

The **concepts**
for cost-efficient containerboard



Containerboard: Produce **more** with **less**

How to build, modernize or tune up your containerboard process to best meet your and your customers' needs? How to achieve better cost-efficiency? How to shorten your investment's payback time? And how to ensure your share of the growing containerboard market? Metso Paper, with its wide scope of solutions covering all stages of the papermaking process from pulping to roll storage, provides you with the right answers.

The future of containerboard grades – linerboard and corrugating medium – looks good. In addition to growth in overall consumption, new products are emerging. For example, thin microflute-based corrugated board is advancing strongly in consumer packaging, the traditional cartonboard territory. Containerboard is also increasingly used in point-of-sale and display applications.

These new opportunities present new challenges. For example, machine speeds need to be increased to economically produce lighter weight grades. Quality must be improved to meet growing printing and packaging requirements. Runnability problems that are often caused by the use of lower grade furnish must be solved. Additionally, more stringent environmental regulations require attention.

Your needs guide us

Metso Paper understands the needs of boardmakers. Since containerboard processes differ in terms of raw materials, end product quality, production capacities, as well as technology, flexible solutions are a must. For example, instead of increasing speed to boost production, another alternative is to increase machine width. Metso Paper is the only supplier able to deliver board machines up to 12 meters in width.

We are committed to delivering optimum solutions that meet your needs to the fullest.



CASE

Palm Wörth PM 6:

- Products: Testliner and corrugating medium
- Capacity; 600,000 tpy
- Max operating speed 1,500 m/min
- Wire width: 11,000 mm
- Basis weight: 60-150 g/m²
- Furnish: 100% recycled fiber



Dr. Wolfgang Palm,
CEO of Papierfabrik Palm

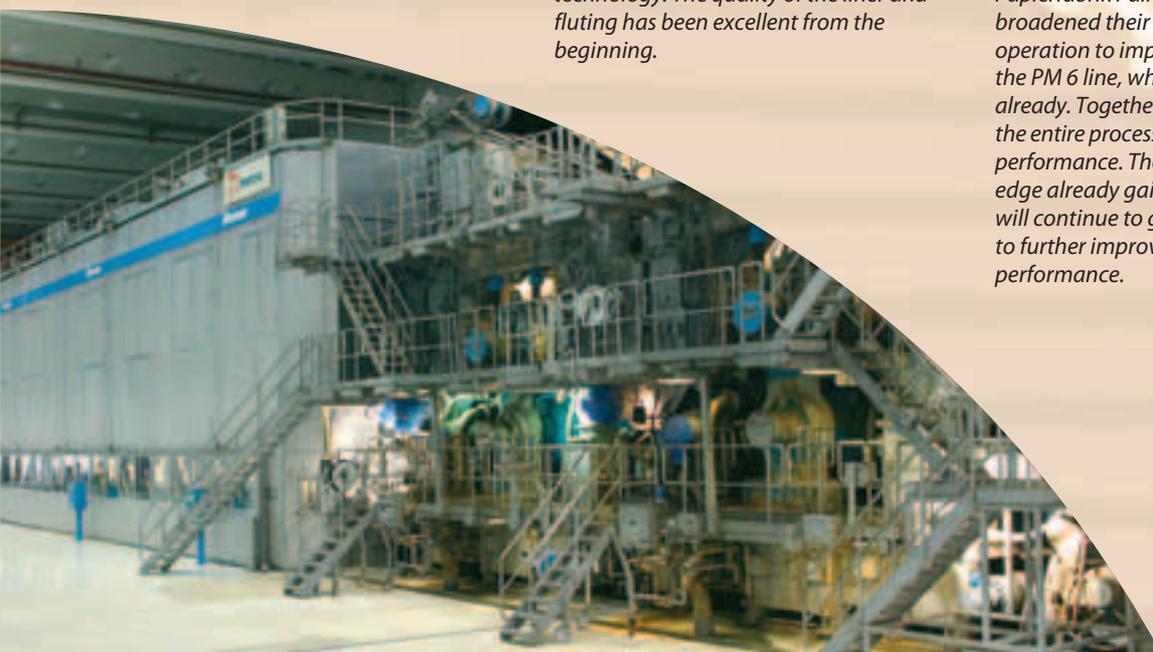
Palm Wörth PM 6: Optimal quality from the world's largest boardmaking line

Papierfabrik Palm's Wörth mill in Germany started up the world's largest testliner and corrugating medium production line in October 2002. The line was supplied by Metso Paper.

The PM 6 line utilizes OptiConcept technology. The quality of the liner and fluting has been excellent from the beginning.

*"Our customers have been extremely satisfied with the outstanding quality and the performance of the lightweight corrugating medium and testliner as well," says Dr. **Wolfgang Palm**, CEO of Papierfabrik Palm.*

Papierfabrik Palm and Metso Paper have broadened their already strong co-operation to improve the efficiency of the PM 6 line, which is close to 90% already. Together they are going through the entire process to optimize production performance. The experience and knowledge already gained by both companies will continue to grow and contribute to further improvement of the line performance.



Layers of expertise

at your disposal

Over half of the board made in the world is manufactured with machines originating from Metso Paper. The list of company names behind them is impressive: Valmet, Beloit, Carcano, Ahlstrom, KMW, and Tampella. And the people behind them are highly experienced and dedicated to board-making.



Whether you plan to build a new containerboard production line, rebuild your existing line, improve your process, or whether you need help with service operations, our full scope offering covers them all. Through strong integration with Metso Paper's other technology areas such as mechanical pulping, automation and service, we can provide you with a seamlessly functioning production line all the way from the recycling plant to finished rolls.

Innovations for a better process

Metso Paper is renowned for its high technology and in-depth process know-how. Our R&D achievements in boardmaking include, for example, SymFormer MB, multi-ply forming, closed transfer press sections, the ValCoat coating station, the OptiCoat Duo coating station, the OptiReel reel, and the WinBelt winder.

When selecting raw materials and boardmaking processes for specific end products, turn to our Technology Centers and pilot facilities for professional services.

Always within your reach

Through a global sales and customer service network of 3,000 experts in over 40 locations, Metso Paper provides you with support whenever you need it. This means that you get expert services close to you – effortlessly and effectively.

SAICA

SAICA 1: New OCC plant boosts capacity and quality

The SAICA 1 mill in Zaragoza, Spain, operates a new 1,200 tpd OCC plant that started up in May 2004. Metso Paper delivered the continuous pulping, coarse screening, fractionation and fine screening systems, as well as the erection, supervision, start-up and training services. The pulp goes to PM 7 that produces liner and fluting in the basis weight range of 105-175 g/m².



Mr. Federico Asensio,
Mill Director, SAICA 1

SAICA 1 OCC plant:

- Continuous pulping, coarse screening, fractionation and fine screening systems supplied by Metso Paper
- Product: Pulp for liner and fluting production
- Capacity: 1,200 tpd
- Raw material: 100% recovered paper

"Metso's work was perfect regarding the erection of the line. Everything took place on time, and the start-up was very smooth and fast. We no longer have any paper machine shutdowns caused by lack of stock. PM 7 makes less reject, and the liner and fluting appearance has improved since the earlier dirt spots have disappeared," says Mill Director **Federico Asensio**.

"We are very satisfied with the total production capacity and the pulp quality of the new plant. I am personally very happy about the way we are working with Metso. They recognize our long experience in OCC lines and are very open to our recommendations."

"Metso has shown willingness to do anything necessary to optimize the performance of the plant. The cooperation is fantastic."

Nine Dragons PM 3:

- Product: Testliner and white-top grades
- Capacity: 1,100 tpd
- Design speed: 1,150 m/min
- Wire width: 5,950 mm
- Basis weight: 100-250 g/m²
- Furnish: 100% recycled OCC



Mr. Liu Wen Wen,
Vice General
Manager and
Senior Engineer of
Nine Dragons

Nine Dragons PM 3: Running at world class speed – 1,130 m/min

Dong Guan Nine Dragons Paper Industries Co., Ltd is a leading producer of container-board in China. The company's 5.9 m wide PM 3, supplied by Metso Paper and started up in 2002, represents the latest technology available. It is also one of the fastest foudrinier machines in the world, running at 1,130 m/min. Its three-ply forming section makes it possible to produce higher quality testliner and white-top grades out of lower quality fiber.

Since many of the corrugated boxes made from the Nine Dragons liner carry exports from China around the world, they have to feature extreme durability. Also, many of the boxes will be printed, placing greater demand on high surface smoothness.

Nine Dragons entrusted Metso Paper with its PM 3 as well as with its PM 2 in 2001. "Cooperation is the key to success – you have to be committed and solve problems together. Attitude is a decisive factor for everything," says Mr. **Liu Wen Wen**, Vice General Manager and Senior Engineer of Nine Dragons.



It's a lifelong process

During its lifespan, a containerboard machine goes through many phases from engineering, erection, installation, start-up, optimization, service, process improvements and rebuilds to final replacement. Metso Paper is by your side throughout the entire investment life cycle.

At the investment stage, Metso Paper's feasibility studies help you ensure correct process dimensioning, analyze machine performance capabilities and evaluate costs. Our experienced staff understands all the aspects of project execution. And if you lack your own resources, you can hand over total project responsibility to us.

Metso Paper's numerous life cycle services help you reach the set targets – and run the machine with the lowest cost per produced ton and minimized unscheduled downtime.

Whether your aims include raising capacity, improving quality, changing grade, optimizing costs, boosting safety or reducing environmental loads, Metso Paper has the optimum solutions for you – regardless of the original machine manufacturer.

Obbola PM 1:

- Product: Kraftliner and Eurokraft
- Capacity: 420,000 tpy
- Operating speed: Max. 850 m/min
- Wire width: 9,470 mm
- Basis weight:
 - Kraftliner 100 – 186 g/m²
 - Eurokraft 125 – 180 g/m²
- Furnish: Sulfate pulp and OCC

SCA Packaging Obbola PM 1: Results through long-term cooperation

SCA Packaging Obbola, located in northern Sweden, produces 420,000 tpy of unbleached linerboard for the European market. For several years, the mill and Metso Paper have developed the production processes together under a cooperation agreement.

For example, the recent PM 1 upgrade included forming section fine-tuning of the vacuum, dewatering and mist removal systems, and improvements in the water handling and cleaning systems.

"The supplier we cooperate with must contribute to reaching our long-term development goals of optimal control over the process, high availability and low total costs," says **Nils Emanuelsson**, Purchasing Manager at SCA Obbola.

"Together with Metso Paper, we have reached our targets regarding improved runnability, quality and fewer sheet breaks."



Mr. Nils Emanuelsson,
Purchasing Manager at
SCA Obbola



WOLSAN



Ms. Anneli Burman,
PM 1 Superintendent
at Kappa Kraftliner Piteå

Kappa Kraftliner Piteå PM 1 and 2: White top linerboard optimized

Swedish Kappa Kraftliner Piteå, the biggest kraftliner mill in Europe, has prepared itself for the growing white top liner demand with continuous investments. The optimal scope rebuilds both on PM 1 and PM 2 were the end results of thorough machine analyses carried out by Metso Paper.

Piteå PM 1:

- Product: Brown kraftliner
- Capacity: 375,000 tpy
- Design speed: 1,000 m/min
- Operating speed: Max. 925 m/min
- Wire width: 7,200 mm
- Basis weight: 115 – 300 g/m²

Piteå PM 2:

- Product: White top liner
- Capacity: 325,000 tpy
- Design speed: 1,100 m/min
- Operating speed: Max. 920 m/min
- Wire width: 7,300 mm
- Basis weight: 100 – 200 g/m²

In 2002, the production capacity of PM 1 was increased by removing its runnability and drying capacity bottlenecks. At the same time, PM 2 underwent a quality-targeted wet end rebuild, and now runs with improved profiles, and breaks have been reduced to half.

"Metso Paper's people are always easily available, the technological solutions are innovative, and Metso Paper works flexibly," comment Ms. **Anneli Burman**, PM 1 Superintendent and her colleague Mr. **Lars Bergström**, PM 2 Superintendent.

Mr. Lars Bergström,
PM 2 Superintendent at
Kappa Kraftliner Piteå



Wolsan Paper PM1:

- Product: Testliner and corrugating medium
- Capacity: 230,000 tpy
- Operating speed: 900 m/min
- Basis weight: 118 – 180 g/m²
- Furnish: Korean OCC



Mr. Kim Jin Doo,
Mill Manager at
Dong Il

Wolsan Paper PM 1: Rebuilds more than doubled capacity

Wolsan Paper PM 1 was modernized by Metso Paper in steps. In 2001, this South Korean machine was equipped with a new top ply fourdrinier, SymFlo head-boxes for both the base and top ply, and a SymBelt shoe press for the second nip position. In 2002, the dryer capacity was increased, and a SymFormer MB was added to the base ply fourdrinier to enhance the dewatering capacity.

After the rebuilds, the formerly 450 m/min line with a capacity of 90,000 tpy now runs up to 900 m/min and produces 230,000 tpy of board. In fact, PM 1 is the fastest linerboard machine in South Korea today.

Out of Korean OCC the mill makes high-quality products and exports part of them to the demanding Japanese market. "It's the profiles, formation and even quality that make our products attractive," says Mr. **Kim Jin Doo**, presently Mill Manager at Wolsan Paper's sister company Dong Il, but previously project manager for the two rebuild projects at Wolsan Paper.

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