THE RISI POWER LIST
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A vision of what could be and the determination to achieve the goal has revived this coreboard manufacturer

**CORENSO CREATES ITS OWN DESTINY**

When Stora Enso acquired Consolidated Papers in 2000, PM 12 at the Wisconsin Rapids, WI, mill was a coated fine paper machine. Nowadays, it is the prize asset of Corenso North America, a 100%-owned subsidiary of Stora Enso. It no longer produces fine paper but has been converted to produce coreboard (core, tube) and grades for the industrial packaging market. How it arrived here is quite the story.

In 2000, coreboard was being produced on BM 13, an old multi-cylinder unit. Meanwhile, PM 12 was near the end of its life as a fine paper machine and in 2002, it was shut.

Also in 2002, Corenso North America was formed as a unit of Finnish-based Corenso United. Corenso United was a joint venture between Stora Enso (72%) and UPM (28%). Stora later bought out UPM’s shares.

That same year, a new slitter/winder (Tidland and GL&V) was installed on BM 13. “We knew that PM 12 would be shut down,” says Mark Ellis, director of coreboard operations for Corenso North America. “But, the new slitter/winder was ordered to fit both paper machines.”

At that time, Ellis and his team knew the right thing to do would be to convert PM 12. But, as he says, the approval process was quite complex. “We proposed the idea and Stora Enso bought in.”

In 2004, Vahjo did a pre-feasibility study on converting PM 12 for coreboard production. The next year, Pöyry conducted a feasibility study. In Fall 2006, the project was approved.

In January 2007, equipment was ordered. The project was done in two phases as the plan was to keep BM 13 operating as long as possible. Stock preparation is in a separate building and a virtually new OCC line from Kadant Black Clawson was installed in autumn 2007. Ellis says about 70% of the line is new. “We were able to re-use the pulper and some of the older thickeners.”

Ellis is also responsible for purchasing the mill’s raw material and he says the OCC quality that the mill obtains is excellent. It is sourced from within a 250-mile radius of the mill. US-made corrugated, which makes up the bulk of the mill’s OCC is much higher quality than Chinese-made, notes Ellis.

**A CHANGE IN MILL OWNERSHIP**

The new recycling line started in October 2007. It should be noted that while all this was going on, in
late 2007, Stora Enso sold its North American assets to NewPage, but Corenso NA was not part of the deal. Corenso North America now leases the space it occupies in the Wisconsin Rapids mill.

In March 2008, the final rebuild on PM 12 was complete. Corenso worked with Vahto to convert the machine. Although PM 12 had been stopped since 2002, regular maintenance had been kept up such as turning the dryer cylinders and bearing lubrication.

The gap between the shutdown of BM 13 and the startup of BM 12 was only 11 days. This was the time needed to move the pope reel that had been installed on BM 13 in 2002. For the most part, BM 13 was scrapped. Total project cost was $35 million.

Design capacity of BM 12 is now 85,000 tonnes/yr and, “That’s where we’re headed to,” says Ellis.

Over the years, the core and tube market has shrunk in the US, forcing Corenso to work with customers in new markets such as industrial packaging. “We do a lot of narrow web products,” Ellis explains, for spinal wound core and tubes and edge protectors. The mill serves markets for high-strength paper cores, flexible packaging, mailing tubes, towel and tissue.

The mill now produces about 11 grade families. A core for coated paper running on a modern, high-speed press has much more demanding properties than a mailing tube. For Corenso, coreboard grades are measured by strength (Scott Bond). Within each grade there are different calipers: 12, 13, 15, 20, 25 up to 40 pl.

As fine paper is thinner than coreboard, a lot of work was needed in the wet end: headbox, forming and press section. Vahto supplied this equipment. A couple of dryers were relocated to fit in the new press section. These dryers were re-installed where the size press had been.

BM 12 now features a Dandy roll for surface treatment, lumpbreaker, double-felted first and second presses. The second press is a shoe press.

**COMPREHENSIVE AUTOMATION**

Corenso took giant strides in its automation. Ellis believes the machine has the most comprehensive ABB system in the US with the most pieces in one place.

As well as the new equipment the mill was able to re-use older technology such as the Smart U-Frame Scanner and Smart Calender Profiler. “ABB determined what was needed to get it up and running again with the new, thicker paper,” Ellis adds.

New pieces include the dilution control equipment for the headbox, air/water moisture profilers, the newest 800 XA automation system as well as the distributed control and quality control systems.

A drives package was also included. The older dryer drives were integrated with the new digital front end technology into a complete paper machine control system. New AC drives were installed on the wet end.
There is a control room as well as an operator station at stock prep. Then, the beater boss in the paper machine control room is responsible for additives, refining and biocides. Each complex can see what the other is doing. But, the beater boss has a fully integrated operator station so he can control stock prep if ever needed.

ABB also supplied a CPV: Collaborative Production Management product – production management system that takes orders, plans trims and tracks the rolls. Corenso is also testing Smart Client, which is a high-level program that looks at all the paper machine information such as operating and energy data. It also has trending capabilities.

Corenso has a service contract with ABB for technical support and to help with any issues that may arise with the control systems. ABB has personnel on site, both at Corenso and NewPage.

The mill's lab does extensive testing with samples taken from every reel. Tests include moisture, caliper, weight, freeness and consistency. There are a variety of strength tests done: ZDT, Scott Bond and ring crush. "The grade drives the test," says Ellis. "For some customers we also do Taber and tear."

HELP FROM AFAR

Ellis notes that the mill employs a "lot of talented people." To help start up the revamped BM 12, the suppliers helped but a lot was done in Finland at the Corenso United mill in Pori. "Our history was cylinder-based production," explains Ellis. "Corenso United started in 1992 with a fourdrinier. The Pori paper machine was our model and we worked with them. They were here at startup and showed us how to operate."

The Finnish sister was involved with the project from the beginning, helping with the design and vendor selection. Operators from Wisconsin Rapids even made the trip to Finland for some hands-on training. "We still can count on their support," adds Ellis.

The comprehensive preparation and training paid off as the project started on time and came in on budget.

R&D and product development is done for the most part in Finland. Corenso North America can use both Corenso United and Stora Enso facilities. "We can make changes ourselves," Ellis says. "It depends on the request from the customer."

Speaking of customers, Ellis says that BM 12's product has been very well received in the market. "The quality is better off BM 12. The top grades are stronger than the top grades off BM 13. We are the top producer of high-strength coreboard in North America."
The mill was able to keep its original customer base and with the increase in production has also expanded its market. And, word of mouth about Corenso's high quality has also led to new customers asking for its products. "We had a good base because external clients wanted more and others were asking for Corenso's coreboard. We have done a lot of trials with new customers."

"One of the advantages we have is that most of our competitors, with the exception of the lightweight producers, make their sheet by building plies (up to 10)," Ellis explains. "We do it in one layer so ply separation is not an issue."

Another difference he adds, is that Corenso's sheet is more square, "so fiber orientation is more square", for example, two for the MD and one for the CD compared with a more conventional ratio of 4:1. Therefore, the profile is flat and there is no edge curl.

"This is a more a technical product than people realize," Ellis says. "There is a lot of demand on cores for various end products."

One of the goals that Corenso had for the revamped BM 12 was to keep the clean appearance of the end product that BM 13 could produce. The old system melted the wax in the furnish and dispersed it through the sheet. Now, the mill can take out the wax and to keep the clean appearance, with the modern screens and cleaners used in the project.

Although the mill has come a long way, there is still much to do. Ellis says they are still in the "learning curve" for the machine although it is already up to 800 ft/min. "There are a number of things we are looking at. We want to invest in the business," Ellis says.

Potential projects include improving energy efficiency. For example, in 2010, a 360-hp screen motor will be replaced with a 75-hp unit. Corenso is also looking at reducing water consumption as well as improvements to the slitting section and packaging line.

The packaging line was not touched in the original project so the mill is looking at increasing automation, including the use of robots, to improve productivity. Ellis fears the packaging line could become a bottleneck in the mill if it is not upgraded. The leading bay is also under observation to see if the way the finished product is shipped can be made more efficient.

The conversion of BM 12 included the installation of a Dandy roll, lumpbreaker and double-felted first and second presses.

Known as the time tunnel, this is actually the rejects drainer located in the stock preparation room.

Considering all that has happened at the mill in the last eight years, perhaps Ellis is understating the case when says that the project was "challenging and interesting". However, the team appears to have chosen the right path. PPI