impressive

ISSUE 2/2015

Become an expert in felt wear

Paper Pete shows you how

Interview with Stora Enso Hylte

Record: 78 hours without a break

Baking for Red Nose Day

Having fun at Heimbach UK

Atrojet.
Tailor made press felt technology

With Atrojet we can provide you with a completely new development for your press section. We are the first supplier, worldwide, to combine multi-axial non-woven structures together with proven bases. The result: a flexible, adaptable press felt, tailor made for high dewatering and long life – whether producing tissue, graphic paper or packaging paper. **Read more on page 11!**

A warm welcome to all our readers,

Summer is now over. Many hours of sunshine are behind us and most of you have hopefully enjoyed a carefree holiday. Maybe you have been on a journey and discovered a part of our beautiful planet that you previously hadn't experienced – on to pastures new, so to speak...

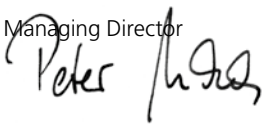
We at Heimbach are also unveiling new discoveries. **Atrojet**, the revolutionary press felt for all grades of paper and our latest innovation, is presented in this edition of impressive. On page eleven we will explain why we feel that we have now ushered in a "new era of press felts".

In this edition Jan-Erik Karlsson from **Stora Enso** in Hyltebruk/Sweden participates in our customer interview. On page eight get to know our customers and read about a running time record that was broken by Heimbach felts.

And of course friends of our "expert" **Paper Pete** are not left out. Last time our "colleague" was asked to speak about installing seam felts, in this edition he gives tips on how you can increase the life of your press felts. Our editors have compiled articles on these and other topics hot off the press.

I hope that you enjoy this edition of impressive.

Managing Director



In Profile

"I would not miss my time as a papermaker for the world!"

task.

A "man of conviction" to reinforce the team

Janek Schiefer has arrived at Heimbach

Yes, they still exist: Young people who know what they want at an early age and steadfastly follow the path. Janek Schiefer is just such a "man of conviction" and since April of this year he has been employed in Heimbach's TASK department. Janek Schiefer became aware of his passion for all things technical early in his training as a papermaker at a cardboard manufacturer in Erzgebirge in Eastern Germany. He earned his spurs as a papermaker over a period of five years during which time he moved through all departments: "Yes, I enjoy technology and it suits me well," said Schiefer, who also worked as a machine assistant, as well as in shipping, stock preparation, the laboratory, and in chemical-biological water treatment. "I would not miss my time as a papermaker for the world, it was a very educational and rewarding period," explained Schiefer.

High school certificate, degree course, working abroad

As a man with a passion for technology he wanted to progress and gained his high school certificate by way of evening classes so that he could move on to study paper technology in Munich. As early as his third semester Schiefer began working on projects in the paper lab at the university and further deepened his knowledge. Later in his studies he had the opportunity to further expand his practical experience as the person responsible for two start-ups in a northern German paper manufacturer as well as with other projects. Schiefer didn't only follow a national path; he was also responsible for planning and commissioning a new stock preparation facility in Iran. Our paper expert also had the opportunity to demonstrate his expertise when he commissioned a size press in Persia.

Making the TASK department even more efficient

As a member of the Heimbach family in Düren, Schiefer is currently supporting projects internationally in the TASK department which looks after our customer's entire process. "Within the first few weeks I was already frequently travelling across Europe with my colleagues. We performed vibration measurements in France and gave our customers advice concerning technical thermographic issues. I supported a start-up in England and measured nip profiles in Croatia."

So that felts last longer

Paper Pete shows how you can combat felt wear

In the first part of our new series of "Best practice from practical experience", Paper Pete gave you some tips and tricks on installing seam felts. Today Paper Pete speaks from his experience with press felts and why they abrade. Papermakers often discover felt wear but cannot precisely identify why the felt is wearing out so quickly. Read about Paper Pete's experiences and maybe you will find a tip for everyday use.

Dear colleagues, you have probably all experienced wear on the paper side of the felt and tried to get to the bottom of the situation. But you are often faced with a real puzzle, even with the machine switched off; you cannot find the cause either in the area of the UHLE box or the felt guide rolls (outer edge), nor at the deflectors, savealls, or any other part of the press section. Then there is only one approach left; find the evidence, as with the following case.

It's all about the width

I was called to a case where a felt had trimmed itself at the drive side after only 3 days running and the trimmed piece went into the press nip, causing holes. A new press felt was then fitted and this was also examined during a machine shut down (this time in the front side). The customer and I found a **very high degree of wear where the felt was overlapping the roll face by too much**. The problem was the width *(see: Fig. 1)*!

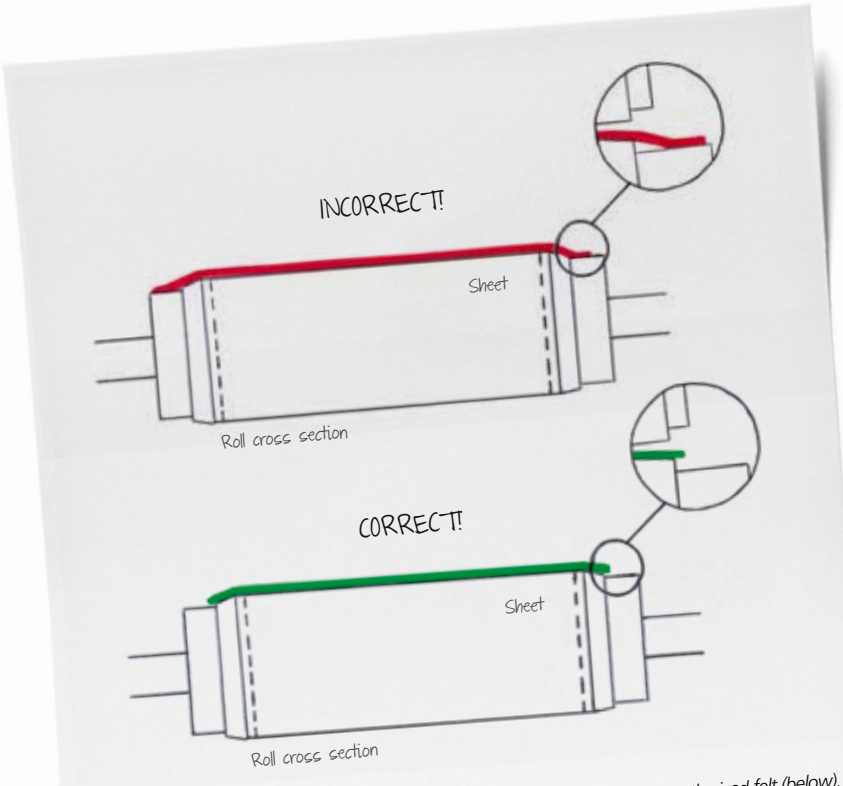


Fig. 1: Roll cross section with over wide felt (above), Roll cross section with correctly-sized felt (below).

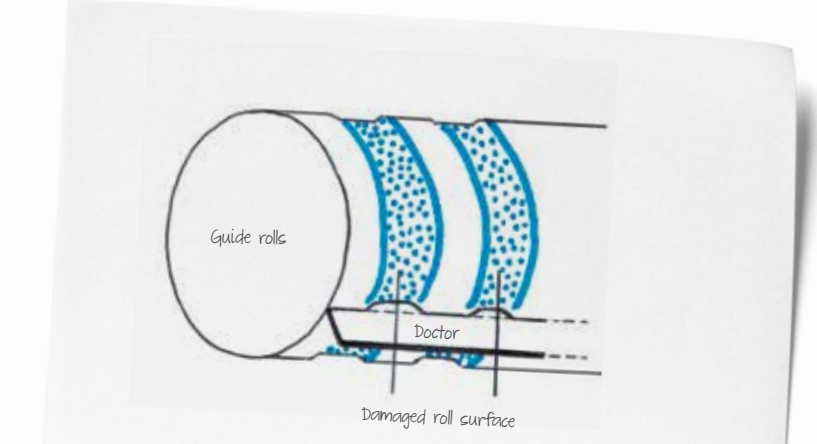


Fig. 3: Damaged surface of the felt guide roll.

Friction as a logical consequence

The felt protruded by 250 mm on both sides and stood proud of one part of the roll face as a result. As this moves at a different circumferential speed to the roll deckle both speeds have an effect on the felt. This in turn caused friction between the edge of the roll and the felt. And since, in this case, the roll edge was extremely dry, the friction was further intensified. We calculated on site that the customer's machine had to be experiencing a frictional path of as much as 28 kilometres per day. *(see: Fig. 2)*!

Less is more

In this case, **less is more,** the solution to the problem lay with the customer; reduce the width of the press felt, avoid contact with the roll deckle, **eliminate the friction, job done**. Unfortunately it's not always that simple. The question is what if the method of operation with a protruding felt cannot be avoided? What are the alternatives?

Wetting and air jets as a temporary solution

In a case such as this it would also be possible to ensure that the roll deckle is continuously wetted. A water spray would at least significantly **reduce the friction**. In our industry this is often referred to as "gentle friction". But one has to accept that **all friction causes damage** and the best situation is where no friction at all is generated. It is correct though to speak about "reduced friction". Friction can also be reduced using jets of air. However, this approach depends heavily on the machine specific felt tension. It is not possible for me to make a general recommendation in this article, but I am always happy to come by with my TASK colleagues to examine your machine and to work out a recommendation.

Guide roll surfaces and felt wear

Sometimes it is not the width of the press felt that is the stumbling block; felts also abrade for other reasons. One customer

$$\Delta = \left[v - \left(\frac{v \cdot D2}{D} \right) \right] \cdot 1.44$$

$$\Delta = \left[1050 - \left(\frac{1050 \cdot 1570}{1600} \right) \right] \cdot 1.44$$

$$\Delta = 28.35 \text{ km/day}$$

Δ = Path difference in km/day
v = 1050 m/min (Press rolls)
D1 = 1600 mm (Roll shell diameter)
D2 = 1570 mm (Roll shell cover)

Fig. 2: How the friction path is calculated.

came forward because he recognised stripes on his press felt, but the cause was unclear. My colleagues and I realised on the spot that the **poor surface condition of the felt guide roll** was the source of this unnecessary wear. "Poor" roll surface conditions are often caused by contamination. If you use rolls in combination with doctors it is also possible for the different hardness of the roll covers to trigger surface damage. If this is so, the doctor and the roll are intermittently coming into contact. This quickly results in "milling" of the roll *(see: Fig. 3)*, as in the case of our customer. The damage to his felt roll was 2 millimetres. For the press felt this means a differential travel of 160 (!) kilometres (over a run time of 40 days). No felt can withstand that! Therefore it is in your own interest to make sure that doctors are set correctly and evenly.

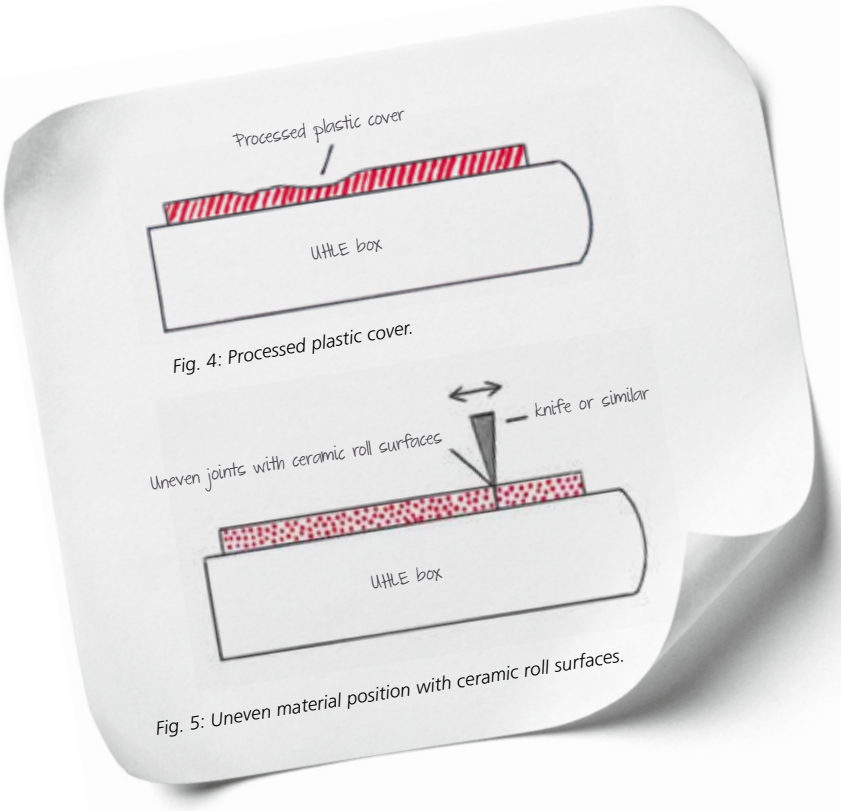


Fig. 4: Processed plastic cover.

Fig. 5: Uneven material position with ceramic roll surfaces.

With ceramic UHLE box covers the devil is in the detail. As these covers are always made up of individual segments, the zone around the joint should always be **meticulously examined**. The slightest difference in the thickness of the individual segments can lead to high rates of felt wear *(see Fig. 5)*! In practice I have often experienced felts that have been cut in the MD due to minimal differences in level. Sometimes the unevenness was so small that it was impossible to feel. It is therefore recommended that the zones around the joints are regularly examined with a knife-like object.

See you next time!
Your Paper Pete

UHLE box surfaces and felt wear

I have another tip. Regularly inspect UHLE box covers. Damaged or uneven covers can also be the cause of felt wear. Plastic coatings wear most heavily in the edge zones *(see: Fig. 4)*. If deposits of dirt are also present then this is a deadly mixture for press felts.

Happy Birthday, dear paper

625 years – and not old at all! That's the way it is: paper production in Germany. Something that was invented around 2,000 years ago in China also began to change the lives of people in Europe from the Middle Ages onwards. **On 24th June 1390**, the Nuremberg wholesaler, producer and Councilman Ulman Stromer, (1329 – 1407), **started up the first paper mill north of the Alps**. In preparation he had converted the "Gleismühl" on the Pegnitz, an old grain mill, into a paper mill. What started back then near Nuremberg with a water wheel has now become a primary industry, and not only for us. Today in Germany around 165 companies produce nearly 22.5 million tonnes of paper and board. The German paper industry employs approximately 40,000 people making it the largest paper industry in Europe. This is worth a hearty "congratulations" and a toast to the next 625 years!

The Webmover District is inaugurated

New motif completes Heimbach-City

First Primo, Atro and Seco, then Yamabelt, now Webmover; Heimbach City's fifth district is completed. "With the unveiling of the Webmover District, we have now also given our city a distinctive face in the area of transfer belts", said Chris Kershaw, Vice President Marketing.

Webmover – a belt that connects
Heimbach Webmover transfer belts help papermakers to eliminate open draws and ensure **smooth sheet transfer from the press section into the dryer section**. Expressed in Heimbach colours, this is from blue to red. And in the same way that Webmover accomplishes a smooth transition "in real life" between two sections of a paper machine, here **it connects two districts in the motif**. As the Heimbach "city planner" Kershaw says: "Just as with all the other motifs, we considered it very important to create a clear link between technology and design." Sticking to this principle a "Heimbach-Biker" was added to represent dynamism and speed. After all, Webmover **can run at speeds above 2,000 m/min without any problems**.

The end of the road?
On the question as to whether Heimbach City still has any undeveloped building land Kershaw replied with a smile: "Let's put it like this: Heimbach offers fabrics, felts and belts for every section of a paper machine. And now **each product range is also represented by its own motif**; this means that our city is now complete. But you should never say 'never'. Who knows what tomorrow or the day after may bring?" The suspense continues ...

From left to right: Tom Hoyle (Heimbach), Jan-Erik Karlsson (Stora Enso Hylte), Lars Nilsson (Heimbach).

Competitive through innovation and efficiency

Interview with Jan-Erik Karlsson, Superintendent PM4 at Stora Enso Hylte

The Finnish-Swedish paper manufacturer, Stora Enso, has produced newspaper in Hyltebruk, Sweden since 1972. Two older paper machines had to be shut down due to restructuring of the paper mill during 2012 and 2013. Today, the two remaining paper machines, PM3 and PM4, are in operation and rely on proven Heimbach press felt technology. The innovative seamed felt, Atrocross.F Connect, has set new standards concerning lifetime and efficiency of paper production. We interviewed Superintendent Jan-Erik Karlsson on how he sees the future of Stora Enso Hylte, what challenges the industry is facing and which experiences he has with Heimbach machine clothing.

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What challenges do the manufacturers of graphic papers or newsprint see today?

Jan-Erik Karlsson

It's no secret that paper making, especially concerning graphic grades, is a tough business. There is an overcapacity in the market and several machines have been closed, including our PM1 and PM2. The real challenge we see today is to identify completely new markets where our products can be used. For this reason we have established our own innovation team at the Hyltebruk mill where our experts develop new and unique solutions for today's heavily competitive market as well as for completely new business areas.

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The closure of PM1 and PM2 and the associated headcount reduction were certainly not easy, but they were necessary actions for the development of the company. How do you see the current situation?

Jan-Erik Karlsson

We have gone through a really difficult time in recent years and several restructuring actions have been taking place. We had to make papermaking more efficient and create new products to be able to be competitive in the demanding markets that we serve. One big task was to merge the various control rooms into one central, modern monitoring room, known as COOP. This enables all important processes to be controlled and monitored from a single location. As a result of all these actions, and especially because of the determination and solidarity of our employees, our order books are now full and both machines are fully utilised.

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What do you see for the future? How well is Hylte prepared for the coming years in order to survive in a difficult market with heavy competition?

Jan-Erik Karlsson

Besides continuous improvement and innovation, we focus closely on our cost structure. We can only remain competitive if we are more cost-efficient in all areas, big and small. For example our own purification plant can cover approximately 10% of the production energy. Raw material costs can be reduced by using more recycled paper.

Machine	PM3 / Valmet Speedformer	PM4 / Bel Baie III
Speed	1,410 m/min	1,480 m/min
Width	8.40 m	8.40 m
Paper grade	Newsprint (40-49 g/m²)	Newsprint (40-49 g/m²)
Press section		
Pick-up position	Atrocross.F Connect	Atrocross.F Connect
1. Press	Atroplan.Connect	Atroplan.Connect
3. Press	Atrocross.F Connect	Atrocross.F Connect
4. Press	-	Atrocross.F Connect
Forming section		Top wire: Primobond.F Bottom wire: Primobond.F
		Record without a sheet break: 78 hours!

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What do you think about Heimbach and the support that Heimbach provided during the restructuring period?

Jan-Erik Karlsson

We appreciated very much the support and service received from Heimbach – particularly regarding the product development and the JUST-IN-TIME customer support.

Whether in the design selection, searching for potential optimisation or rapid assistance by the local Heimbach service people – we felt that professional support was always available.

Stora Enso Hylte employees closing the seam of an Atrocross.F Connect felt.

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You use a lot of Heimbach seam felts in the press section. What do you find particularly impressive in the non-woven Atrocross.F Connect design?

Jan-Erik Karlsson

This is true. We use Atrocross.F Connect in the pick-up, the 3rd and 4th press positions. We also use Atroplan.Connect for the 1st press. Heimbach seam felts are very easy to install. The felts are extremely easy to seam und thus the installation time is very quick. The fast start-up of the felts is also very much appreciated, because the quick break-in time results in a direct increase of the daily production volume.

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The good seamability is certainly one of the main criteria, but the felt must also prove itself over the entire lifetime. What qualities do you especially appreciate?

Jan-Erik Karlsson

Exactly – the lifetime is obviously one of the key criteria! Atrocross.F Connect has reached exellent lifetimes and even offers us additional lifetime potential. It is also worth noting that these press felts deliver consistently high paper quality over the entire lifetime.

Stora Enso facts

- *Finnish-Swedish paper and packaging manufacturer,*
- *turnover 2014 (only paper production): € 3.9 billion,*
- *main markets: Europe, Asia, America, Australia,*
- *400 employees at the Hyltebruk plant,*
- *15 production sites worldwide,*
- *paper production in Hyltebruk: 470,000 tonnes/year (standard newsprint),*
- *several awards for achievements in environmental protection.*

The Stora Enso Hylte paper mill in Hyltebruk, Sweden, has produced newsprint since 1972.

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Using Heimbach forming fabrics and press felts, you have recently acheived a record of 78 hours on PM4 without a sheet break. Do you see this runnability as exceptional?

Jan-Erik Karlsson

We are of course happy with this record. I have seen all kind of press felts and run a number of them on our machines, but 78 hours without a sheet break is a really remarkable result. But: we can't afford to lean back and relax. We must continuously work hard to further reduce downtime and significantly increase our efficiency.

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Thank you for the interview. We wish you further success and will continue to do our utmost to surprise and delight our customers.

A new era in press felts
Presenting the Atrojet product line

Your benefits at a glance:

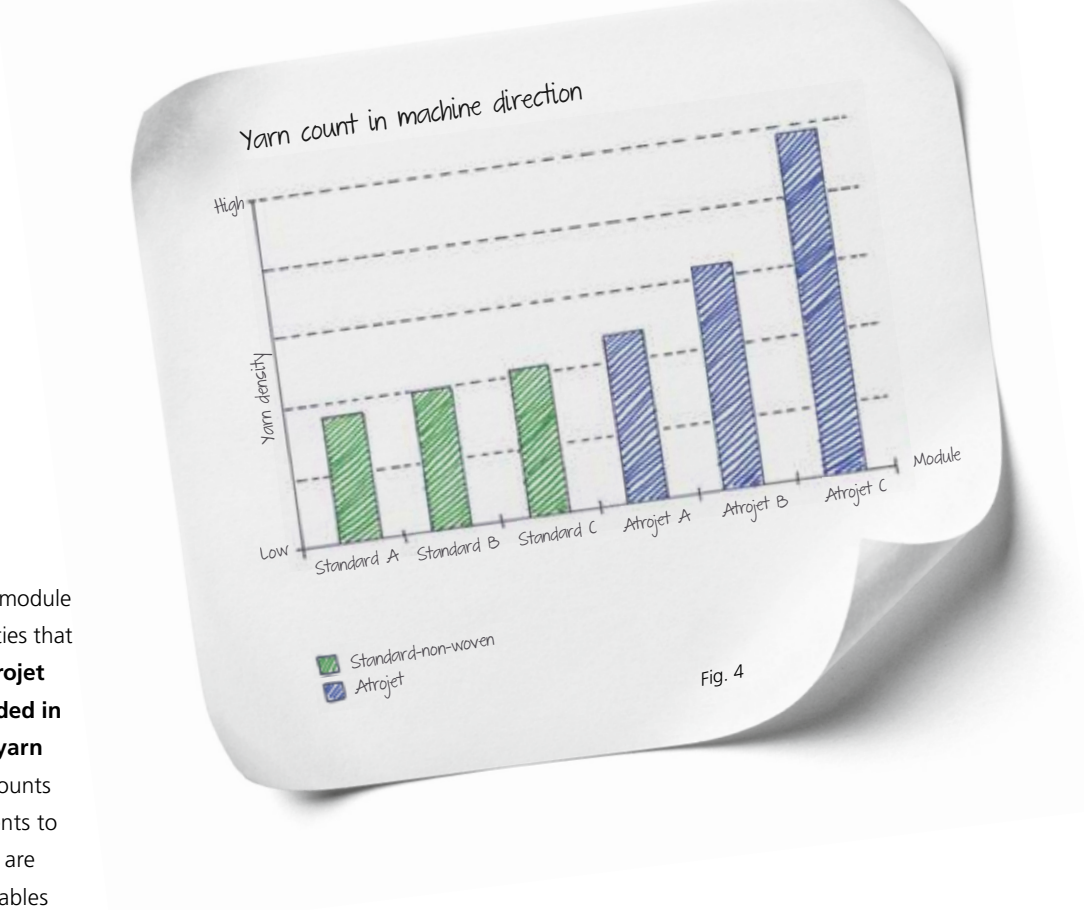
- Highly flexible yarn structure,
- tailor-made felt designs – precise and uniform,
- different surfaces possible,
- coarse open or extremely fine designs,
- high level of dewatering and uniform CD profiles,
- better void volume retention,
- effective cleaning,
- high strength for economical service life.

This is the Heimbach that we all know well: Innovative products that are individually tailored to the needs of the paper maker. This applies to forming fabrics and dryer fabrics – and particularly for press felts: Continuing in line with this tradition, with Atrojet we are introducing an entirely new development for your press section.

Unique press felts – unique structures
Atrojet is the world's first press felt that combines **multi-axial non-woven structures** with proven conventional bases. Thanks to this revolutionary technology **tailor-made, flexible and adaptable base combinations** can be supplied from now on: Whether for brown papers, tissue or graphic papers – **Atrojet can be used for all paper grades and can be adapted to the individual requirements of your application**. We design and produce a paper side base module for the Atrojet felt. This Atrojet module is combined with a base weave selected from existing modules. *(See Fig. 1–3)*.

Because flexibility is a key factor
Every paper machine is different; and because this is so, our product developers have set the focus on maximum flexibility in design: The multi-axial non-woven module offers many **more options in combining yarn and twisted yarn structures than is possible with conventional non-woven or woven fabric structures**. The selection of a suitable base in the substructure enables felt designs to be individually tailored.

Coarse or fine? Find the right design
Not only is the base module highly flexible, the **surfaces of Atrojet felts can also be supplied with different configurations**: If you produce graphic paper or tissue, you need extremely fine and highly compact surfaces. This homogeneous structure guarantees a very good contact with the paper sheet. This results in more efficient dewatering and high-quality paper profiles. More open structures are needed for machines on which a wide range of grades are manufactured and where different raw materials are used. Atrojet is also ideal here: Coarser base modules are available for such cases, and these are matched with coarser surface features. More open felt designs improve the void volume retention and allow particularly effective cleaning of the press felt.



Flexibility in materials as well
For the best production results each module must precisely match the felt properties that you require. **The key benefit of Atrojet is the wide range of choice provided in terms of both yarn material and yarn count**: From very high, dense yarn counts with thin twist-yarns or monofilaments to moderate or low counts, all designs are possible. Atrojet technology also enables the processing of different yarn geometries.

Alignment of MD yarns
In Atrojet felts, the uniformly aligned machine direction yarns are characterised by high symmetry and precision spacing. This homogeneous structure enables optimized key felt properties. The machine direction component has a positive effect on the absorption of tensile forces which results in **enhanced strength and contributes towards economical felt lifetimes**.

With its uniform machine direction yarn structure, Atrojet has far greater surface contact than conventional bases *(see: Fig. 4)*: This leads to more even nip pressure, which in turn results in consistent dewatering and even CD profiles.

Special properties for tissue production
The tailored adaptation and outstanding features of Atrojet press felts make them ideal for use in tissue production: Here press felts must offer, for example, **high dewatering at very high machine speeds**. In addition, a new press felt must **achieve optimal performance levels** within just a few hours. Energy requirements, power, gas, and steam, are particularly important in the tissue production process when compared to production of graphic grades, for example. In addition, tissue felts are more prone to suffer from premature compaction and contamination due to their typically fine fibre batt layers.

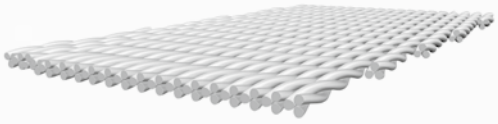


Fig. 1: Atrojet Module.

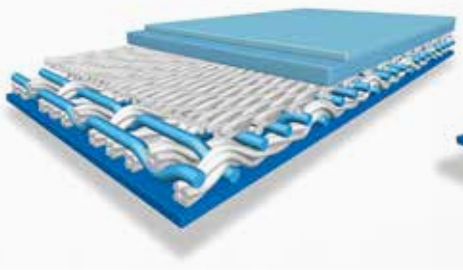


Fig. 2: Atrojet press felt, comprising of an Atrojet module combined with a further support module in the substructure.

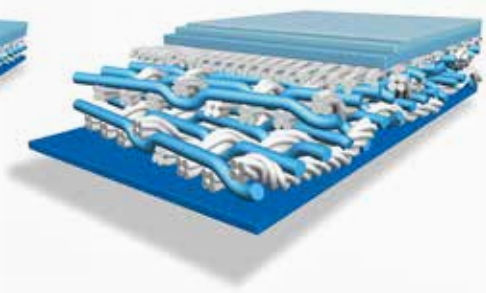
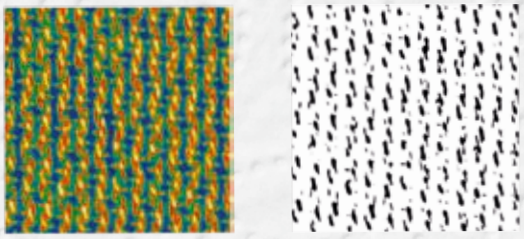
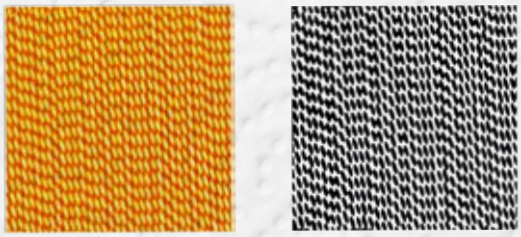


*Fig. 3: Atrojet press felt, here with **two** support modules in the substructure.*



Conventional base - 41.1 % contact surface



Atrojet base - 96.4 % contact surface

Fig. 5: With its particularly compact MD thread structure, Atrojet has a much higher contact area than conventional bases. This causes a more uniform pressure distribution in the nip and thus, very uniform drainage and even CD profiles.

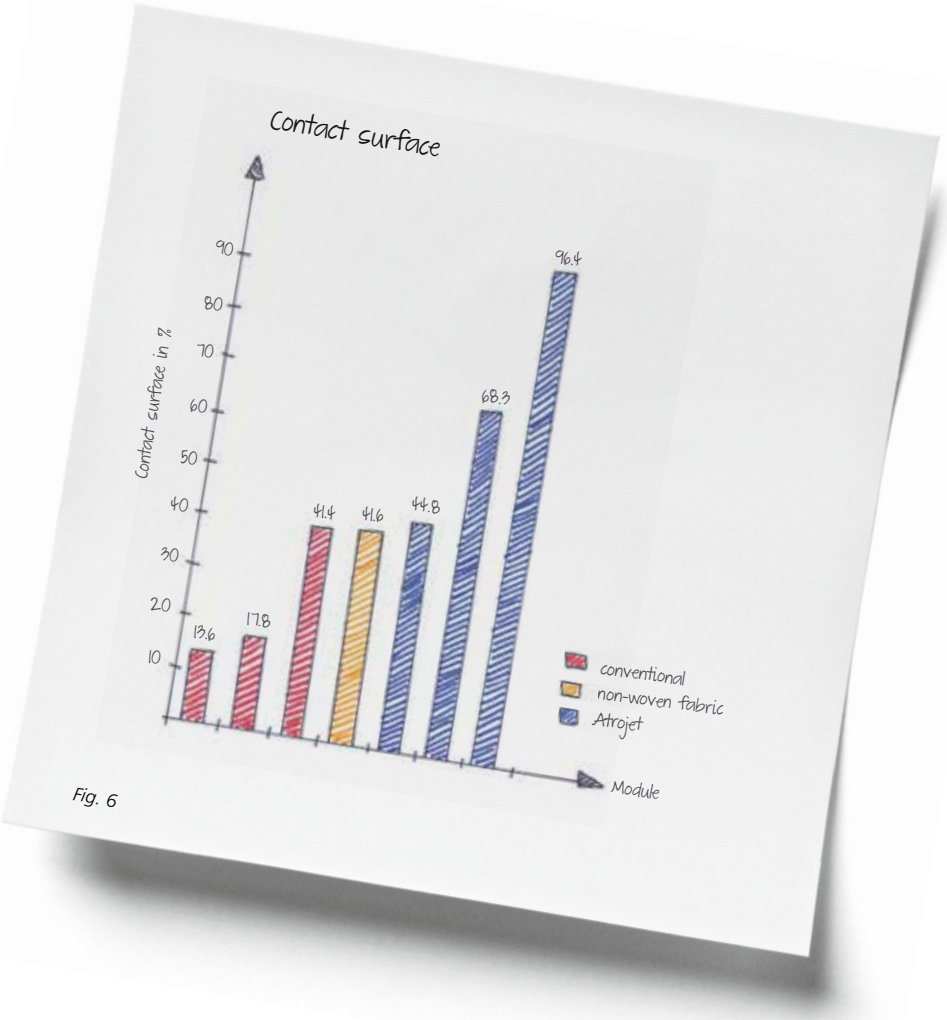


Fig. 6

Atrojet.T – specific solution for tissue

To successfully fulfil these requirements, Heimbach has brought Atrojet.T to life – the ideal tissue press felt: Thanks to the flexible yarn structure, a **compact and very fine Atrojet module** can be produced, that can still be combined with an open substructure. Such a design, tailored to your tissue production, allows the optimisation of energy consumption: Thanks to its fine, homogeneous machine direction yarn structure, **fast starts and the highest possible dewatering** are provided with Atrojet.T. Due to the much higher contact surface *(see: Fig. 5 and 6)* an **optimum pressure transfer** and contact pressure on the Yankee cylinder is also achieved. And if you use Atrojet.T with an open-textured roll side base, you can on the one hand **efficiently clean** the press felt and on the other **improve resistance to compaction and contamination**. This ensures a longer life for the press felt.

Would you like to learn more about Atrojet and Atrojet.T? Your contact partner would be happy to give you all necessary details.

Did you know?

Durable and comfortable

The Kraftliner Igloo invites you to linger a while

Paper is extremely versatile – we all know that. But building igloos from corrugated cardboard? Now that is something new. That is exactly what Heimbach customer Smurfit Kappa has done in Pitea/northern Sweden, where it has built **a large-scale igloo** amidst the ice and snow. This unique building measures four meters in width, is two meters high and consists entirely of corrugated board that is a combination of various different Kraftliner papers.

The international packaging specialist is engaged in paper research and other activities in Pitea, and went to this extraordinary length to prove how **durable and resistant Kraftliner papers** are, even under extreme conditions. But it is not just about research; Smurfit Kappa has also **furnished the easily accessible igloo**: Visitors can exchange ideas, let their thoughts wander, or just escape the freezing conditions in an intimate setting. Which we think rounds it off very nicely!

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Fundraising for Red Nose Day

With cakes and tombola
Heimbach UK collects for charity

Actions speak louder than words. These common words very aptly summarise the notion that we should all give some thought to those less fortunate than ourselves. Our staff at Heimbach UK took up the challenge, and for Red Nose Day collected £377 for disadvantaged people in Africa and the UK.

Red Nose Day: an institution

Red Nose Day was first held in 1988 as an initiative of the BBC (British Broadcasting Corporation) and has taken place every two years since then. Celebrities call for charitable contributions as part of a TV show. This format, which is now also greatly enjoyed in other countries, **has meanwhile almost attained the status of a holiday in the UK**. On Red Nose Day, people come together in companies, schools and other institutions to do something out of the ordinary and collect donations at the same time. This year, Heimbach employees in Manchester came up with the idea of selling home-baked cakes and organising a tombola – not a bad idea as the proceeds show. A big thank you to all our colleagues for their great work!

Having fun for a good cause.

Atrojet

A new era of press felts – with perfect felt designs

Atrojet is the unique press felt with a highly flexible, adaptable multiaxial non-woven module:

- highly flexible and adaptable **yarn structure**,
- tailor-made felt designs – **precise and even**,
- very **fine or coarser** open designs available,
- **high dewatering** and even **CD profiles** due to high contact area,
- improved void volume retention and **effective felt cleaning**,
- high tensile strength potential **for economic life time**.