FORMER REBUILD

PM3 at Sappi’s Skowhegan mill sees improved quality level and reduction in use of wet end fillers and coating materials after former rebuild

NEWSPRINT

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The BioProducts Industry... has a nice ring to it

By John O'Brien, Managing Editor
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The paper industry needs a transformation plan. Why? Because far too many people all over the world perceive the forest products industry, and more specifically, the paper industry, as an outdated manufacturing segment that has been conducting its business the same way for hundreds of years with little or no concern for the environment.

Am I far off the mark here? What I just described isn’t true for the most part, but perception can be reality, and as hard as the industry has worked to change the public’s perception of its operations and products, reprogramming the mindset of hundreds of millions of people has been a frustratingly slow endeavor.

My transformation plan? The industry will become the BioProducts Industry, simple as that. I’m not saying this sarcastically, and I know there already exists a bioproducts segment, of sorts; but there’s justifiably room for a broader brotherhood of products, i.e. pulp and paper, under the bioproducts umbrella.

To add fuel and support to this plan is the new “Bioeconomy.” I’ll go out on a limb here and bet that a bunch of you didn’t even know a bioeconomy existed. Well it does.

According to the Washington, DC-based Biotechnology Industry Organization (BIO), “Bioeconomy” refers to “all economic activity that is derived from the commercial application of biotechnology. It encompasses the production of renewable biological resources and their conversion into... products via innovative and efficient technologies.” In a story on BIO’s website (BIOtechNOW.com), writer Casey Delorme says, “This notion of a bioeconomy is captivating politicians and economists as never before... The great thing is, the bioeconomy can be all things to all people — and that isn’t just a political trick.”

The “notion”, as Delorme puts it, is swiftly gaining traction. On March 24, the U.S. Department of State hosted “Showcasing the Bioeconomy: The Future is Now”, a biotechnology conference which was attended by over 150 members of the diplomatic corps, researchers, and U.S. policymakers. The conference focused on innovations in three areas: agricultural, health, and industrial biotechnology.

In addition, a number of countries are rolling out bioeconomic plans. Finland, for one, unveiled its first national bioeconomy strategy in May described by the Finnish Forest Industries Federation as “a step towards a more sustainable economy and the attainment of a low-carbon society. FFIF noted, “The forest industry plays a central role in the bioeconomy, as the industry’s entire operations are based on products manufactured from renewable and recyclable natural resources.”

How did I think of this ingenious transformation plan? Well one of the things I do on a daily basis is scour the Internet for news about the paper industry – glamorous work – and during the past few months I’ve run across a notable surge in pulp and paper producers announcing bioproduct endeavors: Stora Enso acquired Virdia (biomass conversion technology); Mercer and Resolute’s joint venture “Performance BioFilaments”; FPInnovations and Kruger’s cellulose filament plant in Trois-Rivieres, just to name a few.

But the news that lit the bulb was Georgia Tech’s announcement of a new name for the Institute of Paper Science and Technology (IPST), one of GT’s 10 interdisciplinary research institutes. Institute Director Norman Marsolan explained, “As the industry’s needs have changed, so has our approach.”

IPST is now known as the Renewable Bioproducts Institute... has a nice ring to it! ■
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Contact Thiele today for details on how your deinking process might benefit from using DEKA. We'll be glad to show you the test results and set up a trial in your mill.
Cascades to Sell Its Fine Papers Units to Rolland Enterprises

Cascades Inc. said that it has reached an agreement with Rolland Enterprises Inc., a subsidiary of H.I.G. Capital, for the sale of its fine papers activities for $39.5 million.

The units covered by this transaction are:

- Rolland Division, an uncoated fine papers and security papers plant located in Saint-Jerome.
- CTC Converting Centre, a fine papers processing and distribution plant, also located in Saint-Jerome.
- Fibres Breakey, a de-inked bleached kraft pulp manufacturing plant located in Sainte-Helene-de-Breakeyville.

The three units employ some 425 workers and will now operate under a new company name — Rolland Enterprises Inc. The current management team will remain in place in order to ensure an orderly transition.

Under the terms of the deal, Cascades will continue to work with the new owner for the procurement of waste paper, and to ensure a smooth transfer of ownership for employees, customers and suppliers.

"Despite the positive contribution of these units to Cascades' results, we have adopted a strategic orientation emphasizing growth in the packaging, tissue papers and recovery sectors. The decision announced [July 1] will allow us to reduce debt and further focus our resources in these strategic sectors," emphasized Cascades President and CEO Mario Plourde.

"Cascades has found in H.I.G. Capital a purchaser willing to maintain the operations and ensure the development of the units," stated Luc Langvin, President and COO of Cascades Specialty Products Group. "It is not without regret that we part with these business units, however, given our stated strategic orientation, we believe this transaction will allow them to better pursue their development initiatives and thereby continue to promote the Rolland brand all around the world."

Mercer and Resolute in JV to Commercialize Cellulose Filaments

Mercer International announced the launch of a new joint venture company called Performance BioFilaments Inc., established to commercialize a biomaterial derived from wood fiber called cellulose filaments.

The joint venture will be equally owned with Resolute Forest Products.

Cellulose filaments are derived from wood pulp which has been processed using innovative technology licensed from FPInnovations Inc. The cellulose filaments’ exceptional strength and high aspect ratio make it a unique cellulose-based biomaterial.

Mercer said in a statement, “We believe it has the potential to make a wide array of consumer and industrial products stronger, lighter, more flexible and more durable, while leveraging a sustainable and renewable resource with a low carbon footprint.”

Performance BioFilaments will seek joint development partners from a range of industries — from automotive and manufacturing, to construction and high-end consumer products — to develop new commercial product applications for cellulose filaments.

Caraustar Industries to Acquire The Newark Group

Caraustar Industries on July 2 entered into an agreement to acquire The Newark Group.

Terms of the deal were not disclosed.

The Newark Group is a manufacturer of recycled paperboard, linerboard, industrial tubes, cores and other converted products. Headquartered in Cranford, New Jersey, the company has approximately 1,500 employees and operates over 20 manufacturing facilities in the US and Canada.

Caraustar Industries is an integrated manufacturer of 100% recycled paperboard and converted paperboard products. The company serves the four principal recycled boxboard product end-use segments: tubes and cores; folding cartons; gypsum facing paper and specialty paperboard products.

According to RISI, “the planned acquisition would combine the second and third largest uncoated recycled paperboard (URB) producers which would rank just below Sonoco in that US industry sector.”

The combination of the two companies would result in a combined capacity of 866,000 tons per year of URB, with a total of 13 mill locations in nine states that also include other grades, i.e. gypsum wallboard, coated recycled board (CRB) and recycled containerboard, RISI noted.

In addition, “the new company would have total paperboard capacity of about 1.18 million tons per year, ranking among the fourth or fifth largest such US producers,” RISI said.

“The acquisition of The Newark Group is a major milestone in our growth journey,” said Michael Patton, CEO of Caraustar. “Bringing together the strengths of our respective companies will dramatically expand our manufacturing and distribution capabilities to better serve our growing customer base.”

The acquisition is subject to customary closing conditions and required regulatory approvals.
Shandong Tranlin Paper to Build Greenfield Paper and Fertilizer Plant in Virginia

Virginia Governor Terry McAuliffe on June 18 announced that Shandong Tranlin Paper Co., Ltd. will invest $2 billion over five years to establish a greenfield paper and fertilizer manufacturing operation in Chesterfield County. According to Gov. McAuliffe, the investment represents the largest Chinese investment and job creation project in Virginia history and is the largest Chinese greenfield economic development project in the United States.

Tranlin’s new manufacturing facility will be located on an 850-acre campus in the James River Industrial Center. The company did not provide specific details on the paper grades to be produced or capacity of the proposed manufacturing plant.

Founded in 1976 and based in Liaocheng, China, Shandong Tranlin Paper Co., Ltd., formerly known as Shandong Tralin Paper Co., Ltd., has an annual production capacity of 400,000 tons of pulp, 700,000 tons of paper, 400,000 tons of organic fertilizers, and 2.4 billion food and medical packaging boxes.

“We are pleased that Virginia and Chesterfield County will be the site of our first U.S. advanced manufacturing operation,” said Mr. Hongfa Li, Chairman and President, Shandong Tranlin Paper. “Virginia has abundant resources of agricultural stalks, power and water supply, manpower, and a strong transportation system —all necessary tools that guarantee Tranlin’s future development.

“More importantly, the Virginia team’s flexibility, patience, teamwork, cooperation, and above all, passion for foreign investment, factored into our decision. After an indepth feasibility study that occurred over the past year, we have all the reasons to say ‘Yes, Virginia.’”

Jerry Zhiyuan Peng, Chairman and CEO of Tranlin, Inc., Tranlin group’s recently established US entity, said, “We are excited about the opportunity to apply our innovative technologies in building an industry-leading production base in central Virginia. We are confident this will not only provide U.S. consumers with clean and eco-friendly paper products, but also serve U.S. agricultural interests and home-owners with all-natural and highly effective organic fertilizers.”

Mr. Peng also has roots in Virginia. He is a 2003 alumnus of the University of Virginia Darden School of Business and member of the Darden School Foundation Board of Trustees.
von Drehle to Install New Tissue Machine at Natchez Paper Mill

The von Drehle Corporation announced plans to make major paper mill improvements at its tissue-making operations in Natchez, Mississippi, and Cordova, North Carolina. The Natchez paper mill will get a new Advantage NTT tissue machine from Valmet, and the Cordova mill will see a new Yankee dryer.

The Advantage NTT concept is designed for maximum flexibility and can easily swing between cost-efficient production of conventional tissue and high quality textured tissue.

“NTT technology provides von Drehle with premium away-from-home products using recycled or virgin fibers. These premium products will complement von Drehle’s current brand offering and provide sales potential into new market channels for our customers,” the company said in a statement.

von Drehle expects the new machine to be fully operational in the fourth quarter of 2015.

Graphic Packaging to Sell Multi-wall Bag Business to Mondi

Graphic Packaging Holding Company announced that it and its wholly owned subsidiary Graphic Packaging International, Inc., have entered into a definitive agreement to sell their Multi-wall Bag business to Mondi Group. The non-core assets to be divested include 9 Multi-wall Bag converting plants located throughout the United States and the Pine Bluff, Arkansas kraft paper mill.

“The anticipated sale of these non-core assets substantially completes our transformation into a pure play, vertically integrated paperboard packaging company,” said David Scheible, Graphic Packaging’s Chairman, President and CEO.

“The divestiture will free up valuable resources which we can redirect to further accelerate global growth in our core paperboard packaging business,” he added.

The Multi-Wall Bag plants and the kraft mill had trailing twelve month revenue of approximately $437 million and under the terms of the agreement, the enterprise value is $105 million and the sale will be an all cash transaction.

Mondi, a leading global supplier of kraft paper and industrial bags, operates a network of 36 industrial bags plants in Europe, the Middle East, North Africa, South-East Asia and North America, including four plants in Mexico and the US, and 5 kraft paper mills in Europe producing over 1 million tonnes per year.

The deal is subject to standard closing requirements and is expected to close late second quarter or early third quarter 2014.

Georgia-Pacific to Acquire Specialty Paper Packaging Company, SPG

Georgia-Pacific Consumer Products LP and SPG Holdings LLC have reached an agreement under which Georgia-Pacific would purchase SPG, a paper goods company that manufactures and converts products for the foodservice industry. SPG has operations in Green Bay, Wisconsin; Hattiesburg, Mississippi; and Augusta, Georgia. CIC Partners, a Dallas-based middle market private equity firm, has been lead investor in the company since 2011.

Closing of the deal, subject to regulatory review and customary closing conditions, is anticipated later this year. Financial details of the agreement are not being disclosed.

“SPG has skilled employees, high-quality assets, efficient operations and an excellent customer service model, and will be a significant addition to the Georgia-Pacific Professional business,” said Kathy Walters, who leads Georgia-Pacific’s Consumer Products Group that includes the Professional business.

Stora Enso Acquires US-based Virdia for $33 Million

Stora Enso has acquired 100% of the shares of the US-based company Virdia, a leading developer of extraction and separation technologies for conversion of cellulosic biomass into highly refined sugars and lignin.

The upfront debt-free transaction value is approximately USD 33 million (EUR 24 million) with additional potential payouts totaling approximately USD 29 million (EUR 21 million) following completion of specific technical and commercial milestones by 2017.

In a statement, Stora Enso said, “The acquisition of Virdia supports the vision of Stora Enso’s Biomaterials Division in becoming a significant player in biochemicals and biomaterials. This is a new step in implementing the Division’s strategy, following the recent lignin extraction investment at Sunila Mill in Finland.”

Founded in 2007, Virdia is a private, venture-capital-backed company. It runs a pilot facility in Danville, Virginia. The main advantages of its technology are the cost-competitiveness and high purity of the output, which enable a variety of further conversion and upgrading possibilities for sugars and lignin as renewable intermediates for the specialty chemicals, construction, coatings, personal care and food industries, among others.
NORTH AMERICA

Cascades to Cease Kraft Paper Operations in East Angus

Cascades Inc. announced that it will cease its Kraft paper manufacturing activities in the East Angus, Quebec plant because of unfavorable market conditions and the failure of discussions concerning the plant’s transfer and turnaround.

The company emphasized that this measure does not concern the coated boxboard manufacturing plant located in East Angus.

Close to 175 employees will be affected by the closure, which will come into effect by October 3.

By closing the plant, Cascades is withdrawing from the Kraft paper sector definitively.

“With the arrival of new competitors that convert newsprint paper machines to produce Kraft paper, and the ongoing weakening of market conditions for our products, the East Angus plant has not managed to maintain a competitive edge in the market despite significant investments and serious recovery efforts,” explained Luc Langevin, President and COO of Cascades Specialty Products Group.

SOUTH AMERICA

Montes del Plata Pulp Mill at Punta Pereira in Uruguay Starts-up

Stora Enso’s and Arauco’s joint operation, Montes del Plata Pulp Mill at Punta Pereira in Uruguay, in June received all necessary permits from the Uruguayan authorities and is currently starting up operations.

The state-of-the-art pulp mill has an annual production capacity of 1.3 million tonnes of bleached chemical eucalyptus pulp.

In addition to producing pulp, the mill will be more than self-sufficient in energy made from biomass, producing yearly around 160 MW, of which approximately 70 MW will be sold to the national grid.

The mill site has its own deep-water port for pulp exports as well as a barge wharf for incoming wood to minimize the amount of truck traffic on Uruguayan roads.

“Montes del Plata is a long-term investment, and it will be a very profitable mill, despite the delays in the construction process. We are now focusing all our efforts on achieving a smooth start-up and fast ramp-up to get the mill into full production,” said Juan Carlos Bueno, EVP, Stora Enso Biomaterials.

Stora Enso’s share of Montes del Plata pulp is 650,000 tonnes per year and will be sold as market pulp.

EUROPE

Palm Paper Acquires German Corrugated Board Producer Seyfert

Palm Paper Group announced that on June 1 it acquired the operations of Seyfert — a corrugated board producer based in Germany.

Terms of the deal were not disclosed.

Seyfert, with its head office in Reichenbach a. d. Fils, has been in the ownership of the Seyfert family for 102 years. The deal will allow Seyfert to “develop further under the Seyfert name” and the company “will remain a reliable and competent supplier and partner for its existing customers.”

The Seyfert Group has 3 corrugated plants in Germany. In France, it has 3 corrugated plants and 2 sheet feeding plants, as well as a paper mill for recycled corrugated case material. In 2013, the company had a turnover of EUR 280 million and employed 1,200 people.

The Palm Group consists of 4 paper mills, with 7 paper machines and produces newsprint and corrugated case material. It runs 17 convertor plants for corrugated base material. In 2013, Palm’s turnover was EUR 1.15 billion and it employed 3,000 people.

In a statement, Palm Paper said, “The merger between Seyfert and Palm is an ideal addition to Palm’s existing business. It strengthens Palm’s market position in Germany and enhances its presence on the French packaging market.”
EUROPE

Södra to Increase Pulp Production Capacity of Mörrum Mill

Södra said that it will invest approximately SEK 700 million (approx. $103 million) to increase pulp production at Södra Cell Mörrum. A new wood-chip plant will be constructed and one of the mill’s two pulp lines will be upgraded.

In February of this year, Södra’s Board decided to invest just over SEK 4 billion (approx. $588.6 million) to increase capacity at the Värö pulp mill. Investments are now also being made in the Mörrum pulp mill, where Södra currently operates two parallel pulp lines for the production of softwood pulp and textile pulp (dissolving pulp).

The existing facility at Mörrum currently produces a total of 380,000 tonnes annually. The investment is expected to increase production to about 425,000 tpy.

The project includes a new wood-chip plant with two separate wood lines, one for softwood-chip and one for hardwood-chip production, in addition to a refit of the softwood line, where the existing washing equipment will be replaced.

The first phase of the project is scheduled to be carried out in 2014-15 with completion expected March 2016.

Södra Cell Mörrum currently produces high-quality pulp and is the only Södra mill to produce textile pulp, for which demand is growing rapidly.

UPM to Become Exclusive Distributor of Domtar’s BioChoice Lignin in Europe

UPM and Domtar announced that the companies have entered into an agreement for UPM to become the exclusive distributor of Domtar’s BioChoice™ lignin in Europe. The agreement takes effect on August 1.

BioChoice lignin is produced at Domtar’s biorefinery in Plymouth, North Carolina. A by-product of the kraft pulping process, BioChoice is a 100% bio-based sustainable alternative to fossil-based products and also holds the USDA Certified Biobased product label.

INDUSTRY SUPPLIER

Kemira to Acquire AkzoNobel’s Paper Chemicals Business

Kemira announced that it has reached a preliminary agreement to acquire AkzoNobel’s global paper chemicals business for EUR 153 million. The parties will also enter into a distribution agreement for AkzoNobel’s colloidal silica business for retention and drainage applications for the paper industry.

AkzoNobel’s paper chemicals business includes products for retention and sizing, as well as other paper chemicals, including wet strength and coating products. In 2013, revenues of the purchased paper chemicals business were EUR 243 million (EMEA 40%, Americas 30% and APAC 30%). Over 50% of the revenues were related to the packaging board grades.

AkzoNobel said that the intended sale of its Paper Chemicals follows a strategic review of the business’ fit within its portfolio. Paper Chemicals is part of the Pulp and Performance business within AkzoNobel’s Specialty Chemicals business area. It does not include the company’s Pulp Bleaching business, nor its Colloidal Silica business. The Pulp Bleaching business and the Eka name remain core for AkzoNobel’s Specialty Chemicals business.

Jari Rosendal, Kemira’s President and CEO, said, “Kemira is the global leader in the development, application expertise and supply of chemicals for the pulp and paper industry. This acquisition is a major step in implementing our growth strategy and it significantly enhances our position, especially in the packaging and board industry and strengthens our presence in the Asia-Pacific region.”

The deal is expected to close in the first quarter of 2015 and is subject to customary closing conditions, including completion of employee consultation proceedings and approvals of competition authorities in certain countries.

INDUSTRY SUPPLIER

Voith to Supply Sun Paper with Three Paper Machines

Voith will supply Sun Paper with three paper machines for production of packaging and graphic paper. PM 31 and the PM 32 will be installed at the Sun Paper location in Zoucheng, China. The machines will produce corrugated medium and testliner in a basis weight range of 90-250 g/m² with a wire width of 7,300 mm and at an operating speed of 1,200 m/min.

The third paper machine (graphic paper) is being installed at Sun Paper’s facility in Yanzhou, China. PM 29 is designed for a wire width of 8,100 mm and an operating speed of 1,800 m/min and will produce graphic paper in a basis weight range of 50-120 g/m².

Machine clothing and quality control systems will also be supplied by Voith.
EUROPE

Lecta Reaches Agreement to Close Torraspapel Paper Mill in Girona, Spain

Lecta announced that after negotiations with employee representatives regarding the viability or closure of Torraspapel’s mill in Sarrià de Ter (Girona, Spain), on June 30th the company and employees reached an agreement that will result in the closure of the plant, relocating 73 of the 32 employees to other Group manufacturing sites in Spain.

Torraspapel is part of the Lecta Group.

Current production at Sarrià de Ter, about 67,000 tons per year of base paper and uncoated specialty papers, will be relocated to other Group mills, primarily to the Zaragoza and Motril plants, resulting in a reduction of coated woodfree paper production capacity at these mills.

Lecta noted that “the paper industry has been experiencing very difficult conditions, with a permanent drop in demand. In addition to the decline in sales, Sarrià de Ter has been affected by the impact of changes in the legislative framework for the electricity industry in recent years.”

The gradual closure of Torraspapel’s mill in Sarrià de Ter will take place over the next few months.

Sappi Disposes of Nijmegen Mill in the Netherlands

Sappi Fine Paper Europe has reached an agreement to dispose of its Nijmegen mill in the Netherlands to an affiliate of American Industrial Acquisition Corporation (AIAC).

Terms of the deal were not disclosed.

On September 30, 2013, Sappi announced that it had undertaken a review of its European production assets and identified the need to concentrate its production at fewer sites. At that time, the company’s “preferred option” would be to relocate the entire production of Nijmegen Mill to other Sappi mills in Europe.

The new name of the Sappi Nijmegen Mill is Innovio Papers and it will manufacture specialty paper and no longer be engaged in the coated graphic paper business, Sappi said.

The deal became effective as of June 16, 2014.

Nijmegen Mill, which began operation in 1908, is one of Europe’s largest suppliers of coated fine paper in reels, specifically designed for heatset web offset printing, as well as special coated fine paper for use in digital printing. The mill operates a single paper machine.
Appvion has named Kevin Gilligan as President of its paper division, which consists of the company’s thermal, carbonless, security and specialty products businesses. Gilligan spent the past 20 years working for H.B. Fuller Company and most recently served as Vice President of Global Operations.

Glatfelter recently announced key leadership changes in its Specialty Papers Business Unit (SPBU). Timothy R. Hess was promoted to Vice President of Sales & Marketing, and Calvin Staudt, Jr. has joined Glatfelter as Vice President of Manufacturing. Hess has 20 years of Glatfelter operational and commercial leadership experience and a strong technical background. Staudt brings more than 30 years of industry manufacturing operations experience to Glatfelter and most recently served as General Manager at RockTenn in Florence, SC.

Greif announced that Lawrence A. Hilsheimer has joined the company as Executive Vice President and Chief Financial Officer. Hilsheimer most recently served as Executive VP and CFO for Scotts Miracle-Gro Company.

Ilim Group announced that Timofei Sokolenko has been appointed Vice-President, Sales. Victor Atamanov, who previously held the position has been named Advisor to Senior Management.

International Paper has named Mark S. Sutton as President and Chief Operating Officer and elected Sutton a member of the company’s board of directors. In this new role Sutton assumes responsibility for the operations of the company and continues to report to IP’s Chairman and CEO, John Faraci. Most recently, Sutton served as IP’s Senior Vice President, Industrial Packaging.

Rayonier announced that David L. Nunes has assumed the role of President and CEO of the company and Paul Boynton, formerly Chairman, President and CEO of Rayonier has become Chairman, President and CEO of Rayonier Advanced Materials (formerly Rayonier’s Performance Fibers business). In addition, Benson K. Woo has assumed the role of Chief Financial Officer of Rayonier Advanced Materials. Woo brings more than 30 years of financial and executive management experience, most recently as Executive VP and CFO of Prestolite Electric.

Soundview Paper Company has named William (Bill) Schlenenger as Vice President of its newly formed Fiber division. Schlenenger is responsible for the development of Soundview’s trading business in North America and abroad, as well as the fiber supply for the company’s New Jersey and Vermont paper mills managing its parent roll business.

Stora Enso has appointed Karl-Henrik Sundström, 54, as the new CEO of the company, effective August 1. He has been serving as Executive Vice President and Head of the Printing and Living Division of Stora Enso. Sundström succeeds Jouko Karvinen, who is retiring.

Suppliers

Montalvo promoted Bryon Williams to the position of Global Marketing Manager. Williams’ background includes 8 years of sales and marketing experience with multiple companies and has been with Montalvo for 4 years.

Industry Board

The Paper and Paper-based Packaging Board announced the selection of Mary Anne Hansan as Executive Director of the Paper Check-off program. Hansan is a seasoned marketing and communications veteran who has overseen industry marketing initiatives for diverse industry categories including flowers, plastics and most recently canned tuna.

Industry Alliance

The Agenda 2020 Technology Alliance announced that David Turpin on July 1 became its Executive Director. Following a transition period, Ron Brown, the former Executive Director, will retire as a full-time employee in August.
Ilim Named “Best Russian Exporter-2013”

Ilim Group has been named the Best Russian Exporter in the Pulp and Paper industry under the “Best Russian Exporter-2013”, the annual all-Russian award organized by the Ministry of Industry and Commerce of the Russian Federation.

In 2013, Ilim Group exported 1.8 million tons of pulp and paper products. The company supplies its products to over 30 countries in CIS, Europe, and Southeast Asia.

China is considered to be the largest strategic export market for Ilim Group, with over 35% of all P&P products produced by the company supplied to Chinese market. In 2013 deliveries to China exceeded 1 million tons.

After the ramp-up of the new fiberline in Bratsk, the Group will supply 1.3 million tons of products to Chinese market.

“Over the 20 years of Ilim’s history the company has significantly strengthened its positions on the Russian and key export markets,” said Franz Josef Marx, CEO of Ilim Group. “We mainly export pulp and containerboard, while in accordance with the company’s strategy and in order to substitute imports we supply Russian market with such value-added products as paper and packaging.”

New Name for Georgia Tech’s IPST

Georgia Tech announced a new name for the Institute of Paper Science and Technology (IPST), one of Georgia Tech’s 10 interdisciplinary research institutes. IPST has been renamed the Renewable Bioproducts Institute [RBI].

Over the past decade, the research mission of IPST has broadened beyond papermaking to include technologies that produce chemicals, biofuels and new material products from forest raw materials. The new name reflects this broader research scope designed to better serve the global development of new forest-based economies.

According to Institute Director Norman Marsolan, the new RBI will continue to develop value for the paper industry while growing its engagements with new industry partners to create future opportunities.

“As the industry’s needs have changed, so has our approach,” said Marsolan. “Our longstanding commitment to education and research in papermaking carries forward to the expanded area of bioproducts. And, as the Renewable Bioproducts Institute, we will help a broader set of companies create economic opportunity through access to Georgia Tech’s world-class experts in materials science, chemistry and engineering.”

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Newsprint Balancing Act Again
Relying On Direction of Exports

Capacity shut downs have bolstered the North American newsprint market and helped offset a steep decline in demand. However, increased competition is making it more challenging to use exports as a strategy for North American mills to sustain shipments and operating rates. If exports falter, additional capacity reductions may be required.

By Harold M. Cody

North American newsprint markets have for the most part remained on a steady course through the first half of 2014 despite weak demand and an erratic export market. The remainder of the year could be challenging, however, as the most recent market data raise the uncertainty about whether the time honored process of using export shipments to offset declines in domestic demand can continue to work. If exports lose ground they won’t be able to offset the continued decline in North American demand and this would likely require additional capacity reductions. Any hope for an upward movement in prices, which earlier in the year seemed possible, would also dim.

As noted, the market for the most part so far this year has been steady but lackluster with little activity in terms of price movement or surprises in supply or demand. The continuing decline in demand had been expected and follows last year’s decline when North American newsprint consumption fell 9.4% to 4.9 million tons, according to the Pulp and Paper Products Council (PPPC). The decline was led by a 10.2% drop in shipments to the U.S., which fell to 4.1 million tons. In contrast, one bright spot was a significant increase in overseas exports, which rose 11.4% to 2.2 million ton — an 11% gain over 2012 levels — but still lagging behind the 2011 level of 2.5 million tons. Operating rates for 2013 averaged 91% compared to 92% in 2012.

Growing exports from China and Russia have made the export market highly competitive, making additional gains by U.S. and Canadian mills more challenging.

Demand Off More Than Expected

However, a recent pick up in the rate of decline in newsprint demand and a chink in the armor of exports is of concern. In May, demand fell 7.1% from year earlier levels, bringing the year to date demand down to 6.5% below the same period last year, PPCP reports. Year to date through May, North American demand is at 1.9 million tons with shipments to the U.S. off by 6% at 1.6 million tons.

Potentially of even greater concern is the May drop in export shipments by North American mills, which fell 15% to 173,000 tons, bringing the year to date total to 877,000 tons, or 5% below year earlier levels over the same period. Producers have been working to increase exports to offset continue slippage in domestic newsprint consumption and in early 2014 the effort seemed to be working. However,
the slump in offshore tonnage in May brings the direction of exports into question. As would be expected, U.S. and Canadian combined newsprint production also slumped in May, falling 4% with U.S. mills steeply declining due to capacity reductions. However, operating rates were 96%.

Before the drop in May, exports had been running close to last year’s levels due to a jump of nearly 10% in exports in April which pulled year to date exports close to prior year levels. It also reversed a weak first quarter for exports. Exports continue to run ahead to Western Europe and are up significantly year to date. However, exports to other regions are down, with exports to Asia off by almost 20% year to date and down by one-third in May vs. last year, reflecting the surge in exports from Chinese mills, as well as restarted tonnage in Russia. The gains made last year were driven in part by a major reduction in Western European capacity and subsequently by major gains in European markets by North American exports.

While the news on exports is discouraging, producers have certainly tried to do their part to maintain a healthy balance between supply and demand via the closure of about 375,000 tpy of U.S. capacity to-date. An additional reduction in newsprint capacity is anticipated this fall with the shut of about 200,000 tpy at the DeRidder, Louisiana mill. Current reductions included the sooner than expected conversion by SP Fiber of 130,000 tpy of capacity in January 2014 at its Newberg, Oregon mill. [Newberg’s machine will be converted to lightweight packaging papers.]

Over the last three years over two million tons of capacity has been closed in the U.S. and Canada, although restarts and capacity shifts reduced the net loss to about 1.8 million tonnes. Closures last year included 120,000 tpy by Resolute at Calhoun, Tennessee and about 75,000 tpy of capacity by SP Fiber. In early 2014, Great Northern Paper ceased newsprint production at the East Millinocket, Maine mill, announcing at the time that it would shut down for at least 4 months. The mill had been producing about 145,000 tpy and it’s reported that a good portion of it was targeted at exports.

Restructuring of Newspaper Business Hits Consumption

The ongoing fall in newsprint consumption in North America and other developed economies is a direct result of the continued restructuring of the newspaper business in response to falling ad revenues and circulation losses.

“The ongoing fall in newsprint consumption in North America and other developed economies is a direct result of the continued restructuring of the newspaper business in response to falling ad revenues and circulation losses.”

U.S. newspaper advertising revenue continued to decline in 2013 with Sunday and daily newspaper advertising revenues falling 8.6% from the previous year, with classified advertising revenues down 10.5%, according to the Newspaper Association of America. Total newspaper media revenue, which includes all sources, fell 2.6% to $37.6 billion. Total advertising revenue fell 6.5% to $23.5 billion. Helping to partially offset the loss in revenue in traditional print advertising was a 1.5% increase in digital advertising revenues and a 2.4% gain in direct marketing revenue.

World newsprint demand also fell by almost 5% last year led by the double digit drop in North America and a 7% decline in Latin America. Demand also fell 5%-6% in both Western Europe and Eastern Europe while declining a more modest 1.5% in Asia, according to PPC data. Asian demand accounted for an estimated 45% of global demand at nearly 14.3 million tons, followed by N.A. at 16% (4.9 million tons) and W.E. at 23% (7.2 million tons). Latin America’s share was 6% with other areas accounting for about 10% or 2.5 million tons.

Given the more or less steady state of things, transaction prices for newsprint have remained relatively stable, holding steady for most of 2013 and 2014, with domestic prices at the $600-610/metric tonne level.

The thinking on the part of some was that towards the end of the year, if all else is good, producers may seek to move prices up when the capacity shuts in the U.S. occur as planned. However, if mills see a significant retrenchment in exports, this will be overly optimistic. The gains made in Europe by N.A. mills notwithstanding, growing exports from China and Russia have made the export market highly competitive, making additional gains by U.S. and Canadian mills more challenging. If exports falter, the question won’t be whether prices can gain ground, but how much additional capacity will have to be removed just to keep things in balance?

Harold Cody is a contributing writer for PaperAge. He can be reached by email at: H.Cody@paperage.com.
During the past month or so, in what could be a record, 10 projects have been announced within Europe’s pulp and paper industry and among leading suppliers — either upgrades of existing machines or delivery of new ones. They are largely in pulp, packaging and tissue grades.

**Pulp**

Portucel Soporcel plans to increase pulp production at its Cacia pulp mill in Portugal. The mill currently produces 285,000 tpy of pulp, but the company did not disclose the expected increase in tonnage as a result of the upgrade project, which is scheduled for completion in the summer of 2015. Portucel Soporcel operates three mills in Portugal, producing uncoated woodfree printing and writing papers and bleached eucalyptus kraft pulp. It is Europe’s top producer of bleached eucalyptus pulp and Portugal’s second largest exporter.

Södra is investing approximately SEK 700 million to increase pulp production at Södra Cell Mörrum. A new wood-chip plant will be constructed and one of the mill’s two pulp lines will be upgraded. The company has also earmarked SEK 4 billion to increase capacity of its Värö pulp mill. The investment at Mörrum will raise pulp production from 380,000 tpy to 425,000 tpy. At Värö, capacity will increase from 425,000 tpy to 700,000 tpy. Valmet is heavily involved in each of the aforementioned projects.

Stora Enso Packaging (China) will build a greenfield mechanical pulp plant and board machine in Beihai, Guangxi Province with start-up expected in early 2016. Valmet will supply a chemi-mechanical pulp (BCTMP) and a board production line. Andritz will supply a complete wood-handling line for the project. Unusually, raw material will come from debarked domestic plantation wood. Until recently China was almost completely dependent on imported wood and fiber. Clearly its domestic planting and harvesting policy is starting to deliver.

Former Russian republics are also spending money. JSC Svetlogorsk Pulp & Board’s new pulp mill under construction in Svetlogorsk, the Republic of Belarus, will produce 400,000 tpy of bleached kraft pulp and will be the first bleached kraft pulp mill in the country. Metso’s automation division will provide process automation and valve systems for the new mill. Startup is expected in the third quarter of 2016.
Packaging Grades
Belgian group, Van Genechten has bought Ost-Print LLC, a specialized folding carton producer near Moscow. The Russian firm has a turnover of Euro 8 million and is focused on high added-value carton packaging for the Russian market. Van Genechten has been in Russia for over 10 years and in 2004 bought its first Russian company, VG Contours, ZAO. Both companies operate in food and non-food folding carton grades and together they have combined sales of Euro 20 million.

Sun Paper (China) has ordered three paper machines from Voith for the production of packaging and graphic paper. Two of the machines, PM31 and PM32, will be installed in Sun Paper’s mill in Zoucheng and produce corrugated medium and testliner. The third machine, PM29, will be installed at Yanzhou and produce graphic papers.

It’s noteworthy to mention that Mondi recently started up an Andritz-supplied paper machine (PM7) at its paper mill in Steti, Czech Republic. PM7 is producing white Kraft paper mainly used for industrial bags and shopping bags.

Tissue Grades
Turkish tissue maker Hayat Kimya just ordered its fifth tissue line from Valmet. Hayat’s current tissue production capacity stands at 210,000 tpy, with a converting capacity of 135,000 tpy. The new machine will increase Hayat’s capacity of facial, toilet and towel tissue to 420,000 tpy. Startup of the new line is planned for 2016. The Turkish tissue maker is well-placed to export to the Middle East — its back door. The first two tissue lines started up in 2010 and 2013. The other two are due to start-up in 2014 and 2015.

Comment
The radical cutbacks by European forest products companies in the last two years have finally returned the industry to a point where it can now begin to invest in selected grades. Most of the 10 projects covered here have been planned for some time and have been delayed, but the ruthless focus on cash flow and the easing of recession in parts of Europe have begun to encourage CEOs to start spending money again.

David Price is a contributing writer for PaperAge. He can be reached by email at: DPrice1439@aol.com.

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Unpack the power of Maximyze® for packaging.
Let Buckman help you improve sheet strength and increase productivity

Buckman announces new Maximyze enzymatic technology for packaging. For your recycled fiber sourced grades, it can significantly improve sheet strength and drainage, so you can increase machine speeds. With a customized Maximyze program you can reduce fiber costs, steam consumption, transportation costs and your environmental footprint, too. No wonder it’s an EPA Presidential Green Chemistry Challenge Award winner!

A typical case.
A large, modern machine making linerboard from recycled fiber lost production due to drainage limitations. Buckman applied a Maximyze program to improve drainage, so machine speeds could be increased by as much as 100 mpm. Steam use was reduced 8%, and CO2 emissions were reduced by 1866 metric tons per year.

Find out more.
To learn more about Maximyze for packaging, contact your Buckman representative or visit buckman.com.

Commitment makes the best chemistry.
Sappi Somerset Operations Rebuilds Former on PM3

OptiFormer's shoe and blade technology results in better formation, significant cost savings, and no more two-sidedness at Sappi's paper mill in Skowhegan, Maine.

By Marika Mattila

Editor's note: This article was originally published in Metso's “Results” magazine. Metso on Jan. 1, 2014 became Valmet.

October 2012, Sappi Fine Paper’s Somerset mill at Skowhegan, Maine, USA, started up its rebuilt paper machine PM3, after a challenging former rebuild delivered by Metso. The rebuild was an upgrade of the existing Beloit BelBaie former to create an OptiFormer Gap former with shoe and blade technology.

EXCELLENT REBUILD START-UP CURVE

The targets for the rebuild project were to improve formation and reduce filler two-sidedness and thus reduce the usage of expensive coating. Within a few weeks of optimization and fine-tuning, it was clear that the mill was well on the way to achieving the targets set.

A complex rebuild environment within very limited space is always a challenge for the supplier as well. Metso’s OptiFormer Gap upgrade was preferred because of the need to reliably fit all the equipment into a restricted space.

Since Metso is the OEM for Beloit equipment, its personnel have experience of many BelBaie installations and upgrades and access to all the original drawings. This guaran-
ted an on-time start-up with minimal unforeseen problems. All areas were arranged so as to give good access for operation and maintenance.

The rebuild project was also supported by the extremely high level skills of the mill personnel at Sappi Skowhegan. They have a lot of experience and expertise in engineering, the papermaking process and project management. This combined know-how of the customer side and Metso was the key factor for success in the rebuild project.

**OPTIFORMER GAP WITH SHOE AND BLADE TECHNOLOGY**

Metso’s unique gap forming technology, OptiFormer Gap, utilizes shoe and blade technology to achieve superior paper quality. The formation results have proved to be better than for any of the competing technologies.

The initial dewatering of OptiFormer Gap takes place under non-pulsating conditions utilizing VacuShoe technology. Water is removed in the VacuShoe chamber area (jet landing area) through both the inner and outer fabric producing good retention and symmetric filler distribution at high filler contents in the paper.

After the paper surfaces have been formed, the dewatering continues in the blade dewatering phase, where the loading elements generate pressure pulses and shear forces inside the sheet. This finalizes the excellent formation and high dewatering capacity.

The results from Sappi’s PM3 are proof of the excellent formation levels that OptiFormer can provide.

**ADJUSTABILITY AND CLEANLINESS AT A NEW LEVEL FOR IMPROVED RUNNABILITY**

A forming section with shoe and blade technology can be operated with a variety of grades without having to readjust the forming parameters. Shoe and blade technology allows completely free adjustment of the slice opening, jet/wire ratio and the jet landing point without causing any sheet disturbances.

This technology ensures excellent runnability through improved cleanliness in the gap area. Unlike a traditional

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**Sappi Fine Paper North America, Skowhegan PM3**

- **Wire width**: 8,128 mm
- **Design speed**: 1,372 m/min
- **Basis weight range**: 59-118 g/m²
- **Original start-up**: 1990

“The formation improvement was immediate and resulted in improved screen mottle, which allowed for a wider manufacturing window to operate with higher coat weights and higher calendaring conditions. This improved quality and glossibility provided the opportunity to reduce material costs via wet end fillers and coating materials.”

– Sappi Somerset PM3
forming section with a forming roll, where any dirt particles are trapped between the fabric and the closed roll, dewatering occurs in the stationary shoe area and thus removes dirt from the fabric surface, causing no light spots on the paper. The closed breast roll surface also reduces misting around the headbox slice area. Therefore the top and bottom slice areas are very clean and dry.

“The new shoe blade former is very forgiving compared to the old BelBaie former, which was very sensitive to changes in jet landing. Adjustments in speed or headbox settings can now be done without the risk of causing a sheet break. The addition of Metso’s BlowCleaner fabric cleaning technology as part of the former rebuild has also made significant improvements in fabric cleanliness and dryness of the fabric return run. This has reduced several known causes of forming defects and breaks,” says Sappi’s Somerset operations.

**FAST PAYBACK FOR INVESTMENT**

In Sappi’s Skowhegan PM3, one of the main reasons for the rebuild was to reduce filler two-sidedness so that the mill could apply less coating at the coater section. The project’s return on investment was based on reduced usage of the expensive coating raw material. Just a few weeks after the start-up the mill was already well on the way to achieving the anticipated ROI by reduced coating cost.

For further information about the technology that appeared in this article, please contact Kari Lamminmäki Specialist, Forming Section Product Management for Valmet: kari.lamminmaki@valmet.com.

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**Sappi Somerset Mill At-a-Glance**

Located in Skowhegan in central Maine.

**Annual production**: 795,000 tonnes of paper and 525,000 tonnes of pulp

**End uses**: high-end magazines and catalogs

**Employees**: approximately 840

**Designed for optimal operational and environmental paper supply performance**

---

**Optiformer Gap with Shoe and Blade Benefits**

- Excellent paper quality within a wide operating window
  - Improved formation
  - Improved two-sidedness

- **High production capacity**
  - Higher speed
  - Improved efficiency

- Reduced raw material costs
  - Ability to use higher filler content
  - Low retention chemical costs
  - Ability to produce lower basis weights

- Excellent paper machine runnability
  - Very clean headbox slice area
  - Fundamentally different from roll and blade forming, less sensitive to dirt

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ASPI Fall 2014 Customer Alignment Meeting
Association of Suppliers to the Paper Industry (ASPI)
The Peabody Memphis
Memphis, Tennessee, USA
www.aspinet.org

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North American Forest Products Conference
RISI
Seaport Hotel
Boston, Massachusetts, USA
www.risiinfo.com/events

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Matthew van der Sluys, Process Development Engineer

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“Smart air innovations.”
Mills making paperboard from recycled fiber must deal with reduced paper strength, decreased yield, system contaminants, poor additive efficiency, and increased chemical oxygen demand (COD) levels. Of these issues, loss of strength performance is the most critical. A common response to compensate for strength loss is to apply more internal and surface starch in the papermaking process. This increases starch levels in the final board and therefore in the resulting waste furnish used to make new paperboard. Starch levels in OCC can easily exceed 5%.

The starch present in waste furnish is the most expensive component by weight. Until now, it has been impossible to recycle this starch, as it immediately degrades, dissolves and exits via the effluent stream. The dissolved starch also wreaks havoc in the papermaking system, spiking microbial activity, reducing pH, increasing conductivity, interfering with additive performance, reducing strength, and increasing effluent COD levels.

Ashland developed the Biobond™ program in an effort to solve these issues. This new program enables the recovery and reuse of starch in waste paper, thereby increasing yield, improving strength, and eliminating the issues caused by degraded starch in papermaking at the source. This paper describes this innovative technology and highlight technical performance and sustainability advantages for packaging papermakers. Results from commercial applications will be presented to demonstrate benefits of yield increase, strength increase, additive efficiency improvement, and reduced COD levels in effluent.

SUSTAINABILITY AND THE PAPER INDUSTRY

The landscape of pulp and paper manufacturing has changed rapidly and significantly over recent decades. Several key market shifts are driving these changes including the increased use of recycled or recovered fiber, lightweighting of paper-based packaging, and replacement of printing and writing papers by electronic media. A common thread connecting most of these market shifts is the industry’s drive towards improved sustainability. The pulp and paper industry has made great strides in the last 50 years to become much more attractive in terms of sustainability and reduced environmental impact. Examples of these improvements are widespread implementation of sustainable forestry practices, elimination of elemental chlorine bleaching, and increased recovery rates and manufacture of recyclable packaging. The primary raw material — wood fiber — is bio-sourced, renewable, and biodegradable. Additionally, wood fibers can be recycled numerous times to make new paper, and recovery rates are high; it is estimated that over 250 million tons of
recovered fiber will be used in 2014, representing over 50% by weight of all paper production.

Although the pulp and paper industry has a favorable sustainability story; consumers, brand owners, and governmental agencies are increasing pressure on all industries to further improve in this regard. As a result, pulp and paper manufacturers have dramatically increased efforts to lessen the impact of their operations on the environment and become more sustainable. These efforts include sustainable fiber certification, expansive water, energy and emission reduction initiatives, and improving the recyclability of end products.

Suppliers to the pulp and paper industry have played a critical role in improving the sustainability of their customers’ operations and products. Of these, providers of specialty chemicals have had a particularly significant impact on pulp and papermaking process efficiency and end product sustainability. Notable advances in recent decades made possible by specialty chemicals include the conversion to alkaline papermaking in the 1980s, the introduction and success of synthetic dry strengths in the 1990s, and the move to inorganic mild oxidizing biocides in the early 2000s. Each of these advances has had a definite positive impact on sustainability. For example, alkaline papermaking enables the use of fillers that can substitute fiber in some grades by up to 30%, dry strength resins have dramatically expanded the use of recycled fiber, and improved biocides have increased on-machine efficiencies by 5-10 percentage points.

With a long history of providing new innovations, such as those mentioned above, to meet market needs, Ashland has recently introduced and launched a new program entitled “Biobond. Improving the Sustainability of Paper program” specifically designed for mills making recycled packaging grades. This innovative treatment program has been widely successful with numerous paper machine conversions in Europe, and is now expanding into other regions of the globe.

**PROGRAM OVERVIEW**

This innovative specialty chemical treatment program for the paper machine is designed to achieve one critical objective: to recover and reuse the starch already present in the incoming waste furnish. The value in terms of yield and paper strength that can be generated as a result of recovering this waste starch is quite significant and has not been fully realized in practice until now. This is because virtually all of the waste starch that enters the paper mill as raw material in the recycled furnish quickly degrades upon pulping and is lost before it can be retained in the papermaking process.

In many cases, paper makers are not fully aware of the aforementioned scenario and that potentially millions of dollars per year of a valuable and usable raw material are literally being washed away with the effluent. Consider the financial impact if this starch could be recycled along with the fiber. Starch cost is typically three times that of recovered fiber by weight — if waste starch could be recovered and reused, the need for adding fresh starch at the size press or wet end could be significantly reduced. Synthetic dry strength agents could also be reduced or eliminated. Lower basis weights could be achieved without strength loss.

Additionally, the negative impact of this degraded starch on the papermaking process is very significant causing pH to decrease and conductivity to increase in the paper machine wet end, which has serious ramifications for additive efficiency, deposit control, and final board quality.

By recovering and reusing waste starch, the new program addresses all of these issues with dramatic performance improvements in three key areas; yield, paperboard strength, and efficiency. The performance gains in these three areas directly translate into improvements in both the environmental and sustainability aspects of the process and end paperboard product.

**TECHNICAL CHALLENGE: STARCH PRESERVATION**

Recovering and reusing waste starch represents a very difficult technical challenge. For decades waste starch was known to degrade and cycle up in the white water loop, but was considered to be “dead” in terms of reactivity, ability to be retained, and strength impact to the final board. Successfully turning this situation around required a multifaceted approach that would accomplish two main technical objectives: prevent the incoming waste starch from biologically degrading in the stock loop and effectively retaining the preserved starch onto the fiber. The new treatment program consists of several differentiated chemistries working together holistically — an approach that is needed to accomplish these challenging technical objectives.

Starch preservation is the first step and can be accomplished effectively with thorough and consistent application of the right biocides. Traditional organic biocides typically used to treat starch or fiber, such as isothiazolin and gluteraldehyde, will preserve starch but the dosage rate required to do so effectively is too high to be economically viable. The program addresses this problem by the use of BAC (bromide-activated chloramine), an inorganic mild oxidizer that kills a wide range of microorganisms quickly and cost-effectively.

Treatment of the entire stock loop system is usually necessary to keep the starch in a preserved state throughout the range of normal operating conditions on the paper machine. After the optimum BAC microbiocide treatment program has been designed and implemented, most of the available starch should be in a preserved state. The second step is to retain this starch in the paperboard. If this starch is not retained it can cause serious contamination and deposition issues throughout the paper machine system. This step is perhaps the most critical and the most challenging.

The successful development of the starch retention portion
of the new program took several years of field trial work and laboratory research, culminating in a unique fixation and retention program utilizing two differentiated polymer chemistries. The end result is that most of the available loose starch is fixed to the fiber and retained in the final board, improving yield and providing additional strength.

The program preserves, recovers, and reuses an expensive and valuable raw material that would otherwise be lost. Yield and paperboard strength are significantly improved, but there are also very significant side benefits that must be mentioned. By keeping starch from degrading and solubilizing in stock and white water loops, pH is maintained or increased. Conductivity levels are significantly reduced, as starch and fillers are no longer solubilized (see Figure 1). The result is a much cleaner system with more effective reactions between fibers and chemical additives. Operating efficiency is improved along with critical parameters such as sizing efficiency, wet web strength, dry strength, and deposit control. Finally, COD levels in effluent are reduced by up to 25%, thereby reducing waste water treatment costs, and reducing environmental impact (see Figure 2).

**PROGRAM BENEFITS**

How big is the opportunity to increase yield, improve strength, and increase efficiency in a typical recycled containerboard mill? To calculate the potential yield benefit, it is necessary to know how much starch is available to recover. Starch contributions come primarily from the native starch applied on the paper machine via size presses and spray booms, as well as wet end cationic starch applications and starch-based glues applied in corrugating and converting. The average starch level in old corrugated containerboard (OCC) furnish is estimated at 5% by weight, although the actual percentage can vary significantly by geography. For example, the OCC collected in Europe and Asia contains higher levels of starch due to the high number of size presses used in the manufacture of containerboard — in some cases over 50 kg of surface starch per ton of paperboard is applied in these regions in order to meet strength requirements.

The picture is quite different in North America, where most size presses on recycled containerboard machines have been removed or bypassed over the years due to the desire for speed increases. Also, there is less need for starch addition on the recycled paper machines in North America because of the high quality of local OCC available.

Assuming a global average of 5% starch by weight, the program is shown to recover over 50% of this starch, effectively improving yield by 2.5 - 3.0%. With recovered fiber and starch prices projected to continue to increase in the long term, this level of yield increase represents a significant cost savings for recycled packaging mills.

**COST SAVINGS**

The starch applied on the paper machine is used to accomplish one main objective: improved paperboard strength. The ability to reuse waste starch as a strength agent has very positive cost-savings implications. Strength programs are typically the most expensive additive programs used on the paper machine, whether they are size press starch applications, internal cationic starch applications, or synthetic dry strength resins.

Most paper machines currently using the program elect to leverage the additional strength gained from recovering waste starch by reducing the amount of fresh starch applied at the size press. In these cases, size press starch reductions of more than 20% have been demonstrated (see Figures 3 and 4).

Additionally, there is a potential to reduce the usage of expensive synthetic dry strength agents which are being used more extensively due to the general decline in recovered fiber quality. In many cases, these synthetic dry strength programs can cost as much or more than size press starch treatment. The new program has reduced or even replaced synthetic dry strength applications in some cases, generating cost savings of up to $10/ton.

Finally, this added strength can be used to reduce basis weight. This is a very important benefit, especially for mills seeking to manufacture lightweight recycled linerboard and corrugating medium grades.

**CLEANER SYSTEM**

As previously mentioned, the program prevents the solubilization of waste starch. Dissolved starch wreaks havoc in the papermaking system by spiking microbial activity, reducing pH, increasing conductivity, interfering with additive performance,
reducing strength, and increasing effluent COD levels. Mills can realize multiple obvious benefits by preventing these phenomena. In most cases, improved uptime due to break reductions, a result of a cleaner system with reduced potential for deposits have been noted.

Further, the resulting improvement in additive efficiencies results in direct and measureable cost savings, particularly for retention aids, cationic coagulants, sizing chemicals, dry strength agents, and defoamers. Several dollars per ton of additive savings have also been realized.

**IMPROVED SUSTAINABILITY**

Finally, the positive impact of this program on sustainability cannot be over-emphasized. Virtually every improved parameter can be directly tied to a quantifiable sustainability or environmental benefit. Increased yield translates to reduced starch and fiber usage. Improved strength translates to reduced fiber, additive, and energy usage. Reducing the COD load in effluent reduces energy and water usage, lowers treatment costs and reduces sludge production and landfilling. All of these improvements contribute to reduced carbon dioxide emissions. The yield benefit alone eliminates thousands of tons of CO2 emissions per year on a typical recycled containerboard paper machine.

Over the years, several industry groups have conducted carbon footprint studies on various grades of paper and paperboard. The results of these studies vary significantly and are influenced heavily by the fiber source used in manufacturing (virgin vs. recycled), the type of energy used in manufacture, (fossil fuel vs. biomass), and the geography where the paper was produced. Based on these studies and others, it is reasonable to estimate that the total amount of carbon dioxide emitted per ton of recycled containerboard manufactured ranges between 0.4 and 1.2 tons\(^3\),\(^4\),\(^5\). Using an average figure of 0.8 tons CO2 emissions per ton recycled containerboard, we can calculate that the 2% yield increase provided by this new program can eliminate 4,000 tons of CO2 emissions when used on a typical recycled containerboard machine making 250,000 tons per year of paperboard. With global production of recycled containerboard currently exceeding 100 million tons, global implementation of this new technology program could have a very significant positive impact to the environment, reducing CO2 emissions by over 2 million tons/year.

**SUMMARY**

The documented benefits from European paper mills of this new program are summarized in Table 1.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Typical Benefit</th>
<th>Financial Impact ($/ton savings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basis Weight</td>
<td>2.0% decrease</td>
<td>$4.90</td>
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<td>Surface Starch Application</td>
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<td>Fresh Water Usage</td>
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<td>Cleaning Program</td>
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<td>Retention Aid Program</td>
<td>25% decrease</td>
<td>$0.75</td>
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<tr>
<td>Effluent COD Program</td>
<td>20% reduction</td>
<td>Varies</td>
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Table 1: Documented Benefits from European Paper Mills

This unique, innovative treatment program resolves a long-standing industry problem: the recovery and re-use of starch that is present in incoming waste paper furnish. The negative system side effects associated with solubilized starch are eliminated. Yield, strength, and operating efficiency are significantly improved, thereby making the manufacture of paper much more cost effective and much more sustainable.

**REFERENCES**

1. All references to “Biobond” in this article are to Ashland’s service mark “Biobond. Improving the Sustainability of Paper”
2. RISI - Outlook for Global Recovered Paper Markets 2012

For further information about Biobond, contact Cory Ross, Strategic Marketing Manager, NA Packaging at: cwross@ashland.com.
Using **Press Nip Impulse** to Improve Machine Efficiency

Embedded sensor technology allows papermakers to optimize nip impulse, thus maximizing moisture removal from the sheet and protecting sheet qualities, while sustaining performance of rolls and felts.

By Bob Carney

One of the main factors in improving machine efficiency is the ability to remove water from the sheet by controlling the nip impulse. The optimum nip impulse will maximize moisture removal, protect sheet qualities, and sustain performance of rolls and felts. The nip impulse is the area under the curve of the nip intensity and nip width.

The best way to monitor the nip impulse is by using embedded sensor technology. This has been used for several years to improve process efficiency. Initially, these systems were sparsely used but in just a few short years they have become commonplace with many mills employing multiple systems to monitor different parts of their process. This rapid growth is a testament to the value derived from these systems.

Armed with accurate real-time knowledge of nip performance, operators can adjust operating parameters and make corrections. These systems have quickly identified improper cover crowns, biased loading, and uneven roll cover wear resulting in reduced costs through extended cover and clothing life, reduced downtime, lower raw material consumption, and reduced energy costs. Embedded sensor technology is field proven and providing documented results.

SMART™ Technology, from Xerium Technologies, employs a proprietary embedded sensor system to extract data from the roll cover during machine operation. A series of sensors is embedded across the width of the roll cover, providing a continuous flow of profile data. The sensors are monitored by head-mounted electronics that rotate with the roll and transmit data wirelessly to a dedicated computer. A custom operator interface provides dynamic monitoring of the pressure profile, pressure profile standard deviation, and roll speed. The system also maintains a historical log of past loading data.

The use of new polyurethane cover technology allows for the use of softer covers at higher loads. This allows for a combination of higher nip width as well as higher nip intensity. This increase in nip impulse allows for increased machine speed and increased paper production.

**CREATING THE IDEAL NIP IMPULSE**

To design the proper nip impulse requires taking into account what parameters need to be controlled. It is important to analyze the following operating conditions:

- Nip intensity, nip width and the dwell time
- Start up time, felt life, moisture ratio
- Sheet strength, smoothness, bulk, basis weight
- Sheet breaks, holes, draw, sheet transfer

In order to match the conditions listed above, roll covers are designed to develop nip intensity, nip width and venting. Felts are designed to handle water, transfer the sheet and pressing uniformity.

For a long time it was difficult to achieve the ideal nip impulse because cover technology was not able to match the requirements. Standard polyurethane covers had issues...
with significant temperature increase as the nip intensity increased, however, in recent years new technology has significantly improved the cover operating parameters. New cover materials, like Quantum Xtreme, have low hysteresis which allows the cover to operate at a lower temperature under higher loads, allowing the rolls to operate without water cooling (see Figure 1). Additionally, new elastomers were developed that have increased wear resistance. This increased wear resistance allows the roll to maintain its groove and hole geometry for a longer period of time, and also allows the roll cover to maintain its profile for an extended period of time.

Although earlier versions of SMART® Technology delivered tremendous benefits in some positions, it was limited in its potential applications. The latest technology allows for measurement of both nip width and nip intensity (press impulse). By measuring these two parameters it gives the mill crucial information that is necessary for the press impulse, which is key to the drying of the sheet and how much moisture is removed.

The nip width is measured by the embedded sensor system which takes up to 1000 readings per second while the sensor is in the nip. These readings allow for the software to determine how large the nip width is. Nip width measurement is critical because it is one of two factors in the total nip impulse.

Many factors can impact the nip impulse. These factors include but are not limited to roll cover hardness, loading pressure, temperature, felt caliper and sheet caliper. As a roll and felt progresses through its life the nip impulse will vary greatly based on the factors mentioned above. In addition it is important to know the nip impulse as paper grades change. This is a factor that is increasing in the paper industry today.

One additional factor that assists operations is through the development of the OPC link for the SMART Technology. The OPC link allows for data that is generated in the nip to be transmitted and displayed throughout the mills DCS system. This feature allows for the data to be put out to anyone’s desk that has access to the DCS system. This is in addition to the display on the computer that is normally located in the operators control room.

**IMPROVING MACHINE EFFICIENCY**

There are two ways in which SMART Technology improves machine efficiency. The first is that it assists in achieving a flat nip. A flat nip is critical because a flat nip helps to create a better sheet quality. The sheet quality is improved because there is consistent moisture content across the entire sheet. In the past, the nip was monitored during static conditions. In some cases this was accurate enough to maintain a flat nip profile, but there are several factors that can cause the nip to not be flat during the dynamic running conditions. These factors show the importance of using the embedded sensors since this is the only way to truly measure what is happening in the nip while it is running.

Without a flat nip there are several issues that can occur. The first issue is that the moisture in the sheet will not be consistent. If the moisture in the sheet is not consistent, machine speed will need to be reduced to ensure that the wettest part of the sheet dries properly. In addition, the sheet caliper is likely to vary as well. This variation will likely cause quality issues.

Another issue associated with an uneven nip is that this will increase the wear on portions of the roll cover. This increased wear will require the roll to be removed earlier than normal, reducing machine run time and requiring additional maintenance time. In addition to wearing the cover, uneven loading will also have impact on venting on the roll cover. This can cause additional wear or closing of the grooving and blind drilled portion of the rolls. It is also possible that an uneven nip could cause the roll cover to be damaged and require the operator to reduce the nip pressure.

**Figure 1.**

New cover materials, like Quantum Xtreme, have low hysteresis which allows the cover to operate at a lower temperature under higher loads, allowing the rolls to operate without water cooling.
These two factors will greatly affect the performance of the machine.

Another problem with an uneven nip is that it will affect the performance of the felt. Where the nip is loaded heavier it will cause the felt to compress more than the rest of the felt. This increased compressing of the felt will reduce the effectiveness of the felt to carry water away from the nip, ultimately reducing the felt life in the machine which will increase the costs of operating the machine.

The second benefit of using SMART Technology is that it gives the papermaker the confidence to increase the loading of the press roll. Because the papermaker is confident that the nip is flat, he can increase the loading and he can be assured that the cover is operating properly. The ability to increase the loading is part of the nip impulse which helps to remove more moisture from the sheet. This allows for the machine to speed up because the sheet is drier.

In addition to using embedded sensors, the use of new technology polyurethane like Quantum Xtreme, allows the papermaker to increase the nip intensity. This increased nip intensity helps to increase the nip impulse, and the increased nip impulse will allow the papermaker to remove more moisture from the sheet. This will allow for the mill to increase the machine speed, or reduce the amount of energy necessary to dry the sheet.

**CASE STUDY**

The theories listed above were instituted in a 2-ply recycled linerboard machine. This machine is two straight thru press application as shown below.

Originally the second press on the machine was operating at 1200 PLI. After the addition of the new polyurethane covers and embedded sensor technology, the load was increased to 1600 PLI. Because of the increased loading, the speed on the machine was increased from 2200 FPM up to 2500 FPM. In addition, the rolls were able to increase the grind interval from 6 months up to 1 year. Also, felt life is increased from 8 weeks up to 12 weeks. This increase in speed correlated to an increase of 31 tons per day. The mill has replaced all of their rolls with this new technology and continued to operate at this higher level.

This is just one example of how the use of SMART Technology and Quantum Xtreme roll cover technology improves machine performance and efficiency. New polyurethane technology covers allow presses to run at higher loads, improving the amount of water removed from the sheet, while SMART Technology gives the mill the confidence to operate at higher loads because they know that they have a flat nip. This also allows the mill to extend the life of the press felt because a flat nip has the felt to compress equal amounts in the cross machine direction.

Bob Carney is Director of SMART Technology for Xerium. He can be reached at: bob.carney@xerium.com.
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I once heard the Pulp and Paperworkers’ Resource Council say (about our industry) that “we were green before green was cool.” And when it comes to the carbon neutrality of biomass, there is no greater truth.

Latest in its series of greenhouse gas (GHG) regulations, the U.S. Environmental Protection Agency (EPA) released its proposed Existing Source Performance Standards (ESPS) for power plants, which call for a 30 percent emissions reduction by 2030. Our greatest concern with this rule is that it will increase our facilities’ purchased electricity costs; however, it also sets a bad precedent for how biogenic emissions will be treated going forward. Although the standards mention the positive role that biomass-derived fuels can play in GHG reduction strategies, they essentially treat biogenic and fossil fuel CO₂ the same. As we know, recovering biomass residuals for energy production is not the same as burning fossil fuels or purchasing fossil fuel-based electricity from the grid. Now is the time for EPA to fully recognize the benefits of paper mill biomass fuels in their regulations and policy.

EPA has been working for three years on an Accounting Framework for Biogenic CO₂ Emissions from Stationary Sources. AF&PA expects a revised draft to be released soon. Once finalized, the framework will clarify what biomass qualifies as “carbon neutral” (and therefore excluded from regulation of GHG emissions).

The carbon neutrality of biomass-based energy was not always this uncertain. Only after 2009 was it questioned when the Environmental Defense Fund and others challenged the concept of carbon neutrality in a Science journal article. The following year, EPA excluded smaller CO₂ emitters like churches and small businesses from regulation through its GHG Tailoring Rule. But in doing so, EPA failed for the first time to distinguish biogenic emissions from fossil fuel emissions and did not exclude biogenic CO₂ from Prevention of Significant Deterioration (PSD) / Title V permitting thresholds. After industry expressed concern over the potential far-reaching implications of this decision, EPA imposed a three-year deferral of biogenic CO₂ regulations (the “Deferral Rule”) while it completed a scientific review of the issue. Environmental groups challenged the legality of the agency’s deferral, and on July 12, 2013, the D.C. Circuit Court vacated the rule, stating EPA had not adequately justified the basis for the deferral.

In the midst of the Deferral Rule activity and after considering public comments on the carbon neutrality issue, EPA issued a draft accounting framework; and even more recently on June 23, the Supreme Court ruled that EPA partially overstepped its authority in how it regulates GHG emissions from stationary sources in the Tailoring Rule. This brings us to now, where we are still in limbo, waiting for the revised framework to know how biomass emissions will be counted going forward for EPA’s current and proposed regulations.

In addition to pushing for a favorable carbon accounting framework, AF&PA continues to advocate that the Clean Air Act is the wrong tool for regulating GHG emissions. It imposes inflexible requirements that result in unnecessary and costly expenditures for manufacturing facilities. The ESPS is just one example in a string of regulations that contribute to the mounting costs of the administration’s GHG policy. For paper manufacturers that means higher purchased electricity costs and no assurance that our own internally-produced biomass energy will be treated as carbon neutral for PSD permits.

Our industry’s commitments to renewable biomass energy and energy efficiency, which include our use of highly-efficient combined heat and power technology, have already led to a dramatic decrease in fossil fuel use and GHG emissions. Since 1990, AF&PA members have decreased fossil fuel use in their pulp and paper mills by 34 percent, helping to reduce our industry’s greenhouse GHG emissions by 14.5 percent since 2005 and nearly reaching the goal of a 15-percent reduction set forth in our Better Practices, Better Planet 2020 sustainability initiative.

The fact is that biomass-based energy — particularly our use of manufacturing residuals — is an important part of a sustainable carbon cycle that has long been accepted not only within our industry, but also by the scientific community at large. It’s AF&PA’s mission to ensure that EPA recognizes our industry’s contributions to the larger “green” picture, and we believe that we’re close to doing just that. It’s time for EPA to recognize that biomass energy is part of the solution to reduce GHG emissions.
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