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The news of Sun Paper’s commitment to invest $1 billion in the construction of a fluff pulp mill in Arkadelphia, Arkansas got me thinking about how the operation would fare once it gets rolling mid-to late-2019. In other words, how would Chinese culture co-exist with that of the American worker?

I’ll back up a little bit here because I had those same thoughts when in June 2014, China-based Shandong Tranlin Paper Company announced that it would invest $2 billion to build a greenfield tissue and fertilizer mill in Chesterfield, Virginia. The facility would operate under the company’s U.S. subsidiary, Tranlin, Inc. The facility would operate under the company’s U.S. subsidiary, Tranlin, Inc.

So I did some research and came across an interesting article written by Jeffrey Rothfeder, former editor-in-chief of the International Business Times and a former national news editor at Bloomberg News, titled, “Why Chinese Factories Fare Poorly in the U.S.”

Rothfeder says the problems that Chinese operators have experienced in the U.S. are due to a concept that succeeded in China during that country’s manufacturing boom — low wages, subpar conditions, and few benefits. “That strategy can succeed in emerging nations, especially ones with large labor pools, but it is not feasible in developed economies,” Rothfeder explains.

However, the most predominant problem is culture clashes between Chinese management and American workers. “The authority of supervisors is paramount, and workers are expected to take directions, perform tasks, do their work, and go home. There have been multiple reports of Chinese employers in the U.S. complaining that American workers are too outspoken and independent and are unable to follow rules.”

Rothfeder goes on to say, “An American former executive of a Chinese firm operating in the U.S. told me that Chinese managers would complain, for example, that factory workers would arrive at a job five minutes late and not feel inclined to apologize. Such insouciance at plants inside China would lead laborers to be punished, for example by being sent home for the day, losing pay, forfeiting benefits, or being reassigned to more menial tasks. In the U.S., this approach has typically led employees to become more defiant and less assiduous.”

Rothfeder said that according to Renaud Anjoran, an operations manager at China Manufacturing Consultants, in Shenzhen, the perception that employees are interchangeable and replaceable has led turnover at factories in China to average an astounding thirty-five percent a year among workers employed at least six months.

“They’re seeing similar rates in their American operations. That’s a death sentence in the U.S., where employee skills, loyalty, continuity, job satisfaction and creativity—in other words, lean requirements — determine profitability,” Anjoran is quoted as saying.

Despite all of this, Chinese foreign direct investment in the U.S. totaled $12 billion in 2014. And, in the first six months of 2015, Chinese direct investment in the U.S. rose nearly fifty percent compared with the same period the year before, according to the Rhodium Group, which tracks Chinese money flows into the U.S.

Yet I remain skeptical about the process. In a frenzy to create jobs (and popularity), politicians and state officials promise cash incentives, land deals, tax abatements, funds for training, and possibly other taxpayer funded perks down the road to companies and manufacturing practices they really don’t know very well.

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International Paper on May 2 announced that it entered into a definitive agreement to purchase Weyerhaeuser’s pulp business. Under terms of the agreement, IP will acquire five pulp mills and two converting facilities that produce fluff pulp, softwood pulp, and specialty pulp for a number of consumer applications including diapers, other hygiene products, tissue, and textiles.

Because the transaction is a purchase of assets, International Paper expects to realize a tax benefit with an estimated net present value of approximately $300 million. Including this benefit, the net price is approximately $1.9 billion. International Paper forecasts annual synergies of approximately $175 million by the end of 2018, which will require the need for one-time costs of approximately $85 million.

“Weyerhaeuser’s pulp business has an outstanding customer base served from low-cost, well-run assets that complement our existing system and offers significant synergy opportunities,” said International Paper Chairman and CEO Mark Sutton.

“This transaction will position us as the premier global supplier of fluff pulp and will enhance our ability to generate additional free cash flow. We look forward to working with the talented employees of Weyerhaeuser as we integrate our businesses and create an even stronger company,” Sutton added.

The deal includes five pulp mills located in Columbus, Mississippi; Flint River, Georgia; New Bern, North Carolina; Port Wentworth, Georgia; and Grande Prairie, Alberta, Canada, with a combined total capacity of nearly 1.9 million metric tons.

The sale also includes two modified fiber mills in Columbus, Mississippi; and Gdansk, Poland.

Weyerhaeuser’s pulp business has approximately 1900 employees. The acquisition is expected to close in the fourth quarter of 2016, subject to certain closing conditions, primarily the receipt of regulatory approval.

CTI Paper USA has signed a letter of agreement to donate 1% of gross sales of its new durable papers and synthetics brand, Durilla™, to The Dian Fossey Gorilla Fund International. The Fossey Fund directs money, human and scientific resources to the conservation and protection of gorillas and their habitats in Africa.

CTI Paper’s illustrated Durilla mascot is inspired by the Silverback Mountain Gorilla of Central Africa.

“We wanted to find a way to commit a portion of our product sales to directly benefit gorilla protection and conservation,” said John Kelly, president of CTI Paper USA.

The company’s research showed that the Fossey Fund had the strongest and most comprehensive impact, together with a 49-year track record in Central Africa. Longtime Fossey Fund trustees include Sigourney Weaver, Larry Ellison, Christian Bale and Gilbert Grosvenor.

“Because of its low fundraising and administrative costs, the Fossey Fund ensures that donations have the maximum intended benefit to gorillas, their habitats and local people,” Kelly said. “That’s important to us and to our customers.”

Resolute Forest Products’ president and CEO, Richard Garneau in May announced the permanent shutdown of one newsprint machine at Resolute’s Augusta, Georgia newsprint mill.

The capacity reduction tonnage and timing of the closure was not disclosed.

In Resolute’s first quarter earnings report, the company stated, “This decision is motivated by the ongoing structural challenges in the newsprint market and is necessary to avoid costly rotating downtime.”

Mr. Garneau added, “Long-term market conditions remain challenging for newsprint, particularly for our U.S. mills, which are especially vulnerable in the present U.S. dollar environment. We never take such permanent closure decisions lightly and we understand the impacts this action will have on our employees, their families, and the community. As is customary, the company will work with employee and community representatives to mitigate the impacts of this decision.”

The Augusta mill has the capacity to produce 397,000 metric tons per year of newsprint on two machines. The mill employs about 250 people.
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Arkansas Governor Asa Hutchinson announced on April 26 that Sun Paper will build a $1 billion “bio-refinery” in Arkadelphia. This will be the company’s first facility in North America.

On a trade mission in November of 2015, Gov. Hutchinson traveled to Asia where he and Hongxin Li, chairman and founder of Sun Paper, signed a memorandum of understanding. The proposed plant is expected to produce 700,000 tonnes per year of fluff pulp, according to Sun Paper, and employ some 250 people.

Southern Arkansas has at least 7 million tons of surplus timber growth every year, said Matthew Pelkki, a professor and holder of the George H. Clippert Endowed Chair of Forest Economics at the University of Arkansas at Monticello, according to a news story published by the Arkansas Democrat-Gazette.

Pelkki estimated that the mill would need to harvest about 3 million tons of timber a year to produce 700,000 tons of pulp.

The location of the mill, Arkadelphia, is situated in the heart of Arkansas’ timber industry with easy access to Interstate 30. Forests cover about 18.8 million acres — about half of the state — mostly in southern Arkansas.

“The fact Sun Paper is investing more than $1 billion in south Arkansas speaks volumes of their confidence in our workforce and pro-business environment,” said Gov. Hutchinson. “This is among the largest private investments in the state’s history and the impact will be felt for generations.”

Headquartered in China’s Shandong Province, Sun Paper is the largest privately-owned paper producer in China with an annual pulp and paper production capacity of 4.6 million tons.

Port Panama City Acquires 41 Acres from WestRock

The U.S. Gulf Coast port on Florida’s Panhandle, Port Panama City, acquired 41 acres of mostly vacant land on May 3 from WestRock. WestRock plans to continue to operate its corrugated packaging mill on adjoining property.

Port Panama City’s plans call for development of a state-of-the-industry forest products terminal, including a 250,000-square-foot warehouse for woodpulp, kraft linerboard and related goods. The terminal will also feature a 48-car-capacity rail yard, a refurbished 38-foot-draft berthing area with reinforced bulkhead and a 10-acre laydown area, according to Wayne Stubbs, the port’s executive director.

“This is a huge step forward in enhancing Port Panama City’s already-impressive abilities to handle forest product cargos,” Stubbs said. “Exports of paper and wood pellets helped propel Port Panama City to a record year in 2015, with more than 2 million tons of cargo moving across our docks. This acquisition and terminal project position our port to handle sustained growth for many years to come.”

Port Panama City acquired the 41 acres for $13.6 million, financed through the Florida Department of Transportation State Infrastructure Bank, and has secured an option to buy 27 more acres for another $6 million.

With support of $4.25 million in FDOT grant funding, the port is proceeding with $12 million of first-phase forest products terminal projects. An additional $9 million, half from FDOT, is earmarked for bulkhead work and rail and roadway improvements.

Little Rapids to Invest $40 Million in New Tissue Machine at Shawano Mill

Little Rapids Corporation announced that it will invest $40 million to install a new crescent forming tissue machine at its Shawano Paper Mill in Shawano, Wisconsin. The new machine will replace the existing tissue machine and significantly increase capacity at the mill.

Kirk Ryan, CEO of Little Rapids said the project will increase the mill’s tissue output by about 40 percent, enhance quality and expand the mill’s range of capabilities for product weight, fiber content, and pastel and deep dye colors.

“This investment demonstrates Little Rapid’s commitment to providing high quality solutions for the medical, beauty, personal care and party goods markets,” Ryan said. “This will also enhance the long-term viability of our Shawano Mill and provide stability for employment at this facility.”

Project construction will begin this summer with completion expected in fall 2017.
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![Diagram: Without ColorLok Technology, pigment sinks into the paper, dulling appearances.](image)

![Diagram: With ColorLok Technology, additives keep color near the surface for bold results.](image)

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Even recyclable paper looks better than ever, because ColorLok Technology gives printouts on recyclable paper a brighter, richer appearance. Plus, pigments sit at the surface of the paper, making recycling easier. So yes, you can look good and do good.

![Symbols: Vivid Colors, Bolder Blacks, Faster Drying](image)

![Symbols: Eco-Friendly, Consistency](image)
Metsä Board is launching an efficiency improvement program at its integrated pulp and paper mill in Husum, Sweden. The program involves all operations at the mill.

Metsä Board noted that it has completed a EUR 170 million investment program at Husum to improve its result by EUR 50 million as of 2018. In 2015, the company closed down two paper machines at Husum and converted one paper machine to produce linerboard. In addition, a new folding boxboard production line was started up at the mill in February 2016.

The investment program also included improvements to the integrated mill’s pulp mill and port.

The new efficiency improvement program targets a minimum of EUR 10 million annual cost savings. The company will also begin charting the options for further development for the integrated mill.

“We’ve made a successful transition from paper production to paperboard at Husum, and next we will harmonize operating methods and eliminate overlaps,” said Metsä Board’s CEO, Mika Joukio.

Metsä Board said the measures to improve efficiency will begin as soon as possible, and the company expects results to be gained throughout 2016.

The Husum mill employs about 760 people and has a production capacity of 400,000 tpy of folding boxboard, 300,000 tpy of linerboard and 750,000 tpy of bleached kraft pulp.

Huhtamaki has acquired Delta Print and Packaging Limited (“Delta”), a privately held folding carton packaging manufacturer based in Belfast, Northern Ireland, and its affiliated Polish unit European Packaging Solutions Poland Sp. Z o.o. with a new manufacturing unit in Gliwice, Poland.

The debt free purchase price was GBP 80 million (approximately EUR 103 million).

With the acquisition Huhtamaki continues to implement its growth strategy focused on food and drink packaging and enters the folding carton packaging market also in Europe.

“With Delta we are able to serve our European customers even better and offer them a fuller range of paperboard packaging solutions,” said Eric Le Lay, Executive Vice President, Foodservice Europe-Asia-Oceania. “The acquisition strengthens our offering for the specialty coffee and QSR segments and gives us significant new opportunities in the packaged food market.”

Delta specializes in made-to-order printed folding carton packaging for the UK and European foodservice, packaged food and retail markets. The net sales of the company for the year 2016 are expected to be approximately EUR 70 million and it employs altogether about 300 employees in its two manufacturing units.

The business becomes part of Huhtamaki’s Foodservice Europe-Asia-Oceania business segment as of May 2016.

UPM announced in late-April that it signed an agreement to sell its Schwedt newsprint mill site in Germany and relevant assets to LEIPA Georg Leinfelder GmbH for EUR 70 million.

Currently, the mill has the capacity to produce 280,000 tonnes per year of newsprint, but LEIPA plans to eventually convert the mill’s production to 450,000 tonnes per year of linerboard.

As part of the deal, the parties have entered a manufacturing agreement whereby newsprint would be produced by the mill for a transition period that would end no later than the close of 2017.

The entire personnel of Schwedt mill, about 240 people, will transfer to LEIPA as old employees.

The deal is subject to customary third party approvals.

UPM continues to produce newsprint at its Chapelle, Kaipola, Hüth, Schongau, Shotton and Steyrermühl mills.
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EUROPE

Stora Enso Considers Increasing Containerboard Production in Poland

Stora Enso said that it will begin a feasibility study focused on the profitability of the possible expansion of containerboard production by 500,000 tonnes per year at the company’s Ostroleka Mill in Poland.

The findings of a recently completed pre-feasibility study supported continuation of the process, Stora Enso noted.

Stora Enso said the studied investment will be cost competitive and it has synergies with the newest containerboard machine (PM 5) in Ostroleka, which went into production in 2013.

If the investment is approved following the feasibility study, which is expected to be completed by the end of 2016, the capital expenditure for the expansion is estimated to be in the range of EUR 350-400 million over a couple of years, the company said.

“Poland is a large and growing market where we have a strong presence and customer base,” said Gilles van Nieuwenhuyzen, EVP Division Packaging Solutions. “Stora Enso regularly conducts feasibility studies to explore potential expansion opportunities. The decision regarding a possible expansion at Ostroleka Mill will be made once the assessment is completed.”

RUSSIA

Ilim Group Acquires Majority Stake in Corrugated Packaging Facility, Gofra Dmitrov

Ilim Group has expanded its presence on the Russian corrugated packaging market with the acquisition of Gofra Dmitrov, a corrugated packaging facility located in the Moscow Region of Russia.

The Dmitrov plant has 200 employees and a production capacity of 150 million square meters per year.

Ilim also owns Ilim Gofra, a modern corrugated packaging plant situated in Kommunar, in the Leningrad Region. The facility has over 260 employees and a production capacity of 140 million square meters per year.

With the acquisition of the Dmitrov facility, Ilim’s annual corrugated packaging production capacity jumps to 290 million square meters.

“We believe the Russian corrugated packaging production market is promising and profitable from an investment perspective,” said Ilim Group’s CEO Franz Marx. “By managing two modern corrugated packaging production facilities located right near the main markets for this product — Moscow and St. Petersburg — we will be able to offer our clients better logistics, an improved range and quality of product.”

INDIA

Strong Consumption of Paper in India Drives Demand for Recycled Fiber

The world president of the Bureau of International Recycling (BIR) said that there will be a sharp increase in demand for paper in India in the coming years that will result in an equally strong jump in demand for recycled fiber to feed the mills.

“India is the only country growing successively by over 7% in the last five years. It will become an even more important business partner for Europe than before,” said Ranjit Singh Baxi at BVSE’s paper recycling conference in Düsseldorf in April.

“I am sure India’s economy will stay strong in the next two to five years as well. For 2017, the anticipated growth is 7.5%,” Baxi said. He noted that India’s annual paper consumption currently stands at 13 million tonnes and the figure is growing at an average of 7.6% per year.

With a population of 1.25 billion people and a per-capita paper consumption of more than 10 kg, there are 800 paper mills operating countrywide to feed the sharp rise in demand.

“Newspaper production will be around 6 million tonnes by 2025, requiring about 8 million tonnes of recycled fiber,” Baxi said. “For Duplex board production, the figure is thought likely to touch 5 million tonnes by 2025, requiring 6.6 million tonnes of recovered fiber. And kraft paper production is expected to be at 7 million tonnes, requiring 9.5 million tonnes of recycled fiber.”

Considering the expected boost in paper production, the question remains: ‘Where will fiber come from to meet India’s growing demand for paper?’ With uncertainty surrounding China’s fluctuating need for recovered paper, Baxi says it is “high time” that European companies start thinking about finding a new home for their material. “Find a home for it today before someone kicks you out,” Baxi warned.

Editor’s note: Excerpt from RecyclingInternational.com.
INDUSTRY SUPPLIERS

Kemira Starts Up Sodium Chlorate Plant at Klabin’s New Pulp Mill in Brazil

Kemira Oyj has successfully started up production in its new sodium chlorate plant located in Ortigueira, Paraná, Brazil. The sodium chlorate produced at the plant is used for on-site generation of chlorine dioxide, a key bleaching agent in bleached pulp production.

Kemira’s plant is built adjacent to Klabin SA’s new pulp mill securing a long-term partnership between the two units. This concept is a good example of sustainable circular economy where the production facilities make use of renewable energy from the pulp mill — Kemira providing the pulp production sodium chlorate it needs. Electricity is the main raw material for sodium chlorate.

“Kemira is a global leader in the production and supply of chemicals for the pulp and paper industry and has the most comprehensive offering for pulp production. The new plant strengthens our capabilities to serve the growing demand for pulping chemicals in the South American market,” said Billy Ford, Senior Vice President, Pulp & Paper, The Americas.

The new pulp mill in Brazil (Puma Project) is the largest investment in Klabin’s history and will almost double the company’s production capacities. The unit has a capacity of 1.5 million tons of pulp, with 1.1 million tons of bleached hardwood pulp (eucalyptus) and 400,000 tons of bleached softwood pulp (pine). The new mill will also generate a renewable and sustainable bioenergy surplus of 150 MWh/h.

Xerium Acquires J.J. Plank Corporation for $18 Million

Xerium Technologies recently acquired the business of J.J. Plank Corporation, including its Spencer Johnston brand spreader roll line and related family of product lines for $18 million, comprised of $16.25 million in cash at closing, and the rest in future obligations.

Spencer Johnston and the other J.J. Plank divisions supply equipment used in the production of paper, nonwoven fabrics, flexible packaging, tissue converting, and food packaging.

According to Xerium, the combined company will have one of the broadest sets of capabilities with respect to spreader rolls, dandy rolls, and tissue embossing rolls in the world.

“Incorporating Spencer Johnston’s and the other divisions’ strengths in spreader rolls, dandy rolls, and tissue embossing rolls with our existing portfolio of products is a strategically and financially compelling advancement opportunity,” said Harold Bevis, President and CEO of Xerium. “These product lines will strengthen our product and service offerings, add new customers to our roster, and accelerate revenue diversification.”

OASIS Standardizes Metrology Fleet with 6DOF Technology

Working with Hexagon Manufacturing Intelligence, OASIS Alignment Services recently standardized its large metrology fleet on Leica Absolute AT960 laser trackers and Leica T-Probes.

Based in Rochester, New Hampshire, OASIS is a leading provider of 3D metrology, optical alignment, and mechanical services with eight regional service centers throughout North America. The company serves a broad spectrum of industries, including pulp and paper.

After one year of field testing two Leica AT960s in every customer case scenario, OASIS experienced 100% uptime with the portable measurement technology. OASIS has now retooled its entire field enterprise, moving from traditional laser trackers to the next-generation 6DOF (six degrees of freedom) technology of the Leica AT960 paired with the Leica T-Probe.

“Reliable, failure-free equipment performance is critical to our customers’ success, as well as our own success in providing solutions to our customers,” said Brian Hiltunen, President of OASIS. “It also provides peace of mind, as our field service technicians constantly face challenging jobs in formidable environments.”
INDUSTRY SUPPLIERS

- SonicAire recently announced new executive leadership. Jordan Newton has transitioned to become the Vice President of Innovation and Engineering overseeing SonicAire fan design and engineering. John Sanders, former head of sales for the Northeast region, has become the Vice President of Sales and Marketing responsible for SonicAire sales teams and marketing efforts.

- Voith has appointed Dr. Toralf Haag as Chief Financial Officer. Dr. Haag will succeed Dr. Hermann Jung, who will turn 61 in July and conclude his role at Voith on September 9 after serving the company for 31 years.

INDUSTRY ASSOCIATIONS

- The Confederation of Paper Industries (CPI) announced that its Director General, David Workman, is to step down later this year, giving ample time for a successor to be appointed. Workman has served in his current position since April 2010.

- The European Federation of Corrugated Board Manufacturers (FEFCO) announced that Dr. Jan Klingele, Managing Partner of Klingele Papierwerke, has started his two-year term as President of FEFCO. He succeeds Roberto Villaquiran, who after four years had served the maximum possible time.

RECOGNITION

- Anthony Pratt, Chairman and Owner of Pratt Industries will receive RISI’s first North American Packaging CEO of the Year Award. RISI selected Pratt for his “vision and leadership” in growing Pratt Industries into “one of the largest, lowest cost, and most innovative companies in the North American industry over the past two decades from a virtual startup in this region of the world.”

PAPER

- Arctic Paper in late-April appointed Per Skoglund as acting Chief Executive Officer. Skoglund replaces Wolfgang Lübbert who stepped down from the position. Lübbert will continue as a member of the Management Board.

- Case Paper announced that Todd Greenwood has joined the company as Vice President of Paperboard Sales. Greenwood has 25 years of experience selling paper and board to the commercial print and packaging industries.

- Crown Paper Group has promoted Colin Fernie to President of Port Townsend Paper and Crown Corrugated. With the promotion, Fernie adds responsibility for the Port Townsend Paper mill (Port Townsend, Washington) and retains responsibility for the Crown Packaging and Boxmaster plants (Vancouver, BC, Canada) and distribution centers (Kelowna BC and Calgary, AB, Canada).

- Glatfelter named John P. Jacunski to Business Unit President, Specialty Papers. In this role, Jacunski will have overall P&L responsibility and will lead the development of strategic as well as tactical plans for the business unit. Jacunski will retain his role as Chief Financial Officer.

- SCA has appointed Georg Schmundt-Thomas as its new President of Global Hygiene Category, effective August 1. He will also be a member of the Executive Management Team. Schmundt-Thomas has extensive experience consumer goods industry. He has worked for Procter & Gamble since 1992, most recently serving as Chief Marketing Officer of the company’s Duracell unit.
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ABRASIVE  CARBON FIBER  FIBERGLASS  METAL  PLASTIC
Policy Priorities for Tissue Manufacturers

AF&PA has established a tissue sector to provide a forum for companies that manufacture tissue products to work with its experts on a number of policy and marketplace advocacy issues.

By Donna Harman, President and CEO, AF&PA

Products such as facial and bathroom tissue, paper towels and napkins are at the forefront of new technologies and innovation. Tissue manufacturers are achieving increasingly sustainable production while improving quality and product options for consumers.

To focus on legislative and advocacy issues of importance to the tissue industry in particular, AF&PA established a tissue sector to provide a forum for companies that manufacture tissue products to work with our experts on a number of policy and marketplace advocacy issues.

FALSE CLAIMS

For several years, AF&PA has utilized technical and legal resources to constructively engage companies making specific false and/or misleading marketing claims about our industry’s products. For the tissue industry, we have concentrated on false or misleading marketing messaging relating to electric hand dryers that suggest paper towel use is damaging to the environment, while hand dryer use is not.

One company had a misleading infograph on their website that failed to include the use of recovered fiber in its depiction of the paper towel manufacturing process and claimed “hand dryers are the better choice for our environment and future generations.” We reached out to the company to request correction of the infograph and developed a paper towel fact sheet that highlights the advantages of paper towels to aid our efforts. The company responded by removing all graphics about the tissue manufacture process from their website.

RECOVERED FIBER

Paper recovery is one of our industry’s most positive sustainability messages and AF&PA advances policies for a continuing and expanding domestic recovered fiber supply to help meet global demand. Most tissue products include recycled paper content: 90 percent of the 74 U.S. mills that produce tissue paper use some recovered paper to make new tissue products, and 18 of these mills use only recovered paper.
**FLUSHABILITY**

Concerns over the “flushability” of tissue products have continued to grow in state legislatures and municipalities across the northeast United States. Products like cleaning wipes and baby wipes are not explicitly labeled as “flushable,” but can be assumed incorrectly to be flushable in personal septic and public sewer systems. Incidents where these products have clogged waste water systems are triggering regulatory and legislative action targeting all flushable products.

Work by the industry is underway to refine flushability and labeling guidelines and consumer awareness via a Technical Workgroup on Flushability led by INDA, the industry association for nonwovens. We believe labeling requirements regarding flushability should be set by the industry at large or at the federal level to provide consistency for companies operating in more than one state to avoid having to comply with different rules in each jurisdiction. An additional layer of state regulation inadvertently could inhibit business and the technological innovation of tissue and paper products.

**COMBUSTIBLE DUST**

AF&PA recently took action on several combustible dust-related issues that have significant financial implications for manufactures and converters of tissue. The Occupational Safety and Health Administration (OSHA) had been using improper enforcement criteria for tissue paper combustible dust. The 1/32 inch upper limit for combustible dust accumulation OSHA was using to issue warnings and citations is representative of coal dust, which, like many other materials, has a significantly higher bulk density than dust from tissue paper.

AF&PA submitted comments to OSHA, convincing them to explicitly acknowledge that “very low bulk density materials, such as tissue paper dust, may not create a deflagration hazard even at an accumulation level of 1/4 inch…” or more, depending on the bulk density and other attributes of the dust. We also developed a one-page document summarizing OSHA’s revised guidelines to ensure that companies are aware of how tissue paper dust is assessed.

**CHEMICAL REGULATION**

California Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, requires companies doing business in California to provide a clear and reasonable warning before knowingly and intentionally exposing someone to a Proposition 65 chemical. The Proposition 65 list currently contains over 900 chemicals and is updated constantly, increasing the risk of noncompliance and liability.

To save our members’ time, money and personnel resources, we developed California Proposition 65 Assessment Software, a proprietary tool that assists organizations with determining whether their products are in compliance with Proposition 65.

**ENERGY**

To comply with new environmental regulations, electric utilities are expending billions, transitioning to natural gas and, in some cases, shutting down plants, jeopardizing access to an affordable and reliable energy supply required for the manufacture of tissue products.

AF&PA helped establish and is committed to maintaining very favorable national demand response policies, which allow electricity customers to reduce their consumption at critical times or in response to market prices.

**LEARN MORE ABOUT AF&PA’S TISSUE SECTOR**

If your company manufactures tissue, we would love to talk to you about our work and how you can engage as a member of the tissue sector to shape the policies that AF&PA advocates for on your behalf. For more information about the tissue sector, contact membership@afandpa.org.
Coated Freesheet Market Faces Supply & Weak Demand Challenges

Coated demand continues to shrink but prices have, surprisingly, remained stable following a modest decline last year. However, additional capacity adjustments may be needed in order to avoid a steeper decline in operating rates which are already the lowest among graphic papers.

By Harold M. Cody

The overall printing and writing paper market continues to struggle to adjust to two major factors: exchange rates and declining demand. The degree to which each individual grade sector has been impacted by these two factors, however, varies widely. Coated freesheet grades have been more stable than some but continue to face price pressures and concerns about an excess of supply.

During the first quarter of 2016, North American printing and writing paper demand was about 4.9 million tons, or an annualized rate of 20 million tons, down about 3.5% compared to the first quarter of 2015. The decline in demand by grade varied widely, however. Uncoated freesheet demand fell by a modest amount declining just under 1% vs. 2015 levels. In contrast, uncoated mechanical demand was off by about 4% while demand for coated mechanical plunged almost 10%. Total imports were off nearly 20% vs prior year levels.

Coated freesheet demand was down a little over 4% year over year in the first quarter at 1.1 million tons as shipments were off by 1.8% and imports were down over 10%. The freesheet market has been troubled by weak demand and over supply concerns, although during the latter part of 2015 shipments and operating rates improved a bit. Prices slipped modestly during the second half of last year, falling about $25 to $35 per ton, although it’s reported spot prices showed...
larger declines. Since the beginning of 2016, prices are reported to have stabilized despite the tepid level of demand. Full year demand and shipment data for 2015 were in line with overall expectations that demand in the big U.S. market, and other developed regions, would continue to contract. Printing and writing paper demand and shipments were both down about 5% vs. 2014 levels, a slightly larger drop than the longer term trend of an annual drop of 3% to 3.5%. Overall demand was suppressed by a nearly double digit decline in demand for coated mechanical and uncoated mechanical grades. Freesheet grades posted considerably better results, with coated freesheet demand down 4.2% and uncoated free demand off by about 1% vs. prior year levels. Operating rates are a good indication of challenges facing the coated freesheet sector as U.S. mills ran at or about 90% in early 2016 after averaging well under 90% for 2015.

**U.S. PRODUCERS CHALLENGED BY STRONG DOLLAR**

The overall tone of the market, from a price standpoint, has remained surprisingly good given the weakness in demand for most grades including coated papers. Coated mechanical demand is faring considerably worse than the coated freesheet sector as key markets for mechanical grades, such as magazines and inserts, continue to struggle to maintain market share against steadily rising use of digital advertising. In turn, demand has sharply contracted for mechanical grades. Also contributing to the more pronounced weakness in coated groundwood markets has been a surge in off shore imports, which rose by almost one-third vs. 2014 levels, as off shore mills took advantage of the strong dollar. The strong dollar has changed the competitive cost situation by effectively making U.S. mills currently higher cost vs. mills in Europe for example, making it much easier for off shore mills to compete in the U.S. market. Similarly, it has reduced the ability of U.S. mills to export tonnage.

Imports of coated freesheet last year fell by a minor amount while coated groundwood imports rose almost 10%. However, exports of coated freesheet last year declined about 15% and contributed to the weakness in operating rates and in turn pricing. Exports of coated freesheet have been trending downward recently, falling by 150,000 tons over the last two years. Both the strong dollar and a decline in U.S. capacity contributed to the drop.

**OUTLOOK**

The outlook for the remainder of 2016 and into 2017 remains difficult to predict. First, there appears to be little cost driven incentive for higher prices although recent gains in market pulp prices and a minor movement upwards in oil prices during the second quarter bear watching. This, coupled with price pressures from imported paper, would tend to mean that any major gain in coated free pricing is unlikely.

The wild card to the outlook, of course, would be if additional adjustments to supply are enacted. Verso’s permanent closure of the Wickliffe, Kentucky mill, which was idled last year, along with other closures, helped to keep over supply of coated freesheet to a minimum. It’s expected, however, that as demand shrinks, further reductions will be needed unless exports can pick up the slack, which is unlikely given current exchange rates.

The recent entry of Verso — the top U.S. coated freesheet producer — into bankruptcy in early 2016 makes it harder to predict when additional closures may occur. Verso and Sappi control about two-thirds of U.S. coated free capacity. Industry observers note that Verso will be in a tight spot when they emerge from bankruptcy, noting that it will be difficult to invest in existing facilities to maintain competitiveness when bond and debt holders will be demanding money.

Harold Cody is a contributing writer for PaperAge. He can be reached at HaroldCody@paperage.com.
How and Why Do Prices Really Move in the Paper Industry?

Overly simplistic analysis of how prices behave can lead to poor business decisions that have disastrous consequences.

By Matt Elhardt, Fisher International

Standard economic theory holds that prices are determined by the intersection of supply and demand. As the theory goes, one only needs to understand the shape of the demand curve (that is, the quantity of goods consumers are willing to buy at a given price) and the shape of the supply curve (the quantity or volume suppliers are willing to sell at a given price) to find the price. According to this theory, the intersection occurs when buyers and sellers negotiate the price down to the marginal producers’ cost level. The rationale is that marginal (or high cost) producers would rather walk away from an order than sell below cost. The theory is illustrated by Figure 1.

In pulp and paper, the supply side is well-understood from cost curves. For instance, FisherSolve™ cost curves can produce any combination of market segmenting factors from geography, finished product, furnish, and machine type to hundreds of other factors drawn from FisherSolve’s rich, integrated database. This is illustrated in Figure 2 where the demand line and supply line (cost curve) intersect. For any and every market segment, we can definitively define supply and its marginal cost. But, while this allows one to answer supply questions and a very wide range of other related strategic questions, it still isn’t enough to explain how and why prices move, especially in the short term where most buying and selling happens.

Forecasting prices using supply and demand theory (called “econometrics”) is used nearly universally by today’s pulp and paper industry analysts — and it sounds compelling. The only problem with the theory is that prices in the pulp and paper industry rarely behave this way.
WHY SUPPLY AND DEMAND ANALYSIS ALONE DOESN’T WORK. . . AND CAN BE HAZARDOUS TO YOUR BUSINESS

Overly simplistic analysis of how prices behave can lead to poor business decisions that have disastrous consequences. For example, we read recently about an idea that business leaders can “shape” the supply curve (by shutting “mid-cost” mills instead of higher cost mills) — an idea that would seem to make sense if the econometric supply-demand theory of price behavior were true — can be shown to lead to dramatic losses of market share, competitiveness, and profitability.

Econometrics also produces the common wisdom that changes in manufacturing costs drive market prices up and down. We saw such an assumption embedded in the profitability projections for a major paper producer — who has since been taken over by another company —leading to the conclusion that rising costs would not hurt profitability!

Buyers and sellers set the price according to their speculation about each other’s relative power in the negotiation and their ability to get what they want.

So, how do we know that the supply-demand theory isn’t reliable when put in practice in pulp and paper? If prices were really determined by marginal producers’ cost levels, market prices would always be at that level. When costs went up, prices would rise; when marginal producers’ costs went down, prices would fall. The implication of this is that the margins of marginal producers would always be approximately the same. But they aren’t. Just take a look Figure 3, which shows North American coated freesheet prices, marginal costs, and marginal supplier margins.

We can see from the chart that sometimes costs do influence prices, during time periods B and D when prices were at or below the marginal cost of production (we call this the price floor). During these periods, marginal costs do have an impact — in some cases rising costs will push prices up, in other cases, negative margins will drive mills out of the market, altering the supply and demand balance, also pushing prices up. In other periods (A and C), we see that margins were much higher, but at different levels. In these cases, suppliers had varying levels of strength in the price negotiation.

So why does supply-demand theory fall short for predicting price? There are many reasons. One is that, in the short run (which is where we all live, right?), buyers and sellers negotiate prices up and down based on concerns other than

---

Figure 1

The Classic Supply and Demand Model

Supply
Demand
Price Quantity

Figure 2

The Supply Cost Curve

In pulp and paper, the supply curve for a product segment can be represented by cost curves.

Price Quantity

Figure 3

North American Coated Freesheet Prices
Marginal Costs and Marginal Supplier Margins

Figure 4

Example Negotiation Matrix

Green favors the buyer, both in the present and the speculative future
simply what it costs a handful of producers to make the products. Those producers’ willingness to operate at a loss for a period of time also affects pricing behavior. Moreover, a simplistic use of cost curves could convince one that the marginal price is the same in all markets. The truth is that not every producer bids on all business, making price behavior more complex to predict. Pricing decisions made over the negotiating table are also influenced by factors such as changes in lead times, fear of shortages, buyers stocking up in front of price increases, and many other psychological effects. These cause prices to fluctuate for rational reasons according to other factors than pure supply-demand analysis would suggest.

Buyers and sellers set the price according to their speculation about each other’s relative power in the negotiation and their ability to get what they want. These “free market” forces, are heavily influenced by the changing dynamics of the present market and each participant’s speculation of the future. Buyers and sellers set a price when they each assess their own relative bargaining power, speculating on market forces such as:

- Operating rates
- Inventories
- Costs
- End-demand
- Capacity changes
- Order backlogs
- Shipments

Industry participants use every available piece of information to them to determine their relative selling or buying position. This “mental” game can be represented in simplified form with the scenario presented in the following matrix.

What if today’s market looked like this (Figure 4): What would be the real world outcome? The buyer, believing that inventories are currently high, with a prospect of weaker future industry operating rates, asks for a discount from his supplier to keep his business. The seller, believing the same (they both read the same multi-client industry reports, after all), speculates as well — he’d rather lock the volume now (and for the coming year) at lower prices than lose volume in the future. The buyer, fresh from victory, goes to his other suppliers of like products who, finding that a competitor has lowered prices, lower theirs as well, confirming everybody’s speculative belief about the future, even though nothing is different from the day (or week) before: aggregate end demand is roughly the same, as is the shape of the demand and supply curve and cost level of the highest cost mill.

This point is well illustrated by dissolving pulp price cycles (Figure 5).

The fact is, markets work not by the simple intersection of two linear equations, but by a complex interaction of various feedback loops (Figure 6). Econometric models of supply and demand do not do well in forecasting prices in the short run because they do not take into account the feedback loops that make up every marketplace. Forecasting prices and their turning points is hard unless one has the ability to simulate how the market behaves: the interactions of buyers and sellers and all the mental “rules” that real-world participants use when they negotiate prices.

Above, we described one feedback loop where the price changed without supply and demand changing. Another classic feedback loop example is interaction between price and supply. At higher prices (and higher margins), new capacity can be pulled into the market. In part due to
Forecasting prices and their turning points is hard unless one has the ability to simulate how the market behaves.

economies of scale, the paper industry nearly always over-builds to future expectations (think of how an actual cost curve is stair-stepped, not a straight line), resulting in a future surplus of capacity, which then pulls the price down. Therefore, one can say that the future price is a partial function of today’s price, its direction, and all of the other market factors interacting with each other.

In an ideal world, the rational econometric model should be all that we need. But in the real world where our transactions take place, to predict how prices will behave, one has to capture and model how people have and will speculate about the future and how those speculations will affect buyers’ and sellers’ behaviors. And then how those behaviors will affect their next set of speculations and their subsequent reactions. And so on. Using simulation produces a more accurate and reliable predictor of prices and price turning points and allows us to explain when the market’s turning points will occur, why the market behaves as it does, and what will happen when big events occur or when participants take big actions.

It shouldn’t be surprising that a too-simple understanding of paper industry markets can’t support useful business strategic thinking. More productive would be the use of the latest industry research, math, and technology to create realistic business models that show the consequences of a business’s strategic choices. There are accessible opportunities that the industry’s producers and suppliers can exploit through proper use of advanced business intelligence resources and common sense. We invite you to talk with Fisher about the insights you need and how to unlock the full potential of your assets and investments.

Matt Elhardt is Vice President, Business Development for Fisher International. He can be reached by email at: melhardt@fisheri.com.
Paper industry leaders from around the world met at Paper2016, held March 6-8 in New York City. Through the event’s theme “Generation Paper,” co-hosts AF&PA and NPTA invited hundreds of participants from across the industry to exchange ideas, expand their knowledge, and experience everything our industry’s annual event has to offer.

The Lotte New York Palace played host to the long-standing paper convention, where registered participants attended insightful sessions and meetings, while networking with their colleagues.

GENERAL SESSION: GENERATION PAPER

Emerging workforce expert Eric Chester shared his insights on how to better connect with young employees and attract new talent. Chester is the author of Employing Generation Why: Understanding, Managing, and Motivating Your New Workforce, which advises companies and organizations on the emerging generation and how they can better connect with young employees.

Chester encouraged executives to stop fishing for good workers and to start hunting for them. This includes analyzing their best employees and determining what they have in common, and finding people who have similar core values and backgrounds. He explained that young people do not quit their job; they quit their boss. To retain employees, it is important to acknowledge what they are doing well, recommend what they can improve, and ask what they need to do their job better. People want to maximize their performance and will stay in a job where they feel they are being listened to.

Sappi North America’s Deece Hannigan spoke about industry challenges in terms of regulations and future workforce, and Sappi’s research on the neuroscience of touch as a promising prospect for paper in our society.

PAPER2016 RECEPTION

All registrants were welcomed to network with their peers at the Paper2016 Reception, which immediately followed the General Session. Domtar’s Paige Goff emphasized the benefits of handwriting and presented a video on the company’s PaperPal initiative.
RISI GLOBAL MARKET TRENDS SESSION

RISI’s annual seminar attracted industry executives eager to hear what is in store for the global paper industry. Vice President of World Graphic Paper John Maine spoke about the market outlook for graphic papers and Vice President of World Packaging Ken Waghorne discussed trends regarding paperboard and recovered fiber.

PAPER2016 LUNCHEON

NPTA presented the 2016 Stanley O. Styles Industry Excellence Award to Bill Koehn, vice president of printing and publishing paper sales at Domtar, who reflected on the people and experiences of his more than 30 year career in the industry.

Paper2016 Luncheon keynote speaker Kevin “Kal” Kallaugher, the editorial cartoonist for The Economist and The Baltimore Sun, demonstrated examples of his work with live-action drawing. He showed how he creates his political cartoons and the power of lines on paper. Kal spoke about how it’s a cartoonist’s role to make people think and how cartoons are often controversial, but freedom of expression is an indicator of freedom of society.

At the close, Kal encouraged the audience to take up cartooning and walked everyone through a step-by-step demonstration on how to draw a simple, yet very recognizable caricature of Donald Trump.

International Paper’s Greg Gibson urged the industry to engage employees and communities through election 2016 participation and outreach to elected officials on important industry policy issues.
Correct Felt Permeability

How open do press felts need to be?

By Marcel Lensvelt

In order to remove water from the sheet in the press section, water must flow easily into the press felt. On the other hand, at the exit of the press nip, water must be kept from flowing back into the sheet. These conflicting demands ensure that felt permeability is always a compromise between good dewatering and re-wetting.

This article gives some background information on felt permeability and describes hands-on tools to determine and optimize the permeability of felts which are running in the machine.

The CFM Value on the Datasheet

As part of the manufacturer’s quality control, the air permeability of every felt is tested and usually recorded on the datasheet. Although air permeability is an important parameter for the felt manufacturer, it is of limited value for the paper manufacturer.

Air permeability, in CFM or l/dm².min, is determined by applying a very small pressure difference (of about 0.018-0.029 PSI or 1.27-2 mbar) between the two sides of a fabric and then measuring how much air flows through the fabric. In the case of a very fine, dense fabric, less air will pass through and thus it will have a lower CFM value. This procedure works well for plain fabrics, such as forming fabrics and dryer screens.

However, press felts are not plain woven fabrics, as they have multiple layers of very fine batt needled onto the base fabric. The needled batt is much denser than the base fabric and therefore only the batt determines the quantity of airflow and hence the outcome of a perm test.

In addition, the batt is usually made of polyamide which absorbs some water. This means that the tested CFM value may vary with local air humidity during the test — the higher the humidity, the thicker the batt fibers become, the lower the air permeability becomes.

One possible conclusion is that this test is hardly representative for the situation in which felts are used — large amounts of water, not air, passing through a compressed felt under high pressure. It is safe to say that the CFM value of a press felt is of no value for the paper manufacturer.

Press Concepts and Permeability

When it comes to removing water from the sheet in the press section, there are two basic concepts: nip dewatering and Uhle box dewatering. The two concepts have slightly different properties when it comes to felt permeability.

Uhle Dewatering

In the case of Uhle dewatering, the felt acts as temporary storage for water. It absorbs water in the nip and releases it in the Uhle box. This means that there are some conflicting demands in respect of the felt permeability:

- In the mid-nip, the paper side of the felt must be open so that water can freely move from the web into the felt.
- To avoid re-wetting of the web at the nip exit, the paper side of the felt must be as dense as possible.
- At the Uhle box, the felt must be open again so that it can dispose of the water it contains within a relatively short time.

Nip Dewatering

For effective nip dewatering, the felt needs to carry water into the press nip. Since the sheet also carries water into the nip, the hydraulic pressure in the nip will rise, and at a certain moment water will move in the direction of least resistance.
From a felt permeability point-of-view, nip dewatering is a little easier than Uhle dewatering:

- At the nip entrance, the felt must help to build up hydraulic pressure and must be relatively dense.
- In the mid-nip, water should be able to flow through the felt. To avoid the fines and fillers being washed out, the flow speed must not be too high — the felt may be a little dense.
- Again, to avoid re-wetting of the web at the nip exit, the paper side of the felt must be as dense as possible.

**Other Runnability Problems**

When felts have become too open or too dense, the machine has its own way of letting you know — poor runnability. Table 1 lists some common phenomena, together with their relation to felt permeability.

**Table 1. Perm-related runnability problems.**

<table>
<thead>
<tr>
<th>Phenomenon</th>
<th>The Felt Is:</th>
<th>Possible Explanation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low dry content</td>
<td>Open</td>
<td>For example re-wetting at the nip exit, or...</td>
</tr>
<tr>
<td></td>
<td>Dense</td>
<td>The felt cannot release enough water at the Uhle box.</td>
</tr>
<tr>
<td>Sheet crushing</td>
<td>Dense</td>
<td>Felt is too dense and the water damages the sheet.</td>
</tr>
<tr>
<td>Diagonally ripped felt</td>
<td>Dense</td>
<td>Water for the nip destroys the felt when it suddenly enters the nip.</td>
</tr>
<tr>
<td>Poor pick-up</td>
<td>Dense</td>
<td>The vacuum of the pick-up roll is not effective.</td>
</tr>
<tr>
<td>Shadow marking</td>
<td>Open</td>
<td>The mid-nip flow is too high, washing out fines and fillers.</td>
</tr>
<tr>
<td>Blowing for the 4th press</td>
<td>Dense</td>
<td>The vacuum of the transfer roll is not effective.</td>
</tr>
</tbody>
</table>

**The ‘Right’ Felt Permeability**

It may come as no surprise that there is no general rule for correct felt permeability. From the aforementioned information it may be surmised that machines running with nip dewatering require somewhat denser felts than those with Uhle dewatering, but that is about the only rule of thumb which applies.

Optimal permeability depends on local circumstances, such as press and roll cover design, speed, stock quality, contamination, etc., but also on the requirements of the paper manufacturer, such as break-in time, paper smoothness, minimum felt life, and so on. As is very often the case, it is a matter of investigating what works best in a particular situation. Measuring felt permeability at regular intervals, such as every day at 9 a.m., gives objective data for all machine conditions. The accumulated data gives the paper manufacturer a point of reference, supporting them as they choose the most appropriate action to take.

**Measuring Felt Permeability**

To avoid the negative effects of incorrect felt permeability on the machine’s runnability, it is important to judge the condition of the press felts on a regular basis. Felt manufacturers often use instruments such as L&W Feltperm™ or Cristini PermFlow™. These instruments inject pressurized water into the felt and then measure the water flow. As these instruments are relatively expensive and not often used by the pulp and paper mills, they remain beyond the scope of this article.

**Airflow through the Felt**

An easy and affordable way to get an indication of permeability is to measure how much air the Uhle box draws through the felt. Using an instrument such as the Feltest AirSpeed/2 this airflow can be measured accurately.

Of course, the measured airflow is closely related to the applied vacuum. Therefore it is good practice to also record the vacuum in the Uhle box when measuring the airflow. The Feltest RealVac is a handy portable manometer for measuring directly inside the Uhle box, rather than potentially defective manometers on the paper machine.
Compaction or Contamination?
After the installation of a felt, (dynamic) permeability starts to fall — the felt is compacting. However, contamination will also make it denser. To distinguish between these two possible causes for denser felt, the felt caliper must be taken into account.

In order to measure the felt caliper, the same applies as in the case of measuring the airflow, and only doing so on a regular/daily basis will provide a point of reference in order to assess today’s test result as ‘relatively thick’ or ‘relatively thin.’

The combination of the three tests (vacuum, airflow and caliper) provides very valuable information on the felt’s overall condition, as can be seen in Table 3.

### Adjustments to Running Felts
There are only limited ways of adjusting unfavorable felt permeability. If a felt is dense and not too compacted, thorough felt washing makes sense. On the other hand, when the felt is compacted, installing a new felt may prove more (cost) effective.

For open felts, the options are also limited. When felts are open because they are worn, they need to be replaced as soon as possible. When a felt is too open and still bulky, it is probably still in its break-in period. This situation can be improved by trying to compact the felt, i.e. by increasing the press load or introducing more water into the nip (by switching off one Uhle box).

### Conclusions
Permeability is always a compromise between dewatering and re-wetting. The CFM value on the felt’s datasheet is of no value to the paper manufacturer. Typically felts for nip dewatering are somewhat denser than for Uhle dewatering, but that is about the only rule-of-thumb for felt permeability.

It is important that the paper manufacturer know the usual felt permeability in order to detect deviations and react in-time. Combining the test results from airflow measurement, vacuum and felt caliper gives an excellent indication of the felt’s condition.

Marcel Lensvelt is Managing Director of Feltest Equipment BV. He can be reached by email at: marcel.lensvelt@feltest.com.

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**Table 2. Dynamic Permeability (example).**

<table>
<thead>
<tr>
<th>Airflow</th>
<th>Vacuum</th>
<th>Dynamic Permeability</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0 m/s</td>
<td>20 kPa</td>
<td>2.0 m/s @ 10 kPa</td>
</tr>
<tr>
<td>4.0 m/s</td>
<td>30 kPa</td>
<td>1.3 m/s @ 10 kPa</td>
</tr>
<tr>
<td>4.0 m/s</td>
<td>35 kPa</td>
<td>1.1 m/s @ 10 kPa</td>
</tr>
</tbody>
</table>

**Table 3. Relation between felt caliper and permeability.**

<table>
<thead>
<tr>
<th>Dyn. Perm.</th>
<th>Felt Caliper</th>
<th>Cause</th>
<th>Other Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower</td>
<td>Thicker</td>
<td>The felt is contaminated.</td>
<td>Sheet crushing, reduced speed.</td>
</tr>
<tr>
<td>Lower</td>
<td>Thinner</td>
<td>The felt is (too) compacted.</td>
<td>Sheet crushing, water for the nip.</td>
</tr>
<tr>
<td>Higher</td>
<td>Thicker</td>
<td>The felt is in its break-in period.</td>
<td>Poor dry content.</td>
</tr>
<tr>
<td>Higher</td>
<td>Thinner</td>
<td>The felt is worn.</td>
<td>Poor dry content, felt marking.</td>
</tr>
</tbody>
</table>

Figure 4. Measuring airflow at the Uhle box.

Figure 5. Measuring vacuum inside the Uhle box.
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Trends in Tissue Manufacturing

Tissue manufacturing is growing in all market regions, albeit at distinctly different rates. Each region requires different product performance or quality expectations. However, the emerging trend toward premium product offerings will continue in most, if not all, markets.

A new report by Smithers Pira, *The Future of Tissue Manufacturing to 2021*, says operating environment trends and diverging product performance levels will push alternative manufacturing technologies in the rapidly evolving tissue manufacturing processes. Tissue manufacturers occupying economy segments compete primarily on price. This requires increased focus on productivity and cost control. Premium level product performance will drive increased adoption of structured sheet technologies supported by chemicals and fibers.

Changes are well underway as the standardization of crescent former configurations and sizes have allowed machines to be built in auto assembly line fashion in workshops at much lower costs than the traditional engineered custom machines. Steel Yankee assembly is rapidly joining this disruptive approach to machinery sourcing.

“Product focus is moving toward a two level strategy with economy and premium performance products. Middle of the road products will increasingly be left behind.”
— Bruce W. Janda, author of *The Future of Tissue Manufacturing to 2021*.

**VARIATIONS IN FIBER SUPPLY**

Recycled fiber for tissue making will see shortages as tissue demand grows and the supply of recyclable papers decreases in the electronic media conversion. This will have a disruptive effect, particularly in North America over the period to 2021. Tree-free tissue products are poised to take off in North America and this period will show if consumers will respond with interest. Sustainable pulping where fiber is a by-product of non-fossil energy or feedstock production is moving forward in Northern Europe.

**REGIONAL DIFFERENCES**

Tissue manufacturing is growing in all regions, albeit at distinctly different rates. The two undeveloped tissue markets remain Africa (excluding South Africa) and India. These are unlikely to change the market balance in the next five years. Improved hot air hand dryers will continue to take business away from paper hand towels with substitution rates above 30% expected in Western Europe and North America by the end of this period.

The operating environment for tissue manufacturers will increasingly be constrained by uncertain water and energy access and costs. Sustainability measures will become a greater factor as consumer and government requirements increase. The growth of non-wood fiber sources has opened up new possibilities for simplified and sustainable pulping processes.

New approaches to dry strength additives show potential to increase tissue softness and productivity. Enzyme applications for fiber modification and process management will offer potential sustainable improvements to tissue manufacturing.

*The Future of Tissue Manufacturing to 2021* is available from Smithers Pira (www.smitherspira.com).
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The Valmet IQ quality management solution for the pulp and paper industry is a comprehensive new product family that helps you to reach your process and end product quality goals. Our products, applications and services cover all your needs, from replacement of individual equipment to building a full quality management solution. Each Valmet IQ solution is always based on our extensive industry knowhow and designed to move your performance forward. Read more at valmet.com/iq
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