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FALL 2024

140TH ANNIVERSARY ISSUE

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Devoted to the Interest of the Paper & Pulp Industry

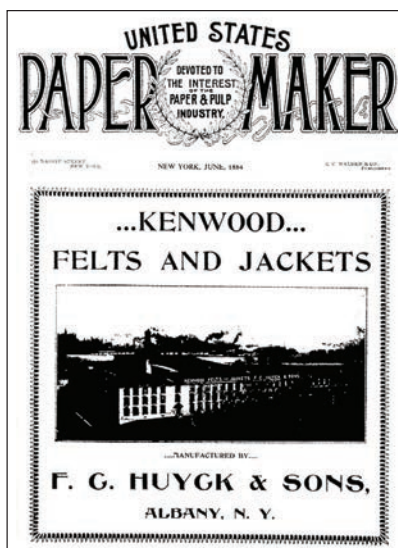
By John O'Brien, Managing Editor
jobrien@paperage.com

"Devoted to the Interest of the Paper & Pulp Industry" — that was the motto printed on the masthead of the first issue of *United States Paper Maker*, published on April 15, 1884 by Charles C. Walden. The first issue was 16 pages in total. It was printed in Holyoke, Massachusetts, which at that time was referred to as "The Paper City" due to the large number of paper mills in that region. At some point during the decades that followed, *United States Paper Maker* became known as *PaperAge*.

Proudly, 2024 marks the 140th anniversary of *PaperAge* and its ancestries. Personally, I've been involved with the production of the magazine since the mid-90s, but since my mid-teens there was always a lot of talk in our house about *PaperAge*.

As many longtime readers of this magazine may remember, my dad, Jack O'Brien, was the publisher and owner of *PaperAge* and became involved with the publication in the early 70s.

Jack's background in the paper industry goes back to the mid-1940's, as did that of his father,



John J. "JJ" O'Brien, who had held the position of editor and, eventually, publisher of *Paper Mill News* and *Post's Directory*, which some of you may know as Lockwood-Post Directory.

Jack worked with his dad during that time, but upon JJ's retirement and the sale of both publications in the early 60s, Jack took a job with Miller Freeman Corp. — the publisher of *Pulp & Paper* — as an editor and New England sales manager. About ten years later, headlines of a news story in the February 1973 edition of *PaperAge* read, "New England Publishing Executive Joins PaperAge Management Team." That's correct, it was Jack.

Through the decades, the pages of *PaperAge* have delivered countless industry news stories, paper company and supplier profiles, technological developments in pulp and paper making, interviews with people who have shaped the industry and others who have simply been a part of it.

Devoted to the interest of the paper & pulp industry — yes, we are.



Jack O'Brien with his dad "JJ" O'Brien (circa 1955).

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Copyright ©2024 by O'Brien Publications, Inc.
All rights reserved. PaperAge (ISSN:0031-1081)
is published four times per year with those issues being:
Spring, Summer, Fall and Winter by O'Brien Publications, Inc.
PO Box 904, Cohasset, MA 02025.
Periodicals postage paid at North Reading, MA.

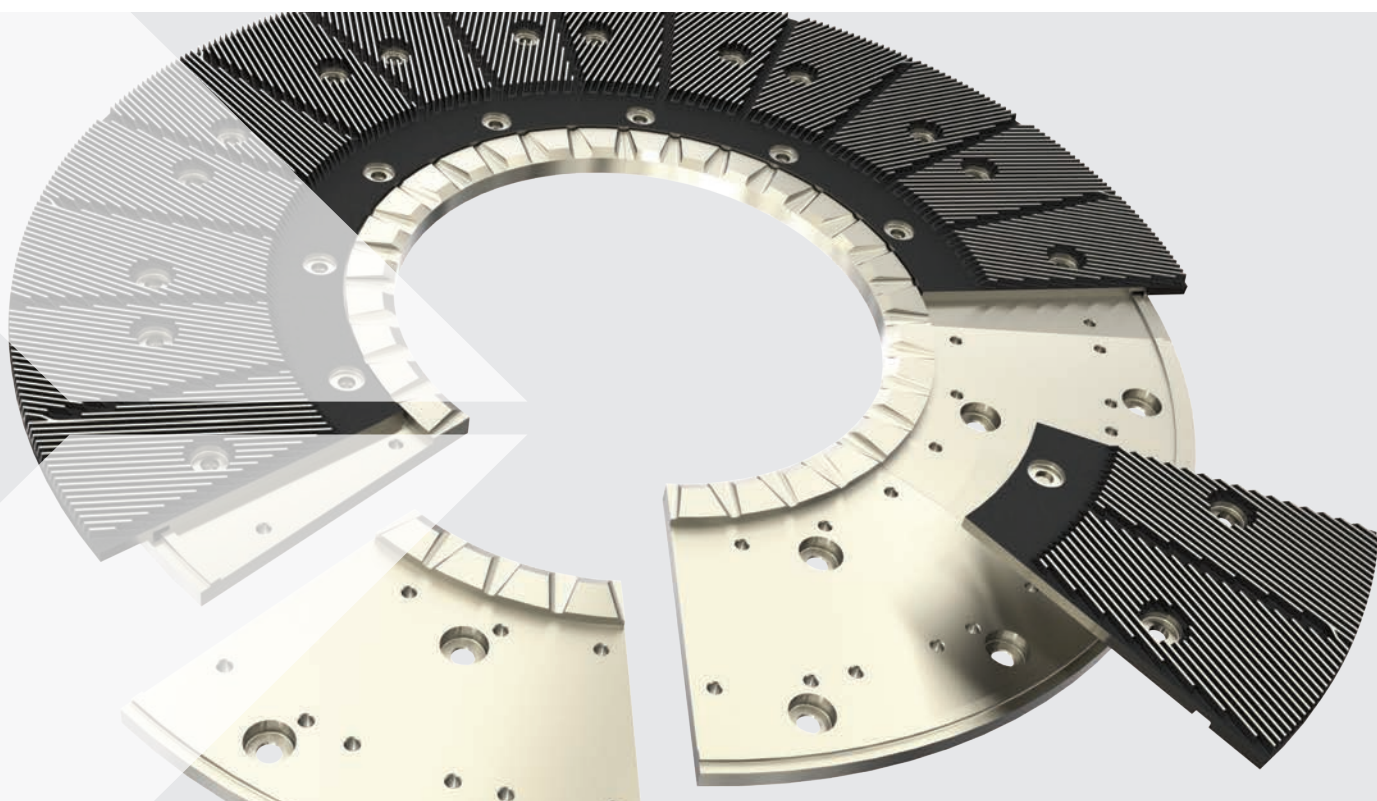
Canadian Mail distribution information:
Publication Mail Agreement #40112731
Ontrac International
P.O. Box 25058, London BRC.
Ontario, Canada N6C 6A8

POSTMASTER: Please send change of addresses to:
PaperAge, PO Box 904, Cohasset, MA 02025

Subscriptions: PaperAge is mailed without charge in the U.S. and Canada (upon written request) to qualified individuals in the pulp, paper, paperboard, and paper converting industries. To all others there is a subscription charge of \$40.00 in the U.S., \$48.00 in Canada, and \$60.00 in all other countries. Single copies may be purchased for \$10.00 each. All payments must be made in U.S. funds and checks must be drawn from a U.S. bank. Credit cards are accepted.

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NORTH AMERICA**Clearwater Paper to Sell Tissue Business to Sofidel America for \$1.06 Billion**

Clearwater Paper in July announced that it entered into a definitive agreement to sell its tissue business to Sofidel America Corporation, a subsidiary of Sofidel S.p.A., for \$1.06 billion, subject to adjustments for debt, cash, transaction expenses and net working capital.

Clearwater Paper said the transaction represents the next step in its transformation to become a premier independent supplier of paperboard to North American converters and the conclusion of its previously announced review of strategic options for the tissue business.

"We are pleased to have reached this agreement with Sofidel, which we believe positions Clearwater Paper for its next chapter of growth and value creation," said Arsen Kitch, President and CEO. "Clearwater Paper is



transforming into a premier paper supplier in North America.

"Upon completion of this transaction, we intend to deleverage our balance sheet while scaling and diversifying our paperboard business to meet the needs of our customers."

Kitch continued, "Our tissue business has delivered excellent financial and operational

performance, supported by outstanding service. We believe this business needs scale and investment to drive growth over the longer term, and we are excited to watch its continued progress as part of Sofidel."

Luigi Lazzareschi, CEO of Sofidel, stated, "The acquisition of Clearwater Paper's tissue business is another important milestone on our path to meet the growing demand for our products in the United States. We look forward to welcoming all the new employees into our family and integrating the tissue business into our network to strengthen our growth by achieving scale and expanding our ability to deliver sustainable, energy efficient products to customers."

The deal is expected to close in the latter part of 2024.

Sonoco Initiates Review of Alternatives for Thermoformed & Flexibles Packaging Business

Sonoco Products Company has initiated a review of strategic alternatives for the company's Thermoformed & Flexible Packaging ("TFP") business, a part of the Sonoco's Consumer Packaging segment. Exploring alternatives for the TFP business is expected to accelerate Sonoco's portfolio simplification strategy.

Sonoco's TFP is a thermoformed and flexible packaging business serving a wide range of customers in food, retail and medical markets. TFP provides a variety of complex packaging to value-added categories including snacks, condiments, healthcare, prepared meals, fresh products and coffee and pet. On a pro forma standalone basis, TFP had revenue of \$1.3 billion in 2023.

"We continue our strategy of focusing

on fewer bigger businesses and investing to deploy our differentiated operating model. We expect that this next step will accelerate our strategy and further drive improved results," said Howard Coker, President, and CEO of Sonoco. "We are excited about the opportunities we have to invest in and improve our industrial paper products, rigid paper containers, and metal packaging businesses."

As a result of the expanded divestiture plans, Sonoco has modified its financing plans for its pending acquisition of Eviosys, Europe's leading food cans, ends and closures manufacturer, for approximately \$3.9 billion. The company now intends to finance the Eviosys acquisition through a combination of prepayable debt, longer-term



bond financing and/or cash on hand.

The strategic review process of TFP is underway and Sonoco expects to complete it in the fourth quarter of 2024.

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NORTH AMERICA

Veritiv to Acquire Orora Packaging Solutions for \$1.19 Billion

Veritiv has entered into a binding agreement with Australia's Orora to acquire the North American packaging and distribution business Orora Packaging Solutions (OPS) for \$1.19 billion.

Headquartered in Buena Park, California, OPS (incorporating Orora Visual) is a leading manufacturer and distributor of sustainable, innovative packaging solutions to customers

across the world, with nearly 70 distribution and manufacturing facilities, and approximately 3,000 employees.

"The combination of Veritiv and Orora Packaging Solutions will significantly enhance the value we deliver to our customers," said Sal Abbate, CEO of Veritiv. "By uniting two successful players with a shared commitment to innovation, sustainability, and exceptional

customer experiences, we are poised to offer a wide range of products and value-added solutions that meet even the most complex packaging and supply chain needs. Our complementary business strategies and core values make this partnership a natural fit."

The transaction is subject to regulatory approvals and is expected to be completed in the fourth quarter of 2024.

Georgia-Pacific Holds Grand Opening for \$550 Million Green Bay Tissue Mill

Georgia-Pacific on Sept. 18 celebrated the completion of its investment initiatives at the Green Bay Broadway Facility. The nearly \$550 million expansion includes a new through-air-dried (TAD) paper machine and three converting lines that will produce Brawny® paper towels and other premium private label brands for the retail market.

Construction for the initiative began in July 2022, and not only helps support Georgia-Pacific's own retail towel brands and the growth of both current and potential premium private label brands, but also reduces manual "touches." This is a critical part of the new paper machine's production process, the associated converting equipment, and the overall infrastructure. With the entire production process nearly 85%

automated, the technology-focused jobs as part of this project will manage high levels of automation across the entire product system.

The new TAD machine adds thousands of tons of tissue production capacity to the Broadway mill, which already operates seven other paper machines and several converting operations.

The entire expansion project is massive — spanning approximately 600,000 square feet.

"[Sept. 18] is an exciting day for Georgia-Pacific," said John Nundahl, vice president of manufacturing, Georgia-Pacific. "After more than two years, it is wonderful to see the results of this new investment in the form of more than 100 full-time jobs, enhanced levels of technology and automation, and production capabilities that will produce



Brawny paper towels and other premium private-label brands."

The Broadway manufacturing facility now employs more than 1,000 full-time employees who support the production of paper products for Georgia-Pacific's away-from-home and retail businesses.

First Quality Tissue to Install Two New Thru-Air-Dried Paper Machines

First Quality Tissue announced a major expansion initiative that includes a commitment to install two new Thru-Air-Dried (TAD) paper machines with associated converting facilities at a new location to be announced in the near future.

The company estimates the first paper machine to be operational in 2027 with the



second machine coming online approximately eighteen months thereafter.

This new investment will add additional capacity to First Quality's existing operations, which currently includes eight TAD machines at two manufacturing sites located in Lock Haven, Pennsylvania and Anderson, South Carolina.



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NORTH AMERICA

Kruger Investing \$32.4 Million in Modernization Project at Kamloops Pulp Mill

Kruger announced a \$32.4 million investment at its Kamloops Pulp Mill in British Columbia, Canada, to implement innovative technology to diversify its product portfolio and expand into fast growing markets.

The governments of Canada and British Columbia are contributing \$5 million each to this project through the Investments in Forest Industry Transformation (IFIT) program (Canada) and the BC Manufacturing Jobs Fund.

"We are very grateful for the financial support from the IFIT program and the BC Manufacturing Jobs Fund," said Irene Preto, General Manager, Kruger Kamloops.

Kruger explained that Kamloops' new pulp washing system will enhance the plant's effectiveness and significantly reduce inorganic

material and talc in the finished product. The process will also result in a notable reduction in bleaching chemical usage.

This technology will be combined with advanced controls and AI-based capabilities to ensure that the pulp consistently meets the most stringent requirements for specialty products that require ultraclean pulp.

"We're especially excited to implement an innovative technology that will optimize our manufacturing processes, improve our environmental footprint, and reinforce Kruger's position as a competitive supplier of high-quality, ethically sourced and sustainably sound specialty pulp," Preto said.

Slated for completion in 2026, the project will enable Kruger Kamloops to ramp up



production of ultra-clean pulp from 43,000 metric tons in its first year up to more than 115,000 metric tons per year in its third year and beyond.

Kruger acquired the Kamloops Mill from Domtar in June 2022.



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A New Chapter in the Legacy of Paper Excellence

Sometimes it takes an adverse event to come back stronger than ever—and that was the case for the Paper Excellence Group, a leading global supplier of pulp, paper, tissue, packaging and wood products. The catalyst was a catastrophic fire at its Resolute Menominee location, which destroyed the warehouse, in-feed conveyor and bale finishing line in October 2022. Thankfully, no one was injured and because rebuilding was required, the company took the opportunity to update its recycled bleached kraft pulp mill with state-of-the-art equipment.

"While recent events have tested our resilience, we have handled those adeptly, and are ready to turn the page with exciting news," says Todd Clausen, General Manager of the Menominee mill. "We are very thankful to our loyal customers for their support during this difficult time and are pleased to be able to provide the full range of products and bale packaging options we have in the past."

Modern Facility Transforms Operations

Beginning September 2024, the Paper Excellence Group will bring online a Recycled Bleached Kraft (RBK) bale finishing line that will include the most advanced technology, enhancing bale integrity with bales that are pressed and wrapped in recycled wrapper.

This customer-preferred bale will also improve handling and storage efficiencies, including streamlining truck and railcar loading. Furthermore, the company is underscoring its capital commitment to the business through several other investments. These include an upgraded forward cleaner system which will provide improved ink-removal capabilities and process reliability; an improved pulper trash handling area; and a brand-new warehouse that will feature enhanced safety systems, such as a larger fire suppression system and fire walls with automatic fire doors between storage areas to segregate wastepaper from finished pulp inventory.

"Our commitment to innovation and supply security remains unwavering, and these technological investments not only enhance our production capabilities but also translate into a superior product and reliability for our valued customers," Clausen explains.

Despite the challenges posed by the fire, the Paper Excellence Group returned to service as quickly as possible in March 2023, ensuring that customers continued to receive the high-quality products they expected from Menominee—and now this bale finishing line marks a return to full capabilities. While undergoing repairs, the mill worked diligently redefining their ability to offer an expanded range of end-use applications.



Throughout the disruption, Clausen emphasizes that the pulp quality was never impacted. "Customers can expect the same levels of consistent brightness and cleanliness they've always valued."

Krafting a Better Result with Recycled Bleached Kraft

The Menominee mill's signature product, its Recycled Bleached Kraft (RBK), will maintain the consistency customers have come to expect, while the enhanced production investments will ensure a reliable supply for years to come.

The sustainable product is 100% air dried, a process ensuring the highest-quality product and bale integrity when compared to other drying methods, and is certified to FSC® Recycled standards as well as SFI®.

The deinking process is the most advanced in the industry due to multiple stages of cleaning that remove impurities, giving the mill the ability to produce a consistently superior clean pulp, that's ideal for all paper, packaging (food and non-food) or tissue needs.

To complement this superior product, the Paper Excellence Group continues to provide the caliber of technical support and industry-leading customer service. "We look forward to speaking with clients about how we can elevate any project they have in mind with our RBK," says John McDonald, Vice President and Managing Director – The Americas for the Paper Excellence Group.

A Bright Future

"While no company wishes to go through an event like we did, we are thrilled to return to our normal operating system, reaffirming our commitment to excellence and safety," McDonald says. "We are proud of these new enhancements that underscore our commitment to pulp—and most importantly, all of our customers."

**For more information, please contact
Ginger Bower, General Sales Manager
Ginger.Bower@resolutefp.com**



SOUTH AMERICA

Suzano Begins Operation of New Pulp Mill in Mato Grosso do Sul

Suzano on July 21 started operations at its new pulp mill in Ribas do Rio Pardo, located in the state of Mato Grosso do Sul, Brazil. The new pulp mill, which Suzano named “Cerrado Project” while under construction, has the capacity to produce 2.55 million tons per year of eucalyptus pulp.

The project is the result of a total investment of R\$22.2 billion (US\$4.3 billion), of which R\$15.9 billion (US\$3.1 billion) was earmarked for the construction of the mill and R\$6.3 billion (US\$1.2 billion) for initiatives such as the formation of the planting base and the logistics structure for the flow of cellulose.

“The successful completion of the Cerrado



Project reflects the dedication and executional skills of each person involved in this grand and transformational project, and demonstrates the culture of excellence that permeates the entire organization, masterfully led by Walter Schalka over the past 11 years,” said Beto Abreu, newly appointed CEO of Suzano.

“His vision and ambition led the company to deliver a project within budget and that, at every stage, adhered to Suzano’s core focus of supporting sustainability and having a positive local impact.”

With the start of operations at the new unit, Suzano’s installed pulp production capacity will increase from 10.9 million to 13.5 million tons per year, representing an increase of more than 20% over the company’s current production.

Suzano also has the capacity to produce 1.5 million tons of paper per year, including sanitary paper, printing and writing paper, and packaging paper, among other items that use pulp as a raw material.

EUROPE

UPM Closes Hürth Newsprint Mill; to Shut Fine Paper Machine at Nordland Papier

UPM Communication Papers has permanently closed its Hürth newsprint mill and will shut-down one fine paper machine at Nordland Papier in Dörpen (PM 3). Both mills are located in Germany.

The number of positions affected is 338. Graphic paper production in Hürth ended on August 31 and Nordland Papier’s PM 3 will be shut-down by the end of 2024 at the latest, resulting in annual reductions of 330,000 tonnes of newsprint paper

capacity and 280,000 tonnes of uncoated fine paper capacity.

UPM explained that graphic paper demand has continued to decline, reflecting the overall trend in paper consumption driven by digitalization. The decline in demand accentuated in 2023 and a durable recovery is not expected, resulting in significant over-capacity in the market.

UPM Hürth manufactures newsprint papers with the annual capacity of

330,000 tonnes. Located in North Rhine Westphalia, Germany, the site employs about 135 people.

UPM Nordland Papier produces uncoated and coated office and printing papers as well as specialty papers. The Dörpen paper mill is the largest of its kind in Europe and produces up to 1.2 million tons of fine and specialty paper annually. Located in Lower Saxony, it employs approximately 1,150 people at the paper mill.

Ahlstrom Launches Study for Adding Saturation and Release Coating Capability for Tape Base Papers

Ahlstrom has initiated a feasibility study for investing in tape base paper saturation and release coating capability. The feasibility study evaluates the most suitable approach to deliver these capabilities.

According to Ahlstrom, the potential investment would help meet the increased customer demand — mainly in the Americas — by further enhancing Ahlstrom’s existing tape product offering to include specialty



base papers, especially creped base papers, that are saturated and coated.

Ahlstrom explained that the potential investment would expand its offering of sustainable solutions by introducing products

with improved sustainability properties like better recyclability and increased use of renewable materials.

“We are launching this study as a step to investigate the best way to access the capability that supports the needs of our customers now and in the future,” said Sohrab Kazemahvazi, Vice President of Ahlstrom’s Tape business.

A final decision is expected to be made shortly after the study is completed.

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EUROPE

Norske Skog Provides Updates on Strategic Projects in France and Norway

Norske Skog provided updates on two major projects — Norske Skog Golbey in France and Norske Skog Saugbrugs in Norway.

According to the company, containerboard production at Norske Skog Golbey is expected to start during the first quarter of 2025. Norske Skog previously estimated production to begin in the second half of 2024.

The Golbey project involves the conversion of paper machine 1 (PM1) from the production of newsprint to recycled containerboard. The machine will have the capacity to produce 550,000 tonnes per year and is expected to reach 95% utilization within 2-3 years after startup.

Commissioning of the roll warehouse, containerboard winder, and the effluent station is ongoing.

In addition, pre-commissioning (I/O check) has started for the OCC drum pulper and will start in early October for PM1. However, work relating to piping and electrical cabling



has taken longer than planned.

The net investment amount has increased to EUR 320 million from previous EUR 300 million as a result of the revised timeline and the additional work required, Norske Skog noted.

At Norske Skog Saugbrugs, the company has started a study that will form the basis of building a bleached chemi-thermomechanical

pulp (BCTMP) production line at the mill in Halden, Norway. Currently, the study is being conducted with support from engineering consultants and vendor dialogues. The final investment decision is still expected during the first half of 2025.

Geir Drangslund, CEO of Norske Skog, commented, “Completion of the containerboard project at Golbey remains a top priority across the Norske Skog group and for me personally. We will do our utmost to complete the project within the updated time frame and budget, and look forward to start customer deliveries. This project has provided us with important lessons that will be implemented in the BCTMP project at Saugbrugs.”

The Norske Skog Group operates four mills in Europe, two of which will produce recycled packaging paper following ongoing conversion projects. In addition, the Group operates one paper mill in Australia.

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EUROPE

UPM Pulp to Temporarily Curtail Production at Kymi and Kaukas Pulp Mills

UPM is temporarily curtailing production at its UPM Kaukas and UPM Kymi pulp mills in Finland to adjust their production to meet market conditions.

“We are adjusting our production as a normal measure in line with market and cost developments, focusing on profitability,” said Marko Sundqvist, Vice President, Pulp Operations Finland.

The shutdown of the Kaukas pulp mill began on September 9 and the shutdown of the Kymi pulp mill on September 23.

UPM estimated that the shutdowns would last for three weeks. Maintenance work will be carried out during part of the shutdown period, but temporary layoffs are possible.

UPM’s pulp mills in Pietarsaari and in Uruguay are continuing to run at full capacity. Deliveries to customers will continue normally during the shutdowns.

The Kaukas mill, which is located in Lappeenranta in South East Finland, is an integrated facility that consists of the pulp mill, a mill producing magazine paper, a sawmill, a biorefinery producing wood-based diesel, and UPM’s research center. The pulp mill has the capacity to produce 700,000 tonnes per year of softwood pulp on two production lines.

The Kymi mill is located in Kouvola in South East Finland. The integrated Kymi mill includes a pulp mill and a paper mill.



The pulp mill has the capacity to produce 870,000 tonnes per year of softwood and birch pulp.

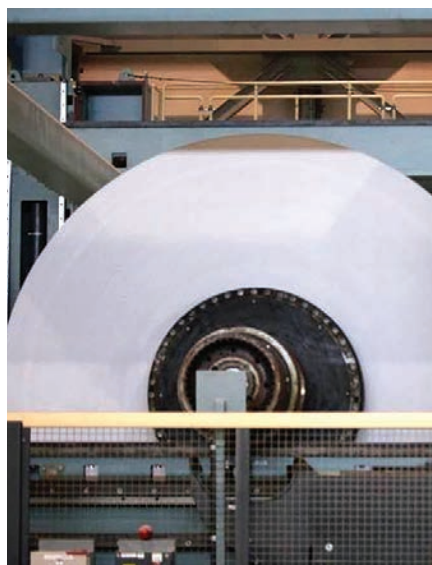
JAPAN

Nippon Paper to Reduce Graphic Paper Capacity in 2025, Expand Tissue Production

Nippon Paper Industries announced its decision to reduce graphic paper capacity through the shut-down of two paper machines — one at Shiraoi Mill and the other at Yatsushiro Mill. Both mills are located in Japan.

Nippon Paper also said that it has decided to start producing “Household Paper” at Yatsushiro Mill, beginning in 2027. Household paper includes facial tissue, bath tissue, paper towels, pre-moistened wipes, and personal care products. The company said the mill’s production will primarily target exports.

In a press release, Nippon Paper said, “In response to the acceleration of demand decline of graphic paper, the company has been working on consolidating production sites, improving productivity, and reducing GHG emissions in an integrated manner, as well as expanding growth areas such as



Daily-Life Products Business by leveraging its existing resources.”

At Shiraoi Mill, the No. 8 paper machine, which has the capacity to produce 64,000

tons per year of fine paper, will be shut down around the end of September 2025. The mill’s remaining production will be used to expand products other than graphic paper.

At Yatsushiro Mill, its N2 paper machine, which has the capacity to produce 232,000 tons per year of newsprint, will be shut down around the end of June 2025. At the same time, No. 9 coal-fired boiler will be shut down by the end of November 2025 to reduce GHG emissions, eliminating the entire coal utilization at Yatsushiro Mill.

The company will continue manufacturing the products made with these machines at its facilities including the abovementioned mills. The employees involved in the machines that will be shut down basically continue to be employed within their respective mills,” Nippon Paper said.

NEW ZEALAND

Oji Fibre Solutions Closes Penrose Recycled Paper Mill in Auckland, New Zealand

Oji Fibre Solutions (OjiFS) has decided to close its recycled paper mill in Penrose, Auckland, New Zealand. The Penrose Mill specializes in manufacturing recycled paper grades only (recycled medium liner), manufacturing around 78,000 tonnes per year.

"This is a sad day (Sept. 18) for OjiFS and particularly our Penrose Mill employees," said CEO, Dr. Jon Ryder. "While this closure will impact directly on our 75 people at the mill, we will continue serving our customers with as little disruption as possible.

"Closing Penrose Mill will not change our Fullcircle operations. We will continue to collect wastepaper and continue to recycle around 90,000 tonnes of cardboard per year at our Kinleith Mill, near Tokoroa. OjiFS will remain New Zealand's largest paper recycler."



OjiFS operates two other mills in New Zealand — the Kinleith Mill, which produces over half a million tonnes per year of bleached softwood market pulp and kraft linerboard paper (from virgin fibre and recycled fibre) annually; and the Tasman Mill, which produces unbleached kraft pulp and K25

fibre cement pulp.

Dr. Ryder continued, "I would like to emphasize that this decision to close Penrose Mill is in no way a reflection of the caliber, dedication and skill of each and every one of our 75 staff there.

"Penrose Mill has suffered a three-year pattern of losses, with no prospect of the situation improving.

"As I've said before, these losses are caused by several issues, including but not limited to, dramatically rising energy costs, and freight and labor costs. We have looked at technology and other changes to save input costs. We have also considered options presented by our staff and their unions.

"At the end of the day, however, there is nothing we could find that would make a difference," Dr. Ryder concluded.

INDUSTRY SUPPLIERS

Valmet to Supply Complete 3.5 Million TPY Pulp Mill to Arauco in Brazil

The Board of Directors of Arauco have approved an investment for a complete pulp mill and selected Valmet as the supplier for the project. Valmet's scope will be the delivery of a complete pulp mill including full-scope automation and flow control solutions.

The contract is estimated to be finalized by the end of 2024, Valmet said.

The pulp mill will be built in Inocência, in the state of Mato Grosso do Sul, Brazil.

According to Valmet, the new pulp mill will be the world's largest single-phase pulp mill project with 3.5 million tonne per year pulp production capacity.

The value of the order for Valmet is over EUR 1 billion.

The anticipated delivery will have an important employment impact on Valmet

and its subcontractors especially in Brazil, Finland, Sweden, Denmark, India and China, Valmet noted.

In June of 2022, Arauco moved forward with its intention to build the new pulp mill, signing a US\$3 billion investment collaboration agreement with the government of Mato Grosso Do Sul. Arauco has named the initiative "Project Sucuriú."

"This is an important and decisive stage of our Sucuriú Project, which will feature high expertise and state-of-the-art technology," said Cristian Infante, Global CEO of Arauco.

Thomas Hinnerskov, President and CEO of Valmet, commented, "This investment is a significant milestone for the industry, and we are proud to be selected as the partner for Arauco in this major project. Arauco's

new pulp mill will be the largest single-phase pulp mill project in the world and will be a showcase for Valmet's sustainable technologies. In addition, the mill will generate a significant amount of excess bioelectricity, contributing positively to the sustainable energy supply of the area."

Valmet will deliver the full production process from wood handling to ready pulp bales to produce hardwood pulp, as well as automation system and related flow control solutions for the whole mill including features from Valmet's Industrial Internet offering.

Valmet's scope of delivery also includes the engineering, procurement, and construction, as well as civil construction and commissioning works at the site.

The new mill is estimated to start-up in the second half of 2027.

INDUSTRY SUPPLIERS

Voith Transitions Navigator Setúbal Mill's PM 1 and PM 3 to Seamed Press Felts

Voith announced that Navigator Paper Setúbal's PM 1 and PM 3 are now operating with seamed press felts in all press positions for the first time.

According to Voith, the successful transition resulted from a three-year-long collaborative development between the Setúbal and Voith teams with the common goal of transitioning all press felt positions to seamed felt designs.

"The challenge is to ensure that seam-marking meets satisfactory standards," explained Ricardo Silva, Sales & Service Engineer at Voith Paper. "With dedication and persistence from both the Setúbal and Voith teams, we



have made this important step forward."

Orlando Ferreira, Superintendent PM 1 and PM 3, explained that using seamed press felts makes changing felts faster with less workforce and without the need to cantilever the press section. In addition, the seamed press felts significantly improve

occupational safety in paper production and increase time efficiency.

"The installation of endless felts almost required the disassembly of the press section," Ferreira pointed out. "With the seam felts, we have significantly reduced the risk associated with this activity and improved working conditions."

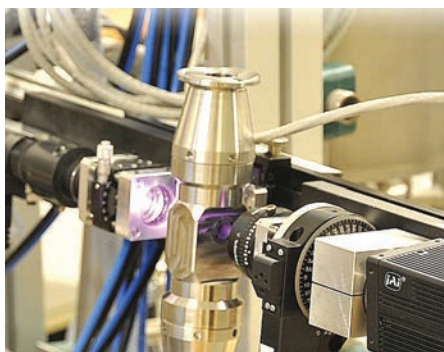
The Navigator Company's Setúbal Industrial Complex (paper mill), which is located on the Mitrena peninsula, near the city of Setúbal, Portugal, includes a pulp mill and two paper machines. The machines' combined production capacity is about 775,000 tons per year of uncoated woodfree paper (UWF).

ANDRITZ Acquires Analyzer and Measurement Company PulpEye

ANDRITZ has acquired the Swedish analyzer and measurement technology company PulpEye. The acquisition complements ANDRITZ's capabilities by adding the core pulp quality analyzers and measurements into the group's automation and digitalization portfolio.

Terms of the deal were not disclosed.

PulpEye provides pulp, paper and board producers with a wide range of online pulp analyzers, measurements and controls ranging from chip quality, kappa to fiber properties and more throughout the process.



"We are very pleased to welcome the PulpEye team with its excellent analyzer portfolio to ANDRITZ," said Stephan Keuschnigg-Zingl,

Senior Vice President Pulp and Paper Automation and Digitalization at ANDRITZ. "This acquisition further strengthens our offering in automation and digitalization and allows us to provide reliable analyzers to measure all the main quality parameters of pulp processing, as well as new solutions and services leveraging them."

ANDRITZ said it will continue to invest in the further development of the PulpEye product line and will establish a dedicated service network to provide customers with global support.

EPIQ Machinery Expands Footprint into South America

EPIQ Machinery recently announced that its Equipment Solutions for the pulp and paper industry has extended its reach to South America, starting with a focus on Brazil.

According to EPIQ, it has entered into an agreement with Logica Automation whereby a team in Brazil named Latin America Industrial provides the contractor with the ability to represent and sell EPIQ Machinery AD and EPIQ DTA line of products. In addition, a team of experts is available to assist with

implementation and technical support for the products.

"Driven by [our] passion for challenges, EPIQ Machinery and Logica Automation share similar vision of offering innovative technological solution," EPIQ stated in a press release. "Together, we will have the capacity of offering cutting-edge turnkey solutions to our customers."

"EPIQ Machinery and Logica Automation partnership merges the ingenuity of



EPIQ Machinery, with Logica Automation technical expertise along with their South America market insights," EPIQ concluded.

The Spin on Toilet Paper

It may not be the most glamorous consumer product on the shelf, but in its early days, toilet paper held audience with ancient Emperors.

CHINA...AD 1391. The Bureau of Imperial Supplies began producing 720,000 sheets of toilet paper a year, each sheet measuring two feet by three feet—for use by the Emperors.

UNITED STATES...1857. A New Yorker named Joseph C. Gayetty produced the first packaged bathroom tissue in the United States. The Gayetty Firm from New Jersey produced the first toilet paper named “The Therapeutic Paper.” It contained an abundance of aloe, a curative addition. The company sold it in packs of 500 sheets for fifty cents, and Joseph Gayetty had his name printed on each sheet!

GREAT BRITAIN...1880. British Perforated Paper Company produces boxes of individual squares of toilet paper. This paper was very coarse.

UNITED STATES...1887. The Scott Paper Company is the first company to manufacture tissue on a roll, specifically for the use of toilet paper. However, around the same time, Albany Perforated Wrapping Paper Co. also produced rolls of what the company termed “medicated” toilet paper.



A roll of “medicated” toilet paper produced by Albany Perforated Wrapping Paper Company. The roll is encased in a cardboard container of a foil type paper with printing and graphics. A promotion on the wrapper claims that use of this product will prevent and cure hemorrhoids. It originally sold for 50 cents.

Scott Paper Gets Rolling

Scott Paper Company was founded in 1879 by brothers E. Irvin and Clarence Scott in Philadelphia and specialized in producing toilet paper.

At first they purchased paper and tissue from outside suppliers and cut, rolled and packaged the paper. They converted large parent rolls of tissue into small rolls and stacked sheets



The founders of Scott Paper, E. Irvin and Clarence R. Scott.

and began to market the product through drug and variety stores under private label names.

In 1896, Irvin’s son Arthur joined the company at the age of 21. He convinced his father and uncle to phase out their private label business and concentrate on their own brand names. With this, Scott purchased the private label name Waldorf from a Philadelphian “paper jobber” named Albert DeCerne in 1902 and began producing this as their first brand name.

As sales grew, it became evident that production changes were necessary to guarantee consistency. In 1910, Scott bought an abandoned soap factory in Chester, 5 miles south of Philadelphia for \$85,000 and began making their own parent rolls of tissue, 72” wide at 150-200 feet per minute instead of buying from others. Rolls were sold with either 650 or 1,000 perforated sheets.

In 1915, Scott installed an advanced, high-speed Fourdrinier paper machine. It made paper 148” wide at 500 feet per minute.

In 1921, their brand, Waldorf, represented 64% of Scott’s total case sales. By 1925 Scott became the leading toilet paper company in the world. ■

Editor’s note: Scott was acquired by Kimberly-Clark in 1995, creating a global consumer products company with annual revenue exceeding \$13 billion. Since then, Kimberly-Clark has retained the Scott brand.

PAPER

- *Billerud* has appointed

Doug Schwartz as

President Billerud

North America

and member of the

company's Group

Management Team,

effective Sept. 30. Schwartz replaces

Kevin Kuznicki, who left the company

in June to pursue other ventures.

Schwartz has extensive experience in

the paper industry and most recently

held the position of Vice President

and General Manager, Rigid Paper

Containers at Sonoco.



Doug Schwartz

- *Domtar* has named **Tracy Altenbaumer**

the new Mill Manager

of the company's

Ashdown Mill in

Arkansas. Altenbaumer

succeeds **J.C. Allaire**, who was recently

promoted to Vice President of

Manufacturing for the company.



Tracy Altenbaumer

- *International Paper* has elected **Andy Silvernail**

as Chairman of the

Board in addition to

his role as CEO, effective

October 1. **Mark**

Sutton, who continued

to serve in the role of Chairman since

retiring as CEO in May, retired from

the Board on Sept. 30. Silvernail

joined International Paper as CEO in

May 2024.



Andy Silvernail

- *International Paper* elected **Tom Hamic** to a newly created role: Executive Vice President and President of North American

Packaging Solutions. Hamic will be

responsible for leading



Tom Hamic

the company's Container and

Containerboard businesses in North

America. Most recently, Hamic

served as Senior Vice President and

General Manager, North American

Container and Chief Commercial

Officer. He joined IP in 1991.

- *Metsä Fibre* has appointed

Timi Hyppänen as

Senior Vice President,

Business Development.

He previously served

as SVP, Supply Chain.

Hyppänen takes over

his new position from **Kaija Pehu-**

Lehtonen, who has been appointed

Project Director of Metsä Group's

carbon capture project.



Timi Hyppänen

- *Millcraft Paper Company*

has appointed **Greg**

Lovensheimer as

President, marking

the first time in its

104-year history that

the company has appointed a non-

family member to this leadership role.

Lovensheimer, who joined Millcraft in

2013, brings nearly 40 years of experience

in the paper industry. **Travis**

Mrakar, who has led the company as

President since 2012 and has served as

both President and CEO since 2018,

will continue in his role as CEO.



Greg Lovensheimer

- *Port Hawkesbury Paper*

recently hired **Eric**

Huard as the Director

of Specialty Sales.

Huard has over 20

years of experience in

the paper industry and most recently

worked as Sr. Territory Manager for

Pixelle Specialty Solutions. Huard

earned his bachelor's in chemical

engineering from Ecole Polytechnique

(University of Montreal).



Eric Huard

- *Progressive Converting*

(ProCon) has

appointed **Claudio**

Muñoz as the new

Vice President of

Innovation, Sales and

Marketing. In his new role,

Muñoz will join the senior leadership

team and lead the growth and inno-

vation strategies for ProCon's Vireo®

coating business. Muñoz brings

nearly two decades of experience

in the paper industry from roles at

Kimberly Clark, Körber Tissue and

Advanced Micro Devices.



Claudio Muñoz

- *UPM* has appointed

Harald Dialer as

Executive Vice

President, Technology

and UPM Biorefining,

effective Jan. 1, 2025.

Dialer succeeds

Winfried Schaur, who has expressed

his intent to leave the company for

private reasons. Dialer joins UPM

from HCS Group where he has held

the position of Managing Director

and Chief Commercial Officer since

2020. He has a Ph.D. in chemistry

and extensive experience in specialty

chemicals and renewables technologies.



Harald Dialer

- *UPM Raflatac* recently

appointed **Brinder**

Gill as the new Senior

Vice President of the

Americas Region and

a member of the UPM

Raflatac Management

Team. Prior to this appointment,

Gill served as Director of the Paper

Laminates Business Unit at UPM

Raflatac for the same region.



Brinder Gill

INDUSTRY SUPPLIERS

■ *Albany International* has appointed **Merle Stein** as President of its Machine Clothing business segment and elected him an officer of the company. Stein succeeds **Daniel Halftermeyer**, who has stepped down from the position to focus his time on the continued integration of the Heimbach acquisition. Since April 2024, Stein has served as Division Chief Operating Officer for the business segment, and prior to that, since 2022, he was the Vice President Sales & Marketing/Applications for Americas. He joined Albany International in 2011.



Merle Stein

■ *Kadant Johnson* has promoted **Chad Corte** to Vice President and General Manager. In this capacity, he is responsible for the company's operations in Three Rivers, Michigan. Corte has served as Vice President, Finance at Kadant Johnson since 2021 and before that served as the director of customer service. He joined the company in 2007.



Chad Corte

RECOGNITION

■ **Randy Adams**, Health and Safety Manager at *Domtar's* containerboard mill in Kingsport, Tennessee, recently won the Pulp and Paper Safety Association's Distinguished Service Award. The award is the PPSA's highest honor, recognizing individuals for their leadership and service to the association and the paper industry during their careers.

Adams started his career as a clerk in 1979 and soon moved into managerial



DeWayne Bone (left), senior safety director for the Paper Excellence paper and packaging business unit, presented the PPSA Distinguished Service Award to Randy Adams, Health and Safety Manager at the Domtar's Kingsport Mill.

roles in production, quality and raw materials, as well as environmental, health and safety. He joined the paper industry in 2009 as the environmental, health and safety manager for Kruger Products. After a decade, he moved to Graphic Packaging International's mill in West Monroe, Louisiana, as the health and safety manager. Adams briefly returned to Kruger Products before becoming the Kingsport Mill health and safety manager in April 2024.

■ **Tom Groves** of *WCP Solutions* is the 2024 recipient of the National Paper Trade Association's (NPTA) Stanley O. Styles Industry Excellence Award.



Tom Groves

Mr. Groves was presented with the award during the Paper Meets LIVE! business convention that took place Sept. 17-19 in Clearwater Beach, Florida.

The Stanley O. Styles (SOS) Industry Excellence Award is NPTA's highest honor and is awarded to an individual who has had a distinguished career in the printing paper industry. Each year, the SOS Nominations

Committee selects an industry leader who has made a positive impact through innovation and dedication, and whose character represents the ideals for which leaders all strive.

Grove's career in the paper industry began in 1974, marking more than five decades of profound contributions. He started as a sales manager in Portland and eventually went on to become WCP's CEO. After 18 years of service, Groves retired from that leadership role and joined the board of directors.

■ **Lana Wilhelm**, *Paper Excellence Group's* director of Indigenous Relations, has received the prestigious Women in Forestry Award of Excellence from the Forest Products Association of Canada (FPAC).



(l-r) Paper Excellence Group: Jennifer Johnson, vice president, Communications; Lana Wilhelm, director, Indigenous Relations, and Blair Dickerson, vice president, Public Affairs – Canada.

The Women in Forestry Award of Excellence recognizes the contributions and leadership of women in the forest sector. Recipients must demonstrate leadership, innovation and a commitment to the forest industry — qualities that Wilhelm embodies.

A Registered Professional Forester in British Columbia, Wilhelm holds bachelor's degrees in both Arts and Science from Concordia University in Quebec and the University of Northern British Columbia, respectively.

JANUARY 18-20, 2025**Student Summit 2025**

TAPPI

Hilton St. Petersburg Bayfront
St. Petersburg, Florida, USA
tappistudentsummit.org

JANUARY 21-23, 2025**2025 Paper Distribution Conference**

National Paper Trade Association (NPTA)

Ritz-Carlton Golf Resort

Naples, Florida, USA

www.gonpta.com/Events**FEBRUARY 10-13, 2025****Paper Week Canada 2025**

PAPTAC

Fairmont Queen Elizabeth Hotel

Montreal, Canada

www.paperweek.ca**FEBRUARY 19, 2025****Converters Expo South**

BNP Media Packaging Group

Greenville Convention Center

Greenville, South Carolina, USA

www.packagingstrategies.com/converters-expo-south

FEBRUARY 21-23, 2025**ASPI Spring 2025 Meeting**

Assoc. of the Suppliers to the Paper Industry

Sand Pearl Resort

Clearwater Beach, Florida, USA

www.aspinet.org**MARCH 5-7, 2025****Sustainability in Packaging US**

Smithers

Swissotel Chicago

Chicago, Illinois, USA

www.sustainability-in-packaging.com**APRIL 8-10, 2025****Tissue World Düsseldorf**

Informa Markets

Messe Düsseldorf

Düsseldorf, Germany

www.tissueworld.com**APRIL 23-25, 2025****PPC Spring Outlook & Strategies Conference**

Paperboard Packaging Council

JW Marriott Indianapolis

Indianapolis, Indiana, USA

paperbox.org/event**APRIL 30 - MAY 2, 2025****AICC 2025 Spring Meeting**

The Independent Packaging Association

Hyatt Regency Coconut Point Resort

Bonita Springs, Florida, USA

www.aiccbox.org**MAY 4-7, 2025****TAPPICon 2025**

TAPPI

Minneapolis Convention Center

Minneapolis, Minnesota, USA

tappicon.org**MAY 20-21, 2025****Converters Expo**

BNP Media Packaging Group

Lambeau Field

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www.packagingstrategies.com/converters-expo

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Green Bay Packaging: 91 Years of Innovation in the Corrugated Industry

Green Bay Packaging's founder, George Kress, believed in building a better box — a concept the company has firmly and successfully embraced since 1933.

For 91 years, Green Bay Packaging (GBP) has been a leading innovator within the packaging industry. The company says its mission is simple: “Offer quality and environmentally friendly products that are cost-effective for our customers.”

Based in Green Bay, Wisconsin, the family-owned company has achieved this goal through safe manufacturing processes and an employee-first mindset. With longevity in mind, GBP has continued to grow with new operations across the US. Beginning as a box company in 1933, the company grew within the Green Bay area with the Folding Carton Division and Green Bay Mill Division before expanding to over 40 locations in 16 states.

Combined with innovative designs, the adoption of cutting-edge technology, and sustainability initiatives, GBP has earned an outstanding reputation as one of the most trustworthy packaging businesses in the US.

“A key driver of our continued growth has been our exceptional team,” GBP says. “As a family-owned business, we are fortunate to have had a legacy of three generations of excellent leadership.

“At our core, Green Bay Packaging has remained dedicated to the betterment of our people and processes. With over 4,800 employees, we strive to operate in a safe work environment.



The original “The Marguerite K”



The new “The Marguerite K”

We truly value our management team and driven employees, and it shows with employee longevity averaging over 10 years,” the company adds.

A Commitment to Sustainability

GBP's commitment to sustainability is a core value that stands on. As far back as 1957, the company began collecting



The new PM 4 has the capacity to produce 685,000 short tons (621,422 metric tons) per year of testliner.

old corrugated containers (OCC) to produce corrugated medium in the Green Bay paper mill — this occurred 20 years before the concept of “recycling” was recognized.

GBP emphasizes that it strives to manufacture the most sustainable products with a focus on reducing waste and using renewable resources through initiatives like recycling water from its manufacturing plants, which has helped the company to significantly lower its carbon footprint.

GBP’s sustainability goals include:

- Reducing our greenhouse gas emissions by 20% per ton of paper production.
- Continuing to monitor and reduce our watershed impacts.
- Achieving a 90% landfill diversion by 2030.

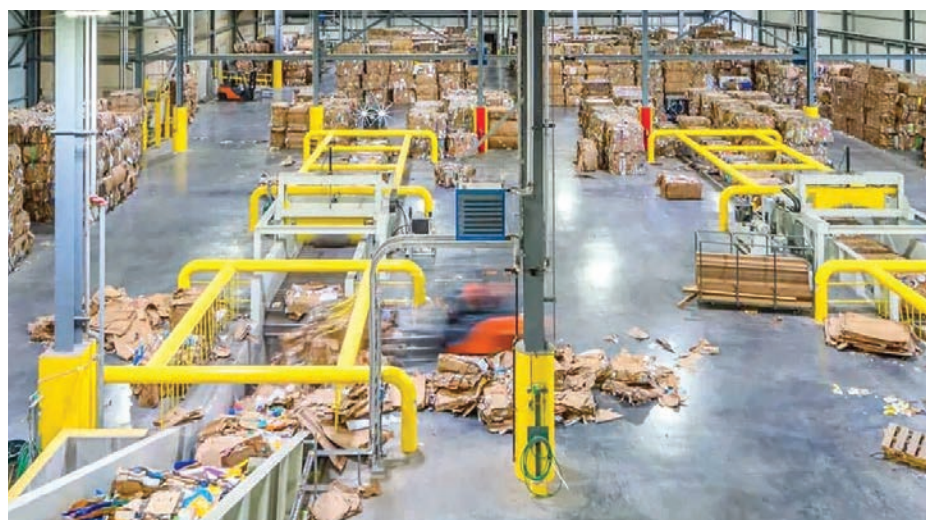
By creating actionable goals, Green Bay Packaging has accomplished sustainable measures in energy, water management, waste diversion, and forestry. The company designs packaging for the environment, sourcing fibers from certified forests and optimizing resources to produce green products that are 100% recyclable.

With a first in-the-world net-zero

circular reclaimed water system at the Green Bay Mill, GBP has achieved one of the most environmentally friendly recycled mills in North America.

In 2022, about one year after the new mill opened, Underwriters’ Laboratories (UL) certified it as a net-zero water user that returns as much or more water of the same quality to the Great Lakes as it draws.

In an article published by the Green Bay Press Gazette in February 2022, journalist Jeff Bollier explained, “The mill accomplishes this via a one-of-a-



As far back as 1957, Green Bay Packaging began collecting old corrugated containers (OCC) to produce corrugated medium in the Green Bay paper mill – a process that continues today.

kind partnership with NEW Water, the Green Bay area wastewater utility, that allows it to recycle waste water and supplement it with partially treated wastewater from the utility.”

In the article, NEW Water Executive Director Thomas Sigmund noted, “It took an awful lot of cooperation and creative thinking by Green Bay Packaging, NEW Water, the (Wisconsin) DNR, the city of Green Bay and Brown County. They took some very unique situations and created wins for everybody, including the environment.”

Investing in Technology

Over the years, GBP has invested heavily in cutting-edge technology to ensure that its products meet the highest standards of quality and safety while at the same time placing a great deal of focus on sustainability.

Before beginning construction of the Green Bay Mill, GBP set out to design a facility with the future in mind. Plans included a complete degree of automation for safety, environmental control, sustainability, and process quality. In 2021, the company saw this plan come to life with the successful start-up of the new mill.

Green Bay Packaging's PM 4: "The Marguerite K"

In 2021, Green Bay Packaging successfully started up its new packaging paper mill in Green Bay, Wisconsin. The centerpiece of the mill is the Voith-supplied paper machine. With a wire width of 331" (8,400 mm) and a design speed of 3,937 fpm (1,200 m/min), "The Marguerite K" produces testliner at basis weights between 23 and 52 lbs/1000ft² (112 and 254 g/m²). The testliner machine has the capacity to produce 550,000 short tons (606,271 metric tons) per year, which has enabled GBP to more than double its production capacity at the Green Bay plant. GBP's PM 4 has been given the



name "The Marguerite K" as a tribute to the wife of the company's founder, George F. Kress. In the company's early years, Marguerite Kress was an

important factor in its initial successes. She worked at the company until 1935 and thereafter was heavily involved in the company's ongoing development.

In the Green Bay recycled paper mill, the company utilizes Industry 4.0 manufacturing technology for better decision-making. Industry 4.0 encapsulates the rapid change in technology within the paper industry due to advanced automation, opening the door to predictive maintenance, higher quality processes, and new levels of efficiency and responsiveness to produce the highest quality recycled sheet.

Green Bay Packaging has also designed two new corrugated box 'Super-Plants' in Tulsa, Oklahoma (opened in 2021) and Fort Worth, Texas (opened in 2023), which have allowed GBP to expand its operation with the latest production equipment for full efficiency and to keep all existing employees.

Giving Back to the Communities Where It Operates

GBP is dedicated to reinvesting in the communities where it operates. From providing jobs for local residents to supporting numerous charitable initiatives, GBP is proud to be a strong corporate citizen.

The George Kress Foundation was founded in 1953 with the mission of caring for the people in the Green Bay community. With a philanthropic focus, the foundation contributes to programs serving young people, education, health, and cultural activities.

"Green Bay Packaging is dedicated to giving back with intentional actions that keep our communities strong, diverse, and vibrant," the company says.

In addition, GBP strives to create an employee-centric environment.

With safety top of mind, the company is dedicated to the well-being of its employees, providing competitive benefits and professional development opportunities that help workers grow beyond their jobs.

As 2024 marks 91 years of successful operation, Green Bay Packaging takes pride in its remarkable achievements thus far and will continue creating a lasting legacy as an industry leader because of those who support it. ■

Green Bay Packaging is a family-owned, vertically integrated company consisting of corrugated container plants, a folding carton facility, recycled and virgin containerboard mills, pressure-sensitive label roll stock plants, timberlands, a paper slitting operation and a sawmill facility. The company is dedicated to the innovative development of its products and forestry resources, focusing on safety, sustainability, quality, and continuous improvement.

A circular inset image showing four people (two women and two men) walking through a modern industrial facility. They are dressed in business casual attire; the women are in blue polo shirts and jeans, while the men are in a light blue button-down shirt and a dark blue polo shirt, both with jeans. One woman is holding a yellow hard hat. The background of the entire image is a blurred view of a large industrial building with a high ceiling and glass walls.

Future(s) unfolding

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Boiler SCR Technology: A Pivotal Step Towards Environmental Sustainability

As emission reductions and decarbonization continue to be an important part of our global sustainability efforts, the industry needs reliable products that not only ensure compliance but also drive sustainability and operational efficiency.

By Chelsey Ryker, Marketing Manager, Nationwide Boiler



A 120,000 lb/hr package watertube rental boiler with CataStak™ SCR for single-digit NOx compliance.

Emission regulations for combustion systems have been in place for more than half a century and in the 1990's, the Clean Air Act put a spotlight on emissions specifically from industrial boilers. Boiler owners were required to retrofit or replace equipment that did not meet the new limits set for emissions of nitrogen oxides (NOx), carbon monoxide (CO), particulate matter (PM), and sulfur dioxide (SO2). While low NOx burner technology was one option that addressed NOx reduction, these burners had limitations including the ability to handle load swings and maintain flame stability. With evolving requirements in areas such as California, burners alone were not able to reliably accomplish the single-digit emissions performance so alternative "back-end" solutions were explored.

Focusing on environmentally sustainable solutions is something that we are all very familiar with today and, while the focus has shifted to reducing our carbon footprint, NOx emission limits in some areas have reached an all-time low of

2½ ppmvd @ 3% O2. Although there are more reliable ultra-low NOx burner solutions available now, that was not the case back in the 90's. The solution in the years that followed the Clean Air Act was, and still is, Selective Catalytic Reduction (SCR).

CataStak SCR: Ultra-low, Single-digit NOx Performance

Nationwide Boiler developed the CataStak™ SCR to address stringent emissions regulations specifically for their fleet of package watertube rental boilers and eventually, they applied the technology to firetube boilers, gas turbines, and other fired equipment applications. The CataStak is a post-combustion, selective catalytic reduction system proven to achieve ultra-low, single-digit NOx performance. The CataStak provides both economical and practical benefits to users through improved operating efficiency and lower emissions, it provides a reasonable return on investment, and it often exceeds emission limits beyond what is required. With the ability to reduce NOx, CO, and VOC, the CataStak was a pivotal step towards sustainable steam solutions for the boiler industry.

Larry Day, Nationwide Boiler's current President & CEO, drove the integration of such back-end solutions into the company's fleet of rental boilers. The objective was clear: to develop an SCR system that would reliably meet and exceed current and future emission limits without compromising critical boiler functionalities.

Known today as the CataStak, Nationwide Boiler started off as a user operating these SCR's across their fleet of rental boilers. The CataStak was proven to offer dependable performance through experience, testing as low as 1 ppm NOx time and time again, before it was ever applied to permanent applications.

In one case study, the CataStak reduced NOx emissions to less than 1 ppm NOx and resulted in an Energy Efficiency Rebate of almost \$300,000 for a prominent Food Processing facility in California. The end-user purchased a new Babcock and Wilcox 50,000 lb/hr, 275 psi boiler equipped with a standard 30 ppm low NOx burner, a CataStak SCR system, an EconoStak fuel economizer, and a condensing economizer. Once installed and commissioned, it was certified to operate at better than 95% fuel-to-steam efficiency with less than 1 ppm NOx emissions. Rather than what was available at the time — a more expensive and complex ultra-low NOx burner with an oversized FD fan — the CataStak proved to be the ideal solution for reducing NOx emissions economically, efficiently and with minimal operator intervention.

With more than 250 installations across the country, the CataStak was an early innovation and just one step towards a more sustainable future for steam production.

NOx Reduction Today

In addition to SCR technology, now



Package firetube boiler with proven 2½ ppm burner.

there are more reliable, ultra-low NOx burners that address single-digit NOx limits as low as 2 ½ ppmvd at 3% O₂. Some of these burners utilize flue gas recirculation (FGR) and higher gas delivery pressures, while others achieve 2 ½ ppm with lower residual O₂, normal gas delivery pressures, and no need for FGR. The 2 ½ ppm burner solution is currently only available for firetube boiler applications.

Proven Technologies Reapplied for Decarbonization

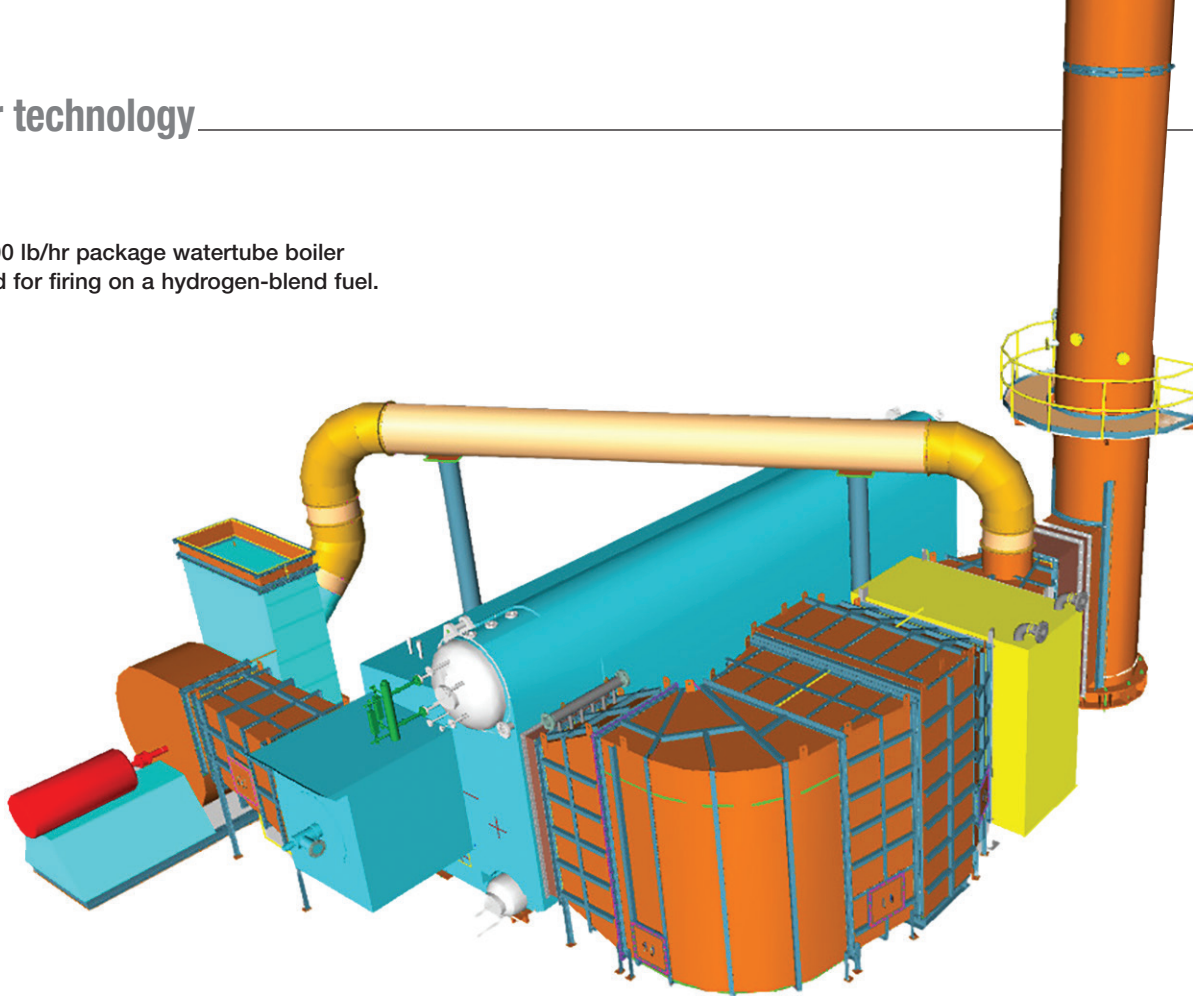
With today's focus geared toward the reduction of carbon and other greenhouse gas emissions, there are numerous proven technologies that are being reapplied for decarbonization efforts. Fossil fuel alternatives provide one sustainable approach to steam and energy production, and this presents options, like hydrogen,

biofuels, and electricity sourced from renewable outlets.

Burners have been successfully fired on hydrogen and biofuels for more than 50 years, and these fuels are proven to be viable, carbonless options for industrial steam production. The limiting factor, however, is hydrogen supply and the production of green hydrogen. Green hydrogen hubs, or networks of hydrogen producers, consumers, and local infrastructure, are currently being developed and are intended to accelerate the use of hydrogen as a clean energy carrier. Once these hubs are in place and hydrogen is more readily available, it will likely gain even more traction in industrial boiler applications.

One challenge of hydrogen firing is the increase in NOx production but, as covered previously, an SCR can be

A 200,000 lb/hr package watertube boiler designed for firing on a hydrogen-blend fuel.



installed to reduce the increase of NO_x output.

Electric boilers have been around for decades and, most notably, can be found in locations like Quebec, Ontario, and British Columbia due to an electrical grid based mostly on hydro, nuclear, or other non-fossil fuel energy sources.

Leveraging electricity as an alternative, electric boilers offer a clean, controllable,

and highly efficient means of generating high-pressure steam, boasting an impressive 99% conversion of energy input. This method showcases zero emissions, which is especially advantageous for industrial sites with the necessary electricity infrastructure required to support such boilers.

Lastly, we have heat pumps as a sustainable option that supports steam production. While initially geared for HVAC, heat pumps are gaining traction in industrial applications as technology advances. Prepackaged heat pumps are not currently capable of producing high-pressure steam, but they can contribute to industrial processes by providing heat up to 240°F. Driven by electricity, it is a carbonless solution with the added benefit of energy efficiency. A heat pump uses approximately one-third of

the energy compared to traditional electric or fossilfuel heat-generating equipment for the same temperature increase. In fact, a heat pump can typically move three to four times the amount of energy it consumes.

A Continued Focus on Sustainability

As emission reductions and decarbonization continue to be an important part of our global sustainability efforts, the industry needs reliable products that not only ensure compliance but also drive sustainability and operational efficiency. Innovations, like the CataStak and ultra-low NO_x burners, as well as proven technologies, like hydrogen firing and heat pumps, reflect a forward-thinking approach. This aligns with the industry's pursuit of efficient, sustainable, and economically viable solutions. ■

Chelsey Ryker is the Marketing Manager at Nationwide Boiler. She can be reached by email at: cryker@nationwideboiler.com.



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Sustainable Packaging Innovation

How college students are reimagining produce packaging for a circular economy.

By Heidi Brock, President and CEO, American Forest & Paper Association

The possibility for packaging innovation is all around us. In a world where sustainability is always top-of-mind, how can we reimagine packaging for everyday products that is sustainable, made of recyclable materials, and also practical?

A place for such innovation that comes to mind is the produce section of the grocery store. Paperboard packaging may dominate store shelves, but it's striking that you don't see paper packaging alongside fresh fruits and veggies.

We posed this scenario to students at colleges and universities across the U.S. for the Paperboard Packaging Alliance's

(PPA) 2024 Student Design Challenge.

Their task: Create sustainable, stackable paperboard packaging for fresh produce.

Each year, PPA challenges students in leading sustainable packaging design programs to demonstrate their design skills, innovative capacity and savvy in meeting real-world customer needs and marketing scenarios.

PPA is a joint initiative of the American Forest & Paper Association and the Paperboard Packaging Council. The mission is to promote the benefits of paperboard packaging as a material in packaging design and selection. PPA is a proud supporter of collegiate packaging



Grovey Garlic – Rochester Institute of Technology



Lively Roots – California State Polytechnic University

and design programs across the U.S. and Canada, donating thousands of dollars in scholarships, materials, and classroom resources each year.

Fresh Innovations

The designs that ultimately landed in our hands for the 2024 Student Design Challenge were remarkable.

From that initial spark of inspiration through the trial-and-error process and finding the best way to utilize space and materials, perfecting sustainable and durable product packaging is indeed a journey.

What makes me so hopeful for our planet is that these students demonstrated creativity, careful thought, and strategy in their submissions.

The students competing in the Student Design Challenge really leaned into the opportunity to use paper-based materials, thinking through how best to use resources, reduce waste and create lasting value.

This fall, students from across the country will meet in Atlanta, GA to see who will take top honors as the next Student Design Challenge Winner. The top 3 finalists feature student design projects from:

- Rochester Institute of Technology
- California State Polytechnic University
- Pennsylvania College of Art and Design

You can check out their fresh innovations



SPUDS Potatoes – Pennsylvania College of Art and Design

at environmental and social benefits.

Each year, I'm impressed by each submission which highlight the innovation

coming from the next generation of sustainability leaders. And the competition's real-world experience adds value to these students as many Student Design Challenge participants have later pursued careers in packaging design.

This year, we were thrilled to have a former student design challenge winner on our judging panel. Her experience brought a new perspective when it came down to judging each project.

I'm grateful for the opportunity to experience firsthand each submission this summer. And I came away with great confidence in the creativity and ingenuity in this future generation of packaging design leadership. The challenge for all of us is to continue engaging them with meaningful packaging design opportunities. ■

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Challenges and Future Potential of Operational Business Intelligence



Operational business intelligence means advanced analysis of real-time data to offer users extremely fast response times in current production

By Dr. Julius Flitsch, Director Remote Operations Efficiency, Voith



Dr. Julius Flitsch

Until a few years ago, the assumption was still “the more data, the better.” This is not entirely incorrect because data are really vital for digital business models, artificial intelligence and thus for innovative products and services. They are a decisive catalyst in using operational business intelligence in industrial applications and future-ready projects in B2B business.

Of course, it is also important from a company’s view to use data over the entire value-added chain and – in the case of information concerning customers and consumers – even beyond. However, in terms of the volumes of data that are simply exploding, it is becoming clear that quantity alone will just not do.

Data Quality is Crucial

The technologies for collecting data along the entire value-added chain are there and they work: sensors and actuators in machines and plants, edge technologies for fast local processing, networks for transmitting data to centralized computer centers, data storage facilities, databases and algorithms. They all have the necessary maturity. Isolated and integrated solutions from various vendors, interoperable systems, open standards and all interfaces link system worlds together.

Despite this, many companies complain that data for evaluations are contradictory, incomplete or obsolete.

This often leads to management decisions based on insufficient information because the spectrum of available data has not been exhausted. In addition, the characteristics of the data used are sometimes inadequate. The bottom line: the potentially immense benefits of Big Data analyses for manufacturing companies are only available if the quality is adequate.

Challenges in Data-Driven Business Models

The fact that the technologies needed for well-founded intelligent data analyses are mature and available does not mean that they are also ready for use by all companies. As a result, it may seem obvious that this is exactly where investment needs to get off the mark. However, this is not the rule. According to experts, it is primarily the lack of technical understanding that hinders many companies on the road to data-driven business models of operational business intelligence. A targeted assessment or E-learning platforms for digital readiness in industry can help.

Alongside the lack of technical understanding, the complex system landscape required for valid data analyses often slows the productive use of data. IT employees are often faced with the task of linking fully developed, heterogeneous systems that were not conceived to be open or interoperable.

The Way to a Sound Data Strategy

The good news for companies on the road to a sound data strategy is that you already have most of the data you need. Master data and metadata, transaction data, increasingly even data from machines and plants in networked production – all of this is the raw material that can be upgraded into data-driven



The good news for companies on the road to a sound data strategy is that you already have most of the data you need.

business models in an operational business intelligence sense.

Digitizing and Automating Plants and Processes

To truly benefit from data, consistent digitization of business processes over the entire value-added chain is required. Data can only provide meaningful information if they completely cover and represent a company's business activities. This task is handled by Business Process Management (BPM). BPM is concerned with the integration of processes and applications to make the data available. It brings an additional important benefit from the company's point of view.

Digitized processes offer the option of automation, for example, in the form of Robotic Process Automation (RPA) in which robots carry out activities that were previously performed manually. Automation tasks, in turn, are the basis for efficiency increases at the company because they replace expensive, mistake-prone manual processes with the work of IT-assisted systems.

"The Democratization of IT"

While companies have to think about

the technologies, databases, cloud storage, network technologies and algorithms, it doesn't need to be a headache. They are available and can be adapted to individualized needs at little cost.

Here, too, the requirements are shifting in the direction of what many experts call the "democratization of IT." The technologies are so accessible that they can be adapted in engineering departments. Development and extensive integration work by IT departments is becoming less necessary.

And even algorithms do not need to be programmed anymore, merely configured and trained. Even this is a task that can be performed in engineering departments using existing domain knowledge. In this way, data processing in companies becomes operational business intelligence that comes from current processes and can be performed in engineering departments and allows for analysis virtually in real time based on transactional data. ■

For further information about the subject matter presented in this article, contact Dr. Julius Flitsch by email at: Julius.Flitsch@voith.com.

Colossal Load Marks Key Project Milestone

Two massive natural gas power boilers have been delivered and are in-place at International Paper's Cedar River Mill, marking an important milestone in a project to reduce the mill's emissions by approximately 25%.

By Megan Shook, Mill Communications Coordinator, International Paper

Editor's note: This story was originally posted on International Paper's website in July 2024.

On a blustery spring morning in 2023, ceremonial shovels were dug into the dirt, symbolizing the groundbreaking of a significant International Paper capital project, and one of the largest projects in Cedar River Mill's history. Now, a year later, the project to build two natural gas power boilers is full steam ahead.

The \$103 million investment began as many do with plenty of earth moving, underground pipe layment and prep work. With the groundwork complete, the next step was to lay the foundation.



Over 11 weeks, about 5,350 cubic yards of concrete was poured, creating the six-and-a-half-foot thick foundation for the future boilers and water treatment.



The \$103 million investment began as many do with plenty of earth moving, underground pipe layment and prep work.

Foundations and Support

Over 11 weeks, about 5,350 cubic yards of concrete was poured, creating the six-and-a-half-foot thick foundation for the future boilers and water treatment. Approximately 535 trucks brought in the cement over five separate pour dates.

As you can imagine, the magnitude of these pours came with several planning obstacles: logistics, active rail, pump truck placement and weather, to name a few. "All of this was done within a constrained project space," said project team member Pat Naughton.

"And we had to do it while keeping

quality and the safety of all involved at top of mind," added Taylor Walkner, another team member. "Collaboration and engagement was one of the biggest factors in making this portion of the project successful," he said.

Adding to the complexity were Iowa's chilling winter temperatures, which required a special concrete thermal control plan and 24/7 monitoring.

This was only the beginning.

Delivering "Five Elephants"

Built in Lincoln, Nebraska, the two natural gas boilers were the largest fully assembled boilers that could be transported via heavy hauler.

Including the 24-feet wide, 17-feet tall boiler, the massive hauling unit totaled 220 feet and weighed approx. 620,000 pounds. Due to the magnitude of the colossal load, extensive travel requirements were in place to ensure the safety of all involved. Permits were needed in every county and city they planned to travel through. In total, the hauler would need to travel 700 miles through three states, twice over, a journey that required a police escort and lifted power lines.

“The feat of this part of the project was massive. To ship something that is that heavy over the road, takes a large amount of engineering. It was eye-opening once you start diving into the details of how much coordination is required to make sure it’s going to be safe for all parties,” said Tony Cleves, project manager. After a 12-day journey, the first boiler arrived at the mill on March 19. The team then did it all again, and the second boiler was delivered on April 5.

Moving into Position

Once onsite, the team disassembled the transport, rotated the boilers and prepared them for the short journey to the project site.

An 80-wheeled goldhofer — a hydraulic modular platform trailer



Adding to the complexity were Iowa's chilling winter temperatures, which required a special concrete thermal control plan and 24/7 monitoring.

driven by remote control and used for heavy transportation — moved the boilers to the project grounds. Travelling at walking speed, it took less than 30 minutes for crews to move the boilers, watching carefully to ensure levelness of the 24-foot-tall load. A crane was used to lift and lower them into their final resting places.

Over the past year, the mill has been buzzing about this project. “This is a

once in a lifetime opportunity. Not just for the project team, but for the mill as a whole,” said Tony. “Many of the mill employees are on the project team and we’ve incorporated a large number of team members into the project overall. People are informed, they are involved, and that tends to lead to more excitement.”

Looking to the Future

Once this project is complete at the end of 2025, the mill’s emissions will be reduced by approximately 25% as a result of the replacement of the coal-based steam currently used. This will contribute to our Vision 2030 target of reducing our enterprise greenhouse gas emissions by 35% by year 2030.

The main building structural steel work began in June.

“We have a lot more to go, but this is a great milestone to have behind us,” Tony said. ■

Pictured: A completed boiler. Once this project is complete at the end of 2025, the mill’s emissions will be reduced by approximately 25% as a result of the replacement of the coal-based steam currently used.



Born of Supply and Demand

The Rittenhouse Paper Mill marked the beginning of papermaking in America.

Throughout the latter half of the 1600s, commerce within America's colonies was growing and the demand for paper heightened. But obtaining paper was a major problem for colonial printers due to the fact that all paper was imported from England — until 1691. In that year, William Rittenhouse and his son Nicholas (or Claus, as it was then spelled) produced the first paper in the American colonies.

Rittenhouse was born in Germany, near the Dutch border. His name then was Wilhelm Rittenhausen, later changed in America. He apprenticed in a paper mill in the German city of Mulheim-Ruhr-Broich. Later he moved to Holland to stay with his older brother where he learned the Dutch methods of fine papermaking.

In 1688, Rittenhouse left Holland and settled in Philadelphia, Pennsylvania near the print shop of William



William Rittenhouse (1644-1708). Originally from Germany, Rittenhouse came to Pennsylvania in 1688.

Bradford. Bradford (1663-1752), an English Quaker, had established the first printing press in Pennsylvania in 1685 and within a few years his business was thriving.

With his knowledge of papermaking and the steady demand for paper being generated by Bradford's printing business, Rittenhouse on September 29, 1690, leased a twenty-acre lot on Monoshone Creek near Germantown, which is now Philadelphia, and formed a company with several prominent Philadelphia residents — one of them being Bradford — to erect a paper mill. On that day, William Rittenhouse and his son Claus began their careers as papermakers and business owners in America.

According to a number of historical accounts, the first mill was constructed of logs and housed a waterwheel positioned over the creek. However, a flood destroyed the mill in 1701 and another stronger mill built of stone was erected next to the spot where the first mill had stood.

According to an account of the mill's destruction, William Barton, the biographer of David Rittenhouse, William Rittenhouse's great-grandson and a well-known scientist, a memorandum written by William Penn, stated that the Rittenhouses had "sustained a very great loss by a violent and sudden flood, which carried away the said mill with a considerable quantity of paper, materials and tools, with other things therein, whereby they were reduced to great distress; and, therefore, recommending to such persons as should be disposed to lend them aid, to give the sufferers 'relief and encouragement, in their needful and commendable employment,' as they were 'desirous to set up the paper-mill again.'"

Penn, the founder of Pennsylvania, was very proud of the Rittenhouse Mill and by all accounts considered Rittenhouse's business a great asset to the colony. With Penn's assistance and support, a stronger mill was built in its place.

Prior to the establishment of Rittenhouse Mill, all paper was imported from Europe and taxed accordingly. The new mill provided a local source of printing, writing, and wrapping paper, as well as pasteboard.

In 1706, Rittenhouse bought out the other partners and became sole proprietor of Rittenhouse Paper Mill. He, and later his son, Claus, trained and developed a capable workforce

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Early beginnings. The site of the second paper mill built by William Rittenhouse after the original mill, which was built of logs, was washed away in a flood in 1701.

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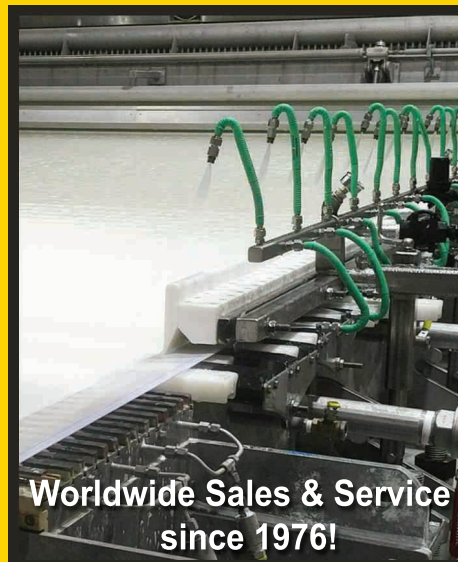
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STATEMENT OF OWNERSHIP, MANAGEMENT, AND CIRCULATION

Publication Title: PaperAge

Publication Number: 0031-1081

Frequency of Issue: Quarterly, for a total of 4 issues published annually. Mailed free of charge to qualified recipients. To all others: \$40.00 in the U.S., \$48.00 in Canada and Mexico, and \$60 in other countries.

Complete Mailing Address of Known Office of Publication: PO Box 904, Cohasset, MA 02025. Complete Mailing Address of Headquarters, or General Business Office of Publisher: PO Box 904, Cohasset, MA 02025.

Full Names and Complete Mailing Address of Publisher, Editor, and Managing Editor:

Publisher, Michael C. O'Brien, PO Box 904, Cohasset, MA 02025.

Managing Editor, John F. O'Brien, Jr., PO Box 904, Cohasset, MA 02025.

Owner: O'Brien Publications, Incorporated, Michael C. O'Brien, PO Box 904, Cohasset, MA 02025; John F. O'Brien, Jr., PO Box 904, Cohasset, MA 02025.

Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages, or Other Securities: None

Tax Status: Has not changed during preceding 12 months.

Issue Date for Circulation Data Below: Summer 2024.

Extent and Nature of Circulation: a. Total Number of Copies; Average No. Copies Each

Issue During Preceding 12 Months – 7,781; b. (1) Outside County Paid/Requested Mail Subscriptions – 6,140; b. (2) In County Paid/Requested Mail Subscriptions – 0; b. (3) Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Non-USPS Paid Distribution – 438; b. (4) Requested copies distributed by other mail classes through the USPS – 0; c. Total Paid and/or Requested Circulation – 6,578; d. (1) Outside County Nonrequested copies – 1,108; d. (2) In County Nonrequested copies – 0; d. (3) Nonrequested copies distributed through the USPS by other classes of mail – 0; d. (4) Nonrequested copies distributed Outside the mail – 0; e. Total nonrequested distribution – 1,069; f. Total distribution – 7,622; g. Copies not Distributed – 53; h. Total – 7,675; i. Percent Paid and/or Requested Circulation – 85.5%.

Extent and Nature of Circulation: a. No. Copies of Single Issue published Nearest to Filing Date – 7,675; b. (1) Outside County Paid/Requested Mail Subscriptions – 6,113; b. (2) In County Paid/Requested Mail Subscriptions – 0; b. (3) Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Non-USPS Paid Distribution – 440; b. (4) Requested copies distributed by other mail classes through the USPS – 0; c. Total Paid and/or Requested Circulation – 6,553; d. (1) Outside County Nonrequested copies – 1,069; d. (2) In County Nonrequested copies – 0; d. (3) Nonrequested copies distributed through the USPS by other classes of mail – 0; d. (4) Nonrequested copies distributed Outside the mail – 0; e. Total nonrequested distribution – 1,069; f. Total distribution – 7,622; g. Copies not Distributed – 53; h. Total – 7,675; i. Percent Paid and/or Requested Circulation – 85.9%.

I certify that all information furnished is true and complete.

John F. O'Brien, Jr., Managing Editor

to produce products of increasing quality. This eventually led to starting up additional mills in Pennsylvania.

William Rittenhouse died in 1708 and left the paper mill to his son Claus. The business prospered at the site and was operated by six generations of family descendants. For twenty years, Rittenhouse Paper Mill was the only paper mill in the Colonies. In 1710, William Dewees, who was married to Claus Rittenhouse's sister, built a mill nearby in Chestnut Hill, having learned the trade at Rittenhouse Paper Mill.

Early Papermaking

Early papermaking was a laborious process. First, clean cotton and linen rags had to be collected. Men called "ragpickers" went from house to house, asking for rags, which they then sold to the mills. Newspapers also ran ads requesting that people bring in their old rags, which the newspaper sold to the mills, who in turn granted a discount to the newspaper publisher for his next purchase of paper. Three men working very hard were fortunate to produce a thousand sheets a day. Pulp was beaten using a huge trip hammer, known as a stamper beater, which was lifted by the mill's water wheel. Sometimes flax was used, but mostly linen rags were recycled for printing and writing paper.

Of the three major jobs in the mill, including the Coucher and the Layer, the Vatman was the real artisan. He dipped a rectangular wire screen called a "mould" into the liquid pulp or "stuff" and lifted out a layer of fibers that would become a sheet of paper. The layer of fibers was laid between felts and then placed on a press. After the water was squeezed out, the paper was hung over ropes to dry.



Vatman. Of the three major jobs in the mill, the Vatman was the real artisan. He would dip his mould, a framed wire screen, into a vat of liquid pulp or "stuff" and lift out a layer of fibers that would become a sheet of paper. The layer of fibers was laid between felts and then placed on a press. After the water was squeezed out, the paper was hung over ropes to dry. *Image from the Crane Museum, Dalton, Mass.*

The quality of the paper largely depended on the quality of the linen used to make the pulp. Watermarks were produced by working a certain wire pattern into the molds; Rittenhouse watermarks produced in the early years of the business variably include the initials WR (for William Rittenhouse), NR, or KR (for Nicholas or Klaus Rittenhouse). As a lasting testimony to Rittenhouse's contribution to print culture and the larger social and cultural development of early America, some of the most important original documents of the British colonies bear the Rittenhouse watermark.¹

The establishment of paper mills in America created political tensions with Great Britain. While the colonists wanted to manufacture their own paper and cloth, English merchants who exported these commodities saw a lucrative market about to dry up. To protect its merchants, England continued to limit these industries in America, which irritated the colonists. Some of the Stamp Acts, which further angered the colonists and helped lead to the Revolutionary War, involved a special tax on imported paper. When the Revolutionary War broke out, imports of paper and cloth were banned. ■



Papermaking homestead. The site of the Rittenhouse homestead with the paper mill on the left.

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