

REGAINING CONTROL

By GRAEME RODDEN, Executive Editor

Never afraid to be a leader or spend on its mills, Green Bay Packaging opted for a new ABB control system to improve quality and eliminate maintenance issues



Green Bay Packaging (Green Bay, WI) recently found itself in a situation familiar to many mills. Its automation systems were ageing (20 years plus) and different components had been acquired from various suppliers. This made it increasingly difficult to operate and troubleshoot not to mention the problem of trying to find spare parts. It was time as Doug Vandenberg, operations manager, Green Bay Mill Division, says, to “get something more uniform, more reliable and with an ease of maintenance.”

Built in 1949, Green Bay Pulp & Paper was the first mill to commercially produce neutral sulfite semi-chemical pulp (NSSC). At startup, it produced corrugating medium from 100% virgin fiber (hardwood). It began using post-consumer waste (OCC) in 1957, setting the stage to using a 100% OCC furnish in 1991. In 1962, Green Bay Pulp & Paper merged with Green Bay Box (see sidebar) to become Green Bay Packaging.

The mill’s first and only machine had its first wet end rebuild in 1982. Most of the original machine was Black Clawson. In 1989, the entire machine was rebuilt by Beloit. The rebuild included a primary headbox, fourdrinier table, redesigned first press, extended nip second press, high pressure dryers, AC drives, rewinder and a distributed control system (DCS). At this point the mill increased its recycled content to 50%.

A couple years later, in 1991, Phase II of the rebuild took place. This included the installation of a BelBond top former and secondary headbox. It was then that the mill closed its pulp mill and recovery plant, moving to a 100% recycled furnish. It also converted from producing medium to linerboard.

However, the Green Bay Packaging Mill Division has since returned to producing medium, which accounts for about half of its 232,000 tons/yr (660 tons/day).

QUALITY AT THE FORE

Although quality was not a problem, the mill is always striving for continued improvement. “Over

Electronics and instrumentation superintendent Rich Allen (left) and paper machine superintendent Pete Ross by the new ABB scanner

time, things were getting older and obsolete,” Vandenberg says. “We needed to increase our productivity, but to do so we needed to continue to improve quality.”

“There were a lot of issues,” adds electronics and instrumentation superintendent Richland Allen. “There was a lack of ‘communication’ between the systems. We had to reset the linear steppers too often. We would lose our mapping and get choppy profiles. We needed a unified source/system.”

Operators were spending too much time maintaining the scanner. Also, calibrating the individual actuators was a problem connected with the communication issue.

800XA WAS THE ANSWER

Vandenberg says the mill started working on the project in 2008-2009 and it was approved in early 2010. The mill turned to ABB for the solution. The scope of supply included an 800xA Version 5 QCS with network platform, automatic grade change and coordinated dryer control as well as new 800xA hardware for the ABB 4-in. linear steppers.

With a Harmony connect, the system was interfaced to the existing MD actuators for speed, weight and moisture controls. Additionally, the 800xA system was interfaced to a new ABB Air Water Profiler for CD moisture control and existing CD weight actuators for CD weight control.

The new system was a standalone project for the mill other than a shower upgrade. The equipment was installed during the course of normal shutdown on October 14, 2010. The mill was able to install some pieces such as the Air Water Profiler during an earlier shutdown so maintenance and operations crews were able to complete the work in one day instead of the two scheduled.

Other work connected to the project such as the water supply system, piping, consoles, installing the hardware and software could be done when the mill was running. “The only thing left for the crews to do was take out the old scanner, install the new one and do the final tie-ins,” explains Allen. “They were able to do it all in about 12 hours.”

Green Bay Packaging produced saleable paper after three reels. With 30 minute turn-ups, this

means the mill had saleable paper 1.5 hours after startup.

There were some specific objectives that the mill wanted to achieve. “We wanted to make a unified platform and increase production by improving our quality with better moisture profiles,” says Vandenberg. “We wanted to eliminate the upsets and be more reliable.”



Green Bay Packaging uses more than one quarter million tons of post consumer fiber annually

The mill's first and only machine was rebuilt in 1991





The mill's production is sent to Green Bay Packaging's own converting operations

According to Vandenberg and his team, the goals have been met. They credit the in-house engineering group for being critical to the success of the project.

The old moisture control system had 42 rows of four nozzles each. Maintenance was a tough task. Now, there are 56 rows with one nozzle per zone and air atomized showers. The water goes where it should. All the actuators are automated; previously, the mill was often forced to run in a manual mode.

One of the things that helped get the project approved was the promised steam savings. In terms of cost, actual steam savings are projected to be about \$0.5 million, or just over 8%, far above the 2.25% guaranteed.

Other improvements have come in bone dry weight CD control 2 sigma, moisture CD control 2 sigma, break recovery times, MD weight and moisture.

Some training was done at ABB in Columbus, OH. Four operators were sent there to see what they were getting. They had some input into the operating procedure. Training was also done in the mill so when it came time to start up, there were no surprises. The operators are very happy overall, adds Allen. "They trust the system."

From collars to cartons

Founded and still owned by the Kress family, the company had its beginnings in 1919 when Frank Kress began making wooden boxes as a side business to his horse collar company. The mill's paper machine is named the Marguerite K, the wife of George Kress (Frank's son).

Unfortunately, the company went bankrupt in 1926 but George mounted a rescue effort and that same year formed Green Bay Box and Lumber, still making wooden boxes and horse collars.

In 1932, the repeal of prohibition brought a large demand for beer cases and other food processors also started using more wooden boxes. Between 1933 and 1948, the switch was made from wooden boxes to corrugated shipping containers. George saw the need to build his own mill, which led to the formation of Green Bay Pulp & Paper and the opening of the paper mill in 1949. As noted, Green Box and Green Bay Paper merged in 1962. The company built its second paper mill in Morrilton, AK.

Now, the company has a total of 29 facilities separated into divisions such as Packaging Systems, Coated Products Division, Folding Carton Division, Paper Slitting Division, Coated Slitting Operations and Pinecrest Lumber. Morrilton is also the site of its Fiber Resource Division.

The Kress family has long been active in supporting the communities in which it has operations. It is also very involved in safety issues through the Kress Foundation. It has sponsored the Pulp and Paper Safety Association's (PPSA) "No lost work day case award" for many years and in 2011 initiated the PPSA's "No OSHA recordable case award".

KEEPING COLLEAGUES HAPPY

The majority of the production from this mill is utilized in its internal boxplants. “We have frequent feedback from our plants and they liked our sheet before,” Vandenberg explains. “One of the goals was to reduce variation in basis weight and moisture and provide a more reliable product.” Green Bay Packaging owns 15 container facilities across the US in its Corrugated Container Division. The mill’s paper is used to produce corrugated containers of various types for fast food, tissue, soap, appliances and other industries.

What’s next? The mill is rebuilding the fourdrinier table in 2011. IBS is the lead supplier. The mill is looking to maintain its strength and be able to offer the same properties at a lower basis weight, notes paper machine superintendent Pete Ross. This would result in fiber, chemical and further steam savings as well as reduced transport costs.

Green Bay Packaging is also looking at replacing its base fine screening system, which is 19 years old. There are other, smaller quality and reliability issues that are being studied. There is some concern about the US MACT regulations for boilers. The mill has a coal-fired boiler that, in the worst case, could need significant capital for control equipment to meet MACT limits. This would mean the natural gas-fired power boiler would have to be used. In any case, the mill is looking at a new control system for the coal-fired unit.

Environmentally, the mill has an enviable record. It is the first paper mill to close its water system. The work on this started in 1963. By 1972, it had a completely closed water system. After closing the pulp mill in 1991, the mill’s water system was out of balance and the mill started to discharge to the local municipal treatment plant at a rate of 100 gal/min. (The mill does not have its own effluent treatment plant.) By September 1992, it had completely reclosed its water system.

The mill uses between 160,000 and 200,000 gallons of make-up water daily to account for evaporation in the drying process as well as the water content in various reject streams. There is a “huge” clarifier to clean white water.

This is a company that has not been afraid to be a leader and as Vandenberg says, “It’s good to see that the company is willing to spend money in the mill on big projects.” **PPI**



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The furnish

The Green Bay mill uses 252,000 tons/yr of post consumer fiber, about 45-55 trucks daily. Yield is in the 92-93% range. Rejects include plastic, wax, metal, wood, nylon and Styrofoam. Most of the furnish comes from the mid-west, particularly the Chicago area. As it uses OCC, grocery stores play an important role in providing the mill with fiber. The mill has about 175 suppliers.

As much of the US has gone to single stream recycling with no curbside separation, sorting out the debris always poses a challenge. Operators are trained on what to reject. Because there are so many suppliers, there is a lot of variation in the quality the mill receives.

The OCC arrives at the mill in bales. There are high-density cleaners after the continuous pulpers. There is a junk tower for heavies, coarse and fine screening and detrashers for the plastics. There is a possibility that the plastic could be made into fuel pellets sometime in the future.

The recycling plant went through a large modernization in 1992. Black Clawson (now Kadant) did most of the work.