impressive

ISSUE 3/2017

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Paper Pete explains the causes

Groove design at its best

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Tension first – then heat-up

Tips for the dryer section

Expansion of Suzhou Site

Chinese press felt facility starts up

Against Price Dumping

Why „cheap prices“ can be dangerous

Strong in Forming

Primoselect keeps progressing – now with additional benefits

What are you looking for from your forming fabrics? Optimal drainage, high retention, low water carrying, improved former hygiene, long lifetime? Then the solution is **Primoselect+** which, **thanks to its combination of materials,** provides clear benefits.

More from page 4.

Dear customers,

I hope you've had a wonderful summer and that you were able to fully recharge your batteries ready for the effort needed to get through to year end.

Since the last edition of Impressive a lot has happened at Heimbach – as always. Our patented **Primoselect** fabric line has been further extended through the addition of designs that achieve clear added value thanks to their **special combination of materials.**

There is also news from our **Chinese site Suzhou**. After extensive building work and development activity we were able to inaugurate a **new factory building** for press felt production in May of this year.

As always a report based upon practical experience from Paper Pete is a must. This time he investigates the causes of **uneven CD moisture profiles**. There are also helpful **tips for dealing with dryer fabrics:** On page 18 you can learn how wavy edges can occur, but more importantly how they can be avoided.

How to prevent accidents and identify dangers at an early stage is a topic that keeps us all permanently engaged. We are therefore very proud of the German Employers' Liability Insurance's **prize** that was awarded to us for exemplary achievements in **Occupational Health and Safety**.

I wish you much success in your daily business!

Best wishes from Düren,

Yours,
Peter Michels

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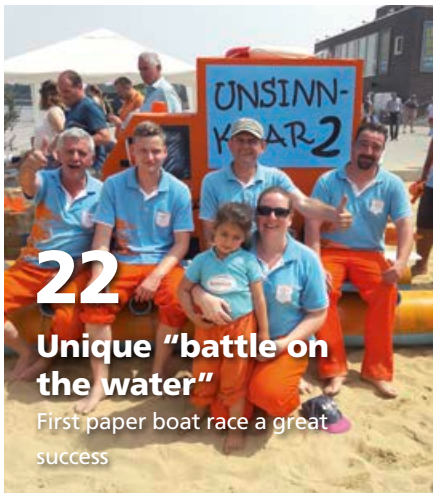


22 Unique "battle on the water"
First paper boat race a great success

Key Contracts in Safe Hands
Carmen Puhl managing corporate business for Heimbach

Proficiency in foreign languages is always a good thing. And it's even better when you are able to apply language skills and intercultural competence in the context of a successful career. All of this applies to Carmen Puhl who took over the role of "Corporate Account Manager", based at Heimbach Düren in August 2016, taking care of our relations with corporate customers worldwide. Besides English she is proficient in one of the most complex languages in the world: Chinese – both spoken and written!

"My days are very varied", she says. Not surprising, when you consider the many requirements that the **Regional Studies and Law graduate** is being asked to fulfill every day.

Well versed in contract management

A key task is to work in close cooperation with the relevant sales colleagues in the course of **day-to-day negotiations with large corporations**. She negotiates with regards to both contract details and prices, drafts agreements and coordinates internal consultations at group-level: "These responsibilities cover group business in both **the European and Asian business corridors** – as well as the entire contract management", Puhl explains. An area of responsibility, "which requires me to make full use of my legal and contract negotiation skills as well as my language competence", she says. Puhl began her career at Heimbach in the sales department at the Düren head office, in July 2006.

Developing sales and technical knowledge

During this early part of her career, she developed the necessary **technical, sales-related, and administrative knowledge** for her upcoming tasks in Singapore. Half a year later Puhl moved to the newly established company, Heimbach Asia Singapore (HAS), working **as "Administration and Marketing Manager":** "When Heimbach was looking to strengthen its Asia business I did not have to think about it for very long! This challenge was a welcome opportunity to combine my interests and abilities with a dose of adventure." Altogether she lived and worked in the Southeast Asia metropolis from 2007 until 2013 – together with her **partner Jochen Pirig**, who held the position of product manager at that time *(see also separate report on Yamabelt from page 16 onwards)*.

Learning to fully appreciate what the Far East has to offer

Singapore is not only a comparatively young state, only having been founded in 1965, but also a true melting pot of cultures: **"My time there has enriched my life in many ways!"** Puhl states, stressing the fact that – "it was these numerous multi-cultural experiences in particular" providing the main inspiration. We fully agree with her when she emphasises the significance of soft skills today – and **intercultural competence is without a doubt very important**. A wide range of language and cultural expertise has been beneficial for Puhl, then and now.

Becoming well acquainted with legal questions

And of course our contract management specialist is putting the know-how gained during her **Regional Studies degree at the University of Cologne** to good use. In that city she graduated in International Business Law and Chinese Studies. As part of her degree and for her year abroad, she **studied at the University of the Chinese metropolis, Wuhan**. Furthermore, both during and after completion of her university studies, Puhl worked at a German business law firm and at an international auditing company both located in Shanghai. Practice for today, knowledge forever – which equally applies to languages.

Primoselect with a Plus
New design – new possibilities

Primoselect, the unique forming family from Heimbach, has a new addition. From now on, papermakers can expect even more in terms of lifetime, formation and energy savings when choosing to access the benefits of Plus designs, as the patented product line has now been expanded by designs that add significant value.

Olli Kaapa, Vice President Products, confirms "Over the last years in particular, we have **strategically extended our forming fabric product portfolio**." Now the already-extensive product range is supplemented by Primoselect Plus (+) varieties whose suffix means distinct additional benefits.

Long experience with multi-layer forming fabrics

Anyone that attaches **great importance to runnability and cost** reduction "will always find the right solution with Heimbach", states Kaapa, referring to savings potential in terms of energy, raw materials and additives, as well as paper quality: "As with every product innovation, it was critical in this case to show **increased benefits for our customers**" he explains. Now a new chapter has begun, adds Kaapa, looking back to the late 1990's, when the first SSB fabrics came on the market - forming fabrics that changed the business due to the fine paper side surface and robust machine side that were made possible by integrated binder yarns.

"We were part of this from the beginning, when these designs became universally popular, and in the meantime we have become established among the leading suppliers". **Our classical Primobond and Primcross brands** have been well proven for many years in the most diverse applications.

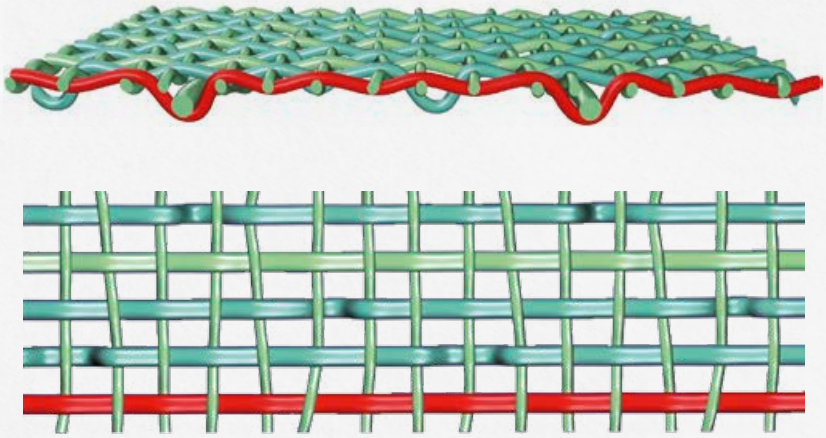


Fig 1: Primoselect with just one binder yarn – all unnecessary yarns removed, a more open structure: For optimum drainage capability and lower energy consumption.

Able to respond to every need

Kääpa, who has worked at Heimbach for over 25 years, points to the widened product range in the forming section, which can be seen in the table below. „Heimbach continues to offer **tailor-made solutions for all types of paper - from pulp to tissue:** With Primoselect, which we unveiled for the first time in 2013, papermakers are able take advantage of previously unprecedented possibilities thanks to the patented weaving design which comprises only one integrated binding yarn," says Kääpä (Fig. 1). The papermaker himself helps to determine the exact specification to be applied by prioritising his needs regarding formation, lifetime, former hygiene or energy savings. Primoselect scores highly on the last point in particular, with energy savings pushed to the fore by the new Plus (+) varieties.

An excerpt from Heimbach's forming fabric product offering:

Product	Suffix	MD Mesh (/cm)	Pulp	Board	Fluting	Kraft	Fine	News	Magazine uncoated	Magazine coated	Tissue
primoplan	P		✔								
primoplan	HD	36		✔	✔	✔					
primoplan	F	60		✔			✔				✔
primobond	HD	22		✔	✔	✔					
primoselect	HD+	21		✔	✔	✔					
primobond	F	29		✔		✔	✔	✔	✔	✔	
primoselect	F	29		✔	✔	✔					
primoselect	F+	28		✔	✔	✔	✔	✔	✔	✔	
primobond	SF	35					✔	✔	✔	✔	✔
primocross	SF	34					✔	✔	✔	✔	
primoselect	SF+	34					✔	✔	✔	✔	✔

A double plus

The Plus+ designs "effectively constitute a stand-alone product line", explains Hamish Parsons, Strategic Product Manager Forming. In addition to Primoselect SF+ for newsprint applications now, with our universal Primoselect F+ as well as **Primoselect HD+ - a design developed specifically for packaging applications** – a full range of designs will be available. Of course, these fabrics also meet the challenge of being able to combine several benefits – clearly, otherwise they would not be able to bear their first name, Primoselect. Both the HD+ and the F+ designs combine two core aspects "which until now have not been available in combination in any other forming fabric" states Parsons. This is why: Firstly the Plus alternatives are characterised by an **8 shaft weave pattern on the machine side** (see Fig 2). Secondly **the machine side cross direction yarns**, designated with the name NRG, benefit from an especially low "Coefficient of Friction", (CoF, see Fig 3 & 4). This special design and material combination also meets demands for maximum abrasion resistance. The machine side construction, in keeping with the general Primoselect concept, offers different options depending upon requirements and objectives. Therefore the proportion of the NRG high-performance monofilaments can vary between 50% and 100%.

Fig 2: Premium solution: 8 shaft weave pattern on the machine side.

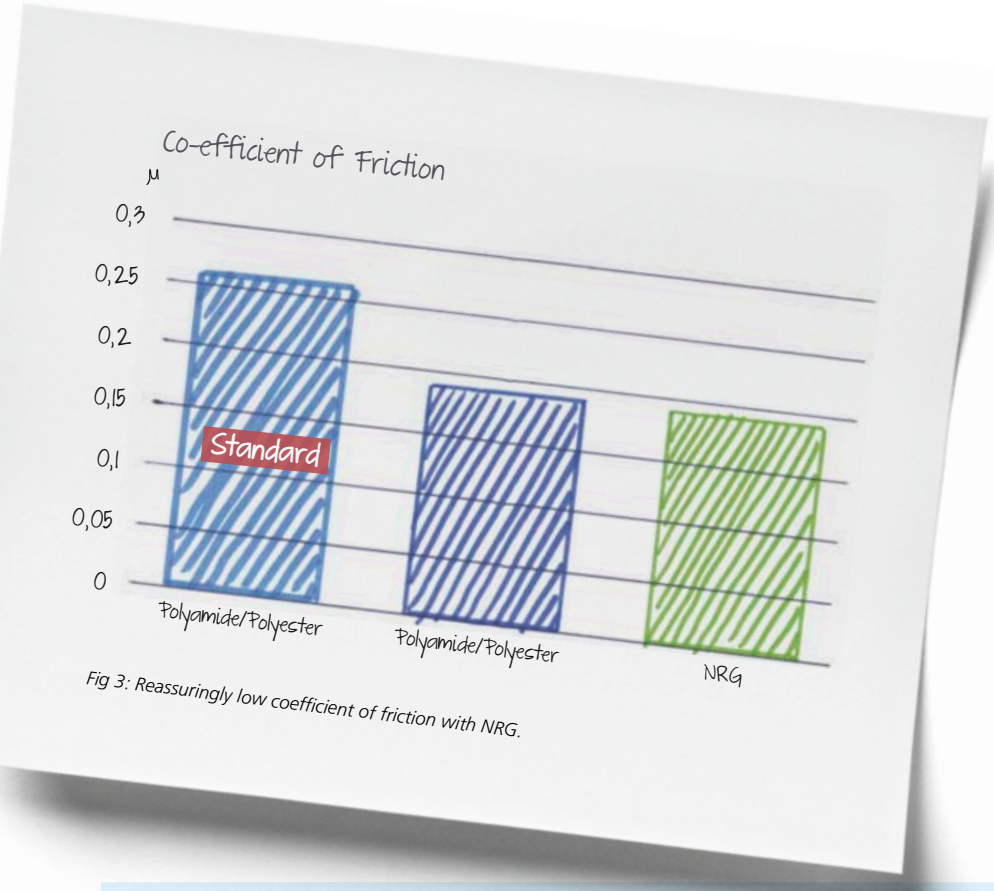


Fig 3: Reassuringly low coefficient of friction with NRG.

One design – many benefits

Improved wear resistance and, in particular a lower coefficient of friction are assured with our Plus varieties: **"Papermakers will make noticeable energy savings"**, adds Parsons. In itself, the 8 shaft construction is nothing new, as this has been standard in the industry for some time, but the combination of weave pattern and materials is revolutionary! Improved cleanliness, reduced fibre carry and less energy consumption: The latter thanks to the new material combination as well as a **more open structure and reduced** caliper of the Primoselect weave. Due to the

References Primoselect.HD+

Example 1:
Former: Hybrid Former
Position: Bottom wire with Top Former
Speed: 450 m/min
Width: 4.40 m
Paper Grade: Chromoboard (280-460 g/m²)

Beispiel 2:
Former: Fourdrinier with Top Wire
Position: Bottom Wire
Speed: 700 m/min
Width: 5.13 m
Paper Grade: Testliner (115-200 g/m²)

elimination of the redundant second binder yarn, fabrics are thinner and water can flow through the structure more quickly. There are fewer yarns in the fabric, and more water throughput. **"The water removal is excellent"**, explains Parsons, who clarifies as follows: " Apart from the fact that each Primoselect fabric has a lower void volume our new material only absorbs small amounts of fluid (water absorption 0,3% see Fig 5). A consequence of this is **very high drainage capacity** and also first-class retention, which reduces costs for chemical additives. Further savings potential, more environmental protection.

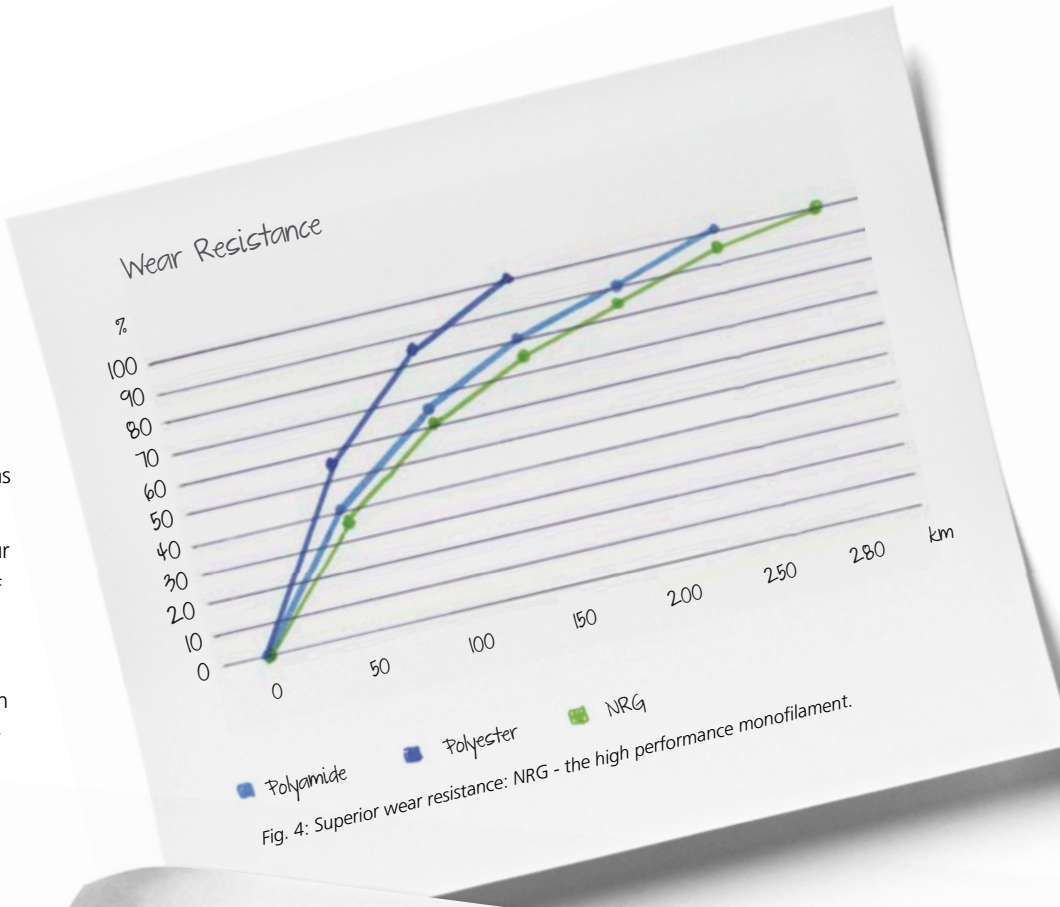


Fig. 4: Superior wear resistance: NRG - the high performance monofilament.

One solution for all grades

In summary, a generation of fabrics that has earned its "Plus": **"We are now discussing the Plus variant with more and more customers, and all installations up to press are highly promising"**, declares Hamish Parsons. Experience the possibilities for more efficient production with Primoselect+ yourself.

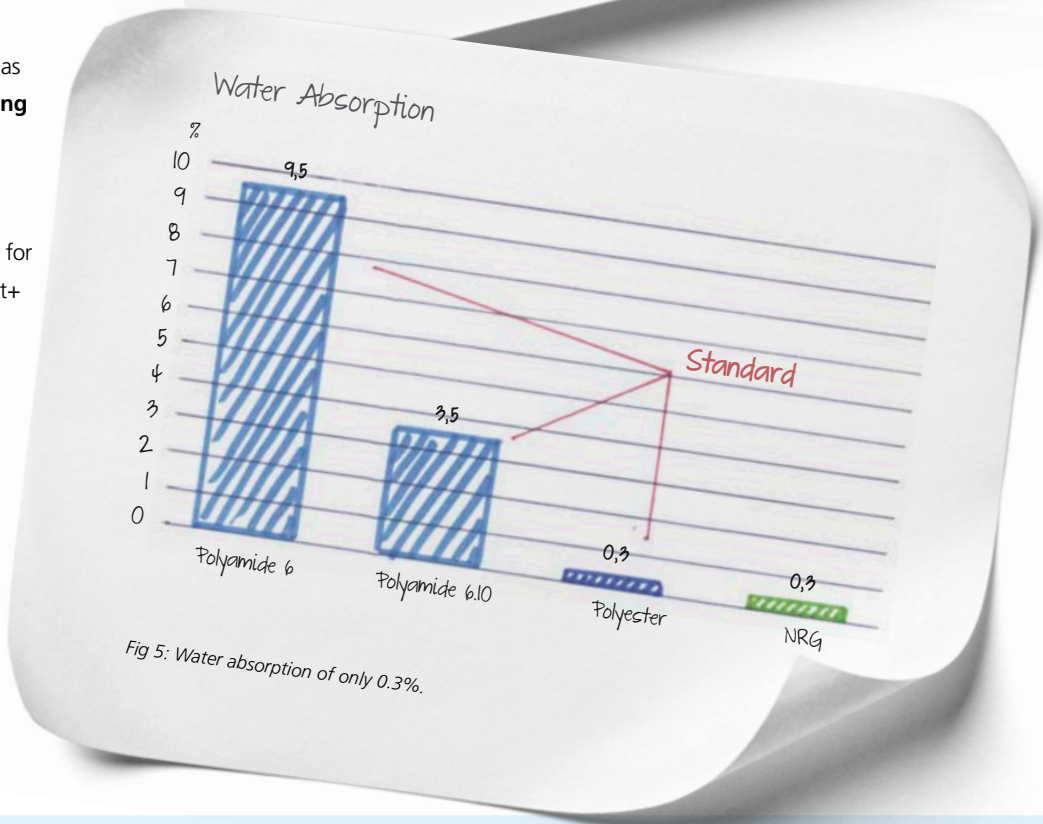


Fig 5: Water absorption of only 0.3%.

Example 3:
Former: Bottom wire with Top Former
Position: Bottom Wire
Speed: 600 m/min
Width: 4.30 m
Paper Grade: Fluting (110-200 g/m²)

Example 4:
Former: Fourdrinier with Top Wire
Position: Top Wire
Speed: 660 m/min
Width: 4.70 m
Paper Grade: Testliner (120-240 g/m²)

Example 5:
Former: Gapformer
Position: Bottom Wire
Speed: 900 m/min
Width: 5.00 m
Paper Grade: Testliner (120-260 g/m²)

Price/Performance Ratio
Often underestimated – always crucial

Strong competitive pressure, high energy costs, continuous drive towards cost savings: These are all well-known factors that accompany us as we go about our daily business. And although this business environment is not easy to navigate we must nonetheless be successful in running a profitable business. There is no doubt that this involves, as an example, purchasing costs for consumables, which are closely monitored in every business. But we should be careful: price dumping damages everyone, including buyers, states Michael Keller, Sales and Marketing Manager.

In sales, we always find ourselves facing great challenges. Often, for machine clothing, it is a question of price. In this context we are talking about **figures that should never be discussed in isolation** – even though we must accept the ever-present cost pressures.

Performance is important

Or rather, and crucial from the customer's perspective – price/performance ratio! This is the best indicator, as to whether a **product really provides value for money** – yes, it is about "value for money" rather than low prices! In order to determine this ratio we always relate plain value to product performance, which, as is well-known, can vary enormously: In the case of paper machine clothing there are classic factors such as **lifetime, dewatering capability or shortened changeover times**, to name but a few. Basic sample calculations confirm this line of argument: If a specific piece of clothing is, say, 15% "more expensive", but delivers a 20% longer lifetime, the word "expensive" has become meaningless. As mentioned before: prices are relative.

"Cheap" is not "favourable"

Of course it requires a little bit more effort to take a close look not just at the asking price of a product or a service but also at the specific characteristics or performance parameters provided. But it is certainly worth it in the end because it (almost) always becomes clear **that the cheapest price does not automatically represent the best solution**. This can ultimately be related to everything no matter whether we are talking about technical components, chemicals, services, and so forth. There is a German saying: **"Those who buy cheap, pay twice!"** – This is generally true and at the same time it points the way forward, because defining what we mean by the term "cheap" is crucial. The fact is that it refers primarily to "inferior quality" – and no papermaker can afford this while **pursuing a high-quality end product**.

Genuine instead of cut-throat competition

Sometimes a preference for "cheap" can even remove the ground from under the feet of the purchasing party. For if suppliers who occupy the market with sometimes aggressive price dumping strategies receive orders, this could lead to a total displacement of other manufacturers, whose prices may at first sight appear to be higher. **But what does this situation mean in the long run?** There are plenty of examples of "discounters" using this strategy to displace the competition, only to considerably drive up prices later. This can represent a danger for every buyer! In this context, we have another German saying: **"Competition enlivens business!"** which is also true. It means that innovative pressure increases when there is a choice of suppliers.

Forming section	Press section	Dryer section
***Primoselect+**, Fine paper 1,400 m/min, Newsprint 1,900 m/min: fewer sheet breaks, longer lifetime.* **Savings/year: > € 490,000**	***Atromaxx**, Testliner / Fluting, 1,200 m/min: Higher dryness, faster start-up, 2 vacuum pumps switched off.* **Savings/year: > € 1,000,000**	***Secoplan.X**, Testliner 1,500 m/min: Fewer sheet breaks, lower water carrying, reduced fabric consumption.* **Savings/year: > € 350,000**
***Primoselect.HD**, White Top Liner, 800 m/min: reduced energy consumption.* **Savings/year: > € 100,000**	***Atrocross**, LWC, 1,500 m/min: More dewatering, higher dryness, fewer sheet breaks, less steam consumption, faster start-up.* **Savings/year: > € 600,000**	
	***Atromaxx.Connect**, Packaging paper, 1,200 m/min: Higher dryness (Nip), more open felt, reduced energy consumption, reduced cleaning aids required.* **Savings/year: > € 370,000**	
	***Atrojet.T**, Tissue, 1,450 m/min: Faster start-up, reduced energy consumption, higher production, up to 20% longer lifetime.* **Savings/year: > € 50,000**	

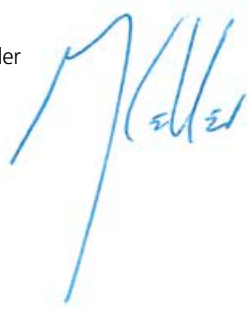
No progress without research

For you as the customer this is totally positive – both now and in the future. Product innovations have to be developed on a regular and continuous basis, today and also moving forwards. For example, what good is the most modern and fastest machine when the fabrics, felts and belts that are needed to run it do not keep up technologically? From the perspective of a machine clothing supplier it is therefore an **absolute necessity to constantly expand and improve the portfolio**. This can only work if we invest continually in research and development. Of course, new products and designs have to offer either **better performance, increased productivity** (longer lifetimes) or help to **save energy costs**. The latter is of particular significance as ultimately energy efficiency is the most important factor in manufacturing.

Ensure savings potential

As a key performance indicator **return on investment (ROI)** is always crucial for buyers. Because even though in the balance sheet machine clothing only amounts to 1.5-2.5% of the total cost, it can in turn contribute enormously to efficiency. It is not uncommon for customers to make **yearly savings in the order of six-digit numbers** *(see also table above)*. Incidentally, these figures can result not only from actual products but also from services: The Heimbach TASK team, for example, operate with up-to-the-minute measuring equipment and technology and can highlight potential areas for savings that were previously virtually unknown. **Hence this is also a form of efficiency increase or profitability** *(see also: Paper Pete from page 10)*. Reductions in cost such as these that involve the manufacturing process directly affect the profit of the papermaker. As indicated above: Price and performance – that's the message.

Yours,
Michael Keller



When rolls really matter
Tips for optimal nip dewatering

Hello, dear papermakers!
Give us facts – that's quite rightly what customers demand from TASK. Just like in our latest case in which a customer noticed irregular CD moisture profiles in his felts over a long period of time. This is a problem that is regularly discussed while undertaking our customer service and one that certainly needs to be addressed when it occurs. After all, in most cases the CD moisture profile can also be observed in the sheet! As always the question is: Where does the difference in water content come from? Clarity comes from nip profile measurement.

As you know, Heimbach customer service personnel regularly check felts running on the machine, measuring and calculating CD moisture profiles. **Ideally each position should be measured more than once over the lifetime of a felt.** In the case of this particular customer our field service colleague measured the relevant data and handed the results to us. My colleague Janek Schiefer and I set out together in order to follow up.

Valuable initial discussion

We initially discussed the issue on site with the mill operations manager who reported interesting occurrences: While both 1st and 2nd press felts operated without problems, in the 3rd press **the CD moisture profile was uneven again and again** (see figure 1). On a machine with a width of 4.5 metres the areas around the edges (front side (FS) and drive side (DS)) clearly showed more moisture than in the centre. This was despite the fact that the press section had been aligned by specialists prior to our visit at the request of our customer. We could therefore establish right from the start: **The two press rolls are aligned perfectly in parallel** so that "crossed alignment" could be excluded as a source of the fault.

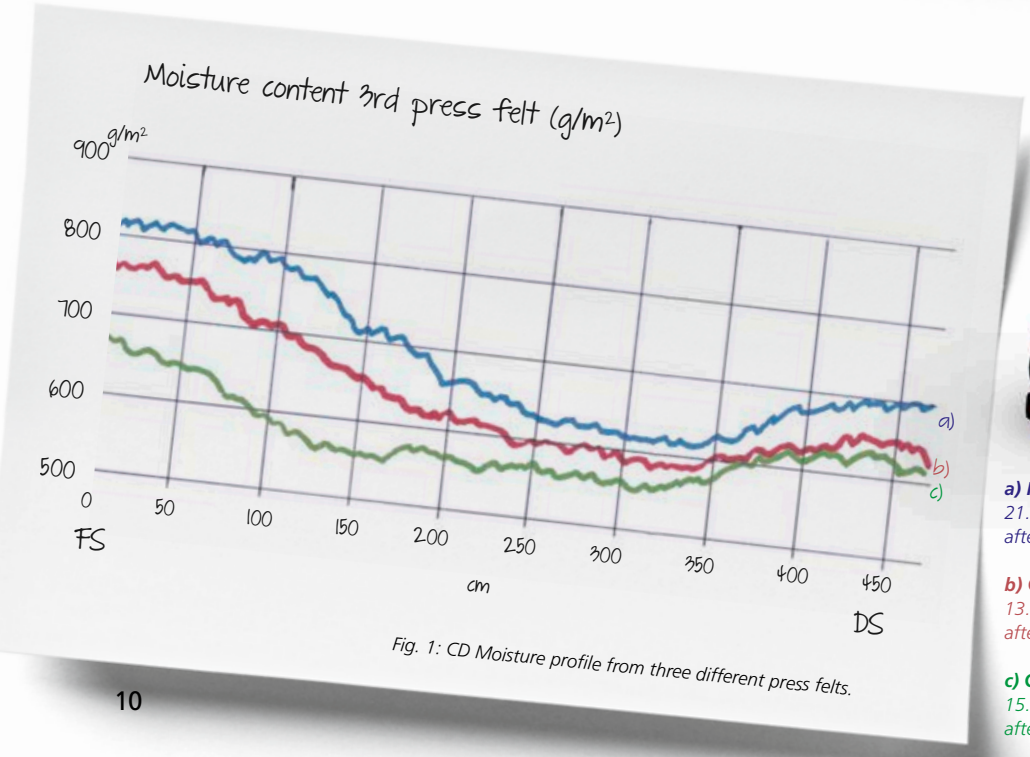


Fig. 1: CD Moisture profile from three different press felts.

a) Heimbach, Atromaxx.CONNECT
21.10.2016-29.11.2016 = 39 Days
after Nip, Average: 700 g/m².

b) Competitor A, unknown
13.04.2017-10.05.2017 = 27 Days
after Nip, Average: 650 g/m².

c) Competitor B, unknown
15.03.2017-29.03.2017 = 14 Days
after Nip, Average: 594 g/m².

Photo 1: Measuring membrane and "multiplexer" in close-up.

Photo 2: Janek Schiefer pick ups data with the "multiplexer".

Investigating the causes

It was equally clear that the fault had **nothing to do with any of the machine clothing**. Figure 1 shows the moisture profiles of three press felts from different clothing suppliers (water content in g/m² felt). Besides our Atromaxx.CONNECT felt a competitor's products had at other points in time been installed in the same position. The result was the same, however: differences in moisture content in the cross direction. We therefore concluded that the **cause of the problem must be in the configuration of the press** – even though, as already mentioned, parallel alignment had been checked. At this point the nip profiles had to be investigated further. So we set to work with our measuring equipment. Here, as always, the principle **"safety first!"** is paramount. After all, there is **a drop of four to five metres under the seam felt**, and you can never be sure that it is strong enough to support a fall.

Hightech unwrapped

Dressed in our safety gear, we were now ready with our technical equipment at hand. In the case of nip profiling, by the way, this consists of sophisticated measuring tools that are really fit for purpose: Besides using special software on high-performance laptops we also use **a "multiplexer" which allows us to pick up data from so-called "sensor membranes"** (see photograph 1). This device, a kind of plug unit, is equipped with contact points which are connected to the membranes. For each customer we have a **specific measuring file**, already created with the aid of a calibrating station, which is installed on each of these measuring membranes. The computer records all raw data which can be read immediately on-site. This allows us to show **force and nip area to the customer on the day of visit**. Precise nip lengths are measured later in the office using the specialist software. This is a crucial processing step and experience in nip profile measurement plays a major part here.

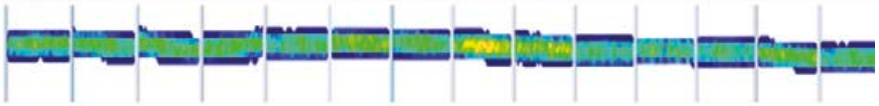


Fig. 2: A good thing – uniform nip lengths.

Special membranes for a special service

However, the most important role in this on-site measurement is played by the sensor membranes, which are **prepared with a special fluid**. This fluid inside the membrane consists of several polymers that change their electrical resistance depending on the force applied to them. The computer software in turn records and interprets this resistance. **Obviously the measuring membranes must be able to withstand great pressures** but at the same time register the minutest differences – robust and sensitive rolled into one. During application the following must always be observed: **The membranes must be placed exactly between the two rolls** in order to ensure that precise nip measurements are recorded. When everything is prepared the press rolls are brought together and pressure is thus exerted on the membranes. Janek and I went on to pick up the data from all 14 membranes (Photo 2). You can see the result in the original image (Fig. 2).

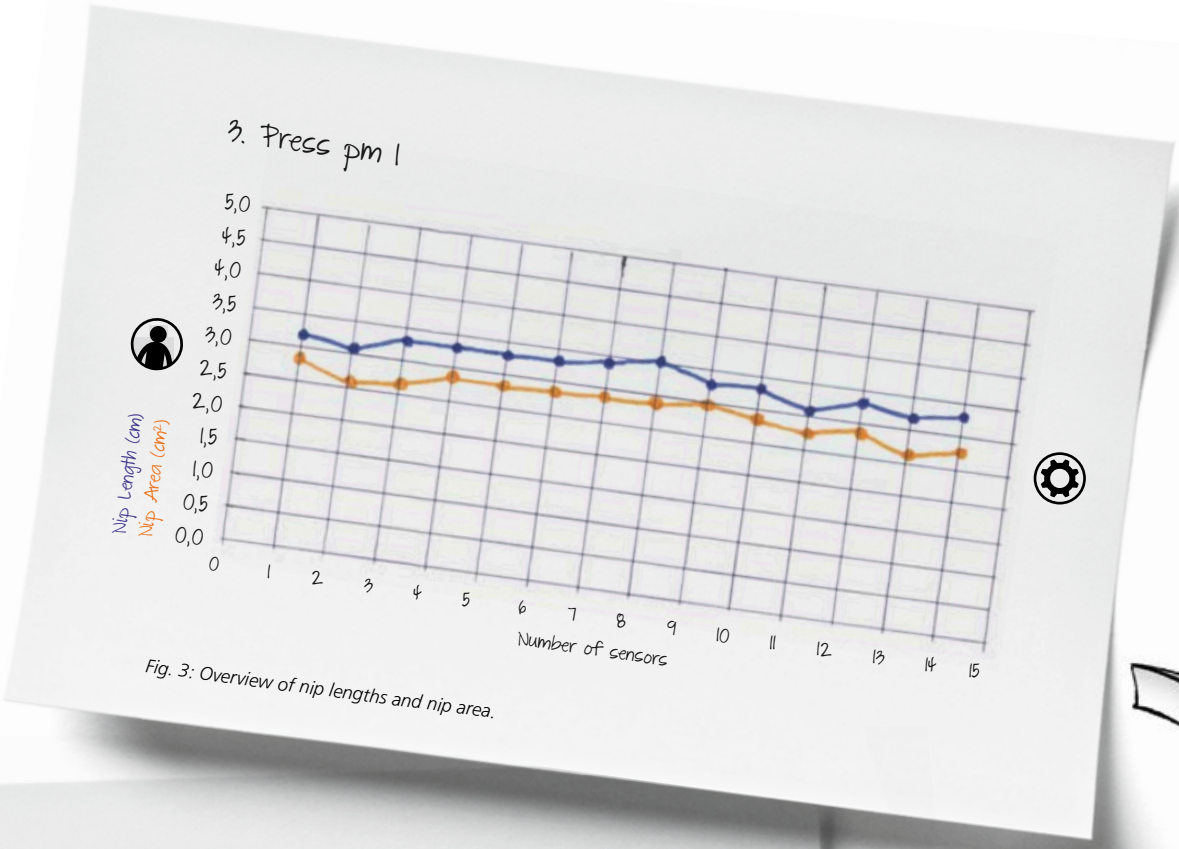


Fig. 3: Overview of nip lengths and nip area.

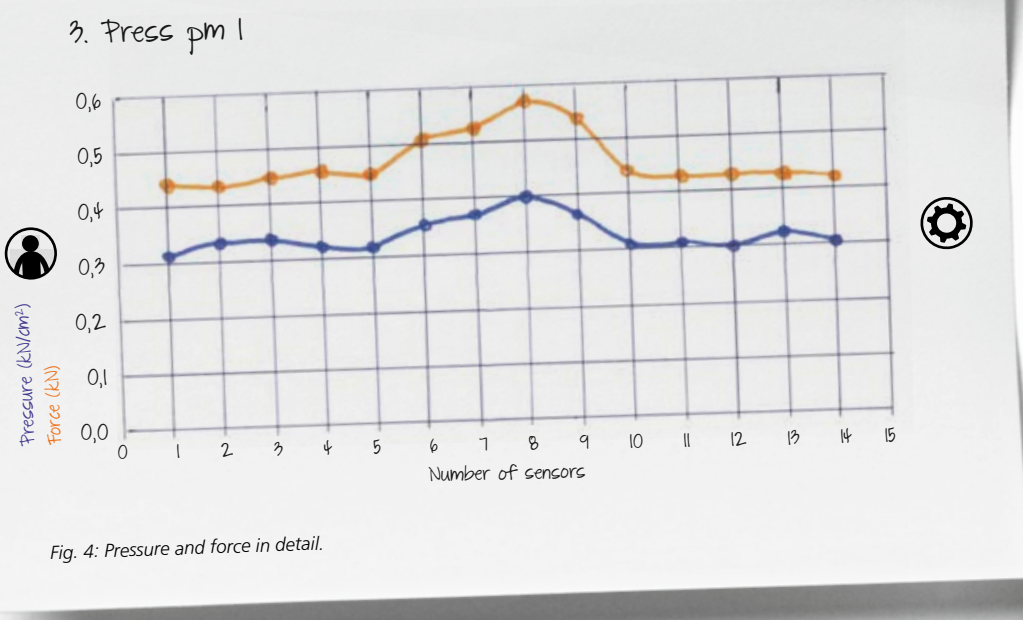


Fig. 4: Pressure and force in detail.

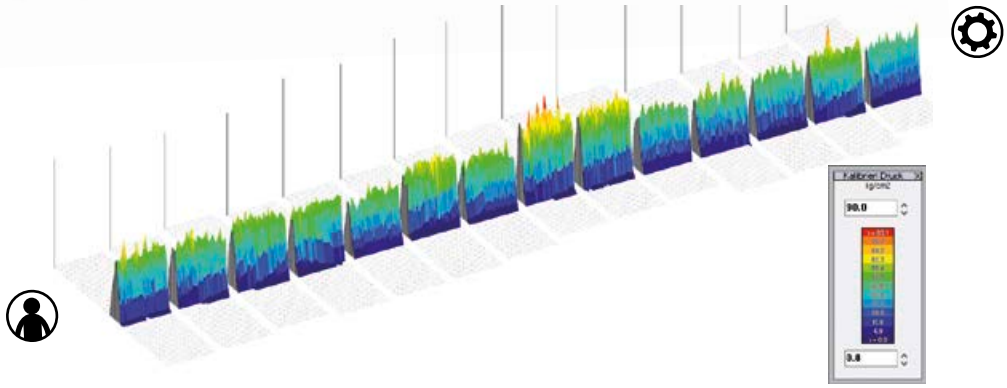


Fig. 5: Original image of the unequal force exerted.

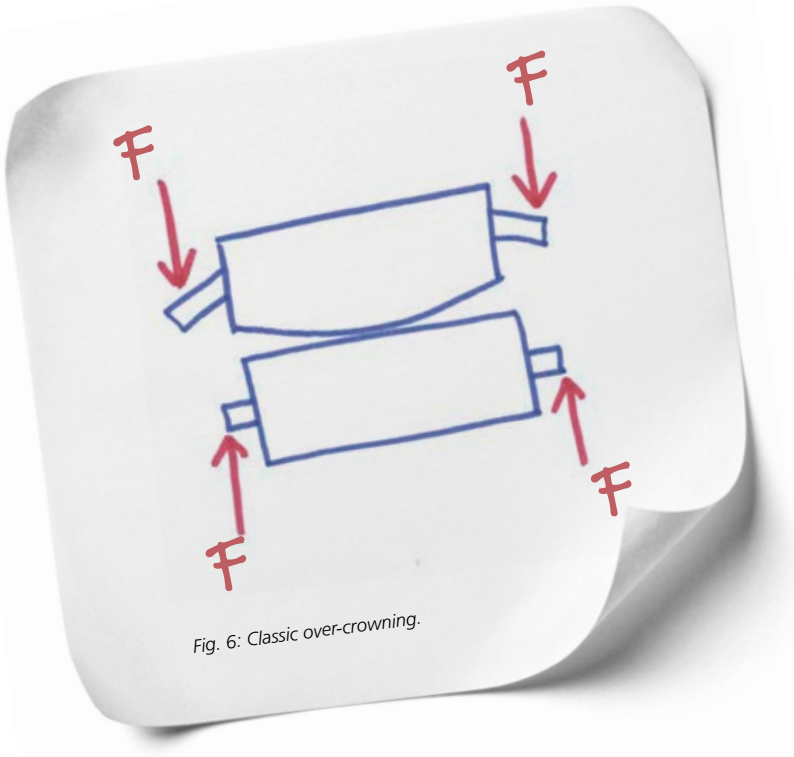


Fig. 6: Classic over-crowning.

Straight facts

This image represents the nip lengths which were **remarkably uniform across the entire machine width**. The values from the 14 membranes are represented for you as line diagrams in figure 3: The nip lengths in blue, the area in orange. Just to clarify: The length is exactly the distance in MD where the rolls meet; the width is limited by the measurement area. **This results in what we describe as the nip area (in cm²), which shows where the rolls press together.** Since the lengths (and therefore also the area) were all in order we then had to focus our attention on force and pressure – **also very significant parameters!** We frequently point out to customers that conclusions based merely on nip length (and area) are not sufficient. Facts cannot be considered to be reliable unless force is taken into consideration.

Unequal force distribution

Simply put, in the area of higher pressure there is no change in nip length any more, which means that misinterpretations are possible. **For this reason, and in order to avoid this, we at TASK always measure area – and force!** The important thing is: we establish the actual force that has been exerted in order to calculate the pressure from it (pressure = force/area). We have produced a further line diagram for you showing this (Fig. 4): Here you see the pressure in blue (kN/cm²), with the force (kN) shown in orange. The facts then became clear: **With equal nip length the pressure (towards the centre) has increased!** Thus we detected an increased effective force. This can also be seen in the original image (Fig. 5), which shows in graphic form that the force in the central area was significantly higher than at the edges (FS/DS).

Correct crowning

These insights correspond to the CD moisture profiles of the felts that we showed at the beginning! **Clarity achieved – thanks to measurements!** We were able to prove that the press roll showed over-crowning (Fig. 6) – a fact that previously had not been considered. Our customer is now going to pass on the results of our measurements to their roll manufacturer who will then calculate how the over-crowning can be rectified. The aim is of course a 100% parallel roll gap that guarantees the best uniformity. What this ultimately means for you, dear papermakers: When rolls are perfectly crowned the surfaces of your press felts can be used to their full potential, in other words: you achieve maximum dewatering! **In this way you extract the optimum from the nip** – and that is ultimately the aim if you want the sheet to leave the press as dry as possible.

Your Paper Pete

New production facility opened
Press felts from our China Site

Heimbach's press felts have been internationally established and recognized for a long time. Demand for our products and service is increasing all the time, in particular in Asia. In order to respond to this we recently completed a further expansion to the Chinese site at "Suzhou Industrial Park": It was there that the latest and most modern press felt production site worldwide came into operation. An important milestone in terms of the development of our press felt expertise, as well as the growth of our Chinese manufacturing facility, which is now the second largest in the entire group.

Heimbach/Suzhou: The new production hall is above right in the picture.

Altogether almost **20 million Euros have been invested in the new production hall** and its machinery. The Suzhou factory, situated near the centre of the world's largest paper manufacturing region, is perfectly technologically equipped for the future.

Long years of machine clothing expertise

Heimbach has been active in Asia for many years, beginning with a local sales and service office prior to the opening of today's manufacturing site. Even during the laying of the foundation stones, it quickly became clear that at a later date we were **going to make press felts in China. Now the time has come**: The product range today comprises machine clothing for all three sections: forming and dryer fabrics have been produced for some years now at Heimbach Fabrics (Suzhou) Co., Ltd. As a result of the expansion the site now comprises ca. 19,000 m² utilised surface, which corresponds to approximately half of the total area there. It is located in the very extensive industry and technology zone of Suzhou, which lies to the west of Shanghai.

Closer to the customer – less energy consumption

Clothing made at the Chinese plant is sold globally, with the Asia-Pacific region being the most important market. There, in particular, an improved environmental footprint and simplified logistics will be noticeable in the future. Now customers from this catchment area can buy press felts directly from China: **"All over the world, our customers receive products of the same high quality"**, Michael Keller, Vice President Sales and Marketing, stresses. And this does not depend on the location. The distance covered in order to deliver a product is, however, an important individual quality criterion – after all, if **delivery routes are shortened** at the same time as delivery times when you are closer to the customer, then less fossil fuels are consumed which in turn benefits the environment!

Excellent team work

Jan Walter, managing director Heimbach Suzhou, says with a hint of pride: **"Thanks to a very thorough planning process and great commitment from all participants we were able to complete our expansion within the envisaged time and cost framework!"** With the whole project taking only 18 months from beginning construction to commissioning, our Chinese colleagues were fully entitled to celebrate the opening of the new press felt facility with a party to which they invited the entire Asian sales team. **The "expats", who had been posted to Suzhou specifically for the construction and start-up phase, also took part in the celebrations.** With their expertise and high levels of commitment they were also key contributors to the success of the project.

Impressive figures

With an annual capacity of **125,000 m² of forming fabrics, 180 tons of press felts and 230,000 m² of dryer fabrics** the Suzhou site is well equipped for the future. The "star" of the new press felt production portfolio is the all-purpose Atromaxx design, which is a particular favourite of cartonboard and packaging paper manufacturers due to its' high dewatering capability: "We have built a manufacturing plant here that is unparalleled", Walter says, whose comment refers primarily to the environmental side of things. Statistics do back up the statement, demonstrating that the Suzhou plant is one of the most **energy efficient production sites in the entire paper industry!** This is particularly noteworthy as Suzhou experiences temperatures between -4 and +40° C and, in addition, air humidity fluctuating between 30 and 95 percent, depending on the season: This presents a special challenge for anyone planning for a good indoor climate while simultaneously creating maximum energy efficiency.

Smart technology installed

Across the total investment **the company had the aim and made a commitment to act in an environmentally responsible manner**. This has been achieved in so far as the Asiatic colleagues are able to treat the waste water from their manufacturing process on site. The treated water can then be fed back to the washing process of press felts in the circulation system. A great deal of know-how has also been applied to in-house technology. What the engineers created is highly impressive: "We control humidity, temperature and dust", summarises Walter. In order to control these three parameters a **tailor-made "Building Automation System"** (BAS) was installed. This technology combines heating, ventilation, and air-conditioning in an economical way. **The entire building is heated by the process energy of one single calander:** "We store heating energy in 30 m³ tanks, which in turn distribute heat throughout the building", Walter explains.

Benefits for people and products

In order to be able to air-condition the entire establishment during the summer months, **water is cooled down at night using a favourable electricity tariff** and is stored in the tanks. This is of great importance to staff, since it creates a pleasant temperature for all workplaces. At the same time, of course, a stable internal climate is also crucial for press felt quality: "In production we need a constant **temperature of between 20 and 28° C and a humidity that lies between 50 to 70 percent**", Walter explains. If we had used conventional technology to heat and cool the complete plant we would have had to spend much more on energy, whereas the environmentally friendly BAS technology ensures that **only as much energy as is strictly necessary is ever used!** Reducing costs, protecting the environment – a worthwhile undertaking!

An internal view of the ultra modern production hall.

Celebrating the inauguration of the new press felt production site.

Full Steam Ahead
Optimum performance in the Nip – thanks to Yamabelt

We are not giving any secrets away when we say that in each and every paper or board production certain quality parameters are critical. These would vary quite a lot depending on the end product that is being manufactured. So, for example, in the production of coated grades or chromo paper (or also cartonboard) priority naturally has to be subsequent printability. In such cases, therefore, surface characteristics must always be a primary focus. And one of the key influences on this would certainly be shoe press belts and their quality.

Naturally, paper manufacturers supplying their customers with graphic papers also have their own demands and quality standards that must be met – no matter whether uncoated and wood free or coated and wood containing: Here, too, **homogenous surface and excellent printability are a must**, as well as minimal marking and avoiding "cloudy" formation.

Adaptability and high value

Since machines, paper grades, and production methods can vary enormously, **clothing for each section also has to be adaptable and flexible**. Customer focus – Heimbach's key asset – is reflected in the fact that all our fabrics and felts are essentially tailor-made!

These customer-individualised product specifications that we have developed for our paper machine clothing portfolio also come as standard for shoe press belts. Beginning in 2010, Heimbach has developed a highly successful co-operation in this product segment with the Japanese manufacturer Yamauchi, well-known for quality and as a **leader in shoe press technology**.

Huge Significance

Jochen Pirig, Strategic Product Manager Belting at the Düren head office, explains: "Our customers have to pay attention to a great number of details throughout the entire manufacturing process – **from raw material preparation to coating and refining, everything has to be coordinated**." And, of course, the same applies to shoe press belts. The nip impulse applied by shoe presses is of vital importance, since press felts as well as belts have a **direct effect on dewatering performance**. Besides, this is one of the crucial positions for preventing possible marking.

Persuasive arguments

Each grooved Yamabelt stands out with uniquely smooth surfaces within the grooves themselves. This detail guarantees the lowest possible flow resistance, at the same time providing optimal **conditions for maximum nip dewatering**! Incidentally, this has a positive effect on conditioning and/or doctoring of the belt, which in turn further benefits the dewatering rate. In addition, the complete evacuation of residual water from the grooves by doctor blade after the nip also helps **maximise the dewatering rate** of belt and felt.

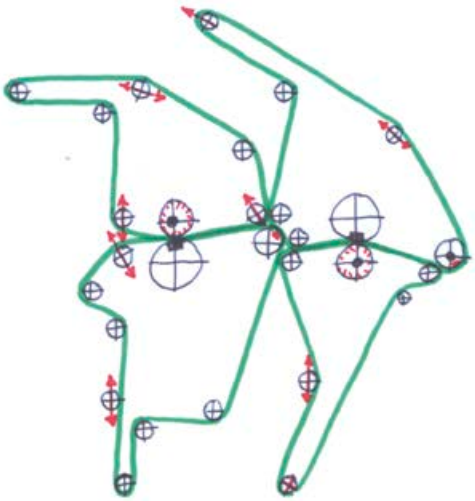


Fig. 1: Valmet, 750 m/min, 740 cm, Coated board, Chromoboard.

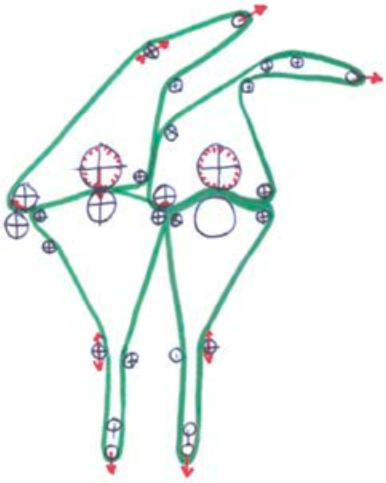


Fig. 2: Valmet, 550 m/min, 485 cm, Coated board, Chromoboard.

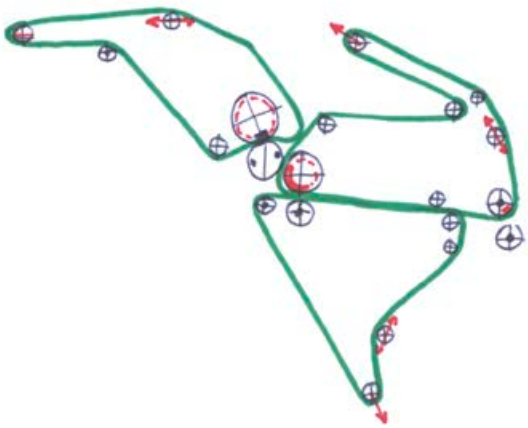


Fig. 3: Valmet, 1,550 m/min, 935 cm, uncoated woodfree.

Jochen Pirig shows a design with intermittent grooves

Better Hygiene

And cleanliness also gets a boost: "Logic tells us that less water carrying in the grooves results in less unwanted misting", Pirig explains. Thus there are **significantly fewer deposits** in the shoe press, which in turn benefits the hygiene of the entire press section. The grooves of all Yamabelt types are produced with rounded profiles; moreover, there is a range of radii to select from. **Each belt has its own design, differentiated by width and depth of the grooves:** "Edges or edged transitions between grooves cannot occur", Pirig stresses, "Yamabelt is exclusively made with rounded groove shapes – and that is ideal!"

Clean edge

Even in the case of intermittent groove designs the groove **bases are rounded throughout**. The tops of the grooves can also be custom-made with rounded edges: **These designs offer a few added advantages**, as Pirig summarises: "A 'round' transition from groove wall to groove bottom and/or grooves with rounded tops provides extreme resilience towards nip stresses".

Perfect combination

Best nip dewatering is achieved when both factors are combined, explains Pirig further: "Extra smooth groove surfaces in combination with rounded edges are **ultimately the most efficient product specification** for maximum nip dewatering!" And this remains the most economical method for dewatering in the press section. **Yamabelt can be used for a great variety of paper and board grades and machine configurations** and offers maximum reliability over the whole lifetime.

International references

"At present some of the **largest shoe presses worldwide are clothed with Yamabelt**" says Pirig, quickly adding another impressive figure: "We have belts currently running very successfully at **speed in excess of 1,600 m/min**!" And all this accompanied by consistently long lifetimes. These arguments are certainly persuading more and more customers to look to Yamabelt for solutions – and this does not only include the manufacturers of high-value graphic paper and board grades that we mentioned at the outset.

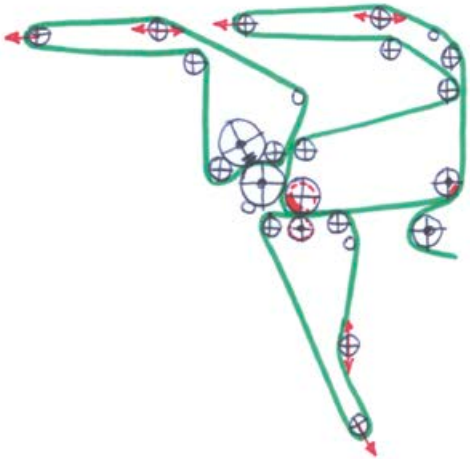


Fig. 4: Voith, 1,620 m/min, 810 cm, coated wood-containing.

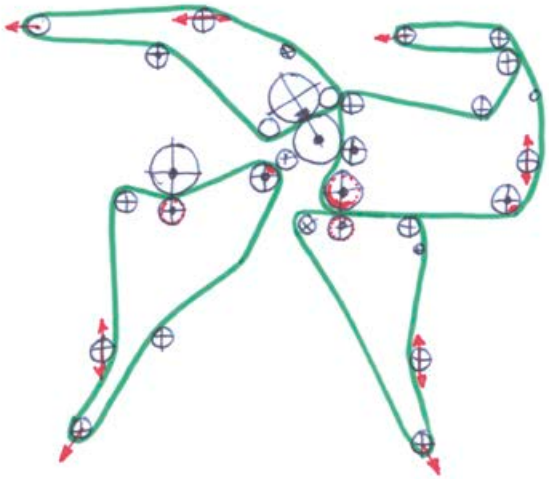


Fig. 5: Valmet, 1,100 m/min, 900 cm, coated woodfree.

Free Ride in the Dryer Section
Patience pays off

Sometimes, and even with high-value dryer fabrics, the edges lift up or there are creases, waves, ripples, bulges. This is a phenomenon that has posed challenges for many papermakers. Where does this originate? How can it be prevented? What can be changed? An important starting point is the handling of the fabric itself: Because installation, tension and heating-up are already crucial issues in the drive to achieve the best drying results.

When the machine is shut down for installation of new dryer fabrics speed, for example, is of the essence. For sure, the **machine must be re-started as quickly as possible**. Nevertheless, a little patience is often necessary – patience that will pay off in the end.

Tips on rolls for professionals

Let's first have a look at the function and importance of **rolls in the dryer section** (Fig. 1): The tension roll should be placed as closely as possible behind the driven cylinder. A loop structure is recommended because if the roll is "wrapped up" in paper this could interfere with optimal running. **The wrap must be absolutely symmetrical** because otherwise a regulating effect is generated. The ideal wrap angle is 180°, as this offers the greatest efficiency through the entire tension length. Caution: **between the tension and guide roll a lead roll should be positioned if at all possible**, so that the two loops are not disturbed.

Respect distances

The dryer fabric must be able to distort diagonally so that it can react to the guide roll. **If at all possible this should be positioned behind the tension roll and just before the first drying cylinder** in the respective group (Fig. 1). In order to allow the fabric to distort, the "run-in" distance between lead and guide roll should be approx. 2/3 of the fabric width, conversely the "run-off" distance between guide and lead rolls should amount to approx. 1/3. The clothing is then effectively "fixed" in this position. Caution: For best control the above mentioned distances should be maintained and the **run-in angle should be smaller than the run-off one** (Fig. 2)! Lead rolls should be distributed evenly throughout the loop. The usual distance between the rolls is roughly one and a half times that of the dryer fabric width. On narrow machines this factor can be increased to 2.0.

Tension and speed

It is important to provide adequate tension capability within the fabric loop **as dryer fabrics can stretch, depending on design, by between one and two per cent.** In order to simplify seam closing the delivered length should furthermore be at least 50 cm

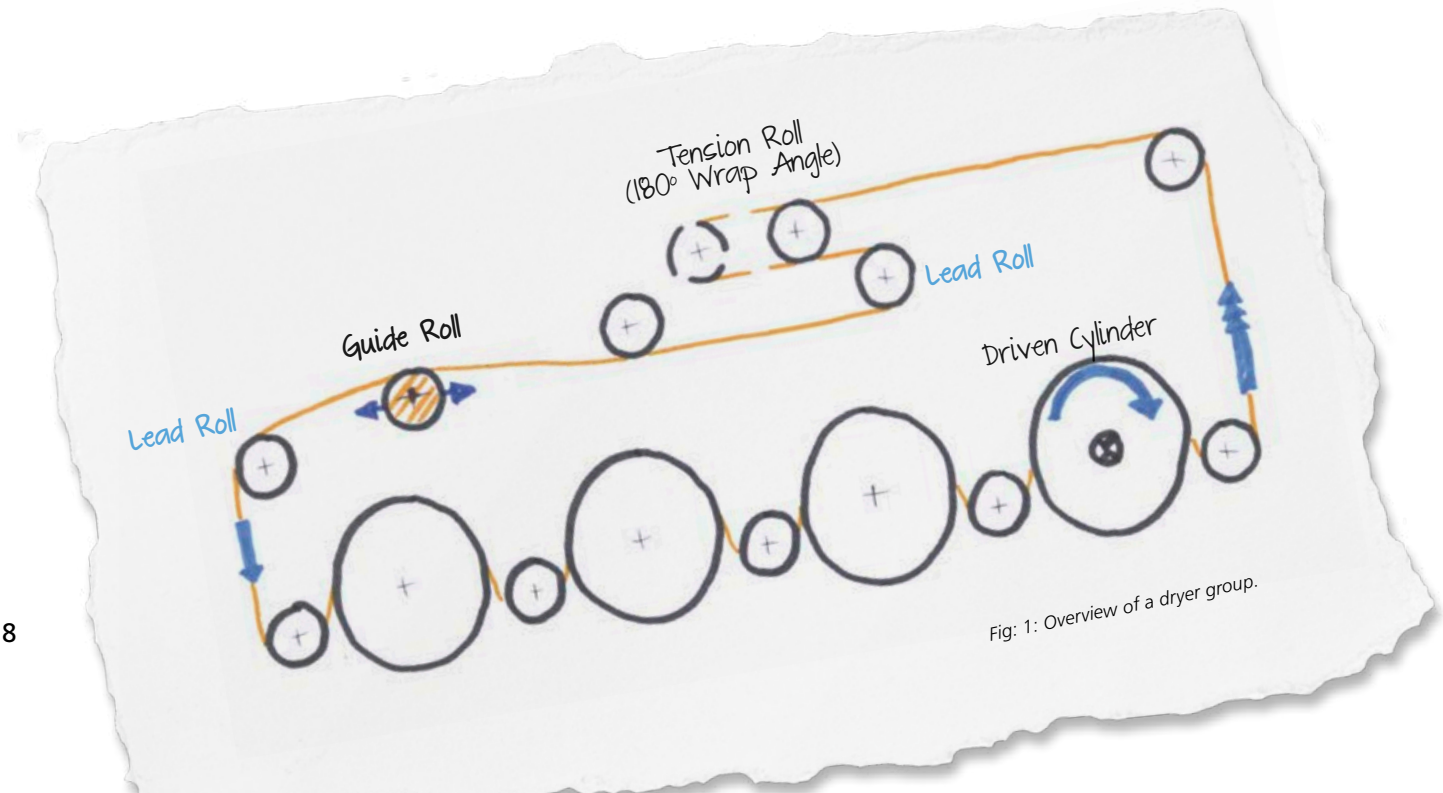


Fig: 1: Overview of a dryer group.

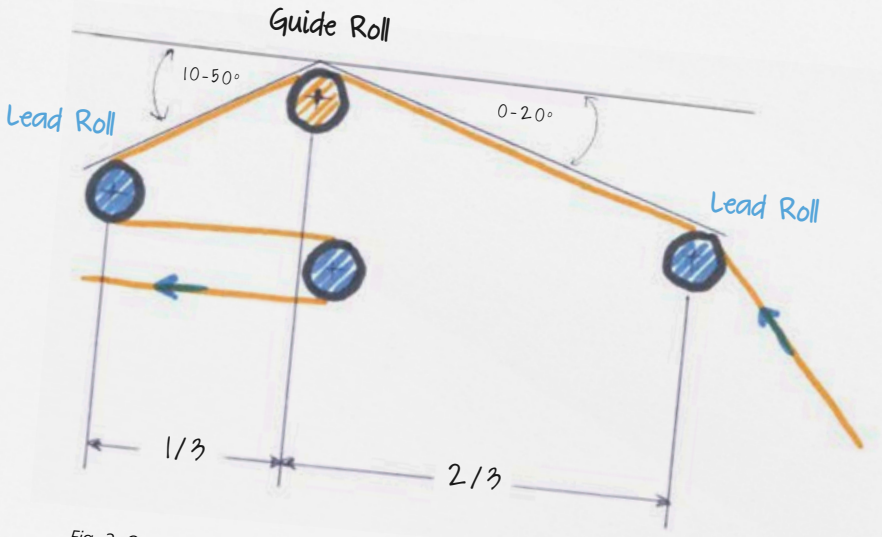


Fig. 2: Optimal distance between lead and guide roll.

Photo 1: A slack edge in MD direction.

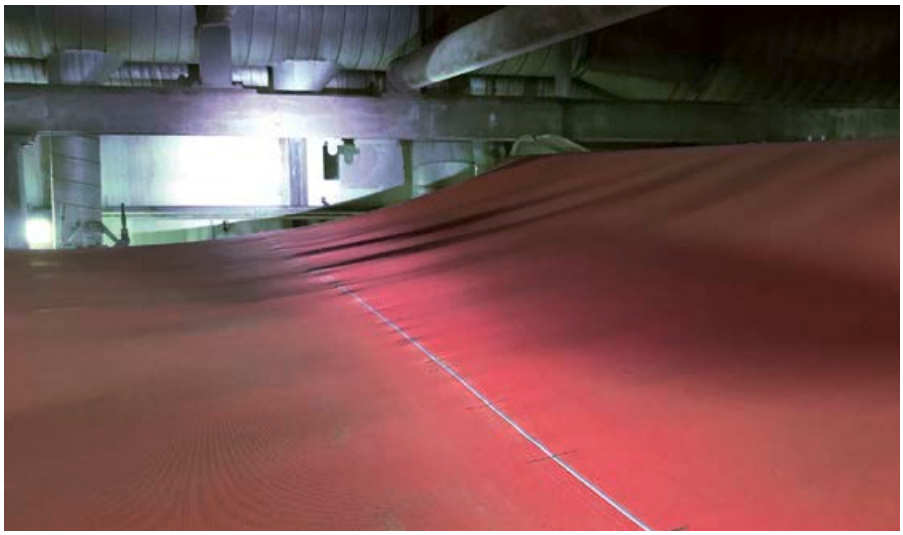


Photo 2: Bulges as a result of incorrect start-up procedure.

greater than the minimum length under tension! During installation ensure that all clothing runs parallel to the front edge of the dryer cylinder; alignment – if required - must take place while the fabric is tension-free. **When the fabric has been installed please start up slowly.** Check the correct alignment at crawl speed and at the lowest possible tension: It is best to start with approx. 1 kN/m.

Now the tension can be steadily increased up to the operating tension. Heating curve and speed ramp must proceed concurrently. **During start-up the motto should be: A calm approach pays off.** The whole procedure should take a maximum of 30 minutes – half an hour of meticulous start-up that means hard cash!

The golden rule

When the **operating speed** has been reached heating-up can begin. **Please never heat up fully before operating speed has been achieved!** If heating is carried out before directional stability and operating tension have been precisely adjusted an incorrect heat setting will result leaving the fabric "thermally fixed" whilst in an undesirable condition. **Unfortunately, this then means that subsequent corrections are no longer possible!** We therefore recommend, in your own interest, that you consider the basic rule that applies to all machine types: **tension first, then heat-up – never the other way round**. Here, too, we recommend patience and that you increase heat application slowly. We cannot emphasise this enough as we have quite often had negative experiences when conducting field trials: In the worst case we came across a dryer section that was heated up to 140° C for several minutes **even though** the fabric speed and tension were still not regulated.

Laboratory provides clarity

The result? Wavy or slack appearance at the edges (photo 1), bulges in the fabric (photo 2), unsatisfactory drying of the paper sheet. In order to get to the bottom of the phenomenon of slack fabric edges **various laboratory trials were conducted** – while of course taking into consideration the thermo-dynamic behaviour of the dryer fabrics. →

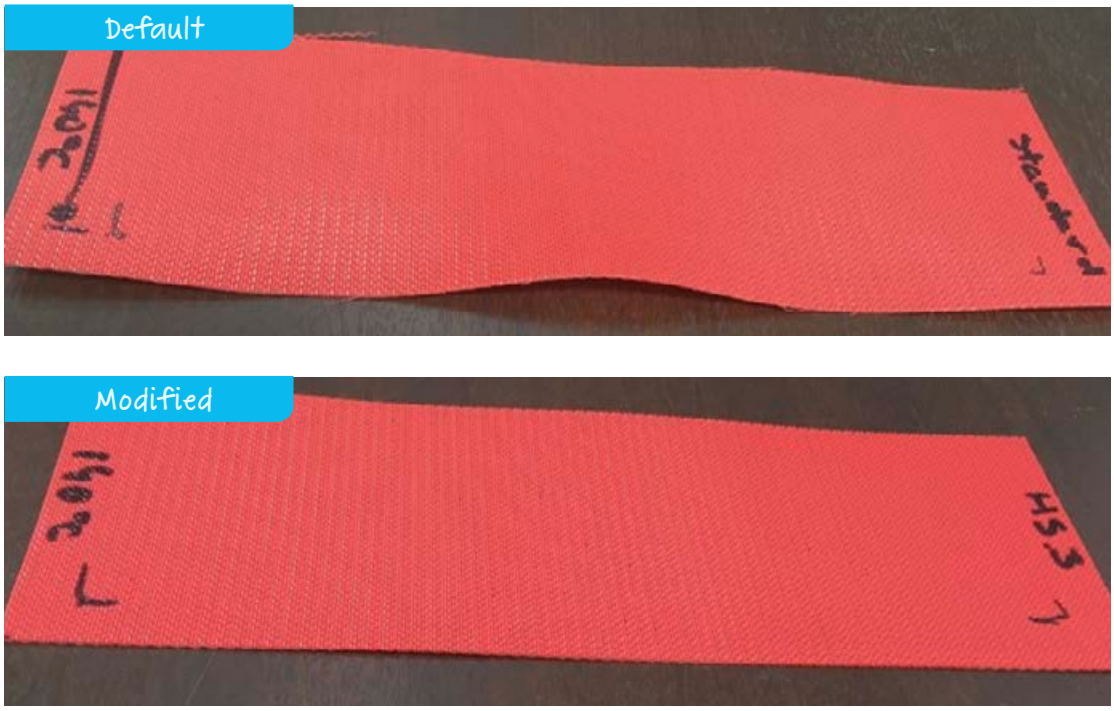


Photo 3: Optimised fabric – flat edges.

This is the central point because the **stretch of the fabric relates to the aspects of tension and temperature explained above**. In the course of these trials both operating and installation conditions were reproduced in order to achieve the deepest possible insights. During the laboratory tests, we **sampled fabrics from the Secoplan.X product range** at various tensions and temperatures. In order to extend the data base as far as possible, the analyses at Heimbach also included extreme conditions.

Modified production – optimised process

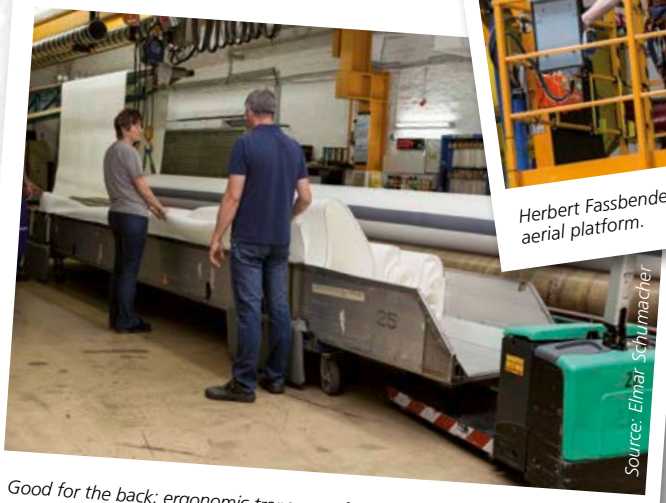
The results were then used to **optimise the production process of the dryer fabrics**. All in the interest of the papermaker: On the one hand the fabrics are more able to adjust and tolerate any small errors that occur during heating-up, and on the other hand the operating window during the start-up phase is extended. Consequently the fabrics shrink less without tension and the **phenomenon of "slack" edges occurs less frequently (photo 3)**. Nevertheless, although dryer fabrics from Heimbach are now less sensitive and more resilient the rule "tension first – then heat-up" still applies. Whoever follows this rule will achieve **a paper sheet that is "automatically" dried more efficiently**. This is, and should always be, the goal.

Safety First
Heimbach Awarded Prevention Prize

Occupational health and safety has always been given a high priority within the Heimbach Group. Our consistent efforts to improve the working conditions of employees are paying dividends. The German Employers' Liability Insurance Association "Energie Textil Elektro Medienerzeugnisse" (Energy Textile Electro Media Products) has awarded its "Prevention Prize for Occupational Health and Safety". In the Textile and Fashion sector, the winner is: Heimbach, Düren.


Source: Elmar Schumacher

Herbert Fassbender on the recently acquired aerial platform.


Source: Elmar Schumacher

Good for the back: ergonomic transport of woven fabrics.

"This award belongs to all of us", stresses Herbert Fassbender, who, as our specialist for occupational health and safety, is responsible for everything relating to this important issue.

Safety while working at height

The 55-year-old knows the production sites across the Heimbach group very well: "Our shop floors cover large areas and we operate many facilities", he explains. "**In this context it is really important to receive ideas directly from staff** so that we can deal with the areas that require specific attention. And he certainly receives large numbers of suggestions for improvement. A central safety aspect concerns maintenance work carried out at height: "In some areas we have ceilings eight metres high. Bad things can happen while working at such a height", Fassbender notes. In former times such work was carried out using scaffolding and personal safety equipment. Today we use aerial platforms, which are much safer: "I did not have to fight long for this investment as **management always has a sympathetic ear where safety upgrades are concerned**", the specialist for accident prevention says.

Ergonomic work stations

In addition to improving work-related safety the issue of occupational health also lies within Fassbender's daily remit: "There are a wide variety of physically demanding operations across our production processes. In these cases it is **important to develop procedures that make things easier for employees**", he reports. For example staff working at assembly tables previously had to cope with hard flooring in the access area. Today work stations have insulated **flooring that is a lot easier on the joints**. In addition, workers had to frequently bend down on a daily basis and lift rollers weighing seven kilos by hand: "Here we resolved the problem by **installing special supporting guides for moving heavy materials**", Fassbender explains. Furthermore we installed so-called "balancers", which help to considerably reduce the manual lifting power required.

Professional health management

The long-lasting health of our staff is another area of responsibility for Herbert Fassbender: "We have had numerous ideas to **help our employees lead a healthy life**, and many of these have already been put into practice", he says with more than a hint of pride. As one example, the company pays a share of the membership fees of sports clubs. Also, amongst other initiatives, a walking group was formed, a fitness room set up, and "well fit menus" can be found daily in the canteen at the Düren site: "Furthermore, employees can **receive physiotherapy from our company medic and are able to hire bicycles at low prices**", Fassbender reports. All these offers are in high demand and that serves as an example for the future, as he says: "You have to constantly develop new ideas and keep the ball rolling at all times." Good job! Because health will always take a high priority!

Unique “battle on the water”
First paper boat race a great success

Paper enthusiasts met in Zulpich on July 9th in the Rhine area of Germany close to Cologne with their ingeniously designed “creative vessels”. How did this come about? The first “ Smurfit Kappa Zulpich Paper Boat Cup” took place on the water sports facility in the nearby lake region. Taking part: a team from Heimbach, Düren, which, with a very respectable paper boat, recorded quite a few notable successes! But let’s look at the events as they unfolded...

First place for boat performance: The sailors of the “Craft-tanic”.

Battling to the bitter end: The “Heimbach Paddle Team”.

In total 18 teams took part in this **fun and games event** in order to win one of several much sought-after cups. More than 3,300 visitors were kept entertained by this watery spectacle that will, we are sure, be remembered for quite a while.

Paper creatively showcased

In the perfect summer conditions, numerous impressive creations could be admired: One team evoked the Flintstones, others appeared dressed as sailors. Besides a pirate boat and a “Yellow Submarine” **a blue and orange vessel with the distinctive name “UNSINN-K-BAR 2” (UNSINN = nonsense) attracted much attention**. This was the vessel with which our “crew” (Thomas Fischer, Janek Schiefer, Jelke Albrechtsen and Ralf Schuster) entered the competition. Also present: Nina Kogel who was the creative director of the challenge. The local swimming baths formed start and finish, which could only be reached by successfully navigating an obstacle course – only single blade paddles allowed, by the way. **All completely home-made**, just like the paper boats.

“Strict” rules

According to the terms and conditions of participation the boats had to be made **exclusively from environmentally friendly materials** (cartonboard, solvent-free adhesives). These raw materials were provided for free by Smurfit Kappa. Among other things, corrugated paper (3x1.80m in size) was supplied, which our creative craftsmen

The happy Heimbach sailors after an exhausting race.

proceeded to refine with great flair. This meant that our **"UNSINN-K-BAR 2" not only looked rather attractive but also survived the damp adventure relatively unscathed** – which is something that couldn't be said for all other vessels. In fact quite a few boats suffered from disintegration of material and/or team soon after the start. The Heimbach team fought bravely and achieved **4th place in two categories and 6th place in a further category**.

Success with cartonboard and endurance

"Even though it wasn't quite enough for a podium place, that's not what's important", design engineer Nina Kogel says. On the contrary, and staying true to the Olympic spirit: **"It's the taking part that counts!"** The jury certainly did not have an easy task when faced with the large number of imaginative fancy costumes and elaborately designed boats. **Judging categories were: most creative boat, best team effort (costume, co-ordination) and the fastest course time.** Throughout the event the Heimbach team, as well as the energetic trainees from Smurfit Kappa, cut a stylish and trendy figure. "Boat builder" Ralf Schuster already has ideas for the second Smurfit Kappa Paper Boat Cup, which has been confirmed by the event organiser for next year: "If we improve our design just a little bit **we might come home with some silverware next time**." We are keeping our fingers crossed.

The "Smurfit Kappamaran" started first.

Third place in speed performance for these water sprites.

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