



*Wood fibers are separated and prepared.*



*Pulp is delivered to the paper mills as pressed sheets.*

**Clothing for pulp drying machines are in a different class**

## Definitely heavyweight!

**Voith Paper Fabrics offers a complete product platform for all types of pulp drying applications from conventional forming and press sections to the most modern machines available in the market.**

Did you know that more than one-third of the world's market pulp production is made on clothing from Voith Paper Fabrics?

Let's start from the beginning with some facts about market pulp. What is market pulp and how is it gained?

Pulp is wood fibers that are separated and made suitable for paper and board production. The pulping process separates individual fibers by mechanical, chemical or semi-chemical methods. Most of market pulp is chemical pulp. Pulp is mainly produced from wood but alternative materials are continually being sought, e.g.

hemp, kenaf and bamboo fibers.

The resulting substance, called pulp, is formed into thick sheets and transported from the pulp mill to a paper mill.

Side products such as chemicals and water are recycled. The "black liquor" is used for energy generation.

Optimization has reached a stage where the excess energy produced is sold to the regular market. Some chemicals are recovered for re-use in the pulping process and also for the cosmetic industry.

### **Market pulp production**

It's important to separate market pulp from the global pulp production.

Market pulp is dried on a pulp drying machine and sold as raw material to the paper and board industry. The global pulp production on the other hand includes all pulp production, integrated mills and market pulp.

The pulp industry is still dominated by North American mills, but the strongest growth rates can now be found in Latin America and Asia with their warm climates that favor fast plant growth. Worldwide production volume reached 54 million tons in 2006, and market analysts expect continued growth of about nine million tons per year for the foreseeable future. All market pulp is not created equally; different raw materials and

**Infobox: Cell Plattform-Highlights**

**CellForm N ...**

- ... is a triple weft 14-shaft design for:
- controlled drainage for optimal function and improved retention
  - additional pulp side support yarn gives very good sheet support
  - three weft system ensures excellent CMD stability
  - high wear potential due to long weft floats on the roll side

**Vector technology ...**

... is a tri-axial non-woven base fabric structure. Its elasticity in all three directions is important for resisting compaction and improving fabric life.

**CellFlex V3 and V4 ...**

... are all mono based structures combined with single and double Vector components respectively. The concept is well-proven where high dewatering and good compaction resistance are required. The Vector component also significantly improves fiber locking which is particularly beneficial for improving the integrity of seam fabrics.

**CellFlex V6 ...**

... is a laminated all mono 2+2 design including double Vector structure offering exceptionally high compaction resistance and dewatering capacity. The strong construction also provides very high tensile strength. It may be supplied with double seams for safe and easy installation.

production processes result in different products, as shown in the table below. Production capacity meets the increasing demands.

**The heavyweight class**

The basis weight of a pulp sheet can vary from about 800 to 1,300 g/m<sup>2</sup>, compared to a sheet of copy paper that is about 80 g/m<sup>2</sup>, and can be produced at speeds of 100 to 230 m/min. Dewatering takes place in three stages resulting in a dryness level of about 90%: having reached 30% after the first stage, the forming section, the press section and the third stage, the air-floated dryer have to manage the other 60%. In other words, 72 kg of water per square meter have to be removed during these three stages.

The final process in pulp drying is cutting of the pulp sheets and sheet baling. A new, modern pulp drying line can produce up to one million tons of production output per year.

**The Cell Platform**

The Cell Platform concept offers the CellForm product group for forming fabrics, the CellFlex product group for press fabrics and the CellTech

product group for broke conveyors and threading tapes.

Customers have very positive results by using the full range of products available. "The Voith Cell Platform helped CMPC Santa Fé to set a new world production record for bleached eucalyptus pulp at its mill in Chile, just six months after startup. The PM 2, a 10 m wide machine, produced 2,739 tons of pulp ADMT (air dry metric tons) in a 24-hour period. The machine was clothed with CellFlex V3 and CellForm OP during the record-breaking run on 30 May 2007."

**CellForm forming fabrics**

The CellForm group includes well-proven designs that are capable of handling the requirements in the forming section.

Voith Paper Fabrics reduced vacuum levels that were too high, resulting in lower energy costs, and eliminated quality issues caused by uncontrolled drainage and insufficient sheet dryness. These problems were all solved to full satisfaction by applying CellForm N.

This fabric design was able to control drainage and increase sheet dryness,

Supplied capacity	
Softwood	20
Hardwood	21
Sulphite	1
BCTMP	2
DIP	3
Total	47

*Fig. 1: Supplied market pulp in 2006 by grade (million tons).*

while stabilizing the vacuum level and thereby reducing energy consumption. The optimized machine equipped with CellForm N achieved record production.

**FormPress fabrics**

FormPress refers to forming sections where a combination of forming and pressing takes place requiring special fabrics. A recent innovation has been a combination of standard twin-wire forming equipped with a pre-press and a shoe press. The bottom tandem wire in the forming section also passes through the presses.

The FormPress fabric CellFlex ZC Seam is Voith's solution for the bottom wire, the most challenging position. This type of application requires strategically engineered fabrics that can survive in the tough environment. Specially developed polyamide is used to withstand exceptionally high loadings in the shoe presses. Benefits seen with CellFlex ZC in the bottom wire position are high performance and energy savings. In daily operation the fabric achieved remarkably good dewatering, resulting in 32% energy savings and in addition, 13.8% steam reduction at the machine.

**CellFlex press fabrics**

The CellFlex group offers press fabrics for all types of pulp pressing applications. Voith's well-proven Vector technology – a tri-axial, non-woven base fabric structure – is the basis for meeting the challenges in the respective press section.

The Vector series for pulp includes CellFlex V3, V4 and V6 in both endless and seamed versions. CellFlex V4 is a new development including a high capacity base weave with double Vector components on each side of the woven base fabric. CellFlex V4 has improved dewatering capacity and improved compaction resistance. The open structure offers high dewatering with lower vacuum levels and requires less chemical cleaning.

Voith Paper Fabrics' new concept for pulp pressing, CellFlex V6 seam, is currently performing well in a very demanding shoe press position in Finland, with greater resistance to chemical degradation.

**Customer Comment**



**Alan Ruiz**  
PDM Superintendent  
from Arauco, Valdivia  
mill in Chile

“We are getting important additional benefits using this new concept. Following Voith Paper Fabrics' recommendations, we reduced HPS pressure to 600 kPa and operated the showers only one hour per day instead of continuous. This resulted in an increase in fabric life from 90 days to 220 days on 2nd and 3rd press, but the most important benefit has been the reduction in water required to be processed in the water treatment plant, improving environmental conditions.”

**Customer Comment**



**Jorge Reyes**  
Fiber Line Manager  
CMPC Santa Fé

“Just 6 months after startup, PM 2 achieved record production thanks to Voith's clothing.”

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