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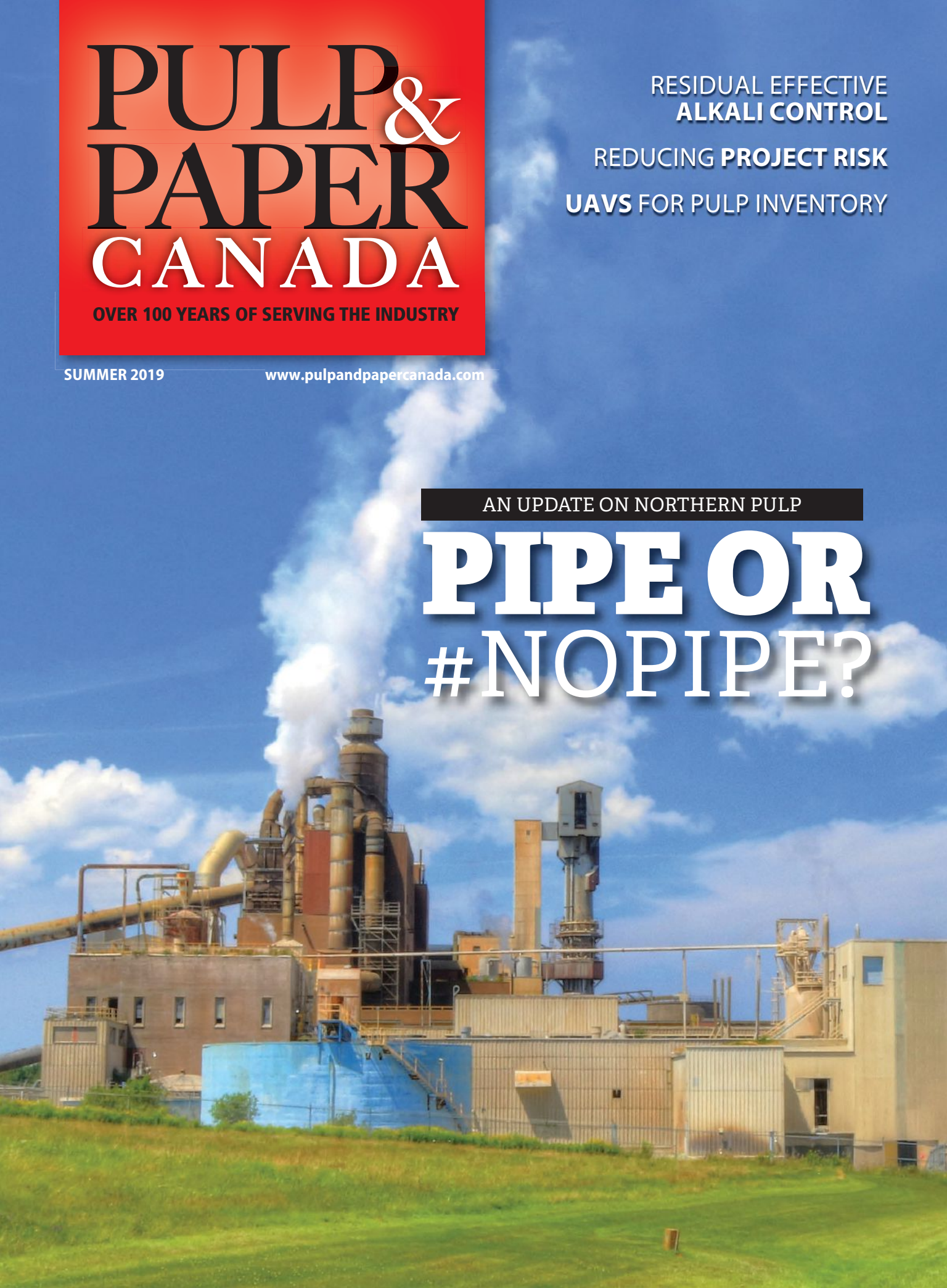

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# PULP & PAPER CANADA

OVER 100 YEARS OF SERVING THE INDUSTRY

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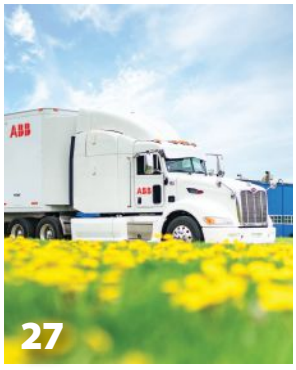


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# Minding the gender gap

When the federal government announced earlier this year that it is investing nearly half a million dollars in a three-year project to increase and retain jobs for women in the forestry sector, it was a small step forward for an industry that has long been traditionally male dominated.

The thing that struck me about the project, which will bring together numerous industry and community stakeholders to formulate the "Gender Equality in Forestry National Action Plan," is that it seems to go beyond a commitment to ensuring forestry companies hire more women. It actually acknowledges some of the real reasons why women are passed over for promotions (unequal access to management training, lack of flexibility for child care) – and why not enough women are working in the sector to begin with (lack of information about the trades, not enough STEM training, pervasive misconceptions about the industry).

Kristina Urquhart
**Editor**

The government reports that in 2016, only 17 per cent of workers in the forestry industry were female. I recently had a conversation with an HR manager at a mill, and he told me that they'd just hired their first female electrician to join a pool of about 100 tradesmen. He wasn't proud of it – and cited the lack of STEM opportunities presented to women, as well as the dearth of information about the pulp and paper industry in general as the chief reasons why he hasn't been able to hire more female workers. There just… aren't that many to hire.

I talked to several women as part of our weeklong online series for International Women's Day back in March, and they had some advice for management when it comes to leadership succession and mentorship. One of the women I interviewed was Irene Preto, an operations specialist at Mercer Celgar, who notes that due to a number of socio-political factors, "women will systematically underestimate their own abilities."

She says male leaders need to provide guidance and positive support as they train the future workforce. And she's right. The pulp and paper industry can't rely on big government investments to fix the diversity gap – part of the change needs to come from within your own organization. That means hiring more women, but it also means hiring more people of colour, especially in and around Indigenous communities that have rights in the forestry sector. Your team will be better for it – you'll not only have new perspectives on how to tackle problems, but you'll acquire a more varied set of critical-thinking and emotional – or "human" – skills – which are what many research firms are predicting will be essential to the jobs of tomorrow.

The diversity gap is just one of the issues we are seeking your help with in our new industry survey called "Retention, reskilling and recruitment in pulp and paper" (see p. 31). We're asking for senior-level leaders to share market insights that will be useful to the entire industry as we address the skills issue from plant floor to C-suite. Please visit pulpandpapercanada.com to access the survey, which will take about 10 minutes of your time – and thank you for your insight! **PPC**

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## Feds invest $100M in Boat Harbour cleanup

The federal government has committed $100 million to support the cleanup of Boat Harbour, Nova Scotia after a pipe carrying effluent from Northern Pulp is removed from the water early next year.

The project aims to restore Boat Harbour back to its natural state by removing and containing contaminated soil and sediment, and improving portions of Highway 348 including the construction of a bridge to replace the current causeway to ensure the flow of water between the ocean and the harbour.

The current pipeline, which passes near the Pictou Landing First Nation and into aerating lagoons at Boat Harbour, will be removed by the government-imposed deadline of January 2020.

The investment, made through the Green Infrastructure Stream of the Investing in Canada infrastructure plan, will also support efforts to restore fish and bird habitat while protecting traditional recreation, fishing and hunting lands for local Mi'kmaq Peoples.

The province of Nova Scotia has already committed more than $100 million toward the cost of the remediation project.

Northern Pulp is currently working on amending its plan to place a new drainage pipe into the waters of Northumberland Strait, which has been met with objection from the community and local fishers. Northern Pulp's parent company, Paper Excellence, has stated that if the January 2020 deadline is not extended, the mill will be forced to close, eliminating over 300 direct jobs.

## Georgia-Pacific invests US$100M into Kentucky Dixie plant

Georgia-Pacific is investing US$100 million in its Bowling Green, Kentucky facility, which produces paper products for its Dixie business.

Originally built in 1991, the plant has seen several expansions in its more than 25 years in operation. Production at the facility represents about one quarter of all paper plates and bowls produced by Georgia-Pacific. This latest expansion will include a new 80,000-sq.-ft. building, the installation of a new printer and several new plate-forming presses. They will also be adding new dock doors with a new driveway with increased on-site truck trailer storage.

"This expansion will help us continue meeting the needs of our customers as demand continues to grow for high-quality, durable paper plates and bowls," says Erik Sjogren, vice-president and general manager of livingware at Georgia-Pacific.

Aside from the increased availability of products and physical changes to the facility, the project will create more than 50 full-time jobs increasing total employment at the plant to about 200 people. With two facilities in Kentucky, Bowling Green and Lexington, Georgia-Pacific directly employs nearly 500 people and has created 890 additional indirect jobs paying US$28 million in direct wages and benefits. Since 2013, the company has invested $66 million in state operations.

"We are excited to expand production at Bowling Green," says Jimmy Lindsay, plant director at the Bowling Green Dixie production facility. "This is a great plant with an excellent safety record, modern facilities and a highly-skilled and qualified workforce. This investment is a testament to the hard work and dedication of our workforce to continuously create value for our customers and the community."

The plant will continue to operate at full capacity during construction, which has already begun and is expected to be finished the first half of 2020.

## North America to see rise in Russian timber and pulp imports

Leading Russian timber companies plan to significantly increase exports of their unprocessed timber and pulp to Canada and the U.S. during the next several years, according to recent statements made by an official spokesperson of Russia's minister of industry and trade.

Due to the current economic crisis in Russia and devaluation of the national currency – the ruble – caused by Western sanctions, timber and pulp exports to the domestic Russian market in recent months have become no longer profitable for local producers. Many have re-directed their supplies to North America, and especially Canada, in recent years.

Suppliers are currently carried out directly, as well as through third-party countries, such as China, whose government imposed a ban on the felling of forest about 10 years ago due to ecology issues.

The range of exports includes plywood along with lumber produced from Russian hardwood. A significant part of the exports also accounts for pine, as well as pulp as a separate item.

According to Denis Manturov, the Russian minister of industry and trade, the devaluation of the Russian ruble has led to prices for Russian wood products becoming very attractive for major customers from both Canada and the U.S. This, according to the minister, provides a competitive advantage to local producers in North American market.

Manturov also added that Russia plans to gain significant benefits from the exports of its timber and pulp to both the U.S. and Canada due to the ever-growing local demand for these products, caused by increasing volumes of their local consumption as well as the reduction of competitors from China observed in recent years.

In the meantime, in order to ensure large-scale export volumes, the Russian government is providing subsidies for the exports of Russian wood products to the North American region. In addition, the government may reduce the existing duties on the exports of domestic range of wood products to the North American region, despite the fact that such measures will be contrary to Russia's WTO obligations.

According to data of the Russian Ministry of Industry and Trade, total exports of Russian timber to the U.S. in 2018 reached about US$150 million, and there is a possibility that these figures may significantly grow this year. In the case of pulp, these figures are varied in the range of US$80-100 million.

Overall, the annual exports of timber from Russia is estimated at 30 million cubic metres, the majority of which so far have been exported to the EU states. However, due to the deterioration of relations between Russia and the European Union and the current weakness of the euro caused by the stagnation of EU economy, the majority of Russian timber producers will consider the North American region as one of the priorities for their further development in the years to come.—*Eugene Gerden*

## CO2 capture unit starts up at Quebec mill

A CO2 capture unit installed by CO2 Solutions Inc. has started commissioning at a Resolute Forest Products pulp mill in Saint-Félicien, Quebec.

The project is in conjunction with Fibrek General Partnership, a subsidiary of Resolute Forest Products Inc., and Serres Toundra Inc., and involves the deployment of a 30-tonne per day (tpd) CO2 capture unit and ancillary equipment at the pulp mill, as well as the commercial reuse of the captured CO2 by the adjacent Toundra Greenhouse complex.

Start-up of the CO2 capture unit officially took place on March 14, 2019, preceded by the successful pre-operation verifications of each of the capture unit's systems, after which the unit was put into operation and the first tonnes of CO2 were captured.

"This unit, a three-times scale-up from our currently operating 10-tpd unit in Montreal-East, confirms the position of our proprietary enzymatic technology as the world's most advanced second-generation carbon capture technology," says Richard Surprenant, chief technology officer at CO2 Solutions.

Once the Saint-Félicien capture unit reaches its nominal capacity of 30 tonnes of CO2 per day, a six-month demonstration period will begin, after which the commercial phase will begin and CO2 Solutions will generate revenues from the sale of the CO2 to Toundra Greenhouse.

CO2 Solutions says the unit will also reduce the Resolute pulp mill's CO2 emissions and enhance the growth of Toundra Greenhouse's production with a non-fossil source of CO2.

Unlike CO2 capture processes that use toxic amine chemicals, CO2 Solutions' enzymatic technology produces no toxic emissions or wastes, making it a clean process. The construction of the Saint-Félicien CO2 capture unit was partly financed with investments from Sustainable Development Technology Canada and the Technoclimat program of the Quebec government, as well as a loan from Canada Economic Development (CED).

## Kruger Products begins construction of Sherbrooke tissue plant

KP Tissue Inc. and Kruger Products L.P. dedicated the construction site of their future Sherbrooke TAD tissue plant on May 13.

Located in the borough of Brompton, Quebec, the new plant will be constructed on a site adjacent to an existing Kruger paper mill, along the Saint-François River. This $575-million investment will create 180 jobs in Estrie, as well as some 1,700 direct and indirect jobs during the construction period that will end in 2021. In addition, a large number of local suppliers will be involved in this vast construction site that represents one million person-hours of work, which is equivalent to about 10 per cent of person-hours worked annually in all of Quebec's industrial construction sector.

Kruger Products' Sherbrooke Plant will include a through-air-dry (TAD) tissue machine, an advanced ultra-premium tissue manufacturing technology. TAD uses less fibre to obtain a bulkier, stronger ultra-premium product that is exceptionally soft and more absorbent than traditional tissue. The Sherbrooke complex will also include converting lines.

Ultimately, the plant will manufacture approximately 70,000 metric tonnes a year of ultra-premium bathroom tissue and paper towels under the Cashmere, SpongeTowels and Purex brands.

"We are very proud to strengthen Kruger Products' presence in Quebec with this large-scale project that will provide significant benefits to the Estrie region," says Dino Bianco, chief operating officer of Kruger Products, in a release. "What's even more exciting is that the local know-how will shine across North America with products distributed throughout Canada and in the United States."

## Domtar to eliminate 70 jobs at Espanola mill

Domtar's Espanola, Ontario mill is set to eliminate 70 jobs as part of a modernization project.

*Elliot Lake Today* reports that the jobs will be eliminated through attrition and retirement.

Bonny Skene, a spokesperson for Domtar, told the news outlet that the mill is simplifying its process in advance of larger upgrades over the next three years.

As part of the modernization, Espanola eliminated one of its two bleach plants and two of its five batch digesters during a two-week shutdown in May. The move is not expected to affect production volume.

## Canadians receive TAPPI Best Research Paper Award

Canadian researchers J. David "Dave" McDonald and Richard J. "Dick" Kerekes have received *TAPPI Journal*'s 2018 Best Research Paper Award.

Their paper, "Rewet in wet pressing of paper," appeared on p. 479 of the September 2018 issue of *TAPPI Journal*, the publication of the Technical Association of the Pulp & Paper Industry.

The award was presented May 6 at TAPPI's PaperCon 2019 conference in Indianapolis, Indiana.

Monica Shaw, editorial director of *TAPPI Journal*, noted in her March editorial that the pair were recognized by the editorial board for the paper's "innovation, creativity, scientific merit and clear expression of ideas."

McDonald is president of JDMcD Consulting and an adjunct professor at McMaster University. He has previously worked at FPInnovations/Paprican and at Abitibi-Price, and is a fellow of both TAPPI and PAPTAC, the Pulp & Paper Technical Association of Canada.

Kerekes is a professor emeritus of the University of British Columbia and the founding director of the university's Pulp and Paper Centre. He is a fellow of TAPPI and PAPTAC.

Both researchers have received the John Bates Gold Medal from PAPTAC and the Gunnar Nicholson Gold Medal from TAPPI.

## Resolute to give former pulp mill site to Saguenay

Resolute Forest Products is selling the site of the former Port-Alfred pulp and paper mill to the City of Saguenay, Quebec for the symbolic amount of $1.

According to Resolute's blog, the sale will occur later this year and is contingent upon a promise from the City that the 0.3-square-kilometre area will remain open to the public.

The Port-Alfred pulp and paper mill opened in 1924, and was closed by Abitibi-Consolidated Inc. in 2003. The mill was demolished in 2006.

Resolute Forest Products, which was formed by the merger of Abitibi and Bowater in 2007, has owned the site since.

## FPAC honours leaders in forest products sector


In May, the Forest Products Association of Canada (FPAC) hosted its annual Awards of Excellence luncheon in Vancouver, where it recognized individual and group contributions in the forest products sector, including pulp and paper.

FPAC hosts this annual event to recognize excellence in the sector and to honour the achievements of its workers and community partners. Winners are selected across several categories including forest community champions, industry partners, Indigenous leadership, women in forestry, rising stars, innovation and lifetime achievement.

"The people of Canada's forest products sector are making contributions every day to help us realize important environmental and economic outcomes," says Derek Nighbor, FPAC president and CEO. "It's important that we recognize these efforts and say thank you to these special people in our businesses and in our communities who are doing such great work."

Among others, the 2019 award winners include Brian Merwin and the corporate development team at Celgar – Mercer International for the FPAC Innovation Award, Marie-Philippe Drouin at Resolute Forest Products for the FPAC Rising Star Award, and Jim Witiw at Mercer International and François Dumoulin at Resolute Forest Products for FPAC Lifetime Achievement Awards.

## Kruger receives $13.8M for biomass and paper

Kruger Inc. is receiving a $13.8 million investment from the Canadian government for biomass and recycled paper projects in Corner Brook, Newfoundland and Brompton, Quebec, respectively.

The funding, administered through the Strategic Innovation Fund, will support Kruger's investment of over $27.5 million.

At its Corner Brook Pulp and Paper Mill, the company will install a new system to dry low-quality biomass, usually sent to landfills, and use it to produce energy for the plant, thus limiting the use of fossil fuels it needs to operate.

At its specialty papers mill in Brompton, Quebec, Kruger will implement a state-of-the-art facility to produce first-of-its-kind, biodegradable, 100 per cent recycled paper approved for direct food contact that restaurants could use—for example, to wrap hamburgers.

This project will create and maintain 743 jobs (including 30 new jobs at the Brompton mill and another 83 new local jobs in Newfoundland and Labrador), and it will create 176 new co-op positions in post-secondary institutions. In a release, the government states it will also facilitate access to new markets, reduce waste sent to landfills and reduce water use by 50 per cent. Because of the investment, Kruger will avoid burning 48,000 barrels of oil each year and reduce greenhouse gas emissions by 25,000 tons annually.

## Resolute renews labour agreements at three U.S. mills

Resolute Forest Products has announced a four-year renewal of the master collective agreement covering unionized employees of three U.S. pulp, paper and tissue mills.

Unionized employees voted overwhelmingly to ratify the agreement at facilities in Calhoun (Tennessee), Augusta (Georgia) and Coosa Pines (Alabama).

"We are pleased to have reached agreement prior to contract expiration, indicative of our collaborative working relationship. As we look ahead, we have enhanced operational stability as, together, we focus on improving efficiency and the overall competitive position of these mills," says Yves Laflamme, president and chief executive officer of Resolute, in a release. "Our continued union/management partnership serves the best interests of our employees, customers, shareholders and a range of other stakeholders."

The agreement took effect for the Calhoun pulp, paper and tissue mill in May 2019 and runs through April 2023, in addition to spanning the four-year period between May 2020 and April 2024 for the Augusta newsprint mill and Coosa Pines fluff pulp operation.

Approximately 775 unionized employees are covered by the agreement and are represented by the United Steelworkers (USW), the International Brotherhood of Electrical Workers (IBEW), and the United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the U.S. and Canada (UA). The agreement improves wages in each of its four years.

## Cascades inaugurates containerboard plant in New Jersey

Cascades has inaugurated its newest and most modern containerboard packaging plant, a US$76-million investment in state-of-the-art equipment.

Located in Piscataway, New Jersey, the new plant is 450,000 square feet. With 170 employees, the facility makes corrugated packaging using some of the fastest, most modern equipment in the world. With an annual production capacity of 2.4 billion square feet, the operation will allow Cascades to increase its internal integration of parent roll production.

"The inauguration of this significant investment highlights our commitment to both the modernization of our asset base, and the consolidation of our containerboard and packaging activities in the Northeastern U.S.," says Mario Plourde, Cascades president and chief executive officer.

"It also represents a continuation of the important projects that we have carried out in recent years, including the Greenpac Mill in New York State and the Oregon tissue converting facility. With a strategic location in the heart of the markets we serve, the plant will allow us to pursue our growth strategy in the U.S. I am also pleased to note that the project was delivered both under budget and on time.

In tandem with other Cascades plants, the new facility will supply lighter packaging to traditional and e-commerce markets, says Charles Malo, president and chief operating officer of Cascades Containerboard Packaging.

## Buckman owner wins TAPPI Woman of the Year Award


Kathy Buckman Gibson was recognized as Woman of the Year by the Technical Association of the Pulp and Paper Industry's (TAPPI) Women in Industry Division at its recent annual PaperCon conference.

Buckman Gibson is a TAPPI Fellow and received the association's Herman L. Joachim Distinguished Service Award in 2007. She has served as a trustee of the TAPPI Foundation and is a past board member of TAPPI, PIMA (Paper Industry Management Association) and the Center for Paper Business Industry Studies (CPBIS). She also served on the board of the Pulp and Paper Foundation of North Carolina State University.

Buckman Gibson is an owner and director of Buckman, a chemistry company for industries including pulp and paper. She has been involved with the pulp and paper industry for more than 25 years while working at Buckman in various capacities including as chief operating officer, general counsel and chairman of the board.

Currently Buckman Gibson is CEO and president of KBG Technologies, LLC, a joint venture between herself and Buckman established in 2018. KBG Technologies is a certified woman-owned business providing chemistries and smart technologies to the pulp and paper industry and water treatment market.

# Producing furfural in North America

By Silvia Cademartori, FPInnovations

As market competition in the pulp and paper industry grows and traditional revenue streams erode, mills are on the lookout for new products. Increasingly, bio-sourced products derived from biomass are gaining attention. For hardwood kraft dissolving pulp mills, the production of the chemical compound furfural would not only enhance the use of biomass, but also generate additional revenue, and create a reliable source of furfural in North America.

That idea was put forth in a recent presentation given at the Symposium on Biotechnology for Fuels and Chemicals, held in Seattle, Washington by Naceur Jemaa, a senior scientist at FPInnovations. He co-authored the presentation titled, "Furfural from Pulp Mill Prehydrolysates," with his FPInnovations colleagues, post-doctorate fellow Adil Mazar and senior scientist Waleed Wafa Al Dajani.

Global market demand for furfural is growing in part due to its increased use in petroleum refining, agricultural formulations, paints and coatings, pharmaceuticals, and a rise in the overall demand for environmentally sustainable biomass-based chemicals, according to the market research and advisory company, Allied Market Research. Furfural used in North America is largely sourced from Asia, South Africa and the Dominican Republic. There are no furfural plants in North America.

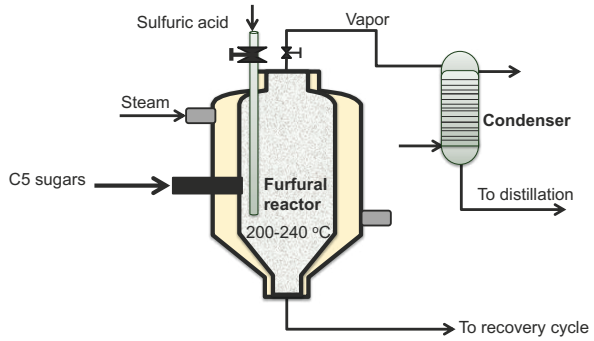
The authors state that North American dissolving pulp mills can be positioned to capitalize on furfural's upward market trend. Currently, prior to the production of dissolving pulp, mills extract hemicelluloses from hardwood chips during a steam prehydrolysis step. A significant amount of five-carbon sugars (C5 sugars) is present in this stream but is burned along with black liquor and lignin. The authors' research indicates that valorizing a waste stream to convert the C5 sugars to furfural can be done competitively, reducing the need for imported furfural, while offloading the evaporators and the recovery boiler at kraft-dissolving pulp mills, which would allow for more dissolving pulp production.

Furfural is a colourless, organic liquid compound that's made by dehydrating sugars that occur naturally in agricultural products and wood biomass. It's primarily used as a renewable, chemical feedstock in industrial processing agents for resins, solvents, polymers, lubricants and fuels. It's also used to a lesser degree as filler in some processed foods, such as brown bread, and in beverages, such as coffee.

"In the last several years, standalone furfural plants in the United States have closed because of the difficulty in competing with overseas producers. The high cost of producing steam for just one product, as well as tight environmental regulations, have made it impossible to make furfural at competitive prices," says Jemaa. "Kraft dissolving mills already meet strict environmental regulations and have available steam, so integrating furfural production into their operations can be achieved economically and responsibly."

The main environmental concern is the effluent created in furfural operations and the treatment of it. Mills have treatment systems in place for their pulp operations, which the researchers say can accommodate the effluent generated by furfural production. Steam and sulphuric acid, which are already abundant in mills, are required to produce furfural.

## Furfural production: set-up




- Patent application filed

According to Jemaa, the furfural supply from Asia is unreliable, as many standalone plants there are also closing: "It's a question of economics. Furfural can be made at a competitive price by kraft dissolving mills and commercial end-users are interested in seeing furfural plants in North America because the current supply is inconsistent. The market is already there."

The researchers propose that instead of burning C5 sugars, they are sent to a furfural reactor where the solution is heated by steam to a temperature of between 200 to 240 degrees Celsius, then adding sulphuric acid. The mixture is then distilled to refine the stream into pure furfural.

There are challenges to be addressed. The volume of C5 sugars extracted from wood chips is large. Some pulp mills generate up to three tonnes of diluted furfural per day in their current process. Market competitiveness depends on the availability of steam, which contributes up to 70 per cent of the production cost of furfural. However, medium-pressure steam is sufficient for production. Additional equipment, such as a furfural reactor and a distillation system, would require capital investment.

The next step for the researchers is to scale up production of furfural. A 20-litre reactor is being readied at FPInnovations' research facilities in Thunder Bay, Ont. The goal is to bring production to mill trials in the short-term future.

"Kraft dissolving pulp mills should take advantage of sugars present in the prehydrolysate stream to produce bioproducts, whether it's furfural, xylitol or others. These sugars are presently wasted and burned. There is a need to convert these sugars to bioproducts to enhance the utilization of biomass and increase the profitability of pulp mills," says Jemaa. "We're getting one step closer to turning mills into biorefineries."

For more information on producing furfural in kraft dissolving mills, please contact naceur.jemaa@fpinnovations.ca. **PPC**

# Q&A: DAVID MEAD

## Investing in capital projects? Keep them on track and budget with these tips from a risk analyst

By Kristina Urquhart


David Mead is a project analyst for Independent Project Analysis (IPA), a research organization and capital projects consulting firm. IPA conducts risk analysis and offers best practices workshops for individual projects and sites in a range of industries including pulp and paper.

Here, Mead reveals some of the ways mills can reduce their project risk.

**PPC:** How can pulp and paper companies benefit from project analysis?

**DM:** Pulp and paper companies are spending huge dollars on capital projects. In general, companies are working leaner and everybody has got more and more things on their plate. IPA is able to help project teams work more efficiently and spend less money on projects. We do this with a database of completed projects that we use to show statistically how project outcomes are affected by the upfront work that project teams do. It really is an eye-opening thing.

That was something that I never understood when I was working in project management for manufacturing companies – how does my project compare to everybody else's? Am I spending more money to install a pump system than my competitors? And that's really so important nowadays for pulp and paper companies, and for industry. They're spending so much money – and it's gotten more important that the money is spent efficiently.

We see client companies make an average of 17 per cent reduction in project costs over a four-year period just by working with us to reduce project risks. If companies are focused on safety, safety improves; if they take their eye off safety, safety gets worse. By reviewing projects at a site and letting them know what risks their projects have and how to reduce them, sites know what to focus on and can make those big improvements in their project systems.

**PPC:** At what stage in a project is project analysis most useful?

**DM:** We often talk to mill project teams prior to full-funds authorization, at their FEL-3 gate. And there, we're able to evaluate the project, give them advice on gaps and let them understand their risks – and then either accept those risks or close those risks before they move forward.

When we review completed projects, we talk with teams about their preparation before authorization, how they executed the projects, and review their costs and schedules. This allows us to give them advice on best practices to improve future projects.

**PPC:** What are some of the common challenges mills are facing when executing their capital projects?

**DM:** It seems like the biggest risks for mills are the same as those for other sectors – doing the right amount of definition work up front. We also see a lot of problems in pulp and paper with having real, clear project objectives up front. Clarity of objectives is a huge driver for outcomes. Also, having a complete and fully integrated team is one of the most important drivers of outcomes as well.

We see a lot of problems with mills at older sites where teams don't do the necessary preparation before authorization. An example of this is an understanding of the locations they will be excavating. If a team is going to dig a foundation for a pump or to put in new footers or something like that, and they haven't captured the data for the underground obstructions, there may be risks. When they start to dig, they may hit a pipe or an electric line – and then they either have to redo their foundation design, or they have to move the equipment location, or reroute the pipes. That's a big thing for sites, and one of the things that I saw when I was working in manufacturing as well – you can do a lot of work with old drawings and things like that, but there may still be a lot of undocumented problems underneath the soil that can cause problems.

The number of major late changes is increasing with pulp and paper. That's clearly based on not doing the work up front. And there are always good reasons for not doing the work up front. Teams are light; they don't have all the

people they need. Mills are focused on putting out paper products, not doing projects. So the project guys sometimes don't have the priority of operations and maintenance.

**PPC:** Where do you see the biggest gaps in project management?

**DM:** We're seeing a reduction in cost effectiveness, longer schedules and operability issues.

Throughout industry right now, we see engineering contractors having more delays than before. And engineering delays affect how well construction can be performed – especially with mill projects, because they usually do a portion of their construction during an outage. If engineering is late, a lot of times it pushes the teams to begin construction before they're completely ready. Project controls require having a control-grade cost estimate, where you can follow it through execution to understand if detailed engineering is getting behind in its schedule.

All of the upfront work is a clear driver of safety and cost and schedule. If engineering gets behind, then everybody is rushing to catch up. If you rush and put more people out there in construction, you may have chaos that leads to more safety risk.

**PPC:** What can mills do to improve safety risk during a project?

**DM:** What we see as best practices is to have a safety review before authorization where the team and the operations and maintenance have all understood what the safety implementations are, and what the safety plan should be. This helps make sure the equipment that goes in is safe when it is installed, rather than coming back later to do it. One of the things we see is that if the team hasn't done that safety review up front, then it becomes something that is done later during detailed engineering when things are more expensive, or during construction when it's even more expensive. Anything that you can understand up front is less expensive than if you make changes later.

**PPC:** What factors can affect the cost competitiveness of projects?

**DM:** Any time there's a change in the personnel that's driving the team through the project, it gives the opportunity for there to be more chaos and for more changes in scope. So you're trying to make changes later on in the project when things cost more and take more time.

Pulp and paper companies certainly understand their safety metrics, and they certainly understand their cost and schedule predictability themselves. Teams can look and see how many safety incidents there are, and can look at their actual costs versus their estimates. It's easy to see if they're overrunning or under-running.

But another really good thing for paper companies to understand is not just predictability, but whether they are spending too much. One of the things that we see with pulp and paper, and many other industries as well, is having estimates that are too high. Projects that have high cost estimates end up spending more. **PPC**

Northern Pulp's operations in Abercrombie, Nova Scotia

Northern Pulp photos © Murdo Ferguson/Paper Excellence

## AN UPDATE ON NORTHERN PULP

# PIPE OR #NOPIPE?

Northern Pulp is awaiting a final government decision on its new effluent treatment plan amid an approaching deadline and pressure from community stakeholders – here's the latest on the contentious saga

By Treena Hein

It's perhaps the most difficult time in history for industrial chemical plants to be "friends" with their neighbours and to communicate the progress that has been made in effluent treatment. In some cases, even though plans for much-improved effluent treatment are in the works, if there's been a history of contamination – and there's no flexibility in the timeline to get new treatment in place – a plant is at risk of shutting down.

That's strongly not the outcome hoped for by Paper Excellence Canada (PEC) about its kraft mill, Northern Pulp Nova Scotia Corporation in Abercrombie, Nova Scotia. In May 2015, Northern Pulp was given until January 30, 2020 by the provincial government to stop using the Boat Harbour effluent treatment facility that it's historically used – the building borders the reserve of the Pictou Landing First Nations, and is owned by the province. Northern Pulp has proposed a new on-site facility, with treated effluent being piped for outlet into deep ocean waters in Caribou Harbour in the Northumberland Strait, the same water body where effluent has flowed since the Boat Harbour facility was commissioned in 1967.

Passage of the legislation shutting down the existing facility (The Boat Harbour Act) was spurred by a pipe rupture incident in June 2014 that resulted in 47 million litres of untreated effluent being released into a nearby wetland instead of reaching the Boat Harbour facility. Northern Pulp pled guilty of the associated charge and was fined $225,000.

### A community divided

Knowing all this, you might agree that it's a gamble for the current provincial government to entertain a plan for a new effluent treatment facility. It's also a compromise of sorts; representatives of all three major political parties have vowed to the people of Pictou County that they would close the Boat Harbour treatment facility. However, hundreds of jobs are at stake. If the treatment facility

closes, Northern Pulp closes and over 300 direct jobs will be lost, as well as many more jobs in the forestry industry associated with mill function (Northern Pulp, for example, purchases almost all the wood chips produced by all of the province's sawmills). Indeed, in early April this year, Unifor representatives had a meeting with Nova Scotia Premier Stephen McNeil about the importance of the mill jobs.

Northern Pulp's plans for a new onsite effluent treatment facility were submitted to the province in January. There is strong opposition to this plan from environmental groups such as the Friends of the Northumberland Strait or FONS, (more on that later), as well as fishers and others. Indeed, a standoff with fishers during fall 2018, one that prevented Northern Pulp from doing ocean survey work to complete its plan, lasted two months – and followed on the heels of protests like one where 1,000 people in July 2018 held signs sporting slogans such as "Pipe Equals Death." On social media, #nopipe posts spiked when actor Ellen Page tweeted support for *The Mill: Fifty Years of Pulp and Protest*, a book condemning Northern Pulp's environmental efforts, by journalist Joan Baxter.

> "We are hoping, after all this diligent and hard work, that the support will be there to keep the mill running."

At the end of March, the province told Northern Pulp that it would need changes made to the plan and more information added; the exact changes, called "terms of reference," were provided to Northern Pulp on April 23. For example, the proposed pipeline route needs to be moved away from shoulder of Highway 106. New survey data must confirm viability of the marine portion of the pipeline. Much other data on, for example, pipeline leak-detection technology and complete characteristics of treated effluent, are also required. Kathy Cloutier, PEC's director of corporate communications, says that all of it – whether additional data, clarifications or changes – is doable and that the team is working on collecting the answers.

You may be wondering at this point, why Northern Pulp took so long to submit its plan. That is, it might seem, especially from the many news stories out there, that Northern Pulp has been "sitting on its hands" from the point in time that the Boat Harbour Act became law in May 2015. Cloutier explains that at that point, Northern Pulp was already involved in seeking amendments to the mill's existing industrial approval (IA) permit, a document that did not account for improvements that PEC had made to the mill since its purchase in 2011.

A court showdown was avoided, and the government amended the IA in spring 2016. "There was no point in addressing the Boat Harbour Act until we had the IA sorted out, as without the amendments, we would have had to shut the mill," Cloutier explains. "As soon as we got the amendments, we began working with government on a plan to address [the] Boat Harbour treatment facility replacement and by September 2016, an RFP for preliminary engineering for a new treatment facility was given to a firm. We worked diligently with that firm, the government and others on our plan from that point on." [For a full timeline of events, visit pulpandpapercanada.com and search for this story.]

You may also be wondering what the point is of working on changes to the submitted plan if the government won't push back the shutdown of the Boat Harbour facility (again, legislated to occur by end of January 2020, only months from now). "Yes, no matter how fast we address the terms of reference this year, we need an extension of use of Boat Harbour," says Cloutier. "If/when our plan is approved, we will need likely at least a year to construct the new treatment facility and the pipeline and receive the environmental approvals, and until then, we must use Boat Harbour to avoid interruption to operations."

She explains that while some have suggested Northern Pulp could shut down the mill from January 31, 2020 to when construction and commissioning of the new treatment facility is completed, a shutdown is not something a pulp mill readily withstands. And even a "hot idle" (another suggestion) would require effluent treatment. Cloutier adds that at least three sawmills would shut down within three weeks if Northern Pulp closed, even temporarily.

"The government has said it would consider postponing the shutdown of Boat Harbour treatment facility if there is community support for that," she notes. "We're working to build that, reaching out to industry stakeholders, community leaders, the Pictou Landing First Nation and others, and striving to be transparent. We are hoping, after all this diligent and hard work, that the support will be there to keep the mill running."

## The proposed plan

In its proposed onsite effluent treatment facility, Northern Pulp intends to use an AnoxKaldnes BAS (biological activated sludge) process purchased from Veolia Water Technologies, the leader in this technology. The process combines conventional activated sludge treatment with "Moving Bed Biofilm Reactor" technology, which involves the use of specialized polyethylene to create a large surface for biofilm attachment.

Northern Pulp says the technology is the best of the two possible kraft mill effluent treatment options, the other being an aerate stabilization basin, which is what's currently used at Boat Harbour. The new system is also expected to meet the impending updated federal pollution regulations for pulp and paper mills.

This is not acceptable to groups such as FONS. Indeed, the group formed to achieve two specific goals: to prevent any Northern Pulp effluent (treated or not) from entering the ocean, and to prevent any extension to the January shutdown of Boat Harbour. As these words on its website attest, trust among its members is low: "Reassurances from the company and the government have led to devastating results in the past. We don't want that to happen again."

"FONS is of the view that a closed-loop system remains a viable choice compared to the proposed [plan], from an economic and environmental perspective…[and] the only environmentally viable solution," says Jill Graham-Scanlan, president of FONS. "Northern

Pulp does not wish to make such an investment to modernize its operations and eliminate its effluent discharges. Northern Pulp wants to characterize the solution as a stark choice between Northern Pulp continuing to make its current profits and offloading the environmental problems to the Northumberland Strait, or closing the mill entirely. This is…an oversimplification of the market and the choices."

Mike Wilson, environmental lead at Northern Pulp, explains that changing the mill from kraft process to one that uses a closed-loop effluent system is not feasible for several reasons. "Closed loop has been tried since the 1970s for kraft mills, but it has not been successful," he says. "A mill making bleached chemical thermomechanical pulp (BCTMP) is closed-loop, but there are two insurmountable problems with that for this site. It would require a complete plant retrofit, which would take some time and is costly. In addition, BCTMP uses a huge amount of energy to break down the wood fibre and in Nova Scotia, power is not cheap. Our existing mill makes 90 per cent of its own energy because the kraft process produces lots of steam. So overall, financially, it's difficult to make a case to switch from kraft."

Leaving the kraft pulp market would also mean leaving a market with growing demand (tissue products) and a reliable customer base for one that is unreliable (paper, newsprint and magazine). This would not be a wise move for any pulp industry company, Wilson notes.

Looking at effluent characteristics, Wilson says there will be no free chlorine at ocean entry, and the pH is expected to be in the range of 7.0 to 8.5. The majority of the content carried in the effluent water (e.g. nitrogen, phosphorus, a water quality metric called chemical oxygen demand) will not be detectable in ocean water two metres out from the pipe opening. This is expected to meet the updated federal regulations.

> "At least three sawmills would shut down within three weeks if Northern Pulp closed, even temporarily."

Dr. Bruce Hatcher, chair in Marine Ecosystem Research at Nova Scotia's Cape Breton University, says the treated discharge from the mill "will be the proverbial drop in the bucket, but it will be a continuous drip. There will be a plume immediately downstream of the diffuser, and undoubtedly there will be negative, including fatal, effects on organisms within that plume."

He adds, "We cannot know exactly what they will be without building the diffuser and measuring it…With so many variables and uncertainties involved, and so much value in a healthy Northumberland Strait ecosystem and its fisheries, there is good justification to undertake a full panel scientific and social-economic study of the effects of a new, direct discharge on the ecosystem. But apparently business and political considerations do not permit that luxury."

The people of the region, Hatcher says, must therefore decide on the basis of the best available evidence "whether they want to take the ecological risk to the productivity of the Strait in order to maintain the economic benefit of the Northern Pulp mill. Whatever the decision, it will be much more a matter of social, rather than scientific, considerations."

Wilson and Cloutier want the community to know how hard the Northern Pulp team is fighting to keep the mill open for the benefit of the whole province. "Our owner has been investing in this mill to improve its environmental performance since its purchase and he's devoted a huge amount of resources to addressing the regulatory requirements over the last four years," says Cloutier. "We want Boat Harbour to return to its natural state and to keep the mill open. We'll get there if we're given the chance. We just need the time." **PPC**

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*Treena Hein is an award-winning science and tech writer based in Ontario.*

# Keeping mills cool in summer

By Steve Birtch & Roger Drost

No matter where your mill is located in the world, it is essential to address the challenges of warmer temperatures to make sure the mill continues to run reliably and safely.

Recently, we spoke at one of the leading industry conferences, PaperWeek Canada, on creative approaches to achieve "best practice" performance at the mills during warmer climates. Listed below are the benefits of beyond-run-of-the-mill thinking.

## Switching with the seasons

Historically, mills purchase expensive cooling systems (industrial chiller coolers, heavy-duty air conditioners, low-temperature air handlers, modular cooling towers, water-cooled chillers, and dehumidifiers) to cool equipment during the summer. Then the system is idled as the colder months approach. After many months of inactivity, a high rate of equipment failure can occur; yet this issue remains undetected until the facility powers the system up for the summer when it's needed the most.

One way to remedy this is to design a flexible cooling system. This system can be installed quickly and turned on with a switch for the summer months and then returned to the vendor in the colder months. Should an issue arise with the equipment, the vendor can quickly replace it with a new one to ensure the mill continues to operate reliably. This approach not only boosts reliability but is also more cost-effective than purchasing and maintaining assets that remain underused for most the year or even worse, bear the costs of lost production due to faulty equipment.

## Reliability from redundancy

Even if the mill is confident of its cooling equipment, always plan to identify valid cooling solutions in the event of an unplanned incident or planned downtime as part of the site's incident-prevention and preparedness program. Bring in an expert for a site evaluation to assess the risks, calculate the space and comprehend the logistics of moving temporary equipment in and out of the site. Cooling services professionals will be able to map out the scope of the project, identify issues and risks, model conditions, simulate potential solutions, provide cost estimates and secure local permitting.

## Monitoring and safety

As discussed, unreliable equipment can bring mills to a halt. Work with a vendor that can maintain the equipment according to strict schedules to make sure it's there when you need it most. For additional support, find a vendor that offers a remote monitoring service to oversee every piece of equipment 24/7 and relay critical information. Remote monitoring alerts engineers immediately of an issue, so quick decision-making can occur to keep operations running.

Workers exposed to extreme heat or work in hot environments may be at risk of heat stress. Exposure to extreme heat can result in occupational illnesses and injuries. Heat stress can result in heat stroke, heat exhaustion, heat cramps or heat rashes, according to the CDC. To address the issue, a temporary cooling system can drop the temperature (even by a few degrees) to keep conditions safe and comfortable.

For example, the workers of a manufacturer were being exposed to 54°C+ temperatures, putting them at serious risk of heat stress. The manufacturer worked with a reputable temporary cooling vendor to design a cooling system, combining a chiller and air handler to let cold air flow into the area. Employees could then work, even in the summer months, at a safe temperature without risk. Improved conditions meant fewer safety-related penalties and higher productivity because workers didn't have to take as many breaks to cool down.

As the warmer months approach, think about your cooling system and equipment to keep workers safe and operations running. **PPC**

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*Steve Birtch and Roger Drost work for Aggreko Canada.*

# RESIDUAL EFFECTIVE ALKALI CONTROL

Maintain ideal levels in kraft pulping, from the digester to the recovery cycle

By Augusto Quinde

Most digester operators manipulate their cooking conditions by focusing on a Kappa number target. This strategy attempts to model the relationship between Kappa number, H-factor (cooking temperature and cooking time), sulphidity, liquor-to-wood ratio and alkali charge (i.e. cooking control variables). Furthermore, operators must consider continuous and drastic variations of wood chips (moisture content, chip size distribution), white liquor (concentration, sulphidity), chips bed packing/ chips flow conditions, liquor flows, digester sizes, etc.

Not all digester operators are aware that the sulphidity percentage level of the white liquor is a very important driving force during delignification. In many pulp mills, the sulphidity data stays in the recausticizing area – and in very few mills is it actually included in the digester daily log sheets.

Variations of all of the above factors have profound effects on the complex performance of the digester (digester variability) and on the uniformity of the produced pulp (quality variability). Therefore, non-uniform kraft pulps can result from various sources such as insufficient liquor flux and/or uneven temperatures and/or unequal chemical distribution (chemical concentration gradient) within the digester, etc. These non-uniform pulps are weaker, harder to bleach (i.e., more chemicals, higher costs, more toxins) and may complicate downstream papermaking operations.

On a continuous digester the pulping parameters to monitor closely are wood chips quality (i.e., chips size distribution, chip thickness, moisture content, fresh vs. dry chips); alkali charge (i.e., AA and EA percentages, white liquor concentration); digester alkali profile in g/l or lb/ft3 (i.e., in the upper cooking zone, lower cooking zone, extraction zone, blowline residual alkali); Kappa number; H-factor, sulphidity percentage, etc.

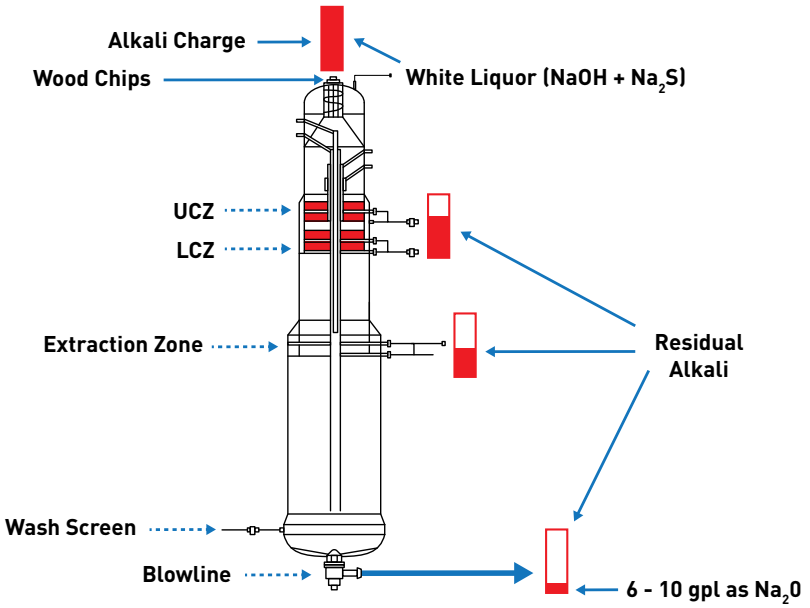


**Figure 1. Residual alkali in a conventional continuous digester.**

From the above list of parameters, the residual effective alkali in the blow line is the one that needs special attention for its effects in the bottom of the digester and other areas beyond the digester (i.e., brown stock washers, bleaching area, evaporators and recovery boiler.) The blow line residual effective alkali dictates the quality of the pulp and of the black liquor.

Here we will focus on the residual effective alkali in the digester (i.e., upper cooking zone, lower cooking zone), the blow line, the bleaching area, the evaporators and the recovery boiler. Among the most common terms used in the kraft pulping industry, "residual alkali" and "residual effective alkali" are used interchangeably.

## Residual effective alkali in the digester

The alkali charge or alkali/wood ratio is one of the most important control variables and its monitoring must secure a stabilized cooked pulp quality. Many mills rely in their traditional laboratory analyses for controlling their alkali concentrations; however, these measurements are not carried out frequently enough for accurate control. Using online analyzers secures quick and accurate measurements that can be

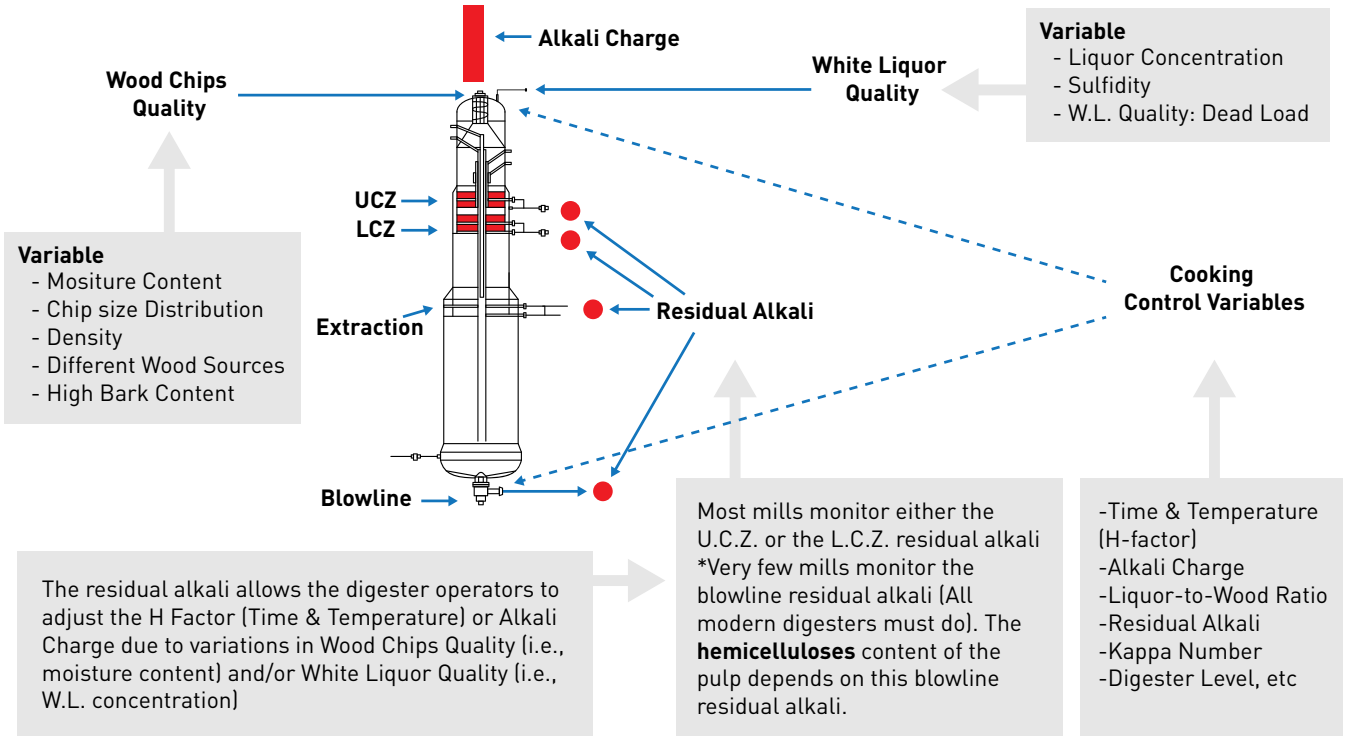


**Figure 2. Variables affecting Kappa number and residual alkali.**

integrated in the alkali/wood ratio to stabilize part of the pulping process.

When working with continuous digesters, it is important to monitor the residual effective alkali from top to bottom of the digester using an alkali-profile control strategy to get a more stable reading of the digester alkali profile. This profile allows digester operators to make corrections in case the alkali concentration in a stage or cooking zone drops too low, because condensation reactions of lignin can lead to the formation of stable carbon-carbon bonds. See figure 1.

New pulping technologies for continuous cooking have been developed, including modified continuous cooking (MCC), extended modified continuous cooking (EMCC), lo-solids, iso-thermal cooking (ITC) and compact cooking (CC). These modifications are based on the four-rule principle: 1) a "levelled-out" alkali concentration throughout the cook; 2) a high concentration of hydrogen sulphide ions (HS-), especially early in the bulk delignification; 3) low concentrations of dissolved lignin and sodium ions, especially at the end of the cook; and 4) the temperature should be kept as low as possible, especially in the beginning of the cook.

The above modern processes can alter the traditional chemistry of the weak black liquor that is fed to the evaporators.

The ideal control and monitoring of a continuous digester should include:

- A very good control of the wood chip size distribution.
- An online monitoring of the moisture content of the wood chips.
- An online monitoring of the quality of the white liquor (dead load).
- An online monitoring of the concentration of the white liquor. This monitoring, together with the moisture content, will secure the proper effective alkali charge (EAW percentage) per oven-dried wood.
- An online monitoring of residual effective alkali concentrations to get a digester alkali profile, at different locations such as the upper cooking zone (UCZ), lower cooking zone (LCZ), extraction zone and blowline.

For instance, if we know the residual effective alkali at the UCZ every five or 10 minutes, then we can correct continuous variations of the wood moisture content or the white liquor concentration or the sulphidity percentage levels. A mill with low budget looking to purchase only one out of the above three online control systems should buy the residual effective alkali control system.

Online control of the residual effective alkali at a few points will help to reduce the variability of the effective alkali throughout the digester to give smoother digester operations and to reduce the Kappa number variability, therefore reducing over-cooking or under-cooking. See figures 2, 3. It seems that a residual effective alkali profile control dictates the quality of the pulp and of the black liquor. Pulp quality and black liquor composition are intimately related.

## Residual effective alkali in the blowline

Even though the bottom of the digester is the last part where the pulping process takes place, it is very important to keep enough residual alkali there so that the lignin that was fragmented at the top of the digester must stay in solution even after going through the whole digester. Many mills in North America

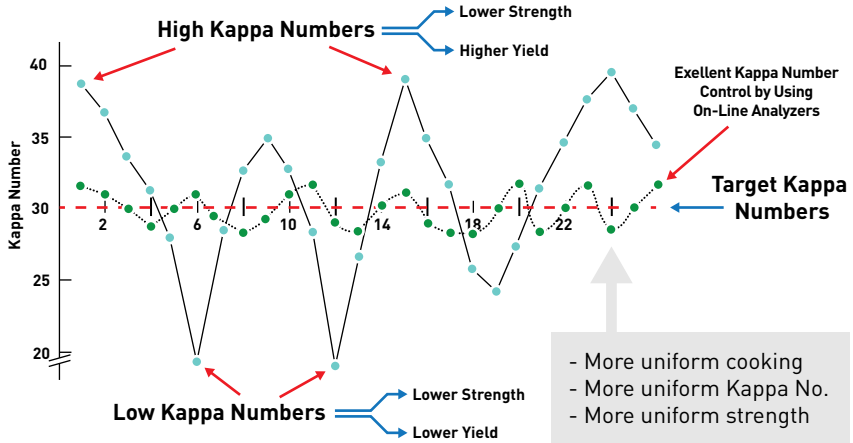


**Figure 3. Good versus poor Kappa number control (hourly data).**

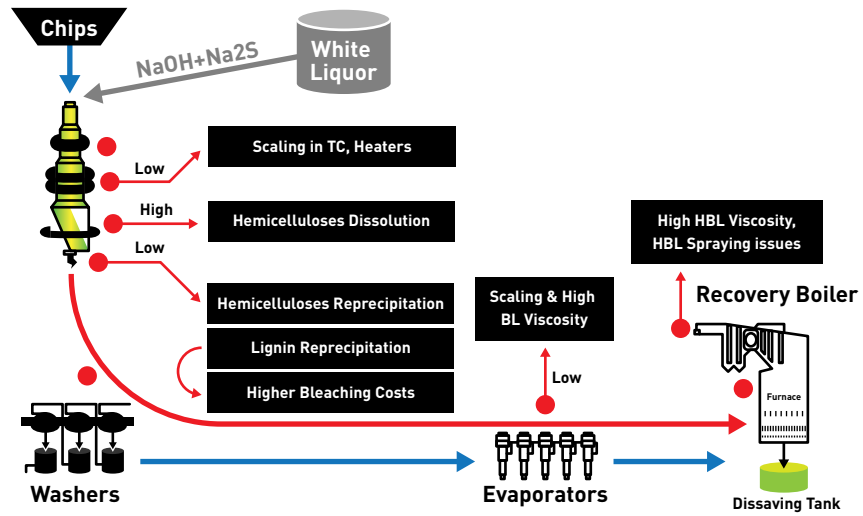


**Figure 4. Effects of residual alkali in the recovery cycle.**

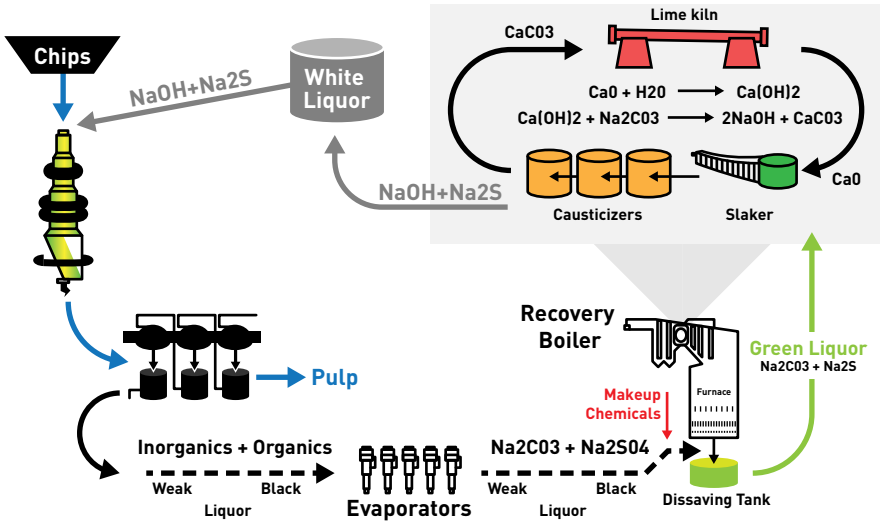


**Figure 5. The kraft recovery cycle.**

work in the range of residual effective alkali between 2.0 to 4.0 g/l as Na2O.

The blowline residual effective alkali should be kept at a reasonable amount within a minimum range between 6.0 g/l –to- 14.0 g/l as Na2O.

The residual effective alkali can show a peculiar effect because, while having an optimal range to keep a low viscosity, lower or higher values of the range can result in a sudden viscosity rise. Most kraft mills suffering high viscosity problems are more likely to be related to low residual effective alkali rather than high residual effective alkali.

The negative effects of low residual effective alkali include re-condensation and re-precipitation of lignin, lower bleachability, lower fibre strength of the pulp, increased corrosion at the bottom of the digester, and increased problems in the liquor recovery cycle in the evaporators and recovery boiler.

The positive effect of low residual alkali is the hemicellulose re-precipitation that takes place on the pulp, causing an increase of the pulp yield.

If the residual effective alkali is too low, then the fragmented lignin re-condenses and re-precipitates onto the pulp at the bottom of the digester. When that occurs, everything that was done at the top of the digester (i.e., pre-steaming, delignification, usage of cooking chemicals, steam, time, energy, labour, digester space) is wasted.

Very low blowline residual effective alkali in the black liquor coming out of the digester may affect other areas such as brown stock washers, bleaching area, evaporators and recovery boiler. See figure 4.

## Residual effective alkali in the bleaching area

When the re-condensation of the fragmented lignin takes place, most of the newly bonds of the re-condensed lignin are mainly of the stable C--C type. These carbon-carbon bonds can be between phenyl groups and also between the three carbon side chains. (Natural lignin molecules in both softwood and hardwood trees contain 50 to 60 per cent of the most easily broken C--O--C ether bonds that simplify the kraft pulping processes. Then, we must avoid the re-condensation of lignin to

prevent problems in the bleaching area. It seems that only nature can make the C--O--C bonds at the proper, natural conditions).

The amount of chemicals required for bleaching depends on how the pulping process has been carried out. Conditions of the kraft cooking affect the bleaching response of the pulp or bleachability. This explains the ongoing debates between the pulping and bleaching areas regarding the amount of bleaching chemicals when dealing with pulps of the same Kappa number coming from the same digester. Pulps produced at very low residual effective alkali (i.e., below ideal blowline residual alkali) must require higher bleaching chemical consumption.

> The positive effect of low residual alkali is the hemicellulose re-precipitation that takes place on the pulp.

### Residual effective alkali in the recovery cycle

A proper control of the residual effective alkali concentration of the weak black liquor flowing from the digester can assure important benefits in the evaporators (i.e., more stable viscosity, less fouling) and in the recovery boiler (i.e., stable viscosity, spray size consistency). See figure 4.

Most of those benefits depend on the chemical characteristics of the black liquor that include elemental composition, residual effective alkali, composition of the organic and inorganic constituents, and molecular weight of the organic material. The properties of black liquors differ from mill to mill and they are directly related to the alkali charge, yield and Kappa numbers.

The important properties of black liquor that affect the evaporation processes are viscosity, heat capacity, density, the boiling point elevation, surface tension and thermal conductivity. Having low residual effective alkali can cause high viscosity and precipitation of lignin. A minimum residual effective alkali of at least 6 g/l must be maintained to avoid lignin precipitation.

The viscosity of black liquors can be controlled by increasing the temperature or by adding alkali. Alkali addition to the digester or to the black liquor can reduce the viscosity of low–alkali content liquors. An important precaution is to neutralize acidic inputs such as chlorine dioxide (ClO2) generator effluent and tall oil brine into the evaporators set.

Fouling in an evaporator set occurs due to various mechanisms like lignin precipitation, fibres, soap fouling, soluble sodium (Na) scaling and insoluble calcium (Ca) scaling. Scaling is a very serious problem that reduces the rate of heat transfer and evaporation in the multiple-effect evaporator plant.

Black liquors are characterized by high viscosity when the residual effective alkali is too low (i.e., less than 2 to 4 g/l as Na2O). The solids content also affects the spray characteristics of the black liquor and droplet size distribution of the black liquor through its effect on liquor properties such the viscosity. Uncontrolled drop size (i.e., too big) of the firing black liquor can cause serious blackouts of the furnace. Under practical conditions, the black liquor viscosity can be controlled by the addition of alkali, by oxidation and storage at high temperatures.

The production of a consistent high-quality pulp is a great challenge for digester operators due to the complex nature of the delignification process and the crucial residence times in the different zones of a continuous digester. Both the evaporation and burning processes of black liquor are very sensitive to some disturbances related to the quality and analysis of the black liquor.

The kraft chemical recovery process has three key functions: 1) to minimize the environmental impact of the black liquors; 2) to recycle the pulping chemicals (i.e. NaOH and Na2S); and 3) to co-generate steam and power. See figure 5.

The negative effects of the low residual effective alkali at various areas in the kraft recovery cycle can be controlled, stopped or minimized by either adding alkali to the digester or before the evaporators or recovery boiler.

For a copy of this paper including references, contact kurquhart@annexbusinessmedia.com. **PPC**

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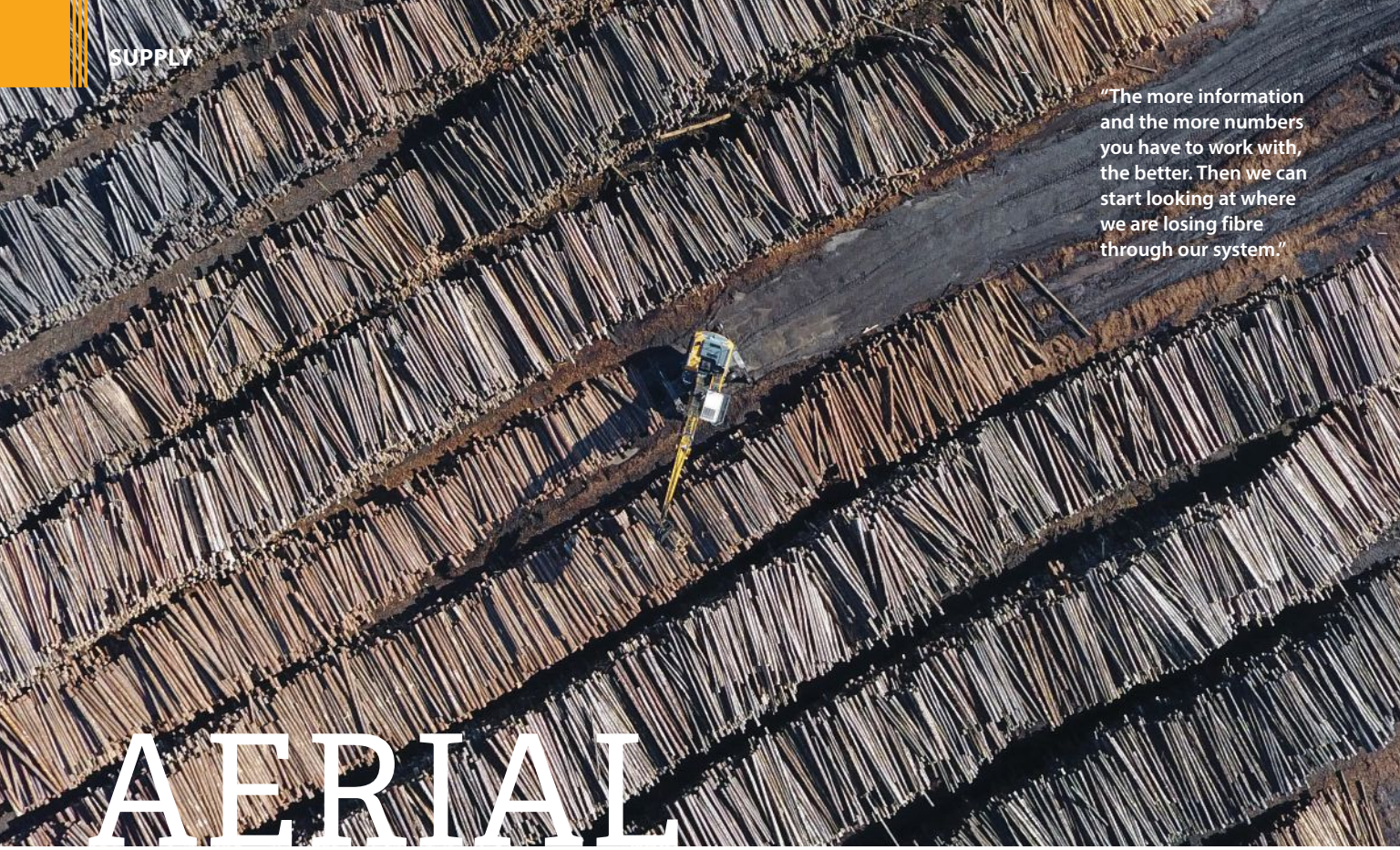
*Augusto Quinde is president of AQuinde Pulping Consulting in Vancouver.*



"The more information and the more numbers you have to work with, the better. Then we can start looking at where we are losing fibre through our system."

# AERIAL ADVANTAGE

## UAVs and big data are changing the fibre supply game

By Maria Church

With forest companies industry-wide facing fibre accessibility challenges, the name of the game today is supply chain optimization. A technology company based in Vancouver believes the solution is in forestry-specific data collection and analytics.

Big data – a buzzword for the storage and analysis of large, complex data sets from multiple sources – has taken most industries by storm. Technologies such as drones, LIDAR, radio-frequency identification and various equipment sensors allow companies to collect seemingly endless amounts of data, but it's the practical application that is somewhat elusive to the forest sector.

Mike Wilcox, co-founder of FYBR Solutions along with Patrick Crawford, says the end goal of all data and analysis in the forest sector is to better understand and optimize supply and production. "We specialize in the use of drones, but they are just the tip of the iceberg," Wilcox says.

"Our goal is to get as much information as far up the supply chain as possible because it has a cascading effect on downstream operations," he says. "We are supplementing traditional data sources with this individual stem inventory, which gives the people on the ground the ability to make more informed decisions."

### Drone beginnings

FYBR began in 2014 as Spire Aerobotics Inc. – a drone company for the natural resources sector. The company has since rebranded as FYBR Solutions to reflect what the team had quickly learned: In order for their drones to solve real-world problems, they needed to provide a turnkey solution for just one industry.

"Forestry really hit home for us, not only in terms of where we are geographically – Vancouver is where a lot of the big forestry companies have their headquarters – but we both grew up in small towns where forestry is the number one driver. It's rooted in who we are," Wilcox says.

Conversations with industry gave the company purpose. The goal became to understand challenges in the forest sector and to cater different technologies to solve problems. Drones (also known as UAVs – unmanned aerial vehicles) are still a large part of what the company offers, but they also work with satellite data, ground data and more. The more information they collect and analyze from all points of the supply chain, the better they can offer optimized solutions to mills.

Wilcox says the company blurs the lines between a service, a software tool and a hardware solution. At some mills, they have deployed drone systems and provided training for the mill employees to collect data on their own. FYBR

then receives and analyzes the data to provide measurements at various stages of the supply chain, such as the measurement of log decks or chip piles, or the accuracy of mature stand surveys for harvest planning.

## Pulp inventory

West Fraser Hinton Pulp in Alberta is a FYBR client. The pulp mill west of Edmonton is continually measuring its chip pile to understand usage and inventory balance.

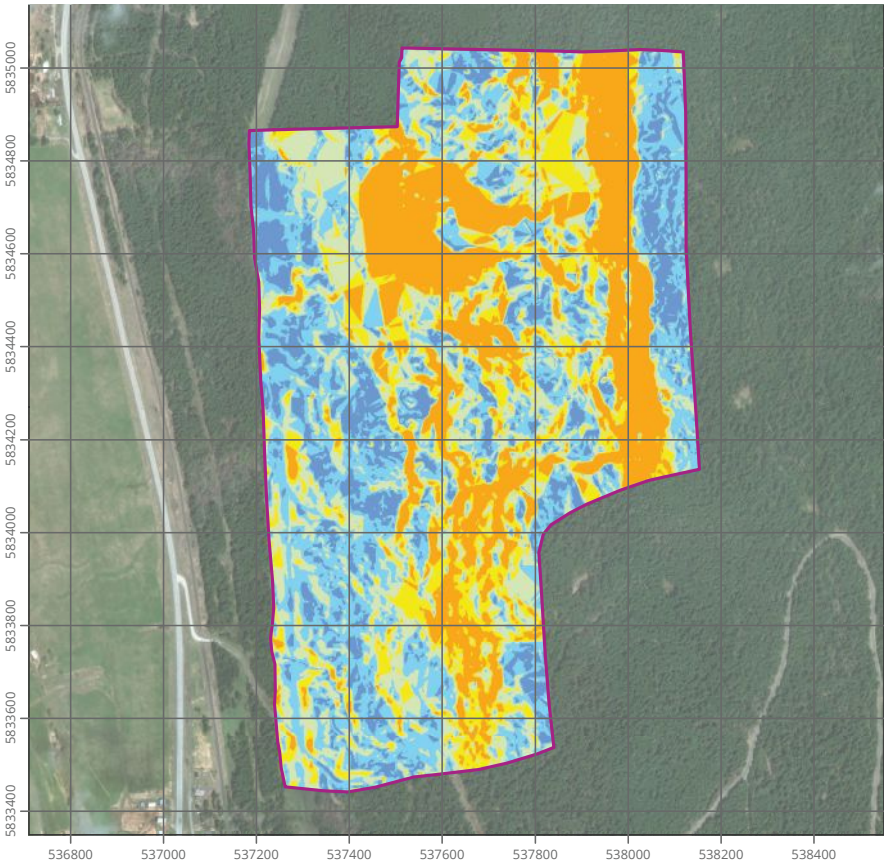
Garry Power (now retired) was the divisional controller for the pulp mill, and worked closely with FYBR to create 3D models of the chip pile to determine volume. Power then compared the volume found by the drones, factoring in compaction, species, etc., with physical measurements taken on the ground. "The more information and the more numbers you have to work with, the better," says Power. "Then we can start looking at where we are losing fibre through our system."

Aside from measuring volumes, Power says the drone can help mill staff perform inspections of the pulp tanks. "Normally we have to take outages, drain the tanks completely, scaffold them up and do a physical inspection of the tank to determine repair plans. We're looking at flying a drone inside the vessel to take pictures and thermal measurements instead of inspections. Even avoiding scaffolding would be a huge savings," Power says.

Hinton Pulp contracts FYBR on an as-needed basis, but Power expects the applications for drones will continue to grow as the technology to analyze the data develops.

## Silviculture surveying

Another of FYBR's clients is Interfor's Kootenay Division in the B.C. Interior. Silviculture forester David Jackson is working with Wilcox and Crawford to develop a reliable method of silviculture survey using drones that is legally acceptable to the forest service. Interfor collects the drone data and FYBR analyzes the information to develop inventory maps for brushing treatments. "Silviculture surveys are [traditionally] done with boots on the ground, so a drone can certainly speed up that process. Hopefully in the future it will




**FYBR's drones are used to collect a range of data on forest volumes, health and boundaries.**

**Drones such as FYBR's (pictured) must be equipped with appropriate sensors and paired with the correct data management system in order to be effective.**


**Mike Wilcox, right, and Patrick Crawford are the co-founders of FYBR Solutions, a technology company based in Vancouver looking to solve fibre supply challenges with forestry specific data collection and analytics.**

reduce survey costs and increase the precision as well," Jackson says.

Jackson operates on two tree farms and a forest licence, working out of Nakusp, B.C., for Interfor's Castlegar mill, where they cut approximately 2,000 hectares a year.

> "FYBR's end goal is to create a single integrated system that digests all the data and provides insights into fibre flow. These insights will help a company save time and money, and plan for the future."

This year, the mill leased a drone from FYBR to fly cut blocks, checking for post-harvest obligation commitments such as the logging boundary, road building, blocked ditches or culverts, and assessing waste volumes. Jackson and a few other staff received training from FYBR to operate the drone, but it's steep learning curve, he says. His first flight ended with a drone in the tree. "It's been a hard thing to live down!" Jackson says.

Time is the biggest obstacle for the Interfor staff, Jackson says. "We're probably not using [the drone] as often as we'd like to," he says. "We have good intentions to use it also for log inventory at the sawmill as well, but that hasn't happened yet. It's still in a testing phase." Weather is also a limitation since drones are not operable in heavy wind and rain.

The cost considerations are difficult to determine, since it's a product with data never before used. The question is, what will they get out of all that data? Jackson says Interfor hopes to cut down on the cost of hiring consultants for post-harvest commitments. And they will continuing working with FYBR to find other ways of optimizing their fibre supply processes, whether it's in the layout of cut blocks or assisting their logging contractors on, for example, skidding distances and cycle times.

## Technology curve

Part of the challenge in working with drones and other emerging technologies is that they are developing at a rapid pace. The applications for drones in forestry are continuously being improved upon, Wilcox says, making reports from as early as a year ago outdated. That also means the possibilities for the technology are limited only by current imaginations.

In precision agriculture, drones with multispectral sensors are being used to survey crops and determine areas where the crop is unhealthy from drought, overwatering or pests. The same concept can be applied for forestry, Wilcox

says. Drones can be used to identify tree species and health indicators – information that could be invaluable to forest management and planning.

FYBR works with master's students from the University of British Columbia's Integrated Remote Sensing Studio to analyze the data they're collecting in the field. "UBC has been a great research partner to answer some of these questions in a more academic, rigorous setting to make sure our results are reliable," says Wilcox.

Each of these emerging technologies – lidar, radio-frequency identification, drones, mobile transportation tracking, and so on – can offer value to the forest industry, but FYBR's end goal is to create a single integrated system that digests all the data and provides insights into fibre flow. These insights will help a company save time and money, and plan for the future.

"It starts with that siloed approach, proving those pockets of value, but the big picture is tying those values together," Wilcox explains. "We are connecting the sawmill with the forest operations, with the sales people and with the accountants. That information transparency is what will have the greatest impact on efficiency and sustainability in the long run."

That means FYBR is technology agnostic, Wilcox says. "We to use whatever tools are available to fill the information gaps in order to achieve a complete view of the fibre supply chain. Then we can identify opportunities for optimization."

FYBR Solutions has drone systems deployed at sawmills and pulp mills in Western Canada, and in the hands of foresters collecting data. The company is also in the midst of branching out to Eastern Canada and the U.S. As FYBR collects more data, it's fine-tuning its system and planning new ways to offer more value to forestry clients. **PPC**

*Maria Church is the editor of Canadian Forest Industries & Wood Business.*
*woodbusiness.ca.*

### Drones 101

FYBR Solutions co-founder Mike Wilcox says there are two main challenges to working with drones in forestry.

The first challenge is the reality that a drone pilot is an airspace user, which means he or she must abide by regulations from Transport Canada. The rules are a necessary way to ensure the safety of everyone involved, Wilcox says.

"If you are putting a two-pound piece of equipment up 300 feet above the ground where helicopters or planes are operating, you want to make sure it's safe and you're not putting anyone at risk. Especially when these systems have the potential to be used negligently or irresponsibly," he says.

Current Transport Canada regulations require that all drones, for commercial or private use:

- Fly no closer than nine kilometres to forest fires, airports, heliports, aerodromes, or built-up areas
- Do not fly over military bases, prisons or in controlled or restricted air space
- Do not fly over crowds higher than 90 metres
- Do not carry dangerous goods or lasers
- Fly only in the daylight, within line of vision
- Commercial drones more than 25 kilograms must apply for a special flight operations certification. Those under 25 kilograms can apply for exemptions, but must adhere to dozens of conditions. New, more straightforward rules are expected in the coming months from Transport Canada.

The second challenge in working with drones, Wilcox says, is managing expectations. "A lot of people think you can just buy a drone, sit in your office, send it out the window and work the joystick. Then you fly it back and you have the information that you're looking for. That's just not the case," he says.

Even if a drone is programed to autonomously fly a particular route, drone users are still required to monitor the air space and be ready to take over piloting if a problem arises.

From a data standpoint, the drone must be equipped with the right sensors and paired with the right data management system for it to be effective. "Without those you're just getting a camera up in the air to take some pictures and get a look at things," Wilcox says.

Drone applications for forestry include inventory audits and tracking, harvest planning, post-harvest obligation survey, post-wildfire salvage, equipment inspections and silviculture surveys. **PPC**

# CANADIAN-MADE PAPER STRAWS

## An Ontario company is bringing its drinking straws made of Canadian pulp to market

By Kristina Urquhart

With the global war on plastic waste in full swing, paper straws are making a comeback – and one Canadian company is capitalizing on the shift with what it believes is the first made-in-Canada drinking straw for the restaurant industry made with Canadian pulp and paper.

Green Circle Dine Ware Ltd., owned by Gsheth Sheth and Wendy Serrao, started manufacturing its paper straws out of a Cambridge, Ontario facility in July 2018.

"There is a lot of awareness about paper straws – everyone is aware of how harmful the plastic is to the environment," says Sheth. "One item that hasn't been touched in the food industry in Canada is the plastic straw. Often there are fibre takeout containers, but there is no other alternative to plastic straws in today's market."

Sheth says that as far as he knows, there isn't another Canadian manufacturer of paper straws using Canadian pulp and paper. He notes that Canada's rigorous sustainable forest management standards make the finished paper of a higher quality than imports. "There are many paper straws coming from overseas, which also isn't ideal if you are trying to be sustainable," Sheth says. "The amount of transportation is just not worth it."

Paper straws, first patented by American inventor Marvin Chester Stone in 1888, fell out of favour in the 1960s as plastic straws became cheaper to manufacture. Today, market research indicates U.S. consumption sits between 170 million and 390 million plastic straws per day. With plastic pollution reaching untenable levels, cities across the United States and Europe have started banning single-use plastics, including bags and straws.


**Green Circle Dine Ware Ltd. is using Canadian paper to fabricate drinking straws.**

Here in Canada, the numbers are smaller, but no less startling – the Ontario government estimates that 10,000 tonnes of plastic garbage end up in the Great Lakes alone every year. The provincial government is considering a single-use plastic ban as part of an overall waste reduction initiative. Vancouver was set to be the first city in the country to ban plastic drinking straws on June 1, 2019, but has since postponed the deadline as it works with restaurant vendors to develop viable, cost-effective alternatives (the cost of a paper straw is currently about 10 times that of a plastic one).

For their version, Sheth and Serrao tried numerous grades of food-safe Canadian paper certified by both the Canadian Food Inspection Agency and the U.S. Food & Drug Administration to find one that would most closely emulate the experience of drinking with a plastic straw.

"The biggest concern in the market right now with straws is they start disintegrating when people are using them in the drink," says Sheth. "There is no way to compare the performance of the straw with a plastic straw, but [the Green Circle] straws have in-built wet strength, and will survive in liquid longer than normal paper."

To manufacture the straws, Green Circle Dine Ware Ltd. uses slit paper on a spiral-winding machine capable of a variety of run sizes. Multiple layers of paper are first submerged in adhesives to hold the straw together before the paper is fed into a rotating shaft, the diameter of which determines the inside diameter of the straw. In order to get the striped colour effect popular on paper straws, the top ply of the three-ply paper is printed with colour.

After the straw is wound, an inline cutting unit cuts the straws into the desired length. The straws then pass through another machine to be invidually wrapped in paper and branded.

Green Circle Dine Ware Ltd. (which also manufacturers a line of biodegradable dinnerware at a factory in India using locally sourced palm leaves) is currently touring Canadian restaurant industry trade shows with its paper straws to secure distributors before ramping up its production capacity. **PPC**

## Thunder Bay TMP-Bio plant inaugurated with $2M federal investment

The thermomechanical-pulp biorefinery (TMP-Bio) plant by FPInnovations and Resolute Forest Products has officially opened in Thunder Bay with a $2-million investment from the federal government.

This investment builds on the $5.8 million previously provided by Canada for the pilot facility to accelerate the development, production and commercialization of green biochemicals derived from sustainably sourced Canadian wood.

The additional funding, provided through Natural Resources Canada's Clean Growth Program, will support the development of the process by which FPInnovations converts wood sugars to biomaterials, which will help create a wood-to-chemicals industry that can help diversify the forest-based economy in rural communities.

TMP-Bio is a patented technology developed by FPInnovations for the commercial production of large quantities of bio-sourced chemicals, such as high-quality cellulosic sugars and H-lignin for use in the development of innovative bio-products, such as wood adhesives, animal feed and composites.

Resolute and FPInnovations joined forces in early 2018 to build the plant, which has the capacity to treat 100 metric tons of biomass annually, at Resolute's Thunder Bay pulp and paper mill.

The CA$23-million project is part of an initiative to renew and transform the forest products industry, building on investments by Resolute, the Ontario Centre for Research and Innovation in the Bio-Economy (CRIBE), and Natural Resources Canada. The project also has the support of the Northern Ontario Heritage Fund Corporation, FedNor, the Thunder Bay Community Economic Development Commission and the Ontario Ministry of Natural Resources and Forestry, in addition to contributions in research and applications from the Quebec Ministry of Forests, Wildlife and Parks and the Nova Scotia Innovation Hub.

## Fortress secures federal support for bioproducts demo plant

Fortress Xylitol Inc., a subsidiary of Fortress Global Enterprises Inc., has signed an agreement with Sustainable Development Technology Canada (SDTC) to receive $10.4 million in funding for a new xylitol and complementary bioproducts demonstration plant at Fortress's dissolving pulp mill in Thurso, Quebec.

The contribution was originally approved by the SDTC board of directors on July 11, 2018.

This funding from SDTC is in addition to the previously announced $10 million grant from Natural Resources Canada and the anticipated provincial investment and loan of up to $7 million previously announced by Fortress on July 11, 2018 that remains subject to completion of definitive documentation.

The demonstration plant project is intended to demonstrate technology for the co-production of value-added and sustainable bioproducts that will help transform the mill into a biorefinery. The process is expected to validate performance and produce pre-commercial quantities of food-grade xylitol and complementary bioproducts for testing and use by customers.

## BIC releases Canada's first national bioeconomy strategy

Canada's first national Bioeconomy Strategy, released by Bioindustrial Innovation Canada on May 14, reflects the views of more than 400 industry representatives from across the country.

The strategy recommends action on four key priority areas identified in foundational work by the Advisory Council on Economic Growth, the Economic Sector Strategy Tables, and Canada's forestry ministers. These priority areas are: creating agile regulation and government policy, establishing biomass supply and stewardship, building strong companies and value chains, and building strong sustainable innovation ecosystems.

The recommendations focus on commercializing innovations to grow larger companies, and to have Canadian products and processes adopted into international value chains. The recommendations support the development of innovation ecosystems across Canada. The recommendations call on the government to introduce policies, regulation and support for companies and the agriculture and forestry sectors to adopt practices and new technologies that improve stewardship of natural resources and increase productivity.

Canada is one of only a few countries without a bioeconomy strategy. A recent international overview produced by the German Bioeconomy Council shows Canada as having no dedicated strategy.

Bioindustrial Innovation Canada, BIOTECanada, the Forest Products Association of Canada, and FPInnovations – the organizations that undertook these consultations – intend to work within their networks to implement the strategy's recommendations. The recommendations will guide the work of these organizations with industry and with government. BIC and its partners will report on the progress in implementing the recommendations.

## Ottawa funds research to help pulp mills adopt RNG tech

The federal government has earmarked $2.38 million to fund a research project at the University of British Columbia that will test clean technologies that generate renewable natural gas (RNG) from forest residues.

The project's goal is to facilitate pulp mills adopting clean technology that will produce affordable biofuel to power the mills or be sold to export markets.

According to a government press release, UBC expects the project to result in $84 million in additional revenue as pulp mills retrofit operations to include RNG production.

# FOCUS ON MACHINE CLOTHING

## Press fabrics with emphasis on dewatering

Voith has expanded its line of press fabrics for paper mills with the MultiFlex Advance and the PrintFlex Advance, with a focus on dewatering properties.

Only available in North America, these press fabrics are compaction-resistant through their expected lifetime. They have improved sheet quality, which the company says helps to lower resource use.

MultiFlex Advance is for producers of kraft liner board, medium, corrugated medium, gypsum and white top liner. PrintFlex Advance is for all graphic-grade paper production, including uncoated free-sheet paper

**voith.com**

## Tension gauge for paper machine clothing

Feltest's TensioMaster tension gauge combines high accuracy with a wide measuring range and durability for paper machine clothing.

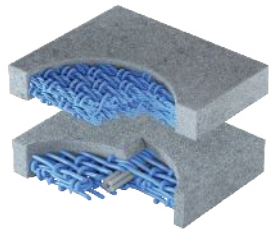
Correct tension equals improved runnability, decreased costs and improved productivity. The Feltest TensioMaster measures felt quality and felt tension, and checks the tension control felt.

Common problems include less fabric stability, wrinkles, fabric wear, changing dewatering behavior, distorted paper profiles, increased bearing load, broken rolls and torn fabrics.

The TensioMaster mechanical tension gauge is calibrated for forming fabrics, but is also suitable to measure changes in felts and dryer fabrics. It prevents wrinkles, torn fabrics and avoids unplanned downtime. It has a measuring range 0.5 – 20 N/mm.

**feltest.com**

## Press felts for reduced energy consumption



ANDRITZ's StrataPress press felts provide a new portfolio of high-performance technology specially developed to help maximize machine press performance. StrataPress is designed with a combination of materials, base fabric structures and unique batt concepts that ensure highest sheet quality, faster machine speeds and reduced energy consumption. The StrataPress portfolio offers both endless and seamed technology to enable any machine to run more efficiently with products specifically engineered for each application, with any grade and in every press configuration.

**andritz.com**

## New CleanWeave dryer fabrics

With Zircon and ZirconHigh, Voith is adding two new members to the CleanWeave product family. The dryer fabrics target an extended service life in a medium hot environment.

Whereas Zircon has a dense weave structure with lower air permeability, ZirconHigh features an open-weave structure for higher air flows. In addition to excellent drying performance, both fabrics also meet the requirements for resistance to hydrolysis and abrasion. As a result they allow for long service lives, even in very challenging dryer sections. The dryer fabrics are particularly suitable for board and packaging paper machines, where the conditions are often hotter and more humid.

The unique CleanWeave product range with minimal intersection points and a low internal void area prevents the accumulation of contamination in the dryer fabrics ensuring they are easy to clean. Thanks to the continuous flexing around rolls and cylinders, contamination is also worked out of the fabric. This means that Zircon and ZirconHigh maintain their cleanliness and drying efficiency over their entire lifetime.

**voith.com**

## Heimbach and AstenJohnson to merge paper machine clothing businesses

Heimbach and AstenJohnson are planning to merge their Paper Machine Clothing (PMC) and Advanced Fabric businesses. The Heimbach Technical Textiles and Filtration businesses and the AstenJohnson Eagle Nonwovens and Foss Performance Materials businesses will not be part of the transaction.

The companies' partnership began almost 40 years ago. Both companies are supported by family shareholders and operate internally with a family-oriented culture. The roots of the companies date back to the late 1800s and early 1900's.

Together, Heimbach and AstenJohnson will have a significant market share in forming, pressing and drying on all continents.

AstenJohnson is headquartered in Charleston, SC in the United States with 2,100 employees located across three continents.

"Together with AstenJohnson, Heimbach has an even more solid foundation for the future," says Peter Michels, managing director of Heimbach GmbH. "We have put ourselves in a better position to grow and compete for decades. We believe this is the start of an exciting journey."

The merger is subject to further due diligence and approval by competition law authorities and is expected to close in the second half of 2019.

**astenjohnson.com**

## ABB takes its technologies on the road

ABB is on the road this summer with its North American Pulp and Paper Tour, a trade show on wheels that packs the company's latest automation technologies into a semi-trailer truck.

The trailer contains interactive product stations showcasing the company's DCS solutions for process and quality control, and its L&W Autoline automated paper-testing machine. CD control actuators, web imaging and monitoring systems, and the NP1200 scanner for on-line quality management are also on the truck.

It's all anchored by a demo of the ABB Ability Collaborative Operations Center, a digital service dashboard that connects mill production personnel, management and ABB specialists. Tour stops can be scheduled by emailing us-napnptour@abb.com.

**abb.com**

## Kruger's Trois-Rivières delivers first TMP shipment

Kruger's Trois-Rivières facility delivered its first shipment of bleached thermomechanical pulp (TMP) earlier this year, allowing the Wayagamack Mill to expand its product portfolio into a wider range of brightness levels.

In total, $40 million was invested to build the new bleached TMP plant at Kruger Trois-Rivières and to upgrade production at Wayagamack.

Launched in September 2017, Kruger's SPEK project is a three-year initiative to develop new markets for the Brompton, Wayagamack and Trois-Rivières mills as part of the company's strategy to diversify its production and complement its product portfolio.

Upon launching SPEK, Kruger also created its new Specialty Papers division, which is leveraging the company's papermaking expertise, production facilities and customer service infrastructure to introduce sustainable, high-quality products. Target markets for these new products include lightweight packaging for the food and retail industries, labelling and digital printing.

This expansion of Wayagamack's product portfolio was achieved less than six months after another important SPEK project milestone. In August 2018, Kruger's Brompton Mill introduced new specialty grades and quickly reached its targets in terms of production volume, product quality and sales.

In addition, the company says the Wayagamack and Brompton mills may benefit fromtheir access to a steady supply of cellulose filaments (CF) from Kruger Biomaterials. The eco-friendly strengthening additive helps make the paper lighter and stronger.

**kruger.com**

## ANDRITZ debuts textured-tissue machine

ANDRITZ has launched its new tissue machine for textured tissue, the PrimeLineTEX, which produces textured tissue of a quality superior to dry crepe and very close to structured (TAD) tissue.

PrimeLineTEX is available with widths of 5.6 or 2.8 m and produces high-quality tissue for towel and sanitary applications. The machine offers up to 25 per cent fibre savings compared to dry crepe and consumes up to 50 per cent less energy than a TAD machine.

The PrimeLine TEX is substantially shorter in length than other market solutions and uses only one additional fabric instead of two. Furthermore, the PrimeLineTEX machine can switch between production of textured and dry crepe tissue.

ANDRITZ offers the entire textured tissue production line, including stock preparation, pumps and automation system.

**andritz.com**

## RISE develops pulse production for specialty paper manufacturing

Producing paper is about large volumes, and the step from manufacturing in lab to industrial production therefore faces great challenges.

Uncertainty regarding supply, demand and price often makes new concepts stick to the "valley of death." You don't want to build a factory until you know that everything works.

Pilot facilities are a good way to bridge this gap. But even here, it can be difficult if the amount of pulp to be tested is small. At RISE, the Swedish Research Institute and innovation partner, researchers and operating staff have now found a way forward through so-called pulse production, which allows for testing of specialty papers with very small amounts of pulp.

"Normally we need at least one ton of pulp to run the full-scale pilot paper machine, FEX," says Mikael Magnusson, researcher in paper technology. "The fact that we have now managed to run the machine with as little as 40 kilograms is a breakthrough. This means that companies that are considering expanding their product portfolio with specialty paper can test this in full scale without having to produce large quantities of raw material."

In practice, the new method of pulse production means that the plant is started with ordinary pulp, then switched to another chest with special pulp, without disrupting production.

"Manufacturing was extra challenging as the pulp contained fibres with very low bonding properties. The excitement was tremendous for both RISE and present customers to see if the web were to break or if the extremely short production would work. But with careful preparation and talented operating staff it all worked out well and the production pulse came to a cheer," says project manager Mikael Bouveng.

The new method means that the threshold is significantly reduced for investments in narrow products with a high profit margin or where demand is low.

**ri.se/en**

## Valmet completes acquisition of GLV

Valmet has completed the acquisition of GL&V, which was announced on February 26, 2019, for approximately EUR 113 million.

GL&V, which had recently changed its public-facing brand to GLV, is a global provider of technologies and services to the pulp and paper industry.

The acquired business becomes a part of Valmet's services business line. GL&V supplies technologies, upgrades and optimization services, rebuilds, and spare parts for the pulp and paper industry globally. The acquired operations had net sales of approximately EUR 160 million in calendar year 2018, employing about 630 people.

GL&V's washing, oxygen delignification and bleaching operations with Compact Press, pumps and mixers technology for chemical pulping, as well as the related Product Center in Karlstad Sweden, are not included in the transaction scope.

"We welcome our 630 new colleagues to Valmet," says Pasi Laine, president and CEO of Valmet. "This strengthens Valmet's global services business further and complements our technology offering for the pulp and paper industry customers. The acquisition also consolidates our local presence and capabilities globally."

**valmet.com**

## APP to debut folding boxboard biodegradable container in Canada

Asia Pulp & Paper (APP) is expanding its packaging portfolio for takeaway food with the Bio Container, an addition to its Foopak suite that will be available in Canada by the end of the year.

Constructed with folding boxboard (FBB), the box offers a fully biodegradable and compostable solution for takeaway containers, trays and other direct food-contact items. The highly durable paper stock is capable of breaking down naturally in 12 weeks, making the boxboard an alternative to commonly used plastic boxes.

The Bio Container's double coating has an outside layer that is excellent for branding and promotions with a white surface suitable for multi-colour lithography, letterpress and flexography.

The inside layer provides level nine grease resistance and is designed to protect against water and grease absorption for reduced food leakage. The Bio Container is formulated for high-speed bar heat-sealing at 80 degrees C/356 degrees F for converting and finishing and hot gluing applications. The box is suitable for both microwave and freezer use.

"Expanding our Foopak line to include FBB to-go containers is another step toward helping brands across the globe reach their sustainability goals," says Felix Koh, senior vice-president and global business unit head for APP. "We're proud to offer a product that will satisfy the needs of consumers and businesses alike, while extending our market reach."

According to APP's recent Paper & Packaging Consumer Trends Report, 71 per cent of Canadians say that the sustainability of food packaging is more important to them today than five years ago. This new offering from APP is FDA-compliant and ISEGA-certified for composability within 12 weeks, and available in 260 to 370 gsm, and 13.3 to 23.6 caliper. The combination of strength and sustainability provide brands a solution to replace single-use plastics, satisfying consumer demands for both quality and environmental impact.

**asiapulppaper.com**

## Cascades Sonoco opens U.S. packaging production line

Cascades Sonoco, a joint venture of Cascades Inc. and Sonoco Products Company, has inaugurated its new production line of eco-friendly packaging at its facility in Birmingham, Alabama.

The investment of US$17 million enables the facility to now produce a water-based functional coating solution to create recyclable, repulpable and compostable containers. Numerous partners, clients, suppliers and employees took part in the event.

This new world-class equipment allows for the production of 50,000 tonnes per year of coated paper and paperboard using the company's FlexShield, FluteSHIELD and SurfSHIELD water-based coating technology. These water-based functional and barrier coatings are designed to replace the non-compostable applications traditionally used in the design of folding carton take-out containers. The coatings can also replace the wax used in the corrugated industry.

The new production line adds to the diversity of the products offered by the Cascades Sonoco facility in Birmingham, which has a core business of manufacturing roll headers and roll wraps for the pulp and paper industry. The plant employs approximately 75 workers and the new machine will create 20 long-term jobs.

The expansion of the Birmingham facility and the installation of the new production line took place in 2018.

**cascades.com**

## Red Meters upgrades slurry density meter

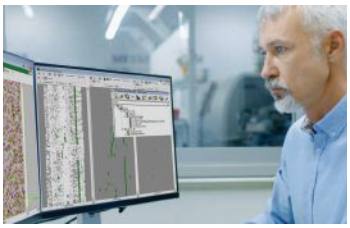

Red Meters has unveiled upgrades to the electronic components of its non-nuclear slurry density meter, which will deliver interoperability, new software and analytics features, and new customization options.

Red Meters V2 electronics boasts HART Protocol, which acts as a bridge between old and new technologies, as well as Modbus. Including both of these technologies allows for integration for companies who operate both legacy or modern systems alike. Red Meters V2 electronics support HART output out of the box for any of the variables being measured, not just density or per cent solids.

The software has also had some significant developments, including remote support and diagnostics, allowing customers to request assistance and diagnostics remotely without having to physically access the meter. This is especially helpful for remote installations and includes remote data log upload and download.

Red Meters V2 is also able to totalize targets for provided live outputs and historical readings.

**redmeters.com**



## AMETEK adds new inspection features to SmartView system

AMETEK Surface Vision's SmartView system detects, classifies and visualizes surface defects. Introduced in the latest upgrade is the Synchronized Web Viewer, which allows multiple views to be displayed simultaneously. It provides the user with total control of the interface, which could help reduce scrap product in the event of a process issue.

This enables different process views, or the same view with a variety of queries in grading, using intuitive drop-down menus and customizable windows to help narrow down results with precision.

SmartView's new Parts Per Million (PPM) application expresses the defect area as a ratio of the total product area. This real-time calculation provides easy visualization of defect density in table and graph formats, making it simpler to identify regions that need closer review.

A number of new processing modes have been added and optimized in SmartView for specific inspection requirements, such as detecting quiet areas on coated products, removal of defects that match a target shape, enhanced repeating defect algorithms, and more.

A new Parallel Classification function enables SmartView to run up to four alternate classifiers on an inspection file, enabling seasonal or test classifiers to operate alongside established classifiers. This allows potential changes to be evaluated without interrupting current production inspection.

**ameteksurfacevision.com**

## Triosim adds B.C. location

Triosim Corporation has opened a new office in Prince George, B.C. to serve its clients in the pulp and paper industry.

Triosim provides mechanical services, spare parts, new pulping equipment, rebuilds and pulp dewatering drum fabrics and wires. Establishing an office closer to its client base will strengthen Triosim's performance, according to company officials.

"We have been servicing our Canadian customers out of our Southern Specialty Services and Wire office in Star City, Arkansas, and our Oramac parts and service office in Vancouver, Washington," says James Hickman, founder and CEO of Triosim Corporation, in a release. "This new office gives us a greater amount of focus and ability to meet and exceed the demands of our existing and new customers."

The new corporate office is located AT 200-245 Hangar Road, Prince George, B.C.

**triosim.com**

# GIVING BACK

The latest community outreach initiatives from the pulp and paper industry.

The Canadian forest products sector is passionate and devoted – not just to the industry itself, but also to its local communities. In this department, we're sharing the initiatives of pulp and paper companies working to make positive social, environmental and economic impacts across the country.

Canfor/Twitter

**Canfor's Vancouver team recently cooked breakfast for 100 residents of Ronald McDonald House BC.**

Paper Excellence Canada

**Paper Excellence Canada contributed $25,000 to B.C.'s Outland Youth Employment Program (OYEP), which provides an opportunity for Indigenous youth to gain skills and exposure to the forest industry.**


Resolute Forest Products

**Resolute's Thunder Bay sawmill employees recently donated $10,000 to the local Boys and Girls Clubs.**


Alpac Facebook

**Alberta-Pacific Forest Industries donated $100,000 to the Athabasca Regional Multiplex to help build a new pool facility.**

**Let us help you share your successes. Tag @PulpPaperCanada or use #PPCGivingBack on Facebook or Twitter, or send an email to the editor at kurquhart@annexbusinessmedia.com. We'd love to hear from you!**

PULP & PAPER CANADA

# INDUSTRY SURVEY

## RETENTION, RESKILLING & RECRUITMENT IN PULP AND PAPER

We need your help! Pulp & Paper Canada is conducting an industry survey to identify challenges and solutions to the skills gap. Senior-level leaders, let us know how your mill is addressing the skills gap through:

Training • Mentorship • Employee engagement • Leadership succession • And more!

Results will be collected by August 1 and published in the Fall 2019 issue.

**Take the survey at pulpandpapercanada.com**

FPInnovations

### ENTER & WIN A FREE PASS

Respondents will be entered to win a free pass for someone on your team to attend the FPInnovations Pulp, Paper & Bioproducts Course, Oct 7-11, 2019 in Montreal.

SPONSORSHIP OPPORTUNITIES AVAILABLE

CONTACT: Laura Goodwin | lgoodwin@annexbusinessmedia.com | 289-928-8543

# See the invisible

The world does not need more food packaging. It needs better, renewable ones.

Chemistry plays a key role in increasing sustainability and reducing food waste by enabling safe and functional fiber-based packaging.

But the features that make a food package more sustainable, more durable or smarter are almost always invisible.

It's time to pay attention to the unseen.

**READ MORE: KEMIRA.COM/BOARD-SEE-THE-INVISIBLE**

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