Higher machine speeds increase the demand for sleeve performance. Metso’s BlackBelt, a unique shoe press sleeve made of high performance elastomer material reinforced with dimensionally stable synthetic yarns, withstands the harshest shoe press conditions. Available in different reinforcing structures and surface options, this reliable shoe press sleeve is wear, chemical and heat resistant, which ensures long and trouble free running.

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Too Much Common Sense

By John O’Brien, Managing Editor
jobrien@paperage.com

Olympia Snowe, the moderate Republican Senator from Maine, made a decision she said was “incredibly difficult,” and that was to walk away from a highly probable fourth term in the U.S. Senate. Her departure leaves Maine, the Senate and the country with one less level-headed negotiator at a table too full of self-righteous dictators.

“The Senate of today routinely jettisons regular order, as evidenced by the body’s failure to pass a budget for more than 1,000 days; serially legislates by political brinkmanship, as demonstrated by the debt-ceiling debacle of August that should have been addressed the previous January; and habitually eschews full debate and an open amendment process in favor of competing, up-or-down, take-it-or-leave-it proposals,” Senator Snowe said in a statement.

Snowe has been a political ally for manufacturing and especially the paper industry, urging government to create or re-work policies that would generate positive, long lasting effects on jobs and the viability of many businesses. There are plenty of examples of her good work, but I only have space to include just a few.

In November of 2011, Snowe pressed Agriculture Secretary Tom Vilsack to support efforts to bring low-cost energy resources to rural economies. In a letter to Secretary Vilsack, Snowe pointed out the majority of the 53,000 manufacturing sites closed since 2001 have been in rural America, and using the USDA’s rural development program to develop low-cost energy infrastructure, like natural gas pipelines, would help retain and expand key rural employers and boost their competitiveness.

“In order to boost competitiveness and retain and expand key rural employers, one unharmonized asset that the United States possesses is an abundant supply of natural gas. This has translated into a market advantage by having a discounted price that is lower than the worldwide wellhead price. This economic reality has the potential to jump-start and reinvigorate US manufacturing, yet some companies are looking to export this supply while many regions in the US lack access to this domestic resource. In addition, many manufacturers lack fundamental access to private capital,” Snowe explained.

Senator Snowe also pushed government to heavily weigh the implications of any newly proposed regulations on jobs, i.e. Boiler MACT. In a statement she likened EPA’s proposed revisions to Boiler MACT as “trying to build a car that accelerates like a Ferrari with the towing capacity of an F-350 truck and the seating capacity of a small bus — all in one vehicle.”

She went on to warn, “The proposed rule is simply unrealistic and unworkable for our pulp and paper mills, sawmills, and biomass power plants” and pointed to the estimated $2.1 billion dollars it would cost the pulp and paper industry to comply. “It places us in a disadvantage from foreign companies overseas, in particular, China,” she said.

“We are always putting the cart before the horse within the agencies and rulemaking. They have to anticipate the costs; they have to incorporate them into a business plan, that’s the point, they have a ripple effect,” she said at a hearing before U.S. Department of Commerce Secretary Gary Locke.

I’m sure there were a number of reasons that played into Olympia Snowe’s decision to step away from serving another term as a U.S. Senator, but her reluctance to continue was most likely the result of something she has a great deal of and her colleagues on Capitol Hill have very little of: common sense.
How deinkers save three ways with one additive

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Appleton and Domtar Agree to Uncoated Paper Supply Deal

Appleton and Domtar announced a tentative agreement in which Domtar would supply Appleton with most of the uncoated base paper the company needs to produce its thermal, carbonless, and other specialty paper products.

The 15-year supply deal is valued at more than $3 billion over the life of the agreement, Appleton said.

Appleton said it currently produces base paper at mills in West Carrollton, Ohio, and Roaring Spring, Pennsylvania. The company purchases any additional base paper it needs from other paper producers including Domtar. Appleton also buys a large amount of waste paper and pulp, primarily for its West Carrollton mill, both of which are susceptible to significant price volatility.

As a result of the deal, Appleton is proposing to cease recycled fiber processing and paper production at its West Carrollton mill. However, the company would continue to operate the mill’s thermal paper coating operations installed there in 2008.

The deal would result in a reduction of approximately 330 jobs at the West Carrollton mill.

Assuming the plan is finalized, approximately 100 employees would be retained to continue to operate the thermal paper coating facility. Carbonless paper coating currently conducted at West Carrollton would be shifted to the Appleton’s converting plant in Appleton, Wisconsin, and result in an increase of approximately 50 jobs at that facility.

Employment and operations at Appleton’s integrated pulp and paper mill in Roaring Spring would be unaffected by the agreement.

“We operate in a capital and resource-intensive industry,” said Mark Richards, Appleton’s chairman, president and chief executive officer. “Successful companies will be ones who find more efficient ways to operate and deliver value to their customers. For some that means greater and more efficient use of their assets; for others it may involve closing operations that limit efficiency.

“Because we buy pulp on the open market, it costs Appleton considerably more to make base paper than it costs a producer like Domtar, which can supply its own pulp. Our proposed operational changes, as difficult as they may be for many of our employees in West Carrollton, are needed for our company to remain competitive,” Richards said.

The West Carrollton mill was built in 1948 by the American Envelope Company. Appleton purchased the mill in 1984 and has made substantial investments to improve the mill’s capabilities and productivity. The most significant investment occurred in 2008 when the company completed a $100-million expansion that included the installation of a state-of-the-art coater to produce thermal paper and construction of related facilities.

IP Completes $4.5 Billion Acquisition of Temple-Inland

International Paper in mid-February completed its acquisition of Temple-Inland.

Including the assumption of approximately $700 million in Temple-Inland net debt, the total value of the deal is approximately $4.5 billion.

IP and Temple-Inland got conditional approval on Feb. 10 from the Antitrust Division of the U.S. Department of Justice (DOJ). Under the terms of the DOJ’s approval, the combined company will undertake the post close divesture of 970,000 tons of containerboard mill capacity within four months, with the possibility of two 30-day extensions.

IP Chairman and CEO John Faraci said, “We are very pleased to have completed this compelling transaction. The combination of International Paper and Temple-Inland strengthens our North American packaging business and enhances our ability to generate cash flow while maintaining our strong balance sheet.

Neenah Completes Purchase of Wausau Paper’s Premium Brands

Neenah Paper recently completed the purchase of certain premium paper brands and other assets from Wausau Paper Corp.

Key components of the deal include; a cash payment of $21 million to acquire:
• Astrobrights®, Astroparche® and Royal brands
• Exclusive license rights for a portion of Exact® brand specialty business, including Index, Tag and Vellum Bristol
• approximately one month of finished goods inventory
• converting equipment for retail grades
• a supply agreement under which Wausau will manufacture and supply certain products to Neenah Paper during a transition period.

Annual sales from the purchased brands are estimated to be approximately $100 million and the Neenah expects to incur one-time costs related to the integration of approximately $10 million.
Congratulations RockTenn and CEO Jim Rubright – for having the ingenuity to make recyclable paperboard part of our lives.

Sometimes you have to think outside the box, even when boxes are your business.

That’s certainly the philosophy of RockTenn. Besides being a leading maker of corrugated materials and packaging solutions, RockTenn is also one of the world’s largest recyclers – helping customers meet their sustainability goals.

Little wonder that RockTenn CEO Jim Rubright has been named Executive Papermaker of the Year.

At Voith, we’re proud to be a global supply partner of RockTenn. Congratulations to Mr. Rubright and the entire company on this distinguished award.

www.voith.com
Billerud Agrees to Buy Packaging Paper Production at Two UPM Mills

Billerud has signed an agreement with UPM to acquire UPM’s packaging paper business in Pietarsaari and Tervasaari, Finland for EUR 130 million.

“We see great potential in the acquired business as it will now be integrated in a business focused on packaging paper,” said Per Lindberg, President and CEO of Billerud. “The acquisition will give us a strong platform to continue developing our offering within smarter packaging solutions.

“In addition, the acquisition significantly reduces our pulp exposure and adds a much larger Euro cost base, which we view positively,” Lindberg said.

The deal includes one paper machine in Pietarsaari (PM 1) and one paper machine in Tervasaari (PM 7), both in Finland. Both machines rank among the largest and most efficient of its kind in Europe and are assessed as well invested and well maintained, Billerud said.

The machines produce packaging paper (sack/kraft paper) with an annual production capacity of about 300,000 tonnes.

Other activities at the mill sites will remain owned and operated by UPM.

The deal, which is scheduled to close in the second quarter of 2012, is subject to regulatory clearances.

Cascades to Close Enviropac Plant in Toronto

Cascades will permanently close its Enviropac plant in Toronto, Canada.

According to Cascades, production at this unit, specialized in the manufacturing of Technicomb™ honeycomb packaging, intended primarily for the furniture packaging industry, will progressively be redirected towards the Cascades Enviropac Berthierville, Quebec and the Grand Rapids, Michigan plants.

“The decision to cease operations at the Toronto plant is due to a significant reduction in business volume,” said Luc Langevin, President and Chief Operating Officer of Cascades Specialty Products Group. “Demand in the honeycomb packaging industry has been affected by challenging economic conditions over the past few years and it is imperative we adjust our operations based on this new economic environment.”

About 36 employees will be affected by this closure which will be effective on June 1, 2012.

Domtar Completes Acquisition of Attends Europe

Domtar on March 1 completed its acquisition of privately-held Attends Healthcare Limited (Attends Europe), manufacturer and supplier of adult incontinence care products in Europe, from Rutland Partners for EUR 180 million.

“The acquisition of Attends Europe moves us further along the path we started down last summer and it consolidates our ownership of the Attends brand on both sides of the Atlantic. With this acquisition, we are adding another platform for growth with a well-established business that has the critical mass to drive product development and brand growth with our current North American business,” said John D. Williams, President and CEO of Domtar.

“Demand for incontinence care products in Europe is strong, and our intent is to double earnings within the next five years,” he added.

Attends Europe sells and markets a complete line of branded and private-label adult incontinence care products distributed through several channels, with sales organizations in nine European countries. The company has 413 employees and operates a world-class 374,000 sq. ft. manufacturing facility with eight production lines, a research and development center and a distribution center in Aneby, Sweden, along with distribution centers in Scotland and Germany.

In August of 2011, Domtar agreed to buy U.S.-based Attends Healthcare Inc. from KPS Capital Partners for $315 million and closed the deal on Sept. 1.

Newark Paperboard Products Enters Sales Deal with Specialty Coating & Laminating

Newark Paperboard Products has entered into a strategic alliance with Specialty Coating & Laminating (SC&L) of Doswell, Virginia whereby Newark is now an independent sales representative for SC&L’s roll wrap products, which include recyclable polyethylene laminated, as well as repulpable aqueous laminated grades.

According to Newark, SC&L offers standard and premium roll wrap and is one of its industry’s few manufacturers capable of poly extrusion and aqueous coating processes.

Newark Paperboard Products is a manufacturer of paperboard tubes and cores, as well as various grades of roll headers.
EUROPE

International Paper to Build New Box Plant in Spain

International Paper said that it plans to construct a new corrugated packaging plant in Villalbilla to build out its position in Spain, the fourth largest corrugated packaging market in Europe.

The new plant will replace the IP's current leased box plant in Alcalá and take over its volumes while also enhancing its capabilities.

“This multi-year project is a substantial investment and reinforces International Paper’s commitment to Spain and the EMEA corrugated packaging market,” said Greg Gibson, Vice President & General Manager of International Paper’s corrugated packaging business in EMEA.

The new plant is IP’s first greenfield box plant in almost two decades in the Europe, Middle East & Africa region (EMEA).

European Paper and Board Production Off About 2% in 2011

After the recovery in 2010 following the previous financial downturn, the indications are that paper and board production by the Confederation of European Paper Industries (CEPI) member countries fell in 2011 by close to 2% as the momentum of the revival was affected by the economic slowdown, particularly in the second half of the year.

With overall volumes continuing to remain below pre-crisis levels CEPI estimated that its member countries produced about 95 million tonnes of paper and board in 2011. Paper production had reached 103 million tonnes in 2007 and decreased by 13% between 2007 and 2009 before increasing by over 8% in 2010, CEPI said.

European pulp and paper production level remains slightly below the average European manufacturing industry performance but still above other energy-intensive sectors, CEPI added.

Based on estimates it would appear that the performance of the CEPI countries in total during 2011 is similar to that of most of the other major paper producing regions of the world with the exception of South Korea and China, which have performed better.

It is estimated that world paper production has recorded a very limited growth in 2011, around 0.5%, CEPI said.

Through its 19 member countries (17 European Union members plus Norway and Switzerland), CEPI represents some 550 pulp, paper and board producing companies across Europe, ranging from small and medium sized companies to multinationals, and 1000 paper mills. Together they represent 25% of world production.

Georgia-Pacific Agrees to Sell European Tissue Operation to SCA

SCA said that Georgia-Pacific has accepted its binding offer for GP’s European Tissue operations and both parties have signed a purchase and sales agreement.

“The deal is a strategic fit and will strengthen our product offering and geographic reach in Europe. It also leads to substantial synergies,” says Jan Johansson, President and CEO of SCA.

On November 10, 2011, SCA delivered a binding offer to acquire GP’s European tissue operations for EUR 1.32 billion.

According to SCA, Georgia-Pacific’s European tissue operations have approximately 5,000 employees and 15 production sites in seven countries. Sales in 2010 amounted to EUR 1.25 billion.

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H. ARNOLD WOOD TURNING, INC.
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Saica Containerboard UK Starts up PM 11

Saica Containerboard UK recently started up a new containerboard production line, PM 11, at its mill in Partington, near Manchester in the United Kingdom.

The 8.2-meter-wide PM 11 is a Metso-supplied machine with an annual production capacity of approximately 400,000 tonnes of lightweight testliner and fluting grades in the basis weight range of 75 to 125 g/m².

The new machine uses 100% recycled raw material and has a design speed of 1,700 m/min.

SUPPLIER NEWS

Metso to Supply Containerboard Machine to Turkish Company

Metso will supply Kipas Kagıt Sanayi Isletmeleri A.S with a containerboard machine for the company’s new mill site in Kahramanmaraş in southeastern Turkey.

The value of the order is about EUR 80 million, which includes a complete high-technology board machine.

“The new machine will utilize gap forming technology which enables a higher production speed and production efficiency ratio for board machines,” said Metso Area President Hannu T. Pietila.

Production speed will be 1,500 m/min, and PM 1 will produce fluting and testliner grades out of 100% recycled fiber. Annual production capacity of the new machine will be approximately 400,000 tonnes.

Start-up is scheduled for 2013.

Xerium Technologies SmartRoll Reaches Milestone

Xerium Technologies passed a significant milestone by booking its 200th SmartRoll — the industry’s first continuous pressure-sensing paper machine press roll based on the company’s SMART technology.

Xerium’s SMART applications are all based on a proprietary embedded roll cover sensor system that provides constant real-time operating data to help optimize production, reduce energy consumption, and control costs.

“Since that first sale just over two years ago, we estimate that SmartRoll has saved our customers more than $40 million in reduced energy consumption and other cost reductions,” said Stephen R. Light, Chairman, CEO and President of Xerium Technologies.

SmartRoll entered full commercial availability as a single application in mid-2009.

ASIA

SCA Proposes to Buy Taiwan-based Everbeauty for SEK 1.9 Billion

SCA has made a binding offer to acquire the Taiwan-based hygiene products company Everbeauty for SEK 1.9 billion (USD 290 million) on a debt-free basis.

Everbeauty is a leading Asian personal care products company with sales in China, Taiwan and Southeast Asia. The company produces and markets baby diapers and incontinence care products with strong brands such as Dr. P for incontinence care products and Sealer for baby diapers. Within incontinence care products, the company holds a number two position in China and a number one position in Taiwan. Within baby diapers, the company holds a number five position in China and Taiwan.

Everbeauty had sales of SEK 1.6 billion in 2010. Some 60% of sales are related to baby diapers and 40% comes from incontinence care products.

The company has about 900 employees.

SCA’s proposal is subject to Everbeauty being privatized under Taiwanese law and remains subject to certain conditions, including approvals and clearances by relevant authorities in Taiwan.

SCA expects to close the deal in the summer of 2012.

Sodra Cell Morrum Mill Starts Up Textile Pulp Production

Sodra said that it has started production of textile pulp at Sodra Cell Morrum. Under full operation, annual production is expected to be 170,000 tonnes.

“We are focusing on textile pulp as this is a growing market to which we can supply a certified, renewable forest raw material,” said Gunilla Saltin, President of Sodra Cell.

Sodra’s executive committee has also made a decision in principle about an appropriation limit for production of textile pulp on a further pulp line at one of the company’s pulp mills. A definitive decision on a second textile pulp line at Sodra will be made this year.
SUPPLIER NEWS

AkzoNobel to Build Chemical Island in Brazil

AkzoNobel is planning to invest EUR 80 million in the construction of a new pulp Chemical Island facility to supply Suzano’s Maranhao pulp mill in Brazil.

The plant will be operated by the company’s Pulp and Paper Chemicals business, Eka Chemicals.

The investment will involve supplying, storing and handling all chemicals for the 1.5 million ton per year pulp mill, which is being constructed in Imperatriz, Maranhao, Brazil. The mill is expected to come on stream in the last quarter of 2013.

“We are very proud to have been awarded this project; it underlines the value our Chemical Island concept brings to our customers,” said Pulp and Paper Chemicals General Manager Ruud Joosten. “The future demand for pulp and paper in Latin America and China is forecast to increase substantially over the next decade and these investments ensure that we are part of that growth.”

---

Size Wise.

How a packaging mill saved $457,040 per year by switching to the Medallion® sizing program from Buckman.

**The Challenge**

The mill was a successful producer of sack paper and Kraft liner from both virgin unbleached Kraft pulp and mixed pulps. Unfortunately, high rosin and alum costs were eating away at the mill’s profitability.

**The Solution**

Buckman introduced its Medallion ASA Sizing program, replacing rosin and significantly reducing the need for alum. Emulsion quality and particle uniformity were good. Retention and Cobb values remained within their target limits. Equipment functioned without any issues.

**The Savings**

Rosin cost elimination: from $9.35/ton to $0
Alum cost reduction: from $6.01/ton to $3.34/ton
Medallion program cost: $6.98/ton
Freight reduction for sizing chemicals: from 23 trucks/year to 4 trucks/year

**Total ROI:**

$457,040 per year + reduced carbon footprint

---

Find out more.

To learn more about our Medallion sizing program or to discuss any other production issues you may have, contact your local Buckman representative. Let us give you a story worth telling.
**People**

**Paper**

- Crane & Co. has appointed Rachel V. Ivey to the position of Vice President, Creative and Product Development. Ivey will lead the creative direction of the company’s consumer division.

- Glatfelter has elected Kevin M. Fogarty to the Board of Directors. Fogarty is President, CEO and Director of Kraton Performance Polymers.

- NewPage announced that James C. Tyrone has accepted the role of Executive Vice President, Commercial Operations and Business Development. Tyrone was most recently with Appleton Papers, where since 2010 he served as Senior Vice President.

- Sappi Fine Paper North America said that Rick Dwyer and Mike Haws have been appointed as the new managing directors of the Cloquet Mill in Minnesota and Somerset Mill in Maine, respectively. In addition, Mike Schultz has been named as managing director of a project to convert the Cloquet’s pulp mill from hardwood kraft pulp to produce chemical cellulose.

- Sonoco announced three executive officer appointments: John M. Colyer, Jr. has been promoted to vice president, Global Paper and Industrial Converted Products. Prior to this, Colyer served as vice president, Global Industrial Converting.

- Ronald G. Leach has been named vice president of Sonoco’s recently expanded Global Protective Packaging segment, elected an officer of the company and appointed to the executive committee. Leach was president and CEO of Tegrant and also has served as president of SCA Packaging N.A.

- R. Howard Coker has been named to Sonoco’s executive committee and remains vice president, Global Rigid Paper and Closures. Prior to this appointment, Coker was vice president, Rigid Paper and Closures – North America.

**Resignation**

- Thomas J. Garland, PaperWorks Industries President and CEO, resigned on Jan. 24. Richard LeBlanc has been named interim CEO. PaperWorks expects to fill the position before the end of April. Garland was the company’s first full-time chief executive and provided the company with leadership through its growth phase from shortly after its founding in late 2008 to the present.

**Industry Association**

- AF&PA has elected Alexander Toeldte, Boise Inc.’s Chairman and CEO, as its new Board Chairman. Toeldte has served on AF&PA’s Board of Directors since November of 2008 and has held leadership positions within AF&PA’s CEO Task Force and committee structure. A native of Cologne, Toeldte studied economics at the Albert-Ludwigs-Universitat in Freiburg, Germany and received his M.B.A. from McGill University in Montreal, Canada.

**Recognition**

- John Neun of Albany International has been named winner of the TAPPI 2011 Engineering Division Leadership and Service Award. The award is intended to recognize an individual for outstanding leadership and exceptional service to the awarding Division. Neun, who began his career in the paper industry in 1979, is currently a Staff Engineer with Albany International’s Process Analysis Group. He received his Bachelor’s and Master’s degrees in Mechanical Engineering from Rensselaer Polytechnic Institute, is a licensed Professional Engineer in New York State.

**Suppliers**

- IPS Testing has promoted Chris Reitmeyer to the role of company Vice President. Reitmeyer first joined IPS in 2010 as a sales engineer.

- SchaeferRolls Inc. has named John “J.T.” Fisher as VP and General Manager. Fisher replaces Debra Breed who recently left the company.
Success in business requires focus, value creation and sustainable solutions.

As the only independent, full-line supplier with a global presence, Albany International offers sustainable, value driven solutions. Focusing on our core business – Paper Machine Clothing, Albany’s products and services create value by reducing Total Cost of Operation through process improvements, increased efficiency, and reduced energy, chemical and water consumption.

Albany Global PMC: Creating value through sustainable solutions.
Private companies in France, Germany, UK and northern Italy are humming along nicely. Mercedes Benz, BMW, Fiat, Bosch, P&G, SCA, DS Smith, and Siemens are doing well. In our industry newsprint and graphic papers are struggling, but tissue and packaging producers are buying, selling and expanding confidently and profitably.

**Tissue**

This sector performs well despite economic adversity in any region. Its consumption is closely linked to living standards. In Europe an ageing population and low-level industrial development have pushed up demand for hygiene and away from home (AFH) products. And rising living standards in Eastern Europe and Russia — admittedly from a low base — are feeding demand for tissue.

Europe’s leading tissuemaker, SCA, has, in the last 20 years, steadily moved away from pulp and packaging into tissue, principally hygiene products. It now has a complete product suite from the forest into the wash room and operating theater.

Its latest acquisition is Georgia-Pacific’s European tissue operations from Koch Industries. A few years ago it bought Procter & Gamble’s European operations.

“**Innovation in most industries is too driven by technical perspectives than consumer perspectives ... You need to bring the consumer into the equation first, before pushing technical solutions.**”

— Jouko Karvinen, CEO, Stora Enso

In addition, SCA has also sold most of its packaging operations to DS Smith of the UK. Jan Johansson, CEO of SCA said, “The reason for the divestment is …to enable increased growth in the hygiene business. The customer profile in the markets we serve is changing and we must also change to meet them.”

Apart from two kraftliner mills it has kept in Sweden, SCA is now, emphatically, the world’s leading tissue maker.

**Packaging**

The ascent of the UK’s DS Smith has been steady and it is now the leading supplier of recycled packaging for consumer goods in Europe with 12,000 employees. Having bought most of SCA’s packaging operations DS Smith is now developing its French packaging sector, Otor, bought from private equity player Carlyle Group fifteen months ago for $322 million. To fund its purchase, Smith sold its Spicers stationary unit.

Analysts broadly agree that recycled packaging operations in Europe are too fragmented and are ripe for consolidation. Miles Roberts, CEO of DS Smith, told the trade press in January that he will continue to look for synergy in the sector and will push to improve recycling rates, focus on the customer and invest in innovation and quality. He said, “A lot of damage is done because there are too many returns in this sector. The paper and board industry is at the stage where most industries were 50 years ago.”

His comments are pertinent. In Europe there are still too many small, local operators who cannot get or process the volumes needed for the big retailers whose packaging presence is global. Municipal legislation 30 years ago encouraged industrial development with grants and tax breaks. But what occupied these sites were bottom of the market repair shops, found-
heads up

ries and small-scale paper recycling operators. There was a steady surge in wastepaper collection, but the technology of recycling moved too fast for the locals. They wasted a lot of raw material and became expensive to run. The first wave of paper recyclers got left behind as wastepaper processing scaled up. They got hit with pollution fines, closed down, or were bought by the bigger players like Smurfit Kappa and DS Smith.

Roberts’ plans include: reconfiguring operations to meet local market needs, building the right mix for the customer and paying close attention to local sources of growth. DS Smith has production units in the UK, France, Italy, Poland and Ukraine. It supplies Nestle, P&G, and giant dairy conglomerate Danone of France.

Roberts’ views chime with those of Jouko Karvinen of Stora Enso. Interviewed by PwC late last year, Karvinen said, “Innovation in most industries is too driven by technical perspectives than consumer perspectives …You need to bring the consumer into the equation first, before pushing technical solutions.”

Driving the Changes

Karvinen and Roberts are just two of 1,258 CEOs surveyed by PwC in its 15th Annual Global CEO Survey. The findings represent the modern forest industry CEO in ways we wouldn’t recognize 20 years ago. Their customer and market focus have led directly to close examination of portfolios and cutting them where necessary. They all plan to make major divestments or leave certain markets as SCA and GP have done. Unsurprisingly, few of the CEOs see much prospect for newsprint in mature markets.

The main players in tissue and packaging are committed to getting a bigger share of their existing markets. But they also prefer to focus on developing new products and services.

I’m encouraged by the dynamism shown by the tissue and packaging sectors in Europe as it underlines the cliché that what works is: ‘give the customers what they want, at a time when they want it and, ideally, at a price they can afford. It sounds old-fashioned but it’s profitable.”

David Price is a contributing writer for PaperAge. He can be reached by email at: DPrice1439@aol.com.
Shrinking Uncoated Freesheet Demand Continues To Pose a Key Challenge

The slide in uncoated freesheet demand continued in 2011. The decline wasn’t a surprise as sluggish economic growth and high unemployment, combined with technology-driven consumption shifts, undermined the market. An end to the slide doesn’t appear to be in sight, which places pressure squarely on producers to control supply.

By Harold M. Cody

The North American market for printing and writing grades continues to move through a very unstable period. Demand for most grades continues to shrink due to fundamental changes in paper consumption in the developed economies of North America. This includes uncoated freesheet grades, where demand continued to decline last year.

Back in 2010, a recovery in the U.S. economy resulted in a slowing of the fall in uncoated freesheet demand from the rapid rate of descent the occurred during the recession. Thus there was some hope that as economic growth continued paper demand might post a modest recovery. However, even as U.S. economic growth actually accelerated through 2011 and GDP rose each quarter (0.4%, 1.3%, 1.8% and 3.3%, respectively), paper demand continued to fall.

It is clear that the long term relationships between paper demand and the general economy, advertising and other paper usage factors, have fundamentally shifted. The decrease in demand continues to be driven by a combination of factors, including continued high unemployment and a combination of technological elements that are working together to reduce the use of paper.

The result of all of this was that North American (U.S. and Canada) uncoated freesheet demand fell 3.4% in 2011, finishing the year at 10.1 million tons, according to the Pulp and Paper Products Council (PPPC). Production was down 3.1% to 9.7 million tons and industry operating rates were poor, averaging 88% for the year vs. 89% in 2010.

U.S. uncoated freesheet production fell 3.0% to 9.26 million tons in 2011, according to AF&PA. It’s worth noting that this is the smallest decrease among major grades, as U.S. production fell by 11.5% and 6.2% for uncoated mechanical and coated paper grades, respectively. In addition, U.S. newsprint production dropped 4.7% from 2010 levels.

U.S. trade helped the market somewhat in 2011 as U.S. imports through 11 months were reported at 930,000 tons — a decrease of 2.6% compared to 2010. Imports of uncoated freesheet are modest accounting for only 6.4% of N.A. demand. As a result of a new paper machine at the Portucel mill, which is now at full capacity, imports from Portugal increased 10% last year. Exports rose 4% last year owing to a strong surge in December.

The decline in demand was widespread across all major uncoated freesheet grades. Bond and writing, offset and envelope grades are the three largest segments and account for 75% of total shipments. Shipments of bond and writing papers, the largest at about 4 million tons, fell 3%. The largest decline was posed in offset grades, where shipments fell just over 6%, followed by a decline in carbonless papers of 3.9% and bond grades of 3.5%. Envelope paper shipments fell just under 3%. In contrast, form bond posted a modest increase while tablet grades shipments jumped 14%.

One broad measure that can be used to track paper use is mail delivered by the USPS. For the fiscal year ending Sept. 30, 2011, total USPS mail volume for all classes was down 1.8% in number of pieces while overall weight was down 1.3% vs. the prior year. It should be stressed that this occurred during a modest economic expansion.

The problems facing uncoated freesheet grades are particularly troublesome since they are the largest segment of the printing and writing papers market and encompass a wide array of grades that the average person encounters every day. These include many brands and types of cut-size papers used in business and home office printers and copy machines, carbonless papers used in multipart forms, offset and envelope grades used for direct mail as well as first class business mail, and paper used for hardcover and soft cover books (this excludes paperbacks which are groundwood papers). In 2011, uncoated freesheet grades accounted for 41.2% of North American demand of 24.2 million tons of printing and writing papers. Uncoated groundwood, coated freesheet and coated groundwood accounted for 21.2%, 20.3% and 16.8%, respectively, of total demand.
Price Stability Despite Downturn

Despite relatively poor operating rates that averaged under 90% in 2011, combined with the bleak news on demand, prices remained fairly steady on major grades, according to various sources. In early 2012, prices for cut-size papers eroded slightly as it’s reported that low cost imports sought market share, while offset roll prices were reported to be holding up better. Copy paper prices were reported at about the $1,050/ton range in early 2012, a few percentage points below prices posted in early 2011. Prices have remained surprisingly stable for the better part of two years and have remained in a narrow band during that time.

There are a couple of reasons for this incongruity. One is a cost push due to rising prices for energy and relatively high pulp prices — both of these have helped to sustain pricing. Recently, however, pulp prices have dropped significantly since peaking last summer and are now down about $150/ton or 15%.

Probably the key factor behind price stability is that producers have closed over 5.7 million tons of capacity in the last decade. Ten years ago North American uncoated freesheet capacity was on the order of 17 million tons, dropped to 14 million tons in 2007, before rapidly plunging to just over 11 million tons last year.

More of the Same?

Unfortunately, when we turn to assessing the outlook for the uncoated freesheet market in 2012, the early reports aren’t encouraging. North American printing and writing paper shipments in January 2012 fell to 1.5 million tons, down almost 6% from year earlier levels, PPC reported. Demand dropped 6.6% while operating rates were at 90%. Similarly, U.S. printing and writing paper shipments fell 3% in January as all four major grades posted decreases compared to January 2011 levels.

New supply fell 8%. Uncoated freesheet shipments fell 1% vs. the prior year, which isn’t all bad, while they rose 5% month to month vs. December. As noted earlier, exports jumped by over 20% in December bringing the full year total to a 4% increase.

The outlook for 2012 certainly isn’t very rosy on a tonnage basis. While GDP is projected to post a modest 1.7% gain in 2012, it is widely expected that no end is in sight to the fall off in demand for printing and writing papers in both North America and Europe. It’s projected that uncoated freesheet demand may continue to shrink by at least 2-3% and it could contract even more than that. The stability in prices will be challenging to maintain if pulp prices remain weak, but there are recent signs that the slip in pulp prices might be ending. If fiber prices rise again and combine with the recent surge in energy prices to push up manufacturing costs, uncoated freesheet mills may be able to continue to sustain pricing in spite of all the issues battering their markets, and as long as they continue to aggressively prune capacity.

Harold Cody is a contributing writer for PaperAge. He can be reached by email at: HCody@paperage.com.
It’s been a little over 12 years since Jim Rubright joined RockTenn as its CEO, and a lot has taken place since that time. The company has sharpened its focus, become very good at what it does, and grown substantially through three acquisitions, the first two being Gulf States Paper in 2005 and Southern Container in 2008. The latest and largest acquisition, however, was unveiled in January of 2011 when Rubright announced that RockTenn would buy Smurfit-Stone Container, the second largest maker of containerboard and corrugated packaging in North America, for $3.5 billion in cash/stock. The deal closed in May and with it came 12 containerboard mills with a total annual capacity of 7 million tons, 98 converting plants and 31 recycling facilities.

Smurfit-Stone’s assets also rebalanced RockTenn’s fiber mix from 16% virgin / 82% recycled to 55% virgin / 45% recycled.

“We believe containerboard and corrugated packaging is a very good business that will get much better over the foreseeable future,” says Rubright, and under his tenure of leadership, sales at Norcross, Georgia-based RockTenn have gone from $1.3 billion to $10 billion a year.

In consideration of RockTenn’s ongoing success and profitable growth, PaperAge has selected Jim Rubright as its 25th Executive Papermaker of the Year.
I’ve heard you say you’re passionate about manufacturing in the United States. Could you elaborate?
That’s absolutely true. I believe that throughout history manufacturing has been the backbone of economic growth in any society. Also, I can’t think of any other industry that embodies the philosophy of hard work and a strong work ethic better than manufacturing.

Manufacturing contributes about $1.6 trillion to the U.S. economy each year and provides jobs for nearly 12 million men and women, making it the largest driver of economic growth in our nation. It’s absolutely critical to our success and prosperity as a nation. One of the greatest threats we face today is that our administration and many members of our government pay lip service to the importance of manufacturing, but pursue policies that are destructive to manufacturing in our country. Without a change to these policies to a program that supports manufacturing and thus American workers, we face a certain prospect of further economic decline.

One of the tools you’ve utilized at RockTenn has been a system of measuring customer satisfaction. Could you tell us a bit about it?
Systematically measuring customer satisfaction has been a critical first step in our drive to achieve continuous improvement in our business. We’ve conducted customer satisfaction surveys for the last 10 years, and I’m pleased to say that we’ve averaged a satisfaction rating of 8.9 out of 10 for the last four years, a rating that shows that we are clearly differentiating ourselves from our competitors in the marketplace.

How do you use the information that comes back from your customers?
The feedback we receive from our detailed survey methodology helps us develop customer-specific action plans to improve their levels of satisfaction with RockTenn. One of the ways we’ll do that in FY 2012 is by investing more than $480 million in our business to improve production, quality and our cost structure.

What was it about Smurfit-Stone that compelled you to make an offer to buy the company?
There’s an important history behind our decision to purchase Smurfit-Stone. It really dates back to 2007, two years after our successful acquisition of Gulf States. Around that time, I became convinced that containerboard was beginning to show the same promising results that bleached paperboard previously had exhibited. With that renewed conviction, we decided to move ahead with our plans to purchase Southern Container, which at the time we considered to be the industry’s premier and most profitable containerboard company. That acquisition strengthened our platform in the corrugated and containerboard business and gave us the confidence to pursue additional acquisitions.
After Smurfit-Stone successfully emerged from bankruptcy in 2010, we began taking a closer look at that business, and two things immediately became obvious: Its large virgin mills were clearly cost competitive and offered great potential, and the investments in its box plant system were beginning to pay off. Although we’ve only owned Smurfit-Stone for seven months, our decision to move forward is producing great results.

What have you and your co-workers done to bolster RockTenn’s culture throughout the legacy Smurfit-Stone workforce?

RockTenn’s culture remains a source of great inspiration for me; it dictates our actions and drives our success. One of the key parts to a successful integration is ensuring that new employees understand and embrace the existing company’s culture and business principles. RockTenn’s culture is founded upon respect: it’s how we treat each other and the people with whom we do business. Our goal is to be the most respected company in the industry by our customers, employees and shareholders, and we work very hard to communicate that message and earn the respect of all these groups.

What plans are in place to shift legacy Smurfit-Stone operations to RockTenn’s business model, level of productivity and profitability?

We base our business model on five key business principles that focus on exceeding our customers’ expectations; investing in our assets and our co-workers; rightsizing our assets for the products they produce; optimizing and standardizing our operating and administrative processes; and seeking acquisitions that will drive further improvements in our business.

We’re unwavering in our commitment to these principles and immediately began transitioning the Smurfit-Stone operations into this mode. Let me be clear; Smurfit-Stone was already doing several of these things right at the time of the acquisition, including investing in its operations and leveraging operational programs designed to drive excellence, consistency and quality throughout its business. RockTenn’s business model focuses on continuous improvement — there are always opportunities to add value for our customers by producing better quality and innovative products at lower costs. We have a number of programs in place throughout the organization that will allow us to achieve and sustain those improvements.

Have Smurfit-Stone’s assets modified your approach to the markets RockTenn serves?

Assets from Smurfit-Stone have allowed RockTenn to become a much larger participant in the domestic containerboard markets and a large exporter of containerboard. We now also operate a much larger mill system and network of corrugated converting plants, with a strong geographic box plant presence on the West Coast. In addition, in Canada, RockTenn is now the largest corrugated box manufacturer, due to the assets we added from the Smurfit-Stone acquisition.

Have Smurfit-Stone’s customers been receptive to RockTenn?

The former Smurfit-Stone customers received the acquisition very well, and the fact is that we’ve been given great opportunities to do more business with them. Their approval is evidenced in both our candid and ongoing conversations with them and the results of our annual customer satisfaction survey, which exceeded our expectations.

The synergy number RockTenn has published is $150 million, but you’ve said there’s about 400 million more
in improvements that could be captured over the next 2 1/2 years. How are you going to do this?
The $400 million in targeted operating improvements can really be broken out in two buckets. The first — about $200 million — can be attributed to capital improvements within our mill system, including major capital projects underway at our Hodge, Hopewell and Stevenson mills. With the remainder, we’ll focus on getting under-performing Smurfit-Stone mills up to industry standards.

The second half of the savings will come from a variety of areas, such as box plant consolidation and operational improvements. We’ll optimize our trade swaps, optimize fiber balance supply into our recycled mills and execute a number of other key projects. We have very detailed, discreet plans in place, and we’re confident we can achieve our $400 million target run rate of savings by the end of calendar year 2013.

In October of 2011, RockTenn acquired a company called GMI Group for $86 million. What does GMI bring to the table?
The assets from the GMI Group consist primarily of four specialty corrugated packaging plants that manufacture pizza boxes and microflute clamshells. We were immediately attracted to GMI for its solid reputation for superior products and services and its outstanding customer relationships, both of which are critically important to RockTenn. Plus, the integration of GMI’s raw materials purchases into our mill system provided significant additional synergies.

Overall, this was a strong strategic fit for us and a meaningful acquisition. While we hadn’t been actively looking for an opportunity like this, GMI was simply too good to pass up, and we’re certainly glad that we didn’t.

You have major projects underway at your Hopewell, Virginia and Hodge, Louisiana linerboard mills. What do these projects involve and what are the expected benefits once the work is complete?
The projects at Hodge and Hopewell are part of our long-term goal of creating a system of well-capitalized, low-cost containerboard mills. At Hodge, we’ve transitioned the mill system provided significant additional synergies.

The Hodge mill has been transitioned to produce exclusively 100% kraft linerboard. Its pulp mill will also be updated.

The RockTenn’s New Lenox, Illinois, box plant is an example of one of the company’s modern, high-performing container operations.
to produce exclusively 100% kraft linerboard and will be updating the pulp mill portion of that operation. We’ll also be performing various paper machine upgrades at Hopewell. These combined projects represent about $140 million of our projected capital costs forecast for 2012 and 2013.

We’re anticipating very high returns for both projects, most likely around 40% or more. Once completed, we expect these two projects to significantly lower the cost structure of our overall mill system.

A natural gas conversion project at the Stevenson mill has been finished and three other similar energy projects are underway at other mills. What is the cost vs. benefit scenario for the four mills?

We recently finished converting our Stevenson mill from using fuel oil to using natural gas to generate steam. By the end of calendar year 2012, we’ll have similar projects completed at our West Point, Hopewell and Fernandina Beach mills. The total cost to convert all four of these mills to natural gas should run approximately $25 million. Based on current prices, we’re estimating the annual benefit from these projects to come in between $45 million to $50 million.

Where does RockTenn rank in North America in paper recycling? What percent of recycled paper from your recycling operations does your mill system consume?

RockTenn is the largest paper recycler in North America. Our internal mill system consumes about 40% of our recycled paper from our recycling facilities. While this is a low-margin business, it’s still a very important part of our overall mix, especially given its ability to optimize the recycled fiber supply to our mills.

How many recycling plants do you operate?

We now have 39 recycling facilities throughout the U.S. that manage approximately 9 million tons of recyclable material worldwide each year. Our ability to provide customers with total recycling and waste solutions to help them meet their sustainability goals is really what differentiates us in the marketplace.

It’s been said many times, ‘A company is only as good as the people who work for it.’ What’s your philosophy when it comes to motivating your co-workers at RockTenn?

My personal philosophy has always been to lead by example. I believe the best way to motivate people is to do your best in every single task you undertake, so that your actions can serve as a guide for others.

What do you want for RockTenn?

I have the same vision for RockTenn today as I did when I joined the company in 1999: to be the most respected company in our industry. Our employees have worked extremely hard to make RockTenn the successful company that it is today. I’m proud to work with my 26,000 co-workers who are committed to finding new ways to improve our business and exceed our customers’ expectations — every time they do business with us.
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chlorine dioxide (ClO₂) has been safely and effectively used in a variety of bleaching and water treatment applications for over 60 years. In the past 10 years, the application of ClO₂ has been steadily growing in the paper industry due to the introduction of a unique small scale, low cost, and worry free ClO₂ generation system developed by the Eka Chemicals called SVP-Pure®.

Eka has used its large scale (2-3 tph of ClO₂) engineering and design expertise and applied it to a PLC controlled generator capable of safely and efficiently delivering 2 – 200 lbs. of ClO₂ per hour. This has opened up new opportunities for applying ClO₂ including: influent water disinfection, effluent system biofilm control, paper mill process water treatments (slime and odor control), broke bleaching, fluorescence reduction, plus others.

CASE HISTORY 1: Influent Water Spore Control

Purate ClO₂ has replaced Hypo and “Hypobromous Acid” (Hypo/NaBr) at the influent water treatment plant for a large integrated pulp and paper mill. This mill consumes several million gallons per day of well water. The disinfection of this water is critical to achieving low bacteria counts in its finished product.

Historically the mill has used large amounts of Hypo and “Hypobromous Acid” in multiple application points to disinfect the water and keep spores to a minimum. Even with high doses, the mill would occasionally experience high spore episodes which elevated the risk for off-quality finished paper. These oxidizer applications have all been replaced by Purate ClO₂ and the result has been dramatic (see Fig. 1).

CASE HISTORY 2: Effluent System Biofilm Control

In this case, a non-integrated paper mill has an effluent discharge pipeline that runs underground for about a mile from the waste water treatment plant to the final discharge at the river. Historically this pipe would build up with uncontrolled biofilm. Occasionally this biofilm would slough off and become a nuisance for the recreational fishermen.

Fig. 1. The average spore count has been reduced by 72%, and the high spore episodes have almost been eliminated.
downstream from the mill’s discharge. The mill evaluated various biodispersants, but was unable to achieve the level of cleanliness that was needed to manage the problem.

The addition of Purate ClO₂ substantially reduced the biofilm growth rate — from about 2-3 inches in three days to less than 1/4-inch in a week. The mill started a routine of periodic cleaning, began Purate ClO₂ to minimize the deposition, and added final effluent screening devices. The complaints from the fishermen have been eliminated and the mill has been recognized for their efforts by the local community. A significant reduction in the rate of growth was seen in our side stream deposit device. The results of the biofilm growth with and without Purate ClO₂ are seen in Fig 2.

CASE HISTORY 3: Paper Mill Process Stability and Odor Control

This case study involves a large 100% recycled linerboard mill with a fairly closed water system (approx. 1,200 gallons of incoming water per ton of paper). Historically the mill had used organic biocides to control slime growth on the paper machines. With this type of treatment the mill occasionally would run into situations where:

- Too much or too little biocide would impact the methanizer (anaerobic waste water treatment)
- Too little biocide would allow for bacterial growth to proliferate and cause pH swings that would cause process whitewater upsets (pH, conductivity, & charge)
- Uncontrolled bacterial growth would cause runnability and finished product defect issues.

Since the organic biocides did not effectively control the bacteria, the mill next evaluated a chloramine treatment. However, the intermittent “shot feed” chloramine treatment caused similar issues as the organic biocides; that is, inconsistent bacteria control causing issues with the anaerobic waste water treatment process which eventually impacted the paper production operation.

ClO₂ was introduced to several feed points at a low and steady dose, the anaerobic waste water treatment issues subsided, and the overall paper machine and waste water treatment operation steadied out. By steadying out the operation, the result was a 6% productivity gain with lower treatment costs. (see Fig. 3).

Fig. 2. In the effluent deposit device, results showed about a 90% reduction in the rate of slime growth.

Fig. 3. Production trend illustrating a 6% increase in output following introduction of Purate water treatment.
CASE HISTORY 4: Broke Bleaching
An integrated, alkaline fine paper mill makes a variety of grades in a variety of colors, including white shades. Mill personnel saw an opportunity to improve the way they managed their inventory of broke rolls if they could effectively bleach this additional supply of fiber.

In the past, non-white broke rolls that the mill produced were segregated and stored, or repulped with Hypo Bleach and used as a pulp supplement. This hypo bleaching at the repulper was inconsistent and occasionally caused issues with shade in the finished product. As a result, most of the non-white broke rolls were held in storage and used only during production runs of similar colors (the bleach plant was already running at maximum capacity, so sending broke to the bleach plant was not an option). The mill’s warehouse was “over flowing” with broke, while at the same time the company was purchasing bales of bleached pulp to supplement the mill’s need for fiber.

The mill evaluated Purate ClO₂ with the PLC driven SVP-Pure ClO₂ generator and was able to effectively control the bleaching of the broke. This gave the mill the flexibility to maximize the use of broke rolls and minimize the purchase of baled pulp. The broke in the warehouse is now kept to a minimum.

ADVANTAGES OF CHLORINE DIOXIDE
What are the advantages of using chlorine dioxide compared to other oxidizers?

**Effectiveness.** When considering water disinfection, chlorine dioxide is a very effective bacterial disinfectant. It is even more effective than chlorine for the disinfection of water that contains spores and/or viruses. In some processes, chlorine dioxide has regained attention because it effectively deactivates the chlorine-resistant pathogens Giardia and Cryptosporidium.

**Chlorine dioxide is extremely effective in removing and preventing biofilm (slime) growth.** This is a key factor in treating cooling towers and paper machines. Disinfection with chlorine dioxide minimizes odors, which can be the result of geosmin forming bacteria or over use of chlorine. It destroys phenols, which can also cause odor and taste problems (drinking water). Chlorine dioxide is more effective for the removal of iron and manganese than chlorine, especially when these are found in complex substances.

**Disinfection byproducts (DBP).** The use of chlorine dioxide, instead of chlorine or bromine, prevents the formation of harmful halogenated disinfection byproducts, for example trihalomethanes and halogenated acetic acids. Chlorine dioxide does not react with ammonia, amines or other oxidizable organic matter. Chlorine dioxide can also remove substances that can form trihalomethanes and improves coagulation. It does not oxidize bromide into bromine. When bromide containing water is treated with chlorine or ozone, bromide is oxidized into bromine and hypobromous acid. After that these react with organic material to form brominated disinfection byproducts, for example bromoform.

**Lower doses for more effective disinfection.** The use of chlorine dioxide reduces the health risk of microbial pollutions in water and at the same time decreases the risk of chemical pollutions and byproducts. Chlorine dioxide is a more effective disinfectant than chlorine, causing the required concentration to kill microorganisms to be much lower. Because ClO₂ is more reactive than chlorine, the required contact time is less. This is a consideration when corrosion is a concern.

**Effective ClO₂ treatment is not pH dependent.** Unlike chlorine, chlorine dioxide is effective at a pH of between 5 and 10. The efficiency of ClO₂ actually increases at high pH values, while the active forms of chlorine and bromine are...
greatly hindered by pH values above 7.5. Under normal circumstances chlorine dioxide does not hydrolyze. This is why the oxidation potential is high and the disinfection capacity is not influenced by pH. Both temperature and alkalinity of the water do not influence the efficiency of ClO₂. Chlorine dioxide is effective in a variety of applications.

**PURATE**

Purate is a unique stabilized solution of sodium chlorate and hydrogen peroxide. Eka Chemicals’ SVP-Pure chlorine dioxide generator uses Purate and sulfuric acid to produce ClO₂ on-site that is easily piped to the point of application. No chlorine gas is used or produced in this process.

Eka has incorporated its engineering expertise of the large Bleach Plant ClO₂ generator systems (>50 tpd) into safe and efficient small scale (50-5000 lb./day) units. There are several sizes and models of the SVP-Pure generator, but all use the same technology to produce ClO₂.

The SVP-Pure operation is very simple with minimal moving parts. This makes the operation extremely reliable. Solenoid or mechanical metering pumps control the flow of the Purate and Acid to the generator where the ClO₂ is produced. The generator is under a constant vacuum created by the motive water going through the educator at the outlet of the generator. The flow of water creates the vacuum and is also used to dilute the ClO₂. The diluted ClO₂ produced is in the range of 0.5-3.0 g/l. (Note: This is about 10-20% of the strength of the ClO₂ used in bleach plants — typically 10-13 g/l.).

The ClO₂ is sent to the application points as it is produced. Typically no ClO₂ is stored on site. PSM is not required. All models also have an advanced PLC and touch screen to control operation and monitor interlocks. All units have the added capability to input process variables, i.e. ORP, production rates, white water flows, etc., which can be used for control or remote monitoring.

Purate ClO₂ is one of the reasons that the small scale ClO₂ market is growing. The simple generation of ClO₂ from Purate, combined with a reliable PLC controlled system, has allowed for the expanded use of chlorine dioxide in a variety of applications in the paper industry.

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*Congratulations Mr. Rubright — Executive Papermaker of the Year*
During the last decade of papermaking, the industry experienced a literal explosion in the application of support shute binder (SSB) forming fabric technology. SSB fabrics, developed and introduced almost 13 years ago by Weavexx and Huyck Wangner, revolutionized the industry by overcoming several inherent limitations from conventional double-layer and triple-layer structures (Fig. 1). Huytexx fabrics as they were originally known, utilize a unique and still patented reverse-pick stitching pattern that provided the world’s first plain-weave top triple layer with a binding concept that did not exhibit interlayer wear. The structure provides straight-through drainage, which allows a dramatic increase of fiber support, compared to single and double layer fabrics. This resulting improvement in drainage led to better dryness and excellent retention.

However, with increased fineness (higher CMD and MD yarn densities) of the SSB fabrics, the top side open area is reduced, leading to higher drainage pressure and lower drainage rates. The operational window is reduced, vacuum levels increase, drive energy increases and sheet solids go down.

With today’s increasing demands for higher machine speeds with improved sheet formation, SSB has reached its technological and operational ceiling for delivering the ideal combination of sheet properties and drainage capacity while providing optimal energy efficiency.

In addition to the requirements for structural changes, papermakers are seeking relief from high energy costs in the ever-increasing competitive landscape of the global paper industry. This article will review new structural and material technology developed specifically to address these modern demands.

NEW GENERATION STRUCTURES

In order to meet these new challenges for graphical paper grades, several new-generation forming fabric concepts were developed to overcome the aforementioned limitations of SSB.

As a functional review, the paper furnish includes fibers, fillers, chemical components and water. The forming fabric’s primary objective is to filter the fibers and fines from the water. However, even the finest forming fabric structures are unable to mechanically retain a fines particle on their own. Hence, first pass retention — the build-up of the initial fiber matt — is critical.

Only the forming fabric directly influences this initial sheet forming process. Further sheet forming, retention and drainage performance are controlled by the initially-formed fiber matt. Therefore, the overriding purpose of the forming fabric is to properly construct this initial fiber matt.
Forming fabric performance is mainly defined by its characteristics provided in the initial drainage section of the paper machine. As a result, Xerium development engineers shifted the focus from the fabric structure to a specially formed drainage channel concept providing optimum sheet formation, quality, and machine efficiency.

This ideal initial fiber matt must provide:

- proper sheet formation, due to mobility of the fibers
- retention of fines and fillers (matt is always finer than the fabric)
- open structure, to facilitate water removal over the whole former at lower vacuum levels without sheet sealing.

Actual field results prove that the initial fiber matt must be porous and not densified. Otherwise the sheet becomes “sealed”, reducing the overall drainage rates. The vertical-downward hydraulic velocity on the sheet side of the fabric has a crucial impact on the porosity of the initial fiber matt. A higher surface open area provides a lower flow velocity and produces a more open initial fiber matt. In order to provide this more controlled drainage environment, the surface open area on fabric’s machine side is reduced.

Rapid customer adoption of Xerium’s new Engineered Drainage Channel (EDC) product line proved this concept which is diametrically opposed to the conventional wisdom in the paper industry, much like the SSB was ‘out of the box’ thinking ten years ago.

What does a fabric’s optimal drainage channel look like, in detail?

- Most fibers exiting the headbox are MD oriented. It is a well-known fact that CMD oriented forming fabric meshes provide the highest mechanical fiber retention. Therefore, the sheet side hole needs to be CMD oriented
- Regarding drainage capacity and fines/filler retention, a high sheet side surface open area is critical. Therefore a volume of water can pass though the forming fabric at a relatively low flow velocity on sheet-forming level
- Conversely, to control this flow for optimum and smooth sheet forming, a reduced open area on the machine side is required
- The caliper of the fabric, and its corresponding Z-direction hole length, needs to be minimal to ensure rapid water removal
- And, to ensure steady-state performance throughout fabric life, caliper loss needs to be minimal.

ENGINEERED DRAINAGE CHANNELS, OR EDC

The patented EDC concept was developed by Xerium engineers and confirmed by in-house laboratory tests using the FRET drainage tester. In addition, Grenoble University corroborated the concept and modeled the flow velocities over different depths through the fabric. The surface open areas in Z-direction control or influence the velocity of the water flow (Fig. 2).

To apply the optimum channel we are using an internally-developed tool to simulate the drainage channel, the average mass distribution in Z-direction, and show the porosity or free surface over the whole fabric caliper in MD and CMD direction. This revolutionary approach allows for development focused on the fabric’s holes, not on the mesh.

The exact channel specifications are created by different ratios between the sheet side and machine side CMD and MD yarns. In addition, modifying the yarn diameters and/or mesh densities on the sheet side or machine side has an influence on the shape of the channel. Application engineers can now create a special channel for each application world-wide, customized on individual customer requirements (Fig. 3).

NEW GENERATION FABRIC MATERIALS

In addition to major new developments in forming fabric structures, Xerium has invested significantly in the development of drag load reducing material technology. This research was conducted in response to two major
market factors. First, since a large population of older machines are operating at or near their drive limit, any reduction in drive energy helps to stabilize the operation and to optimize costs, and often to allow for incremental speed increases without capital investment. Second, even on more modern paper machines which are equipped with sufficient drive power, reducing drive energy contributes significantly to reducing the production costs.

Since the forming fabric is in constant contact with the dewatering elements, it creates frictional forces and therefore losses of energy. For some fabric styles, the loss is significant therefore requiring the machine to overcome a high drag load in order to run the fabric. Obviously this situation creates a drawback for the fabric as well. Reducing drag loads in the forming section offers the papermaker the possibility to reduce the energy consumption in the wet end.

For example, on a fourdrinier machine, there are a number of locations of energy loss:

- Friction between the different mechanical pieces of the forming section, rolls, ball-bearing, etc.
- Slippage effect between the rolls and the fabric. If the slippage speed between the fabric and the roll is zero, then energy loss is zero.

However, if slippage speed is greater than zero, there is friction and so energy loss and wear on the rolls.

- Friction between the fabric and the dewatering elements.

It is generally accepted that the energy loss due to the friction between the fabric and the dewatering elements is estimated to be 15% in parts 1 and 2 (Fig. 4) and 80% due to the vacuum boxes in part 3. The remaining 5% are friction in the roll bearings and other miscellaneous losses. So, according to this thought process it was more fruitful to focus on the high vacuum boxes. The higher the vacuum applied from a box, the higher the drive load. The vacuum level depends largely on the sheet formation process. If the sheet structure is formed “open” enough atop the initial fiber matt, it is more easily dewatered, thus requiring lower vacuum levels resulting in energy savings in drive energy. The aforementioned EDC technology already provides this capability in the structure.

FORMING FABRIC MACHINE SIDE MATERIAL

Historically, some fabrics were offered with materials targeted at reducing drive load energy. However while those materials did reduce the friction coefficient of the fabric, they provided shortened run times. Another drawback of those materials was a significant limitation in the available diameters, which severely limited the application scope.

In order to overcome these limitations Xerium partnered with a yarn manufacturer to develop EnerSTAR™. EnerSTAR combines unique machine side materials which deliver low friction attributes with very high abrasion resistance. For the first time, the drive load can be reduced without compromising fabric life or stability (Fig. 5). What’s more, EnerSTAR is applicable to a wide range of forming fabric positions and grades, due to its availability in more yarn diameters.

The combination of EDC and EnerSTAR create opportunities for even larger benefits:

- lower drag loads due to less friction of the forming fabric on the dewatering elements
- lower drag loads due to lower vacuum levels
- lower vacuum levels due to easier water removal from the improved sheet structure
- higher sheet solids on pick-up
- improved runnability
- possibility to run lower headbox consistencies resulting in improved paper formation at higher or constant retention.

![Figure 4. Dewatering elements on a Fourdrinier paper machine.](image)

![Figure 5. EnerSTAR for reduced energy and extended life.](image)
**CASE HISTORIES**

The following are actual mill case histories with documented ValueResults where each forming fabric was installed.

### Graphical Grades

<table>
<thead>
<tr>
<th>Location: Asia</th>
<th>Former: Bel Baie IV</th>
<th>Grade: uncoated freesheet, copy paper</th>
<th>Speed: 4,200 FPM</th>
<th>Previous Fabrics: SSB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem: Customer experiencing poor sheet quality/white spots, high retention aid usage, high draws, sheet curl.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Result: Installed Formexx fabrics on both positions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
  - quality issues resolved
  - reduced retention aid by 25%
  - reduced refining energy
  - reduced draw
  - reduced steam consumption by 10%
| Total annual value of approximately $2 million. |

<table>
<thead>
<tr>
<th>Location: Europe</th>
<th>Former: Gap former</th>
<th>Grade: uncoated groundwood</th>
<th>Speed: 5,200 FPM</th>
<th>Previous Fabrics: SSB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem: high drive loads, unable to reduce energy sacrificing sheet quality.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Result: Replaced SSB fabrics with Finetexx fabrics on both positions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
  - improvement in sheet structure due to EDC
  - sheet quality parameters achieved
  - more open sheet required lower vacuum
  - drive reduction of 7% |
| Total annual value of over $80,000 in power savings. |

<table>
<thead>
<tr>
<th>Location: North America</th>
<th>Former: Gap former</th>
<th>Grade: uncoated groundwood</th>
<th>Speed: 4,650 FPM</th>
<th>Previous Fabrics: SSB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem: Customer looking for improved performance, drainage.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Result: Replaced SSB fabric with Finetexx on conveying position.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
  - improvement in sheet structure due to EDC
  - sheet solids improved nearly 2% points
  - higher dryness into press improved water handling and felt performance |
| Total annual value of over $135,000 in energy savings. |

### Tissue Grades

<table>
<thead>
<tr>
<th>Location: North America</th>
<th>Former: C-wrap former, Outer position</th>
<th>Grade: 100% recycled</th>
<th>Speed: 5,720 FPM</th>
<th>Previous Fabrics: SSB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem: Customer needed improved sheet formation, drainage, and to maintain or improve fabric life.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Result: Replaced existing fabric with Formsoff on outer position.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
  - significant improvement in sheet formation leading to reduction in sheet rejects
  - reduced sheet breaks
  - increase fabric life |
| Total annual value of over $300,000. |

### Packaging Grades

<table>
<thead>
<tr>
<th>Location: North America</th>
<th>Former: Fourdrinier</th>
<th>Grade: Liner</th>
<th>Speed: 1,800 FPM</th>
<th>Previous Fabrics: SSB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem: Customer experiencing high break rate, low couch dryness.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Result: Replaced existing SSB fabric with HTX V2.</td>
<td></td>
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</tr>
</tbody>
</table>
  - immediate reduction in sheet breaks by almost 50%
  - increased off-couch dryness by almost 2% points
  - nearly 1.2% increase in average speeds over the entire grade spectrum |
| Total annual value of almost $700,000. |

### CONCLUSION

The development of technologically advanced forming fabrics has progressed to unforeseen levels. Field proven fabrics are now commercially available to make not only higher quality sheets, but at reduced operating costs.

From our decades-old synthetic “wire” which changed the industry forever, to today’s state-of-the-art designs incorporating innovative structures with space-age raw materials, customers can operate their machines at higher speeds, using less energy per ton of production and with increased confidence in the durability of their forming fabrics.

This is especially significant to the papermaker as these new fabric technologies often deliver operational savings many times greater than their acquisition costs.

Steve Cole is Director Global Product Management – Xerium Technologies, Inc. He can be reached by email at: Steve.Cole@xerium.com.

Credits:
Oliver Baumann, Technical Director, Global Forming Fabrics, Huyck. Wangner (Germany). Stephan Ernst, Product Manager, Forming Fabrics, Huyck.Wangner (Germany).
Enessco International concentrates on developing environmentally friendly products for the paper industry. Our technology can not only improve your sheet, but save your mill a great deal of money.

The Enessco family congratulates Mr. James Rubright for being named PaperAge’s “Executive Papermaker of the Year.”

RockTenn with Mr. Rubright’s leadership has completed the purchase of Smurfit-Stone. Mr. Rubright and the management of RockTenn recognized the true underlining value of Smurfit-Stone, its employees, and their work ethic and pride. We at Enessco salute RockTenn, and Mr. Rubright’s leadership and vision.

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Swedish Researchers Create Nanofibers from Cellulose Sludge

New research using pulp mill sludge shows promising signs that the by-product can be broken down and re-introduced in the papermaking process.

A research team at Lulea University of Technology (LTU) in Sweden is on a mission to recycle pulp mill sludge and produce cellulose nanofibers, which can be re-used to make paper and board grades.

Currently, the researchers are working with sludge from Domsjo Fabrikerna’s mill in Sweden. The mill has an annual production capacity of 235,000 tons of specialty cellulose used by manufacturers of viscose (textiles) and non-wovens (hygiene products). The mill’s cellulose is bleached totally chlorine-free in a closed-loop bleach plant.

According to LTU’s researchers, the mill creates about 1000 tons of residual sludge per year, which is not re-used, and so far, their research project is proving to be an economic and environmental success.

“This is definitely the best result we have had in producing nanofibres from different bio-residues. Presumably, this is a very profitable production that more cellulose industries should take an interest in,” said Kristiina Oksman, a professor at LTU.

The researchers noted that the particular sludge from Domsjo makes it possible to produce the most profitable production of cellulose nanofibres from bio-residue products, to-date. The yield from the process of manufacturing cellulose nanofibres from the sludge is 95%, compared with cellulose nanofiber production from wood chips 48%, lignin residues 48%, carrot residues of 20%, barley 14% and grass 13%.

“The separation of cellulose nanofibres from bioresidues is energy-demanding, but when we separate the waste from Domsjo, the energy consumption is lower,” Professor Oksman said.

“The special cellulose from Domsjo has very small size and it also has high cellulose content and therefore the fibers do not need to be chemically pre-treated before the production of cellulose nanofibers,” Oksman explained.

The research team noted that cellulose nanofibers manufactured from this sludge are probably shorter than the cellulose nanofibers made from pulp, but are finer and can form dense films with excellent barrier properties.

For example, potential uses for the recycled sludge could be less costly, more environmentally-friendly liquid board to produce milk cartons. Many other paper and packaging applications would also be possible.

“Our goal in this project is to create new materials, use residues, and thereby increase the value of the whole production chain. Now, Smurfit Kappa has also shown interest for us to investigate the conditions for their cellulose sludge,” Oksman said.

LTU’s research is part of the project Bio4Energy, a research program focused on creating a highly efficient and environmentally-sound biorefinery processes that uses biomass sourced from forests as raw material.

For further information about LTU’s research, contact Katarina Karlsson: katarina.karlsson@ltu.se

Lulea University of Technology (Lulea, Sweden) has an annual turnover of EUR 160 million. Today the University has 1,500 employees and 16,000 students. Research is carried out in close cooperation with companies such as Shell, Ericsson, Scania, LKAB, Airbus, Volvo Aero and IBM and with the University’s international partners such as Monash University and Stanford University. This research has a turnover of more than EUR 90 million.
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The brilliance, Tapio says, is that Eka Purate works with virtually every process he’s come across during his twenty years in the business. It also makes good business sense, since the offsite monitoring allows you to concentrate completely on what you do best.

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