography and radio. A radio is simply switched on less and less frequently, as more and more people are listening to the radio via mobile devices or consuming the program as a podcast regardless of the broadcast time. So there is an increasing need for navigation and visual representation. This was achieved on the one hand by simplifying the website structure, on the other hand by making micro-typographical adjustments. With the relaunch in November 2021, for example, the number of font styles used to date will be reduced. Adaptations in the code also ensure uniform quotation marks and apostrophes.

Optimal functionality

The focus of Claudia Friedrichs' (zweigrad Design, Hamburg) contribution was on the practical implementation and showed how strongly the respective context influences the design. Using two examples, she made it clear how important close contact with users is. Optimal functionality can only be

achieved through compromises in design. Devices for use on construction sites must meet different requirements than those for private use indoors. Exactly what these are cannot be discussed alone at the desk, but needs to be supplemented with practical experience.

Finally, Nadya Kuzmina (Interface Designer, Berlin) talked about typography in video games and created a connection to the opening of the Typotage the evening before. Under the title "Typo-Play", the Leipzig games collective "People Can Play" invited people to playfully deal with typography. The short lecture and a „Let's Play" are available on the Leipzig Typotage YouTube channel. Nadya Kuzmina deepened the topic in her lecture and made it clear that typography in video games is an underestimated field and offers a lot of space for experimentation.

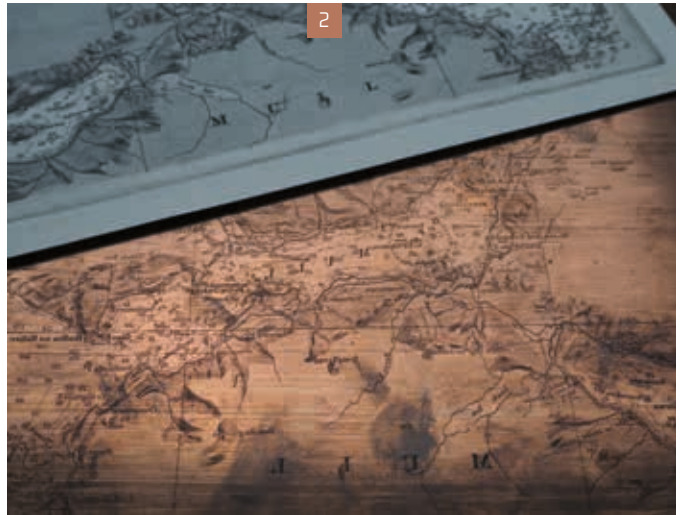
Promotion of the Art of Printing

The Leipziger Typotage are an event of the Gesellschaft zur Förderung der Druckkunst Leipzig e.V. (Society for the Promotion of the Art of Printing Leipzig e.V.), which has been taking place annually at the Museum



Type is ubiquitous, good typography is not.

1



2



of the Printing Arts, Leipzig, since 1995. In addition to type and typography, the conference also focuses on graphic design, art, production techniques in the print sector and related topics. It is about questions in an analogue and digital context with a view to history and innovative developments for the future. Practical examples, historical references and research results are discussed under an annually changing focus.

The Museum of the Printing Arts provides a unique setting for the conference. Historical, fully functional casting, setting and printing machines are located on four floors and are demonstrated daily. It is a lively industrial and cultural place that combines workshops and a museum and is dedicated to the intangible cultural heritage of printing techniques. Regular workshops also offer the opportunity to set and print texts yourself. Both beginners and more experienced “typesetters” will be happy with the rich stock of metal typesetting and with the support of the specialist staff. In doing so, some notice that the design of a text requires more than just putting together letters. Because typography is an art; it shapes information. The focus is always on legibility, because typography has a positive or negative influence on the conveyance of information. Today the term is broadly defined and extended to the de-

sign of communication media in general. The means of design are writing, images, lines, surfaces and empty spaces. Jan Tschichold once said: “Good typography is [...] there and yet not noticeable; inconspicuous, but a prerequisite for well-being, silent, supple [...] Good writing, correct arrangement; these are the two pillars of all writing.”

Macro and Micro

A distinction is made between macro and micro typography. Macro typography is about the overall design of a page, such as page format, type area, type of sentence, font size, line width or word separations. In addition, the placement of images or graphics, as well as the ratio of text to image, play a role. Microtypography is also called detailed typography and deals with the subtleties. It is about the choice of the font, the use of small caps (capital letters) or li-

gatures (letter combinations), the spacing of characters, words and lines as well as the spelling. While the first points leave a lot of creative leeway, there are clear rules for spelling, for example with regard to the format of quotation marks and dashes. Distances in particular have a major influence on reading speed and legibility. Narrow words and lines are more exhausting than an airy sentence in which the eye is guided clearly.

The most important design element in typography is font. The classification into 11 groups is common: Venetian Renaissance Antiqua, French Renaissance Antiqua (e.g. Garamond), Baroque Antiqua (e.g. Times), Neo-Classical Antiqua, Serif Linear Antiqua (also called Egyptienne), Sans serif Linear Antiqua (also Grotesk called, e.g. Helvetica), Antiqua variants, script fonts, handwritten Antiqua, broken fonts (e.g. Fraktur) and foreign fonts (e.g. Cyrillic). Both formal and historical criteria



- 1 Letters from the museum collection.
- 2 Printing plate for map printing in gravure printing.
- 3-4 Letterpress workshop at the Museum of the Printing Arts

were used for the classification. The choice of font influences legibility and aesthetics and is based on the type of text and the font.

What is good Typography?

In the middle of the 15th century, Johannes Gutenberg not only developed printing with movable type, but also typography. With the first printed font, Textura, decisions about letter shapes, spacing or highlighting were also necessary. These were considerations that were also relevant for handwriting, but were handled individually. The work of the prototypographers – as the typographers of the first generation in the 15th century were called – was refined over the following centuries. Typographic systems of measurement and terms, which for the most part developed between the 17th and 19th centuries, are still used today, also in a digital context. The point as a measu-

re of font size, for example, goes back to the French François Ambroise and Firmin Didot. At the end of the 18th century they defined a point of 0.376 millimeters, which German type foundries also used as a guide. In addition to the French point, there was also the American point and, with the introduction of desktop publishing in the 1980s, the PostScript point, which is also used by today's word processing programs. Many of the fonts used today also have their origins in lead type. The Times, for example, was designed in 1931 for the magazine „The Times“, and the Futura font was designed in 1927 by Paul Renner. Both are timeless fonts that are still used today alongside many others such as Garamond, Bodoeni or Walbaum. The widening of the character spacing, the “spacing”, also comes from hand typesetting. Spaces are narrow strips of metal that create space. If you take a closer look at type and hand typesetting, you will repeatedly come ac-

ross terms that we today mostly use in digital handling of type without knowing their origin.

One of the greatest challenges in digital design with text are the different output devices. The contents are no longer unchangeable, as in the printed book, but adapt to different formats. This variability must be taken into account from the outset so that content communication works in different types of display.

Type is ubiquitous, good typography is not. However, it is a prerequisite for text to be read and understood with ease. So what is good typography? That clearly depends on the evaluation framework and changes with the zeitgeist. In any case, content and form must be in a meaningful relationship to one another. The form must serve the content, which allows different interpretations, but is condensed in the principle “Form follows function”. But like many other things, typography not only requires following rules, but above all practice.

The 27th edition of Leipziger Typotage will take place in the spring of 2022 at the Museum of the Printing Arts and online. ||| **Almut Hertel [Museum of Printing Arts, Leipzig]**

www.typotage.de
www.druckkunst-museum.de



The production capacity of the Guaíba pulp mill's line 2 will be increased from 1.5 million ADt/y to 1.85 million ADt/y.

Valmet & CMPC

Letter of Intent for the Modernization of Guaíba Pulp Mill

Valmet and CMPC have signed a letter of intent (LOI) for Valmet to deliver key technology for the BioCMPC project. The target of the project is to increase the production capacity of the Guaíba pulp mill's line 2 from 1.5 million ADt/y (air dry tonnes per year) to 1.85 million ADt/y.

The modernization is expected to start operation in the fourth quarter of 2023. Valmet and CMPC target to finalize the contract during October 2021.

This expansion project, BioCMPC, targets both to increase the production capacity of the Guaíba mill and also improve the environmental performance with for example increased pro-

duction of renewable electricity and minimized water usage in pulp production process.

"Valmet delivered the CMPC's Guaíba mill line 2 in 2015 and the mill has been a showcase for many of our technologies. Over these years we have introduced value adding industrial internet solutions and offering our expert services for mill maintenance. To be chosen as the main part-



With this project we will continue delivering the best technology available combined with leading automation and industrial internet solutions for efficient and even more sustainable pulp production.

ner for this remarkable project reinforces Valmet's commitment for a more sustainable future," says Celso Tacla, Area President, South America, Valmet.

"With this project we will continue delivering the best technology available combined with leading automation and industrial internet solutions for efficient and even more sustainable pulp production. This delivery will feature our latest technology to lower water usage, reduce emissions and eliminate odorous gases. Our experts will support optimizing the mill performance both onsite and remotely," says Bertel Karlstedt, Business Line President, Pulp & Energy, Valmet.

Technical information about the delivery

Valmet's delivery for the Guaiba pulp mill line 2 modernization will include rebuild of the pulp drying, fiberline, evaporation and white liquor plant, a new recovery boiler and new ash treatment, extended distributed control system including advanced industrial internet features. The technology delivery is supported by spare parts packages. The upgraded line is optimized for high reliability and performance with low environmental impact.

The pulp drying line upgrade will increase the drying and baling capacity and performance with the same high operational safety requirements that always guide Valmet's projects. The upgrade includes improvements to screening and drying, automatic tail threading and an additional baling line.

The fiberline upgrade includes cooking plant technology update, fiberline improvements in brown stock and post oxygen washing and a new additional bleaching stage. The upgrade gives flexibility to minimize water usage and effluent generation improving the fiberline sustainability and environmental KPIs.

The white liquor plant upgrade includes capacity increase of the recaustisizing and lime kiln. The modernized lime kiln electrostatic precipita-

tor (ESP) and lime mud disc filter will ensure low emissions.

The evaporation plant will be upgraded to process 2,000 t water per hour. The eight-effect design provides high steam economy and features robust and reliable Valmet Tubel design. Improved condensate treatment will lower water consumption of the mill.

The new recovery boiler will have a design capacity of 1,900 tds/d (tonnes dry solids per day) and will feature several high-power features for low energy consumption and high steam generation. The delivery also includes electrostatic precipitators (ESP) tailored for recovery boiler conditions. The recovery boiler ash will be treated with Ash Leaching Duo technology offering easy operation and improved leaching efficiency to maximize cooking chemicals recovery.

The CMPC Guaiba mill has already been the benchmark of the industry as an odorless mill. The collection and handling of the mill's odorous gases is further improved with NCG upgrades across process islands. The automation delivery includes Valmet DNA distributed control system, advanced process controls (APC) for selected process areas, analyzers and online measurements.

The delivery is supported with extensive Valmet Industrial Internet (VII) services package with onsite and remote expert support. The VII services include Valmet Performance Center support, Data Discovery, Dynamic Center Line Advisor, Performance Monitoring tools and Operator Training Simulator.

About the customer CMPC

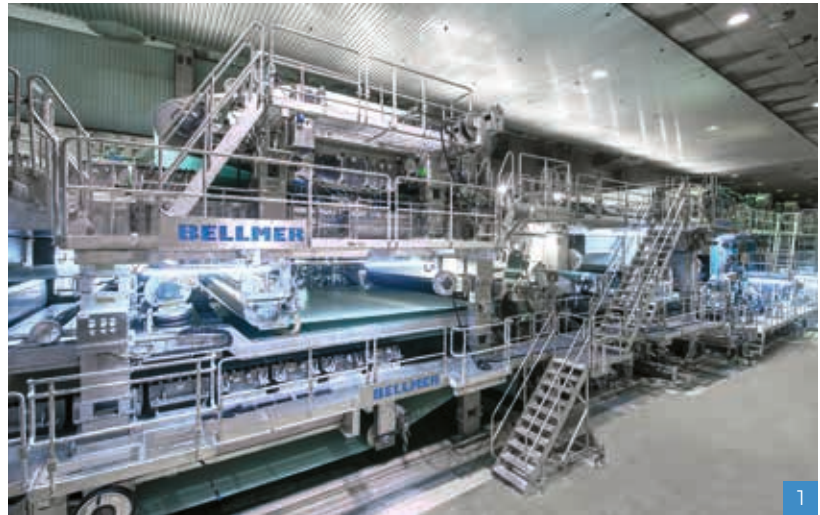
CMPC produces and markets wood, pulp, packaging products, paper, tissue, and personal care products from certified plantations. The Company has over 641,000 hectares of forest plantations, mainly pine and eucalyptus, located in Chile, Brazil and Argentina. CMPC Pulp SpA operates 4 production lines in Chile and 2 in Brazil, with total annual production capacity of approximately 4.1 million metric tons of pulp. |||



Bellmer

Tailor-Made Types of Headboxes for Different Applications

The demand of wood fiber based packaging materials has been increasing by ca. 15 percent since the corona pandemic eased in China and rest of Asia. On-line shopping is growing worldwide and similar increase in demand of packaging materials is foreseen soon in North America and Europe.



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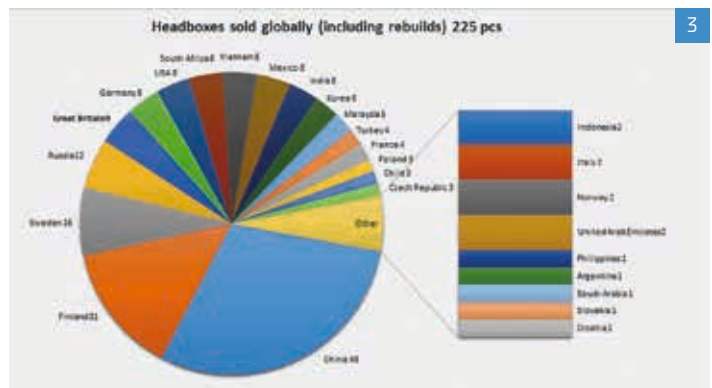


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Bellmer has been enjoying the recovery of board machinery investments especially in Asia. The company has now a record order backlog of 22 headboxes to be supplied to global markets until May 2022. Majority of the orders have been placed by customers having mill sites in China, Korea, Malaysia, India and Cambodia. The 225 orders of Turbo series headboxes from global markets have been divided as seen in fig. 1.

Bellmer's headbox portfolio consists of hydraulic and rectifier roll headboxes marketed with brand-names TurboJetter and TurboStreamer. The advantage of rectifier roll headboxes is the wide flow range of 1 to 2,8 meaning that the same headbox can operate e.g. paperboard production of 110 gsm and 300 gsm without deteriorating board quality. The Bellmer TurboJetter is a high-tech hydraulic headbox equipped always with two diffusor elements and an optional dilution control for optimum cross-directional board profile 2-sigma of 0,3–0,4 and superb formation.

Kotkamills BM2 in Finland is a premium board machine, which produces on a triple-layer wire section concept recyclable, renewable, high performance barrier boards for food service and cup



3

- 1 Great CD-profiles at Kotkamills BM2, Finland.
- 2 The rectifier roll headbox TurboJetter.
- 3 Fig. 1: Headboxes sold globally (including rebuilds).

stock end uses. By applying unique water-based dispersion on-line on virgin fibre based carton-board, products such as cups and plates can be easily recycled and repulped. Thanks to the advanced headbox technology, Kotkamills achieves very great CD-profiles and stable edges with the visual appearance of the board being superior. |||



Voith presents the world's most modern pilot coater for barrier papers and flexible packaging solutions

The market demand for sustainable barrier papers is continuously increasing. The innovative papers play an important role in the field of sustainability. With the modernized pilot coater in Heidenheim, customers can now directly test up to 18 different coating variations on all grades of specialty, board and packaging as well as graphic paper and transfer the results directly into practice.

In addition to the very flexible setup of the coating stations, Voith placed a high value on extremely efficient drying process under real production conditions. Latest digitalization and automation technologies from the Papermaking 4.0 portfolio enable full process control and a wide range of analysis options during pilot trials.

voith.com/technology-center

VOITH



Pulp Analysis

Hallsta Mill – The Biggest PulpEye User in the World

Holmen's paper mill in Hallstavik, Sweden, has received its fifth PulpEye online pulp analyzer, making the mill the biggest PulpEye user in the world. The first one came in 2006 and the fifth has just arrived at the mill.

Which benefits do online pulp analyses give to pulp- and papermakers? How come that a fairly small Swedish high-tech company has established itself globally and why has the Hallsta Paper Mill for the fifth time chosen pulp analysis equipment from PulpEye?

"We were five enthusiastic engineers in Sweden with a solid background in measurement of pulp qualities online who founded the PulpEye company in 2002," says Öjvind Sundvall, one of the founders and MD of PulpEye. "Based on our experiences we were convinced that it ought to be possible to develop better technologies for measuring important pulp properties online com-

pared to the ones existing in those days. Therefore, we decided to set sails and together with users develop our own solution starting with analyzer modules for fibre, shives and freeness measurements. Since then more pulp analyzer modules have been developed and installed in both chemical and mechanical pulp mills as well as in OCC and MDF plants worldwide."

"The first PulpEye customer installation was in 2004 and the historical first customer was Rottneros buying a PulpEye with modules for online measurement of fibre, shives and freeness as base functions. This first installation is after seventeen years still

running. The mill has since then done comprehensive production investments as well as installed additional PulpEye equipment and modules."

Hallsta Paper Mill, an early user of PulpEye analyzers

Another very early PulpEye user is Holmen Paper's Hallsta mill which already in 2006 bought and installed their first equipment. For many years the mill, located about 100 kilometres north of Stockholm, was one of Europe's biggest newsprint mills, and in 1974 the mill had as many as eight paper machines. Since then it has changed quite



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4

- 1 Holmen Paper's mill in Hallstavik has just installed its fifth PulpEye.
- 2 The CrillEye module is increasingly used by pulp, paper and board producers to optimise the process and product quality.
- 3 PulpEye is a modular analysis system developed for the pulp and paper industry.

a lot and today has two paper machines, the 8.6 m wide PM11 and the 8.5 m wide PM12.

In 1974 the mill was the first in Sweden to start production of TMP pulps and since a number of years the whole production is based on TMP pulps from fresh spruce. Like most producers of newsprint and similar printing grades the mill has had to develop and produce other paper products and today Hallsta Paper Mill is a big producer of papers for applications like books and magazines. It is also where many of Holmen Paper's speciality products have been developed and to a large extent are manufactured. Paper from Hallsta Paper Mill is eco-

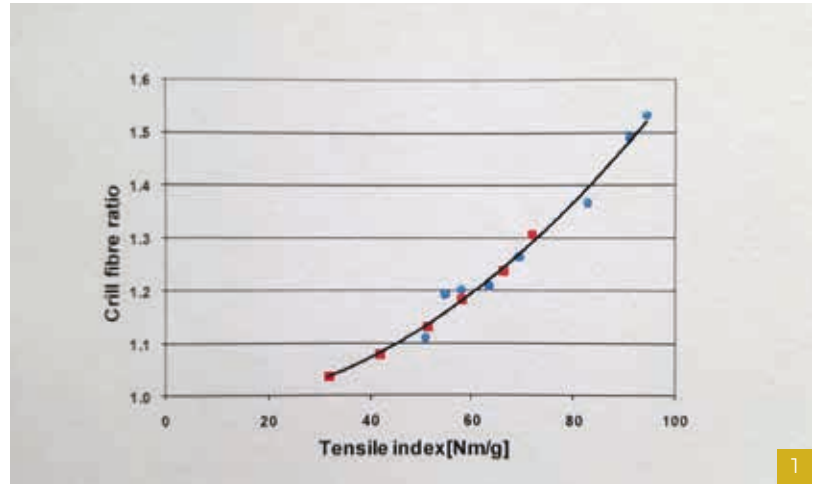
certified, and brands produced are Holmen View, Trnd, XInt, Plus, Book, EpiqQ, Uniq, Gift, Pack and Note. The mill employs about 370 people.

"The Hallsta Paper Mill has a fifteen-year history with PulpEye and is with five installed units now the biggest user in the world of PulpEye analyzers," says Öjvind Sundvall. "Now three analyzers are placed in the TMP plant and since 2009 there is one in the paper mill, analysing samples from both paper machines' stock preparations. The fifth, connected with an RMEye unit for loading manual samples, is placed in the laboratory and is also used as a master for all online pulp analyzers in the mill."

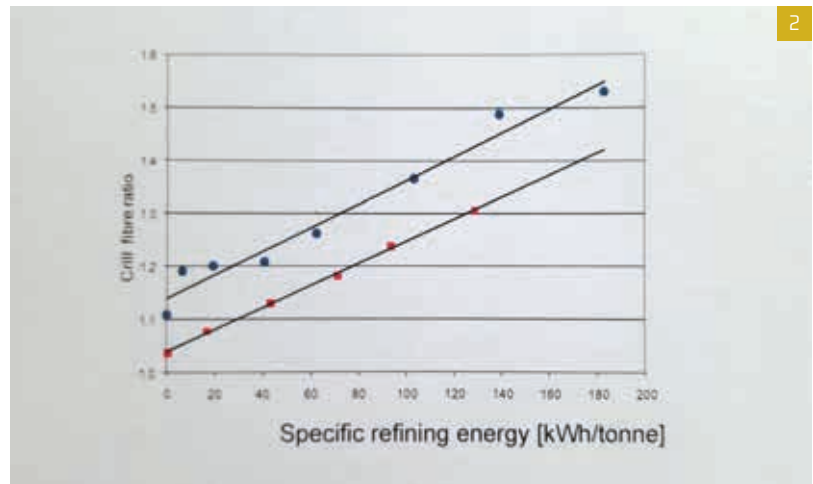
"Our existing pulp analyzers had for many years served us well but they were gradually approaching the end of their lifetime," says Maria McGuinness, Production Engineer, TMP and Bleaching, at Hallsta Paper Mill. "A couple of years ago we therefore evaluated the different future replacement alternatives. We wanted a robust technology combined with flexible usage as well as good service and support and concluded that PulpEye was the pulp analyzer most suitable for our needs. We have just received our fifth PulpEye in the mill. So now we have a modern and efficient way of controlling pulp and stock quality."

The PulpEyes in the TMP department

We bought this unit to start learning even more about the fibres and how we develop them in our process.



1



2

are used to quality control of the pulp as well as of the reject handling. The one in the stock preparation is used to control the LC refining processes. All PulpEye analyzers are equipped with fibre, shives and CSF modules and in addition one analyzer in the TMP department is also equipped with a CrillEye module.

The importance of crill for strength properties

The CrillEye module is a good example of how research results obtained in a technical institute can be brought to market through cooperation with a commercial company and it is a story worth telling.

The existence of very fine fibrous material called crill has been known since the early 1960s. Crill is finely divided cellulosic material liberated during pulp refining. The crill particles are typically 0.25 micrometres in width and about a hundred times thinner than the fibres. Although only about one per cent of the weight of fibres and other particles in the furnish is crill, it can correspond to as much as fifty per cent of the total free surface area. This shows the importance of crill for the strength properties of pulp or paper.

Research studies at former Innventia, now part of RISE Research Institutes of Sweden, showed that crill is the single variable having the strongest connection to paper strength. Laboratory results in Figure 1 show a strong correlation to paper ten-



- 1 Fig. 1: Lab crill measurement correlates very well to pulp and paper tensile strength index.
- 2 Fig. 2: Crill to fibre ratio is a linear function of specific refining energy.

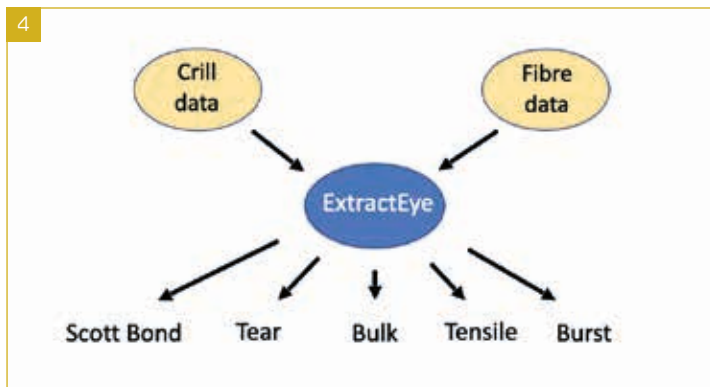
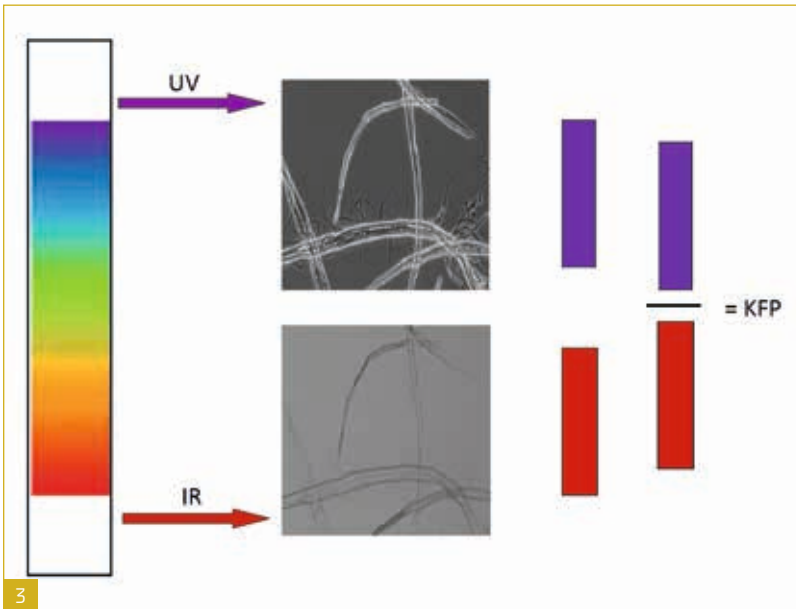
sile strength index. The more crill there are on and around the fibres, the stronger the paper will be. By measuring the amount of crill it is possible to pre-calculate the strength of the pulp and hence define the refining needed to optimise the amount of crill. The crill content of the pulp has a linear function of the specific refining energy applied as shown in Figure 2. This linearity makes managing crill content a simpler task.

The crill measurement is based on the comparison of two optically measured surface areas by light absorption. It is adapted from the kappa measurement optical detection system. The total area of fibres and crill is measured with ultraviolet (UV) light. The total area of fibres only is measured with infrared (IR) light. The light absorption measurements are extremely fast, which is

an advantage for online detection and measurement update speeds. The "crill variable", KFP, is a concentration independent ratio, obtained when the fibre plus crill area (UV) is divided by the fibre only area (IR). The measurement can differentiate between crill particles that are detached from the fibres and those which are still attached. Figure 3 illustrates the measurement principle.

Modular fibre analysis system

CrillEye is a measurement module of the modular PulpEye system. Data from PulpEye and crill data are fed into the ExtractEye calculation module where tensile, tear and burst strengths as well as bulk and Scott bond properties are calculated, as



3 Fig. 3: The principle of crill measurement.

4 Fig. 4: Using ExtractEye bulk, Scott Bond value, bulk, tear, tensile and burst can be calculated online from crill and fibre data.

shown in Figure 4. This is done every fifth minute and the results are shown online to the mill operators on screens.

“At Hallsta we have a CrillEye module in one of our PulpEye units in the TMP plant”, says Anders Thorén, acting Mill Manager at Hallsta Paper Mill. “We bought this unit to start learning even more about the fibres and how we develop them in our process. “Old school” information isn’t giving us the full picture so with some more development and understanding of the CrillEye module we hope to open a new book of information.”

“Today most mills in the pulp and paper industry have a mill data base containing a huge amount of process and quality data from which ExtractEye can retrieve data for hundreds of variables and present a clear summary of how the process is run-

ning,” says Otto Lindeberg at Extract Information, the inventor of ExtractEye. “In mills using ExtractEye it continuously retrieves process and quality data important to board or paper manufacturing respectively. Process operators can follow calculated pulp properties and make necessary adjustments to keep the quality on specified targets.”

“In Hallsta mill, work is underway to build a process model with important parameters that affect quality outcome,” Maria McGuinness continues. “The model is intended to be used as an operator tool in the TMP plant to quickly find causes for deviations in quality outcome, and it contains both process data and quality data from PulpEye measurements. With the ExtractEye software, we see the opportunity to be able to look at more quality parameters

at the same time, i.e. make more use of the data that is available today and thus better understand the cause of quality deviations.”

For mills producing any kind of pulp there is a package available from PulpEye, PulpOnTarget, in which ExtractEye retrieves data for fibre properties from PulpEye to calculate pulp quality data to give a corresponding overview of the pulp production. Pulp mills therefore install PulpOnTarget to get a good and always updated process overview to optimise the process as well as the product quality.

Fruitful cooperation with institutes and universities

“No one can come up with solutions to each and every problem and this is also true for PulpEye,” Öjvind Sundvall continues. “Apart from close cooperation with customers getting ideas for developments we are also cooperating with research institutes and universities bringing cutting edge technology to the market. Examples of such cooperation are with FP Innovations which resulted in analyzer modules for analysis of fibre wall thickness and for measuring vessel cells, with former Innventia for the CrillEye module and with RISE Processum in developing the DotEye module together with a number of pulp mills.”

“Having started on a quite modest scale, gradually supplying Swedish pulp, paper and board mills, our analyzer equipment is now used in sixteen countries worldwide. We are very grateful for the trust shown us by customers like Holmen Group and many others for their willingness to cooperate and bring new development ideas to us and hence to the market,” Öjvind Sundvall finishes. ||| **Sören Back, SB Kommunikation AB**



Zeller+Gmelin

Product Development With Competence and Speed

LED technology is a success story in many areas. This also applies to the printing industry. LED UV curing of printing inks and coatings is picking up speed in more and more market segments. To keep pace with the fast-growing demand for LED inks among its customers, ink manufacturer Zeller+Gmelin GmbH & Co. KG invests a lot of energy in research and development.

In the case of the recently launched Uvalux® LED U540 series, less than a year elapsed between the start of development and the market launch. In this article, Michael Handl explains how such a rapid pace can be achieved for a complex task. He joined Zeller+Gmelin in 2019 and is head of Commercials and Packaging in the R&D department.

When Zeller+Gmelin launched the development of the new Uvalux® LED U540 Commercial ink series in November 2019, it was by no means the first product for LED application. Because the buzzwords LED, sustainability and energy saving have de-

termined the trend in all product areas in recent years, the ink manufacturer is currently driving the development of corresponding ink series in all segments. This ranges from offset printing in the commercial and packaging sector to flexo printing in the narrow-web segment or metal or moulded body or cup printing to inkjet printing for labelling and marking. According to Michael Handl, the fact that the current Commercial series could already be presented at a sales seminar in October 2020, i.e. after only eleven months, is on the one hand due to Zeller+Gmelin's core competence in the field of radiation-curing

inks and on the other hand to the already existing experience with ink series for LED applications. For example, the company had started development work on the Uvalux® LED U581 FCM series for indirect food contact in February 2019.

Customers receive a sustainable complete solution

Zeller+Gmelin's goal is to round off the range of LED inks for offset printing into a complete package in the course of 2021, explains Michael Handl. The two series Uvalux® LED U581 FCM and Uvalux® LED U540 already fit seamlessly into the overall portfolio. This is characterized by the targeted specialisation in radiation-curing ink systems - irrespective of the technology chosen, such as UV, electron beam or LED curing. In addition, a consistent demand from users for sustainable solutions can be observed across all processes, which is also taken into account. This includes that both the product itself and the entire process chain are designed sustainably.

"With LED-Ink series, we are serving a market that is growing in the long term with sustainable products," Michael Handl is certain. He cites a number of aspects as reasons for this. "LED has the advantage that energy-saving production is possible. At the same time, ozone is no longer produ-

- 1 The new ink series from Zeller+Gmelin are designed for LED UV application in sheetfed and web offset printing.
- 2 Michael Handl joined Zeller+Gmelin in 2019 and is head of Commercials and Packaging in the R&D department.



ced in the lamp area, from which the personnel at the machine must be protected by elaborate extraction equipment. Furthermore, the need for lamp replacement and the maintenance effort are noticeably lower due to the significantly longer service life. Since LED systems no longer contain mercury, there is no risk of staff coming into contact with this critical substance. For customers who switch directly from conventionally drying to radiation-curing inks, there is also a time advantage because further processing can take place immediately. This means that more jobs can be completed in a shorter time.”

Specialities complete the ink series

Right from the start of development, Zeller+Gmelin had planned to complete the LED ink series with additional products such as varnishes and cold foil adhesives. A whole range of these products is now available both as LED variants and in FCM quality. In this context, Michael Handl points to a special development success: an LED accelerator in FCM quality. It is intended for cases where increased reactivity is required. This applies, for example, to demanding processes where critical substrates have to be printed. This opens up the possibility for users who do not want

to keep an additional ink series in stock to “push” the reactivity of certain jobs with the help of the accelerator if necessary. The application is simple. The accelerator is stirred into the ink before processing. Then it is added to the ink fountain and printing can start.

Printing inks for food compliant packaging

Developing printing inks for the food packaging sector is already a tradition at Zeller+Gmelin. The company launched its first low-migration ink for UV printing as early as 2006, making it a pioneer in this field as far as Michael Handl is aware. Recently there has been an increasing demand for LED offset inks for use in the food sector. The decision to start the development project described here with the Uvalux® LED U581 FCM series should be seen against this background. The abbreviation FCM stands for ‘Food Contact Material’ and already suggests that the development of such a colour is particularly difficult and requires special know-how. “In contrast to the formulation of a conventional UV ink for the non-food sector, the choice of raw materials is doubly restricted when the criteria LED and food come into play at the same time,” explains Michael Handl. “For the subsequent development of the com-

mercial ink, the experience was then again an advantage to enable the record-breaking short time to market.”

Zeller+Gmelin will certainly be able to use this experience for the developments that are currently in the pipeline. These include, for example, the Uvaflex FCM LED Y581 ink series for flexo and narrow web printing. LED inks for the areas of ‘Metal Decoration’ and ‘Rigid Plastic’ as well as inkjet printing are also in the pipeline.

Printing inks and sustainability

Michael Handl sees a lot of need for a development in the future around the whole issue of sustainability. This begins with the selection of raw materials, which naturally complies with guidelines such as the EuPIA exclusion policy, Swiss Ordinance or Nestlé Guidance. In addition, close observation of the market is indispensable to enable customers to plan for the long term with product series of high and consistent quality. As soon as there are signs that a substance may become the focus of legislation, this development must be taken into account. Such forward-looking development work should prevent colour formulations from having to be changed at short notice due to raw material bans. The industry has already experienced more than once how great the effort is to find substitutes and subsequently adapt the formulations. For customers, this can also entail lengthy approval procedures, depending on the market segment.

The fact that Zeller+Gmelin has its own analytics department is of great value to the company. It keeps an eye on market developments and provides advice to ensure that research and development is always up to date and can act with foresight.

Compost, recycle and de-ink

Another topic that will play a major role for Zeller+Gmelin in the future with regard to sustainability is compostability and recyclability, especially for food packaging. For example, for packaging to be consi-



dered compostable according to EN/DIN 13432, it must decompose by at least 90 per cent within a maximum of 90 days in an industrial composting plant. To fulfil this, suitable printing inks and varnishes are also required. The C81 ink series for cup printing has now been tested in terms of compostability. For the R&D department at Zeller+Gmelin, this topic is high on the agenda for all further projects, says Michael Handl.

In the course of the sustainability debate, the de-inkability of inks has also come increasingly into focus. Because Zeller+Gmelin pays special attention to the complete recyclability of products printed with inks or varnishes from Eislingen, the company has had various ink series assessed by the independent International Research Association for Deinking Technology (IN-GEDE) according to their method 11. After all, good de-inkability is an essential prerequisite for recycling paper-based products. All samples were classified as "good de-inkability" and thus all fulfil the requirements of the highest category.

LED technology – entry or change

Michael Handl has already listed the advantages of LED technology in ink curing. Consequently, it is currently steadily gain-

ing market share. The users who are newly deciding to use LED curing can be divided into two groups. The first has been using traditional UV inks and the second has been using oxidative drying systems.

When switching from conventional UV systems to LED technology, the main advantages are the well-known savings in energy, the elimination of ozone formation and mercury use, and the improved processing of very thin and temperature-sensitive materials. "Printers who previously used conventional inks gain a very charming advantage," says Michael Handl. "Because the ink layer is cured immediately, the print product can be further processed directly afterwards. There is no need to allow for drying times. This aspect is a very decisive factor for most businesses."

Progress in LED development

With the new LED colour series, Zeller+Gmelin has achieved a number of advances compared to the previous generation. For example, the adhesion and reactivity properties have once again been improved significantly. The ink-water balance has also reached an even higher level.

"Especially on BOPP film, it was sometimes difficult to achieve good adhesion in

the past. Here we have taken a big step forward, especially with the Uvalux® LED U581 FCM series," Michael Handl cites as a concrete development success. For packaging printers in the food sector, it is particularly important that this ink series is just as suitable for printing on foils as on paper and board. This saves companies from having to stock different ink systems for individual material groups. "The Uvalux® LED U540 Commercial ink series also offers a special solution to the problem of optimising abrasion resistance. This means that overpainting can be omitted for certain applications. Abrasion tests, which were carried out on original material such as chocolate boxes and whiskey packaging, showed very good results even with metallised board qualities. The bottom line is that the printer saves a work step and thus reduces its costs."

Rapid response to market demands

When asked about the expectations Zeller+Gmelin has for the new products, Michael Handl sees the Uvalux® LED U581 FCM ink series as a logical continuation of the successful activities with the existing portfolio in the food packaging sector. The introduction of the Uvalux® LED U540 Commercial series is also intended above



1+2 The LED UV colour series are matched to the wavelength ranges 385 and 395 nm as well as to H-UV applications.

all to help open up the commercial printing sector even more. "In general, we are focusing on the company's strengths of providing our customers with high-quality and safe products. Our team consists almost exclusively of ink specialists. This enables us to respond quickly and flexibly to customer demands. Technically competent service is of decisive importance. Its task includes, among other things, recognising the requirements of practice. With this know-how, as well as short lines of communication and open communication within the company, it has already been possible to develop numerous specialities that represent the expected practical solutions for customers. In this way, we want to be able to react to new tasks at short notice also in the future."

Using the advantages of LED technology

The series of LED offset inks called Uvalux® LED U540 is intended for paper and board print products such as commercials, mailings or forms as well as labels and packaging in the non-food segment. In view of the numerous advantages of LED technology, LED offset printing has become a growth market in the commercial printing segment – both sheetfed and web offset.

Suppliers of printing presses and UV systems have subjected the inks in the new series to thorough print tests and found them to have very good properties. The balanced ink/water ratio and optimised flow properties deserve special mention. Both ensure stable production in the press. The optimally adjusted pigmentation offers a high colour strength, which on the one hand delivers brilliant and detailed print results and on the other hand improves the yield. At the same time, the Eisingen-based company's development department has designed the ink series specifically for high press speeds. In practical tests, stable offset printing was achieved even at speeds of up to 18,000 sheets per hour or 220 m/min in web printing.

The ink series is matched to the wavelength ranges 385 and 395 nm as well as to H-UV applications and adheres very well to various paper and board qualities. In addition to high gloss, the ink layer also has good flexibility. The surface properties are complemented by high scratch and rub resistance as well as good overprintability with all common processes.

Low-migration series for LED UV offset printing

Uvalux® LED U581 FCM are low-migration printing inks for LED UV application in

sheet-fed and web offset printing. At the same time, they are classified as low-odour and are therefore particularly suitable for printing food packaging – both paper and film. All raw materials used are up to date with regard to the requirements of the EU chemicals regulation REACH and the EUPIA exclusion policy.

Features of the ink series include a well-balanced ink-water balance and optimised flow properties, so that it ensures stable production printing in the press. Due to the high reactivity, an LED unit is sufficient for reliable curing. The absorption spectrum of the new series is designed for the wavelength ranges 385 and 395 nm and H-UV applications. In addition to the aspect of migration safety, printing with the new LED UV ink series also offers the advantage of lower heat input into the substrate, so that temperature-sensitive substrates can also be processed. It also shows a very low curling tendency, making it ideal for very thin film substrates. Because various cold foils can be overprinted very well, high-quality finishing of the printed products is possible.

The new ink series from Zeller+Gmelin are designed for LED UV application in sheetfed and web offset printing.

The LED UV colour series are matched to the wavelength ranges 385 and 395 nm as well as to H-UV applications. |||

How long was the production line shut down for if there was a problem with label printing?



» According to a recent study by Loftware subsidiary NiceLabel, in which 300 IT managers from manufacturing companies in Germany, France, Great Britain and the USA took part, more than two thirds of those surveyed failed to produce for more than an hour due to incorrect labeling. 77 percent recorded such a loss of production more than four times a year.

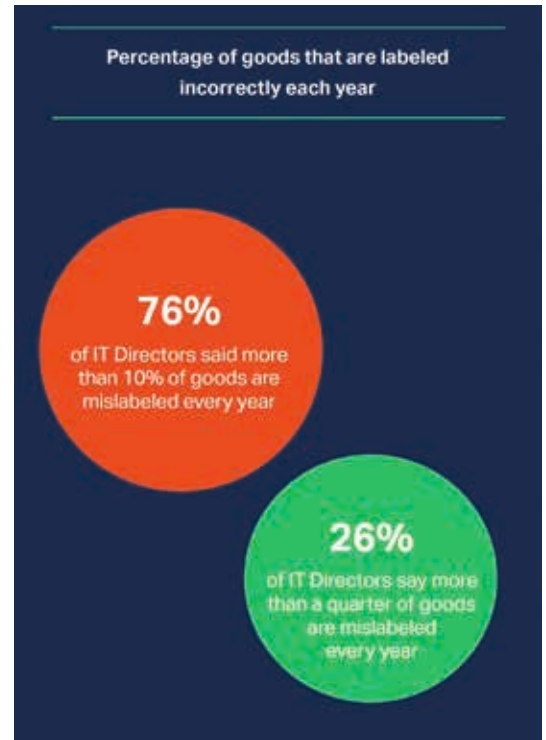
Loftware

A Quick Change of Labels Ensures a Company's Success

In the global market, companies have to react quickly to changed customer requirements or new legal requirements. This forces them to make frequent changes to product labeling. The better companies deal with it, the faster they can introduce products and save costs on top of that.

In today's complex manufacturing environment, many companies continue to struggle with isolated labeling systems driven by inefficient manual processes - with no way to access data from ERP and warehouse management systems. This makes it difficult for companies to change product labels quickly without using their IT department - a long and costly process that is neither efficient nor effective.

The negative effects of this development can be seen almost every day in practice. According to a recent study by Loftware1, which included 300 IT directors from manufacturing companies in Germany, France, the UK and the US, more than half of those surveyed said that their compa-



» Around three quarters of the companies involved in the study registered more than 10 percent of incorrectly labeled goods in the past year. And for almost 26 percent, this applies to more than a quarter of all products.

ny took at least a day or more to change labels. Around three quarters of them registered more than 10 percent of incorrectly labeled goods last year, and almost 26 percent of them registered that for more than a quarter of all products. For two thirds of those surveyed, production was interrupted for more than an hour because of this, which happened four times a year for 77 percent. A production standstill costs German companies an average of 138,000 euros per hour.

It is therefore hardly surprising that for more than a third of the study participants, the greatest challenge when introducing new label designs is avoiding errors that require a product to be relabeled.

Data silos encourage errors and generate costs

Despite this unfavorable situation, many companies have still not switched to a company-wide labeling solution that is integrated into business applications. They continue to use their own applications, deploy them as needed, and rely on unlinked or manually entered data.

With this isolated and inefficient approach, companies risk unnecessary disadvantages, some of which are associated with high costs: They have to support multiple applications, can only implement customer requirements with a delay and may pay fines for non-compliance with legal regulations.



» Author Josh Roffmann, Vice President, Loftware, is responsible for product management.

Cloud technology lowers entry barriers

Fortunately, this situation is changing, as many companies are recognizing the advantages of cloud technology: Even if there is still a long way to go, the trend towards the cloud in the entire manufacturing industry cannot be overlooked. Cloud-based labeling is an important part of this ongoing migration. The benefits of this approach include the ability to streamline and scale the labeling process. This saves companies considerable sums of money that they would otherwise have to spend on the IT infrastructure.

Until now, the use of high-performance labeling solutions only made sense for large organizations that had the necessary resources and internal IT skills. However, the barriers to entry are reduced by the cloud technology, so that even smaller companies that do not have sufficient IT skills or the budget required to operate hardware and software can use such solutions.

Perhaps the most important benefit is that the cloud-based digital transformation of labeling gives companies the ability to control labeling processes from any location. Role-based access by people with the appropriate permissions ensures that business users can access labels and carry out quality assurance measures - regardless of whether the labels are required in the warehouse, in the factory or in another facility.

Modern labeling solutions reduce costs and increase flexibility

Indeed, a centralized, modern labeling system can improve the quality and agility of a manufacturing company, reduce costs, and promote greater flexibility in the supply chain across the

company. Such a system also provides consistency and accuracy in a global environment. In addition, it simplifies the overview, supports the maintenance of business operations and makes it easier for employees to comply with company standards.

The element of centralized control and management is crucial here. When product labeling is disorganized, simple tasks like changing a shipping label not only become tedious, but can also damage branding and consumer safety.

In addition, data-driven labeling with business logic enables users to change product labels on a large scale. To do this, they use information from their business applications and configure rules that dynamically adapt the label content based on their data. Expanding labeling to include suppliers and partners across the supply chain also ensures that they are using the correct templates and content. Relabeling is therefore no longer necessary. This not only saves companies time and money, but also reduces waste, which makes the entire process more sustainable.

A centralized system provided in the cloud also helps manufacturers avoid errors that can occur when companies maintain multiple labeling solutions without a connecting interface for checking relevant data. All of these problems are costly: some companies report that they spend millions of dollars each year printing corrected labels - not even factoring in the additional costs of labor, storage, and lost productivity. ||| **Josh Roffmann, Vice President, Loftware**

¹ www.nicelabel.com/de/ebook-modernizing-streamlining-digitizing

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Conference Hosts:

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Preliminary Program & Highlights 2021

Bioeconomy

“Industrial Site Symbioses - On the Benefits of Integrating Power-to-X Technologies in Pulp Mills” - Daniel Klüh, Frank Wegener, Matthias Gaderer – TU Munich, Zellstoff Stendal GmbH

“CO₂ Neutral Pulp & Paper Industries in 2040” - Daniel Stegmann – Uniper SE

“How are future material developments influenced by recent legislative actions like SUPD?” - Martin Zahel – Papiertechnische Stiftung (PTS)

Process innovations

“Online measurement technology for real-time analysis of industrial process suspensions” Johannes Holubec – KraHol GbR

“EcoBright - A Bleaching Technology Reducing the Environmental Impact” Peter Biza – Imerys S.A.

“Enhancing dry and wet strength of paper by fibre engineering” Alexander Feldner – Papiertechnische Stiftung (PTS)

Fibre Forming

“Disrupting the traditional Molded Fiber industry with the HP Molded Fiber Advanced Tooling Solution” John J. Briden – HP Molded Fiber Advanced Tooling Solution

“Kiefel Natureformer development - Three years from the Idea to more than 100 production machines for molded fiber products” Matthias Hausmann, Richard Hagenauer – Kiefel GmbH

New Fibre Products

“NOVUM Project: Cellulose-based material for 3D printing” Sascha Galic – J. Rettenmaier & Söhne GmbH + Co KG

“Outlook for new fibre raw materials for packaging in the coming years” Peter Désilets – pacocon GmbH

“PCC-functionalized nanocellulose composites in production and application” Birgit Lutsch – Papiertechnische Stiftung (PTS)

“Silphie Fibers - The New Alternative on the Raw Material Market” Julian Pflieger – OutNature GmbH

“New Approaches in Cellulose Based Strength Additives” Jonas Konn, Jan-Luiken Hemmes – Kemira Oyj



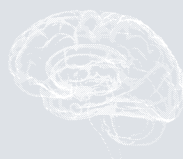
» Panel Discussions

» Speakers Talk

» Question & Answer Sessions



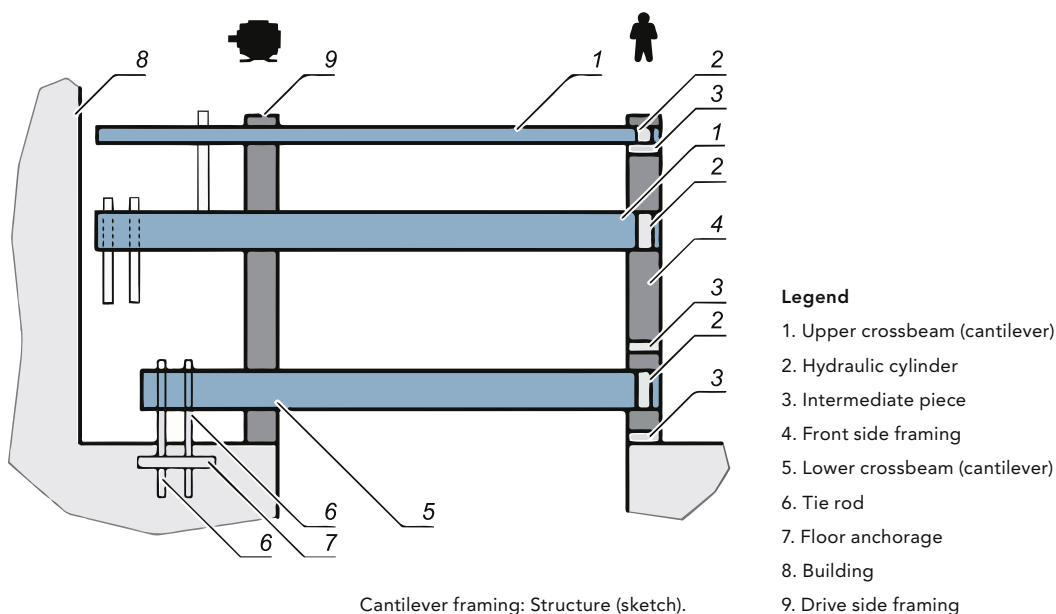
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What Does it Mean?

Cantilever Framing

The fascinating term “cantilever framing” can be found in the field of paper production. An explanation from Michael Otto, Head of Press Section at Voith GmbH & Co. KGaA.

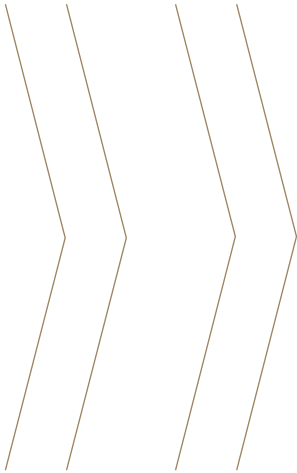


Some of the fabrics in the wire and press sections are endless belts. With a so-called cantilever framing, a fabric can be inserted into the machine in this way. In this case, the framing on the front side is closed during operation in order to absorb the static and dynamic forces.

For a fabrics change, connecting elements, so-called intermediate pieces, are removed on the front side. This creates openings in the – front side frame through which the fabric can be drawn into the machine. A cantilever construction fully supports the framing parts on the front side, including their attachments such as rolls and brackets. The forces occurring on the front

side framing are transferred by the transverse cantilever beam via the drive side framing and tie rods into the ground. As soon as the fabric has been retracted, the openings on the front side are closed again with the intermediate pieces and the operating condition is restored.

||| Michael Otto, Head of Press Section, Voith GmbH & Co. KGaA



Perswall

Wallpaper Renaissance with Xeikon CX500

Perswall, part of the Embellence Group and a pioneer in digital wallpaper construction is leading a wallpaper renaissance supported by the installation in 2020 of a Xeikon CX500 dry toner digital colour press.

The company today is described as a lifestyle brand for the career minded who wish to improve their individual and genuine self-expression. Perswall was rebranded and re-launched in March 2021 and at the same time released a new collection of designs called 'Serene Beginnings' signed by celebrated designer Sarah Widman with 11 wallpapers in Scandinavian tones with bohemian elements.

Fredrik Larsson Larsson, COO of public held Embellence Group states, "With our 115 year heritage of wallpaper production, our company has the experience, understanding and knowledge to create unique designs to suit today's consumer requirements. After years of paint playing a leading role in interior decoration, it is time for the wallpaper renaissance. With digitally printed premium wallpaper, a self-developed

e-platform and fast delivery service, Perswall is attracting design interested and quality conscious customers around the world. With our new Xeikon printing press we can now produce around 2000 sq.m (21,000 sq.ft) of designer wallpaper every day."

Moving forward with Digital

In 2020, Perswall installed the Xeikon CX500 dry toner digital colour press for digital wallpaper production to increase capacity. Replacing a previous Xeikon press, they chose the CX500 as part of Xeikon's highly productive Wall Decoration Digital Production Suite, to not only increase capacity but to increase their capabilities to compete in a growing marketplace. Larsson explains, "Our ambition is to grow

and fill the Xeikon machine with more and more jobs. The competition in the digital wallpaper production arena is growing but our strength and advantage is in having been early into this market. Also, we now have a seamless workflow from web order to printer. With the efficiency, quality and flexibility of the Xeikon CX500 machine, this eco-friendly solution will enable us to quickly and simply produce fully finished rolls on the broadest range of substrates in short runs with fast changeovers and minimal waste. Our designer wallpapers use a non-woven material, a cellulose-based paper with polyester fibers."

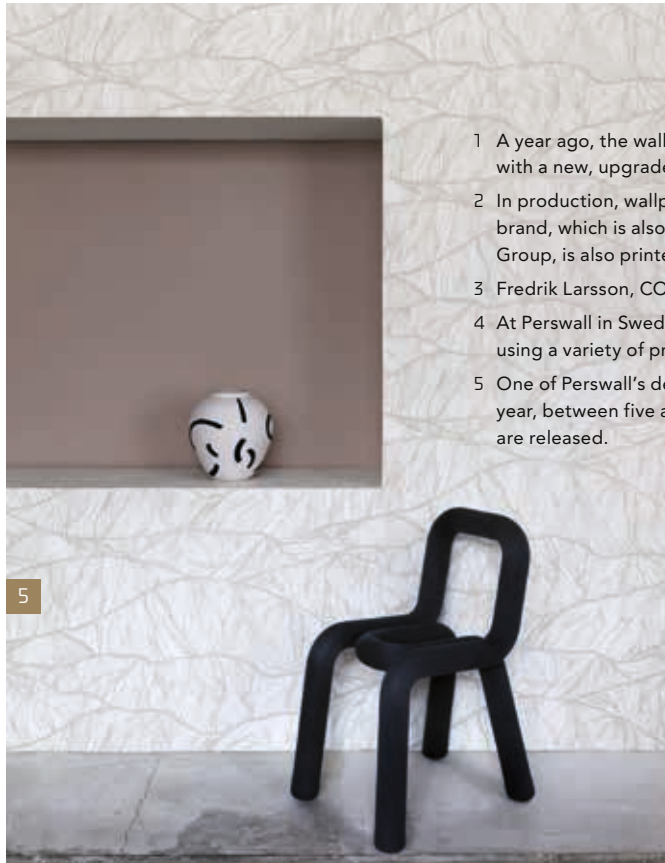
Perswall creates designer wallpaper to attract style conscious consumers looking for high quality and unique interior design environments. Perswall produces wallpaper 'on demand' for both the Perswall and Boråstapeter brands. Customers are able to upload their own pictures or design and define the precise size of the final result. Delivery can be done within four days of ordering. It is also possible to order through a reseller, where customers can go to collect the final product. The Perswall brand is geared to be 'right in time' with the company communicating directly with its customers to build relationships based upon coopera-



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- 1 A year ago, the wallpaper printer was replaced with a new, upgraded model.
- 2 In production, wallpaper for the Boråstapeter brand, which is also part of the Embellence Group, is also printed.
- 3 Fredrik Larsson, COO, Embellence Group.
- 4 At Perswall in Sweden, wallpapers are made using a variety of printing techniques.
- 5 One of Perswall's design wallpapers. Every year, between five and ten different collections are released.

tion and the development of creative and interesting wallpaper products.

Covering the whole of the Nordic region, the Perswall production facility is situated in Borås, a city, one hour into the country from Gothenburg, Sweden and famous for its textile tradition. The factory in Borås still uses old techniques for printing wallpaper, such as the original glue printing technique Collagraphy. 150 staff in total work for both the Perswall and Boråstapeter brands. 50 of those staff cover production and design at the Borås headquarters facility. 80 per cent of production goes to the Nordic market while the rest is distributed around the world, from North America to New Zealand.

Niche Products

In production other methods are represented apart from digital. At Perswall they utilize gravure, screen, flexo and collagraphy. Defining the two brands one could say that Boråstapeter approaches the broader market while Perswall serves the niche and 'on demand' markets. The company group also comprises an Italian production unit focused on exclusive products under the Wall & Deco brand. These products can

be used outdoors and in sanitary rooms and are printed using inkjet technology. Larsson comments, "So what is popular right now? What motifs are most liked by the consumers today? The answer is – all kinds of flowers, small and large. Among the bestsellers we find romantic large flowers and a pruning pompous greenhouse, wallpaper with a world map and images of Central Park and New York skyscrapers. Trends in interior decoration have changed throughout history. Through time wallpaper has had glory days and difficult days. Painted walls dominated 20 years ago and the norm in construction was to deliver white painted walls – a non-choice that gave a rather sterile environment."

Planning for growth

Perswall has a vision to grow its market share and is leaning on its long history and the diversity of skills of the company plus its partnerships with leading designers. Perswall's new collection 'Serene Beginnings' signed by Sarah Widman follows an ongoing strategy. Every year the company releases and presents between five and ten different collections. The launch plans can span between two and five years and

at present there are more designer co-operations in the pipeline. The Embellence Group has set a target of doubling its turnover to 120 million euro in the next five years. The target to be reached is planned with a continued focus on the premium end of the markets plus growing turnover in international markets – also through acquiring other international players. Founded in 2006 by Irene and Christofer Gimmersta, the company was one of the pioneers in digital wallpaper production. Earlier called WallVision, the Embellence Group has a turnover of € 57million. In March the Group was listed on Nasdaq First North Premier.

Larsson concludes, "Today wallpaper is back in vogue and interior decorators are looking out for unique and exceptional creative designs for walls and other surfaces. More and more people are now seeing that it's not boring anymore to put up wallpaper, but rather a simple way to improve their standard of living and stimulate their personal environment. At Perswall, we demonstrate our wallpapers as an exclusive design product, not as a construction piece. Xeikon's CX500 digital wall decoration press is a key asset in our plans for the future." |||



Vanguard Collection

The Role of Colour in a Post Pandemic World

Having survived fires, The Great Depression, two world wars and now a global pandemic, James Cropper is well versed in adapting to, and surviving, the impact of world events that lie outside of our control. We've been doing it for nearly two centuries!

With that experience we recognise that in times of crisis, things change in the consumer market, and as a business providing brands with paper and packaging solutions, we need to be across those changes so we can deliver what is in demand. The Coronavirus pandemic has altered consumers' expectations and desires which is why we've invested in refreshing our Vanguard range of papers.

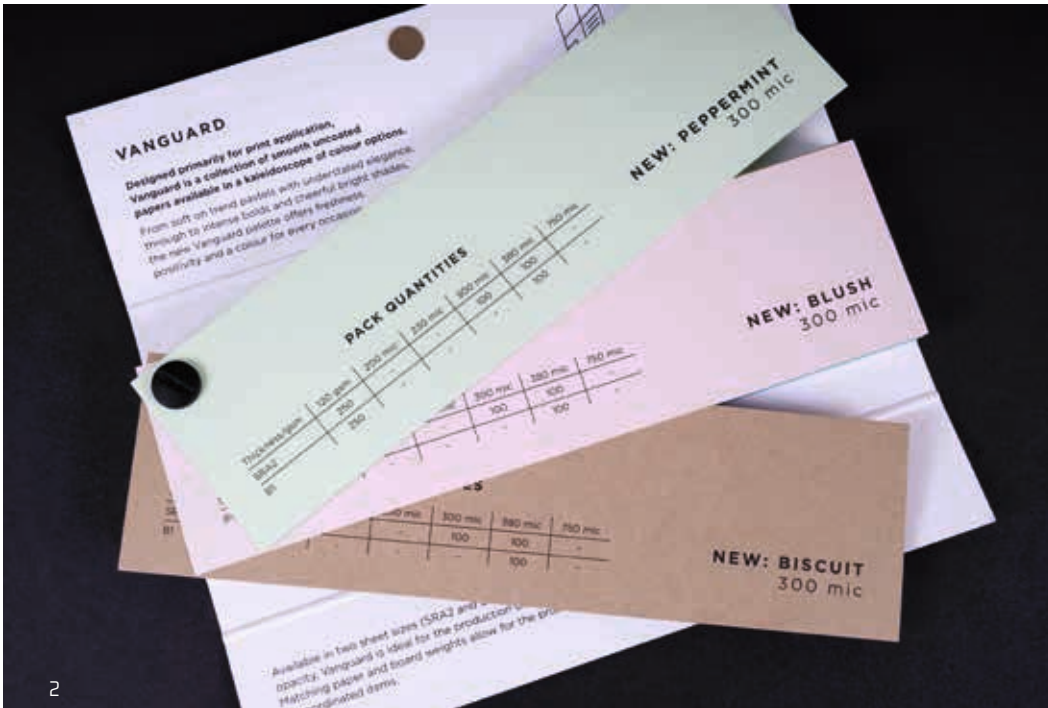
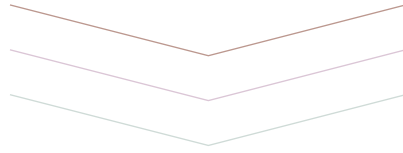
Ever since a global pandemic was declared the world has lived with uncertainty in everyday

life. The way we work, learn, relax and travel are just some examples of how lifestyles have had to be reimagined. Research which we commissioned recently has also revealed how it has even changed the colours we're drawn to in life.

It's fair to say that the post pandemic consumer will come with some degree of apprehension and caution when making buying decisions and, as experts in colour, we wanted to explore how this could influence the colours which attract them; and ultimately which hues businesses should be using. The research, which was conducted with over 1,000 consumers, found that the pandemic has influenced the colours that Britons are choosing now.

New Colour Choices

Britons are now more drawn to calming tones than any other colour types. A third of people said they look for lighter shades that convey calm, while only 8 percent want bold and primary shades. Creams, blushed pinks, gold and a shade of peppermint were all named as colours consumers find most calming. It's important for us as paper and packaging experts to adapt to change which is why we undertook a comprehensive evaluation of our Vanguard collection



- 1 The new Vanguard palette of 28 colours offers customers soft on trend pastels with understated elegance, through to intense bolds and cheerful bright shades.
- 2 James Cropper's Vanguard range comes with the introduction of three new colours, new sheet sizing options and the inclusion of upcycled fibre.

and refreshed it to meet the appetite for calming and natural tones.

Designed primarily for print application, Vanguard is a collection of smooth uncoated papers available in a kaleidoscope of colour options. Extensive market research and the evident growing demand for muted and relaxed shades was the inspiration behind the three new colour choices: peppermint, blush and biscuit.

The Vanguard peppermint colour epitomises a feeling of spring and cheerful energy, bringing a cool touch of personality to designs, while the Vanguard biscuit shade offers a warm, natural tone connected to nature. Lastly, blush is a soft pale pink hue capturing a neutral contemporary look, reminiscent of pale peonies and roses and the graceful swirl of a morning sunrise. The new Vanguard palette of 28 colours offers customers soft on-trend pastels with understated elegance, through to intense bolds and cheerful bright shades.

Aligning to James Cropper's commitment to circular design, and the consumer's continued need for environmentally friendly packaging, every colour in the Vanguard collection contains a minimum of 30 percent upcycled fibre, to keep materials in use and help in the regeneration of natural systems. The upcycled fibre, which is gi-

ven a second life as a new paper product, is blended with fresh fibre from sustainable forestry sources to deliver beautiful papers without any compromise on performance or beauty. In addition to the three new colours, we have also introduced new sheet sizes with the UK and European markets in mind. The portfolio of coloured papers is now available in two sheet sizes: SRA2 and B1, the most commonly selected print grade sizes.

Three new Palette Choices

The Vanguard collection is a snapshot of James Cropper's colour and fibre capabilities. We believe the three new palette choices offer the freshness and positivity which the world is craving today; and the blend of upcycled and virgin fibre contributes to the circular economy, while delivering the premium quality we are renowned for.

With the benefit of high opacity, Vanguard is ideal for the production of printed items such as letterheads and envelopes, posters and brochures, invitations and tags, presentation folders and business cards. Matching paper and board weights enables the production of coordinated items. ||| **Jamie Bartle, Senior Product Manager at James Cropper**

Leonhard Kurz

Sustainability and Finishing are no Contradiction

Brand manufacturers know the problem: The large variety of products at the POS makes it increasingly challenging to stand out from the crowd with one's own product.



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Packaging plays a key role here; it not only conveys a crucial part of the product statement but often provides the decisive differentiating feature that attracts the consumer's attention. In the end, the product itself must impress with its properties, but successful finishing of the packaging can often be the crucial factor that makes sure the item ends up in the shopping cart.

While, on the one hand, the battle for customer attention is increasing, on the other hand, buyers' demands for the sustainability of the individual products and their packaging are growing too. Supplying new and efficient solutions that add shine to products and their packaging in the truest sense of the word, while still meeting ever-growing environmental standards, is becoming a balancing act for manufactur-

ers. But the thin-film technology and finishing expert Leonhard Kurz has the answer. For decades, the company has been striving towards sustainable working and the respectful use of existing resources.

Markus Hoffmann, Member of the Kurz Executive Board, is certain that there is hardly any industry that has taken greater steps towards sustainability in recent decades than the printing sector. In his opinion, the entire industry's successes are already very far advanced. They include, for example, the continuous reduction of the energy costs incurred in production and processing, the cleaning and treatment of exhaust air and the proper handling and disposal of wastewater, for instance through wastewater pretreatment or the

use of consumption systems. Establishing and maintaining environmental standards in such factories ensures continuous improvement. Nevertheless, and in spite of this positive basic assessment, Kurz is far from complacent and believes that there is still room for improvement when it comes to sustainability.

So if the industry continues to exploit the optimization potential, maintains its commitment, educates customers, and actively communicates successes, the step towards a greener future can be taken quickly. There are many advances to expand the initiatives for sustainable action in printing, packaging, and finishing. However, it is important to constantly face new challenges in the process. It is well known that plastic carriers are used in embossing

- 1 Making products unique through finishing: Brands that want to stand out don't get around eye-catching packaging in light of the huge range of products on offer. At the same time, meeting customers' increased demands for sustainability is a major challenge.
- 2 Kurz not only strives to be a green leader itself but, above all, wants to help its customers achieve this and thus give them a competitive advantage.
- 3 The injection-molded material Recopound® originates from the Recosys® recycling system and can be further processed into plastic parts using the injection molding process. The material is based on carrier films from the finishing process.



processes, from which the decorative coating layers are removed during the transfer process. This means that, compared to laminates, this very film does not remain on the surface but only serves to transfer the wafer-thin decoration layer to the respective print substrate. The disadvantage is that this PET carrier nevertheless accumulates as a residual material in the transfer process and has so far been primarily thermally recycled and used for energy production due to its high calorific value, or used as a substitute fuel instead of coal and gas in the energy-intensive process of cement production. But it was not possible to at least partially recycle the PET carriers into the cycle. Does all this ultimately mean that printing and finishing are in conflict with sustainability? No - at least according to the experts from Kurz.

For the company management and the Kurz family, the path from ambitious gold-beater to global, sustainable, and innovative finishing expert is clear: "We want to be the most sustainable company in the industry and deliver on our promise to our customers to make them the green leaders in their industries," explains Markus Hoffmann. However, this sustainable idea must be brought into line with what the company is known for among its customers: Finishing according to high quality standards.

Challenging an entire industry

Holistic sustainability in the finishing of packaging sounds like a huge responsibility and challenge. On the one hand, the packaging itself consumes resources and, on the other hand, further waste products and emissions are generated during the finishing process. "We're not fooling ourselves," explains Markus Hoffmann and adds: "Like many sectors, the printing, packaging, and finishing industry is also subject to the rule that only doing away with printing, finishing, and even the packaging itself would be the most sustainable alternative." Clear words from the member of the Kurz Management Board, who is responsible for the areas of graphic finishing solutions and the associated machines of the thin-film company, among other things. And words that also demonstrate a realistic assessment of the situation at Kurz. After all, it is the main business of many companies - and of Leonhard Kurz too - to transfer the thinnest decorative coating layers to the customer's products using these PET carriers, so that they in turn get an individual and attractive look and thus make the products unique and eye-catching.

For Ralph Hopfensitz, however, the self-critical approach that is practiced in the company is not in contradiction with what is produced by Kurz for processors,

printers, and their customers, which often include brand manufacturers. "Finishing is of course nice to have but not a must-have. But a world completely without nice-to-haves isn't actually very nice," says Hopfensitz, also a member of the management at Leonhard Kurz. And it is precisely in this tension between the pursuit of greater sustainability and the entrepreneurial goals of the printing, finishing, and packaging industry that there are numerous other market participants in the industry in addition to Kurz. They all need to continuously develop and optimize their activities in order to take into account the important issue of sustainability.

How do you become a green leader?

In view of the changing customer requirements and an ever-increasing demand for sustainability, printers and processors also rely heavily on the responsibility of the companies supplying them - innovative service providers who share this demand and meet it. "Sustainability has become part of our DNA because, on the one hand, it is also exemplified by the owners at Kurz. On the other hand, we've been scrutinizing our actions every day for years to see whether we have actually found the most resource-efficient solution," explains Ralph Hopfensitz. In addition to thin-film technology, the brand core also includes the path to Life Cycle Thinking (LCT). This approach envisages being made aware of the impact that daily work has on the environment and reacting to this in terms of sustainability. Leonhard Kurz summarizes this claim for its customers under the slogan 'Be a Green Leader' and at the same time offers them the opportunity to assume responsibility for their products and industries. How



does that work? "In part through very close coordination and a lot of consulting services," Hopfensitz says, adding: "We want to educate our customers about what happens to their product after finishing. Will it remain recyclable? What are its properties? What is visually possible? We clarify all of these questions in advance. Only then can the customer make the right decision for them in a truly conscious and holistic manner."

Recosys® – another building block for reducing CO₂ emissions

"Together we are working intensively on new solutions, even better alternatives, and a sustainable future. In this way, we are establishing a process that saves resources and reduces CO₂ emissions," summarizes Markus Hoffmann. However, new standards in terms of environmental compatibility, which Kurz sets time and again, give converters the opportunity to reduce their carbon footprint by participating in the return system. They also enable brand manufacturers to attractively finish their products and packaging, and thus ensu-

re an attention-grabbing presence at the POS. Kurz has now set such a benchmark with the Recosys® program and wants to offer as many market participants as possible significant added value. This return and recycling system for PET carriers hits the pulse of the times in the graphic industry and proves particularly influential when many companies pull together.

What exactly is behind it?

After years of research, Kurz has succeeded in producing a recyclable plastic, Recopound®, from the substrate material used to transfer the coating layers in the finishing process. "We are now able to recycle a large part of the carrier films, which were previously primarily used for energy generation," says Dr. Markus von Beyer, responsible for the development of environmentally friendly and sustainable technologies at Kurz, about the successful work of his team. The plastic pellets obtained can be further processed into high-quality components using the injection molding process. For Kurz, however, this breakthrough in sustainability was just one of the steps on the road to a greater goal. Markus von Beyer: "One day, we want new

PET carriers to be created from the recycled carrier film. Ultimately, we want to create a recycled material that can be used to make new PET films for our own transfer products. Only this step will fully close the loop."

The path to the closed loop

"We invest millions of euros annually in all projects that make our production, but also our products, even more sustainable. This investment in a vision, is also a signal for the entire industry," Markus Hoffmann states, explaining the ambition. In fact, 100 percent of the electricity requirements of Kurz's German production facilities are already covered by green electricity. In addition, the company's own systems are being further developed in such a way that they consume significantly less energy. "Our overarching goal is closed loop, an actual cycle that conserves resources and does not waste them. We want to lead in this way and take the industries in which we operate with us. At the moment, we see that many of our market participants don't yet have this issue on their agenda. That's why we want to set a positive example," says a determined Hoffmann.

We invest millions of euros annually in all projects that make our production, but also our products, even more sustainable.



- 1 Walter Kurz, Chairman and 5th generation family member in the company, is aware of the company's responsibility to make the world better for future generations. The family encourages and promotes all measures that support this project.
- 2+3 Ralph Hopfensitz (top) and Markus Hoffmann (bottom) are members of the management team at Leonhard Kurz, and in their areas are also responsible for the sustainable further development of the company and its products.
- 4 Markus von Beyer heads the team that has developed Recosys®, among other solutions, as Head of EHS & S.
- 5 The company headquarters in Fürth, Germany: Among other things, Kurz uses large-scale photovoltaic systems to ensure that the electricity at the two German sites is environmentally friendly.

A look back in time shows that, for Kurz, being a sustainability pioneer is not a new concern. In the early 1970s, new solutions for environmental issues were deployed – driven by an entrepreneurial family that was aware of this responsibility at an early stage. Closed cooling circuits and after-treatment technologies were introduced long before they became mandatory. Chairman and family member of the 5th generation of the company, Walter Kurz, adds: “In the 1980s, new methods for solvent recovery were introduced. State-of-the-art systems were used to ensure fire and leak detection. At the beginning of the 1990s, our first thermo-reactor was put into operation, which enabled the thermal combustion of exhaust gases and thus heat recovery. The energy was eventually fed back into our own processes.”

Joining the United Nations Global Compact is also intended to boost the company's commitment and thus help to turn the 'Green Leader' vision into reality – not only for Kurz, but also for its customers.

The dimensions of sustainable finishing

From the point of view of Kurz experts, there are several levels that must be reconciled

in order to lead the finishing industry into a sustainable future. On the one hand, from their point of view, it is becoming increasingly important to raise customer awareness of the advantages that meaningful finishing can bring and thus create transparency. “The advantages of finishing are obvious – studies confirm that finished packaging is often perceived more quickly, which influences the purchase decision. At the same time, a large number of tests and certificates confirm that the packaging remains recyclable thanks to our solutions and can be assigned to the right fraction in the recycling plant,” says Markus Hoffmann.

Another step is that Kurz acts as a system provider alongside manufacturers and finishers and has been helping them to supply the finishing industry – whether digital, hot, or cold transfer – with ever newer and resource-saving process solutions for years. But Kurz is not only looking for more efficient solutions in customer processes. The company itself also relies on energy saving, exhaust air utilization, and wastewater treatment in its production. Only if the entire value chain can be made more sustainable can a lasting impression be made in the carbon footprint of the finishing industry.

And even if Recosys® does not currently make money yet, according to Kurz, it is a fundamental component of the strategy. The return and recycling of residual materials develops its maximum performance when many companies participate. This is precisely why the thin-film experts continue to invest heavily in technological innovation and want to roll it out worldwide.

The last important field that Kurz sees in its sustainability campaign is at the beginning of production. The procurement of raw materials, traceability of the supply chain, and close cooperation with partners and suppliers on site are intended to ensure that environmental standards are observed and monitored throughout the entire process.

“We are delighted to see how many companies with a great sense of responsibility are working on their own sustainability strategy and expanding it,” explains Markus Hoffmann, and Walter Kurz adds, “We hope that we can lead by example in many areas and also motivate hesitant companies to invest even more in the present, for the next generations.” |||



Cyber Security

A Prescription for Protecting Pulp and Paper

Apala Ray, ABB's Global Cyber Security Manager, Process Industries, looks at the challenges faced by the pulp and paper industry and explains that the basis for effective cyber security boils down to an effective mix of technology, good cyber hygiene and common sense.

The most powerful tool any engineer can possess in this modern connected landscape is data. Ones and zeros are the foundation for just about everything in modern Industry 4.0 driven operations, including pulp and paper. As a result, digital transformation – underpinned by smart technology – has become the most important operational exercise any business can perform.

Modern paper, board and packaging mills are dependent on sophisticated computer-controlled automation systems and this smart technology is all about delivering agility, flexibility, and efficiency. However, with one eye on recent headlines, it is equally important to also consider security, especially if you rely on legacy technology, which does not have any form of embedded security.

From an infrastructure perspective, to be fully digitally transformed, you must be fully connected. And when you're fully connected you introduce what the IT industry likes to call threat vectors – potentially open routes/gateways – into your system. With a major part of digitalization being the convergence of operational technology (OT) with IT systems, these gateways can open up a much larger mixed digital 'playground' for hackers than they would have done a few years back.

These days companies who weren't traditional targets of cyber attacks are making headlines more and more because any industry that is sensitive to downtime is an ideal target for money-making criminals. To make sure you have the proper protocols in place, you need to understand why and where manufacturing is becoming mo-

re vulnerable, what the standards are and how that translates to pulp and paper to prevent it from happening to you.

Are you interesting enough?

The pulp and paper industry may not appear to some as a lucrative target, after all it is such an established and historic industry. What intellectual property (IP) is there that's worth stealing? One of our customers recently exclaimed, "we're not interesting enough for hackers". Herein lies the issue. Today's hackers aren't after your IP or contact details, they're just after your money; and one of their favorite tools is ransomware.

It is in this domain that the world has changed with the positioning of "ransomware as a service". It is exactly as it sounds; a highly unethical practice, which sees malware being leased by hacking groups to



- 1 Infrastructure monitoring: Digital powertrain control room.
- 2 Apala Ray, Global Cyber Security Manager, Process Industries, at ABB.
- 3 Protecting data is increasingly important. This also applies to the pulp and paper industry.

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line back up and running,” before adding that “it was one of the toughest decisions of my life.” Conversely, in 2019 Norsk Hydro suffered a similar ransomware attack, but bravely chose not to pay in an attempt to set an example. It took at least three weeks, with the support of cyber security experts, to repair to a functional level and an even longer time to recover to an ‘as was before’ state.

criminal organizations. But to use it, you must abide by the rules – only targeting commercial organizations who can afford to pay.

This is where it gets surreal. Upon full payment of the ransom, these hacker groups will then altruistically offer a customer-service function that will get you back to where you were before the attack. The overriding message being “paying up = minimal disruption”! This is not a stage a company of any size would wish to reach, with prevention always recommended over repair when damage to the organization may have already harmed business, systems and reputation.

Over the past two years, incidents of ransomware have increased by over 500 percent. In fact, within ABB, we predict that a substantial number of our customers globally will face an attack in one form or another. Of those that have already been attacked, a high percentage could have pre-

vented the incursion with foundational cyber control. Indeed, a few years back the question asked was, “if you will be attacked” whereas now it is more a case of asking, “when will you be attacked?”.

You don’t have to go back too far to see a high-profile example of this type of attack. The May 2021 Colonial Pipeline incident saw the company’s IT system frozen out, completely crippling fuel deliveries up and down the east coast of the USA. Although the company acted quickly to try and segregate the malicious code, the damage had already been done and, once publicized, hoarding and panic buying started.

Colonial took the decision to pay the ransom – some \$5 million (some of which has been recovered) – almost immediately, with CEO Joseph Blount Jr. explaining to a senate committee that he wanted “to have every tool available to swiftly get the pipe-

Malware propagation

Even more recently was the highly sophisticated attack on Kaseya, one of the biggest attacks to date. Hackers supposedly gained access to a desktop management tool and then pushed an update that infected thousands of businesses, including Sweden’s Coop grocery chain, which had to close all 800 stores as it could not use its checkout terminals. Such was the impact of this attack and the issue of such a wide customer base that U.S. President Joe Biden got involved and directed U.S. intelligence agencies to find out who was behind the attack.

So, how does this affect the pulp and paper industry? If you are a commercial company with a profit flow, you can guarantee that you are interesting enough. It really is as simple as that. The chances are you might not even be singled out nor individually targeted.



One just needs to think back to the recent ransomware attack at the second-largest U.S. packaging company. Quick to admit that it was a victim, the company swiftly put systems in place to ensure business continuity and minimize customer impact. However, following a shutdown of certain critical systems in what it described as “an abundance of caution”, the company subsequently announced a drop in mill production that was 85,000 tons lower than plan.

The entire mill IT/automation infrastructure is only as strong as the weakest link. It could be through a USB key, an email link, or an unsecured hotspot, but once compromised only one mission system needs to be taken out to impact the entire enterprise. The colonial pipeline incursion was believed to be via a legacy VPN profile, which was not protected by two-factor authentication.

To put this issue in perspective, one must only look at the recent lumber supply issue in the US, which was driven by a perfect storm of Canadian tariffs, a sudden upsurge in demand for remodeling during the pandemic and issues with the supply chain. Although the market is recovering, it

shows how susceptible it is to external stimuli and all it would need is for one or two major mills to be taken out of action due to malware and it starts all over again.

The pulp and paper sector traditionally holds a very low inventory, given there is no value in keeping a year’s worth of tissue/boxes. With paper being a critical infrastructure to the US economy, hacking just one tissue supplier could take out 22 percent of the capacity. Small failures could see huge effects on everything from face-masks, through to pizza and Amazon boxes, and onto building supplies.

Security over and above standards

The pulp and paper industry has by no means escaped it so far. We know of other companies in the wider industry that have been victims of an attack but have managed to keep it under the radar and, one presumes, are either weathering the effects or simply paid the ransom to maintain operations.

National and international cyber security legislation and standards are in place, such as the ISA/IEC 62443 series of standards, developed by the ISA99 committee and adopted by the International Electrotechnical Commission (IEC), provides a flexible framework to address and mitigate current and future security vulnerabilities

in industrial automation and control systems. But these standards should only be considered as the foundation of any security system. A more holistic approach is required, coupled with a real understanding of what is behind this legislation, especially how systems should be configured, deployed, and maintained.

There is a big difference between best practice and what you actually need to do; a single standard cannot prescribe solutions for such a diverse range of target industries. Process industries customers, and not just those in pulp and paper, are always asking us how they can comply, recognizing that the legislation is not prescriptive enough. Cyber resilience is the ability to plan, respond and recover from cyber-attacks and data breaches, while continuing to work effectively.

Legislation + actual intervention

This legislation surrounding your operations needs to be considered, in parallel, with a full security audit, including an inventory of what something is, where it is and most importantly in this instance, what it is connected to. Pulp and paper mills typically have very layered networks with smart components close to the processes. Having a full device inventory is essential, together with an assessment of its current state and knowledge on what should be



- 1 OT security minimizes the risks of cybersecurity threats.
- 2 If you are a commercial company with a profit flow, you are a possible target.

protected. Network segmentation can also go some way in protecting IT and OT architecture.

Foundation control is by far one of the most efficient measures any company should undertake and is a primary strategy that should be in place to maintain security postures. It can include relatively simple operations such as security patch updates, robust-antivirus installation, regular and structured backups, and network segmentation.

A bit like a mill's network structure, your approach to cyber security – applicable for both IT and OT assets – can also be layered. Starting at asset level, you need to consider the device-level security, which for a PC would be anti-virus software that is patched and updated to its latest version number. The next layer, which could comprise PLCs or servers, should also be patched to the latest software version, along with any vendor-specific maintenance patches. To control access, you then need to ensure that adequate account management procedures are in place and that staff rigidly follow these. Next would be computer policies and hardware registers – what can and cannot be attached to the network and to the assets.

Then we get to the firewall level, which is an interesting illustration of the inadequacies of existing cybersecurity legislation. Many documents mandate the existence of firewalls, but then go into very little detail as to their role and operation. Without configuring a firewall correctly, patching it and defining secure pathways all you are doing is box ticking as opposed to securing your network.

Above the firewall should sit the company policies and procedures, which dictate the minimum level of security. A full holistic security program should also mandate

what needs to be done in the event of a breach and how operations should be recovered and brought back into action as soon as possible. Finally, above all of this lies physical security, which should prevent any unauthorized access based on site/office entry procedures.

As with any security protocol, the weakest link is often the employees. This is rarely intentional or malicious; they are simply looking at ways of under-complicating their jobs, so can be quite creative when it comes to circumnavigating security policies. All employees must be made aware of the implications, no matter how small the potential security breach. Daily work must be carried out while adhering to fundamental security practices around passwords, data storage and sharing, and with up-to-date awareness of potential risks.

Introducing cyber security management into industrial system operations can seem to be a major change and can be overwhelming. Therefore, early steps must work towards a solid understanding of context-specific risks and their prioritization. Effective collaboration with security capabilities between Enterprise IT and OT from the organization as well as among product suppliers, system integrators and operators is key.

People, policies, procedures

At ABB, from an overall approach, we recommend using people, policies, and procedures in conjunction with technology. Firstly, you must establish a foundational level of technical and organizational security controls to defend against the majority of the generic threats. Then you must undertake continuous management and maintenance of these controls, possibly

adding more sophisticated controls, before finally creating a strong collaborative operation of cybersecurity controls with managed security services.

The primary messaging behind all of this is that you should not shy away from adopting new technologies just because of the potentially higher security risk. There are thousands of companies out there that have invested in new networks, smart automation and edge/IIoT technologies that are secured against threats because they considered and implemented security as part of the overall transformation plan.

Help is out there

While the risk to pulp and paper – and any manufacturing industry – is higher than what may be naturally assumed, my message is simple – do not be intimidated. You do not have to be clever to be secure, you just have to be cyber-hygienic. That means having a layered defense strategy in place.

Tackle the obvious stuff yourself and stay current – patching and applying updates really is one of the most important things you can do. After all, we're not all car experts, but I don't need a degree in automotive engineering to check my tire pressure or top up my washer fluid. For the more complicated routines, there are prescribed time-dependent service actions and a network of experts – much like in automation.

In the grand scheme of things, cyber security does not offer any pay-off or pay-back; it is much like insurance, you keep it current for peace of mind. From a financial perspective the biggest impetus should be: how much will it cost if I don't have security? Now that's a sobering thought. |||
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29 Mio. kWh Electricity

Producing as Needed Saves Electricity and Money

New studies by the independent consultancy Smithers show how European companies save significant amounts of electricity, CO₂ and waste thanks to needs-based labeling with inkjet printers. In addition, the production processes are becoming significantly more efficient and sustainable.

If every European company switched to needs-based labeling with inkjet printers, almost 29 million kWh less electricity would be used every year. This corresponds to the amount of electricity required to illuminate 95,960 houses in one year and a reduction of 6.7 million tons of CO₂. With inkjet printing tailored to one's needs, up to 180 million square meters of waste of unusable label material could also be avoided. That corresponds to the area of more than 25,000 soccer fields. In addition, the reduction of unnecessarily printed label materials would reduce the consumption of more than 600 tons of ink.

Smithers conducted a survey to compare the sustainability of different printing processes and assess how they help manufacturers achieve their sustainability goals. To this end, the institute analyzed companies that use a number of commercial thermal transfer and inkjet printing processes internally. From the consumption values of the productions, it calculated a sustainability rating in various key categories such as electricity, waste, consumables, storage and transport.

It concluded that using inkjet technology to print labels in-house has great commercial and operational benefits such as lower power consumption and less waste, making it environmentally friendly. This supports companies in achieving the following UN sustainability goals:

SDG 7 Affordable and Clean Energy: Inkjet technology is a far less energy-intensive process than many traditional processes and requires only a fraction of the electricity.

SDG 8 Decent Work and Economic Growth: Inkjet printing is cost effective and improves margins for label printer users.

SDG 9 Industry, Innovation and Infrastructure: Innovative inkjet technology reduces waste of unusable label materials due to overproduction.

SDG 12 Sustainable Consumption and Production: Inkjet printing generates significantly less waste than thermal transfer printing.

Jörg von Ahlen, Head of Marketing at Epson Deutschland GmbH, comments: "Labels are a crucial means of ensuring the success of brands in a large number of industries. Choosing the right label printing process is important when it comes to commercial benefits in terms of go-to-market, flexibility, and quality. In the meantime, more and more companies are switching to needs-based color label printing with inkjet technology, as this makes an important contribution to achieving a company's sustainability goals and improving efficiency. Choosing inkjet printing tailored to your needs lowers overall power consumption and the amount of waste generated. It reduces rejects and overproduction and minimizes the cost of consumables. The optimization of the supply chain as well as a steadily better recycling of ink cartridges further improve the advantages of ink printing in terms of sustainability." |||

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