

impressive

ISSUE 2/2018

Problem: Barring – Solution: ODIN

How to determine MD mass variations

Perfect Start-ups

Fast Forward: The first track record reported

Global waste paper market

Constantly on the move

Long history in forming

Heimbach UK introduces itself

Farewell Plastic

British food retailer commits to paper

Webmover: A trusted Long-Distance Runner

Portfolio grows with new designs
and tailor-made doctor blades

Transfer belts fulfill a crucial function in paper machine operation as they ensure **problem-free sheet transfer** from the press to the dryer section. Learn more

about belt development, with new "HD" and "T" designs, as well as the **unique WebDoc from page 06.**



Dear customers,



A warm welcome to our summer issue of impressive!

Are you looking forward to the football World Cup as much as we are? Sunshine, beer gardens and public viewing are a perfect way for everyone to share in the thrills. Players, line-up, commitment – it takes many different aspects to drive success.

And in the end **it is often the tactical decisions** that reward teams and win trophies.

This is a statement that we can easily transfer to both your and our business: **Lean Management** is an approach for process optimisation and has been common practice at Heimbach for several years now. Its aim and ambition is **to focus all activities on providing benefits for the customer**. Permanent improvement, at all levels and in all operational areas, is a key part of it. In order for Lean to succeed **a holistic approach is needed**, systems must be internalised and processes coordinated. These are tasks for our experts operating internationally in order to ensure unified norms and standards.

Suppliers and partners are systematically included in this effort as well. **A value-added chain does not stop at one's own factory gate**. Not forgetting our environment, which also benefits from this, since efficient operations lead to lower energy consumption – ecology and economy combined.

It is remarkable how much positivity develops when thinking purely in terms of cost is put aside. Modern management systems help us to achieve this. Employees actively contribute to suggestions for improvement, **creativity and ambition are increased** substantially and personal initiative becomes a central part of our working culture (see article on Heimbach UK from page 18).

Tactics contributing to success – let's grow together.

Summer greetings from

Peter Michels

PS: Already signed up for the online tipping game? www.heimbach-wm.com – have fun at the World Cup!

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Fast Forward persuades Faster start-ups – more profit

In our 02/2017 edition we introduced fast forward to you. A module made from special high-tech material that makes it possible to achieve turbo-charged start-ups. We promised significant cost savings – today you can read of some success stories.

The fast start-up of a press felt is of enormous economical importance: A reduced speed of 100 m/min over two days of start-up already represents a yearly loss of around one million Euros when applied over

a 12 month period (on machines of medium width with 30 day felt life)! **Heimbach's innovation significantly improves start-up speed** – without runnability problems or "falling off" in dewatering efficiency. →



PM: TWINVER
Speed: 1,230 m/min
Width: 8.35 m
Grade: LWC, 36–63 g/m² (untreated)
Pick-up:

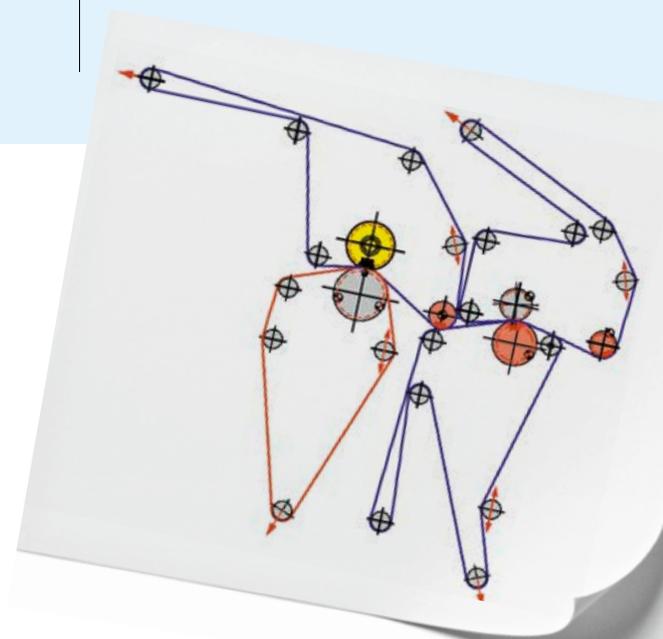
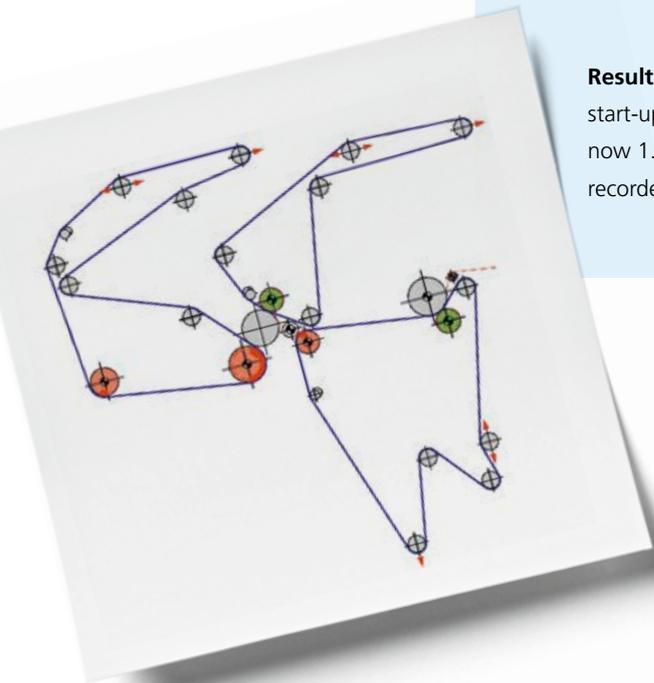
atrocross.Fff
CONNECT

Result: enormous reduction of start-up time, previously 36 hours – now 1.5! Fastest start ever recorded on this machine.

PM: Optipress
Speed: 1,500 m/min
Width: 7.05 m
Grade: copy, 60–120 g/m²
Pick-up:

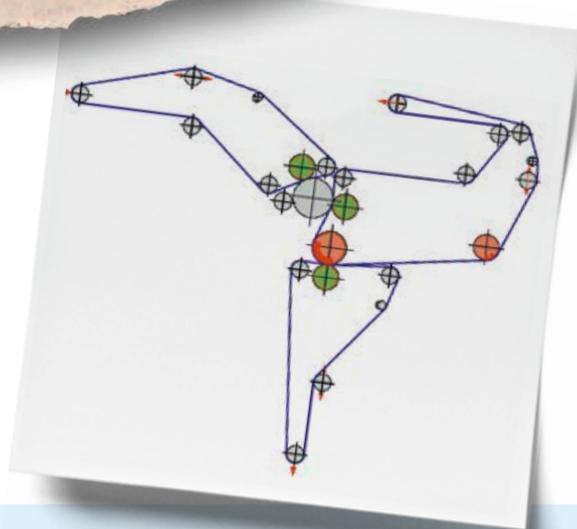
atrojet.ff

Result: very fast start-up, best performance to date.



Fast Forward persuades

- Significant acceleration of start-up
- Very high dewatering efficiency from the start
- No runnability problems over the entire lifetime
- Available for all press felt designs from Heimbach



PM: TRI-NIP + 4th press
Speed: 1,100 m/min
Width: 6.30 m
Grade: standard WFC, 50–120 g/m² (untreated)
Pick-up:

atrobond.ff

Result: fast start-up, fibre bleeding completely eliminated.

PM: TRI-VENT
Speed: 1,540 m/min
Width: 9.35 m
Grade: standard newsprint, 40–48 g/m²
Pick-up:

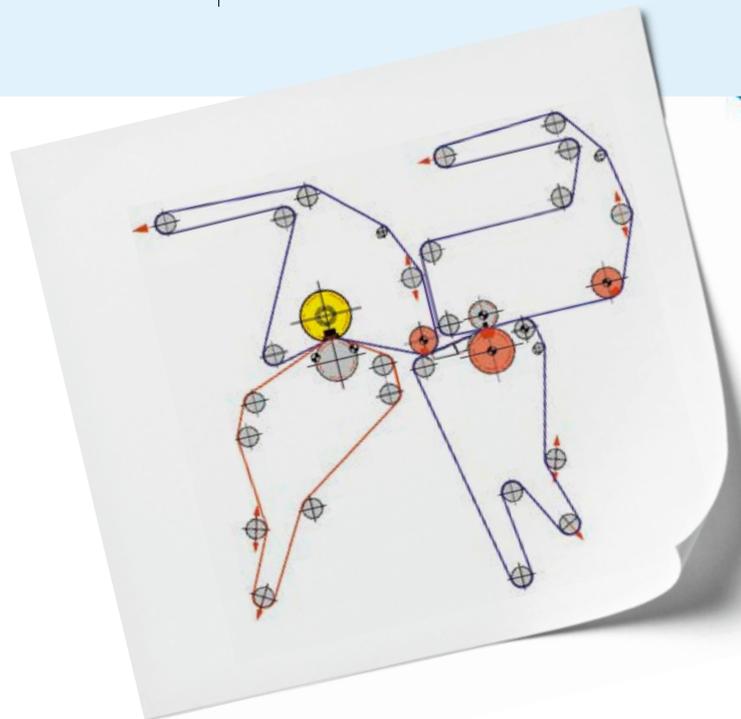
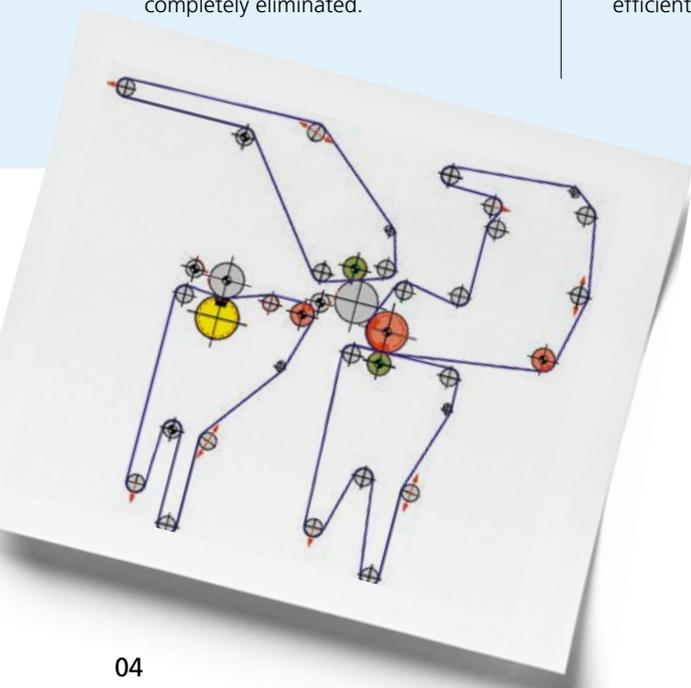
atroplan.ff
CONNECT

Result: very good start-up, highly efficient dewatering.

PM: Optipress
Speed: 1,400 m/min
Width: 10.15 m
Grade: standard WFC, 54–90 g/m² (untreated)
1. press bottom:

atrocross.Fff
CONNECT

Result: rocket-like start-up, high dewatering over entire lifetime, no fibre bleeding.





PM: Tandem NipcoFlex
Speed: 1,900 m/min
Width: 8.90 m
Grade: standard newsprint,
40–60 g/m²

2. press bottom:

atroplan.ff

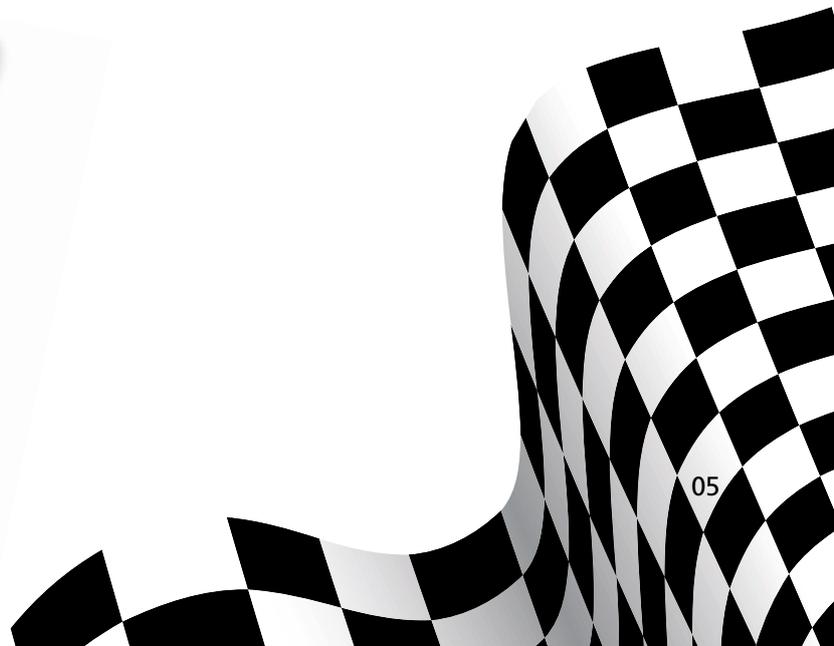
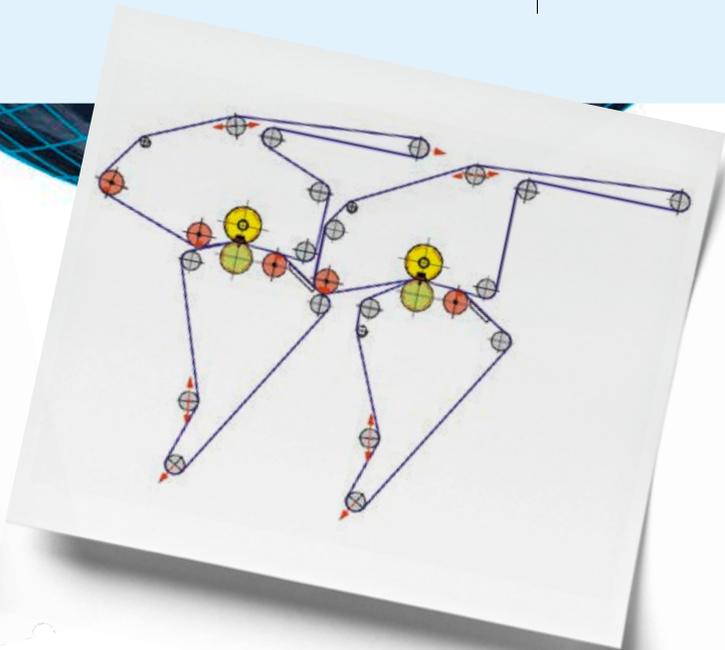
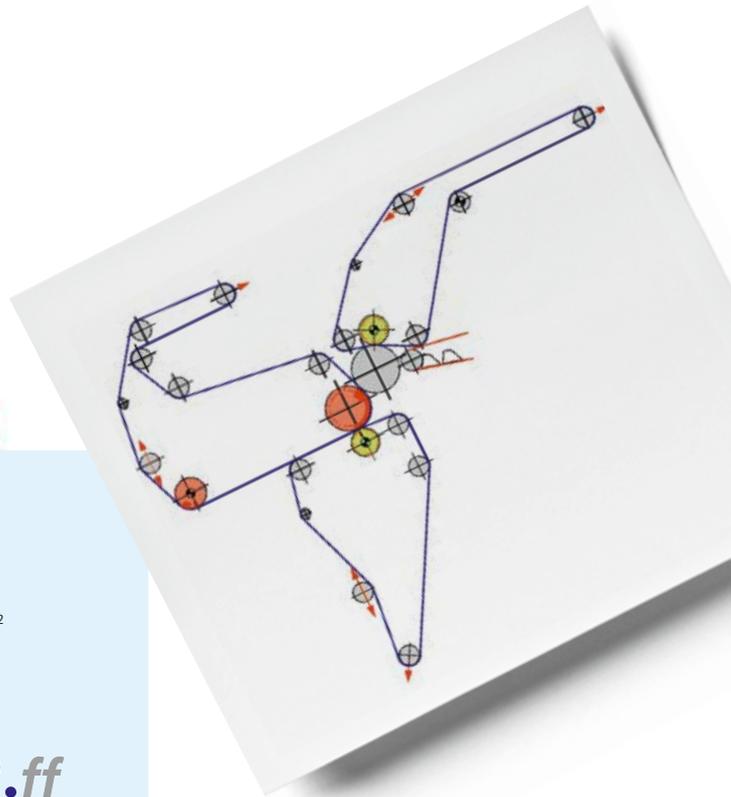
Result: significant improvement
of start-up.

PM: Sympress-2
Speed: 1,400 m/min
Width: 9.30 m
Grade: copy, 70-100 g/m²

1. press bottom:

atroplan.ff
CONNECT

Result: very good performance.



Webmover – a very special transfer belt

Product range extended with new designs and doctors

For many years papermakers have valued the diverse features of Heimbach's webmover: The tailor-made solution for machines with closed draw technology, optimizing sheet transfer from press section to dryer section. As a "pure" transfer belt without dewatering function webmover is a guarantor of maximum safety and best running characteristics.

Over almost 20 years the paper industry has taken advantage of the opportunities presented by "Closed Draw Technology", upon which Heimbach's solution is also based. Jochen Pirig, Strategic Product Manager Belting, remembers: "Press sections were **first furnished with this technology at the end of the 1990's** – the innovative part being the configuration with an impermeable transfer belt". This enabled the sheet to be transferred from the press to the dryer section by a closed draw.

Expertise has grown

Required now just as in the past: A transfer belt **providing long-term and stable operation**. This is where Heimbach targeted its investment from the beginning. These new developments rendered the complex

limitations of open draw systems redundant and opened the door to achieving machine speeds of 2,000 m/min and more. The **classic press section of this type is constructed with a double-felted first press**, in different styles such as grooved roll press, hard nip press, suction press roll or shoe press – depending on the operation and paper grade range of the machine.

Well-conceived down to the last detail

In the second press, which as a rule has a shoe press layout, the top position is equipped with a press felt. In the bottom position, **a transfer belt is fitted instead of a press felt** (Fig. 1). Over the whole distance from the second press nip through to the dryer section the sheet remains on the transfer belt whose even surface ensures a stable sheet

transfer. At the same time, the impermeable nature of the belt prevents sheet rewetting (Fig. 2). Figure 3 shows typical examples of webmover applications.

Universally applicable

Press sections equipped with transfer belt positions soon grew in popularity and machinery builders began to build this technology into new machines. **The advantages of closed draw systems were applied to more and more paper grades and the press configurations associated with them.** Although initially designed for bulk production grades (SC, LWC, newsprint, graphic paper) transfer belts have been increasingly adopted for other grades (white toliners, MG papers and in tissue production). A further and relatively recent trend can now

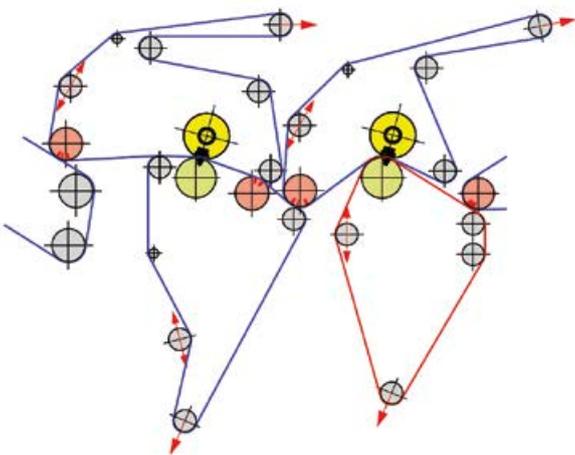


Fig. 1: Typical machine design with transfer belt.

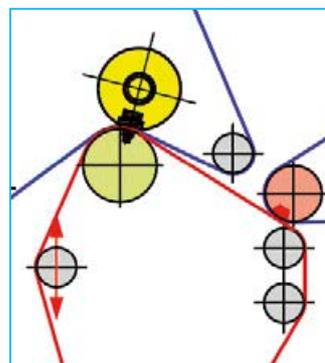


Fig. 2: Stable sheet carrying without re-wetting after 2nd press.

webmover.

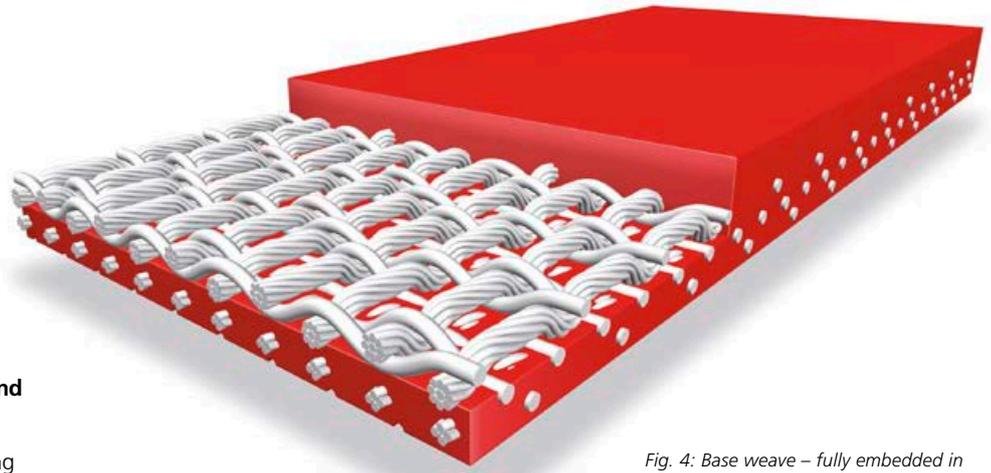


Fig. 4: Base weave – fully embedded in polyurethane material.

be noticed in **paper machine upgrades and rebuilds**: Here also, the many advantages offered by closed draw technology involving transfer belts are in evidence.

The interaction is key

In the early stages transfer belts were based very firmly on the concept of press felts. Consisting of a polyamide base weave with a fibre batt similar to a conventional felt, a **polyurethane (PU) coating was then added on the paper side**. In this way the adhesion of the moist sheet to the transfer belt surface after the press and the release of the sheet from the transfer belt by means of the third pick-up roll into the dryer section could be achieved. Pirig confirms "This balance of sufficient sheet adhesion and easy release from the belt surface is the key for safe transport from the press section to the first dryer group".

Challenges overcome

Central to the product development was a customer requirement for cost-effective

service life with consistent product characteristics – particularly in terms of surface quality. Added to this was the challenge of creating a product with **controlled adhesion and release** on the paper side surface – throughout the lifetime of the transfer belt, of course. These requirements were fulfilled in 2006 with the product launch of Webmover. **A milestone for customers and Heimbach alike.**

Product portfolio extended

Today, twelve years later, the range offered to papermakers is no longer limited to the "standard" webmover. **The product family now includes an "HD"**, meaning "heavy duty", version, developed for positions with

greater roll side abrasion potential. Also new in the range is **Webmover.T**, a transfer belt specifically designed for the manufacture of **hygiene papers**. Independent of grade, the Webmover product range has fulfilled customer expectations from the beginning, in particular thanks to its material qualities: All belts in the product family contain an extremely strong base weave which sits securely embedded inside the polyurethane coating (Fig. 4). Protected in this way, the base is – in the true sense of the word – the backbone of the Heimbach transfer belt. Dimensional stability, durability and tensile strength are the **guarantees of long service life.** →

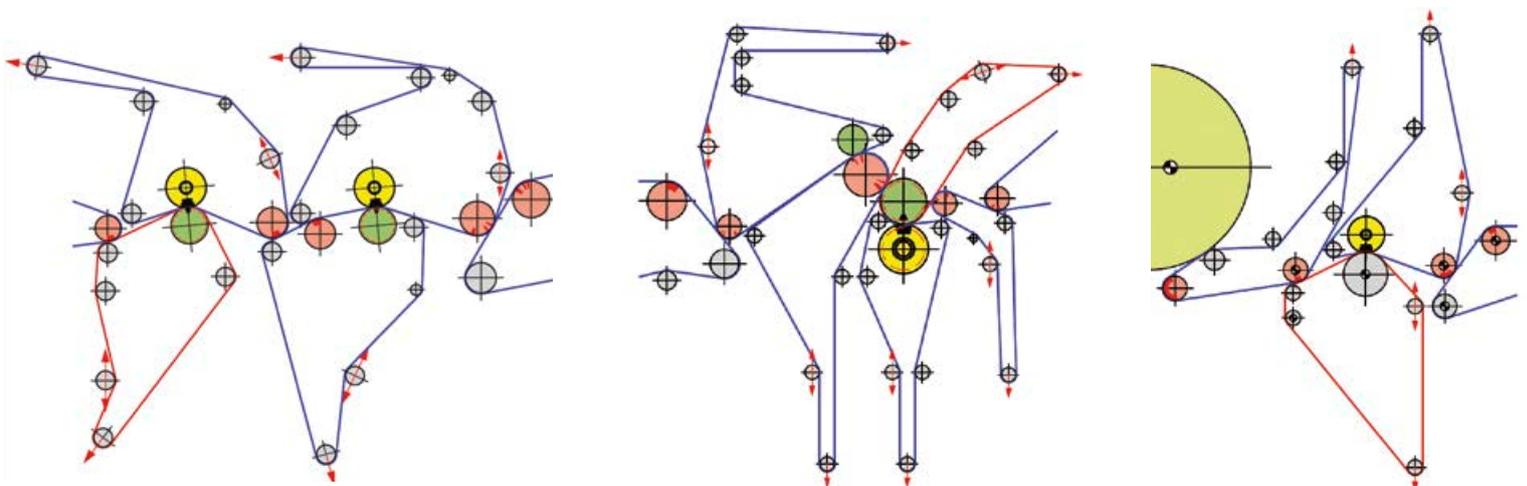


Fig. 3: Typical examples of machine configurations with Webmover.

Webmover life times - the current "Top Ten":

Virtually indestructible

The patented PU-based coating is at the centre of the technical innovation. It is distinguished by a **defined and uniform pore structure** (photos 1+2), which is what makes the consistent surface properties possible in the first place. Webmover did, and still does, set standards for papermakers who expect maximum lifetimes. On high speed machines lives of up to 18 months have been reached; on paper machines with medium production speeds **21 months** has even been achieved (see also adjacent table). With service life like this a targeted change of Webmover fits very well into bi-annual or yearly maintenance shutdowns.

Resistant against contamination

When speaking of substantially longer service life the focus inevitably settles on the surface of the transfer belt: This must **remain in a consistently good operating condition**, which is an essential precondition for ensuring equally steady and trouble-free operation. The surface quality is particularly influenced by synthetic sizing chemicals such as ASA and AKD. Contaminants coming, for example, from recycled furnishes can also affect the surface condition of the transfer

belt. Nowadays devices for intensive conditioning such as oscillating high-pressure shower units are used. Moreover many transfer belt positions are equipped only with inside guide rolls, which has a positive effect on efficient cleaning.

Surface in view

When looking at the conditioning of the Webmover surface in a mechanical-physical sense there are two key factors: First, cont-

inuous treatment with low- or high pressure showers ideally using **process water heated to more than 40°**. A pressure of over 160 bar is furthermore recommended in order to achieve the best possible results. Of equal importance and significance is the use of perfect and correctly aligned doctor blade holders and mate rolls. The same applies to the condition and the doctoring of the mate roll itself. Any kinds of imperfections have a negative effect on conditioning and runnability.

Perfect integration

Machine builders offer suitable equipment for conditioning. Linear blade loads of between 120-180 Newton/metre (N/m) are most commonly used in transfer belt positions. Loads of 220 N/m are also applied, but are less common. Heimbach has developed a new module for optimum integration between transfer belt and doctor. **"From now on papermakers can take advantage of two new add-on tools, WebDoc.regular and WebDoc.coarse**, which could be referred to as 'ideal blades', as far as the clothing is concerned", states Pirig. They were designed exclusively for use with Webmover.

Lifetime (days)	Machine speed m/min	Paper Grade
638	800	Packaging
621	900	Graphic Papers
541	1800	Graphic Papers
492	1100	Graphic Papers
413	600	Speciality
367	1300	Graphic Papers
359	1150	Speciality
320	1600	Graphic Papers
312	1700	Graphic Papers
303	1600	Graphic Papers





Photo 1: Webmover in magnified cross section.

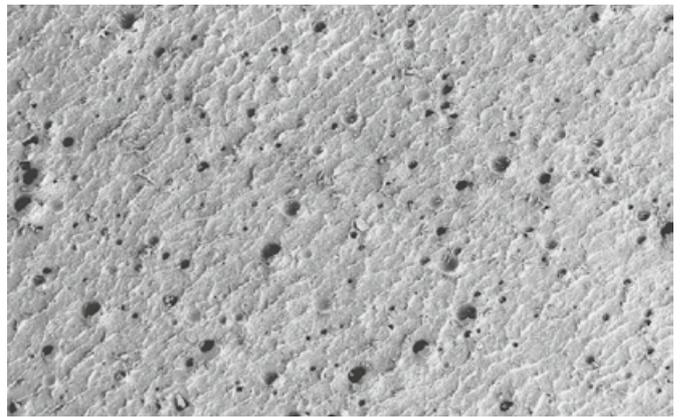


Photo 2: Webmover surface (paper side) under scanning electron microscope.

For individual applications

Both Webmover and WebDoc are produced using PU material that works in perfect harmony (photo 3). The right combination of belt and doctor blade offers the best possible surface cleanability; independent of the paper grade produced. **WebDoc.regular is designed for continuous use** and in positions with moderate contamination potential. Where contamination is more severe a coarser blade is required: Here **WebDoc.coarse** is used; a variety with more strongly pronounced cleaning potential, to be **used in interval or continuous opera-**

tion. Of course – no matter which blade you use – it can only operate properly if it is perfectly calibrated.

No burrs

WebDoc blades boast a balanced ratio of flexibility and abrasiveness. So, in the event that paper lumps reach the doctored roll, WebDoc **reduces the risk of possible damage to the Webmover surface.** At the same time the polyurethane material achieves the desired friction effect necessary for efficient cleaning. A further advantage of the blade is the fact that **no burrs form**

at the grinding edge. If such burrs should detach they can lead to serious disturbances in production as they are carried back to the nip and can cause holes or breaks in the sheet. **With WebDoc you are on the safe side in exactly the same way** as with Webmover. A strong operating tandem for your paper production.

webmover.

webmover.HD

For "extra tough" applications: Webmover.HD – "Heavy Duty"

webmover.T

Especially for tissue paper – Webmover.T!



Photo 3: Perfect harmony with Webmover: the new PU blades.



Waste paper furnish Opportunities and challenges

The market in raw materials is fast-moving. If just a few months ago waste paper was scarce, at the time of our editorial deadline we were already reading about oversupply. Why concern ourselves at all with the raw material situation and waste paper quality? Because as machine clothing manufacturers we are increasingly confronted with contamination and foreign substances and individual solutions are needed.

Earlier this year there were media reports that the licensing procedure for importing waste paper into China was being eased. The Chinese Ministry for the Environment had stipulated that the **minimum production volume of papermaking companies** must be 300,000 tons per year in order to obtain an import licence. Since March the limit has been reduced to 50,000 tons/year, which means that more waste paper will again be moved from Europe in the direction of China.

Perspective Asia

We judge this to be a snapshot of a symbolic nature. When a course is set in China it has considerable effects on the waste paper market and our sector overall. **China's market power is undisputed** because it is and will remain the largest sales market for waste paper worldwide. It is estimated that the People's Republic will import around 19.2 million tons from Europe in 2018, about a quarter less waste paper than in 2017. In Germany as well as in the Land of the Dragon the **quality of waste**

paper is a constant theme: In mid-2017 China lowered the contaminant limit for imported waste paper from the previous 1.5% to 0.3%, which meant an almost total import stop. As expected this stringent limit provided ample scope for discussion – quite apart from the question of how the controls would be executed in reality. Every single bale would have to be opened! One of the consequences of changed environmental policies is a **high demand for pulp at significantly higher prices**, because China needs to satisfy its domestic market with more virgin fibres.

Opportunities for Europe

Eventually China set a **threshold level for permitted impurities of 0.5%**, which is not necessarily the last word on the matter either. These examples – import licences and changes in impurity limits – have had significant impacts worldwide, which may indeed be seen as **opportunities for European papermakers**: providing unusually favourable terms and conditions for waste paper stores that are well-stocked currently.

In addition, better quality is now available thanks to oversupply. **Less for China automatically means more for Europe**. Our continent continues to be at the forefront of recycling – and our waste paper utilisation rate is the highest globally.

Valuable Resources

With new packaging laws coming into force in Germany on 1 January, 2019, an additional impetus in terms of resource efficiency is quite possible. This law prescribes that the recycling rate for paper, cardboard and carton must be increased from the current 70% to 90%. Whether the already high waste paper utilisation can be further increased remains to be seen. Last but not least the **scarcity and therefore high cost of pulp** will keep us busy looking for **alternative raw materials**. It may be that soon grass, bamboo, stone or milk will win through as the main or supplemental components for sustainable paper production.

Growing demands on machine clothing

Even though production of graphic papers has been declining for years and the prospects remain challenging due to digitalisation, there will always be a core demand. What is indisputable, however, is that the shortfall in graphic paper with virgin fibre content leads to a **lower quality of the waste paper** that we use. This fact has negative consequences for all areas of



Desirable and valuable: waste paper raw material.

the paper machine and for the production process as a whole. As a result, **demands on clothing are significantly more complex** today than they used to be. Innovative forming fabrics such as Primoselect make an important contribution in terms of former hygiene and conditioning. Due to their diagonal structure, multi-axial felts from Heimbach offer excellent resistance to compaction as well as high functional flexibility. Shoe press belts (Yamabelt) consist of a

unique base layer and advanced polyurethane in order to withstand the stresses of millions of nip cycles. And in the dryer section "contamination resistant" dryer fabrics are Heimbach's answer to stickies and deposits on cylinders and rolls.

The more complex the conditions for raw materials become – the more innovative clothing must be. Our specialists in Research and Development, Application, Sales and

TASK develop products for today's challenges and work together with you to find solutions for tomorrow.



Bamboo grows quickly and is rich in cellulose.



Innovation and high tech in one: grass paper.

In Profile



Lars Breuer (left) and Marcus Neumann.

TASK plus Two Heimbach welcomes new colleagues

More and more paper manufacturers use measuring technology, because even minor improvements in and around the paper machine can have great effects. By employing Lars Breuer and Marcus Neumann we have added two new colleagues to the TASK team at the same time. Both share a passion for technology and a keen interest in paper. Here we provide a detailed introduction to our newcomers.

Breuer has been working in the Heimbach service department since September 2017: "My great-grandfather, my grandfather and my father all worked here before me", he proudly reports on the long family tradition. Truly remarkable, as you seldom hear somebody say: **"I have known the company for most of my life."** A nice thought.

Fascinated by machines

"If you want to become a master you have to start young", the German saying goes. This certainly applies to Breuer, who first put on Heimbach safety shoes **during his school and university holidays**, "being able to acquire practical experience in the company for several years". Motivated by

his keen interest in technology – in particular large-scale production machinery – he graduated from the University of Applied Sciences in Aachen with a Bachelor Degree in **Engineering, specialising in Energy technologies**. Over the course of his studies he acquired the theoretical tools of the trade and studied complex correlations.

A Team Player through and through

Breuer is a keen table tennis player: **"I have been playing for the Heimbach club for around 20 years"**, he recalls. This means that he has known his current employer for the same amount of time as he has frequented the south terrace of the Bundesliga football team that he calls "my FC Köln":

task.

Technical Assistance,
Service and Know-how

"As a Rhinelander I have cherished this club since my childhood". This coming from a man who confirms he is "looking forward to a **variety of challenges on different paper machines**" and who "cherishes team spirit". These words could just as easily have been spoken by Marcus Neumann, who has also been working for TASK since the summer of 2017.

Learning from the bottom up

Having trained from 2006 – 2009 as a paper technologist with a Düren-based manufacturer of speciality papers, he is now on the road, providing technical service: "I've come full circle", Neumann summarises. This circle not only comprises expertise in manufacturing but also in terms of machine technology. The active football player, who also enjoys travelling, gained an **additional qualification in mechatronic engineering** in 2013. Of course not just anywhere, but in the paper sector – with another company in the region. "A very enjoyable and important period in which I was able to apply previously acquired specialist knowledge", he recalls.

Continuing education and working at the same time

This was also the case after our technophile moved to a company specializing in calibration: "In less than four years **I got to know numerous measuring devices in great detail**", reports the passionate motorbike rider. Great background experience for advising customers as a member of TASK. Measuring technology is recognized as a critical factor when it comes to examining paper machines (see also: Paper Pete from page 14): "**Measurements are expected to yield meaningful results** – and calibration is highly significant for this", Neumann says. Besides calibrations and alignments his job also includes the repair of measuring devices;

it is always an advantage to have such knowledge on hand within the company. While still with his previous employer, Neumann successfully continued his training and graduated as a "**Certified Mechatronics Technician**". Theory and practice in harmony – just like when performing a service on site. Lars Breuer and Marcus Neumann: reinforcing TASK today, working for you tomorrow?

More on TASK?

Get to know the comprehensive range of services offered by Heimbach TASK: From status quo analysis to the most complex problem-solving using state of the art measurement equipment. An email to info@heimbach.com including the key work "TASK" is enough.



Tracking mass variations

Measure with ODIN – forget barring

Hello, dear papermakers!

Many of us know of it – nobody likes it: barring. Unwelcome irregularities that are sometimes only visible during end processing. As a rule, such abnormalities are the result of mass variations. This is a problem that is frequently only identified in the laboratory because on-machine diagnostic systems are not able to measure with sufficient frequency. Or, to put it more precisely: they are unable to detect MD mass variations in the paper sheet. This is where ODIN comes in – a special measuring fork with an appropriately higher scanning frequency.

I recently participated in a round table discussion of experts on the subject of barring and took copious notes. So today I am drawing from our “in-house” practical experience for your best practice. My colleague Janek Schiefer, who inspects paper machines for TASK on a regular basis, began by showing an illustration which you can see in fig. 1.

Tracking density

This is not a real-life photograph; it is a computer-aided visualisation that helps to illustrate the core problem in the plan view. This is because, when we **speak of “mass**

variations” we mean a change in density.

In the image these differences are simplified, with the white areas indicating increased density. In order to obtain such findings it is invariably necessary to use the ODIN system, as scanners installed on paper machines are usually only able to measure or scan up to a maximum of 100 Hz – compared to the **measuring fork used with ODIN, which is capable of scanning up to 3,000 Hz!** Let's illustrate these figures by means of an example: A paper machine runs at 1,200 m/min; the distance between MD variations is 150 mm.

Values prove facts

The scanner measures 100 times per second (100 Hz), **ODIN records 3,000 measurements in the same time period:** “In order to detect a fluctuation at all you must measure at least 2.1 times per barring period”, Janek emphasises. In our case study we are dealing with 150 mm; **therefore a value must be obtained at least every 70 mm.** The on-line scanning equipment cannot achieve this since its scanner only samples at a distance of 200 mm (corresponding to 100 Hz). By contrast, ODIN collects data every 6.6 mm (3,000 Hz). It is immediately obvious that the frequency of the on-line

Mass variation

150 mm

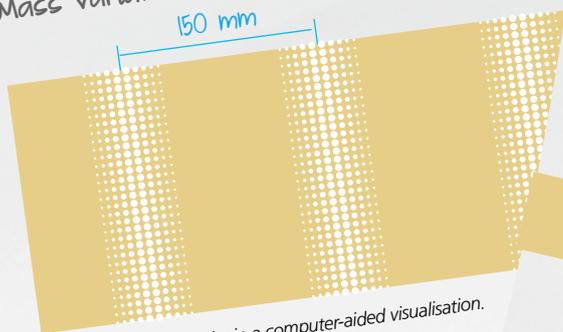
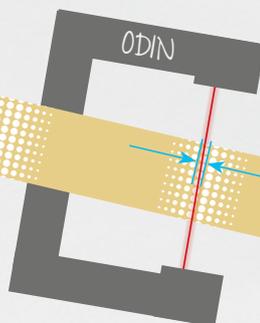
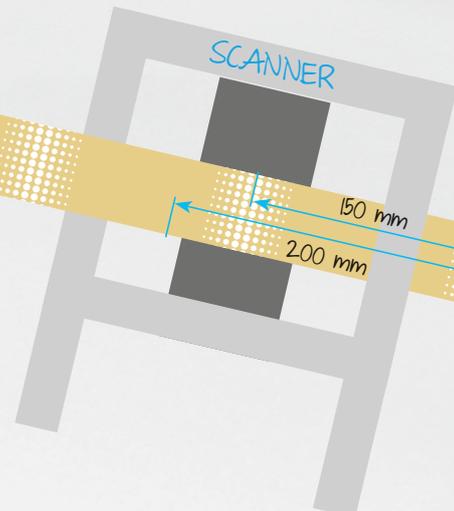


Fig. 1: Increased density in a computer-aided visualisation.



6.6 mm



SCANNER

150 mm

200 mm

Fig. 2: ODIN and scanner shown schematically.

measuring system is not sufficient, while the ODIN system can be regarded as a guarantor of precise measuring (see fig. 2). **These facts are crucial for papermakers** when customer satisfaction is paramount.

Suitable for every paper grade

The type of paper you produce, whether graphic, tissue or packaging, is irrelevant for the test – it makes no difference. In general, however, there are a few prerequisites that have to be met **in order to make measuring possible at all**. During the entire process the machine speed must remain constant. Furthermore the paper web must not be too opaque! After all, ODIN transmits a light beam through the paper sheet in order to achieve results – in some cases this might mean that filler material or the density of a particular paper grade may preclude the use of ODIN. **This is, however, not very often the case** – as Janek summarises: “As a rule paper webs of up to 140g/m² can be scanned.” Below this threshold sheets are nearly always sufficiently translucent to permit successful measurement.

Process logic decides

Let’s now take a look at the actual process. As always the following applies: start at the front, finish at the end. At this point, however, we should be clear that, when determining periodic MD mass variations, “front” actually means “end” since **the first measurement must always be carried out just before the reel-up** (see fig. 3). Why do we begin at the end? Because we know for sure that at this point the actual faults already exist and therefore can be detected by measurement. Here several barring frequencies (or just one) can be recorded in order to start searching for the precise location of the origin of the problem. **This is done against the machine direction by a process of elimination**. Simply put each barring has

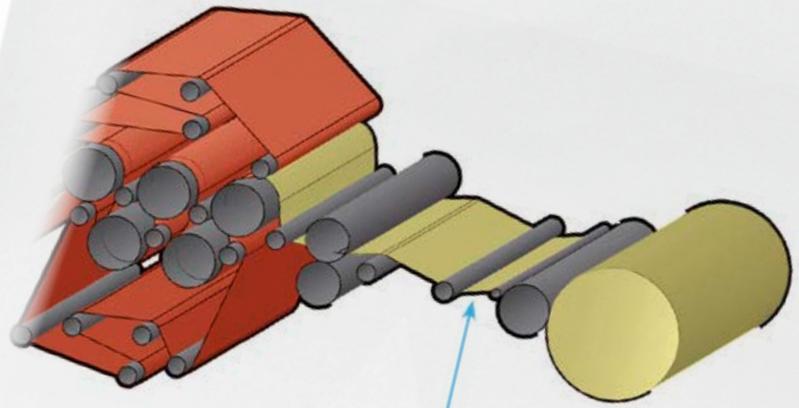


Fig. 3: The first ODIN measurement is always taken directly before the reel.

one – or several – sources which must be spatially located. It is exactly this localisation that is an important element of the ODIN measuring process.

Precise and reliable

Once the source of the barring is known the cause can be identified. This is done either by vibration measurement or by recording the speed of a rotating element (such as roll, pump, separator). In our case study fig. 4 shows the result. **At exactly 150mm, the mass densification is present.**

This value corresponds to a barring frequency of 133.33 Hz. Please bear in mind: The diagram **could** also show 2, 3 or more variations. This would mean having to find several sources of faults, about which we will not go into detail here. The key here is finding the **one original** factor that is responsible for the disturbance that we identified at 133.33 Hz. →

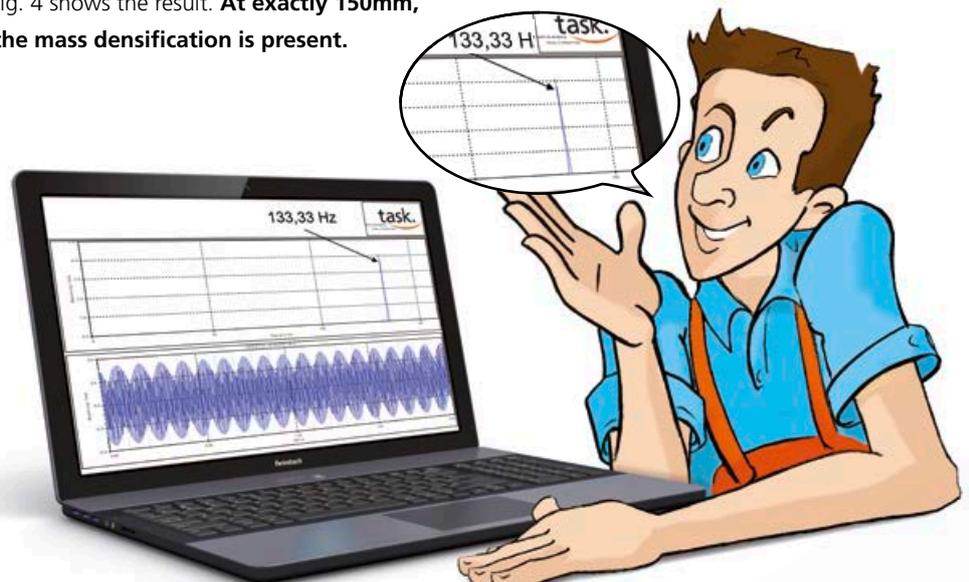


Fig. 4: Clear peak – clear fault, at 133.33 Hz.

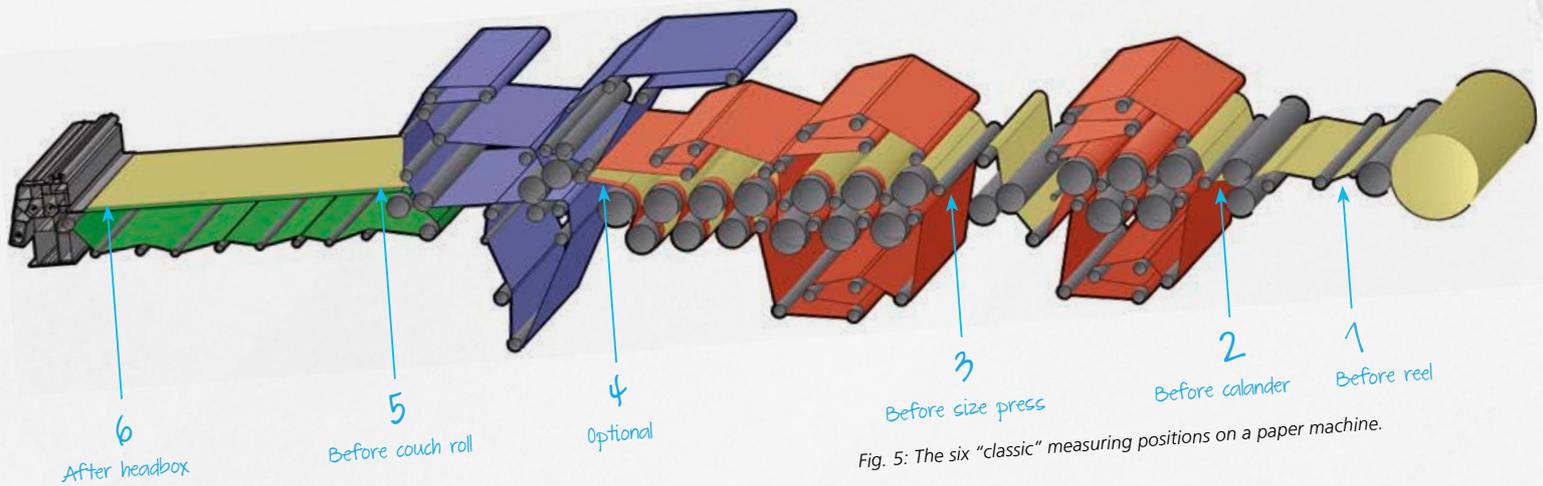


Fig. 5: The six "classic" measuring positions on a paper machine.

Point by point

Let's take a look at the entire paper machine, limited for the purposes of this article to the path from headbox to reel (fig. 5).

The classic measuring points are numbered from one to six. Let's consider the other five, after having found at position one what the status of the fault was just prior to sheet reel-up. Measuring point number two is before the calender. Should the "133.33 Hz fault" **disappear at this point** we would know: One or more of the calendar rolls are the cause of the barring, which we would then be able to verify by means of vibration measurement. However, since measuring shows the same fault at this point we proceed step by step. At point number three we carry out our measurements **before the size press**.

Everything is relevant

The fourth measurement is taken between the **press and the dryer sections**, though this is optional as it can sometimes be difficult to obtain access here. ODIN's fifth measurement is at the **end of the forming section** (near the couch roll, photo 1). The sixth and last of these "classic" measuring positions is located directly after the headbox. Everything must be looked at, and nothing must be missed; **every single component with direct influence on the paper sheet must be considered as a**

causal factor – vacuum pumps for example. In addition, water circulation, filler content, chemistry can have an effect – the list of possible sources of barring is long.

Beyond the machine

In principle, everything concerned with air, stock and vacuum systems requires special attention. As Janek states, **"Rolls rarely act as triggers, pumps much more often"**. Also, any sizing process, screening system, suction boxes or forming fabric vibrations come into consideration. And, we have to admit, clothing can also occasionally be a cause. Anyway, back to our Case Study. Our "133.33 Hz problem" was still with us at the forming table – **leading us on to the upstream process**. We needed to look at the stock approach of the machine, for which the same applies as before: If an irregularity is present here already this can still sometimes be preserved all the way to the reel.

Small unit – big effect

In some instances, the paper machine itself can actually be helpful, as several inconsistencies that could be responsible for barring may even **be "ironed out" on the machine**. This term is very fitting – our TASK colleagues regularly discover that different machine parts are able to offset a large part of the

barring that occurs. This did not, however, apply to our case, and we were forced to look elsewhere. How, then, to find the fault? Quite simply we **moved the testing to the stock approach unit just behind the last measuring position** – where we had a positive result, which brought the pressure screens into focus. Here, where the screens transport the stock through the pulsation dampeners to the headbox, we found a frequency of 33.33 Hz. **Source of fault identified.** Why? Because the screen has a rotor with 4 blades, and $4 \times 33.33 = 133.33$ (see photograph 2).

Clarity for all involved

Wear and tear had taken place in this component – quite normal once standard lifetime had been achieved. The result of this advanced wear was greater pressure fluctuations, which the dampener was no longer able to cushion sufficiently. The screen was therefore also responsible for the barring seen in the finished sheet. Now that the cause was known, maintenance personnel could check and repair blades, basket, blade distances and slot widths as necessary. The process of elimination has worked again – with the ODIN measuring fork. A tool, by the way, that was specifically developed for such applications. It is made of high-strength carbon and weighs only two kilos.

A true “lightweight” that allows you to accomplish heavyweight work.

Fast facts

Previously heavy metal devices were the rule – backbreaking work! **It’s good that nowadays everything is high tech,** which applies not only to ODIN but also its various “partners”: The data is transmitted via a measuring amplifier to a telemetry system, and recorded wirelessly by a laptop (see photo 3). The high performance software of the computer then performs a Fast Fourier Transform (FFT) and breaks the time signal of the measurement down into individual frequencies – **the facts are now available.** A complete ODIN measurement including evaluation usually takes a day: “In the case of particularly complex machine peripherals evaluation of the individual components will of course take longer”, states Janek.

Forward-looking actions

But even if it needs a little patience now and then until certainty is established: In the end it is you, dear customers, who always benefit from the measurement of possible mass variations. This is not only the case when barring is already visible – preventative measures also pay off in the end. Damage to units or machine elements can also be verified before barring occurs, with subsequent prevention of production losses. Through this kind of regular maintenance paper quality is kept at a consistently high level. Furthermore, and once faults have been located, paper technologists have access to important – and valid – information to allow them to efficiently plan repair stoppages.

All the best,

Your Paper Pete



Photo 1: Measuring point 5 before couch roll.



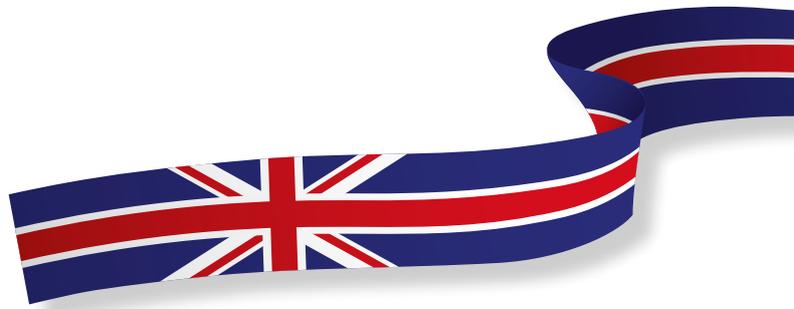
Photo 2: Vertical screen with four-blade rotor.



Photo 3: The ODIN measuring device.

Forming at its best

A Portrait of Heimbach UK



Producing wires and fabrics for the Paper Industry for over 200 years – that is how we could summarise the core competence of Heimbach UK. The site employs around 100 personnel, who produce up to 160,000 m² of high quality and innovative forming fabrics every year. Located in the Northern city of Manchester, which is also home to the twin football powers of United and City, our forming experts apply similar passion and professionalism to their work to find customer-oriented solutions. You can see what is behind it all in this article.

A glance at the corporate chronicle reveals that the **forming roots of the site date back all the way to the 18th century**. The earliest predecessor of today's factory was founded in 1790 to produce metal wires, and the company has carried the name "Heimbach UK" since 1991.

An established team

In Manchester, "forming strands" come together – in the truest sense of the word: Everything that is planned and developed here forms the foundations for the production and sales of forming fabrics worldwide. International co-operation and greater customer proximity are the keywords. There are

many milestones that underline the technical innovation of a skilled workforce that meets ISO 9001 quality criteria (see Fig. 1). One such example would be the introduction, in 1998, of the first **SSB forming fabrics**. This revolutionary solution quickly conquered the market **under the name Primobond**, as did classics such as Primoplan and Primocross. All in all, products that gain consistently high marks with excellent results to this day – just like Primoselect.

Pioneering achievements that convince

Whilst, with the introduction of SSB fabrics, Heimbach was "only" one of the pioneers, what has followed since has shown an

exceptional talent. Why? Because in 2013 the era of **Primoselect, a patented multi-layer forming fabric comprising a single integrated binder yarn**, began. The unique flexibility provided by the single binder yarn opens up unprecedented design choices that are much-appreciated by papermakers and applications personnel alike. Primoselect, therefore, is certainly not the last innovation. It really is a never-ending story: or, as the saying goes in Manchester: we are only as good as our last fabric and cannot rely on past achievements. **And this applies to all fabric types** – whether you produce graphic papers, packaging or tissue the portfolio offers the right design for every requirement (see Fig. 2).

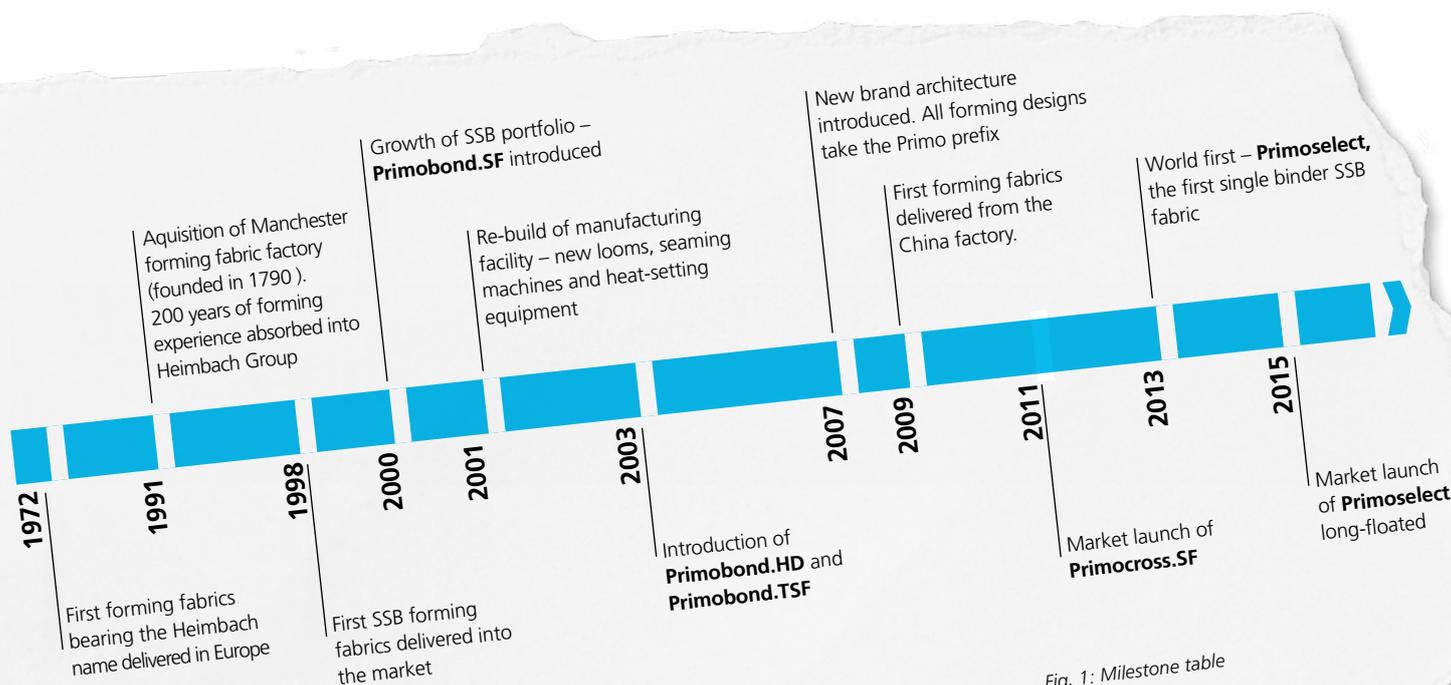


Fig. 1: Milestone table

Forming A-Z

A state of the art machine house shapes the picture in production. A combination of 24 shaft weaving and projectile shuttle technology makes the site a centre of excellence for demanding SSB fabric production: which means **longer lives, optimum drainage, lower energy consumption and increased productivity**. Machines never stop; the workforce is active 365 days a year, around the clock. Customers are supplied worldwide, supported by an **international development group, and a flexible production team** that harmonise perfectly. It could be customer- specific clothing advice, or the specialised diagnostic and problem-solving service provided by our HOME and TASK teams. There is a solution for every need. →



Product	Suffix	Design	Pulp	Board	Fluting	Kraft	Fine	News	Magazine	Magazine coated	Extra Fine	Tissue
primoplan	HD	Double Layer		✓	✓	✓						
primoplan	F	Double Layer		✓			✓					✓
primobond	HD	SSB		✓	✓	✓						
primobond	F	SSB		✓		✓	✓	✓	✓	✓	✓	
primobond	SF	SSB					✓	✓	✓	✓	✓	✓
primocross	SF	SSB					✓	✓	✓	✓	✓	
primoselect	P	SSB (new)	✓									
primoselect	HD+	SSB (new)		✓	✓	✓						
primoselect	F	SSB (new)		✓	✓	✓						
primoselect	F+	SSB (new)		✓	✓	✓	✓	✓	✓	✓		
primoselect	SF+	SSB (new)					✓	✓	✓	✓		✓

Abb. 2: Forming fabric portfolio at a glance.

On-site Services

- Installation and start-up assistance
- Drainage measurement
- Caliper and tension measurement
- Photographic fabric control
- Fibre carry measurement
- Minor repairs
- Control of guide, tension rolls and cleaning devices
- Checking condition of drainage elements
- Troubleshooting
- Analysis of MD mass variations (ODIN)
- Speed Measurement
- Thermography measurement

Laboratory

- Forming Fabric Lab Reports
- Paper analysis
- Stock analysis

Abb. 3: The forming service package offered by HOME and TASK.



Photo 1 – training completed – congratulations to all involved!

Service that pays off

Our employees analyse paper samples and forming fabrics with specialised measurement and diagnostic equipment to determine properties such as caliper, shear, or air/water permeability. Based on these findings, we are able to make **reliable statements concerning the quality and performance of our clothing** – at any time of the day or night. Of course, modern technology alone does not suffice: motivated and competent personnel are essential at all levels. Employees from both production and administration at Heimbach UK are required to undergo a tailor-made internal learning programme: **specialist skills are taught and personal development encouraged**. The latest group to complete this stage is shown (see photo 1).

Modern organisation

Lean is firmly established at Heimbach UK, as it is in all our sites. In particular during these times of accelerating digitization it is important that the site guides its employees directly in their work environment, implementing potential improvements at the workplace, rather than via a computer. Only in this way can the high quality and reliability of a forming fabric be guaranteed. It is with this in mind, for example, that work instructions are no longer written in text form, but are instead highly visualised



Photo 2 – clearly structured and highly visible – Standard Operating Procedures.

(photo 2). This has the effect of significantly increasing both comprehensibility and acceptance. The processes described there are continually scrutinised, measured and improved with the help of the staff who implement them.

Creating added value together

The group applies the unchanging principle **“improve and grow together”**- the core component of the “Heimbach 2020” corporate strategy, which includes customers, partners and suppliers. Within this community, success sets in faster, and more can be achieved, if **everyone pulls together**. This is also the principle in Lean Management,

which has since become a part of the working culture. A lot can be made to happen, when everyone understands what it is all about. Thus, self-initiative is expanded and confidence is promoted within the organisation as individual strengths. Processes and lead times become shorter, and decisions are made independently. Knowledge of these management principles does not only provide an internal pay-off. Heimbach UK is **part of a nationwide business network** where the organisation can connect with employees of other companies and share their experiences.

Two rivals – one city:
Manchester City and
Manchester United.



Transparency is valuable

In addition to this “Best practice organisation” **customers who take advantage of our “open door” policy can also benefit.** This concept was last used by Dutch papermakers from Parenco and de Hoop, who returned home impressed by our standards, manufacturing and organisation (photo 3). A nice compliment indeed for Heimbach UK personnel, who also like to meet up outside of the offices and factory both to socialise and **raise money for charities (photo 4).** **Teamwork at the forefront** – which also applies to your tailor-made forming solutions.



Photo 3 – Customers from the Netherlands visit the plant.



Photo 4 – For a good cause – reaching the summit of the highest mountain in Wales.

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Online Tipping game



Food Retailer Commits to Paper Plastic disappears

It's not a new problem: waste, especially plastic, pollutes the oceans, forms carpets of refuse on beaches and – not least – contaminates the human food chain. Great, then, that change is coming! The British food retailer ICELAND has taken up the fight against plastics. By the year 2023 all own brand products are to be packaged in an environmentally friendly way – and of course paper plays a major part in this.

On 16 January of this year the European Commission published a strategic paper outlining the different ways that plastic waste can be reduced on our continent. The theme was: **more recycling – less waste**. Richard Walker, managing director of ICELAND is leading the way in this respect.

Exemplary approach

The company, which comprises around 900 supermarkets in the UK, is the market leader for frozen food and has voluntarily committed to completely eliminate all plastic-containing outer packaging from its own brand portfolio within the next five years. **Paper and cartonboard are taking control!** According to Iceland, the company

is the first to take positive action globally. “Good timing”, we might say as Walker also communicated this to the outside world on 16 January. And while the EU plans to make “all plastic packaging on the EU market recyclable from 2030” (only), **ICELAND will have achieved this aim long before**. Good, that there are always those who lead from the front!

Alarming facts

In the UK alone effectively one million tons of plastic waste are generated per year; and this figure only refers to the rubbish accumulated by British supermarkets every twelve months. Other figures illustrate the extent of the pollution in even more detail.



Photo 1: Bag-in-Box® for engine oil: environmentally friendly, sustainable, practical.

According to estimates more than **twelve million tons of plastic end up in our oceans every year**. Frans Timmermans, First Vice President of the European Commission, notes: “If we do not change the way we manufacture and use plastics there will be **more plastic populating our oceans than fish by 2050**”. Even today it can be observed that more and more caught fish are contaminated with plastic. This is not surprising as according to an EU source nearly 60% of all plastic waste consists of packaging which can be absorbed by marine animals as tiny particles. It is, therefore, perfectly logical that ICELAND should take this as its starting point.

Imitators welcome

Walker's initiative has been met with wide approval. Giving priority in the future to containers made of paper and pulp as well as using completely recyclable paper bags sets a **good example for an entire industry**. A business sector that is able to set trends,





ICELAND managing director Richard Walker with paper-based packaging.

as the food retail trade has massive influence on consumer thinking and behavior. Even more influence, possibly, than politics or journalism. Not surprisingly, John Sauven, head of **Greenpeace UK, also welcomes the initiative.** He does, however, point out at the same time that other retailers are more reserved when it comes to following ICELAND's example. This is not the only criticism: There are also complaints that the British company's initiative only concerns its own brands. While this is, of course, correct, it is clear that Walker's influence can only be limited to his own company. To this extent **his plans should be supported** and others should be urged to follow. It would certainly be a mistake to criticise good intentions.

Quality comes first

There is no question that consumers prefer plastic-free packaging. A British market research organisation identified strong public support: **80% of 5,000 respondents would agree if supermarkets stopped relying on plastic.** 91% of those questioned would even explicitly recommend such food retailers. And almost 68% believe other retailers should follow the same route as ICELAND. These are **good conditions for producers of packaging papers,**

particularly since we may assume that similar opinions are expressed in other European nations. Protecting marine life and maintaining food quality is imperative. Lobbying by the paper industry will also play an important role here. **The more political awareness regarding paper as packaging material is raised,** the more likely that parliamentarians will create paper-orientated frameworks.

Multitalented Paper

PRO Carton is criticising the EU strategy. Even though they welcome the questioning of plastic materials, **a clear endorsement of paper is missing.** Also, the EU draft does not envisage the possibility of taxing non-recyclable plastics. The latest product development by Smurfit Kappa proves that it is worth looking for plastic-free or plastic-reduced solutions: The Irish company brought to market environmentally friendly packaging for engine oil called Bag-in-Box®, which in comparison with traditional plastic bottles consumes around **85% less material.** The innovative aspect is a reinforced bag inside the box (see photo 1): It consists of a combination of polyethylene and nylon layers, reducing odour and preventing oil migration.

Sustainable and practical

The bag is highly resistant to cracks caused by bending – thanks mainly to strong seals and a sturdy film. All around it: the packaging is paper – with an integrated tap, needless to say. **Examples such as these underline once again the sustainability of paper!** Let's work together to create new opportunities – so that what gives this column its name will continue to be valid in the future.



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- ensures exceptional **uniform pressure distribution** in the nip
- grooved roll side for smooth water flow
- **high dimensional stability** for safer running