

# *h.w.com/quarterly*

Communication by **Huyck.Wagner**

Issue 4 – December 2011



## *content*

### *editorial*

Offensive product innovation  
bears fruit 2

### *newsflash*

Short reports 3

### *cover story*

EDC forming fabrics – a field  
report from Stora Enso's PM 1  
at the Sachsen Mill 4

### *product news – forming fabrics*

...Twin track to top  
paper machine runnability 7

### *product news – press felts*

Bestseller sets record 8



## Offensive product innovation bears fruit

Although the economic environment is still challenging, the current year has overall been a successful one: The order entry has developed satisfactorily. Especially production of the Gloggnitz plant is fully loaded. Contrary to 2010, there have been no extraordinary burdens encumbering our performance. We have passed the stress test of the financial restructuring process with flying colors and can now fully concentrate on our core business. Above all, we see these positive results as proof of the success of our dedication to constantly improving our entire product range.

In our role as the leader in sustainable innovation with respect to paper-machine clothing, we have this year revolutionized the forming fabric sector by introducing the patented EDC technology. In addition, the product segment has been enriched by the new EnerSTAR material technology, aiming at a reduction of the power consumption and achieving remarkable energy savings. In the pressfelt area, we have launched the new IMPACT product family, which is characterized by its unique yarn assembly and recognized for the benefits it offers. Recently, we also launched ProSeam, the latest seam felt generation fit for a variety of applications. This is the first time that we can offer our customers an innovative seam felt also for their shoe press positions. Papermakers who have installed our new clothing have given us positive feedback across the board. Not only have our innovative products resulted in a more efficient paper production, but they also counteract the cost drivers such as raw materials and power consumption. The best proof of how well our modern forming fabrics and pressfelts are received is that today, half of our sales are realized with products that have been developed only recently.

Therefore, our innovative spirit and commitment will continue to play a vital role in our business in the future. We want to be more than just a competent advisor; we like to think of ourselves as a loyal partner to papermakers. We want to work together with you to seize the opportunities for sustainable growth: we sincerely appreciate your confidence in us and look forward to continuing our constructive collaboration. We are always open to your requests and suggestions. Just take us at our word!

We wish you happiness, health, hope and success in the coming year, both personally and professionally.

Kind regards,

A handwritten signature in blue ink, appearing to read 'E. Kerschhofer', with a long, horizontal flourish extending to the right.

Ernst Kerschhofer  
Vice President Marketing & Sales EMEA

### Lower Austrian innovation prize goes to Huyck.Wangner Austria

In October, the Chamber of Commerce of Lower Austria sent out invitations for its twenty-fourth innovation prize (Karl Ritter von Ghega prize), to be presented at the Grand Casino in Baden. The award is handed out annually to commercial and industrial companies in the state of Lower Austria that are innovation performance leaders in the areas of product, process and services. The proud winner in 2011: Huyck.Wangner Austria! In addition to being named the “Lower Austrian Innovation Prize Winner”, which includes a cash award valued at EUR 10,000, the winner is entitled to enter the contest for the “Austrian State Prize for Innovation”.

Huyck.Wangner Austria submitted its latest flagship **Impact** felt technology in the category „Large Companies and Corporate Subsidiaries“ and was again successful. Admittedly, Romer Labs Diagnostic GmbH was able to snag first place with its strip test for allergies, which aims to improve food safety.

State media covered the award ceremony, which was followed by a very interested public.



From the left: Dr. Petra Bohuslav, State Minister and representative of Lower Austria, DI Klaus Haiden and Marietta Riemer from Huyck.Wangner and Dr. Christian Moser from the Chamber of Commerce of Lower Austria.

### Northern Europe's sales teams reinforced

Sweden and Finland are extremely important markets for paper machine clothing suppliers. The countries are home to striking, modern paper machines, especially for graphic paper, which can serve as excellent international references. The major paper corporations UPM, Stora Enso and SCA are also headquartered there. A strong sales team that keeps in close contact with customers is thus very beneficial to suppliers.

In order to serve its customers even better, Huyck.Wangner recently added highly qualified staff to its Northern European sales teams and is pleased to welcome the new employees on board.

#### New in Sweden

**Jens Erik Nokleby**, former production supervisor at SCA and most recently working in the paper machine clothing industry

#### New in Finland

**Kimmo Sarin**, former production manager at several UPM mills and most recently project manager at UPM.

**Matti Muurinen**, production manager at SAPPI before joining Huyck.Wangner.

**Katariina Laplace** brings several years of experience in the PMC felt and dryer fabrics industry.

**Heikki Mikkolainen** also has many years of experience in the PMC industry for press felts.

### Munich university students visit Huyck.Wangner in Reutlingen

In late October, Huyck.Wangner in Reutlingen had some interesting visitors from Munich. Christopher Herz, last year's talent award winner, had organized a study tour together



The students from the Munich university were impressed about forming fabric production...

with his fellow students in order to have a closer look at the manufacturing of paper machine clothing – forming fabrics to be exact. Prof. Stephan Kleemann, head of the Process Engineering – Paper and Packaging/Master of Engineering in Paper Technology course accompanied the group of twelve students. After a brief introduction into the theory of paper machine clothing, Oliver Baumann, Technical Director Forming Fabrics Europe and Andreas Päch, Marketing Director Forming Fabrics Europe, led the visitors on a factory tour and expanded on the individual steps in the manufacturing process – from the drawing board in the R&D department to warping, weaving, seaming and heat setting. The students expressed considerable interest during the visit and during the subsequent Q&A session, questioned their hosts at length on the necessary qualifications to enter the field. Huyck.Wangner will be most pleased if one or two of the students end up in Reutlingen after earning their degrees.



... and showed big interest – like i.e. at the seaming section.



## EDC forming fabrics – a plus for paper quality and production

A field report from one of the first installations: Stora Enso's PM 1 at its Sachsen Mill in Eilenburg, Germany

For over a decade, structurally bound forming fabrics have dominated the field in paper manufacturing and have established themselves as the de facto clothing standard. SSB technology, developed and patented by Huyck.Wangner and launched in 1999, has passed its prime. Against the backdrop of a steadily tightening business environment, most notably reflected in rising energy and raw material costs, the clothing specialist has once again introduced a groundbreaking technology, EDC (Engineered Drainage Channels), ringing in a new era for forming fabrics that offers papermakers a significant edge in manufacturing and resource efficiency. This field report on Stora Enso Sachsen GmbH's PM 1 in Eilenburg, Germany, demonstrates how EDC forming fabrics have to date proven themselves as a successor to structurally bound fabrics in practice. The company installed and successfully tested one of the first *apexx* EDC forming fabrics.

The key specifications of a forming fabric are flawless sheet forming for top paper quality, optimal retention of fines and fillers and an open sheet structure to provide efficient drainage. Its primary task is to dewater the paper furnish and form the initial sheet. Its performance characteristics therefore largely determine subsequent sheet

forming and paper machine runnability. The wire section's drainage capacity decisively impacts paper quality and production efficiency. Perfect sheet forming requires that the initial fiber mat have a sufficiently open structure and adequate permeability to provide easier drainage along the entire former and ensure flawless formation.

The key objective of the new EDC forming fabric technology is to control dewatering during this critical initial sheet forming stage and regulate it to optimize drainage characteristics. At the same time, it puts an end to the limitations still exhibited by SSB fabrics. Despite steady enhancement and quite respectable drainage performance, further technical improvement of these products is now no longer possible.

### **EDC – revolutionary forming fabric technology with customized drainage channels**

Unlike structurally bound forming fabrics, where the development spotlight was always on fabric structure, the completely new, patented drainage channels of the EDC designs, closely tied to the fabric's paper-side topography, fundamentally improve the wire section's drainage performance.

Conventional SSB forming fabrics have a limited free paper side surface area and the drainage channels opening toward the running side; as a result, they form a relatively dense sheet that resists drainage to a certain extent.

Since the flow rate on the paper side of the forming fabric strongly influences the porosity of the fiber web and thus the mobility of the fibers, the new EDC technology's drainage channels are designed for a large free surface on the paper side. This keeps the flow rate at the sheet forming stage low and the initial sheet open. At the same time, the drainage channels to the running side are closed. This controlled dewatering process ensures that the initial sheet is formed gently.

In order to effectively implement the new drainage channels, the fabric structure also had to be redesigned. The fineness of the monofilaments used also improves fiber support, since it optimizes fabric caliper and pore volume.

Increasing the shute count while keeping permeability the same measurably increases not only drainage performance (DI – Drainage Index), but also fabric stiffness, which in turn has a positive impact on the stability and mechanical running properties of the fabric throughout its entire service life. Its unique performance attributes are its large free surface on the paper side, reduced open surface on the running side and application driven warp concept.

### Optimizations in the wire section of PM 1 at Stora Enso's Sachsen mill

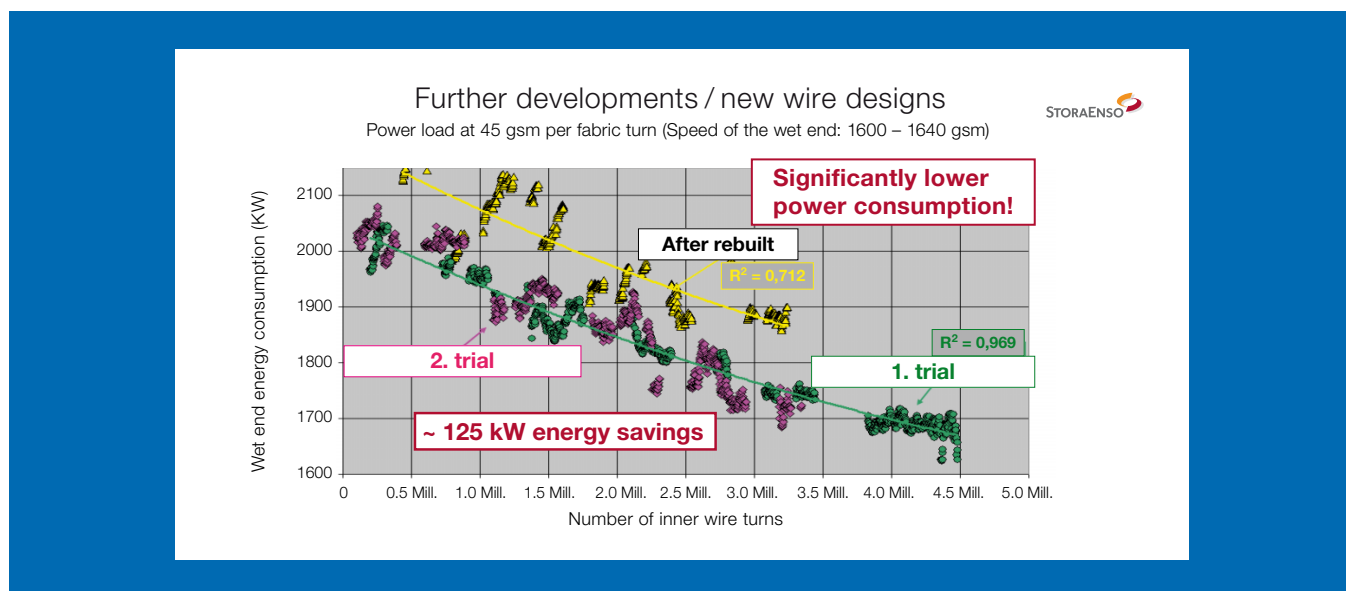
Initial situation: Stora Enso Sachsen GmbH in Eilenburg's PM 1 newsprint paper machine produced 320,000 tonnes of paper annually – mostly newsprint with a grammage range between 42.5gsm and 48.8gsm and since 2010, telephone directory paper with a grammage range of 34gsm to 40gsm. It was started up in 1994. A HiVac was installed directly behind suction roll 2 in 1999. Due to space limitations, the jet trim edge cutters had to be moved to a very awkward location. In 2003, the former was converted to an OptiFormer. However, existing suction roll number 2, which was originally part of the former design, remained in operation. Long-term dewa-

tering analyses showed that the expected increase in dry content as a result of leaving the roll in place did not materialize. Whenever there were meetings about cutting energy costs, the discussion repeatedly turned to the question of whether the vacuum at suction roll number 2 should be cut off. On other Stora Enso paper machines, not only was the vacuum cut off from suction roll 2, but it was also successfully converted to a solid roll. At the end of 2009, it was decided to take suction roll 2 out of service and at the same time, move the HiVac to ease the space limitations in the jet trim edge cutters area. While these optimization steps were being taken in the wire section, the SSB forming fabrics that had been used to that point in time were also closely analyzed.

In general, the Selectra and Optiply TSP designs used on PM1 as the outer fabric and inner fabric respectively exhibited good runnability, even at high speeds (effective 2008, compacted Compressor versions of both fabrics were installed). However, drainage analyses showed that dry content could not be further improved and thus the targeted energy savings would not be achievable. The deliverables Stora Enso gave Huyck.Wangner were thus quite clear: The dry content achievable by a new pair of fabrics had to be higher than twenty percent during the startup phase and the target service life twelve weeks, so that the fabrics and the felts could be replaced simultaneously at regular intervals. PM 1's Production Manager Dirk Schwarze and Production Engineer Andreas Irmscher, were also aiming to further increase the speed of the paper machine without compromising its efficiency, which has always been excellent.

### First apexx EDC design installed

For the tests, the fabric specialists established the first EDC design, *apexx*, based on measurements and drainage analyses that Huyck.Wangner had been conducting on PM1 for years. When telephone directory paper was added to the range of products to be produced on PM 1 (34, 36 and 38gsm), requiring higher tear resistance and brightness and the introduction of virgin fiber and wood-free recycled paper, the drainage properties of the former were customized to suit.



Drive power consumption did not fall when using the SSB fabric, driven in part also by the revamp of the paper machine. In fact, consumption increased about seven percent. One of the key goals was thus to address this issue by installing the new *apexx* Compressor EDC fabric. Replacing the standard SSB forming fabric with the new design proved successful. The power consumed by the drives fell by about seven percent, back to the original level. Other goals were to raise the dry content at the pick-up by 0.5 to 1 percent to increase output and to reduce web tension at the center roll. In view of the aim to raise the speed and efficiency, the latter parameter is pivotal.

The first *apexx* set was installed on PM 1 in August 2010. Startup was problem free with 45gsm standard newsprint running at 1,540m/min. Overall, operation was more stable and there were fewer web breaks. During this project phase, Huyck.Wangner continuously monitored the performance of the wire in order to ensure a smooth transition from SSB to EDC fabrics. The service team conducted a number of analyses to determine drainage performance and paper machine configuration and took measurements to examine the condition of the fabric, also with the FSP (Fabric Scanning Profiler). Their aim was to gather as much data about the *apexx* fabric's running properties as possible and eliminate any weaknesses. After an initial assessment, Andreas Irmscher concluded that the dry content target of over twenty percent had not yet been reached and that the inner wire was distorting, resulting in reduced width. The proposed solution for raising the dry content was to install the even higher performance EDC design *finetexx* DC on PM 1. It is the latest high-performance fabric developed by Huyck.Wangner and exhibits the highest FSI values thanks to its superfine weave. The high FSI values result in unprecedented drainage performance.

Stora Enso Sachsen was satisfied with the very stable, break-free operation and improved paper machine run-ability, the lower tension between the center roll and the fourth press (less than four percent) and the higher paper machine speed. In addition, it was possible to improve machine cleanliness and thus reduce the cleaning requirement accordingly.

### Significant improvement in paper quality and production

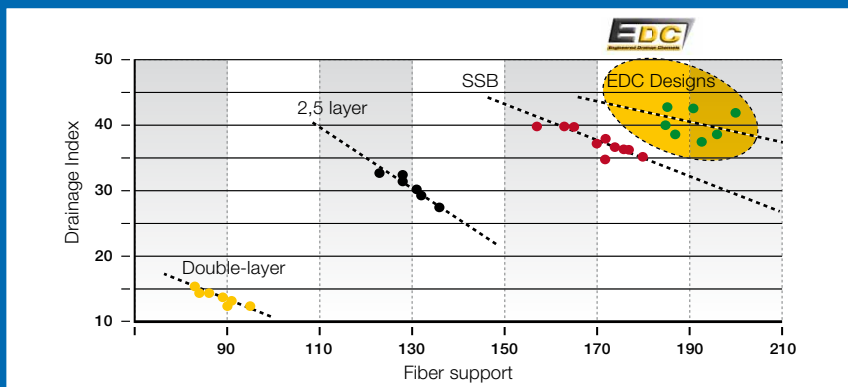
A key finding from initial field experience with the new EDC technology is that drainage performance is not the only parameter that impacts paper quality and paper machine efficiency. Rather, the key is to align the drainage with application-specific requirements and balance these parameters to optimize sheet forming performance. EDC forming fabrics control drainage and thus substantially improve sheet forming. This widens the paper machine's operating window without compromising sheet forming performance, and results in outstanding paper quality at the end of the production process.

Huyck.Wangner applies its expertise to selecting various monofilament thicknesses and densities and defining custom EDC forming fabric structures that match various customer applications. The company covers the entire application spectrum using these methods. The number of applications is thus unlimited. In principle, EDC fabrics can be used on all types of paper machines and for all types of paper.

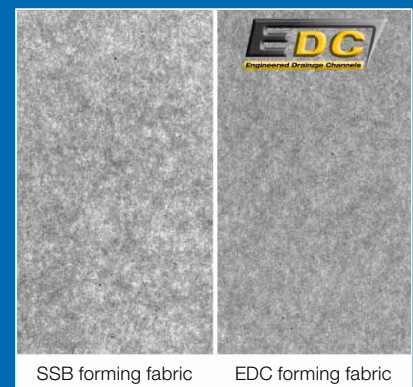
Installations on various paper machine applications to date clearly show that controlled, gentle initial drainage results in measurable efficiency improvements due to higher dry content at the pickup, higher speed and higher output or increased tonnage. The drainage-promoting sheet structure also reduces drive loading and, despite higher drainage capacity, lower vacuum, both of which generate significant energy savings in the wire section.

After introducing *apexx*, the EDC product family was expanded to include the *formexx* and *finetexx* forming fabric designs. The *formexx* product generates optimum results for hybrid and gap formers in the medium speed range. The *finetexx* design is especially suited to high-speed gap formers and higher grade paper types. Huyck.Wangner is sequentially converting its fabric portfolio to the new EDC technology so that it can offer papermakers measurable improvements in their production operations.

### Evolution of sheet formation properties



Comparison of sheet formation properties.



Forming improvement.



### ...Twin track to top paper machine runnability

In the forming fabrics product category, 2010 was dominated by the two groundbreaking technologies **EDC** (engineered drainage channels) and **EnerSTAR**. The first tests were conducted in late 2010 and early this year. Since then, the new forming fabrics have been installed on a wide variety of paper machines with exciting results.

Huyck.Wangner has followed up on its SSB success with the revolutionary **EDC** forming fabric technology, once again confirming its technical leadership when it comes to modern, efficient clothing solutions for the wire section. The specially formed drainage channels (engineered drainage channels) from which the product family's name is derived, guarantee improved and more efficient sheet formation. They have now been tested on almost all types and categories of paper machines. In Europe, 185 **EDC** forming fabrics were installed over the course of the year. The results achieved are impressive. From packaging papers to fine and very fine paper grades, considerable savings and improvements in production efficiency were evident after only a very short time.

In addition to having outstanding running characteristics, **formexx**, which is mainly installed on hybrid formers' and

fourdrinier machines' wire sections, is most noted for the significant improvement in sheet formation that can be achieved when using the product. In addition, so far, the specified dry content has been achievable on many machines at a low applied vacuum, which significantly cuts drive power consumption.

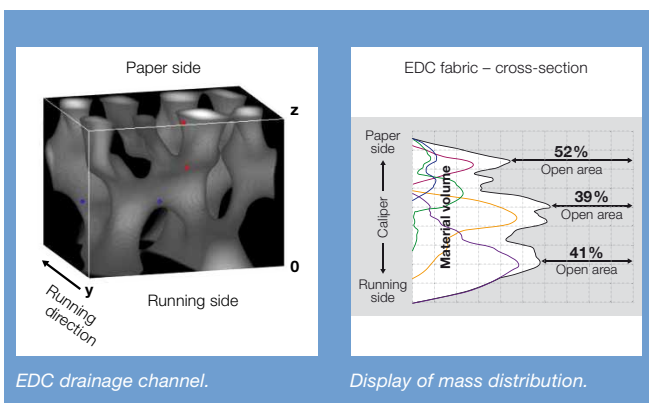
Huyck.Wangner developed **finetexx**, another **EDC** fabric, especially for gap formers used for graphic paper production systems. The product has already run fifty-eight times on European paper machines. It scores points because it makes sheet formation more efficient, which not only improves paper machine runnability but also significantly enhances paper quality.

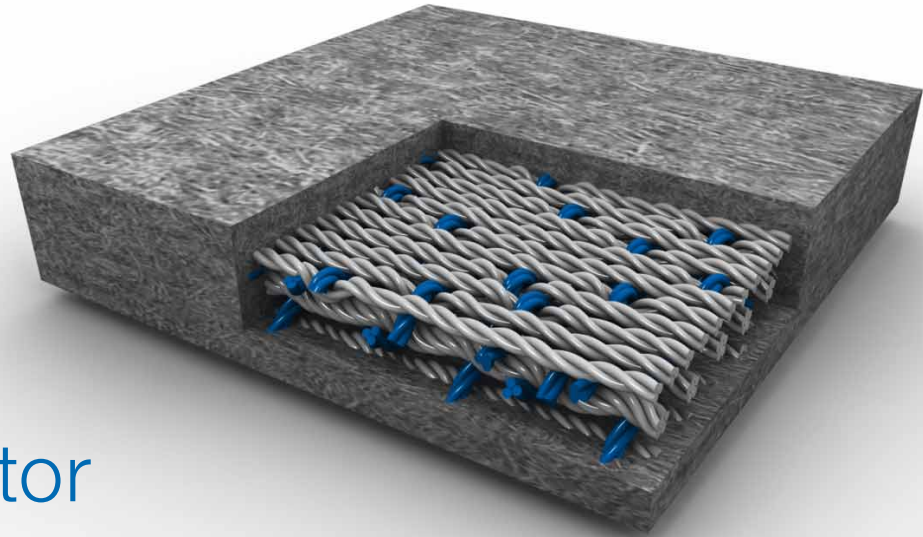
This year's second development highlight is the material technology **EnerSTAR**. It reduces drive load without compromising the fabric life. Fabrics with this special material type are universally beneficial and are used across the entire paper grade spectrum.

**EnerSTAR** forming fabrics shine on a huge variety of paper machine types and substantially cut drive power consumption. Their longer life also significantly improves papermakers' bottom line. With the average drive power consumption savings of fifteen percent and the twenty percent longer life that have been achieved to date, papermakers' reception has been very positive.

#### Savings with EDC & EnerSTAR (YTD)

Paper Grade	Chemical savings	Efficiency improvement	Speed increase	Energy savings	Life time improvement
Packaging				390,000 USD	100,000 USD
Graphical Papers	80,000 USD	120,000 USD	3,850,000 USD	2,945,000 USD	160,000 USD
<b>Total</b>	<b>80,000 USD</b>	<b>120,000 USD</b>	<b>3,850,000 USD</b>	<b>3,335,000 USD</b>	<b>260,000 USD</b>





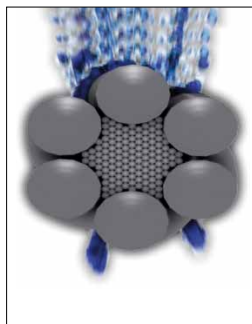
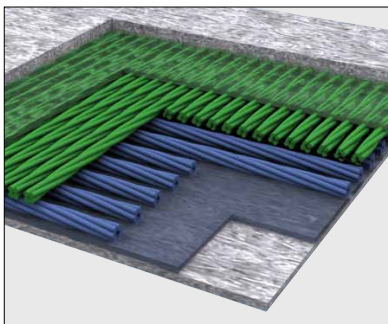
## axxelerator

### Bestseller sets record

Modern paper machines need press clothing that ensures optimum machine performance right from the start-up. As the leading manufacturer of high-performance press and seamed felts, Huyck.Wangner continuously achieves market success with its product innovations. Again last year the company had a bestseller:

Since being launched in 2006, **axxelerator** has become an absolute sensation in Europe. Over 140 satisfied papermakers would be loath to forgo its advantages – especially the high machine efficiency, runnability and above-average drainage performance. The felt design meets the stringent specifications for smooth profile, top quality graphic paper with excellent printability produced on modern high-speed paper machines. Felts belonging to this product line are in terms of absorbing vibrations unbeatable, especially on the very demanding third and fourth press. No wonder that this year **axxelerator** felt sales broke the 1,000 mark, a record.

With the new **Impact** design, Huyck.Wangner is for the first time offering nonwoven technology, thus closing a gap in its premium segment. The core of the design features a unique hydrophilic yarn technology and a newly arranged felt structure. It behaves like a sponge that saturates almost immediately. At the same time, the yarns are inter-connected by a multidimensional linked layer that makes the felts extremely stable. **Impact** felts are especially noteworthy for their immediate startup and top nip dewatering. Since the official rollout at Zellcheming 2010, Huyck.Wangner has supplied about sixty felts in Europe and has expanded its manufacturing capacity for the **Impact** product to address the strong demand.

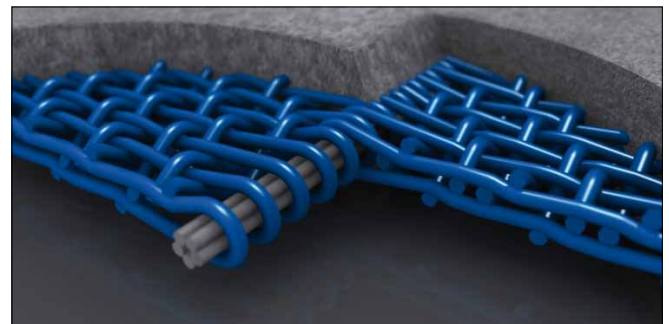


*Impact – press felt designs featuring maximum nip dewatering.*

Huyck.Wangner developed **Impact TS** especially for tissue production based on the new technology. The objective was to help papermakers cut energy costs and improve production efficiency, both of which are key parameters for these producers. Very promising field tests and the rising demand, even though the innovative product has only been on the market for a short time, are a testament to its performance capabilities.

**ProSeam** felts, also launched this fall, are woven seam felts with a double or triple-layer fabric structure. Their performance success rests on unique weave configurations, which when combined with additional seam reinforcement are able to withstand very high load. The new product family offers multiple advantages: maximum reliability combined with time savings and reduced personnel costs during installation (only two people are needed for an unplanned felt change), top paper quality thanks to a nonmarking seam and maximum drainage performance paired with extremely smooth paper machine runnability and long potential service life. Huyck.Wangner's **ProSeam** product family offers a high-performance design for almost every application.

**ProSeam SP**, a high-performance seam felt specially developed for shoe presses, is completely new. Because of the longer nip dwell time and the associated risk of seam marking, this position was taboo for seam felts to date. With its new **ProSeam SP** seam felt design, Huyck.Wangner has now also for the first time launched a high-performance seam felt for these demanding applications. Its special weave configuration in combination with process optimizations during manufacturing make a noteworthy contribution to improving the seam loop integration. The clothing specialist is thus responding to the increased demand in Europe.



*Huyck.Wangner's new ProSeamSP design.*