Expert Witness

Bradley Kiff, Joseph Hubbard, John Brzezinski, Tony Newman, Greenpac.

Greenpac

Linerboard mill on a true track for success.

AstenJohnson

Linerboard mill on a true track for success

Hannu Korhonen and **David Hufnagel** from Greenpac (left and center) with **Steve Lachacz** from AstenJohnson on the 9.03 m (356 in) trim linerboard machine at Greenpac.

It was five years ago in July 2013 when the first roll of lightweight linerboard came off a new machine at a new mill near Buffalo, New York. Sure, the nearby Niagara Falls are impressive. But, so is this 100% recycle Greenpac Mill.

Producing high-quality, lightweight packaging grades from 100% recycle isn't the only thing that the Niagara Falls area is known for.

A series of nearby waterfalls plummet 176 feet (53.6 m), span 3700 feet (1115 m), and dump 750,000 gallons (2,800,000 liters) per second over the precipice. That's enough to attract 8,000,000 visitors a year – slightly more than come to visit the nearby Greenpac linerboard mill.

Still, the visitors to Cascades' Greenpac Mill have reason to be impressed: a sustainable recycling operation and a modern, large linerboard machine (9.03 m or 356 in trim) are showcased in this mill which produces extra-performance packaging grades.

Extra performance

"We basically produce two linerboard grades here," says Murray Hewitt, Greenpac's General Manager. "One is a HP (high performance) grade that is basis weight driven. The other is a grade we introduced called XP (extra performance) which is sold based on its ability to meet strength guarantees."

Sheet basis weight is of little value to a box maker if the box doesn't meet strength targets for edge crush and compression. "With our XP product, we focus on the criteria that are important to our customers," Hewitt says. "The fact that we make the sheet lighter while adding starch for crush resistance is an added plus, as it also reduces transportation costs for our customers."

Careful consideration for trials

The machine and related auxiliaries were supplied by one company (Valmet), which also had a multi-year agreement for the machine clothing. There were limited exceptions for Greenpac to run trials with other suppliers to stimulate competition. However, this meant mill management had to carefully consider and prioritize which machine positions and which suppliers to run trials with.

A couple of priorities for fabric trials were clear: the pickup (press) felt position and the base-ply forming position. As Tony Newman, Production Manager at Greenpac, explains, "Stability and consistency throughout our operation is a very high priority. We just weren't achieving these things in critical forming and pressing positions."

A pressing matter

According to David Hufnagel, Junior Process Specialist who was formerly a machine operator at Greenpac, the issues with the pickup felt were that it was widening out, sometimes wrinkling, and occasionally popping at the seams. "Cleanliness was also an issue, as we had to shut down and do caustic washes a few times a month," he says.

Greenpac elected to try an AstenJohnson AccuFlow press felt in the pickup position. "You only get one chance to make a good first impression," says Steve Lachacz, AJ's Sales/Service Representative for the region. "Getting a trial for AccuFlow was the entry point we were hoping for."

The trial happened in late 2015. "Right off the bat, the fabric didn't widen, didn't fill in, and dewatered well," Hufnagel says. "The performance was as good as we hoped."

According to Daniel Hédou, AJ's Global Technology Leader for Press Fabrics, AccuFlow is the first four-layer woven press fabric with high void volume and a single seam without lamination. "Suppliers have tried different ways to add mass to a press felt to increase dewatering capacity, but they always involved a double seam with its inherent problems," Hédou says. "AccuFlow, with its single seam and high void volume, has been a game-changer in the press section."

Tracking true

At its trim and design speed (915 m/min or 3000 ft/min), Greenpac's machine is one of the continent's largest packaging machines. It has a capacity of 540,000 t/a in basis weights ranging from 97-170 gsm (19.8-34.8#/1000 ft2) from 100% recycled fiber -- mostly OCC.

From day one, the forming fabric for the base ply (top position) had a severe guiding issue – "running off the rails" during every start-up or shutdown. "The top wire was the most critical issue we had to solve," Hewitt says. "We struggled keeping the wire on the machine. The machine supplier and clothing supplier couldn't resolve the issue in a timely manner. It kept going in circles, so we began looking at alternatives."

Due to the high hydraulic flow conditions of forming positions on wide and fast Fourdrinier packaging machines like Greenpac's, the stock-on/stock-off guiding issue is not uncommon, according to Mike Boettcher, Forming Product Manager for AstenJohnson. "In my 30+ years in this business, I've seen it quite often," Boettcher says. "However, the situation at Greenpac was one of the more clear-cut examples and could have been catastrophic – losing an expensive forming fabric and/or damaging other machine components."

"Fabric performance has been good, and AstenJohnson is supporting us. We meet often to discuss what improvements we can make."

Murray Hewitt,
Greenpac General Manager

According to Hufnagel, "We were told that it was a machine issue. We had operators with wrenches keeping the wire from running off the back side by adjusting the hand guides with wrenches until the fabric settled in to a range that could be handled by the automatic guides. So, just to check, we ran a wire with the twill in the other direction and the fabric ran off the front side of the machine. That was the turning point for me – we knew it was a problem with the fabric."

"I've had AJ products in all the mills I've worked for over 30 years," Hewitt says. "So, we gave them this opportunity." AstenJohnson recommended its KraftStar fabric with a unique, patent-pending option called TruTrac™.

TruTrac was designed exactly for situations like Greenpac was encountering, says Boettcher. "We modify the twill pattern on the machine side of the fabric to eliminate guiding problems for positions that are sensitive to high hydraulic flows.

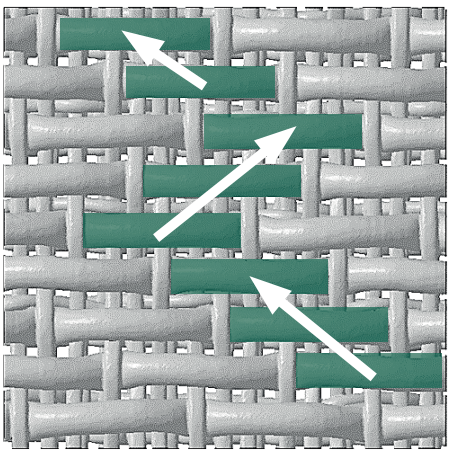
"On the day of the trial, even before the fabric was installed, three AJ guys found two rolls that were causing our wear problems," Hufnagel says. "We had been struggling with this since start-up. It was refreshing that a supplier was looking at the whole machine, not just the fabrics. From the moment KraftStar was put on, it was obvious that AJ nailed it. The tracking was phenomenal, and the caliper profile was exactly as we wanted it."

Greenpac is now also running an AJ wire on the finish ply (bottom) forming position. "We are trying to improve our ply bond, and our thinking is that by having compatible wires top and bottom from the same supplier, we will get that improvement working with a single supplier," Newman says.

Boettcher points out that modifying an existing product with TruTrac is not so simple. "Consistency is important," he says. "Papermakers expect a certain performance and don't want a change that alters machine performance. So, we had to figure out a way to add TruTrac capabilities without detracting from the other product benefits."

Hufnagel agrees. "Our experience is that some fabrics will do one thing extremely well – say dewatering or seam integrity – but will fall down in the other areas that are important," he says. "Product consistency and performance across-the-board are extremely important to us."

David Hufnagel, Junior Process Specialist for Greenpac.



TruTrac machine side

Drying and drawing

Greenpac also ran a trial with AstenJohnson in the dryer section. "In the first UniRun, we had problems with fabric cleanliness and with potential edge cracking," Hufnagel explains. "With 100% recycle, contaminants can ultimately make their way into dryer fabrics. We were changing dryer felts every three or four months due to losses in permeability."

According to Lachacz, "We put the our SpeedTec fabric on in the first UniRun position. Later, when it came off, there were no visible signs of wear or of the fabric filling in."

Switching to SpeedTec also enabled Greenpac to reduce draw in the first position by 28%. While many dryer fabrics have a neutral line with equal distance between paper side and machine side, SpeedTec shifts the neutral line to the sheet side. According to Lachacz, "This minimizes stretch and draw forces on the sheet as it passes through the dryer cans. This design excels on higher speed machines, especially in the early sections where abrasion and contamination are highest."

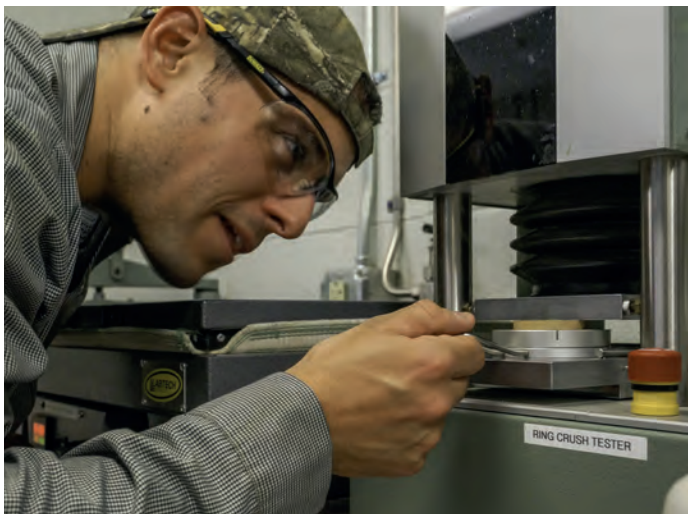
Always more to do

"Greenpac is excellent to work with," Lachacz says. "We've had some challenges given the size and speed of this machine, but they have patiently worked with us as partners."

"We challenged AstenJohnson to provide us a wire that would not run off the machine, and that would not wear quickly and was easy to clean," Hufnagel says. "The very first try with TruTrac, they nailed it. That was a good starting point."

Hewitt agrees. "After the transitions in the wet end, things are much more stable now," he says. "Fabric performance has been good, Steve is here on a regular basis, and the other AJ guys are supporting us. They are learning our machine every day. We meet often to discuss what improvements we can make as we track forward."

Reel/winder operator



The Greenpac Mill produces two linerboard grades. One is a grade that the mill introduced called XP (extra performance) which is sold based on its ability to meet strength guarantees.

Tony Newman, Production Manager

Matt Heiss [AstenJohnson] performing a drainage survey on the former.

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