

New forming fabric PrintForm IS with a unique SSB design

## Improved sheet quality without negative side effects

**While an increasing number of papermakers are moving towards finer mesh SSB forming fabrics, a significant number have stayed with coarser products. The reason for this is the widespread opinion that reduced wear potential and stability could lead to adverse effects. Voith Paper has developed a new SSB forming fabric concept that eliminates the need to decide between coarse or fine mesh fabrics.**

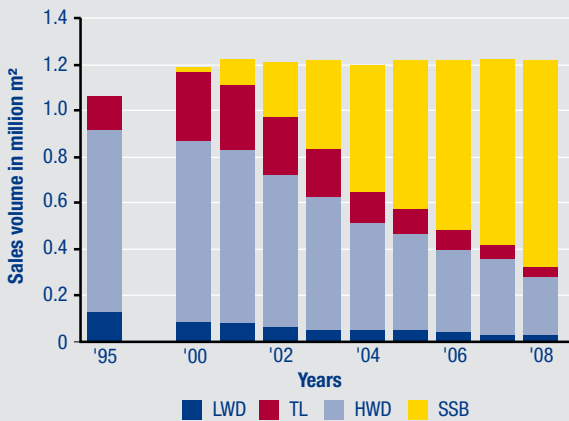
Today, the forming fabric market is dominated by SSB designs. That is a market share of approximately 50-70%, depending on geographic region. The majority has changed little since its market introduction. Although there have been new developments in alternative binder yarn bindings and weaves, which increase the float on the bottom side, the original 1:1 warp ratio remains the central characteristic of almost all SSB products.

### The development of SSB designs

The main focus in SSB development has been on the design of different mesh structures, coarser products for board and packaging grades and increasingly finer mesh for high-end graphics papers. Finer mesh SSB products are especially attractive for paper manufacturers of lighter basis weight grades, which operate with mechanical pulp and increased filler levels, and producing coated grades.

Sheet porosity is critical here. Finer mesh products also offer potential retention benefits. Most forming fabric manufacturers now also offer finer mesh SSB products for this market segment.

However, the main hurdle to wider acceptance of these finer SSB products is their stability and durability. Improvements in retention, sheet quality, and cleaner former operation are positive factors for paper

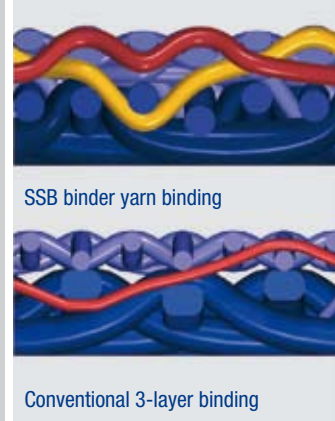
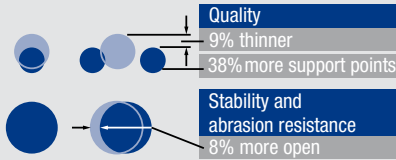


Sales trend forming fabrics in Europe.

Standard SSB warp yarn ratio



PrintForm I warp yarn ratio



Comparison of the warp yarn ratios of a standard SSB fabric with a 1:1 ratio and PrintForm I with a 3:2 ratio.

manufacturers. Nevertheless, many customers in the competitive paper market are not prepared to accept the previously existing disadvantages to achieve their goals.

For this reason, many paper manufacturers have stayed with their standard 0.13/0.21 mm machine direction warp diameter and 58-60/cm warp density. To date, paper manufacturers have had to choose between either fabric life, durability, and stability or the improved performance characteristics associated with finer papermaking surfaces. Fabric manufacturers were not able to combine all of these features into one design – until now.

**The new PrintForm IS forming fabric**

The latest development from Voith Paper, the PrintForm IS, offers paper manufacturers a way around having to choose fabric life, on the one hand, and sheet quality and mechanical retention on the other. The PrintForm IS combines an extraordinarily fine papermaking surface and a very stable wear-side surface with high run-time

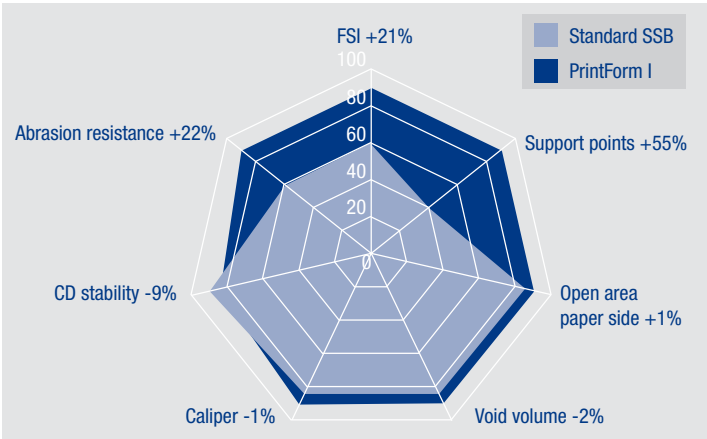
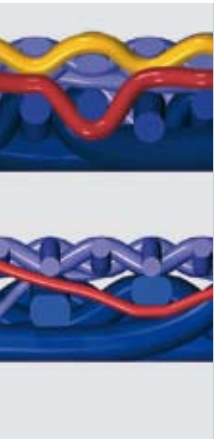
potential. The key to maximizing all these fabric characteristics in one and the same product was to reject the standard 1:1 warp ratio.

The PrintForm IS is woven using a 3:2 warp ratio. Additionally, the papermaking side warp yarn diameter is super-fine, while the wear side warp yarn diameter remains relatively coarse. This unique construction allows the development of forming

fabrics with two characteristics, which are usually contradictory: a super-fine papermaking surface, with Fiber Support Index (FSI) values of +220, and a wear side with a high life potential.

Compared to standard SSB designs with 0.13/0.21 mm warp diameter, the PrintForm IS shows a significantly improved paper side surface, a much longer life potential, and a high CD stiffness. At the same time, no compro-





Comparison of the technical data for a standard SSB and PrintForm I.

mise has been made in openness, caliper, and CD stability. The PrintForm IS is available with a weft ratio of 2:1 (ISY) and 3:2 (ISW). A wide range of permeabilities (cfm values) and wear side weft yarn diameters is also available. With these tools, the PrintForm IS can be fine-tuned to any of the paper manufacturer's needs and wishes.

The PrintForm IS offers significant performance improvements in every

area, which cannot be matched by conventional SSB products. It is especially suitable for paper manufacturers who want to use finer mesh SSB designs, but have concerns about wear potential and stability. Real savings are being achieved through reduced retention aid usage, fewer breaks thanks to improved forming fabric cleanliness, lower sheet porosity and thus less coater bleed, longer fabric lifecycles and improved CD profiles.

**Field results:**

- Uncoated, wood-free paper grades were produced on a Beloit PM equipped with a BelBaie IV former (8.5 m wide, 1,100 m/min). The PrintForm IS is implemented in the bottom fabric position. The goal of the tests is improved sheet formation and fabric running time. The previous fabric in this position was a competitor's SSB design with a warp diameter of 0.13/0.21 mm. The PrintForm IS test was concluded after an average life, while laboratory analysis revealed that a remaining life potential of +50% could be achieved. The PrintForm IS is now the standard design on this position and demonstrates significantly improved formation and very clean running.
- Newsprint from mechanical pulp is produced on a Beloit PM equipped with a BelBaie II former (6.3 m wide, 900 m/min). The standard 0.17 mm 60 warps/cm double layer design on the bottom fabric position was replaced by a competitor's SSB design with a 0.13/0.21 mm warp diameter during 2005. Wire marking was reduced and formation improved. Running time was extended by approximately 15%. A first trial with a PrintForm IS showed further substantial savings in retention aid chemicals, reduced fiber carrying, and improved formation. Standard running times were reached without problems.
- Surface-sized, wood-free paper is manufactured on a Metso SpeedFormer HHS (7.1 m wide, 1,000 m/min). The bottom position normally ran a fine mesh SSB design (0.12/0.18 mm warp diameter). In principle, it is not surprising that the PrintForm IS easily reached its budgeted running time, but still had 40% life potential remaining. The fabric positively affected the sheet quality. In particular, formation could especially be improved at lighter grades.



**On Focus: PrintForm I**

- ProEnvironment
- ProRunnability
- ProQuality
- ProSpeed

Section: forming  
 Width: all  
 Paper grade: graphic paper, high quality board & packaging

**Contact**



**Johan Mattijssen**  
 johan.mattijssen@voith.com