

Solutions for Single Shoe Presses

Efficient Clothing for Future Technology

The pace of globalisation continues to accelerate and an increasingly competitive marketplace forces decision makers to focus on high productivity and efficiency. These factors themselves are of course extremely relevant when investing in a new paper machine. But what use is the most modern machine, if clothing solutions cannot keep the pace with technology? A detailed consideration of clothing makes particular sense in the relatively rare single shoe presses: we asked our practical expert Paper Pete to research current information regarding this revolutionary technology and to present the possibilities that Heimbach clothing can offer for these new dewatering solutions.



Dear paper maker colleagues! Undeniably: single shoe presses (SSP) are still very rare. At present there are just **13 machines worldwide** working with this technology. This is actually surprising, because on the one hand SSP, using the abbreviation, offer a variety of economical options for a wide variety of paper grades. On the other hand, my development colleagues must also have or be ready with **highly efficient clothing solutions** for such machines in order to take the best possible advantage of the potential presented by this technology.

Efficiency in dewatering

The road to success for the innovative SP began with its' introduction in 1980: in the meantime, **over 1,000 paper machines fitted with SP** can now be found globally (see: Fig. 1). Almost 15 % of the SP currently running came into operation since 2012, which shows how current this subject actually is. Although most SP are used in the production of packaging paper and containerboard, over the years the technique has also become increasingly

Dewatering with shoe presses

The facts, dear paper makers: While conventional roll presses have a press zone length of 20-50 mm, in shoe presses (SP) this length is much larger at approx. 120-330 mm. Also SP work with surface pressure, while conventional solutions dewater with line pressure: **Dry content > 50 % is easy to implement with SP**. This benefits the entire production process, bearing in mind: if we increase the dry content of the sheet before entering the dryer section by only 1 %, this corresponds to a **production increase of about 5 %** – or respectively less energy consumption for drying.

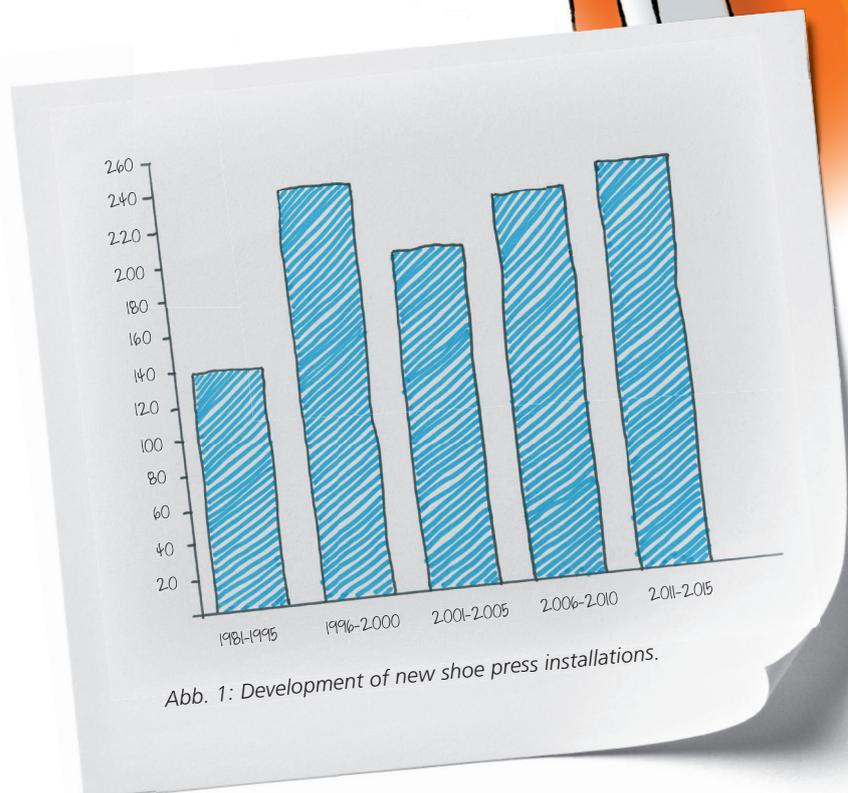


Abb. 1: Development of new shoe press installations.

interesting for **producers** of graphic papers (e.g. newsprint and reprographic paper): it's worth taking a look here at verifiable figures that prove **production costs with SP are up to approx. 40 Euro/tonne lower** (calculated over all grades) than machines running without SP.

Unique technology

In September 2003 our regular customer **Mondi SCP** was the first company in Europe, in Ruzomberok, Slovakia, to start **fine paper production with a single shoe press (SSP)** on PM 18 (for Mondi see info box and Fig. 2). SSP not only present you, dear paper makers, with major challenges: we clothing professionals also need to liaise with, and intensively advise, clients on the (as yet) infrequently-used technology – presenting customized solutions, so that **paper makers exploit the great potential of this innovative technology to its' maximum**. First and foremost the focus is on the two press felts! My colleague Olli Kääpä who has been supervising SP projects with us for many years, always says: **"The entire success of the paper machine depends on the two felts!"**

Decisive felt combination

And Olli Kääpä is far from alone with his opinion. Our development and application engineers also know just how important it is in SSP projects to find the optimal

combination of felts for the customer: The dictum "married couple" has prevailed here internally, which I think is a good description, **forcing us to see the top and bottom felts as a "Couple" with SPP**, when paper makers want to extract the most out of the felts.

My colleagues particularly like it, when I present a project where "married couples" play a key role. It is clear from the outset in our project meetings that everyone is looking forward to finding a way to "square

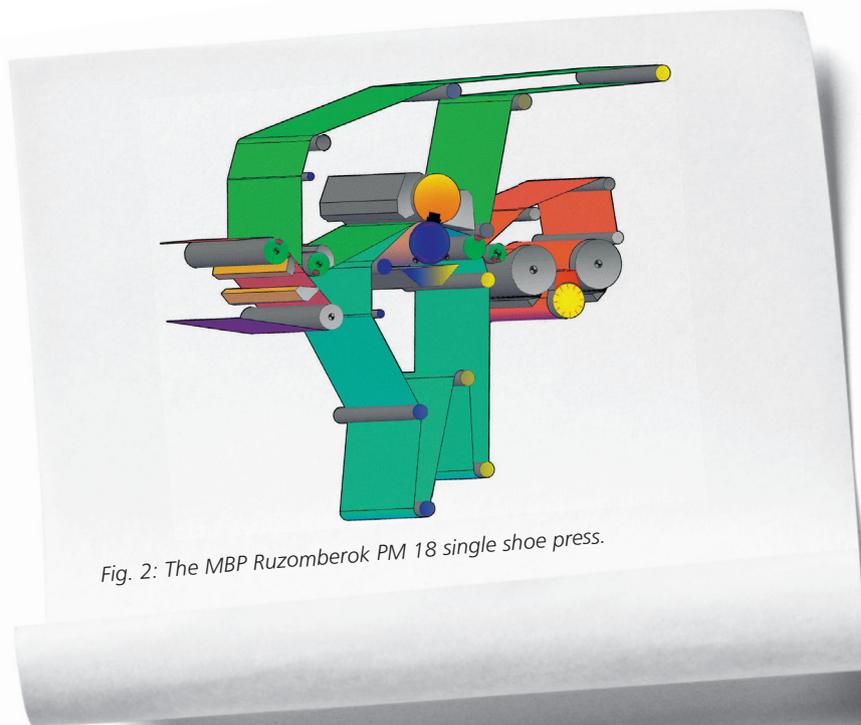


Fig. 2: The MBP Ruzomberok PM 18 single shoe press.

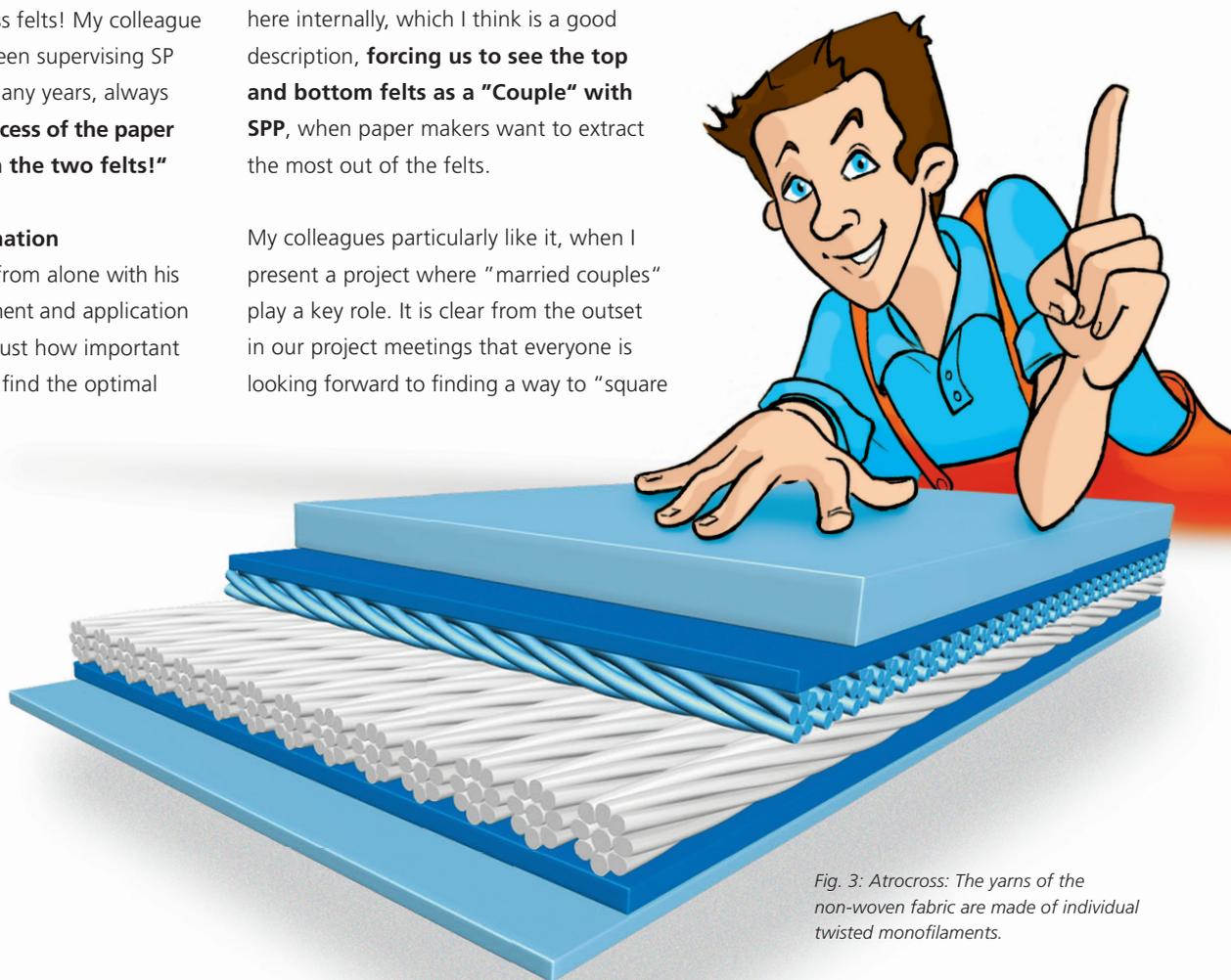


Fig. 3: Atrocross: The yarns of the non-woven fabric are made of individual twisted monofilaments.

the circle”, as indeed the felt couple must on the one hand allow **an enormous amount of water** to be discharged in the SSP, whilst at the same time also **produce a very smooth paper quality**. Actually, this contradicts itself as we surely cannot develop felts that are both “open” and “dense”... Or?

Leading from the front

My colleagues considered a **customized solution** right from the very first SSP project with Mondi in Ruzomberok: During 2002/2003 I was not yet on board, but I often hear interesting reports from this time. I can say however, what was on board was a great deal of ambition and spirit of innovation: **a completely new design of felt was developed** using mathematical and physical simulation programs, as well as numerous laboratory tests.

Atrocross milestone

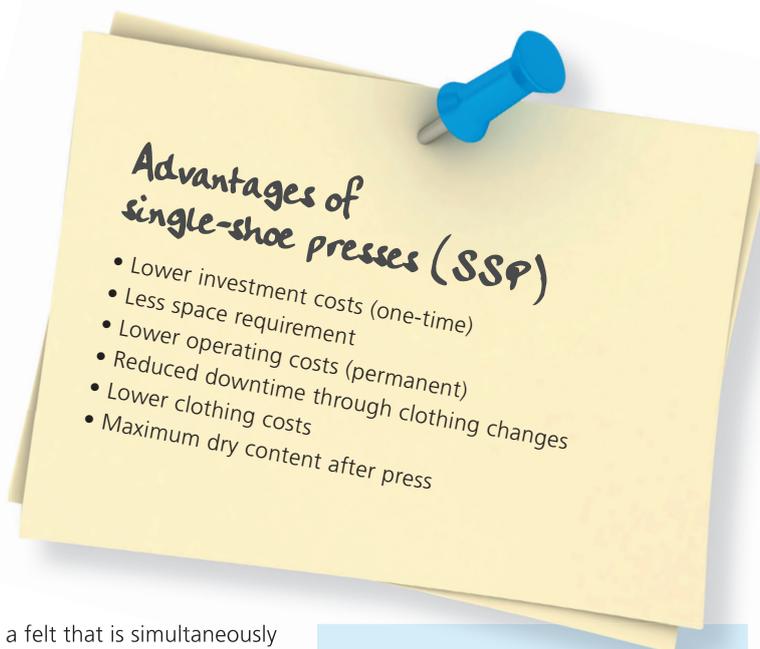
An **Atrocross** married couple was installed on PM 18 (Fig. 3), a press felt design that has been proven to provide extremely fast start-ups and to be a pronounced nip-dewaterer. Continuous developments of non-woven technologies still accompany Mondi Ruzomberok and PM18 today. With the current designs, Mondi’s paper makers achieve a **dry content of up to 56 % after the press section!** Excellent moisture profile and **minimal two-sidedness** are observed at the same time. This would

therefore imply a felt that is simultaneously “open” and “dense”. Moreover: the two **Atrocross felts** dewater as much as the first, second and third presses of a conventional roll press combined – and with only **a single nip** (Fig. 4).

That’s it for today, dear paper makers. And it wasn’t long at all with the press power and innovative ideas from my colleagues: do look forward to next time – because I will be reporting on an exciting example of “Best practice from practical experience” ...

Regards from Düren

Your Paper Pete



INFOBOX

Mondi/Ruzomberok – long-time world record holders!

Admittedly, our Slovakian colleagues at Mondi Ruzomberok are unfortunately not immortalised in the “Guinness Book of World Records”. Nevertheless, they have held a **world speed record** for an impressive four years, on their PM 18 (built 2003) with SSP. Reprographic paper (80g/m²) is produced on the **7.30 metre wide machine** which has achieved a **sensational speed of 1,620 m/min.** – Mind you: this high speed range can be easily maintained, so this was not a one-time event. This makes Mondi’s PM 18 one of the fastest and most efficient fine paper machines in the world.

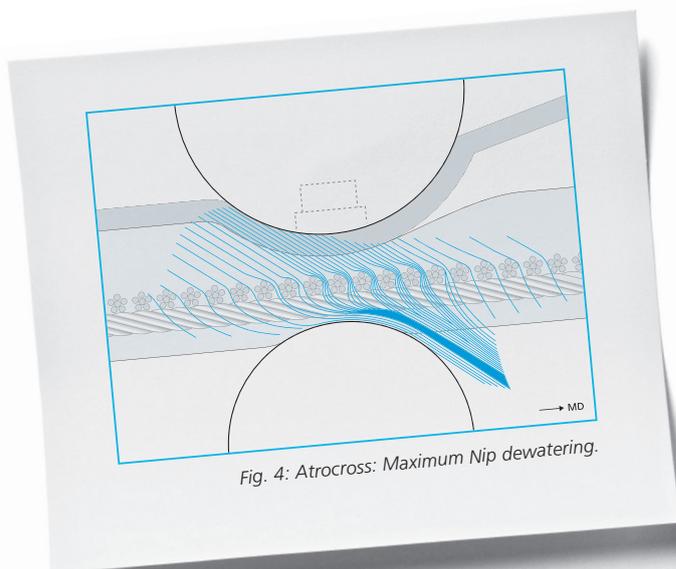


Fig. 4: Atrocross: Maximum Nip dewatering.

