PULP DIRECT

The Biofore Company UPM

UPM PULP • CUSTOMER NEWSLETTER

Make a mark with thermal papers.

3/2018 #pulpdirect

Solving customer challenges

Generations of tradition and innovation

Boosting sustainability performance

Fibre baskets of the world

SOLVING **CUSTOMER CHALLENGES**

End use always dictates the features of a specialty paper. But do you need to compromise something to achieve those features?

If you ask UPM Pulp's Director of Technical Customer Service **Mats Backman** he both agrees and disagrees.

"It's our job to help make specialty paper products possible through smart use of raw materials and process optimisation."

Let's take thermal papers for example. It's a paper type used in various inkless printing applications. Thermal papers consist of several technical layers. The thermal coat – hence the name – is the one that reacts to heat and transfers images onto the paper. However, it's the base paper and its raw material characteristics that define where the end product will be used.

"The pulp mix and refining are completely different whether the paper is used in, for example, cashier receipts, movie tickets or football match tickets. It all comes down to the user experience and convenience."

The same goes for every specialty paper: they all have special requirements.

GOOD SERVICE FOR BETTER PRODUCTS

So how will a papermaker reach their product requirements?

"We believe in profound cooperation, where the customer and our technical service people work towards a common goal," Mats says.

The optimisation process starts with a review of the customer's needs and challenges.

"The best results do not necessarily require a complete overhaul of the furnish. The solution might be as simple as changing the amount of refining energy, altering the proportions of pulp components or replacing one altogether," Mats explains.

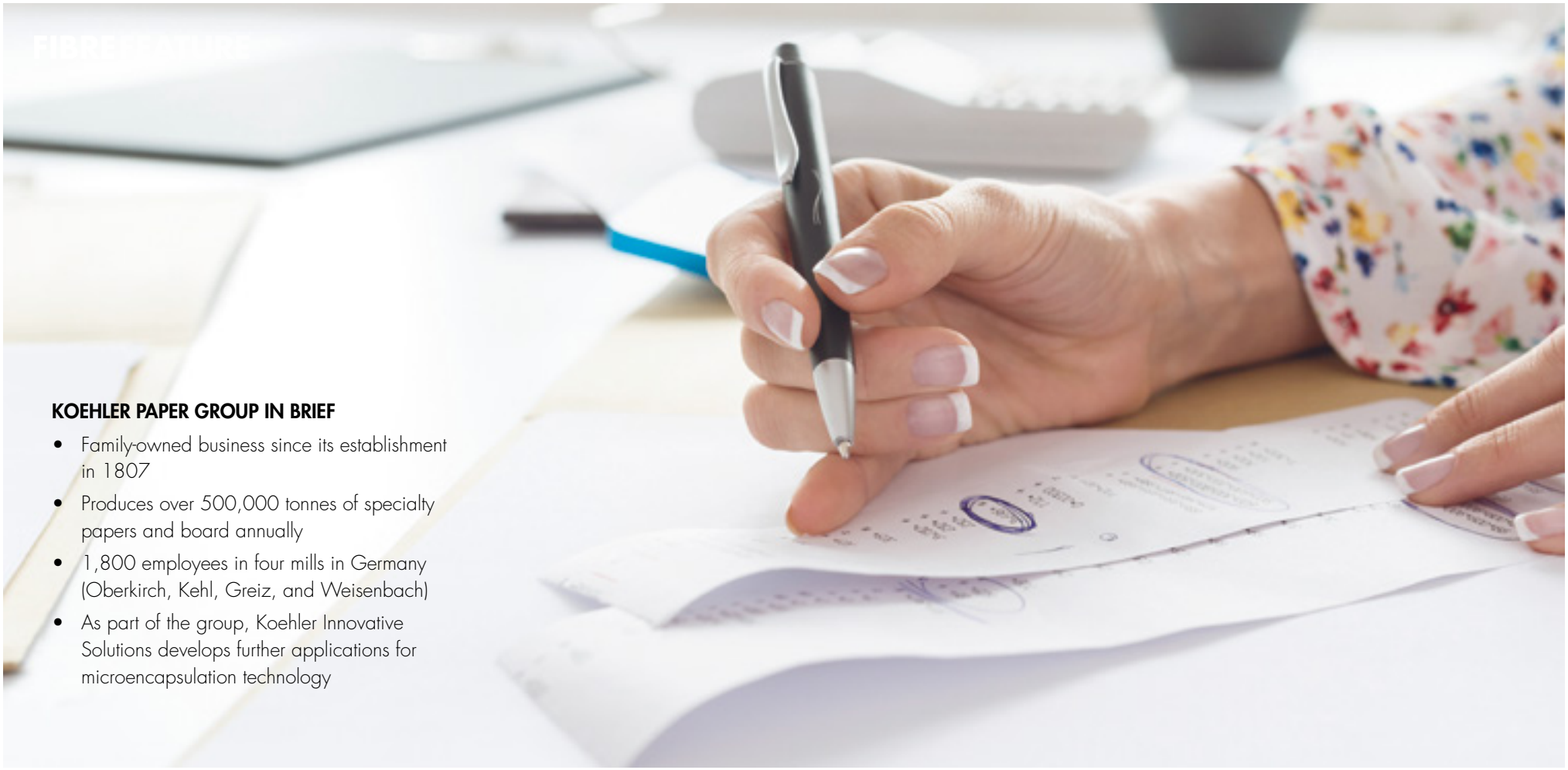
A limited test run gives first indications of the new performance. Based on the customer's online samples, UPM's own analysis results and process simulations, UPM Pulp's technical customer service suggests further changes.

"We continue to work together until we find the best possible outcome," Mats says.

According to him, Chinese customers especially have utilised UPM Pulp's technical service to rapidly develop their processes and products.

"Our technical team is a multidiscipline organisation. In addition to knowing pulps inside out, many of our people have a solid background in papermaking and printing. They truly understand the problems our customers face daily." ■

The thermal coat reacts to heat and transfers images onto the paper. However, it's the base paper and its raw material characteristics that define where the end product will be used.



KOEHLER PAPER GROUP IN BRIEF

- Family-owned business since its establishment in 1807
- Produces over 500,000 tonnes of specialty papers and board annually
- 1,800 employees in four mills in Germany (Oberkirch, Kehl, Greiz, and Weisenbach)
- As part of the group, Koehler Innovative Solutions develops further applications for microencapsulation technology

GENERATIONS OF TRADITION AND INNOVATION

The Koehler Paper Group continues to break new ground in specialty papers with over 210 years of experience.

Koehler is one of the few independent, family owned paper companies in Germany. According to **Klaus Krieg**, their Corporate Director Supply Chain Management, and **Christoph Müller-Stoffels**, Head of Marketing & Communications, their long heritage is also what sets Koehler apart from the competition.

"Since 1807 our philosophy has been to strive for a leading position across the board: productivity, machinery, raw material efficiency, energy and development," Krieg explains.

"We always look ahead, but we are also very conscious of our traditions. Instead of thinking in financial quarters, we think in generations. This applies to business practices, the environment and people," Müller-Stoffels continues.

With headquarters in Oberkirch, in southwest Germany, Koehler is most famous for their thermal paper range. In addition they produce carbonless, decor, packaging, fine and coloured recycled papers. The Koehler Paper Group also makes board for playing cards and beer mats.

"We have more than 1,800 employees working in four mills. It's not uncommon for our people to come from families who have already been with the company for as long as five generations. I think that describes well our commitment, and the unique relationship between the company and its employees," Müller-Stoffels says.

MAKING A MARK WITH THERMAL PAPERS

Thermal papers are top class specialty products. They require high technological knowledge and skill to produce. Only a handful of companies globally specialise in thermal papers. Yet millions and millions of consumers will encounter Koehler's products every single day.

"The largest end use for our thermal paper is at the Point of Sale or POS where you get a receipt. That can be in your local grocery store or in the restaurant when you pay for your dinner with your credit card," Klaus Krieg says.

When buying groceries you also come across the other main thermal paper application: the self-adhesive labels you get from a vegetable scale utilises thermal printing.

"And thanks to booming e-commerce the use of labels with thermal face paper continues to grow. Every parcel contains several labels that have been printed with thermal technology," Krieg adds.

Besides POS and labelling, thermal papers are ideal for printing entry tickets and betting slips.

Thanks to our good partners, Koehler has been able to secure the raw materials we need for the full run.

Klaus Krieg,
Corporate Director Supply Chain Management, Koehler Paper Group

Thermal paper consists of three main parts: a base paper, a precoat to improve printability and a reactive chemical layer that changes colour when exposed to heat. The paper can also have a protective coating on the front and back. From Koehler the paper goes to a converter who then prints and makes the small-size cash register or label paper rolls. When used for labels, a laminator is involved who not only applies the adhesive layer, but also the release liner to protect the adhesive layer before use. With its new paper machine, Koehler will also be able to provide the release liner.

While thermal paper's structure is quite complicated, its usage is brilliantly simple – and that's the paper's greatest advantage.

When the printhead in a printer gives the thermal layer a short heat energy pulse the functional chemicals react in milliseconds making the lettering or image appear. Thermal printers are energy-efficient, quiet, fast, compact, easy to use and require no other consumables than the paper.

STRICT REQUIREMENTS FOR RAW MATERIALS

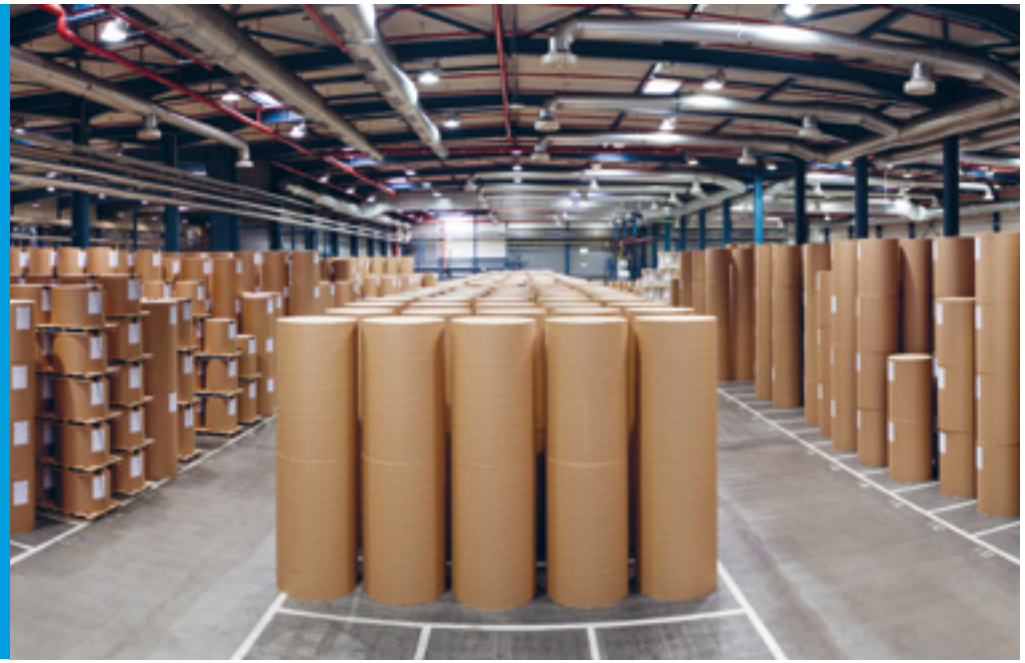
Pulp for the base paper and chemicals for the reactive layer are the most important raw materials in thermal papers – in terms of both quality and cost.

Koehler's primary requirement for pulp is its constant quality. Thermal papers are typically produced in lower grammages than

CONTINUED ON PAGE 3 ▶

We are currently expanding into the production of paper for flexible packaging, and we are researching new functional surfaces. This means replacing fossil-based raw materials and coatings with renewable ones.

Christoph Müller-Stoffels,
Head of Marketing & Communications,
Koehler Paper Group



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graphic papers. The paper must have a very smooth surface as well as high tensile and tear strength.

"We run our paper machines at high speeds. There can't be any interruptions or fluctuations in pulp quality. The same goes for chemicals we use," Klaus Krieg says.

According to market studies there is good global growth potential in POS and labelling thermal paper over the next 10 years.

Krieg says that Koehler is continuously endeavouring to maintain its competitiveness. A part of that balancing act is choosing a reliable pulp partner.

"Koehler is not a spot buyer," says Krieg and explains that the company is always interested in long-lasting relationships with suppliers.

"Thanks to our good partners, Koehler has been able to secure the raw materials we need for the full run. One of the success factors is also the coating technology that allows us to make thermal paper in a very efficient way and still reach a necessary print quality," Krieg says.

SUSTAINABLE INNOVATIONS DRIVE BUSINESS

As the recent IPCC special report on global warming suggests, governments and companies alike must take immediate action to halt climate change.

The Koehler Paper Group is already a frontrunner in generating and using renewable energy in paper production. The company also uses more environmentally friendly means in logistics, replacing trucks with rail and river transportation when it's feasible.

"The paper industry is a very energy-intensive business. A large part of our energy comes from sustainable sources such as our own biomass, wind power and hydropower. We have also been able to significantly lower the consumption of water per tonne of paper," Klaus Krieg says.

Much of Koehler's success in sustainability comes from the company's heavy commitment to R&D.

"I like to think that innovation drives us. For example, we are currently expanding into the production of paper for flexible packaging, and we are researching new functional surfaces. This means replacing fossil-based raw materials and coatings with renewable ones," Christoph Müller-Stoffels says.

The pièce de résistance of Koehler's paper range is called Blue4est® – an award-winning thermal paper that contains no reactive chemicals. The reaction when exposed to heat in a printer is purely physical instead of chemical.

"The paper can be used with current thermal printers, it doesn't fade over the years and – most of all – it is an ecological alternative. Because Blue4est® doesn't contain any reactive chemicals it's the first thermal paper approved for direct food contact," Müller-Stoffels explains. ■

BOOSTING SUSTAINABILITY PERFORMANCE

> **Our assessment continues to raise the bar and challenge companies in their thinking about long term risks and opportunities.**
>
> **Robert Dornau,** Director and Senior Manager in Sustainability Services, RobecoSAM

A record number of companies are interested in having the sustainability of their business thoroughly analysed and ranked in the Dow Jones Sustainability Index. The measurement is a great benchmark for companies to see if they are on the right track.

Profit, people and the planet. It is often by these three factors that the sustainability of a business is measured. Increasingly companies seek an independent, external ranking to display transparency in their sustainability progress. The Dow Jones Sustainability Index is one of the most esteemed industry sustainability rankings.

Results for the 2018 evaluation are now public and UPM was again nominated number one in the global forest and paper products industry.

UPM Environment and Responsibility Vice President **Sami Lundgren** does not hide his contentment with the best ranking. But as he puts it, it is a long term commitment rather than just a vision, that has resulted in the top spot.

"You have to walk the talk. Results speak for themselves, but they show we have taken a holistic approach to sustainability," Lundgren says.

Founded in 1999, the Dow Jones Sustainability Index (DJSI) assesses three dimensions – economic, environmental and social – in the performance of major global companies, an approach that Lundgren calls the most comprehensive in the market.

CHANGING EMPHASIS

The Dow Jones Sustainability Index is maintained by RobecoSAM, a Zurich-based investment research company. This year was a record breaker for DJSI, as the number of companies analysed hit an all-time high. Altogether over 3,500 of the largest global companies based on market capital were invited to answer between 80 to 120 questions. The number of companies which replied to the questionnaire increased by 5% from the previous year.

Each year RobecoSAM adjusts the criteria on which companies are measured. The aim is to keep the questions significant, explains Director and Senior Manager in Sustainability Services, **Robert Dornau** from RobecoSAM.

"We remove topics that have become common practice over the last few years and no longer distinguish leading companies. This ensures that our assessment continues to raise the bar and challenge companies in their thinking about long term risks and opportunities," he says.

One of the elements under scrutiny is good governance. Dornau explains that well run corporate governance ensures that a company is managed in the interests of shareholders.

"Empirical evidence suggests that over a period of five years, the difference in return on equity between well-governed and badly-governed companies can be as much as 56%."

For the DJSI ranking, each of the three dimensions analysed include between eight and 10 focus points. This year in the economic dimension for forest and paper product industries the analysed aspects include corporate governance, tax strategy and supply chain management.

In the ecological dimension, companies are measured, for example, by immersion of biodiversity in their business and sustainable forest management. In the social dimension things like human rights and philanthropy matter.

OPPORTUNITIES TO GROW

Lundgren says UPM performed well in all three dimensions, especially in the economic analysis, where UPM received the best score in all but one of the categories. In the environmental dimension UPM scored full points for important categories, like environmental policy and reporting, product stewardship, sustainable sourcing and forest management.

There is also room for improvement, Lundgren points out. For example, in the ratio between value added and usage of resources like water and production of waste and air pollution.

For UPM, opportunities still lie in the social dimension. UPM scored top marks in human rights and labour practice indicators. The single question which weighs the most in the social dimension results is occupational health and safety, and here UPM's performance weakened. Commenting on the results, UPM Vice President in Environment and Responsibility, Sami Lundgren sees opportunities.

"Our strength is definitely that we are evenly strong in all areas. Governance and code of conduct are our strong points on the economic side. We have also done well in responsible sourcing and sustainable forestry. Within our development areas, subcontractor safety could be improved as well as emissions further diminished," Vice President Lundgren says. ■

VISITOR ZONE

FIBRE BASKETS OF THE WORLD

João Cordeiro
Senior Principal
Pöyry Management Consulting Oy

Demand for forest products is predicted to continue growing steadily. The demand is driven by grand global developments such as urbanisation, population growth and new consumer habits. Unsurprisingly the demand for fibre is the greatest in emerging markets where also the supply of wood is scarcest, mainly in China and the rest of Asia.

But how can the forest industry keep pace? Where will all the wood for sawn timber, plywood, paper, board, tissue and textiles as well as chemicals, fuel and composite materials come from?

Wood plantations play a key role in countering this fibre deficit.

The whole concept of plantations can be rather misleading. Yes, a plantation is highly efficient way to grow wood. A hectare of fast-growing plantation can be up to 10 times more productive than a natural forest. However, effective land use doesn't necessarily mean only rapidly growing tree fields. In fact only about 10% of the total global plantation area is planted with fast growing species such as eucalyptus. A better term for plantations could be man-made forests.

Successful plantations consider the three basic elements of sustainability: social, environmental and economic impacts. Since plantations typically cover large land areas their location is one of the most important factors. Trees grow in places unsuited for agriculture. Sustainable plantation operations should support individuals and local communities, won't displace natural habitats and are located logistically near the 'consumer' – for example a pulp mill.

One could describe well-established wood plantations as a mosaic that forms a sustainable big picture at the landscape level. A plantation should have clear preservation zones for old primary forests and water bodies as well as areas reserved for other purposes such as food production. Well-established plantation forests also prevent erosion, and as part of the water cycle they increase humidity and contribute to regular rainfall. ■

WHAT'S UP?

LEADing corporate commitment

UPM was recognised as a Global Compact LEAD company among only 34 companies across all regions and sectors to represent the highest level of engagement with the UN Global Compact. The United Nations Global Compact is the largest voluntary corporate sustainability initiative in the world with more than 9,000 company and 3,000 non-business signatories.

To achieve the ambitious Sustainable Development Goals (SDGs) set out in the 2030 Agenda, the UN Global Compact has developed a portfolio of Action Platforms. These platforms facilitate bold and concrete sustainability actions through innovation and deep collaboration between stakeholders.

For the LEAD recognition companies are expected to participate in at least two of the Action Platforms. UPM has been a part of 'Reporting on the SDGs' and 'Decent work in global supply chains' platforms.

LEAD companies also need to demonstrate engagement with the initiative and commitment to defining and fostering leadership practices in line with the Global Compact Ten Principles and the SDGs.

In addition to UPM the distinguished group of LEAD companies includes global players such as Unilever, Nestlé, BASF and L'Oréal. UPM has been a signatory of the Global Compact since 2003 and has had LEAD status since January 2016. ■

NICE TO MEET YOU

MANAGER

Technical Customer Service, APAC

Who are you and what do you do at UPM Pulp?

"My name is **Lili Zhou**. I'm a TCS Manager in UPM Pulp's APAC team in Shanghai. My job is to offer technical support to our customers. I also deliver feedback from them to our mills for continuous product improvement."

What is the most inspiring part of your work?

"Talking to different people with different experiences. Seeking to understand customers' and potential customers' needs both in the short term and long term. And of course cooperation with customers helping them maximise the benefits from using our pulps."

What should customers know about UPM Pulp's technical service and support?

"We offer a complete package - a global technical support network, our own R&D facilities in Europe and Asia, a versatile products portfolio as well as close collaboration with leading machinery manufacturers and research organisations. We are every customer's best partner as a pulp supplier."

How do you keep up the good energy?

"I love to be with my family during weekends – spending time with them and cooking together." ■

P.S.

Dear Reader,
Since the recent publication of the IPCC climate report, the topic of climate change has been more widely discussed by the public. In this context it is important to highlight the positive impact of sustainable forest management and wood-based products in mitigating climate change.

Trees act as carbon sinks. Sustainable forest management boosts forest growth, thus increasing carbon sinks. Carbon is best bound by healthy and well-managed forests where maintaining the biodiversity of the forest is taken into consideration and impacts to watercourses are minimised.

Like forests, wood-based products also store carbon throughout their lifecycle. It is important to use wood as efficiently as possible – meaning that logs, wood chips, sawdust, bark and other side products and residues of wood processing are used in further manufacturing or to generate fossil-free energy.

Sustainable forest management and wood procurement mean concrete actions taken to safeguard the growth of forests and the benefits for both people and the environment. We believe that wood-based solutions play an important role in the transition to a fossil-free future.

Best regards,
Lajos

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PULP DIRECT

UPM PULP
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