

# World Pulp & Paper

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# Coarse or fine? A suitable design!

By **Franz Kiefer** and **Jochen Pirig**, Heimbach GmbH & Co. KG

As a specialist and market leader for non-woven and multi-axial press felts, Heimbach has proven press felt technology: pre-existing woven fabric or non-woven fabric structures can be combined with a multi-axial non-woven structure.

“These flexible and adaptable Atrojet modules are the dawn of a new era in press felts” said Franz Kiefer, who, together with his colleague Jochen Pirig (both Strategic Product Managers), supervised the R & D project launched in 2011 from the very beginning. The development project amalgamated not only the experience gathered over the years at Heimbach, but also the results of a series of field trials with customers in Europe and Asia. The main focus was on an expansion of the spectrum of yarn material and counts. “In this respect we no longer wanted to be limited,” commented Jochen Pirig. The actual objectives were clearly formulated: Fast start, high dewatering and high service lifetime.

As the first manufacturer in the world to combine a multi-axial non-woven structure with conventional woven bases, the company from Düren revolutionised its proven press felt technology and can now offer tailored, flexible and adaptable base combinations in its Atrojet product line. The name chosen for the new product

**“the crux of the matter is the lamination, and the knowledge of how the process parameters are kept constant”**



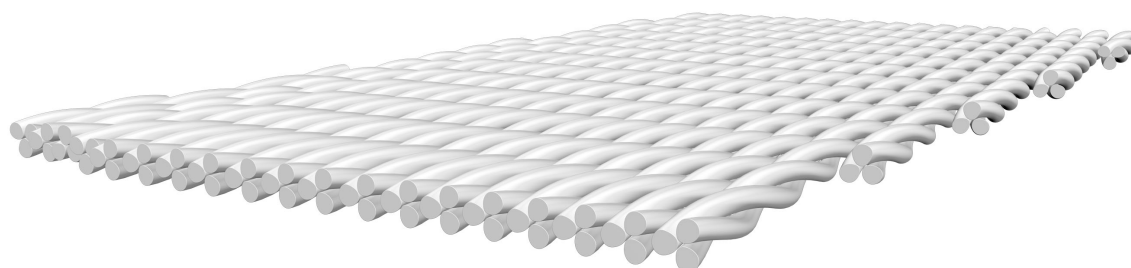
**Figure 1.** Franz Kiefer (left) and Jochen Pirig, Strategic Product Managers at Heimbach

line is no accident: the suppliers want the paper manufacturer with the innovative Atrojet felt design to discover new shores!

Atrojet technology is globally unique and can be adapted to the individual requirements of each application. To achieve this, Heimbach designed a specific paper side Atrojet base module and combined it with existing base modules. The resulting multi-axial non-woven base offers far greater

flexibility in the composition of both yarn and twisted yarn structure than conventional non-woven or woven structures. The selection of a suitable base in the substructure enables tailored felt designs. Understandably, Messrs Kiefer and Pirig would rather not reveal too many details of their secret part of the manufacturing process, but they are prepared to confirm that “the crux of the matter is the lamination, and the knowledge of how the process parameters are kept constant”.





**Figure 2.** *Atrojet module*

The uniformly directed MD yarns are characterised by high symmetry and precision spacing

## GLOBALLY UNIQUE

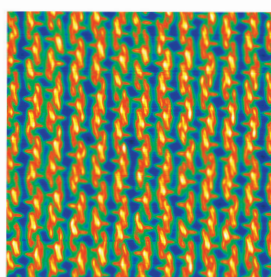
The success of Atrojet is down to an incredible flexibility of both yarn material and yarn counts. Whether from very high, dense yarns with thin twisting or monofilaments, or from more moderate or low yarn counts, Heimbach tailors each module to fit closely to the felt properties requested by the customer. Atrojet technology also enables the processing of different yarn geometries. The uniformly directed MD yarns are characterised by high symmetry and precision spacing. This homogeneous structure enables key felt characteristics to be emphasised and improved. The uniform, machine direction (MD) yarn structure has a positive effect on the absorption of tensile forces; in turn, this gives enhanced strength and makes a major contribution towards an economical service life.

With its particularly dense MD yarn structure, Atrojet has far greater surface contact and homogeneity than conventional bases. This brings about a more even power transmission in the press nip and results in very uniform

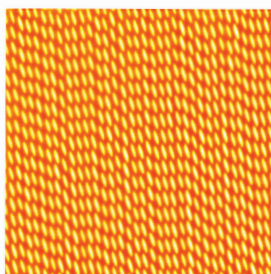
dewatering as well as a uniform paper CD profile. Atrojet designs can also have a positive influence on paper surfaces in regards to its smoothness and printability. This is of importance for the graphic paper sector and also in packaging field, where the demands on printability are

continuously growing.

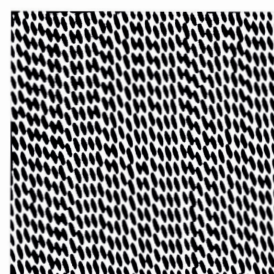
More open felt designs usually improve void volume retention and allow particularly effective cleaning of the press felt. This is particularly important for machines with a larger range of paper grades and a selection of different raw materials.



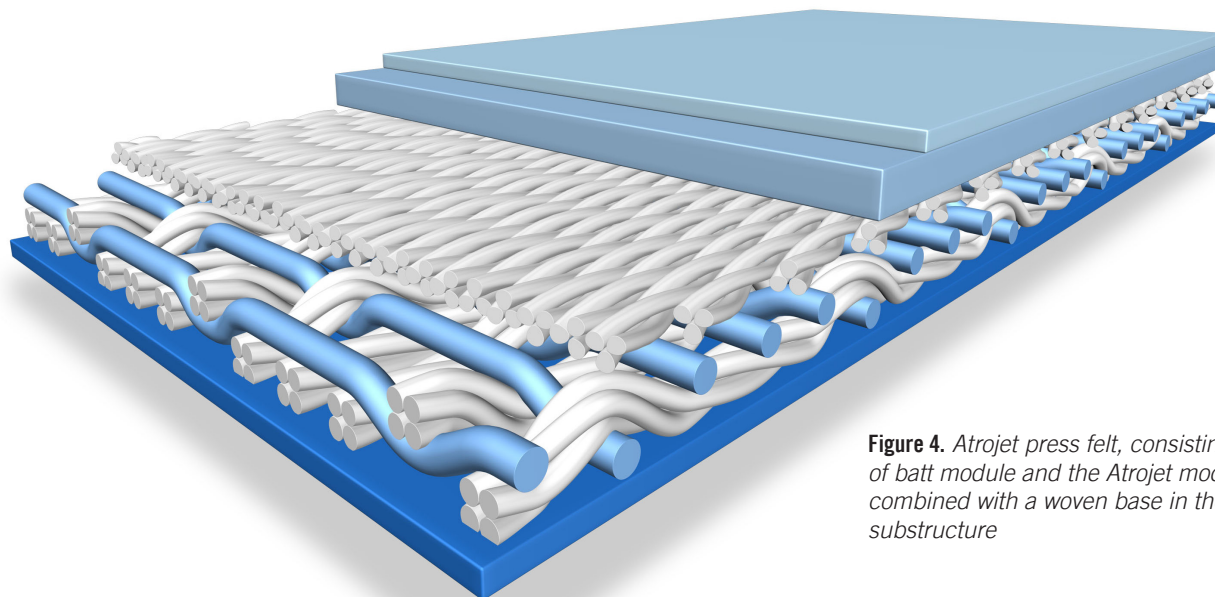
Conventional base - 41.1 % contact surface



Atrojet base - 96.4 % contact surface



**Figure 3.** *With its uniform machine direction yarn structure, Atrojet has far greater surface contact than conventional bases. This leads to more even pressure transmission at the press nip resulting in very steady dewatering and even CD profiles*



**Figure 4.** *Atrojet press felt, consisting of batt module and the Atrojet module combined with a woven base in the substructure*

#### TISSUE IN FOCUS

The production of tissue paper makes extremely high demands on the press felt: a high degree of dewatering must be achieved at extremely fast running speeds. Also a new press felt has to reach optimal performance within just a few hours. Another consideration is: when drying, energy requirements (gas and steam consumption) demand greater consideration than in the production of graphic papers. The fine fibre batt layers typically used means that tissue felt has a tendency toward compacting and contamination.

Here, Atrojet press felts can have a particularly positive effect thanks to their tailored adaptation. This makes them ideal for use in the tissue sector – one with very specific manufacturing requirements. The adaptability of the yarn structure enables the implementation of an extremely compact and very fine Atrojet module. This can, for example, be combined with an open substructure.

#### REDUCING ENERGY REQUIREMENTS

An Atrojet press felt used in tissue

production opens opportunities for actively optimising energy requirements: the fine, homogeneous Atrojet MD yarn structure enables fast start-up and the highest possible dewatering. The best possible contact area yields optimum pressure transfer and contact pressure on the Yankee cylinder.

Selecting an open-textured roll side base enables the press felt to be cleaned more efficiently; it also improves the resistance to compacting and contamination – thus potentially increasing the service life of the felt.

Unsurprisingly, Heimbach take an optimistic view of their market share potential, given the growth currently being experienced in the tissue sector. “With this product we wish to make future inroads into the tissue sector to a much greater degree than we have so far” confirmed Mr. Kiefer.

#### AT THE CUTTING EDGE

“The paper industry is our pacemaker,” summarised Jochen

Pirig. “The range of raw materials is constantly expanding, as is the range of products”. He considers Atrojet to be a product that meets the needs of the future “because this felt does not need to be changed, even when changing between batches of raw materials, or rapidly changing recipes and grammages”.

Many of the customers in whose premises Heimbach conducted test runs have already placed repeat orders; the potential for this new technology seems to have been recognised. The company has invested a seven-figure Euro sum in its Olten facility in Switzerland. Within the Heimbach Group, the Olten facility is considered a competence centre for multi-axial products in web technology. Atrojet production at Olten should be in full swing by the end of the first quarter, 2016.

Franz Kiefer and Jochen Pirig are certain: “Atrojet represents the next evolutionary step in felts sector. Here we are presenting the product that will dominate through the next decade!”

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