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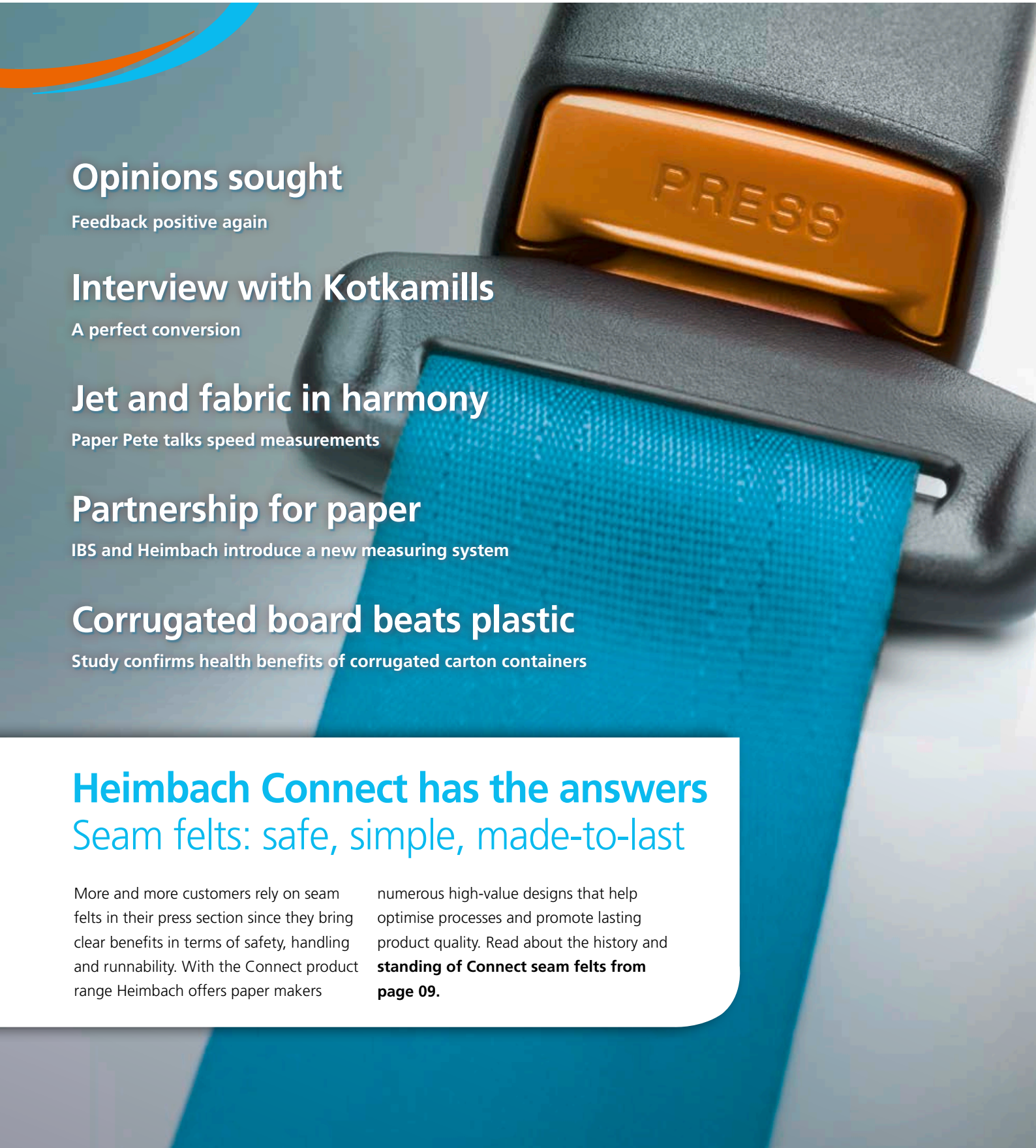


Opinions sought

Feedback positive again

Interview with Kotkamills

A perfect conversion

Jet and fabric in harmony

Paper Pete talks speed measurements

Partnership for paper

IBS and Heimbach introduce a new measuring system

Corrugated board beats plastic

Study confirms health benefits of corrugated carton containers

Heimbach Connect has the answers

Seam felts: safe, simple, made-to-last

More and more customers rely on seam felts in their press section since they bring clear benefits in terms of safety, handling and runnability. With the Connect product range Heimbach offers paper makers numerous high-value designs that help optimise processes and promote lasting product quality. Read about the history and **standing of Connect seam felts from page 09.**

Dear Paper maker,

Welcome to the first edition of impressive in the New Year.

I hope that 2017 has started well for you!

In this edition – as always – you, our customer, are the focus: To begin with, read about the first results of our latest **satisfaction survey,** to which we invited your opinion at the end of last year.

Following this, read an interview with a satisfied customer, **Kotkamills in Finland**, who it has been our pleasure to support during a machine conversion from fine paper to board all the way through to, and beyond, the start-up phase.

For all of us health and safety is an absolutely essential and very current topic. Therefore, I am pleased to introduce you today to **IBS**, an Austrian mechanical engineering company that has developed **safetyMASTER™**, a fully-automated system making the measurement of felts completely safe.

In this issue, Paper Pete is also talking about measuring; more specifically he is reporting today on **speed measurement at the headbox** – another activity that requires an enormous amount of attention to safety at work. Join him on his latest adventure.

Connect seam felts are very popular, not least due to the simple and safe handling that they provide in the process of installation: Our lead article tells you more about designs that set new standards – with customers all over the globe.

I wish you great success in your daily business and look forward to another year of successful co-operation!

And now: Enjoy reading!

Peter Michels
Managing Director

Processes in Good Hands
Lean Management for maximum efficiency

As Robert Bosch poignantly remarked at the beginning of the 20th century: "Always strive to improve the status quo. Nobody should be content with having achieved something but always aspire to do better." Lean is a modern, systematic approach to apply this maxim.

Frank Grieger, who has been working as Lean manager in the Heimbach Group since January 2016, describes it like this: "Whenever you are creating the most efficient and effective processes possible, **the focus must always be to optimise the benefits for customers.**" For a few years now all Heimbach employees have been engaged in prioritising efficiency.

Lean at all sites

Grieger stresses: "**Lean involves everyone in the organisation.** Implementation can only succeed when the company's aims and objectives are broken down in such a way that their meaning is crystal clear for every employee."Grieger coordinates the "Lean expert team" that has been **supporting the different Heimbach sites** in their Lean practice.
The members of the working group represent all PMC sites. They meet once a year and exchange experiences and views on current achievements and issues. **"Within the team, of course, we always work with clear practical references,"** he says, when referring to best practices.

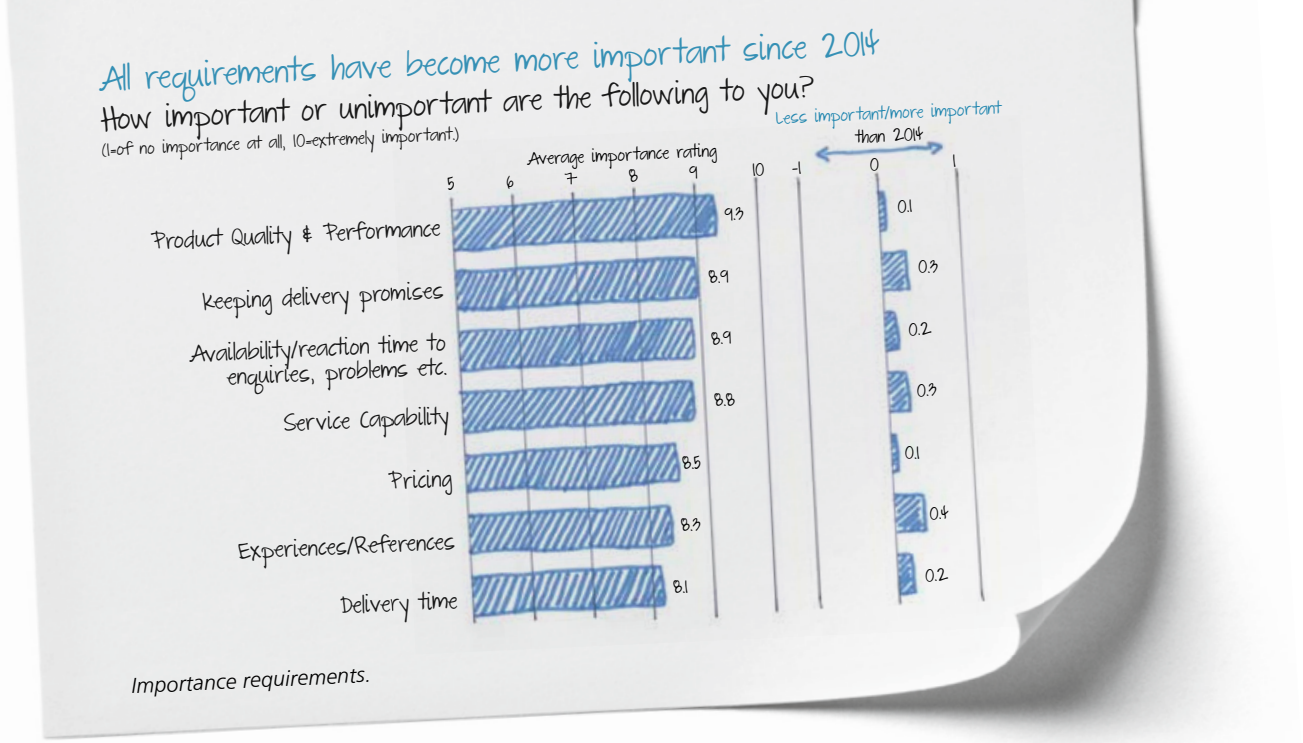
Proven in practice

These are discussed intensively so that everyone knows specifically what can be improved. In addition, the experts are developing **new group-wide standards**. Grieger brings his know-how to both the "Lean expert team" and directly to individual locations where he supports the further development of various lean practices in the role of consultant: Heimbach employees worldwide benefit from lean processes as they make products and provide services of the required quality, and quantity – at the right time and at fair market prices.

Customers come first

The Heimbach group of experts brings all company operations into line with customer value thus ensuring that customers are always provided with **the best products and services:** "The most important thing is that customers always remain loyal and recommend us to others", Grieger says and adds: "In simple terms we use Lean as a means to bring the **company's aims and objectives into line** with the requirements of the customer." Thanks to permanent structural improvements it is possible to synchronise company processes in the best possible way and in so doing **optimise the entire value-added chain**. In short: Value creation – preferably without waste.

The members of the "Lean expert team" (from left to right): Didier Verhaert (Burgos, Spain), Frank Grieger, Andrea Laaf (both Düren, Germany), Martin Hüser (Neu-Moresnet, Belgium), Frank Hendemann (Düren), Simon Johnson (Manchester, England), Raphael Burri (Olten, Switzerland); beside the group on the right: Stefan Merckens, Vice President Quality (Düren).



Importance requirements.

Following the trends

First results of our Customer Satisfaction Survey are out

In November last year we asked again for your opinions in our online Customer Satisfaction Survey. This bi-annual event is a key part of our continuous improvement and strategy planning processes as we need to monitor and understand what you, our customer, believe to be important in your choice of Paper Machine Clothing suppliers. We fully understand that as market conditions change and develop, so your requirements and needs are likely to do the same. Of course, at the same time we also need to find out if we are delivering satisfactory performances in these fields.

Asking for the opinions of our customers is a long tradition at Heimbach "because **customer focus is essential for us**", said Stefan Merckens, Vice President Quality, who is responsible for the customer satisfaction survey together with Michael Pelzer (complaints management). The first results of the survey can already be seen, and below is an early glimpse.

Importance ratings increase across the board

In comparison to 2014 the **importance ratings for all key criteria have increased**, which is certainly an indication that customers are becoming more demanding of their suppliers. Clearly this is a trend that does not only apply to the PMC industry. In particular the early analysis of responses shows that, whilst product quality and performance remains the most important factor in the decision-making process, the biggest increases in importance ratings were related to the **need for information and technical support**. From this we can certainly understand that customers wish to have safety, security and confidence in those they entrust with PMC supply (see Fig.).

Good grades and progress

Bearing the above in mind we are highly pleased to see that **general satisfaction levels have actually increased** slightly from an already relatively high level. Our reaction time to enquiries, problems and the like, as well as our service capability, were graded higher than in 2014 and this gives us every incentive to continue our efforts to improve along these lines. "Better feedback as a consequence of operative changes support us in our efforts to **critically evaluate specifics of our practice on the basis of customer testimonials",** reported Project partner Pelzer, adding: **"Once again we received very constructive feedback."**

One of the most noticeable changes in customer thinking was in relation to specialized service, where substantially more respondents informed us that this capability was important to them, to the extent that under certain circumstances this could be a paid transaction.

Reviewing everything in detail

The most critical part of the exercise begins in earnest as we digest all details provided by the survey, and begin to plan our actions for the next two years to ensure that our performance improves further and that we stay fully in tune with the requirements of the market. **"Every single response on each questionnaire is scrutinised in detail"**, Merckens explains the procedure and adds: "For all our customers their expectations towards us as suppliers have gained in importance." The next edition of impressive will report in detail on how we will be able to meet and hopefully exceed your requirements and further optimize our service.

Thanks to your lively participation Heimbach will donate 500 trees to the project "Plant for the Planet"!

Kotkamills Oy from above.

A Board Machine guaranteed for success
Kotkamills discuss details of BM2 rebuild

Kotkamills has been a long-term Heimbach customer, purchasing machine clothing for all sections. On July 22, 2016, the Finnish paper makers started up Board Machine 2, which has been producing high quality Nordic folding boxboard for the packaging industry and food service sector ever since. In the following interview Filip Sundholm (Production Director) and Teemu Nikkonen (Production Manager) discuss the machine rebuild and their experiences with Heimbach.

KOTKAMILLS

Kotkamills, a company with long-standing tradition and history **since 1872**, has developed into an international premium brand of the paper industry. At present the company employs approx. 460 people at the Kotka site; a further 40 are employed at the subsidiary Tainionkoski. Kotkamills **manufactures the consumer board brands AEGLE™ and ISLA™**, which are utilised in a variety of industries: AEGLE™, a traditional folding boxboard, is processed into consumer packaging (such as food, medicine, cosmetics). ISLA™, a food service board designed specifically for the food service industry, is used to **manufacture e.g. disposable cups and plates.**

From left to right: Oliver Beyel (Regional Manager Heimbach) in conversation with Teemu Nikkonen and Filip Sundholm.

Anton Kainulainen (Sales and Service employee Heimbach, left) and Teemu Nikkonen, Kotkamills, next to BM2.

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What was your motivation for converting PM2 from MFC to board grades?

Kotkamills

We had to react to market trends: On the one hand, the production of MFC grades was no longer profitable; at the same time, **demand for premium board grades is growing worldwide**. For these reasons we decided to convert PM2 into BM2. We studied a variety of scenarios and in the end chose what we considered to be the **best option in terms of realization, time schedule, and costs.**

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You set an ambitious timescale for the project. Why?

Kotkamills

Unfortunately, producing MFC grades was leading to monthly losses. We therefore had to create **positive business – in our case that meant board production** – as soon as possible. Without a doubt, the time frame was very tight, in no small part due to market mechanisms. Board contracts are traditionally negotiated on an annual basis, so we were determined to **participate in the contracts for 2017 supplies**. Delaying the start-up by just one single month would have meant completely missing out on the 2017 sales cycle with certain customers.

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What challenges did you encounter?

Kotkamills

For sure, the main challenge was the **incredibly short time frame** from project planning to realization: The complete process took only 16 months, which might well be a world record – at least as far as a **new concept machine** is concerned. We should point out here that the planning phase actually continued while the rebuild was underway.

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Your BM2 makes "online dispersion coating" possible. What can you tell us about this process?

Kotkamills

Without a doubt, online application of dispersion coating is a unique feature: "online" means the ability to apply coating layers directly to the machine during production. Kotkamills' **BM2 is the first machine where this concept has been planned and achieved in a completely new facility from the outset**. Furthermore, this was the first time that tried and tested processes were combined with new and modern concepts in all sections of the machine. This made us feel to a certain extent like pioneers.

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Does "online dispersion coating" provide exclusively technical benefits?

Kotkamills

No, there are also ecological benefits, as BM2 can run without plastic barrier coatings, which means the board is **completely recyclable**. Products benefitting from this process offer added ecological value, in so far as the end product can be **recycled with other waste paper.**

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About your new brands AEGLE™ and ISLA™: What benefits do these grades offer your customers?

Kotkamills

AEGLE™ is our traditional folding boxboard brand offering **high bulk and smoothness**. Our customers are already reporting that AEGLE™ boxboard provides excellent runnability through the converting process. Customers can choose folding boxboard – with or without recyclable barrier coating – **that is lightweight, with high bulk and rigidity.** AEGLE™ gives excellent printability and other finishing processes, such as varnishing or embossing, have seen improved results.

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Simply put: An all-round premium product, just like ISLA™.

Kotkamills

Yes, that's exactly what we are aiming for: **Kotkamills board has to be a permanent player in the premium segment.** We are confident this can be achieved with ISLA™, our latest innovation: ISLA™ is a dispersion coated board, specifically developed for the food service industry. End products such as disposable plates or coffee cups are easily recyclable due to the water-based dispersion barrier coating!

Project "Flying Eagle"

Rebuilding the old PM2 (MFC paper) to BM2 (packaging board) – **Project name "Flying Eagle"** – in profile:

Rebuild costs: approx. 170 Million euros
Rebuild time: 16 months (including 6 months for building)
Machine width: 5.90 m (trim width 5.36 m)
Machine speed: 800 m/min
Production capacity: 400,000 t/year (weights from 150-500 g/m²)

"Heimbach is a highly experienced clothing supplier to the board industry."

From the former PM2 to the "Flying Eagle".

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Could we therefore say that there was ecological as well as economic motivation behind the rebuild?

Kotkamills

That's right; a rebuild should not only improve the main processes but also have positive side effects. One of the most effective ways to **protect the environment is to prevent waste**, and this is one of Kotkamills' main motivations. Moreover, as part of the rebuild, we took the opportunity to adopt the latest technology, which will result in a significant reduction in our electricity and water consumption.

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For the next two years you will purchase all your machine clothing from Heimbach. How and why has this single source decision come about?

Kotkamills

Of course, such important questions require team decisions. Efficiency was among the principal reasons for opting to single-source our main partners – for example PMC and Chemistry. **We highly appreciate partners that are both expert and experienced, and are fully acquainted with the process** – and Heimbach is one of these.

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In addition to high-quality products, what else is important to you regarding long-term cooperation?

Kotkamills

Close cooperation and reliability are key factors! Suppliers should be able to get to know BM2 from up close and we would very much like to master the learning curve "hand in hand" with suppliers: You can only **benefit from shared experiences**. Ideally we would like to see this development continue to include machine runnability as well as PMC from Heimbach.

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Why do you value Heimbach as a supplier and partner?

Kotkamills

There are several reasons: Heimbach is an **experienced machine clothing supplier for board machines.** In addition to this we are familiar with Heimbach as a supplier on PM1 and the old PM2. It is also an advantage for us to be able to purchase **all clothing products – including shoe press belts – from a single source.** We are also happy to be able to draw upon the extensive range of specialized services available from Heimbach TASK. All this adds up to a comprehensive picture.

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Can we expect more "green products" from your production in the future?

Kotkamills

This is our aim. We want to focus on compostable board products in the future to put our slogan **"from nature back to nature"** into practice. Our target is to obtain all necessary raw materials directly from nature in the most effective way. **The food industry offers many growth opportunities.** Imagine, if we could replace all plastic parts of a food package with paper and board products!

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Thank you for the interview!

Highly efficient products
Seam Felts – at the top of the tree

Nowadays seam felts are regarded as equals in relation to endless felts. Initially only used for board and packaging paper, they can now be applied to almost all paper grades. Seam felts from the Heimbach Connect range are appreciated by customers worldwide for their service life and user friendliness. In the following article you can find out more about the long-term success story of Heimbach seam felts and why they have earned the right to be ranked among the leading products in the industry.

It has been some considerable time since the first steps were taken to develop efficient alternatives to the classic endless felts. "It was in the mid-1980s", remembers Hans Peter Breuer, who has worked in the paper industry for more than 40 years, and who has been involved in developing innovations for the press section for almost as long. He summarises the advantages of seam felts: **"They are much simpler, quicker and safer to change".** And this is the decisive argument for more and more paper makers. Nowadays more than a third of all Heimbach press felts sold in Europe are seamed felts, with that figure trending upward.

Work safely – produce effectively

"Health and safety has to be a top priority", Breuer emphasises and he explains that many customers choose seam felts for precisely this reason: **"There is virtually no risk of accidents for employees**, because there is no need to dismantle or open any roll bearings." Connect felts are easily installed by only a few workers, taking 30 to 90 minutes depending on position. This means that the easy handling of seam felts **saves a lot of time.** Apart from handling, performance is of course critical: What was previously seen to be an ambitious undertaking to achieve thickness, density, yarn count, strength and dewatering – to the same standard as endless felts – is nowadays a reality.

Seam felt specialist Hans Peter Breuer describes technical details.

Clear difference – used seam felt "then" (left) and "now" (right).

Innovations for the best products
"Admittedly, we were not the first manufacturer to produce seam felts; however, we advanced to the top quickly and today we are able to say that we have been **right at the forefront for many years**", product manager Breuer argues. This development is mainly due to continuous product innovation. At Heimbach a team of experts works together in order to advance the seam felt portfolio bit by bit. Essentially the step-by-step progression of Connect felts is about stability, contamination resistance, and **dewatering on a consistently high level.** Numerous patented types of Connect felts are testament to the success of these efforts.

Yarns, seams and sustainability
Some innovations deal with specific needle technology, others concentrate on improving yarns: "Over time we have steadily reduced yarn thickness and have been able to significantly **reduce the susceptibility to marking of the area around the seam**", Breuer says. "Of course, when I look back at old designs from 20 or 30 years ago I sometimes smile to myself", he adds, and points to the obvious differences: Back then felts were all but "shattered" near the seam; nowadays they all but **retain their original state** (see Fig. above). By the way, there are environment benefits from innovations, too: Heimbach has succeeded in **developing a special start-up layer** that does not need any chemical substances at all – sustainability in action!

Excellent Credentials

De-watering performance, stability, handling, runnability and durability: These quality features have won over Heimbach seam felt customers worldwide. **Below you can find selected references for Connect products:**

Reference 1
Configuration: TRI-VENT
Speed: 1,540 m/min
Width: 9.35 m
Paper grade: Newsprint
Pick-up/1st press: Atroplan.Connect
3rd press: Atrocross.F Connect

Reference 2
Configuration: Big roll press + SP
Speed: up to 850 m/min
Width: 3.45 m
Paper grade: Testliner
2nd press (top + bottom):
Atromaxx.Connect

Reference 3
Configuration: TRI-VENT
Speed: 1,500 m/min
Width: 9.20 m
Paper grade: Newsprint
Pick-up/3rd + 4rd press:
Atrocross.F Connect
1st press: Atroplan.Connect

Cleaning? Not a problem

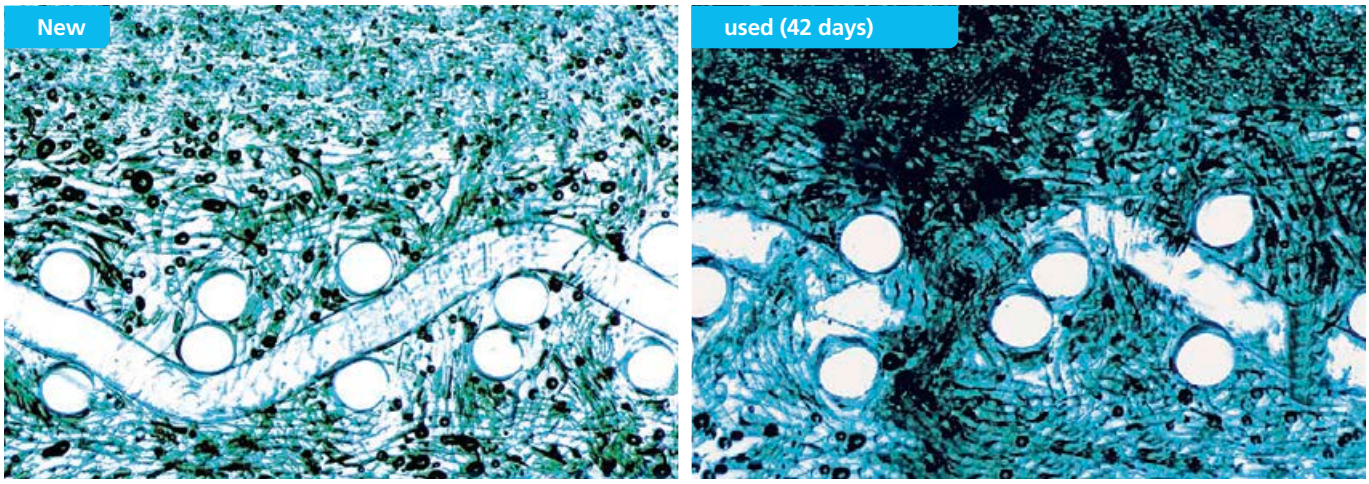
Particular attention must always be paid to the seam, given that it is the "weakest link in the chain". Problems that occurred previously around the seam area of felts are now in the past – even when customers use high pressure cleaning methods. Nevertheless, compared to endless felts, reduced pressure is required: **"More and more customers use nip de-watering instead of UHLE boxes, as there are plenty of advantages"**, Breuer asserts. De-watering at the nip protects the felt and saves energy because there is no UHLE box to slow the felt down. In addition, it is cleaned more effectively as the energy available is increased a hundred-fold. And – the most important factor – sheet dryness is increased because the nip allows higher pressure to be applied. But no matter whether de-watering takes place via the nip or by classic methods, seam felts always fit the bill.

Stability that convinces

However, what would the best felt be without high-tech base layer materials? Apart from fibre and needle innovations, the base material is always at the centre of our development. All base components are made of mono filaments in both machine and cross-machine directions, and **monofile yarns are a reliable basis for tight, dimensionally and diagonally stable fabrics:** As the cross-sectional image clearly shows, this Connect seam felt displays a virtually unchanged base layer geometry after 42 days. Moreover, the yarn counts of Connect felts make seam closing extremely easy. A point that is very important in practice – particularly when closing needs to be done in record time (see: reference table below).

Base layer geometry is the foundation

When we consider behaviour of the base structure, it becomes apparent: monofilament base layer constructions are hardly deformed. The original geometry is able to withstand press loads over a significant time, which means that the **seam felt base layer can deliver a consistently high performance** over its whole lifetime. Here the real benefit for the paper maker is again to the fore: As we all know seam felts are installed flat across the full machine width – in the same way as dryer fabrics – which means they can be noticeably more rigid than endless felts: "Another point that makes installation easier for paper makers", says Breuer.



Comparison of seam felts: Void volume of Connect felts.

Reference 4

Configuration: Bi-VENT + shoe press
Speed: 750 m/min
Width: 5.40 m
Paper grade: Fluting/Testliner
Pick-up: Atromaxx.Connect
1st press bottom: Atroplan.Connect
Shoe press top: Atroplan.Connect
Shoe press bottom: Atromaxx.Connect

Reference 5

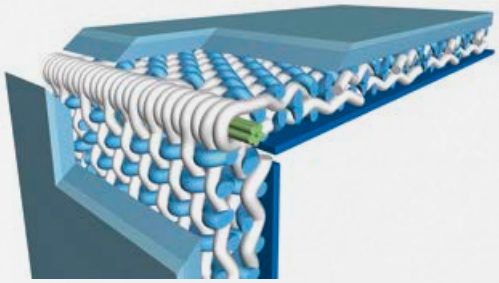
Configuration: LNP + shoe press
Speed: 1,000 m/min
Width: 7.40 m
Paper grade: Kraft and sack paper
Pick-up: Atromaxx.Connect
1st + 3rd press: Atromaxx.Connect

Reference 6

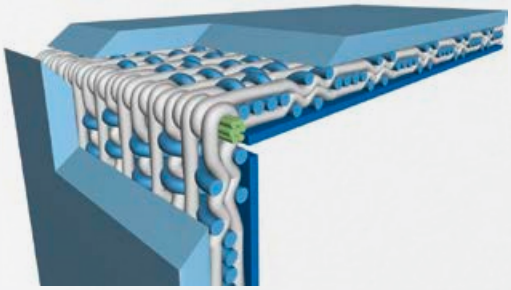
Configuration: TWINVER
Speed: 1,250 m/min
Width: 8.35 m
Paper grade: Magazine paper
Pick-up: Atrocross.F Connect

Connect is available in:

Atrobond, Atrolink, Atromaxx, Atroplan and Atrocross.F. designs.



atromaxx. CONNECT



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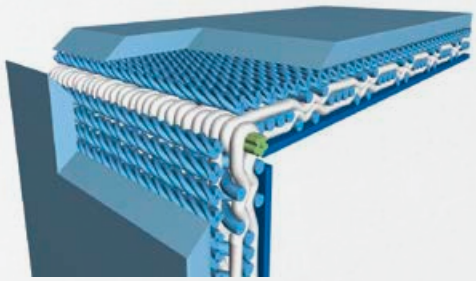

atrocross.F CONNECT

Durability means long service life
Connect felts remain open and abrasion-resistant for a long time, and this contributes to the **exceptionally long lifetimes that Heimbach seam felts regularly achieve**. These designs are highly incompressible, which helps promote long-lasting, consistent and high levels of dewatering. "Downtime is going to be reduced, because of the quick installation time for seamed felts, even in the case of unplanned changes", Breuer adds, before addressing the end product: "Everything is of course dependent on the quality of the paper". Here Connect felts score because they incur virtually **no issues with trim or general edge issues like edge drop off or edge lifting**, which in turn means fewer breaks.

A design for every need
The Heimbach seam felt product range is optimized for almost **every application** – with the exception of highly sensitive graphic papers: In other words, nowadays almost all paper grades can be produced using Connect felts. There are even Connect designs suitable for shoe presses using a single felt, or for highly loaded rear positions of graphic paper machines. Even machines making security papers use Connect products now. **The highest speeds no longer present any problems** either, because running characteristics, elongation performance or felt tension, and in particular seam designs and the surrounding area are compatible with any speed. Clearly the investment of time and additional innovative resources is worthwhile in order to increase the range of applications step by step. **"We may soon be able to even apply seam felts to the ultra-sensitive décor paper market"**, Breuer ventures a purposeful prediction. Of course we will let you know as soon as the time for this has come.

Best Practice from Practical Experience

Speed Measurements at the Headbox

Paper Pete makes things clear

Dear Paper makers,
Change is the order of the day in Heimbach's TASK department: Whether we are investigating one or in some cases all sections of a paper machine, offering advice on machine technology or performing analyses – no two jobs are alike. What we do know for sure, however, is that on many occasions a customer needs facts first of all in order to pursue a line of enquiry and we can help with specific measurement technology. In today's case study we were in action during the start-up phase of a machine producing folding boxboard and carried out measurements on three headboxes in order to assess the jet-wire ratio.

Together with my colleagues Janek, Ralf, and Jelke, we began with a preparatory meeting. Janek explained that the customer had ordered the complete clothing package from Heimbach and that they were asking us to check the **jet-wire speed**. Ralf and Jelke talked us through a diagram of the forming section so that we were able to prepare ourselves in a targeted way.

Measurements are complex

During our flight my colleagues reported on some interesting projects in which they had performed speed measurements and as a result had been able to determine the cause of increased fabric wear and/or disproportionately increased sheet breaks. Other jobs consist of **precision-tuning drive systems** or synchronising transfer positions. In addition to this we frequently check **machine settings, such as speed indicators**, for accuracy – and this was also relevant for this particular assignment.

Facts for forming

Once on site, we exchanged views with the production manager who suspected that the three fabrics were not running at exactly the same speed, which could lead to displacement or movement of the sheet layers during couching. It wasn't at all clear, furthermore, whether jet speeds were displayed correctly in the control room, which for machine operators in the forming section is **the control instrument per se** – after all, you need correct information that you can rely on. As we know, perfectly calibrated and correctly displayed jet speeds – also called "jet-wire ratio" – are the **basis for being able to manipulate the formation and some of the stability characteristics of the end product.**

First results

We began our measurements and identified the jet speeds as well as those of the forming fabrics of the filler, back, and surface layers. The first significant result was: **All three fabrics were running at exactly the same speed** (see pg. 14, Fig.1), so that we were able to quickly reassure the production manager with regard to his first concern. The speed displayed in the control room also corresponded to the result of the measurements. However, in the back layer a major difference of jet speed was discovered: The measured speed was around 35 m/min below the value that was shown in the control room. For the first time we suspected that the problem might be down to a calculation error and/or incorrect programming of the speed indicator.

Ratio – the decisive factor

Next, together with the paper makers on site, we dealt with the speed differentials between jet and fabric, i.e. the "ratio". You can appreciate how fundamentally important the provision of the correct value is in this context, after all, **fibre orientation**

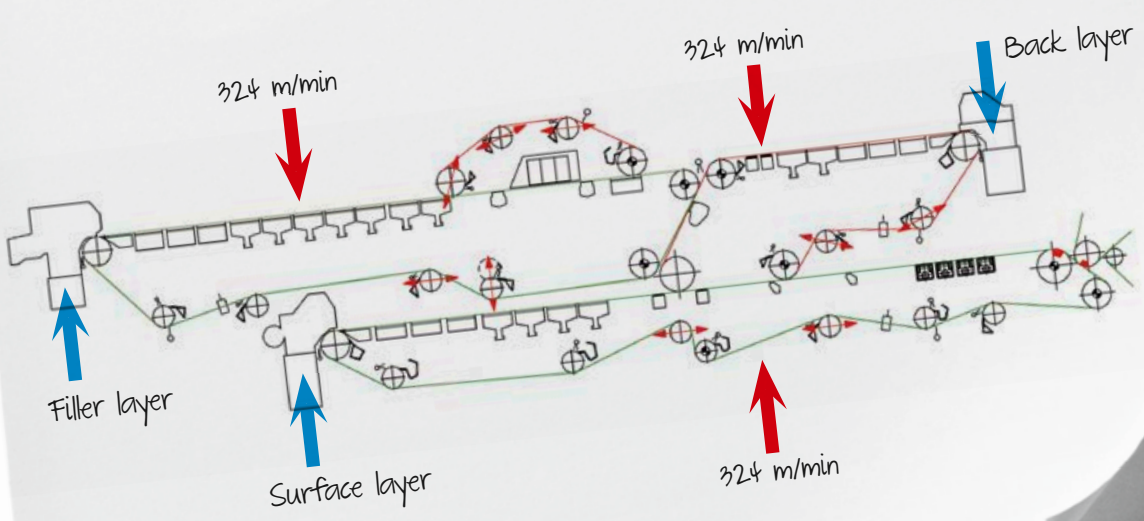

Fig. 1: Fabric speed in the filler as well as surface and back layers.

and formation are set according to this. Even though the back layer appeared to have a ratio of 10 m/min, the measurement that we took showed -25 m/min (Fig. 2). In this circumstance, the paper makers quite logically assumed that the jet was 10 m/min faster than the fabric and therefore more fibres were aligned in a cross direction. In fact, the jet was actually 25 m/min **slower** than the fabric and therefore the fibre orientation followed tended **more to the machine direction.** We therefore increased the jet speed until a real ratio of 0/min was achieved.

Slice opening and jet speed

After this had been accomplished, we changed the slice opening of the headbox in order to find out whether the **jet speed remained constant**. For this test it is essential that all control parameters – including the adjusted ratio – are maintained. If then you change only the slice opening of the headbox (flow rate higher or lower), the jet speed has to remain constant. Any changes, however, are an indication that in principle the entire system has to be checked. In the back layer we found quite conclusively:

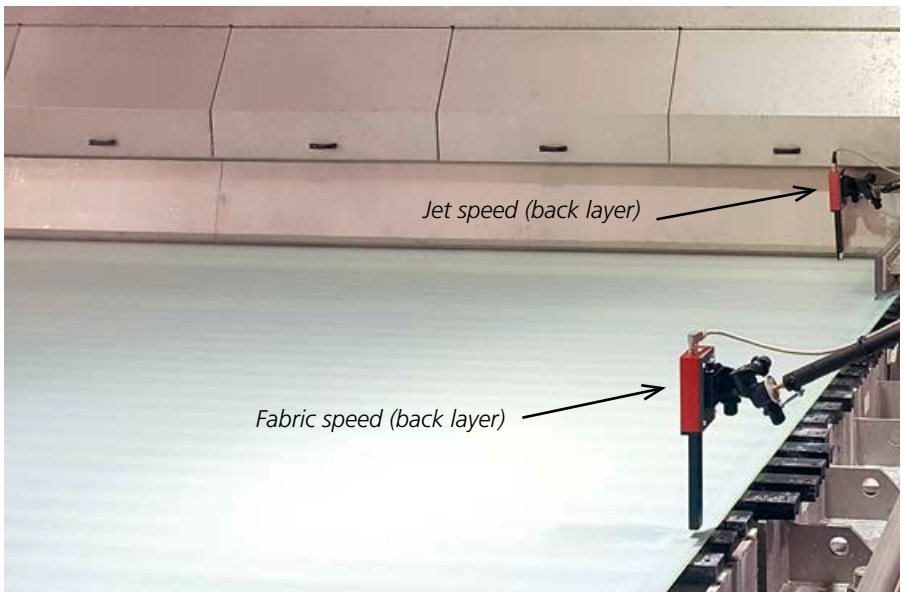

Fig. 2: Both fixed measuring points in the filler position.

When the slice opening was changed from 20.6 to 21.2 mm the jet speed was perfectly constant – however, measuring values and display consistently indicated a difference of just under 35 m/min. We therefore came to the conclusion that there was really **only one single factor responsible** for the different readings.

Clarity achieved

The next series of measurements was performed in the filler position. This is a crucial factor for achieving overall sheet strength and comprises **more than 80% of the total sheet mass**. The jet was permanently 28 m/min slower than displayed. From experience the customer's paper makers had suspected from the beginning that the display was incorrect. Together we aligned the speeds (jet and fabric). After completion of the adjustments the measured speeds matched. Finally we performed the **measurements in the surface layer** (Fig. 3). The results of both the filler and the surface layer confirmed what we had already found in the back layer: Only one single source of error made sense!

Job done – paper makers happy

Now we were able to tell the customer with absolute certainty: Fabric and jet were perfectly adjusted in all three layers, which meant that trouble shooting could be focused on the area of data processing.

Either the software itself or its specific programming was the source of the problem. From this point onwards our measurement results can provide the customer's software experts with the basis for **correcting the calculation of the jet speed.** Once this has been done we will make another visit to the customer to test the jet speeds once more. Then everything will be resolved and we can say with confidence: Once more we have been able to use experience and our skills to provide practical help to a customer. **All's well that measures well!**

With best wishes,

Your Paper Pete

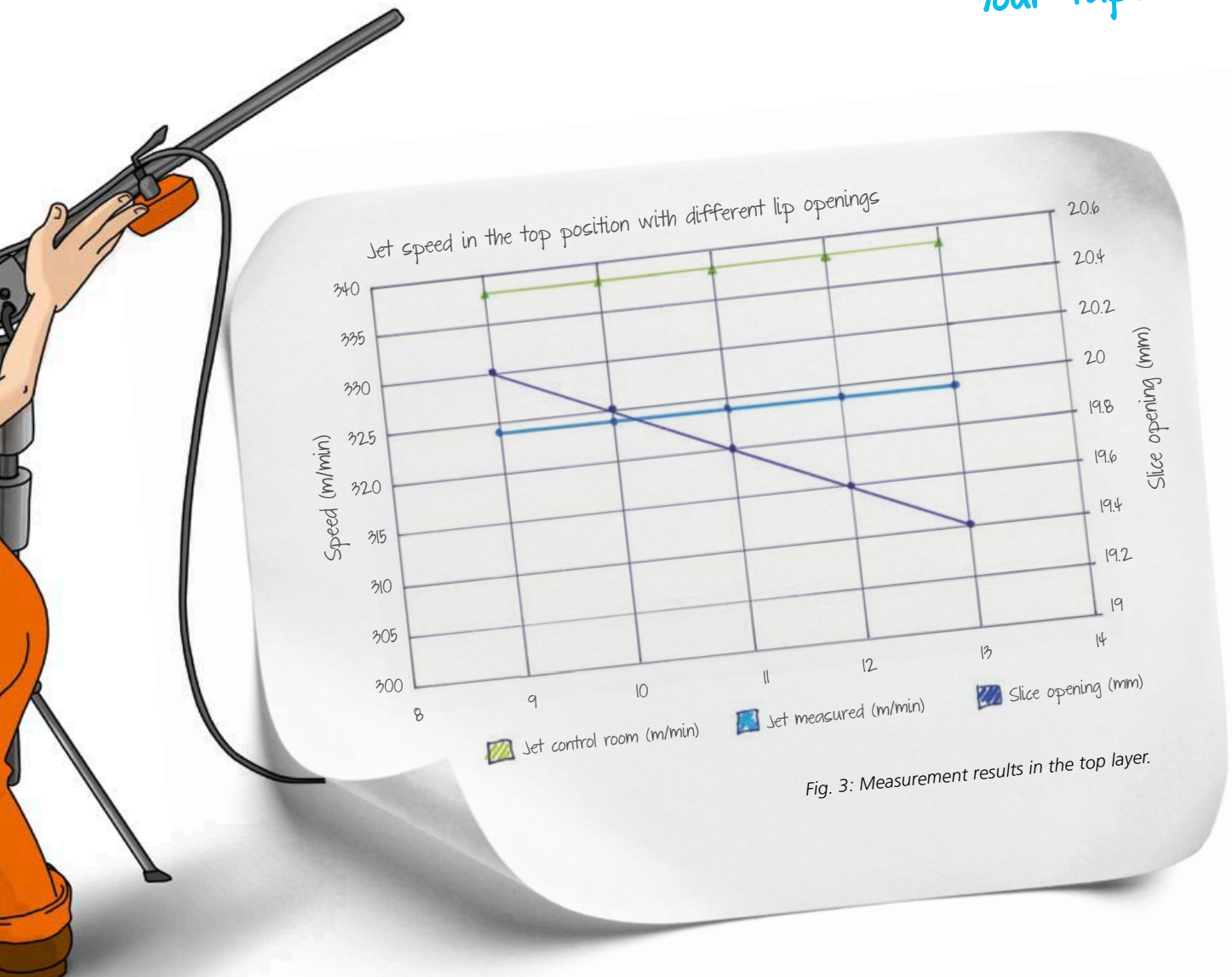

Fig. 3: Measurement results in the top layer.

Fully automated measuring system for paper machines

Safe and reliable felt measurement

Every product has to offer at least one tangible benefit to the customer – and if there are several, then so much the better. The Austrian machine and systems specialist IBS has created just such a product – safetyMASTER™, which supports paper makers in order to provide safe and effective measuring. Read more on this system in the following report.

Usually, when we refer to "benefits to the paper maker", what this means in practice is cost reduction. Savings are achieved by optimising, step-by-step, the entire production process in all sections. **Exact and precise measurements during the paper-making process** are an essential part of this. SafetyMASTER™ permits CD profile measurement of water content and permeability in all press felt positions.

Health and safety top priority

Even today periodic measurements of cross machine felt profiles are very often performed manually. "However, **manual measuring on a running paper machine always carries a risk**, which is why a variety of paper manufacturers have already outlawed such practices", Thomas Fischer, Head of the Heimbach service team, TASK, explains. He also points out that in certain positions measuring is not possible at all (no space, no walkway). Paper makers also know: Even if measuring is conducted with absolute diligence, the results are still dependent on individuals – this is simply unavoidable. **Heimbach welcomes customers' own investment** in the installation of measuring equipment because it improves health and safety of the paper makers on-site as well as that of our service engineers when they perform their own measurements in the paper machine.

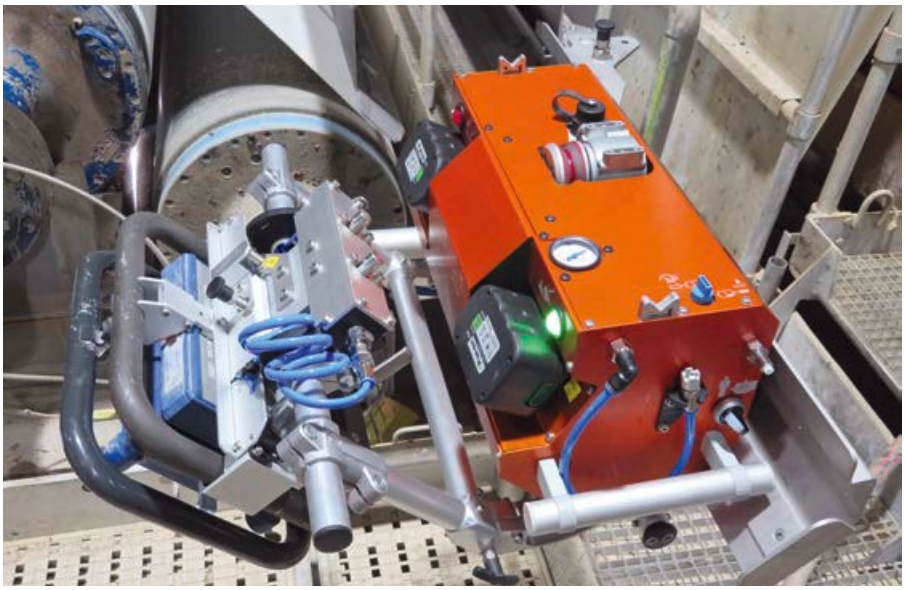

Fig. 1: Low risk of contamination – thanks to the special cross beam design.

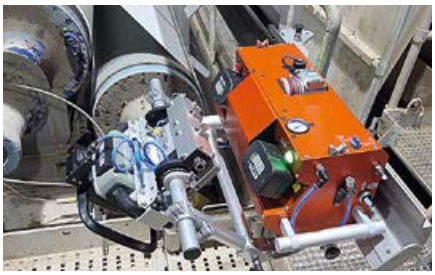

Fig. 2: An overview of the components of safetyMASTER™.

Fig. 3: Autonomous, self-driving shuttle without the need for cross beam connections.

Fig. 4: Measurements of cross or length profile in three positions.

Please address any enquiries directly to Gerd Ressmann, who is Head of Development and Product Manager at IBS (Email: g.ressmann@ibs-austria.com).

Fig. 5: Easily and conveniently transported.

safetyMASTER™ – the solution

With the introduction of safetyMASTER™ the manufacturer, IBS, has helped relegate issues such as safety risks, problems with lack of space, and measurement variations to the past: The safetyMASTER™ system **guarantees safe CD-profile measurements** on a running paper machine, while the operator remains safely outside the measuring area. Measurements can be taken anywhere, even in positions where there is little space or no walkway to measure the CD-profile. "The system offers **perfectly reproducible measuring results**, since human influence is all but eliminated and the system is 100% consistent", Fischer explains. This is particularly important when customers need TASK to perform measurements and subsequently analyse the figures obtained.

Adaptable and reliable

The safetyMASTER™ system consists of a **simple and compact stainless steel beam**, the design of which almost entirely eliminates the risk of contamination (see Fig. 1). In addition a rotating and removable loading ramp is provided which facilitates the ergonometric installation of a self-driving shuttle (see Fig. 2). The system is flexible because it "works with all available felt measuring devices and can even be installed retrospectively", says Fischer.

The safetyMASTER™ is easily and quickly installed ready to start felt measurements. All the service engineers have to do is to mount the autonomous shuttle at the loading ramp and close the latter; **no connections at the cross beam** are needed (such as electricity, pressurised air, water – see Fig. 3).

Sophisticated overall concept

The shuttle is pushed into the cross beam and the measuring process is started: To this end a selector switch for **CD-profile or 3 position MD-measurements** is provided (see Fig. 4). **The position of the measuring head is adjustable individually** as it can be rotated by 180°. The high-performance adaptor allows up to 50 measurements per load. At the end of the measuring process the shuttle, which weighs only 20 kgs, can be **transported easily, comfortably and quickly**, thanks to the backpack that comes with the device: **Safety is paramount**, particularly when an operator needs to have both hands free in order to safely negotiate ladders and walkways (see Fig. 5). The space-saving system can be stored anywhere.

Financial benefit straight from the manufacturer

Heimbach Managing Director Peter Michels talks about the financial side: "The cost of investment in SafetyMASTER™ is related to the machine width and the number of required measurement positions. The starting price is well under Euro 30,000.00 and the "full" cost is around Euro 100,000.00. License fees do not apply. The system can be bought directly from the manufacturer, which means an additional financial benefit for Heimbach customers and which also makes sense in terms of the comprehensive warranties." Clearly this system will have a **very short payback period** – not only when you consider that operators are able to work safely, but also because all the effort that has to be put into **manual felt measuring will be a thing of the past**. One paper manufacturer who is already using safetyMASTER™ is **Parenco in the Netherlands** (see above).

Achieve more together

Parenco, a well-known Dutch paper manufacturer, now measures Heimbach machine clothing with safetyMASTER™, **one of the first joint ventures:** "We are particularly pleased to welcome a recognised technology leader such as IBS in our paper machine partner network", Michels reports and adds: "For Heimbach, **customer safety is always a top priority**. SafetyMASTER™ offers customers a safe and reliable tool, both in terms of exact and consistent measurement results and health and safety standards."

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Case Study
Parenco BV, Renkum/NL

Machine: PM2
Machine width: 9.20 m
Machine speed: 1,200 m/min
Paper grade: Testliner, Fluting
Production capacity: 385,000 t/year (Basis weight range 70-160gsm.)

Good for Consumers
Corrugated Cardboard instead of plastics for packaging

Healthy eating is important, everybody agrees. In particular, fruit and vegetables should be on everybody's daily menu. However, the healthiest foods often pose problems when it comes to retaining freshness and hygiene. There is good news to report: A study from the University of Bologna reveals. Fruit stays fresher for longer when it is packaged in corrugated cardboard containers.

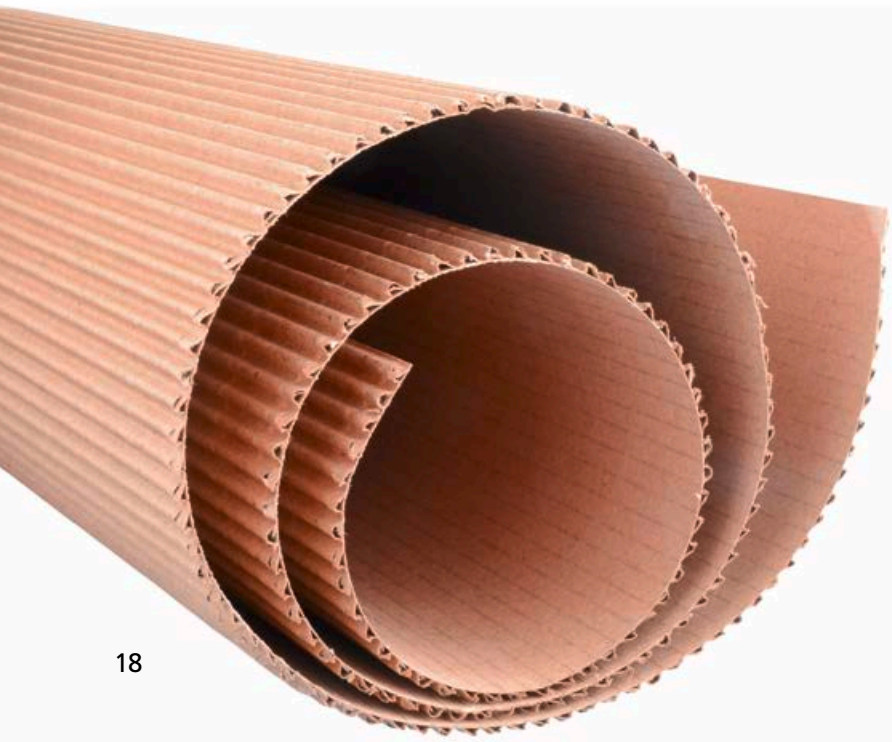
They are familiar to many of us: predominantly green plastic containers used to store and transport fruit and vegetables. The plastics industry calls this packaging material "Reusable Plastic Container" (RPC). That is quite true as they are indeed reusable. But are they consumer friendly? The Italian researchers have now established scientifically that fruit keeps longer while at the same time contaminating less – **provided that corrugated cardboard containers are used!** A clear statement that underlines once again: paper is not only good for recycling but also for the consumer, i.e. for all of us.

Corrugated cardboard helps ensure food safety

The experts from the University of Bologna found out that fruit packaged in corrugated cardboard contaminates much less, which means **better food safety for consumers!** Of particular significance here is protection against "pathogenic micro-organisms", meaning bacteria that make us ill. These are not to be confused with bacteria that make food decay, which means the product itself becomes unpalatable. While a simple visual inspection reveals decay, this is not the case with "pathogenic" bacteria. Therefore, it really is important to know that **corrugated cardboard is much safer than RPC!** This is the clear outcome of the tests conducted at the Institute for Agricultural and Food Science under the supervision of Prof. Rosalba Lanciotti.

Corrugated packaging clearly better

According to the European Corrugated Packaging Association FEFCO the Italian research group has found "**statistically significant differences** in the microbiological quality" of the fruit studied. To begin with, off-the-shelf peaches were placed in previously contaminated plastic packaging under consistent laboratory conditions. This procedure was repeated with a different batch, the difference being that this time the peaches were placed in pre-contaminated corrugated cardboard packaging. The subsequent measurements that recorded the transition of micro-organisms to the peaches were revelatory: **The fruit in plastic became contaminated 48 to 72 hours earlier than that in the control group that had been stored in corrugated packaging!** And not only that.



Good for all foodstuffs: Packaging made from corrugated cardboard is the universal answer.

Preservative properties also improved
The researchers around Prof. Lanciotti also showed that when fruit was stored at high temperatures for 48 hours, up to 95 % of the fruit in contaminated plastic was polluted with E. coli bacteria! In comparison, for the corrugated cardboard containers the result was **never more than a quarter**! But apart from protection against disease-causing bugs, corrugated cardboard containers offer improved preservative properties because **freshness, appearance, smell and taste of the fruit are retained for longer**, as the study shows. Moreover the scientists prove: The risk of damaging fruit and vegetables in transit is also lower when using cardboard containers.

All kinds of advantages
In summary, these are positive findings for our industry. But it is not only in the **corrugated cardboard sector that producers are able to look forward to increased turnover**, other sectors of the economy benefit from this study too: **Retailers also benefit** as they are constantly looking for the best possible packaging solutions, even more so if the packaging also reduces the risk of food contamination. **The logistics sector, too, should welcome** these research outcomes as it effectively confirms that the time-intensive cleaning of plastic crates is a thing of the past. Therefore, thanks to corrugated cardboard there is more time for the actual transport – and we are all aware, of course, that in logistics every minute counts. FEFCO, Brussels, also highlighted the importance of this study: **"Packaging fulfils a crucial function."** Exactly – and the main lesson is: Use corrugated cardboard!

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