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THE BI-MONTHLY PUBLICATION FOR AMERICAN AND CANADIAN INTEGRATED AND INDEPENDENT BOX MAKERS

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Corrugated TODAY

is jointly published bi-monthly by Brunton Business Publications Ltd and NV Business Publishers Corporation.

www.thepackagingportal.com

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SUBSCRIPTION RATES

USA \$50 per year (2 years \$80)

Canada \$50 per year

Outside U.S. and Canada,

Airmail \$95 per year

Single copies and back copies \$8.00 each

Corrugated Today LLC.

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Corrugated Today is produced by
Brunton Business Publications Ltd
(ISSN: 1934-497X).

POSTMASTER: send address changes to:
Corrugated Today, PO Box 802,
Manasquan, NJ 08736.

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FINALLY! GREAT THINGS ARE HAPPENING AGAIN

In some ways, the last 16 months have been merely a blip on the radar as life finally begins to resume normalcy, and in other ways those months were an enduring test of our patience in the face of so much uncertainty. COVID-19 was the ultimate monkey wrench, throwing all of our plans in disarray. Not anymore. Depending on where you live, the return of sporting events, concerts, weddings, live theatre and travel is a welcome change and quite frankly invigorating. Everyone is eager to re-start their lives.

For the corrugated industry, one of the first live and in-person events in more than a year is happening August 8-12 in Orlando, Fla. SuperCorrExpo 2021 (SCE) offers an opportunity to bring the industry together after a long pause with a lineup of educational programs, keynote speakers, an “epic gala” event at Universal Orlando resort, Box Manufacturing Olympics and countless networking opportunities. The real value is the display of new products and machinery, some operating on the show floor. With more than 240 exhibitors and 18 dedicated exposition hours, SCE will highlight technology and equipment for all segments of the market. Many of the exhibitors have provided *Corrugated Today* with a summary of their product offerings along with what they will be showcasing. The listing is in this issue.

The last SCE took place in Orlando in 2016 and from all indications was a resounding

success. According to show organizers, TAPPI and AICC, The Independent Packaging Association, 92% of attendees stated that the event perfectly delivered on providing the latest technology, ideas and insights on corrugated box manufacturing. Indeed, great things often come out of this event, such as product launches, new partnerships and alliances, even the idea for a new publication! At SCE 2004 in Atlanta, the publishers of *Board Converting News* and *International Paper Board Industry* laid the groundwork for launching *Corrugated Today*. It is hard to believe that was 17 years ago.

With many travel restrictions in the U.S. lifted, now is the perfect time to attend SuperCorrExpo and get reacquainted with industry friends and learn about the latest trends, all in one convenient location.

A ‘Normal’ Journey

On the subject of travel, my husband and I took our first major trip in over a year in May, flying from Cleveland to Denver to visit our younger daughter. Aside from having to wear masks at the airport and on the plane, we were delighted to experience a somewhat “normal” journey.

One night while enjoying dinner at a packed Boulder restaurant we talked about the changes as a

result of COVID, particularly in the area of technology. For example, every restaurant we ate at provided menus via barcodes that we scanned with our phones. We also used an app on our phones to open our hotel room door; no key was necessary. From a business standpoint, we relied on teleconference programs like Zoom and Teams and quickly realized that we didn’t need to be on a plane every week to do our jobs.

Another major change was the launch of virtual expos like ConneXion, Brunton Business Publications’ (co-owner of *Corrugated Today*) platform that just completed its second event in June. It is quite extraordinary, using 3D virtual reality modelling in an online expo environment, coupled with a dedicated mobile app for sharing of news, video, content, podcasts and webinars. ConneXion helped bring converters and suppliers closer together at a time when exhibitions and conferences were being postponed or cancelled. The platform was a Digital Event Awards 2021 Winner.

Granted, many of these advancements would have happened eventually, but COVID accelerated their rollout. It is a silver lining to what has become one of the biggest challenges the world has faced in our lifetimes. ■

Feel free to contact me with story ideas, comments or suggestions. I can be reached at 440-356-2257 or e-mail jschultz@corrugatedtoday.com

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ACME CORRUGATED BEGINS POST-PANDEMIC EXPANSION

THE \$35 MILLION INVESTMENT INCLUDES AN 80,000-SQ-FT ADDITION, A 110-INCH FOSBER CORRUGATOR, THREE NEW CONVERTING LINES, AND STATE OF THE ART MATERIAL HANDLING.

BY LEN PRAZYCH

As the world continues to recover from the pandemic, there is still a sense of uncertainty as the nation's manufacturers begin to fully reopen their doors to embrace a "new normalcy." What isn't in question, however, is the unprecedented and explosive demand for

corrugated boxes in a questionably "post-pandemic" world. Ask any independent box maker and the answer is the same: "Backlogs like we've never seen before." "Busier than we've ever been." "Can't get enough sheets fast enough to fill customer orders." "Had to add a second shift."

Or in the case of especially successful independents, Acme Corrugated Box Co. among them, "Need to invest \$35 million and build a new 80,000-sq-ft expansion."

"This expansion demonstrates our commitment to our overall growth and enhanced sophistication of the company," says President Bob

An architectural rendering of the 80,000-sq-ft expansion in Hatboro, Pa.



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Cohen. "It will allow us to increase manufacturing capacity, further embrace innovation of new products and flute profiles, and give us a greater ability to serve our customers."



President Bob Cohen

With the thawing of the northeast soil and the pandemic apparently under control, the company recently broke ground on an addition to its existing 250,000-square-foot facility in Hatboro, a 1.5-square-mile town 15 miles outside of Philadelphia, where Acme was founded in 1918 by Cohen's father, Edward J. Cohen. In the story of the independent spirit worth retelling and remembering, Edward packed his horse-drawn wagon with scrap paper and traveled through Philadelphia's dusty streets in search of customers. He found plenty, and soon added reclaimed corrugated boxes to satisfy the diverse needs of the bustling city. Just two decades later, Edward had incorporated and moved his operation indoors in Center City Philadelphia. The end of WWII brought increased prosperity, and as the economy grew, so did the company.

"It will allow us to increase manufacturing capacity, further embrace innovation of new products and flute profiles, and give us a greater ability to serve our customers," says Bob Cohen.

The approximately 30% increase in the facility's footprint will allow for a 50% increase in manufacturing capacity.

Seven decades later, in 2021, it's still "business as usual," and the company is still growing, still prospering, with Bob Cohen, 73, owning the company and the third generation firmly entrenched: Erik, 46, is Acme's top salesperson; Jeremy, 43, is the company's Vice President of Operations; and Alex, 28, who joined the company a year-and-a-half ago, is one of Acme's front line supervisors, all of whom will be writing the next chapters of the classic tale of an independent box maker's hard work, family commitment, and achievement of the American Dream.



Jeremy Cohen, Vice President of Operations

Overall Optimism

"The expansion plans were actually in place before the pandemic hit, but in July of last year we paused – along with the rest of the industry – to re-evaluate our commitment and we

determined that there was still the need to expand," says Jeremy.

Adds Bob, "As a sign of our overall optimism, we continued with our plans fully aware that there will be uncertainty coming out of a pandemic. Still, the signs we saw told us that we have a duty to meet the future with confidence and forbearance. And I believe that when we complete our expansion, our facility will be the envy of other converters."

The approximately 30% increase in the facility's footprint will allow for a 50% increase in manufacturing capacity. The new construction will house a new high-speed Fosber 110-inch doublewall corrugator line, which will replace a Fosber 98-inch corrugator.

Once the new corrugator is operational, the 98-incher will be decommissioned, disassembled and moved. In its place will be added a WIP system distinct to the U.S. and designed to allow the total automation of sheet transfer to converting machine centers.

The 110-inch corrugator will allow Acme to produce its current flute offerings of C, B, D, E and BC, BD and ED doublewall, with the possibility of some additional offerings.

"We will also continue to perform a lot more detailed testing," says Jeremy. "We believe that we are intrinsically a structural box producer and as such we do quite a bit of internal testing to ensure the box we are producing meets the requirements of the product being packed."

Complete Integration

Acme retained the general contracting services of Cincinnati, Ohio based

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Warak will be installing a seven-story vertical rack WIP system.

Acme retained the general contracting services of Cincinnati, Ohio based WSA-USA to facilitate the integration of the new machinery and material handling.

WSA-USA to facilitate the integration of the new machinery and material handling.

“We are so proud to be partnering with the Cohen family on this historical expansion and automation project,” says Jim McLaughlin, President of WSA-USA. “Acme was one of our first customers when we entered the U.S.

market in 2011 and they’ve been a long-time partner of ours ever since. This will be our ninth project together and it’s an especially exciting one.”

Acme and WSA-USA began discussions about the expansion project back in 2017, when the first concept drawings were crafted. The respective teams have taken

trips together to Europe and Asia to visit multiple highly automated corrugated facilities to learn from their experiences and how to utilize the best elements into Acme’s expansion plan.

“In 2019 we started testing the layout in our 3-D Simulation model to validate the solution with our Barcelona, Spain based partner, Warak, and for the past three-and-a-half years, we have been fine tuning the layout and integrating new levels of automation to the finished solution,” adds McLaughlin. “When the project is completed, Acme will become one of the most advanced and automated corrugated plants in the world.”

The project will include a WSA-USA Automatic Material Handling system controlled by WSA’s iFAS integration system, a seven-story vertical rack WIP system to store 10mmsf of board serviced by two stacker cranes, and a Harmax automatic roll delivery and return system with a roll car integrated with the new Fosber Link M3 roll track system.

Additionally, Acme will put in a VortX starch kitchen by BW Papersystems, which uses a proprietary 10-step adhesive mixing process that efficiently prepares precise starch batches in far less time than most other systems, according to the company. Batches can be mixed and ready in 10 to 12 minutes versus 30 minutes or more on some other systems.

Souderton, Pa. based AES Scrap Conveyor Systems will supply the waste handling equipment, which includes a second baler, a second hogger shredder, a core shredder and an AES patented Air Shark rotary material separator. “AES’s headquarters is just 20 minutes from us and they have been servicing us for more than 30 years,” says Jeremy. “Their reputation for excellence and our long relationship with them was a choice that just made sense.”

Construction on the expansion is expected to be completed sometime in the first quarter of 2022.

Future Initiatives

Construction on the expansion is expected to be completed sometime in the first quarter of 2022. The additional floor space created by the expansion will allow Acme to add three additional converting lines in the future, work that is considered Phase II and Phase III. The company is not expecting to add any new employees just yet but like other converters, there is an ongoing challenge in finding and retaining quality workers, especially machine operators. Acme continued

in full operation as the pandemic was spiking. The company’s “headcount” remains much as it was when the pandemic started.

The change in buying habits during the pandemic has dramatically impacted the demand for containerboard and like most other converters, Acme Corrugated Box Co. will continue to benefit from the ever-changing ways consumers buy products. The Cohens know there will be more movement back to retail. They also know that companies like Amazon are intent on

reducing their packaging excesses. They also expect changes in demand as consumer buying trends change. With the expansion, they will be even more prepared to meet market demands for the future, whatever the future may hold.

Says Bob, “We, like most independents, will continue to compete on competency, innovation and service. To prove value, we must continue to find ways to differentiate ourselves by using the best material available, utilizing the best equipment available and knowing that success is dependent on finding new products and new ways to service our clients. It’s a simple formula but one that has worked extremely well for us.”

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A NEW PLAYER IN TOWN

DOMTAR ENTERS CONTAINERBOARD MARKET WITH KINGSPORT MILL CONVERSION.

BY REBECCA RENDON

For more than 100 years, Domtar's Kingsport Paper Mill has been a proud employer and community partner in the city of Kingsport, TN and the surrounding area, not only as a large employer, but also a supporter of local vocational education, environmental sustainability and civic and

recreational programs that enhance the daily lives for their neighbors.

Domtar, which is one of the largest integrated manufacturers of uncoated freesheet paper in North America, continues to invest in the local Kingsport community. The company announced a \$350 million plan to convert the Kingsport Mill to produce

100% recycled containerboard grades targeted at independent corrugated converters across North America. This investment will make the facility home to what is believed to be the second-largest recycled containerboard machine in North America, producing nearly 600,000 tons of high-quality recycled papers.



"Global and local customers are looking for sustainable packaging solutions."

STEVE HENRY, DOMTAR'S SENIOR VICE PRESIDENT OF PACKAGING

Steve Henry, Domtar's Senior Vice President of Packaging, explained that the decision to convert this existing paper mill finally comes to fruition after years of studying the containerboard marketplace. Domtar CEO, John Williams' experience in the European packaging market, as well as Henry's experience working with companies like Georgia Pacific and International Paper, led them to explore this new long-term strategic plan to build a large and cost-competitive packaging business.

Multiple Mill Conversions

In 2018, the company launched its asset conversion roadmap, which identified four of Domtar's 13 pulp and paper mills, including Kingsport, that could be converted to containerboard over time. Other mills that were chosen for possible conversion, in addition to the Kingsport Mill, include Ashdown, AR, Marlboro, SC, and Hawesville, KY.

"We didn't view it as a sprint necessarily, but more of a 10-year roadmap, showing the potential of a 2.5-million-ton containerboard system at the end of the journey," said Henry. "Our decision was driven by the fact that you cannot just convert an asset and hope that the market is there. We really took the time to study the containerboard market and look at how needs are being met and the unmet needs of independent converters."

Domtar has leveraged their customer relationships to identify a compelling value proposition with the independent converters. Domtar will

not own or operate competing box plants. They found that independent converters were looking for long term competitive suppliers that they can rely on to truly be their partner and an extension of their business.

"Global and local customers are looking for sustainable packaging solutions. The global customers know they can get different packaging solutions from Europe and elsewhere, and have expressed frustration that they can't always get those options here in North America," said Henry.

Land Swap

Domtar announced in August 2020 the plans to convert the Kingsport Mill from uncoated paper production to the company's first containerboard facility, with hopes of becoming one of

North America's leading lightweight recycled containerboard suppliers. As a necessary part of the mill conversion, Domtar and the city of Kingsport agreed to swap land parcels. Through this effort, the city will receive 40-acres of land and Domtar will receive Domtar Cloud Park. They've also agreed to contribute \$500,000 toward relocating a community Skate Park that is currently located on the land.

Repurposing the site will be an extensive process. Demolition work began in November 2020 and all major pieces of equipment have been purchased, preparing the way for eventual construction activities. The project is on schedule to start-up in Q4 of 2022. They've begun implementing the operations readiness plans for the Mill start-up and the packaging management teams are in place. Kingsport is expecting to begin bringing employees back at the end of this year or beginning of 2022.

In December, Domtar experienced a devastating loss with the passing of Marty Barfield, following a long illness. Barfield was the general manager of the Kingsport Mill and a key architect of the work system for the new containerboard operation that is under construction. In January, Troy Wilson





Left to right: John Williams, Domtar CEO, Steve Henry, Domtar's Senior Vice President of Packaging and Troy Wilson, Kingsport Mill manager.

was appointed Kingsport Mill manager. Joining the Kingsport community from Domtar's Johnsonburg Mill in Pennsylvania, where he was previously the Paper Mill Manager and also brings significant containerboard experience. Wilson is excited to lead the Kingsport team and carry on Barfield's vision of creating a high-performance culture as they take an exciting next step in the Mill's presence in Kingsport.

Growing Demand for Recycled Grades

With more daily commodities being delivered in boxes and consumption of packaging materials on the rise, Domtar feels that sustainable paper-based packaging is the right decision and most importantly, helps protect the environment from plastic waste. "We continue to see a greater adoption of recycled grades," said Henry. "There used to be a more specific selection of recycled grades versus kraftliner, but the industry is constantly learning more on how to build a better box with recycled grades, while preserving the strength of the

board in the converting process."

Henry states that the recycled product has been sourced from the right partners in the region, to secure materials they will need for next year, as an initiative led by Mike Butler, Senior Director of Fiber Sourcing at Domtar.

"Containerboard is a growing business. It grows at about 2% per year and the pandemic has just sped that up," said Wilson. "People are working from home and ordering online. E-commerce is redefining how we buy. Now, everything comes in a box. I see it growing further as we move along. Domtar had the project planned and a team in place at Kingsport, prior to COVID-19, and the pandemic just reaffirmed that they had made the right business decision."

Domtar looks to put an emphasis on lightweighting and providing innovative packaging solutions. The mill will produce a full range of recycled products with basis weights ranging from 18# to 42#, to serve a variety of customers who may be seeking ways to reduce the amount

of packaging and moving towards a lower basis weight with exceptional strength and durability.

"We are making sure we take a long-term strategic view of which customers we want to partner with, based on a variety of factors, not just geographic location. Ultimately, we are open to serving all of the North American footprint, as well as exporting some too," said Henry.

Big Machine

A greenfield OCC plant with fiber fractionation will consume nearly 660,000 tons of recycled material to produce new containerboard. Domtar is utilizing the newest, uncoated free sheet machine in North America which started up in 2003 and working with Voith to upgrade the machine to produce premium recycled liner and medium. The machine has a 340-inch wide trim, which is well positioned to serve 110-inch corrugators. The Voith machine at Kingsport will have the ability to run up to 4,500 feet per minute, making it one of the fastest containerboard machines in North America and the second largest recycled machine in North America. The system will include Voith's BlueLine products including water, sludge and reject handling systems, which will maximize both efficiency and quality.

"We are confident in Voith's equipment and expertise as an industry-leading supplier of recycled fiber systems and we are certain their equipment will meet the needs of this new project," said Charlie Floyd, Vice President, Packaging Strategic Capital, Domtar.

"Domtar and Voith have a longstanding relationship in many areas and we are happy to be partnering with them as they enter the containerboard market," said David Buchanan, President, Voith Paper North America. "This system will provide the machinery and technology so that their mill will operate with the highest quality fiber



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Recycled from the Ground, Up

Driven by the eco-friendly, sustainable approach that Domtar is known for taking, this mill will feature recycled materials literally from the ground, up. In an effort to weave sustainability into everything they are doing, the ground-up concrete from the demolition will be used to create the base for the new concrete in the facility. Furthermore, the mill will convert byproducts sorted from its OCC supply, like plastics and the remaining short fibers, into steam and electricity to provide energy to the mill. Ultimately, the main goal is to reduce waste of all sorts. This mill will prevent about 50,000 tons of plastic waste from entering landfills each year by instead burning it to produce energy.

Henry described other types of sustainability efforts and initiatives that will be present at the mill. They will become certified by the Sustainable Forestry Initiative® (SFI®) and the U.S. Food and Drug Administration (FDA) for food contact, providing the full value of sustainability.

What's Next for Domtar?

When asked about his thoughts on a potential issue of over saturation in the containerboard market, Henry said, “We’re really focused on the value proposition to independents. We are convinced that there’s a strong market and the need for supply from a strategic partner who isn’t going to compete with them in the market. There’s a spectrum of recycled products available. Some are much higher quality than others. There’s a premier product in the market today and we want to surpass that and provide an even higher quality

product and offering to customers.”

On May 11, Paper Excellence, a global diversified manufacturer of pulp and specialty, printing, writing, and packaging papers, and Domtar entered into a strategic business combination under which the Paper Excellence group of companies will acquire all of the issued and outstanding shares of Domtar. After the transaction closes, Paper Excellence intends to continue the operations of Domtar as a stand-alone business entity. As such, Domtar will continue to be led by its management team and Paper Excellence plans to retain its corporate and production locations.

Domtar has experience repurposing mills and Paper Excellence recognizes this and sees the value. Domtar has previously converted the Marlboro, SC, facility to produce lightweight thermal paper grades and the Plymouth, NC and Ashdown, NC facilities to fluff pulp. ■



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UPON COMPLETION, THE EXPANDED PLANT WILL BE ONE OF THE LARGEST CORRUGATED MANUFACTURING FACILITIES IN NORTH AMERICA.

BY LEN PRAZYCH

Middletown, N.Y.-based President Container Group (PCG), a leading Northeast manufacturer of corrugated containers and point-of-purchase displays, broke ground on a \$40 million expansion of its already immense super plant in April. The investment is expected to create 50 additional jobs upon the project's completion in December 2021.

The 100,000-sq-ft expansion will house PCG's second state-of-the-art Fosber corrugator, plus additional converting equipment and conveyors. This will result in a significant increase in the company's manufacturing capacity and will enhance the overall quality of service to its valued customers.

Upon its completion, the expanded super plant will be 622,000 square feet, making it one of the largest

corrugated manufacturing facilities in North America.

PCG was designated as an essential manufacturer by the federal Department of Homeland Security and the State of New York. Its manufacturing supercenter at 290 Ballard Road has been operating at full speed, 24 hours a day, before and during the entirety of the COVID-19 pandemic.

Owners and employees of President Container Group (PCG), along with public officials and community business leaders, broke ground on the company's \$40 million expansion in Middletown, N.Y.



President Container Group prides itself on sustainability, recycling and other efficiencies that preserve natural resources.

Larry Grossbard, Co-President of PCG



Richard Grossbard, Co-President of PCG



Richard Goldberg, VP of Operations at PCG



Larry Grossbard, Co-President of President Container Group said the project was undertaken due to the increase in the incredible demand for its products, as well as President Container's commitment to the future growth of the company. "We are extremely proud to break ground on our 100,000-sq-ft expansion at our state-of-the-art super plant in Wallkill," said Grossbard. "Our theme is 'Manufacturing For The Next Generation' and we are proud to be part of this community. We are extremely grateful for all of our essential partners. Our deep thanks goes out to those great teams for being accessible and helpful. We appreciate everyone's support and expertise every day. It's great to run a business in this community when you have this level of support."

Richard Goldberg, PCG's VP of Operations, echoed Grossbard's sentiments, especially when it came to acknowledging the commitment shown by the Town of Wallkill. Many of the same people that were involved with the construction of PCG's 522,000-sq-ft facility in 2008 were also involved in this latest expansion.

"The support and teamwork of everyone involved with this project has been nothing less than outstanding every step of the way," said Goldberg. "This will be a world class facility and something that we and everyone in the community will be proud of."

Trailer trucks with machinery for the expansion were rumbling through the parking lot during the celebration. The Fosber corrugator will arrive in October and Goldberg promised PCG would start making boxes in January of 2022.

Numerous public officials lauded President Container Group's investment and commitment to the region.

Eric Gertler, Empire State Development Acting Commissioner and President & CEO-designate, said, "The expansion of PCG's manufacturing facility in Orange County represents a \$40 million investment in the region and will ensure that job retention and creation in the region are maintained in the manufacturing sector, which is an integral part of the region's economic strategy."

U.S. Sen. Charles E. Schumer noted President Container Group's vital contributions while praising the company's expansion. "We should all be very proud that one of the nation's leading manufacturers of the packaging we see and use every day is operating and expanding in Orange County," he said.

Maureen Halahan, President and CEO of the Orange County Partnership, was one of several key partners in helping the project become reality. "Having participated in the initial discussions about this expansion with the President Container team, I am especially proud to see this project move forward," she said. "When construction is completed at the end of this year, we'll have another shining example of the collaborative, visionary work being done in Orange County."

President Container Group prides itself on sustainability, recycling and other efficiencies that preserve natural resources – all while producing clean, safe products relied upon by some of the most well-known brands and corporations across the nation. ■

INCREASING UPTIME

DATA SCIENCE - THE WAY OF THE FUTURE

BY MARK PEYTON AND MATTHEW MILLER

The maintenance of corrugated machinery involves a lot of nuance – hundreds of thousands of moving parts, each working in tandem and each with its own set of responsibilities and maintenance needs. As parts undergo natural wear and tear from use, they must be carefully monitored to prevent costly downtime caused by failure or related breakdowns. Sometimes, as parts begin to wear out, there are telltale signs, such as decreased output speed, more frequent jams, sounds and smells, but not all components create such

obvious, detectable signs that maintenance is needed.

Even with careful adherence to a PM schedule, and even with the most experienced, seasoned operators on the lookout for anomalies, there can still be catastrophic failures or unforeseen malfunctions that take machines offline. As technology advances, there are new ways to leverage early signs of potential issues to detect, and more importantly, predict problems before they happen. That technology has a name: Data Science and it is the key to increasing uptime and profitability

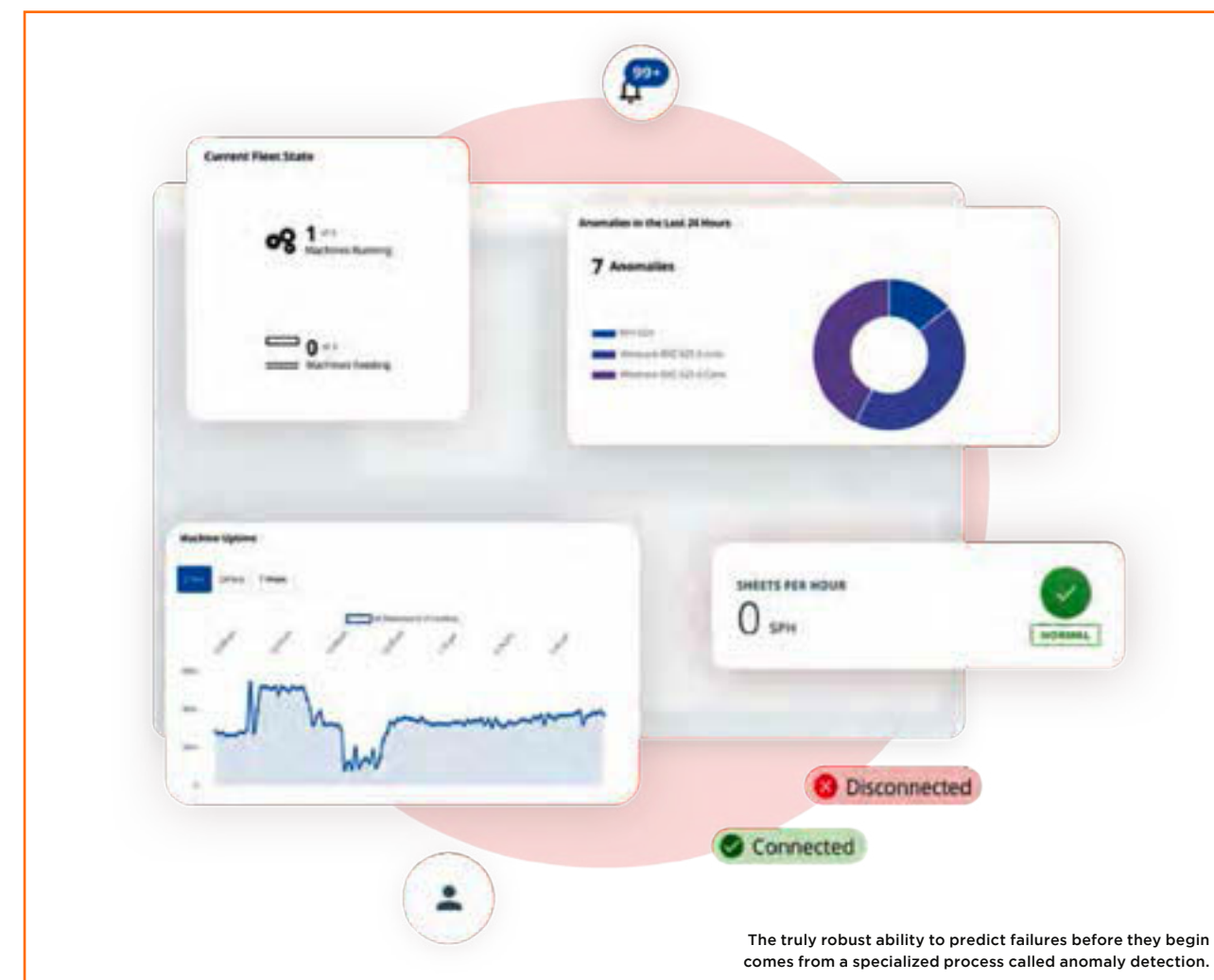
of corrugated box plants around the world.

What Is Data Science?

At its most basic level, data science is the intersection of expertise in a specific field, and the gathering, storing, and application of data produced within that field to uncover useful insights that otherwise elude detection or easy perception. Data science is used around the world, spanning every discipline, from detecting and preventing diseases to optimizing baseball rosters; from stopping tax fraud to finding a romantic connection, and everything in

THIS IS THE FOURTH
IN A SERIES OF
ARTICLES BY SUN
AUTOMATION ABOUT
KEEPING MACHINES
IN GOOD WORKING
ORDER.

Helios, has begun rolling out its anomaly detection machine learning dashboard as of Spring 2021.



between. The field of data science requires a combination of sophisticated data collection and specialized knowledge in the area or field in which the data is to be applied.

Depending on the age of the equipment in the facility, corrugated equipment may already be generating and storing volumes of data. However, in most cases, this data is either only looked at retrospectively, or it is not

being analyzed at all. Much of this information can be applied insightfully by data scientists to optimize maintenance intervals and equipment performance. But the truly robust ability to predict failures before they begin all comes from another more specialized process called anomaly detection.

What Is Anomaly Detection?

Anomaly detection is a concept used

for mining data from machines and other Industrial Internet of Things (IIoT) devices. And while this sounds complicated, at its essence, is the ability to look for any type of activity that breaks with the norm. In corrugated, an anomaly could amount to a strange noise, a jam or lag somewhere on the line, a shudder or vibration that is unexpected, or any number of other occurrences that is unusual.

Even with careful adherence to a PM schedule and the most experienced, seasoned operators, there can still be catastrophic failures or unforeseen malfunctions that take machines offline.

The real utility in applying data science to corrugated lies in predictive maintenance and optimization of maintenance schedules.

While on the surface, each anomaly may be minor if not completely meaningless, detecting and cataloging these anomalies is incredibly insightful to a data scientist, because the anomalies can then be mapped to other problems or breakdowns. When coupled with other operating data and retrospective labeling by machine operators about which anomalies ultimately lead to what specific problems, data scientists and machine learning algorithms can learn to read patterns in machine activity, and they can ultimately be used to alert operators to impending problems while there is still time to fix them.

Increased Profit, Productivity

The real utility in applying data science to corrugated lies in predictive maintenance and optimization of maintenance schedules. With insight that can detect issues before they start, a proactive approach can be taken to maintenance. Rather than having a machine unpredictably break down during a big project or during peak hours, data science can instead alert the operators and facility managers to a need for maintenance while there is still time to schedule it during non-peak hours.

This type of changeover can also happen as routine parts replacement rather than a major repair, which ultimately means lower cost. Think of it as a low engine oil indicator light clicking on in a car, as opposed to a bone-dry engine seizing up and failing completely – the cost savings on the labor alone is enormous, and it is a matter of a quick trip to an auto parts store for an oil top-off, instead of



Data science applied to anomaly detection can lead to a true assessment of when failures are imminent.

sending the car back to the dealer or even the factory for repair.

Another crucial benefit is more accurate maintenance intervals potentially extending the lifespan of parts. Without the use of data science, it is up to a maintenance manual to provide what is essentially an estimate of when a replacement should happen.

For another automotive example, this equates to changing a timing belt – there is a recommended mileage interval for changing a timing belt, but nobody really knows when a timing belt is failing until it actually fails. So while changing it out at 100,000 miles preempts major maintenance, you may be spending a day or two without your car and paying for a new timing belt while your existing timing belt is still good for another 30,000 miles. Likewise, data science applied to anomaly detection can lead to a

true assessment of when failures are imminent, so costs on suggested maintenance can be deferred until maintenance is actually required.

How To Get Started

Data science as applied through machine learning is not new to the world of manufacturing, but it has just recently begun bursting onto the scene in corrugated. Our manufacturer-agnostic machine learning platform for corrugated, Helios, has begun rolling out its anomaly detection machine learning dashboard as of Spring 2021.

It is important to note that this does not simply replace the need for maintenance personnel, but rather, requires their buy-in and expertise to help the algorithm become “smarter.” When equipping the Helios platform, operators catalog anomalies over a series of weeks and months. Over time, this allows the algorithm’s machine learning to take place, which can lead to predictive maintenance reminders and other insight and analysis for optimizing maintenance intervals and maximizing uptime.

Ultimately, Helios serves as a tool that expands and sharpens the insight of the existing maintenance operators, who are now able to couple their own experience with new unprecedented levels of detail detected by the Helios algorithm, increasing uptime and maximizing profitability of the facility as a whole. ■



Mark Peyton is the Director of Aftermarket at SUN Automation Group. He brings decades of industry experience

and expertise to SUN where he has held many customer-focused positions. Prior to his 20-year career with SUN, he worked for Langston and United. He can be reached at mpeyton@sunautomation.com or 410-472-2900.

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REVISITING COMPLETE DESIGN & PACKAGING

IT HAS BEEN THREE YEARS SINCE CORRUGATED TODAY FEATURED THE NORTH CAROLINA SHEET PLANT. THE ADOPTION OF HIGH-SPEED DIGITAL IS INSPIRING MANY CHANGES.

BY JACKIE SCHULTZ

For corrugated manufacturers interested in how the addition of a production digital printer impacts a plant's product mix and work flow, look no further than Complete Design & Packaging (CDP). It has been three years since the mid-sized independent in Concord, N.C., installed an EFI™ Nozomi singlepass corrugated printer, the first in the

U.S. Since then, many changes were implemented and new equipment added as digital printing became a larger share of the product mix.

Prior to installing the Nozomi, CDP did minimal digital printing, primarily for short runs and prototypes. Today, digitally printed packaging and displays account for about 50% of the entire portfolio. The remainder is

industrial packaging, which includes flexo up to four-color, litho top sheets, and partitions, dividers, shrouds and caps. The company also has an EFI VUTEK® h5 multi-pass digital printer for running short run business, anywhere from 50 to 500 pieces.

Most of the litho and all of the six-color flexo jobs have been converted to digital, says President Howard



Howard Bertram with his daughter, Sarah Mazingo, and son, Ross Bertram, who both work at the company.

CDP specializes in high-end graphic packaging and P-O-P displays,



Bertram. "But that's not why we got the Nozomi. We got it to grow our model and add new business." And grow it has. Compared to three years ago, the company is 40% larger from a sales and personnel standpoint. Fifty-six people were hired just within the last year and there are now seven employees in pre-press versus only one a few years ago. In addition, a second shift was recently added and major facility renovations were completed, including relocating the fulfillment staging area to a separate building a few blocks away.

Founded in 2002, CDP specializes in high-end graphic packaging and P-O-P displays, a niche that digital printing is well suited for. The quick turnaround of litho quality printed sheets is helping the company to expand into new markets, such as e-commerce, and is widening the geographic reach. "We were already in the print market, but it opened up a new customer base and new opportunity," Bertram says. "Now we sell coast to coast. Before, if we couldn't drive to a customer, someone in the next town five hours away would and should be running the job."

Facility Upgrades

The Nozomi is an imposing machine, measuring 120 ft long – about one-third the length of a football field.

CDP's printer is installed in the main production area, just around the corner from the analog equipment, on the opposite side of the 120,000-sq-ft building. A separate outside entrance with an attractive lobby and large conference area was built for customers and visitors interested in learning more about digital printing. The VUTEK is also located on the production floor in a temperature controlled room, just steps away from the Kongsberg C44 and C64 cutting tables. A third Kongsberg C44 will be installed later this year.

A second conference area is located closer to the main entrance in the sales and marketing room, which was recently renovated and expanded

with cubicles and a large display of digital, flexo and litho printed samples.

In addition to the facility renovations, the growth in digital printing prompted major changes on the production floor with several machines being replaced. There are now fewer machines producing more throughput.

Bertram admits to a certain fascination with new technology and recognizes the value in upgrading and switching out equipment regularly. Within the last two to three years CDP removed a label laminator, a flatbed diecutter and two rotary diecutters, replacing them with a Young Shin high-speed flatbed Zenith 210 Plus

Mike Mason, who has become an expert in digital printing, operates the EFI™ VUTEK® for short run business.





A second Apstar rotary diecutter was installed last year.

diecutter and a second Apstar HG 1628 rotary diecutter from Haire Group. Two print stations from the existing six-color Apstar were moved to the new Apstar so the company now has a four-color and a two-color rotary diecutter. "Why did we do that? Because the six-color was collecting dust," Bertram says. "Since we added digital, we haven't purchased a print plate set that's more than three colors."

Both Apstars have KleenPlate

printing defect and plate wash eliminators and IR dryers from JB Machinery and downstackers from A.G. Stacker.

Having identical Apstars with interchangeable anilox rolls helps from a setup and maintenance standpoint. CDP adheres to a strict preventive maintenance schedule. "We're down every single week on every single machine a minimum of four hours for preventative maintenance," Bertram says. "Since these are the same

machines they are easier to maintain and repair." Keith Furr, Plant Manager, adds, "It's very rare for a machine to go down and it be a surprise. We plan when they're down."

The second Apstar and the Young Shin diecutter were installed in the last 12 months along with a Felix XY glue plotter from Poland. The Zenith diecutter offers large format capability of 82.5- x 59.05-inch, rapid makeready and can run up to 5000 sheets per hour. It was purchased to diecut the output from the Nozomi and VUTEK.

The Felix gluer replaced a hand gluer and is used primarily to glue displays. It uses both hot and cold glue. "We can use it on jobs that would previously take three minutes to hand glue. This machine can do it in under one minute," Bertram says. "The beauty of it is dispensing the same amount of glue and the same exact position every single time."

For high-speed specialty gluing the company has a Magnus 230 specialty gluer from Duran Machinery of Turkey with an EAM Mosca bundler with SONIXS strapping technology. CDP also has a Langston flexo folder-gluer.



Nathan Christy (left), Production Manager, Keith Furr (middle), Plant Manager, and Bryan Allman, Operations Manager

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Production Efficiency

Above every machine center are large monitors that provide operators with real-time data and averages for uptime, speed and setups. They are part of Amtech's ScoreKeeper production monitoring system and are integrated with order entry, inventory control, shipping, receiving and invoicing. Jesse Yates, an operator on the four-color Apstar, says the monitors help the crews be more efficient and work smarter. "What I like about it is it helps you keep track of time, how long you've been on one job and your setups."

A red screen signals potential delays or bottlenecks. The goal is a green screen. "Once an order turns red on the screen we know something is late and then we can immediately react and use another machine or do whatever is necessary," says Nathan Christy, Production Manager. "Now the operators can see live what works and what doesn't," adds Furr. "When you know what doesn't work you can adjust to what did work. You don't have to speed up just to change what you're doing."

Bertram says the system facilitates teamwork and friendly competition between the crews, motivating them to put up better numbers than previous shifts. It also creates a less harried work environment. Yates agrees. "It's all about finding a rhythm, especially with your operators and setup guys."

Bryan Allman, Operations Manager, encourages the operators to approach setups like a NASCAR pit crew, a fitting analogy since the Charlotte Motor Speedway is just eight miles



Jesse Yates operating the four-color Apstar rotary diecutter with A.G. Stacker downstacker.

away. "Just get in and get out," he says. "That's another thing with ScoreKeeper, when it starts the run time they know if they have time or have to make time up."

Family Culture

The level of investment and commitment to producing a quality product translates to high morale and pride among the employees, which is clearly evident to anyone who visits. "We are all family. I don't own this company, but I'm going to treat it like I do," says Christy. Furr agrees. "We all take care of each other."

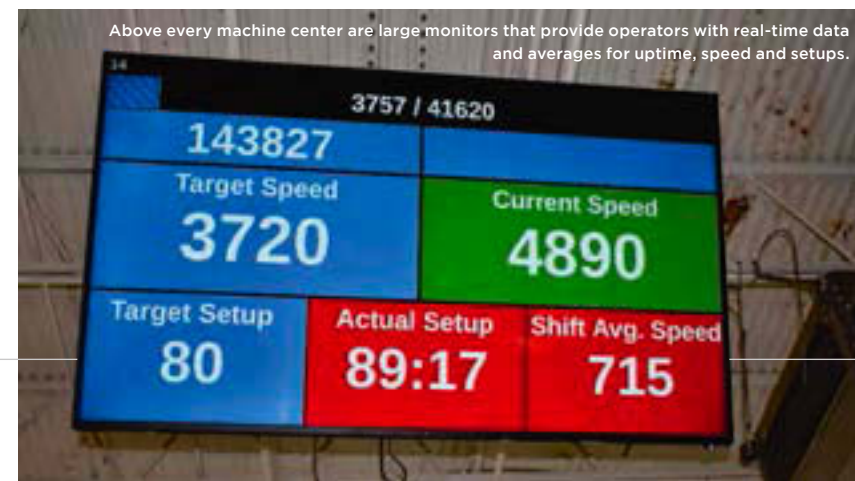
"The people make it great," adds Lori Ivester, who joined the company in the last year. "They give you everything you need to succeed. Everybody works really well together."

When Bertram talks about CDP's success he is often overwhelmed with emotion. He is humbled and exceedingly proud of the culture and the way employees have embraced the new

technology. However, he does not sugar coat the challenges faced in 2018 and 2019. "When we installed the Nozomi we only had one Gerber sample table and it was in the room we're sitting in (the sales and marketing room). We also had a six-color Apstar and we installed the new Duran Magnus specialty gluer in 2017. To shift from that to digital and have everyone on board, it was tough. We all were on board but the learning curve was hard. We've come a long way."

Indeed, the company is now a go-to source for many still learning about digital printing. It is not unusual for fellow board converters to reach out to Bertram to get more information. "People who visit the plant often say, 'You've got this figured out,'" he says. "A lot of it is our maintenance. Those printers don't last forever. You have to take care of them. You need to clean print heads. They don't clean themselves. These machines don't fix themselves."

Next year CDP will commemorate its 20th anniversary. There is a lot to celebrate and be thankful for, first and foremost the employees. Bertram emphasizes that the company's growth and achievements are the result of a winning team effort. There is a strong core group of veteran employees as well as many rising stars. "We're in good hands," he says. ■



Above every machine center are large monitors that provide operators with real-time data and averages for uptime, speed and setups.



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3:00 - 5:00 P.M.

For the first time since 2016, the corrugated industry will have a major trade show. SuperCorrExpo®, one of the most influential corrugated packaging-focused shows in the Western Hemisphere, is happening live and in-person August 8-12 at the Orange County Convention Center in Orlando. Sponsored jointly by TAPPI and AICC, The Independent Packaging Association, the show typically occurs every four years. This year's event will feature: 17 educational sessions (more than 25 hours of education), five keynote speakers, the Corrugated Classic Golf Tournament, the Box Manufacturing Olympics design competition, Innovator of the Year, an epic gala event at Universal Orlando, countless networking opportunities, and more than 240 exhibitors, many with working machinery, on the show floor. Following is a list of what some exhibitors will be featuring.

EXHIBITOR HIGHLIGHTS

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The custom design machinery manufacturer produces top and bottom feed counter-ejectors from minis to jumbos, top and bottom fold folder-glue, jumbo unit stackers, lead edge feeders, two-piece one pass glue, moulder proofers, die proofers, continuous running stackers for digital printers, electrical upgrades and rebuilds.



Advantzware

Providing a flexible and comprehensive system to address the business management needs of the independent box business, as well as full scale packaging plants and integrated companies. With modules for estimating, scheduling, production, inventory and accounting, this scalable system supports packaging plants of all types and sizes.

Air Systems Design, Inc.

ASDI offers customized scrap removal systems on a turnkey basis, providing products for pneumatic conveying, material handling and dust control.

For over 39 years the company has installed separators inside plants, including mechanical conveyors directly to the baler for horsepower savings and for the BHS zero-defect corrugator and other types of corrugators.

Albany International Corp.

A supplier of corrugator belts, product offerings include one of the industry's only non-adhesive EZ lagging, an energy saving belt DuraSpiral and Durapro LP, for today's demanding market. Also available is an audit service (Accupressure), which maps the double backer pressure system.



Alliance Machine Systems International, LLC

For more than 40 years, the Spokane Valley, Wash.-based company has designed and manufactured more than 14,000 machines for the corrugated industry, with installations worldwide. Products include robotic load formers, stackers, prefeeders, pallet handlers, specialty folder-glue, and more.



American Baler

Offering tension systems that yield heavier bales, lower wire costs, less material handling, and longer lasting machines. The automatic tie system pulls the wire across for most efficient ties and is on casters for easy swing out for house cleaning. With service techs around the country, the company can ensure critical up time.



American Corrugated Machine (ACM)

An industry leader since 1985, the company is a broker of new and used equipment from industry suppliers, such as Torosian Tech Services, Sechang Machinery Company, RJE Machinery, Engineered Recycling Systems, Potdevin, and Marumatsu. ACM also specializes in expert ASA appraisals.



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Anilox Roll Cleaning Systems, Inc. (ARCS)

The Eclipse® Anilox Laser Cleaning System provides state-of-the-art technology using a proprietary rotary laser scanner that can clean all types of printing and coating rolls. Sustainable technology - no waste generated. Branch offices are located in Philadelphia and Charlotte. Equipment sales and on and off-site roll cleaning services are available.



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THURSDAY:
NOON - 3:00 P.M.

SPECIAL EXPO
FLOOR RECEPTIONS:
3:00 - 5:00 P.M.

Apex International

The company provides box makers and box printers performance upgrades. GTT anilox rolls are optimized for clean, ink-efficient corrugated printing. Corrosion-proof Accora glue sets feature precision stainless steel applicator rolls and ceramic doctor rolls which maintain an optimum gap. OEM-tested, approved and recommended.



ARC International

With manufacturing plants in Charlotte, N.C. and Las Vegas, Nev., the company supplies new and reconditioned anilox, wiper, feed, glue, meter, knife, splicer and impression rollers to the flexographic and corrugated industries. Offerings include 100% carbon fiber mono-blade and dual-blade chambers. Technical field personnel can perform roller audits and provide technical support and training.



ATS-Tanner Banding Systems AG

Providing premium quality, innovative and sustainable banding solutions to secure product during transport or for retail packaging, the company bundles and packs products sensibly, ecologically and economically and offers solutions that range from table tops, to stand alone, all the way up to fully automated.



Automated Conveyor Systems, Inc.

Introducing new product offerings and new technology for existing products, ACS Load Tiering Devices now incorporate touch screen panels to assist with troubleshooting and replacement parts identification. New products include stack inverters, bundle tripler and ball top turntables.

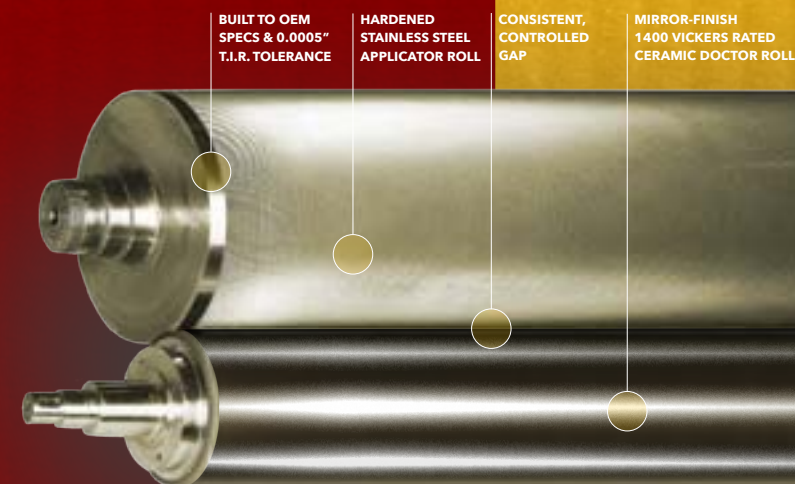


BGM Bahmüller

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speeds. As a partner in the joint venture, BGM Bahmüller offers sophisticated flexo folder-gluers with working widths of up to 5.5 m (217").

Balemaster

An innovator in baling technology, balers are equipped with features that maximize bale density, minimize dust, and optimize throughput capacity. Balemaster will feature its specialty export baler designed to produce bales that weigh over 2000 lbs.



Barberán S.A.

Founded in 1929, the Spanish company manufactures industrial surface machinery and specializes in digital printing machinery.

Baysek Machines

The company produces flat die-rotary anvil diecutters. Features of the C-170 include: one operator, automatically shear cut, fully stripped waste, accurately counted and neatly stacked, nick/tag and angel hair free finished units. New is a digital post printer for corrugated boxes. Print bar codes, QR codes, part identification numbers, pizza boxes and more.



BCM Inks

Learn about the company's successful e-commerce printing and digital OPV solutions. BCM's ecofriendly e-Flex inks and varnishes are designed to increase press efficiency on inside/outside presses while providing necessary protection. The brand color is controlled by online Color ConneXion® color management software designed specifically for the corrugated industry.



Bickers GmbH

The GLUEJET -XY glue plotter for perfect and profitable displays and packaging features servo-controlled automatic XY gluing with



GLUEJET® PA - Glue Plotter
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application of hot melt adhesives and cold PVA glue. Independently controllable workplaces allow for production from all four sides of the table. Benefits include increased productivity, product quality, better work ergonomics and optimized staff deployment.

Boiler & Steam Performance

Providing steam solutions for the corrugated industry. From complete solutions to component upgrades, BSP can supply replacement boiler room code tanks and assist converters that are planning to upgrade steam/boiler systems, add equipment or install a new corrugator steam system.



Bowoo Co., Ltd

The company offers singlefacer belts for MHI 60G and 60H and BHS corrugators.

BW Papersystems

Offering a complete line of corrugator equipment, brands include legendary MarquipWardUnited corrugators as well as VortX starch kitchens. The company also offers an extensive range of finishing equipment, including rotary diecutters, flexo folder-gluers, and twin box slitters.



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Cambrica Corp.

Classify, link, analyze, and understand your data. Turn your data into business assets to stay competitive. Discover and analyze complex relations in your data with one of the best and most versatile Semantic AI platforms on the market.

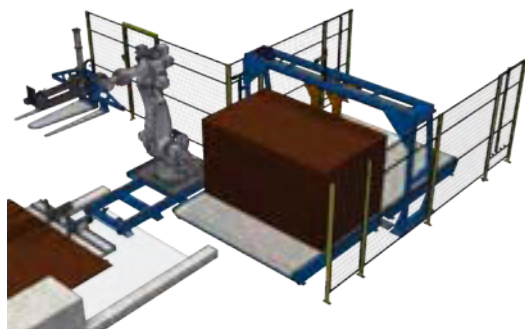
CavCom

Providing communication and hearing protection solutions for any environment. RadioGear® and Talk Through Your Ears® technology ensures hearing protection and 2-way radio communications. Standard and filtered EarzOn® and TruEarz® products provide industry standard hearing protection with the option for enhanced face-to-face communication and situational awareness.



Chicago Electric

The leader in upgrades for the corrugating industry will display new thin-wall hot plates and roller shoe conversion to improve the critical



bonding zone on the corrugator. Also on display will be the new ProFeeder robotic prefeeder solution from BHS Robotics.

Container Graphics Corp.

The supplier of rotary and flat cutting dies, flexographic printing plates and pre-press services is also an international distributor of cutting die and printing plate supplies. The family-owned business of more than 60 years has 14 facilities in the U.S. and Canada.



Copar

Specializing in corrugator bridge control, synchronized splicing, process control, closed-loop warp correction, and thermal imaging as well as glue application, glue detection, jam detection and plant-wide production displays for converting lines. Newly formed Copar Electric provides complete electrical installation services for both the corrugator and converting lines.



Corrugated Box Equipment LLC

Supplying a wide range of machines for converting and testing, with a specialty in ecological and productive



solutions with finished goods like food and industrial packaging, edge board protectors, tube applications and disposables from recycled raw material.

Corrugated Chemicals

The company has been providing specialty chemicals and services to the corrugated packaging industry for over 40 years. CCI's proactive approach has helped it become one of the largest specialty companies in the corrugated industry. Growth has come through the evolving needs of clients and focusing on their bottom line.

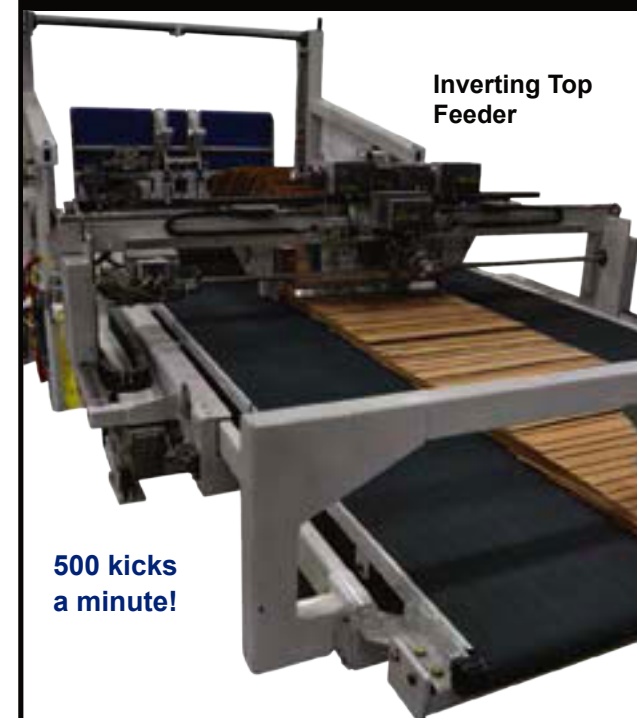
Corrugated Gear

Serving the corrugated industry for over 30 years with quality replacement parts and excellence in the rebuilding and upgrading of machinery from roll stands to complete flexo folder-glueers from most manufacturers. Corrugated Gear has specifications for over 800,000 parts, an in-house manufacturing/fabrication facility, and a fully capable ReBuild center.



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Corrugated Replacements, Inc.

Assisting corrugated box plants in the maintenance of their corrugating/ converting machinery by supplying replacement parts and offering other useful services. Specializing in custom machined parts and offering quick turnaround with attention to customer service.



Cristini

The patented Spirabelt™ is a significant development in corrugator belt design in the last 40 years. The result of over 10 years of research and development has led to a belt of unparalleled design that was recently awarded various patents.



CST Systems Inc.

The company is the exclusive U.S. distributor of Renova roll movers, brake systems, humidity control systems, tension control systems,



and Renova and Casrem mechanical chucks. It is also a U.S. distributor of Ecochem anilox roll cleaning systems and starch removers, and IBD Wickeltechnik winding shafts.

Dicar

The global supplier of durable urethane anvil covers, diecutting systems and die supplies also provides a range of expert services and support around the world. Popular products include Anvilok® anvil covers, Anvilok III® glue lap/ hand hold system, Crushless® wheels, Dicar Equalizer® G4, AnviLatch™, SpeedStraps™ and more.



Domino

Celebrating its 43rd year in business, the global manufacturer and distributor of digital printing solutions with world headquarters in the UK, and North America headquarters in Gurnee, Ill., has 25 subsidiaries, representation in over 120 countries, and over 2900 employees worldwide. Visit to learn more about the new X630i digital aqueous inkjet corrugated press. dominodigitalprinting.com



Ducker-Ringwood Automation

The material handling solutions company specializes in automatic corrugator take-off systems to full plant automation, including automatic high-speed robotic pre-feeders and palletizers.

Eaglewood Technologies

The recipient of the FTA Technical Innovation Award and finalist of the Label Industry Global Award for Innovation is an anilox roll cleaning expert with a solution for every flexographic printer. In addition to cleaning systems, the company offers mobile service, bringing sophisticated technology to the customer's door.



EAM-Mosca Corp.

High-performance bundlers and unitizers efficiently strap bundles and loads of corrugated cartons, sheet, shingled product streams, bulk bins, and retail-ready pop-up displays. Several new products focus on automation, improved speed and reliability to meet the steady pace of technology-based innovation in the industry.

GAMA AMERICAS Ink Control Systems



G31 VISCOMETER

For The Corrugated Market

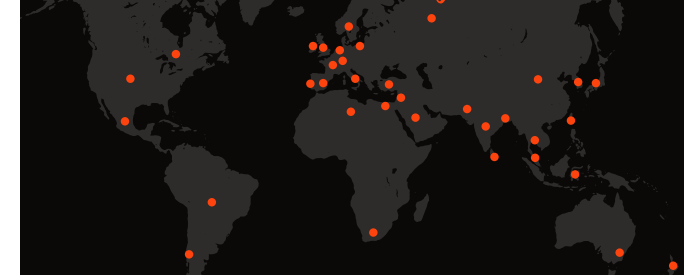
- pH, viscosity and temperature control
- Integrated ink transfer pipe to the press
- Easy to use
- Reduced maintenance
- Low environmental impact

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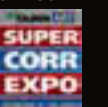


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Edda Wrapping Machines

Starting in the field of industrial electronics and automation, the company expanded its product line in 2011 to include standard packaging machines and packaging consumables. There are 28 dealers worldwide and 180 machines in operation. A recent addition is the manufacture of CNC cardboard machines.



EFI

Showcasing its end-to-end production workflows, including the Corrugated Packaging Suite, Escada corrugator control and MarketDirect Pack Central solutions, the company will also highlight Nozomi – a leading single-pass inkjet corrugated printer – and the Fiery digital front end solution used to drive ultra-high speed digital print for packaging.



Emmepi Group Srl

The company offers the design and development of integrated and turnkey solutions, based on the “made in Italy” excellence in the corrugated industry, to deal with and solve all specific needs concerning the organization of work areas, the optimization of production times and management of production processes.



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www.supercorrexpo.org

Engico SRL

Founded in 1990, the company is a supplier of tailor-made converting machines. Installations are 100% made in Italy and mainly located in Italy, Europe and North/South America. With its own technical department for design, research and development, internal patents protect several devices applied on the machines.

Felins USA

A premier partner for packaging and bundling solutions, the robust, sustainable, and cost-efficient packaging machinery includes banding machines, automated systems, shrink wrapping machines, and tying machines as well as other product lines in strapping, stretch film banding, and rubber banding. For more information, visit <https://www.felins.com>

Flint Group Image Transfer Technologies

Showcasing a portfolio of high performance, environmentally friendly, low hazard Varn® Enviroflex Biodegradable Cleaners for use as part of a regular cleaning schedule to optimize press performance and print quality.



Flint Group Packaging Inks & Poteet Printing Systems

Poteet Printing Systems and Flint Group Packaging Inks provide high-performance inks, in-plant ink dispensing, custom training programs, color management tools, and pre-press consultations. Sustainable inks and coatings from the TerraCode product line support corrugated packaging circular economy goals.



Fosber America, Inc.

The new Smart SF5-B Belt Singlefacer design has improved bonding for heavyweights while producing an indiscernible sheet on lightweights

Do you still use PP bands ?

TOM PE tape tying machine



For more info about PE tape



Movie of TOM YTC145-D



1. Cost reduction

PE tape, which is less expensive than PP bands, can reduce 55 percent of the running cost in the maximum by replacing the 7mm wide PP bands with 50mm wide PE tape.



3. Dealing with automation

For reducing labor costs and measures against labor shortage, Japanese beverage manufacturers are increasingly automating their corrugated case production lines. PE tape, which is easy to cut, take out, remove, and collect, is the most suitable for automation of the feeding process.



2. Improvement of productivity

PP bands require at least 2 seconds per strapping. TOM tying machine can tie 1 bundle for just 1.7 seconds. YTC150-H2 can tie 40 bundles per minute, so you can save 625 hours per year.



4. Conservation of the environment

Just by replacing PP bands with PE tape, the usage amount of plastic material can be reduced. PE tape is flexible so that it can also reduce its disposal volume, thus you can greatly reduce CO2 emissions and contribute to the global environmental protection.



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81 years of producing tying machines. We have 100% share in Japanese market, and also our machines are No.1 tying machines and loved in the world.



and high graphic substrates. The Quantum Corrugator uses the Quantum Singlefacer and Topfacer and is developed for the 70- and 98-inch webs. The PaperLink rounds out the latest developments in the splicer/rollstand category with a simpler, lower bridge height design.

FRIESE

The newly-formed FRIESE North America LLC is reinforcing its commitment to the North American corrugating roll market by showcasing its triple polished tungsten carbide, CCS/Thermo-grooves (condensate removal system), and proprietary flute profiles including the comprehensive PACE (profile analysis and comparison estimate).



FujiFilm North America

Fujifilm Graphic Systems Division is a global solution provider in multiple segments for the printing industry, including commercial – analog and digital – wide format, labels & packaging and industrial. The company is an industry leader in color knowledge leveraging its 80-plus years of experience in imaging.



George M. Martin Company

An internationally recognized, single source supplier of high performance rotary diecut stackers and QBIII nicked bundle breaker systems. Utilizing "Scrubber Technology," the company designs and delivers high speed, top performance material handling solutions for maximum performance. Equipment can be seen on new or existing rotary diecutters of all makes, models and sizes.



HAECO

Celebrating 40 years, the company will display dynamic demonstrations of the InControl Series for high-speed flexo and specialty folder gluing solutions; the new InSpect glue verification; the



next generation of trim removal system, TRS-4; engineered gluing solutions for gluing corrugated damage prevention products; and introducing Meler hot melt gluing solutions.

Haire Group

A premier provider of new machinery for over 40 years, the team has been meeting customer needs with innovative solutions, including Apstar rotary diecutters, flexo folder-gluer and more. Visit www.hairegroup.com for more information.



HarperLove

The company offers specialty adhesives, performance additives, and wet-strength resins. Services include product development and custom product formulation, machine and process assessments, adhesive formula adjustments, machine tuning, detailed service reporting, and more.



HITEK Equipment Inc.

The following fast setup equipment will be highlighted: BCM Transtech die and print plate storage systems and CleanFlex print plate cleaning system; Marumatsu automatic flatbed diecutters; Bizzozero BoxMaster box making machine; Kiseung KT platen diecutters; Lian Tiee flexo folder-gluer, rotary diecutters and print slotters.

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BLANKING DIE
CUTTING PLATES
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SAFELY IN CASSETTES

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Hurst Boiler & Welding Company, Inc.

Manufacturing, designing, engineering and servicing gas, oil, coal, solid waste, wood, biomass and hybrid fuel-fired steam and hot water boilers since 1967. The company also manufactures a complete line of boiler parts and boiler room peripherals and provides turnkey aftermarket products and services.

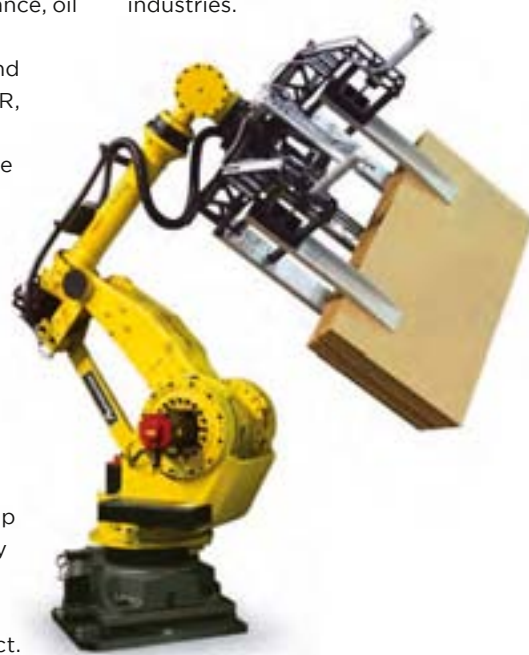


ICASA

Custom made functional coatings for paperboard and paper products, coatings include water resistance, oil and grease resistance, non-abrasion, anti skid, paraffin and wax replacements, ESD, MVTR, heat resistance, over prints, flame retardants, polyethylene replacements, flexo coatings and tailor made coatings for corrugators, converters, paper mills and offline coating processors.

Ingredion Inc.

The full-service adhesive supplier to the corrugating industry applies decades of corrugating experience to help meet and exceed productivity and performance targets – [with overall lower costs and reduced environmental impact.



Innoveyance: C&M Conveyor & Ohio Blow Pipe

Delivering dependable, comprehensive custom-engineered solutions in material and scrap/trim handling and dust collection. Molded through the integration of C&M Conveyor (est. 1982) and Ohio Blow Pipe (est. 1932), the company manufactures and installs safe, efficient and reliable solutions to help modern box plants excel.



Inspire Automation

Made up of the Systec and Automatan brands with locations in Indianapolis, Ind., and Plover, Wis., the company is a full system provider of material handling, litho-label printing, and robotic automation solutions for the corrugated and folding carton industries.

INSUN

In business since 1991, the specialist manufacturer offers automatic folder-glueers and stitchers and double bundling/strapping machines for the global corrugated box industry.



ISRA VISION AG

Together with its subsidiaries, the company is a market leader in surface inspection systems. With 25 sites worldwide, ISRA is always close to customers, ensuring optimum service and support. CartonSTAR inspection system for printed corrugated carton board will be presented at SuperCorrExpo.



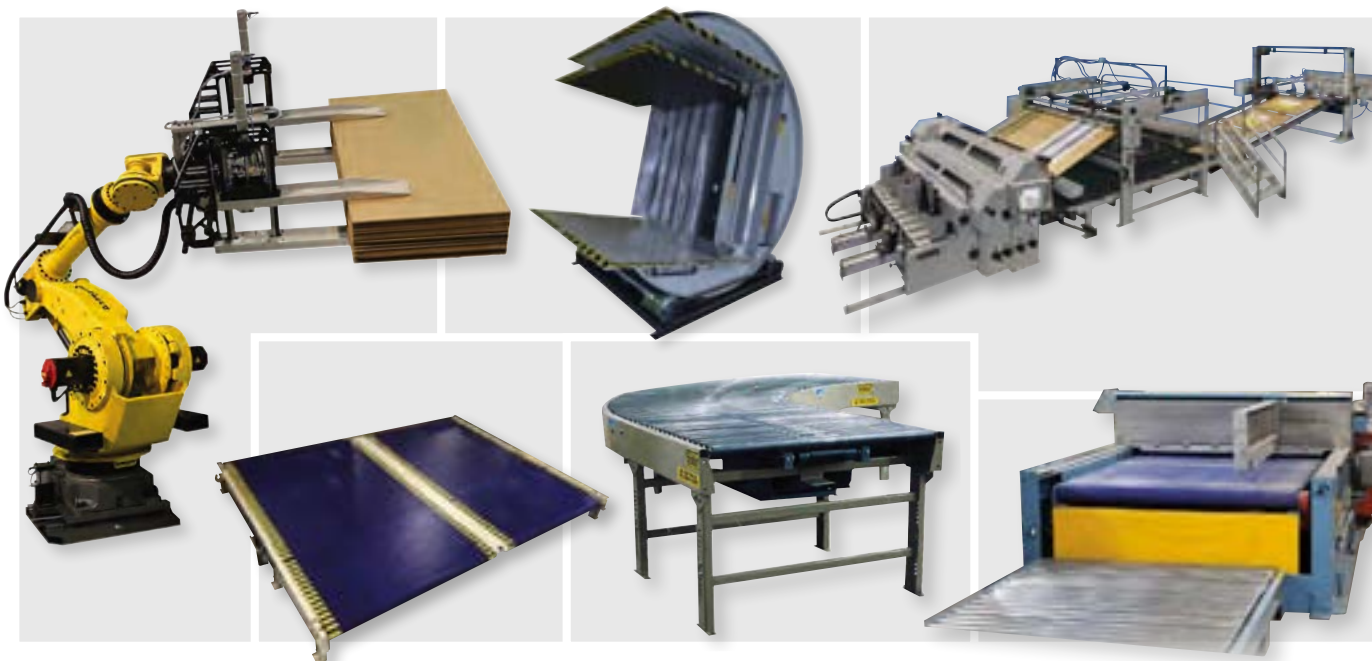
JB Machinery Inc.

Innovative products that optimize productivity, quality, and safety of direct print flexo include ColorDry XL3000 IR dryers, ColorCure COLDUV, KleenPlate3.0, InKomand



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precise ink temperature control and KomandCenter single control platform. ColorDry XL-UP and ColorCure TurboBOOST upgrades bring existing systems up to JB's latest safety and performance standards.

JKSP Services

AirBond double backer upgrade enables increased running speeds, reduced waste and enhanced quality. It is compatible with all types of double backers to replace inefficient weight roll and shoe systems that don't fully utilize the available heat in the hotplates along with a limited level of process control.



Jonco Die Co. Inc.

The manufacturer of platen and rotary steel rule cutting dies, creasing counters and stripping fixtures is an Inspire Innovations member and authorized provider of TopMatrix™ and TrimSaver™ and produces corrugated rotary cutting dies with or without mechanical stripping.

Kernic Systems Inc.

For over 40 years the company has provided balers, air conveying and dust collection systems, shredders, industrial vacuums, vertical balers, and recycling equipment to the corrugated industry and a wide range of markets.

Koenig & Bauer Durst

The digital printing joint venture of Koenig & Bauer Durst paves the way for the digital transformation of production processes with single

pass digital printing systems for the folding carton and corrugated industry that convince with their productivity and set standards in terms of print quality.

Kolbus Hycorr

Delivering advanced equipment solutions for corrugated and rigid box production, new products include the Kolbus RD-S, Boxline and Autobox AB310. The Kolbus Hycorr family of flexo rotary diecutters continue to be manufactured in the USA. All equipment is supported by a network of North American based service personnel and spare parts inventory.



Kongsberg Precision Cutting Systems

Delivering robust and reliable digital cutting solutions to wide format, packaging, and industrial markets worldwide. By fusing technology and creativity, Kongsberg PCS enables customers to produce faster, safer, and more efficiently without limiting imagination.

Leipa/Sharp International Group

Leipa GmbH has partnered with Sharp International (Group) for over 15 years to make its full line of coated and uncoated 100% recycled white top linerboards available to corrugated box manufacturers in the US and Canada. The latest print capabilities and custom inventory programs in US warehouses will be highlighted.



Lenze

The global manufacturer of electrical and mechanical drives, motion control and automation technology, including IoT cloud solutions, provides powerful hardware and software to enable converting and printing machine automation, from wet-end to dry-end, and corrugated board production, to the printing and finishing of packaging materials and labels.



Mainline Conveyor Systems

Delivering products and services for the conveying needs of the corrugated industry for over 30 years, the company's conveyor industry veterans understand the modern corrugated box plant's requirements for a material handling system.



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Mercury USA Inc.

Mercury manufactures many parts, such as anvil covers, feed wheels, no crush wheels, conveyor and transmission belts, folding belts, doctor blade end seals, and PU creasers, as well as plastic and steel doctor blades, cutting die supplies and many other aftermarket products.



Mid America Paper Recycling

Mid America Paper Recycling, a national recycling industry leader, designs recycling solutions for paper packaging firms and containerboard facilities, small and large. The Waste Audit can help improve recycling processes and realize significant revenues from recyclable pre-consumer waste. Take a free online survey to upgrade your processes.

HOW WE TURN WASTE STREAMS INTO GROWING VALUE STREAMS.

Mid America designs customized recycling programs for companies ranging from small businesses all the way up to Fortune 500 corporations. We understand the challenges companies face in securing reliable revenue streams, and we spot the shortcomings of their current recycling vendors - even though the vendors are often seen as "solid enough." When recycling is wasted, it's not helping increase revenue or meet environmental goals.

WE FIND EVERY ANGLE TO MINIMIZE WASTE AND GROW REVENUE:

- Process Based On Continuous Improvement
- Mid-Direct Insights That Maximize Value
- Training Staff For Safety & Efficiency
- Equipment Recommendations & Leasing
- Superior Logistics Resources & Coordination
- Reducing Costs Downgrades & Rejections
- Accurate Reporting & Quarterly Meetings
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GROWING THE WORTH OF YOUR WASTE STARTS WITH A FREE WASTE AUDIT.

This is a proven process, based on continuous improvement methods, that forms the foundation for our strategic business partnership with you.

The first part of the audit happens in an online survey with about 40 questions. Next, there may be follow-up phone conversations or site visits.

OUR COMPREHENSIVE PROCESS AUDITS ALL THE FOLLOWING AREAS:

INFORMATION ABOUT YOUR BUSINESS	OPERATIONAL GOALS	LOGISTICS	WASTE VOLUMES	EQUIPMENT / LABOR	FINANCIAL GOALS	SERVICES	SAFETY	CONTINUOUS IMPROVEMENT
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Mitsubishi Heavy Industries America

With a staff of engineers for field service in North America, the company has many years of collective experience in servicing and maintaining Mitsubishi machinery and provides free on-call support to all customers and machinery, past and present. With some machines running for over 40 years, MHIA collaborates with customers to upgrade and rebuild.

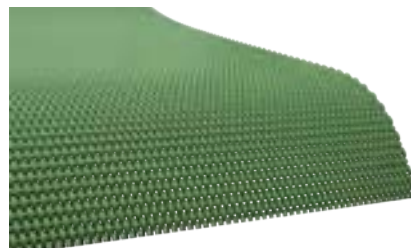
MoistTech Corp.

The IR3000 can scan across the paper web to obtain cross-web moisture profiles, which allows detection of wet and dry streaks. The sensor can also be installed for single point measurement for analyzing moisture levels near the edges. Measurement wavelengths, algorithms, and calibration parameters are pre-set before installation making the sensor a "plug and play" device.



Nextwire, LLC

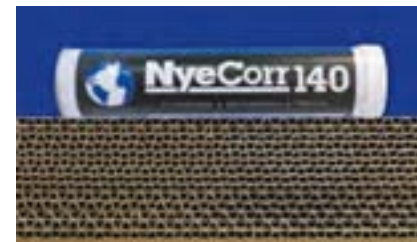
Offering performance-driven solutions including ArmorPress, a woven metal mesh engineered for increased surface contact resulting in improved bond and heat transfer. Nextwire is also the authorized North



America distributor for Hybridmesh 3322 from GKD, a multilayer mesh made with multifilament, bronze and synthetic fiber.

Nye Lubricants

A member of the FUCHS Group, the company is a leader in the innovation, formulation and manufacture of synthetic lubricants. NyeCorr® 140 synthetic corrugator grease is used for the maintenance of singlefacer and pre-heater bearings in the corrugating industry.



OASIS Alignment Services

With machine alignment and precision measurement solutions provided by OASIS, corrugated board manufacturers increase operational efficiency and get back the time needed to focus on what matters most: people, accuracy, quality, productivity.



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As the economy continues to recover, we remain committed to providing the technology, service and support so you can come back stronger than ever.

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Pamarco

Providing innovative solutions for printers to achieve efficiency and quality in their facilities, the portfolio includes anilox rolls, ink management systems, ink proofing, anilox cleaning solutions, and many other products.



Paper and Dust Pros

For over 50 years the company has designed, engineered, fabricated, installed and serviced high quality scrap removal systems and provided compact custom solutions. This includes: air conveying, trim handling and dust control systems; the original APS separator; new and warrantied refurbished equipment; real time remote systems monitoring.



Para USA Corp.

The international company offers peripheral machines and handling equipment solutions. Products include pre-feeders, palletizers, vacuum stripper stackers, bundle breakers,



centralized pallet inserters, full auto paper reel feeder/transporters to the corrugator, WIP, and vertical storage for board and finished goods.

Policart

The Italian-based company is a supplier of anvil covers and urethane components, offering a wide range of diecutting blankets, anti-crush wheels, creasing profiles and equipment. Supplying over 60 countries worldwide, distributors and agents provide technical support and on-site training.



Premier Paper Converting Machinery Inc.

Developing machinery for partition and slitting applications, with installations worldwide, from small shops to large corporations and applications including glassware (beer, wine, colognes, etc.) pharmaceuticals, automotive, health and beauty, and more.

Quest7

Established 03.03.03, the company celebrates over 18 years of supplying products to the corrugated industry as a manufacturer and distributor. Product lines include converting male and female slotters and corrugator carbide and steel razor slitters, splicing tapes, re-enforcement tapes, strings and tear tapes.



Re USA

Re S.p.A.'s factory direct office and the only authorized source for genuine Re brake pads, brakes, and brake parts, serving the USA and Canada. Products include the "Combiflex" pneumatic brake (CX series), torque-activated core chucks, and the ReCorr bridge guide system.



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have **ANY**
COLOR
as long as
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Robopac Systems

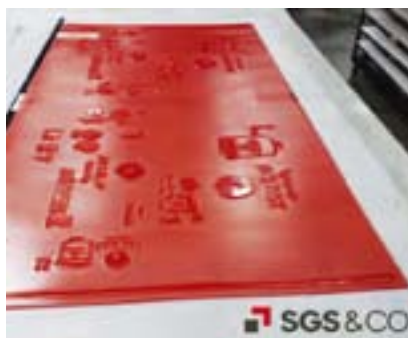
Genesis Futura XL is a fully automatic rotating ring stretch wrapper for products with dimensions up to 76" x 76" and 120" in height. The machine operates without sliding electrical contacts. It is equipped with the Robopac pre-stretch system of batteries and ultra-capacitors.



upgrades for flexo folder-glue, printer-slotter, corrugators, and floor slitters offers scorers, creasers, crushers, glue tab cutting equipment, slotter heads, scrap chopping tools, perforating tools, and much more.

SGS & Co

A leading supplier of flexographic plates for the corrugated industry, delivering innovation, quality, and speed to market for brands and printers alike. Fueled by two specialist teams, Marks and SGS, the design, technology, and production expertise offers a seamless approach to packaging commercialization.



Signode Packaging Systems/Strapping

From advanced packaging equipment and warehouse automation solutions to the production of strap, stretch and protective packaging materials, customers rely on Signode to efficiently and effectively pack, bundle, unitize, warehouse and transport their products across complex global supply chains.

Solema USA

A branch of global leader Solema SRL in Italy that designs and builds industrial machines for automation in the paperboard industry, the company provides solutions like cutting, forming, and assembling and will be featuring its new modular cutting system, UNI.CO.



SRC

The global corrugating roll manufacturer announces the opening of a new US facility. This state-of-the-art operation brings 49 years of experience to serve the North American market, providing service, cassette assembly, pressure belts, and stocks of finished rolls and cores that can be ground to customer needs.



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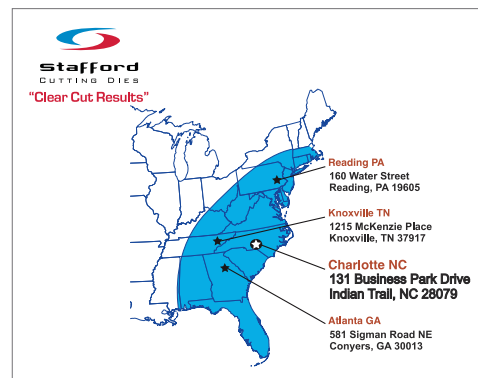
Stafford Corrugated Products

Supplying high-quality parts for every segment of the production line, including anvil covers. Stafford introduced the Rodicut Knuckle Lock Fiberglass Backed anvil covers in 2005, becoming an industry leader and setting the standard for all anvils.



Stafford Cutting Dies Inc.

Manufacturing flat and rotary cutting dies and featuring innovative technologies like TopMatrix, TrimSaver, impression counters and mobile repair carts, the company ensures on-time delivery through its own distribution system using more than 15 delivery vehicles and three remote service centers.



SUN Automation Group

The global industry leader engineers and builds the SUN625® rotary diecutter and provides sales, service and support in North and Central America for Latitude Machinery Corp. SUN is the North American, United Kingdom and Ireland sales and service provider for PARA Machinery and the North American sales provider for Highcon. In addition, SUN powers the corrugated industry's IIoT platform

EVERYTHING CORRUGATED UNDER



Helios and is also the OEM source for Langston/Staley equipment parts and service.

Teufelberger Ges.m.b.H.

The family-owned company produces PP and PET strapping, focusing on the three pillars of sustainability, performance and safety. The newest innovation, TEWE® SoPRIM® focuses on reducing the material input while having less packaging waste.



Tien Chin Yu Machinery Mfg. Co, Ltd

TCY Machinery of Taiwan is a specialized manufacturer and exporter of all sizes of flexo printers and corrugated machinery and has been established for over 50 years with more than 1000 installations worldwide. The company provides a complete range of flexo converting machinery.



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Helios

Powered by SUN

the Corrugated Industry's Machine Learning/IIoT Platform



Remote Monitoring

Deep insights into current and historical machine operation.



Anomaly Detection

Identify anomalous machine states so you can react before a failure.



Predictive Maintenance

Optimize machine maintenance intervals using AI that adapts based on machine operation and usage.



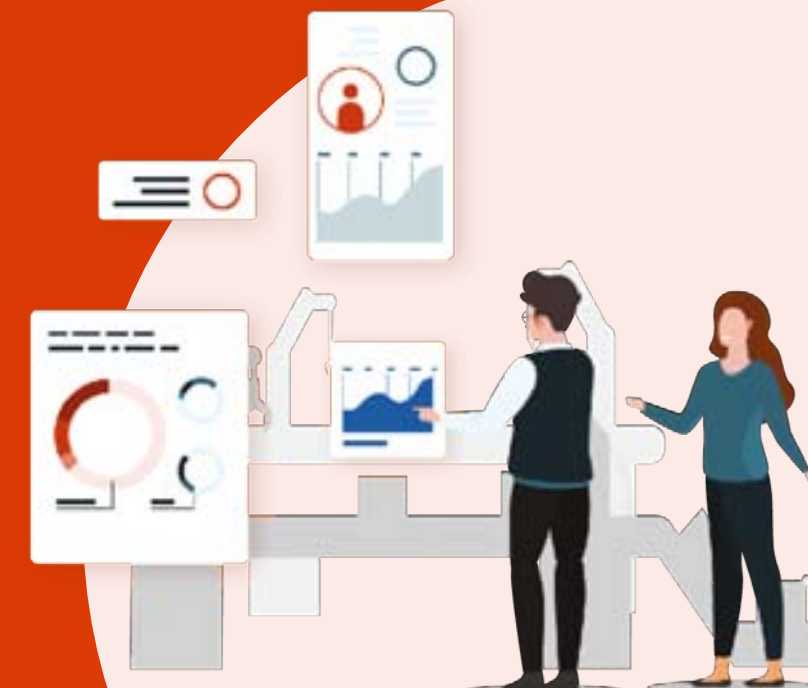
Advanced Predictive Analytics

Advance alerting of potential component failure before it happens.
COMING SOON

- ✓ Reduce production bottlenecks and unplanned downtime
- ✓ Optimize box plant productivity
- ✓ Increase asset utilization
- ✓ Optimize maintenance intervals and costs
- ✓ Automate parts orders
- ✓ Predict failures before they occur
- ✓ Minimize loss and maximize output



Learn more about Helios today by scheduling your free demo.



Tilia Labs Inc.

Offering CAD-based nesting and imposition for digital corrugated converters – reducing costs through smarter planning and layouts. As reliance on human decision-making for complex planning becomes ever more challenging, Tilia Labs is leveraging A.I. technology to help digital converters estimate faster, plan smarter, and manufacture profitably.



TRESU

A highly specialized company offering flexo printing machines, chamber doctor blade systems, doctor blades and customer service and technical support, TRESU has 40 years of experience in the development, production and maintenance of engineered solutions and supplies directly to end-customers, OEMs and partners worldwide.

Tribco Inc.

Exhibiting brake pads that last three to five times longer than traditional brake pads – but won't scratch or damage rotors and drums – because they are lined with Braketex® 100% Kevlar® fibered composite friction lining. Braketex-lined pads are ideal for all converting and corrugating applications.



Two10 Technologies

Allowing leaders to tap into the potential of their data, business is trying to talk to you. Data is being input by the gigabyte into your systems every day. Two10 turns that data into actionable solutions.

Unico, LLC

Since 1967, the company has been engineering high-performance drives and control systems and is a pioneer of direct drive cut-off controls, providing automation solutions to the converting industry for over four decades.



Valco Melton

A leader in designing and developing camera inspection systems, the company utilizes innovative research in identifying the existing needs of the corrugated box and carton industries. In today's world of manufacturing, it is more important than ever to produce defect free boxes and cartons.



Wexler Packaging Products, Inc.

A leading supplier of packaging and bundling solutions in both primary and secondary packaging, the company provides cost-saving "green" solutions for the bundling process. Wexler represents ATS-Tanner Banding Systems AG, a leading manufacturer of banding systems, machines and materials for over 20 years.

WSA-USA

The company offers material handling solutions, including full plant automated conveyor systems; iFAS (Intelligent Factory Automation Software); vertical rack storage solutions for WIP, finished goods and roll stock; state-of-the-art strapper controls; plant simulations; automatic prefeeders; bundle handling systems including breakers; pallet insertions systems and much more.



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Wulftec International

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Zefco Inc

With over 30 years of experience in the construction and foundation industry, the company is designed to demo and re-install concrete foundations on accelerated timelines

and has an in-house fabrication shop, fleet of equipment and vehicles, along with a number of experienced staff members.



Zenith Cutter

Manufacturing high-quality products for the corrugated industry since 1953, the full line includes cut off and rotary shear knife sets, slotting knives, high-speed steel or carbide razor slitters, brass fingers, brass strippers, collars, scoring rings, urethane and accessories.



Zund America, Inc.

Offering digital cutting and workflow solutions for efficient samplemaking to non-stop packaging production and providing high-performance tooling for all popular packaging materials (incl. up to 4" thick foam) and a full range of automation/robotics.



EXPO FLOOR HOURS

MONDAY - WEDNESDAY:
NOON - 5:00 P.M.

THURSDAY:
NOON - 3:00 P.M.

SPECIAL EXPO
FLOOR RECEPTIONS:
3:00 - 5:00 P.M.

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PRINTCHECK PRINT INSPECTION
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We understand that every customer has unique concerns. Our custom designed solutions will eliminate costly inefficient operations. Our remote monitoring system alerts you when there is an issue. It can also automatically shut down your entire system to prevent plugging. We provide maintenance programs to ensure limited down time.

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- ▶ FLAME & SPARK DETECTION, NFPA, ANSI AND OSHA COMPLIANT SYSTEMS
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Parts are in stock for corrugator roll replacement of most models of single facers.

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TAPPI Corrugated NEWS

SNEAK PEEK AT



2021

Corrugated Packaging Division Council

Appointed Members:

Greg Arvanigian
President
Arvco Container Corporation

Bert Hurler
Manager, Engineering & Capital Purchasing
International Paper

Michael Martin
VP Engineering Services
WestRock

Josh Reich
Sales & Customer Service Manager
Greif, Inc

Glenn Rogers
Mill Division Technical Manager
Pratt Industries

Elected Members:

Greg Jones (Supplier Advisory Chair)
Executive Vice President
SUN Automation

Stephen Burnett (Fiscotec Chair)
Technical Services Manager
Atlantic Packaging Paper Mills

John Semenske (Corbotec Chair)
Midwest Regional Sales Manager
for Corrugated
BW Papersystems

Tom Staal
Corporate Quality Manager
Advance Packaging Corporation

Mike Kohler
Vice President Sales
Kohler Coating

Lena Sharesky (Young Professional Liaison)
Sales Representative
Packaging Corporation of America

Division Leadership

Corrugated Division Chairman
Jeff Quinn
VP of Operations
The Haire Group

**Corrugated Division Vice-chair and
Technical Program Chair**
Ed Stuczynski
Director of Engineering
Menasha Packaging

Division Chair Emeritus & Awards Chair
Ell Townsend
Director of Manufacturing Services
Packaging Corporation of America

TAPPI President & CEO
Larry N. Montague

**TAPPI Corrugated Packaging Division
Account Manager**
Kristi Ledbetter

TAPPI Calendar of Events

**TAPPI/AICC
SuperCorrExpo®**
August 8-12, 2021
www.supercorrexpo.org

**Chicago TAPPI
Trade Fair**
November 2, 2021
Marriott - Oak Brook, IL

Chicago TAPPI Golf Outing
September 14, 2021
Ruffled Feathers, Lemont, IL
www.tappi.org/chicagotappi



Take a Sneak Peek at SuperCorrExpo® 2021

TAPPI/AICC SuperCorrExpo® 2021 is the most powerful global hub of corrugated networking in the Western Hemisphere. It's been five years since SuperCorrExpo 2016 and there is a lot going on within just a few days. This year is shaping up to be the best ever ... so you don't want to miss a moment! From a variety of workshops to keynote speakers with current and compelling messages, to opportunities for hands-on interaction, here's a sneak peek at what you can expect.

SuperCorrExpo kicks off **Sunday, August 8th** with the immensely popular Corrugated Classic Golf Tournament at Shingle Creek Golf Course. After a great day of golf, Sunday concludes with a Welcome Reception at the Hyatt Hotel pool where you can continue to connect and build relationships in a casual fun environment. Hawaiian Luau is the theme, so be sure to sport your best Hawaiian shirt.

The show floor opens **Monday afternoon, August 9th** with over 240 impressive exhibits throughout the entire showroom. Also, be sure to make some time to attend the Best Practices on the Corrugator Course, chaired by Tim Church of HarperLove, which will be a two-day course held **Saturday, August 7th** and **Sunday, August 8th**. The course covers a range of topics, including the best methods to achieve higher productivity, produce better product quality, and reduce waste and downtime.



Watson

As the week gets started, so do the keynote speakers. **Pete Watson**, President and CEO of Greif, Inc. presents on **Monday, August 8th** at 9:45am. As CEO, Pete's vision for Greif is: In industrial packaging, be the best performing customer service company in the world. This vision, together with developing a culture based on Servant Leadership, has been adopted by Greif's 17,000 global colleagues, and is propelling Greif to global leadership in industrial packaging.



Boyd

Pete will be followed on Monday by **Richard Boyd**, Co-founder and CEO of Tanjo, Inc., an artificial intelligence and machine learning company. Richard is a serial entrepreneur, tech consultant, celebrated author and sought-after speaker on virtual worlds, computer gaming, machine learning and human/computer interfaces. He is also co-founder and CEO of Ultisim Inc., a simulation learning company that utilizes gaming technology and AI in a variety of industries.

Panel discussions and breakout sessions get started **Tuesday morning, August 10th** with four to choose from:

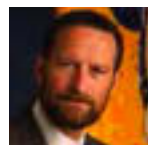
Panel Discussion "Digital Print Panel – Suppliers", **Peter Snyder**, HarperLove, Moderator. Panelists: **Matthew Condon**, Domino; **Dennis van Ijzerloo**, Barberan; **Liz Logue**, EFI; **Sharon Chesler**, HP; **Christopher Guyett**, Koenig & Bauer-Durst.

Panel Discussion "Artificial Intelligence and How It Can Be Securely Implemented", **Chris Harris**, WPR Services, Moderator. Panelists: **Craig Cumberland**, Principal Consultant at Credera and formerly with Microsoft and GE Product Development; **Benjamin Wald**, Co-founder at Very; 3rd Panelist TBD.

Breakout Session "Competitor-Proof Your Company" Speaker: **Ed Wallace**, Managing Director, AchieveNEXT Relational Capital.

Breakout Session "Capital Equipment Justification/RIO" Speakers: **Ed Garguilo**, Equipment Finannce Corp., and **Pat Szany**, American Corrugated Machine.

Tuesday and Wednesday mornings will feature two additional workshops: Production & Maintenance Forum and Hazmat Packaging: Roles & Responsibilities. Both workshops require additional registration fees.



Wardle

Following the breakout sessions, the program will move to a general session room on the exhibit floor and will feature keynote speaker **Duncan Wardle**, Former Disney Head of Innovation & Creativity. Duncan and his team helped Imagineering, Lucasfilm, Marvel, Pixar and Disney Parks to innovate, creating magical new storylines and experiences for consumers around the globe. As founder of iD8 & innov8 he now brings his extensive Disney experience to audiences around the world using a very unique approach to Design Thinking that places the end user at the core of the creative thinking process and also looks in new and usual places to uncover insights for innovation. This helps people capture unlikely connections, leading to fresh thinking and disruptive ideas.

Presentations on **Wednesday, August 11th** bring a new level of excitement with three separate panel discussions and a breakout session:

Panel Discussion "Digital Corrugated Converters Panel", **Jim Wegemer**, INX International, Moderator. Panelists: **John Kelly**, Dusobox; **Howard Bertram**, Complete Design; **Gabriel Perez**, Bay Cities Container; **Finn MacDonald**, Independent II.



Panel Discussion "How Our Industry is Stronger Post-COVID", **John Semenske**, BW Papersystems, Moderator. Panelists: **Neal McConnellogue**, BW Papersystems, **Dave Burgess**, JB Machinery; **Richard Brochard**, WestRock.

Panel Discussion "Virtual Training for Boxplants – Tools/Techniques", **Paul Aliprando**, SUN Automation, Moderator. Panelists: TBD

Breakout Session: "Deliver Impactful Value Propositions" Speaker: **Ed Wallace**, AchieveNEXT Relational Capital.



Sewell

David Sewell, newly appointed President and CEO of WestRock, will deliver the keynote address on Wednesday. Sewell joined WestRock Company as chief executive officer in March 2021 and is already leaning into sustainability, innovation as well as diversity and inclusion to deliver the next generation of fiber-based packaging solutions. David joined WestRock from the globally recognized brand, Sherwin-Williams, and is bringing new perspective while also leveraging the \$18 billion company's extensive and differentiated portfolio and award-winning talent.

You don't want to miss what's on tap for the last day of SuperCorrExpo, Thursday, August 12th, because it won't be around again for another three years!

Breakout Session "A Primer Session on Corrugated", **Tim Church**, HarperLove, Moderator.

Panel Discussion "Recruiting and Retaining Talent in Current Times", **Jeff Pallini**, Fosber America, Moderator. Panelists TBD.

Panel Discussion "Inside/Outside Printing Panel", **Tim Wilson**, Haire Group, **Steve Biller**, BW Papersystems.



Morris

The 2021 SuperCorrExpo program will conclude on Thursday with a keynote address from **Jim Morris**, Athlete, Author, Teacher and inspiration for the movie "The Rookie." The Cinderella story of Jim Morris serves as testimony to the power of dreams and their ability to inspire and transform human life. Jim Morris' meteoric rise from 35-year-old high school teacher to flame-throwing major league pitcher in three months made cinematic history with the release of "The Rookie" starring Dennis Quaid.

In addition to the conference program which is full of technical information and educational opportunities, the exhibit floor will be open each afternoon Monday – Thursday for access to over 240 exhibitors under one roof. SuperCorrExpo will also host the first-ever Box Manufacturing Olympics which will be on display on the exhibit floor all week. This competition will be a combination of the TAPPI CorrPak® Competition and the AICC Packaging Design Competition and is sure to attract the best new designs in packaging and printing. Attendees will have the chance to vote for their favorite entry.

A first-ever Women in Industry breakfast on Wednesday morning, and annual meetings for the technical committees of TAPPI's Corrugated Division, will offer the opportunity for additional relationship building and connections. Check the schedule of events so that you don't miss these key elements of the week's activities.

To stay up to date with the latest developments and to register, please visit www.supercorrexpo.org





TAPPI CORRUGATED PACKAGING DIVISION



REACH RELATE RESONATE



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SUPERCORREXPO 2021 EXHIBITOR LIST (AS OF JUNE 3, 2021)

A.G. Stacker, Inc.	Baysek Machines Inc.	Cuir Corrugated
Absolute/Pamarco	BCM Inks	DataLase, Inc.
ADI/PDM Trade Group	Belt Power LLC	Deublin
Advanced Dynamics/MoveRoll	Beta Industries	DICAR Inc.
Advanced Equipment Sales	Bickers GmbH	Dieco/Graphics 2 Press
Advantzware	BKG Corrugating Rolls	Digital Print, Inc.
AICC, The Packaging School	Blower Application Company (BloApCo)	Domino
Air Systems Design, Inc.	Boiler & Steam Performance	Doyle Systems, Inc.
Albany International	Borregaad USA	Ducker-Ringwood Automation
Alliance Machine Systems International, LLC	Box & Carton Blue Book	Duo-Technik GmbH
Allied Powers LLC	BW Papersystems	DuPont Image Solutions USA, LLC
American Baler	C & M Conveyor Inc.	Eaglewood Technologies
American Corrugated Machine (ACM)	C.U.E. Inc.	EAM- Mosca Corp
Amtech Software/Avista/Qualitek	Cambrica Corp.	EDDA WRAPPING MACHINES
Anilox Roll Cleaning Systems, Inc. (ARCS)	CavCom	EFI
Apex International	CETCO	Ely Enterprises, Inc.
ARC International	Chicago Electric Company	Emmepi Group SRL
Arco Murray	Colex Finishing/Patrick & Vernon	Engico SRL
Arden Software North America	Compass Systems & Sales, LLC	Engineered Recycling Systems
ATS-Tanner Banding Systems AG	Container Graphics	Erhardt & Leimer Inc.
Automated Conveyor Systems, Inc. (ACS)	COPAR Corporation	FARO Bearings USA, Inc.
Automation & Control Inc. (ACI)	Core Stripper, Inc.	Felins USA
Avista Solutions International, Inc.	Corrquest Automation, Inc.	Flint Group
Bahmuller	CORRUCLEANER	Flora/Shenzhen Runtianzhi Digital Equipment
Baldwin Technology Co. Inc.	Corrugated Box Equipment LLC	Fluke Reliability
Balemaster	Corrugated Chemicals	Fosber America/Tiruna
Baler Service Co.	Corrugated Gear	Freeman Manufacturing & Supply Co.
Barberán S.A.	Corrugated Replacements	FujiFilm North America
Baumer hhs	CST Systems Inc.	George M. Martin Company



TAPPI CORRUGATED PACKAGING DIVISION

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Global Boxmachine, LLC	Mid America Paper Recycling	SGS
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Haire Group	MoistTech Corp.	Signode Packaging Systems /Strapping
Hansen-Rice, Inc.	Monroe Rubber & Plastic Inc./Essential Products	Sioux Rubber and Urethane
Harmax RollCon	MoveRoll	Solema USA
HarperLove Adhesives	MSK Covertech, Inc.	SRC Corp.
Henkel Corporation	Muhlen Sohn Inc	SRPACK Machine Co. LTD
Heraeus Noblelight America LLC	Nextwire, LLC.	Stafford Corrugated Products Inc.
HITEK Equipment Inc.	Northland Chemical Inc.	Stafford Cutting Dies
Höcker Polytechnik GmbH	Nye Lubricants	Stickle Steam Specialties Co. Inc.
HP	OASIS Alignment Services, Inc.	Stitching & Gluing Solutions
Hurst Boiler	Olympic Wire & Equipment	StraPack Inc.
ICASA	OM Partners	SUN Automation Group
Ingredion	Omya, Inc.	Syn-Tech Ltd.
Inspire Automation: Systec & Automatan	OpSigal	Taiwan Endurance Co. Ltd.
Insun	PAC Strapping Products Inc.	Talleres Serra S.A.
International Baler Corp.	Pace Punches, Inc.	TAPPISAFE
INX International Ink. Co.	Pace Punches, Inc.	TEUFELBERGER
ISRA VISION	Padrick & Vernon Equipment, LLC	Tien Chin Yu Machinery Mfg. Co, Ltd
J.M. Fry Printing Inks	Paper and Dust Pros	Tilia Labs
JB Machinery Inc.	Para USA Corp.	Tiruna
JDengineers B.V.	Peoples Capital & Leasing Corp.	TISCO/ Thacker Industrial Service Co.
JJC Services LLC	PIC-Precision Industrial Contractors	TKM, US
JKSP Services	Policart SRL Anvil Covers	Transpak Equipment Corp
JML Services	PolyChem Corp	TRESU
Jonco Die Co Inc.	Polymag Tek, Inc.	Tribco Inc.
Kadant Johnson Inc.	Poteet Printing Systems	Triosim Corporation
KERNIC SYSTEMS INC.	PowerHandling, Inc	TRUE NORTH GRAPHICS, Inc.
Kiwiplan Inc.	Premier Paper Converting Machinery Inc.	Two10 Technologies
Koenig & Bauer-Durst	Printron	Unico, LLC
Kohler Coating	Procemex	Valco Melton
Kolbus Hycorr	Projects Designed and Built (PD&B)	WEIMA America, Inc.
Kongsberg Precision Cutting Systems	PRP	Wexler Packaging Products
KPI Incorporated	Qualitek Solutions, Inc.	Wisdom Adhesives Worldwide
Lamina Systems	Quest7	WPR Services
LENZE Americas	RaeCorr Industries	WSA USA, LLC
Lubcon Turmo Lubrication, Inc.	RapidBond	Wulftec International
Magnum Inks & Coatings	Re S.p.A.	Xante Corporation
Mainline Conveyor Systems Inc.	Robopac Systems	Zefco Inc.
Maren Balers & Shredders	Rochester Midland Corporation	Zemat Technology Group
MaxDura International Co., Ltd.	Rodicut Industry s.a.u._	Zenith Cutter
MCTRON	Samuel Packaging Systems Group	Zund America, Inc.



TAPPI CORRUGATED PACKAGING DIVISION

What's in Store at SuperCorr?

If you're looking to build and augment business relationships this is the place to be

From golfing to luaus to an epic gala so spectacular we can't even mention it by name, the opportunities for building solid business relationships don't get any better than this.

And by "this" we mean SuperCorrExpo® 2021 (SCE 21).

With an established and well-deserved reputation as the corrugated event to attend regardless whether you are buying or selling, SCE 21 has been designed around a number of relationship-building events. It begins Sunday, August 8 at the Shingle Creek Golf Club at the one and only Corrugated Classic Golf Tournament.

Deals are made on the golf course

Consistently one of the most popular industry golf gatherings because of the number of members it brings together, this year's Classic promises to shine thanks in part to the recently revamped course. Three new holes, a group of redesigned holes, and the overall balance of the course recalibrated to accommodate new design features means more forgiveness and recovery options along the extra-long par 4s and 5s. The course now features more visible and strategically placed bunkers that force players to navigate creatively, yet demands precision. The greens highlight a variety of slopes, mounds, and swales complemented by varying sizes from 3,500 to over 9,500 square feet.



After the 19th hole, SCE attendees continue the camaraderie at the Opening Night Reception and official ribbon-cutting at the Hyatt Regency Hotel. With a luau theme, everyone is encouraged to wear their favorite "tropical" shirt because who knows, you may just win first prize for the most laid-back shirt on display. A three-piece, beach-inspired band rounds out the evening's festivities.

On Monday, TAPPI holds its Awards and Recognition Breakfast beginning at 7:30 a.m. in the general session room on the Exhibit Floor in the Orange County Convention Center (OCCC). Greif, Inc. President and CEO Pete Watson then kicks off the 2021 keynotes with the opening presentation – a sure way to learn where the industry is headed after the ups and downs of the year-plus pandemic. And then the turbo-charged relationship building begins, with the

official opening of the Exhibit Floor at noon on Monday, Tuesday and Wednesday, and receptions on the Exhibit Floor from 3:00 p.m. – 5:00 p.m. each day. The Exhibit Floor will remain open on Thursday from noon until 3:00 p.m.

Technically, we can't mention it by name

As the technical programming continues on Tuesday, AICC holds its annual Awards and Recognition program in the Exhibit Hall, honoring Student Design Competition winners and Troll Scholarship Recipients, the Innovator of the Year, and the official Board elections. TAPPI's Corrugated Board Technical Services Committee (CORBOTEC) also meets from 12:10 – 1:30 p.m.

The evening offers a very special (and epic) event at Universal Orlando Resort, beginning with dinner at Jimmy Buffett's® Margaritaville® Restaurant. Private access for SCE attendees means limited lines and crowds and an evening tailor-made for special memories. Buses will begin pick-ups from the Rosen, Hilton and Hyatt Hotels beginning at 6:00 p.m. Return transportation will be available starting at 9:00 p.m.

On Wednesday, the relationship building continues with TAPPI's Fiberboard Shipping Container Testing Committee (FISCOTEC) meeting beginning at 12:30 p.m., the Emerging Leaders/Young Professionals special evening gathering at the Hyatt from 6:30 – 9:30 p.m., and the popular International Reception at the OCCC where all SCE attendees are invited and encouraged to attend. The excitement kicks off earlier in the day with a virtual plant tour of Dusobox from 8:00 a.m. – 9:00 a.m., and a Women in Industry breakfast, followed by a ground-breaking keynote address from brand new WestRock CEO, David Sewell.

Finally, on Thursday, Best of Industry and Attendees Choice winners of the TAPPI/AICC first-ever Box Manufacturing Olympics will be declared, followed by the anticipated closing keynote address by Jim Morris, athlete, author and teacher who served as the real-life inspiration for the movie, "The Rookie." And, if that isn't enough, the final hours for the show floor will run from noon until 3:00 p.m. before closing once again until the next SuperCorrExpo in 2024.

Universal Orlando is matching the latest local health and safety guidelines to enhance your experience across the resort. Learn all you need to know by visiting www.universalorlando.com/safetyinfo.

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Brands require accurate color in print. Our DiamondTop™ white linerboard grades deliver uncompromised quality and consistency helping you hit your customers' delta E requirements. Produced from virgin fiber and without the use of Optical Brightening Agents (OBAs), DiamondTop™ offers a naturally bright sheet with inherent visual stability and low b-value variance.

Give yourself the competitive edge; choose DiamondTop™ for superior flexo and digital print performance.

DiamondTop™
White linerboard solution



IN CONVERSATION CHRIS HEUSCH, FOUNDER OF ARCH

AS REPORTED BY DWAYNE SHRADER

ARCH Inc. opened its doors in 1996 as a consulting firm offering technical expertise to box makers who were trying to enter the then relatively new market of high-graphic direct print. Chris Heusch, President, Founder and principal consultant of the firm takes a look back at the beginning of ARCH and how the industry has changed in the last 25 years. Born and raised in Germany, Heusch's initial education and career was in finance. In 1987 he joined the family business, Dr. Lambotte & Schattenberg, ink makers of Bonn, Germany. Dr. Lambotte mostly served the packaging industries, with the main market being corrugated flexo direct print. Along with his father, Wim Heusch, he jointly managed the company for a number of years and expanded the international footprint to include key clientele throughout Europe, Africa and Australia.

Chris Heusch – a guest speaker at the AICC Digital Experience forum.

We work with box makers to bring their personnel on board with new equipment, technologies and best practice processes.

How has ARCH evolved over the past 25 years?

ARCH Inc. was founded as a consulting firm, offering technical expertise to family owned and managed producers of paperboard packaging in the Americas and Europe. In the beginning our main focus was on providing educational products for production personnel. That's still a key offering today as we work with box makers to bring their personnel on board with new equipment, technologies and best practice processes. Our capital equipment and general business consultancy engagements have grown over the years to a more prominent role, but education is still the main focus.

Who were your first clients and why did they retain you?

Wabash Fibre Box in Chicago, Tim Benecke, and Mid-Atlantic Packaging, Andy Pierson, were my first clients. I think they still squabble as to who was actually first. Wabash had just invested in a six-color Bobst flexo press. This was a big step and they were looking for help to get their production personnel educated not only on the equipment but on the new techniques and processes necessary to maximize the efficiency and profitability of this new market. They were also looking for help selling these new capabilities to their customers. Remember, this was a time when we were trying to change

Chris Heusch and Jim Nelson (AICC Design Committee Chairman) at the International Packaging Design Competition.



brand owners from litho to direct print high-graphics. Mid-Atlantic was well on its way to building their printing business on multiple rotary diecutters. They were looking to address some production issues and take their capabilities to the next level. Both Wabash and Mid-Atlantic remained loyal clients for many years. Even after Wabash was purchased by International Paper, Tim and I collaborated multiple times until his retirement last year from The Royal Group. The story is much the same with Andy and Mid-Atlantic, which was recently purchased by The Royal Group.

What was the state of direct print 25 years ago,?

There was perhaps more of a division in lines of thought regarding direct print. In Europe there was an early and strong following of off-line print. Bobst and Cuir, leaders in platen diecutting, in particular drove this development. The platen cutters had the major share of the market and Europeans were very comfortable with the process. So diecutting off-line with printing as a separate process seemed natural. In

the U.S., with a focus on efficiency, printing high-quality inline with the box making process, be that rotary diecutting or case making, was boosted primarily by Ward and United and later found ardent support by Göpfert. U.S. converters wanted to put a blank in the feeder and have a finished, high-quality print product at the delivery end.

At the time everything was gear driven and the mode of transfer was pull roll. Vacuum transfer was just starting to emerge and was creating a whole new set of obstacles with ink performance and sheet control. Deritend tried gripper chain transfer which was reminiscent of the gripper bars used by platen diecutters. Servo drive integration was just a pencil sketch in an engineer's note pad. We were experimenting with unusual and thin printing plate packages to control dot placement and growth. Everyone was experimenting with chambered doctor blade systems, and often with painful results. Wipe rolls were still prevalent and many suppliers were offering combinations of rolls and single or chambered blade systems. At this time most of the nips were still

Clearly the biggest evolution has been servo drive and digitalization.

being set manually. So impression precision was dependent on the operator's finesse. The printing process was being approached more as a mechanical operation than the science and craft that we see it as today.

What mileposts in direct print on corrugated have you witnessed?

A big evolutionary step came in the 1990s when gear driven machines adapted a thinner undercut. The thinner plates significantly enhanced the control of ink transfer from the plate to the sheet. The addition of on-press drying systems also had a significant impact. First hot air – some which actually used gas for an open flame! We were daredevils back then – and then infrared, which enhanced the drying speed and subsequently the production speeds and the ability to diecut inline without offsetting and damaging the print.

Another evolution was the integration of vacuum transfer. That was not without a few experimental disasters, but once the kinks (quite literally) were worked out it had a considerable impact on quality, productivity and waste reduction. Now that we had positive sheet control, we could significantly reduce and in many cases eliminate trim, and warp was not the traumatic factor it once was.

However, clearly the biggest evolution has been servo drive and digitalization. Servo drive offered superior registration over gear driven machines. Gear train wear and play were no longer an issue. You could stretch or shrink your print area and maybe even run different plate thickness packages. Other digital tools came onto the scene including automatic registration and whole

sheet inspection systems, automatic ink control systems, automatic plate washers, fully automated anilox roll changers and more.

What are converters coming to you for today?

Education and training is still a big draw. What I'm teaching has evolved to keep pace with the technology. Equipment, processes and best practices are continually changing and we have to stay on top. However, the most common inquiries today regard process improvement. This can focus on the evaluation of a process, correct utilization of a piece of equipment, justification of new equipment purchases, or the recognition of the need to update tooling purchases. Automation is a major topic of discussion. Managers are looking to better leverage their key production

personnel. Automation is seen as a tool to enhance productivity, stabilize quality and reduce waste. The smart use of automation allows them to put the key personnel where they can be of greater value to the operation. The increased use of recycled paper is another issue facing converters. It's a different substrate with different characteristics and therefore reacts differently. There are proven adjustments that need to be made to inks, plates and tooling to obtain the best results. Even simply getting the board through the press, scoring, folding and gluing can change with recycled paper. And all of this can change depending on the amount of recycled fiber in the formula.

How has your role changed?

When ARCH was established, we set aside an annual budget of time and money for ongoing education. At the onset flexo printing and diecutting were our strong suits. This has expanded to enhancing the operations of laminators and specialty gluers as well as total material handling, plant



Inspecting a sheet during a client training session.

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Will digital inkjet replace flexo print? I don't think so, but it will gain solid market share over the next five and ten years.

automation, and corrugating. Our focus on communication skills and business management experience supports all of these.

What do you see as the future of digital printing? Will it ever be 'for everyone?'

We have watched the evolution of digital direct print on corrugated for 20 years now. It is now clear that inkjet printing has surpassed other digital printing technologies for our substrate. With single pass printing, the holy grail of speed and quality seems to be in reach. This will continue to make inroads into higher quality and shorter to medium run markets. First targets: litho label and flexo offline printing. However, the simple single color solution for faster inline machines is also becoming more common. Will digital inkjet replace flexo print? I don't think so, but it will gain solid market share over the next five and ten years. Will it ever be for everyone? I believe it already is in some sort of application. There are a wide range of digital options available today from single color units to print codes and cert stamps on an RSC, to a four-color medium resolution unit, to the 'Full Monte' for those looking to do high-end, multi-color graphics in a single pass.

Another advance in direct print is two-sided (inside/outside) printing. Will it remain a popular capability post pandemic?

Most certainly, direct-to-consumer product packaging is here to stay, and



Heusch says there is a range of options for digital print on corrugated, from simple single color to multi-color high graphics.

with that the unboxing experience. There are a wide range of inside print solutions. In a simple RSC one might see a one- or two-color repeat graphic of a company logo or assembly and use instructions. In more appealing diecut structures we see full graphics inside, sometimes utilizing lithographic print solutions. If this combines with multi-color printing outside it becomes rather unwieldy as a single pass solution. Are we going to build rotary diecutters with six inside and six outside print units? And then try and control all that? I don't think so. That is where two-sided print and digital print combine for more feasible answers. A digital press added to a box plant can give all sorts of inside and outside print solutions offline. As setup is less cumbersome, the separate machine pass may prove more viable than a lengthy setup of a 12-color monstrosity.

Other market trends?

The retail environment, which is the driver of printing in packaging, scatters into more channels today than it did 10 or 15 years ago. Grocery, club store, convenience, mass merchandiser, direct-to-consumer,

direct subscription, etc. This means there will be more and different packaging solutions required for print as well as structure. Run sizes will likely continue to be driven down, and concurrently product customization will increase. We're starting to hear a few murmurs, but when will digital cutting and creasing launch a serious effort? That's to be determined and certainly dependent on advances in technology.

What lasting effects do you think the pandemic may have on converters and the packaging industry?

The pandemic has accelerated trends we were aware of before. Online and home shopping was popular before, but their popularity skyrocketed during the pandemic. This also drove the need for a robust recycling structure. In my opinion these trends will not revert. The way we do business as an industry has also changed. Organizations are evaluating the changes they have made and are beginning to understand the impact it has had on their growth and bottom line. Many will likely adopt these changes as the new way of doing business. ■



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SUCCESSFUL DIAGNOSIS AND RESOLUTION
REQUIRE A METHODOICAL APPROACH.

BY WAYNE PORELL
HARPERLOVE

Caliper loss and crushed board can lead to a wide range of issues within a customer's packaging operations and supply chain. Many of today's customers use automatic box set-up equipment in their packaging lines, and variations in board caliper can cause throughput issues and jams. Caliper loss can also lead to false scores, poor print quality, unreadable bar codes, loss of compression, and ultimately potential box failures in the field.

There are many potential causes of caliper loss, so successful diagnosis

and resolution require a methodical approach. Start by identifying any changes that were made immediately prior to the appearance of the issue. It could be as simple as a repair or adjustment not properly completed, or a raw material change. The most recent change could quickly lead you to the root cause of the problem.

If you cannot identify a recent change that is causing the caliper loss, then you should proceed through a thorough review of the machine, starting at the wet end:



Built-up debris on ballast rolls

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During these challenging times we continue to respond by supporting our customers through in-person service calls as well as through the use of remote technologies.

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Belt tracking issues

- Add the caliper of both liners to the flute height of the corrugator rolls. This gives you the theoretical caliper for the combined board.
- Measure the caliper of samples of both liners cut from various positions across the web to check for consistency.
- Cut samples of the singleface board on the operator side, center, and drive side of the machine. Inconsistencies here may indicate a worn or out-of-spec corrugator roll.
- Cut samples of the doubleback liner on the operator side, center, and drive side, and measure the calipers of these samples combined with the singleface samples. These combinations will provide the baseline caliper for the combined board and determine if variations in the paper are causing the variations in the board caliper.
- Confirm that the medium pre-conditioner is turning at the correct speed and that the steam shower is operating properly. Problems with this equipment can lead to flute fractures.
- Check the pressure and corrugator rolls to confirm parallel. Too much corrugator roll loading pressure will cause crush.
- Measure the gap between the glue roll and the bottom corrugator roll.
- Cut and measure a sample of the combined board before the web guides to check if the incline belts or a roll/wheel on the bridge are causing crush.
- Cut and measure a sample after the web guides prior to entering the doubleback glue station. Some parts of the web guides can wear and cause crush issues.
- Cut a sample after the glue station again from all three areas across the web. Crush here can be caused by a) a rider roll or contact bar that is out of parallel, b) if the T.I.R. is out of range, or c) a bad bearing in one of the rolls. Also check the glue roll for the same issues.



Uneven hot plates

Many customers use automatic box set-up equipment in their packaging lines, and variations in board caliper can cause throughput issues and jams.

- The hot plate section can crush the board with several of its components. Cut samples directly after the combined board exits the head pulley. If you find crush exiting the head pulley, you will then need to cut samples from the outer edges of the web in the hot plates. If the hot plates have a high leading edge in the paper travel direction, this can cause crush as well as delamination issues. Also, look for dried starch on the hot plates which can crush the board.
- If the plant is using weight rolls, worn bearings can allow the roll to bounce and crush the board. If the weight roll arm gets hung up on one side, this puts all the weight of the roll on one side of the sheet instead of evenly distributing it.



Fractured flutes

- If the plant is using shoes and one of the shoes malfunctions and stays down, it will crush the board. This is why it is important to keep the moving parts of the shoes clean and working correctly.
- Measure the caliper of the top corrugator belt across the width of the machine and at various positions on the web. Caliper variations in the belt can cause caliper variations in the board. Variations in belt caliper can also lead to a weaker bond corresponding to the thin areas of the belt because of inadequate pressure to hold the web and bottom liner together. Evidence of this problem will show up as spotty glue lines on a soak test.
- The traction section can cause the crush issues if the ballast rolls have bad bearings or the arms holding the rolls get hung up. This is similar to the issues with the weight rolls.
- The knife can crush the combined board if the entrance rolls or exit rolls are out of parallel or have too much loading pressure.
- No-crush wheels can crush the board if they are installed in the wrong direction. The fins in the middle of the wheels must be able to flex. If they are improperly installed and not able to flex, they can cause crush issues.

- Finally, the stacker can cause crush if too much pressure is put on the no-crush wheels entering the stacker bed.

Identifying the causes of crushed board can sometimes be difficult and time-consuming, but a thorough and methodical approach will help you pinpoint the root causes and will reduce customer issues and returns. ■



Wayne Porell has more than 40 years of corrugated industry experience. He is a Senior Technical Representative serving customers

primarily in the Northeast where he has helped numerous plants with corrugator issues and improved their waste, productivity and quality.

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Finn MacDonald, President Independent II

INDEPENDENT II FIRST TO INSTALL DOMINO PRESS

When high-speed single pass digital printing was introduced to the corrugated market a few years ago, Finn MacDonald and his team at Independent II watched closely. MacDonald knew he wanted to offer customers digital printing, but he was not convinced that the existing technology was well-suited to his company's mix of business. Founded in 2006 in Louisville, Ky., Independent II is a full service sheet plant that MacDonald, who is President, likes to refer to as a brown box and light brand manufacturer. Services include design, manufacturing, warehousing and delivery to customers in the food and beverage, e-commerce, home goods, innovation/technology and manufacturing sectors.

"Our DNA isn't built around a lot of high-end display or POP work," he says. "As those first generation high-end digital printers came out, we would stay connected with that technology and who it was best suited for, but we



Recent samples from customers in the e-commerce, spirits, food & beverage and non-profit sectors.

never felt like it was speaking to us."

MacDonald found a solution last year when Domino introduced the X630i digital corrugated press. The single pass, flexo caliber machine was installed at the Louisville facility in August and is the first installation in North America. Printing at speeds up to 246 fpm (75m per min), the X630i offers throughput on a small footprint, measuring 10 ft H x 38 ft W x 21 ft D and allows for a wide range of print options. He says the press is "fundamentally different" from other digital presses for corrugated because it can operate in an industrial production environment, has a relatively small footprint, uses aqueous inks and includes components from well-known corrugated industry suppliers.

The X630i is based on Domino's proven Generation 6 ink jet platform, which has nearly 1000 global industrial installations. The press is ideal for shipping containers, shelf-ready packaging, and displays and features Domino's i-Tech intelligent Technology for high quality printing. The Domino AQ95 aqueous ink set is Swiss Ordinance and Nestle compliant for food packaging and enables printing on a wide range of uncoated and coated stocks, with no pre-coating primer or bonding agent required. The print resolution is 600 dpi.

Domino has partnered with well-known suppliers, such as Esko for the digital front end, and SUN Automation for the lead edge feeding system. The servo driven continuous bottom feeding system provides automated setup for sheet sizes, caliper and

vacuum assist. It can store jobs and sheet sizes for quick setup and can feed E- to B/C-flute.

The print area on a 63- x 118-inch blank is 53- x 118-inch. "That's a great size blank for a 66-inch diecutter or a 37-inch to 66-inch flexo," he says.

This investment strengthens Independent II's strategy to offer 'responsive packaging,' a term that MacDonald uses to describe the packaging needed for these tumultuous and disruptive times. The press offers a cost-effective way to quickly change branding and messaging as needed and opens up new markets for inside/outside printing, customization, variability and a wider color pallet. And then there is the opportunity to run everyday orders, the type of business that funnels through Independent II on a daily basis. "I really think we are in a position to be more dynamic in the everyday space," MacDonald says. "The space above us is well-known. That's high-end premium, but when you get down to where so many of us are impacted with our packaging, that's this everyday level." ■

The customer wanted to move its brand from one-color on kraft to full color on mottled white. Independent II's design and digital teams developed six new facings which allow for content changes to be revised run over run.



Money making machine



Domino X630i digital aqueous inkjet corrugated press

...MORE PROFIT per job.
...MORE CAPACITY in a given day.
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Why X630i?

- Small footprint (10'H x 38'W x 21'D)
- Change SKUs & print jobs on the fly
- NO PLATES to make, mount, or inventory
- Less downtime, MORE UPTIME
- Print SPEED up to 246 fpm
- AQ95 aqueous ink, POLYMER-based
- Prints on COATED & UNCOATED stocks
- Swiss Ordinance & Nestle COMPLIANT
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- LOWER Total Cost of Ownership



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AN UPDATE

MATERIAL HANDLING

FROM CORRUGATOR TO WAREHOUSE

The handling of raw materials through the box plant has been scrutinized closely over the last few years as companies have to carry out ever more risk assessments to protect the workforce from injury in the workplace. Added to this, the continued drive for more efficient operation in the plant and the pursuit of greater profitability is encouraging box makers to invest in the latest material handling systems.

The handling of materials between each stage of the corrugating and converting process is critical to the success of the plant and conveying systems are a crucial part of the complete transport and logistics system and should be considered an integral part of the manufacturing process.

It is now universally accepted that the reductions in manning levels, reduction in waste, removal of dangerous fork truck operations and the improvement in runnability of converting equipment results from automation by conveyorization and is a must for a profitable operation.

The mission of improving productivity in the box plant by supplying innovative material handling solutions to deal with ever increasing volumes has no doubt challenged the R+D departments of every supplier. The following report gives an insight into recent developments from many of the key suppliers to the industry.

Global Growth

Dücker Group is a privately owned family business founded in 1848 in Germany. The group is active in many countries in terms of designing, manufacturing, installing and servicing complete handling solutions and peripheral equipment for the corrugated and solid board Industries. All that history started 170 years ago, and the challenge is to continue with the 6th generation of the Duecker family now on board.

The heart is remaining located in Langenfeld, Germany, where the equipment for conveyor systems installed in corrugated plants is designed and manufactured. This offering is covering all the needs of the most modern and highest technology factories, from the reel handling before the corrugator to the finished goods area as well as the software control and supervision system. This includes in particular the so-called WIP area (work in progress) where many different solutions could be offered by Dücker to ensure exactly the output and the flexibility needed project by project. Recently, Dücker has demonstrated

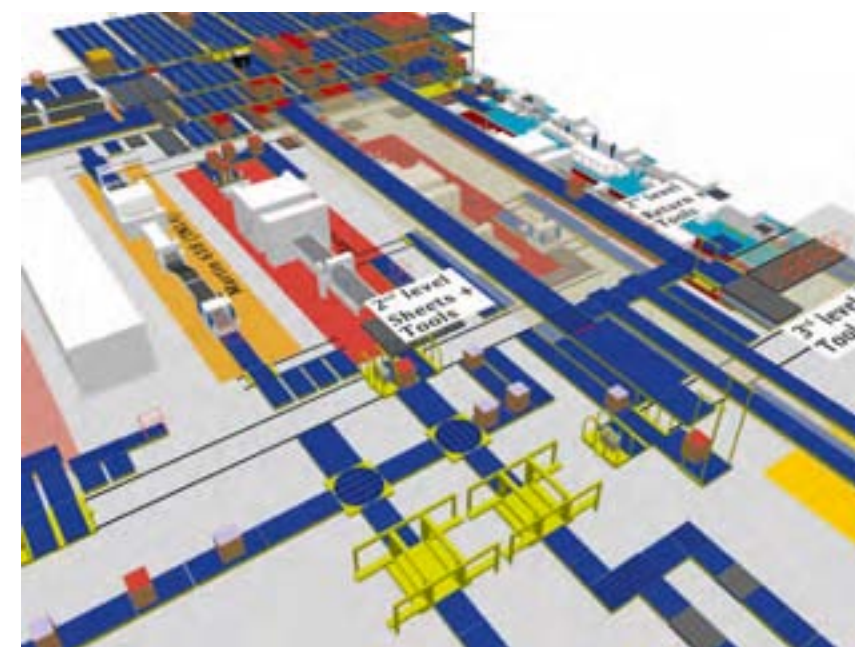


this innovation capacity by developing in collaboration with Westfalia, the HISS (Hybrid Intermediate Storage Solution), which is the combination of a standard “blue belt” WIP with a high rack storage system.

For more than 20 years the group has grown and extended its portfolio and market coverage through external acquisitions and joint ventures. In 2020, the structure of the group evolved to place Dücker International GmbH as the holding company, managing the investment of its historical site of Langenfeld. The main goal is to develop

collaboration between the companies and support group strategy by facilitating the integration of new businesses. For serving the corrugated Industry, this network of companies includes Dücker Robotics (Italy), Dücker Corrpall (Sweden) and Dücker Prefeeder (Netherlands). To expand market coverage worldwide and look into opportunities on markets growing faster than Europe, the Dücker Ringwood Automation (USA) and BHS Dücker Systems (China) joint ventures were established.

To further widen the portfolio of solutions, a major step was achieved with the announcement of the collaboration between Dücker and Seemi. This combines the strengths of both parties – the flexibility and tailor-made project management of Seemi with the high tech and efficient solutions of Dücker. Both brands will remain active in the market under their own names to continue serving their customers.



Another strategy is looking to markets other than corrugated board. Dücker has integrated Krift & Zipsner, a leading supplier of complete logistic solutions for the solid board industry, into the Dücker Group. Based in Steinebach/Sieg, the company designs, manufactures, installs and services pile turners, conveyors and complete handling systems, supporting machinery market leaders like Bobst, Heidelberger Druckmaschinen AG, and Koenig & Bauer AG for all their installations worldwide.

The history of Dücker has always revealed new innovations. The future will be focused on offering and integrating different technologies into software control and supervision solutions, as well as turning buzzwords from the virtual world – like industry 4.0, cloud solutions, AI and predictive maintenance – into a real-world benefit. The company Dücker AMC



recently moved to Monheim and is now the base of the software development for the Dücker Group.

The Group is growing to remain in a position to offer the best possible solutions to customers worldwide while maintaining a great respect of each company people, knowledge and history. The common DNA is to design, manufacture and install fully automatic systems to offer customers more efficiency, effective reduction of personal cost and waste and better productivity.

<https://duecker.biz/en.html>

Automated Solutions

Modern corrugated plants constantly strive to produce more MSF with less

equipment and reduced headcount. In addition, they are doing more setups and shorter runs to provide improved customer service. C&M Conveyor's material handling solutions automatically link the different operations, flowing the sheets through the value stream from roll handling to corrugator, to converting equipment, resulting in each machine having the right product for a given order being produced with full visibility from manufacturing floor to the front office. Following are some recent product developments.

Converting Machine Productivity – C&M pioneered and perfected conveying equipment based on the new ball belt technology with both fixed height bundle conveyor and



C&M Conveyor's Computer Inventory Management System



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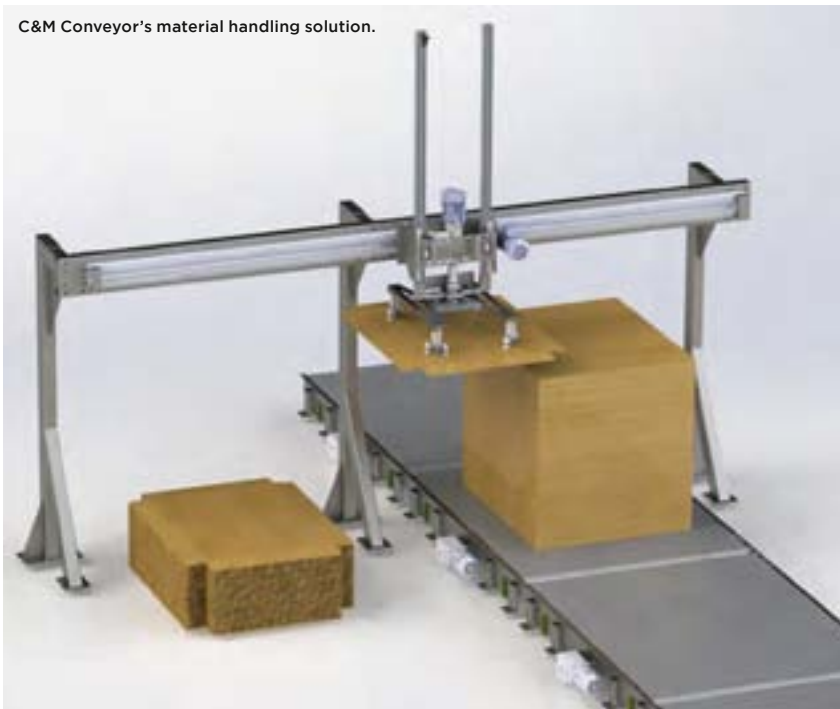
OnsetX^{HS}

Take a deep dive into the OnsetX HS at fujifilminkjet.com.

What if a high quality multipass printer had the capability of allowing you to produce short-run, quick turnaround jobs efficiently? Well, you'd have the OnsetX HS: an automation-ready configurable platform with speeds of up to 15,600 square feet per hour.

The world's fastest high quality flatbed printer is perfectly constructed to elevate your corrugated packaging portfolio. Give it your displays, shelf-ready packaging and subscription boxes, then kick back and enjoy the show.

C&M Conveyor's material handling solution.



bundle conveyor on lifts. This gives conveyor the ability to side-shift, right-angle transfer in one or two directions, rotate and load build in a smaller footprint with constantly moving bundles. It also improves efficiency at the load former or robotic palletizing by grouping bundles together, side-by-side, rotating orientation and reducing operator interface.

Computer Inventory Management System (CIMS) – CIMS provides a visual interface to track orders from roll room to the shipping docks for the highest customer service. In alliance with Rockwell, C&M developed a proprietary system that is fully integrated with the plant's scheduling to allow for completely automated order routing. CIMS provides real-time access to work-in-process and inventory management. It has flexible controls and is customizable for any order mix and is coupled with diagnostics and remote support to maximize uptime of material handling systems. CIMS is said to be the first system in the industry with options for mobile device access and real-time

waste tracking throughout the plant, including options to integrate with the plant's trim system.

Shipping and Distribution Automation – Box plants can achieve increased throughput of 250+ loads/hour by utilizing C&M's proven Ball-Belt Rotator, based on 48" x 48" loads with a 2x2 strap pattern. The Mesh Ball Rotator Conveyor provides a rollerless surface that utilizes a Modular Ball-Belt and integrated worm gear driven rotational disc. The new visual Strap System is flexible and allows a plant to apply custom straps to a scaled photo of the load. The new Dunnage Transfer System automatically applies top sheets, increasing safety while driving higher throughput. This equipment has options for integration to a plant's scheduling system. The developments listed here and the 40 years of experience make C&M a premier partner to offer fully automatic banding systems with high throughput, safety, and uptime in corrugated box plants.

www.cmconveyor.com

Latest Generation

Geo. M. Martin Company's patented Scrubber® Technology introduced the corrugated industry to the latest generation of rotary diecutter stacker technology. Engineered to maximize the capacity and throughput of all rotary diecutters, the LBX Scrubber Stacker combines sheet control with superior scrap removal to produce perfectly square, virtually scrap-free stacks and bundles at maximum speed. With a wide range of standard and optional features, the LBX and SBX Scrubber Stackers can be configured to meet the converters' specific needs and can be easily upgraded or reconfigured for changing market demands.

Creating new performance expectation for the corrugated industry, the LBX Scrubber Stacker has raised the average production from 32 MSF/hour to 80 to 100 MSF/hour, with top performers reaching 200 to 400 MSF/hour. Latest innovations further enhance their capabilities, productivity, safety and efficiency.

The SQC system automatically removes sheets from the stacker's board line at all rated press speeds. SQC can be integrated with the LQC system for 'on the fly' operator side ejection of single or multiple short sheets or samples for safe and easy quality inspection pulls. SQC can also create a gap in the web for a stack or bundle change, thus eliminating 'double inking' issues.

The SQX system combines the features of SQC with additional scrap removal capabilities. Placed behind a LBX Scrubber, the SQX further enhances the Scrubber's scrap removal capabilities to deliver virtually scrap free boxes (well under 1%) making it ideal for scrap critical operations such as auto packing lines. SQX can also be placed on new or existing Select® and or Valu-Stak™ stackers, allowing them to take advantage of these enhanced capabilities.

Where Less is More

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By eliminating jams
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- ▶ **More Production**
Able to operate at the highest die cutter speeds



LBX™ and SBX™ — exceeding customer demands

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LBX Scrubber

The LQC system is excellent for quality conscience converters, especially those serving automatic packing lines. It scans the sheets and compares the length to a predetermined tolerance. When out of spec boxes are detected the feed is interrupted allowing the operator to manually pull the bad sheets, or automatically eject sheets when used with the SQC or SQX systems.

Geo Martin's Quik-Break™ III (QB-III) bundle breaker features significantly faster cycle speed, a soft stop/start break and pull cycle, and multi-function 'gapless' upper platen which eliminates edge roll on small bundles. The upper platens can be set to apply equal pressure when running variable bundle log heights, or to operate even faster as a solid platen for most one across bundle logs.



The company offers a full range of bundle line components to provide custom solutions for each customer's requirements.

www.geomartin.com

New Partnership

SUN Automation Group has entered into an exclusive strategic partnership agreement with the Italian material handling company, PARA Srl. SUN will be the exclusive representative of all PARA equipment for the United States, United Kingdom and Ireland as well as the service provider for all PARA equipment and the distributor of PARA parts in the United States, Canada, the United Kingdom and Ireland.

PARA offers a variety of material handling and machinery solutions for the corrugated industry and has

installed 15,000 products worldwide. Products include: pre-feeders, palletizers, RDC stackers, bundle breakers, pallet inserters, vertical storage solutions, paper mill roll transports and unit conveyor systems from corrugator to converting equipment using smart carts.

Following the success achieved by Para for its 'Work In Progress' vertical storage system that can be located between the corrugator and the converting department, the company continues to attract attention from box plants. One of the latest developments is an integrated reel storage system. Known as the 'Crab' Reel Transporter, the paper reels are automatically transported, housed and then unloaded to the correct reel stand and splicer on the corrugator. Using such a vertical storage system for paper reels will allow for better use of space and removes the need for clamp trucks to deliver reels to the corrugator, enhancing operator safety in the plant.

The company is now able to supply fully automatic equipment around a corrugator, interfaced with



SUN Automation is now the exclusive representative of all PARA equipment for the United States, United Kingdom and Ireland.

the customer's ERP Management Software to manage the flow from the corrugator to the converting machine infeed lines. These lines include: vertical storage for reels, crab reel transporter, corrugator take-off handling equipment, WIP vertical storage or WIP acetal belt conveyors (one or two floors).

www.parasrl.com

Complete Solutions

From pre-feeders to robotic palletizers, Alliance Machine Systems offers a variety of material handling solutions that keep the pace with today's finishing machines.

Hiring and retaining employees is a challenge for both integrated and independent box plants. According to the Association for Advancing Automation, robot orders surged 20% during the first quarter of 2021 over the same period last year.

Finishing machine productivity is frequently dictated by loadformer operators. The bending and twisting required to place heavy bundles can lead to soft tissue injuries and fatigue, resulting in lost time. Replacing a semi-manual loadformer with



Alliance FeedMAX Block Push Bottom Feeder

a robotic unit frees up associates for more important tasks and can increase productivity, as the robot never tires or has soft tissue to injure.

Whether a plant is running a high-speed flexo folder-gluer at 800 boxes per minute or a 30-year-old 50-inch flexo plodding along at 4500 boxes per hour, Alliance has the right automatic loadforming technology for any application. Products include:

- Raptor XR loadformer for high-speed flexos, rotary diecutters and specialty gluers
- Raven loadformer for medium speed, 50-inch flexos
- RaptorPAL high performance pit-less robotic palletizer

Accurate and efficient feeding of corrugated to a flexo folder-gluer or rotary diecutter is a key component of maintaining productivity on the box line. Alliance's line of pre-feeders includes innovative features to ensure maximum reliability, ease of use, and continuous operation.

Boasting both top feeders and bottom feeders, this line includes the staple, FeedMAX Block Push Bottom Feeder, High-speed Top Feeder, and the new Inverting Top Feeder that is rated at 500 kicks a minute.

Other products include stackers, pallet handlers, bundle breakers, and more.

For more than 40 years, the Spokane Valley, Wash.-based company has designed and manufactured more than 14,000 machines for the corrugated industry, with installations worldwide.

www.alliancellc.com

Optimizing Through Automation

Operational efficiency. It is what everyone strives for. A flawless process throughout every step of the supply chain, enabling perfect packaging to be delivered to the right place at the right time. But too often, there are delays and bottlenecks in the process that cost time and money. In an environment where competition is increasing and margins are decreasing, such delays can make



Alliance Raptor XR RDC automated loadformer

Breaker 2



or break businesses. Automation can help to overcome these bottlenecks and not only improve the overall productivity, but also reassure customers of the output consistency and quality.

One of the biggest bottlenecks in the chain can often come at the layer arrangement and palletizing stages, particularly now that many brand owners are demanding ever more complex box styles. Bobst offers solutions that automate these

processes, increasing efficiency, quality and peace of mind.

For optimal layer arrangement there is the Breaker 2 Flat Track. While conventional breakers can separate diecutter output and, in some cases, turn batches through 90, 180, or 270 degrees, Breaker 2 Flat Track forms complex layers ready for palletization, allowing users to totally automate the process. It has a low-pressure blank separating mechanism, with 60% more surface contact, enabling

gentler separation without any crushing of the board. High-strength synthetic belts and chains throughout all stations ensure the perfectly flat transport of blanks as small as 8 x 8 inches without any deformation during transfer and no workflow interruption. It can handle up to 300 batches per hour.

Breaker 2 Flat Track can be retrofitted to any generation of Bobst Autoplaten® for corrugated board and will form layers in a programmed routine without affecting the performance. Bobst claims it has a footprint half the size of other breakers, saying it uses 30% less power and takes half the time to install.

To maximize the productivity of the diecutter even further, Bobst needs a completely smooth transition from the layer arrangement to the palletizing. Palletizer 2.1 ensures that is the case, completely automating the palletizing process, ensuring excellent piling quality and stability, with piles up to 8 ft high possible. The palletized piles are automatically delivered to the in-house logistics system. It is also equipped with the user-friendly color touch screen CUBE. This interface stores job and layout data,

Palletizer 2.1



Powering performance



CORRUGATED BOARD

Setting the bar higher

Don't compromise between unbeatable graphics quality and high productivity in printing and converting. Combine both in the most productive corrugated box-making machines.



allowing easy recall and fast setup management. This fully automatic palletizer is a perfect complement to Breaker 2 Flat Track and together they form a powerful production line perfectly adapted to the Bobst range of corrugated flatbed diecutters.

Finally, if a production line is set up in a mirror configuration – two lines facing each other in order to optimize the production area layout and maximize operator productivity – both peripherals, palletizer and Breaker 2 Flat Track, can be accommodated and configured accordingly.

www.bobst.com

Committed to Innovation

Over the past 25 years, A.G. Stacker has utilized the latest technologies to innovate new and existing products, and offer service enhancements, with world class support. The Virginia-based company has built a reputation of “best in class” rotary diecut stackers that provide customers with capabilities that increase productivity, while improving quality and safety.

The A.G. team embraces the opportunity to collaborate with

A.G. Stacker X-12 pit-less lift conveyor



customers to alleviate production bottlenecks and other common pain points through product development. This “commitment to innovation” has led to over 20 patents issued on A.G. designs and systems, along with numerous patents pending and multiple innovations on the horizon.

A high-performing innovation, the G3 rotary diecut stacker has patented features that boast fast setup and high

production speeds of bundle and full stack production. Capabilities and features include, but not limited to: no feed interrupts, auto setup, integrated safety, no pits, speeds up to 20,000 kicks/hour, digital technology for service and support. With the speed of equipment increasing, the efficiencies gained utilizing this stacker technology provide a competitive edge for converting operations, both large and small. These benefits are not limited to the decreased changeover time and high production speeds, but also include the innovative safety benefits of automatic sample removal for quality checks at high speeds.

Additional offerings include outfeed systems and an Infeed Conveyor System (ICS). The ICS is an ergonomic, semi-automatic feeding system capable of being integrated with all hand-fed corrugated converting machinery.

For bundle lines, the high-speed Hopper Ejector allows auto-set and no feed interrupt that pairs with the Bundle Conveyor System (BCS), to bring bundle after bundle to the breaker. In addition to providing single line flexibility for full stack and bundles as part of the BCS, the X-12,



A.G. Stacker Infeed Conveyor System

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a pit-less lift conveyor, can down stack at a height down to 12 inches to discharge the product coming from the stacker.

Due to the success of these systems, product offerings have been expanded to provide complete outfeed solutions for RDC lines. These solutions are fully integrated, high speed systems that have no pits, pneumatics, or hydraulics. Additionally, A.G. has committed to a digital transformation where engineering design, service, production, training, and operations are all connected and available anywhere, any time.

www.agstacker.com



Improved Efficiency

Automated Conveyor Systems, Inc., a designer and product supplier in the corrugated industry, specializes in a system that automates the process of moving corrugated board from corrugator discharge to machine infeed. Known as STARS (Storage Tracking and Retrieval System), the system eliminates the need for operators to manually move loads throughout the factory floor and allows the work to naturally flow into the appropriate machine infeed. Plant personnel oversee the process and have several options as to how the work will move throughout the plant and to the correct machine.

Operators use a graphical interface called Layout, which represents the factory floor and lets users see



where orders are in real-time on the floor as well as the scheduling for each order in the current machine lineup. Layout shows the entire process from corrugator discharge to machine infeed with various graphical representations of the discharge conveyor, turntable, transfer cars, and storage lines.

STARS was designed with compatibility in mind. It gives the plant the freedom to use its familiar vendors. Coordinating with the plant's scheduling software, STARS can make decisions on an order-by-order basis and move loads throughout the factory floor – autonomously and effectively.

www.acsconveyor.com

Vertical Rack Storage

Back in 2017 and after many years of installing and commissioning countless "traditional" material handling solutions, WSA-USA embarked on a new journey in what it considered to be the future of material handling systems in a modern corrugated super plant. Fast forward to 2021 and those assumptions have become a reality. The corrugated industry in North America is now enthusiastically embracing vertical rack storage solutions as a more economical and efficient method of warehousing and transporting WIP, finished goods and

corrugator roll stock. The reason is simple: going up is more cost-effective than going out. The approach of having a sea of conveyor installed to store and move WIP material is outdated and simply proving out to be costly on many fronts.

Space, energy usage and reduced maintenance are just a few areas of cost savings which can be realized with a vertical approach. Additionally, a vertical WIP solution is a point-to-point delivery system so no longer will plants be forced to operate in a FIFO world. Corrugators can run more efficiently, orders are tracked more precisely and product is handled much less frequently. The vertical WIP warehouse can be used to store both primary WIP, secondary WIP (two pass work), as well as finished goods bales for added system functionality. No longer do customers need to consider costly offsite warehouse space to store their customer's product as it can now be stored in house in roughly a third of the space.

Building commercial is more expensive now than it ever has been which makes it the perfect time to consider vertical solutions. A vertical WIP system with seven levels of racking can store approximately 10,000,000 sq ft of board in approximately 15,000 sq ft of space. A traditional conveyor system

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SCAN TO LEARN MORE





WSA-USA's vertical rack storage solution

would require 3 – 4 times this space. Reducing the building footprint by an average of 50,000 sq ft equates to a minimum savings of over \$2.0 million at current square foot build costs.

WSA-USA, with its partnerships with worldwide industry leaders in both vertical rack storage solutions (Warak srl @ www.warak.com), automated roll handling solutions (Harmax Rollcon @ <https://materialhsa.com/harmax>), and PC based automation software leader KTC, is fully committed to changing the way the industry vets out its material handling needs. From proving out customer layouts with virtual 3D simulation software to managing all aspects of the build out from start to finish, customers have recognized that WSA-USA is a truly trusted partner in defining and implementing the ideal solution that minimizes initial investments while maximizing long-term company profits.

www.wsa-usa.com

Fully Integrated Solutions

Safety, operating efficiency, productivity, and labor reduction are focus areas for a corrugated industry that is positioning for record product demand. With the combined brands and comprehensive product portfolios of Systec and Automatan, Inspire Automation is positioned to assist customers with each of these focus areas.

The Systec product line continues to address developing requirements beyond the movement of corrugated materials. For those who manufacture with pallets, the FastPal multi-line pallet dispensing system, and the fully automatic Load Pallet Device (LPD) is an attractive solution. When integrated with the Visual Automatic Positioning System (VAPS) for strap placement, the system is fully automatic from palletizing to strapping.

For inventory control, Systec offers Advanced Production Inventory Control System (APICS). It automatically routes material from the corrugator to work-in-process staging and automatically retrieves the material for delivery to the converting center without operator intervention. More than just a simple routing and tracking system, it interfaces with both the corrugator scheduling software and production scheduling

systems and using sophisticated algorithms makes intelligent decisions based on available conveyor space and when an individual order is needed.

High speed bundle processes are helping OEMs achieve the increased output demands. To support these processes, Systec has developed a high-speed bundle solution, including the Active Ball Transfer device for high-speed and accumulated bundle transfers.

Automatan robotic solutions are also proving to be extremely valuable in reducing downtime and reducing direct labor requirements in this challenging hiring environment. The combination of the AutoStak robot with the Systec Faststak unit-load former and other Systec conveyor products create a seamless robotic palletizing solution. The Automatan AutoFeed robotic pre-feeder continues to gain popularity in the industry and serves as an ideal solution for customers looking to utilize plant space more efficiently, increasing safety while reducing labor and maintenance.

Inspire Automation is also focused on after sales service support, offering the Inspire Advantage Program, a pre-scheduled annual preventative maintenance and audit service. For real-time monitoring, the company



Inspire Automation's robotic solutions



Inspire Automation's Load Pallet Device and FastPal multi-line pallet dispensing system.

offers the AutoView 24/7 Process Monitoring system. Installed cameras and monitoring systems support remote diagnostics and training support throughout the customer's processes. The company continues to look at ways to reduce lead times and improve spare parts availability in this challenging supply chain environment.

www.inspireautomation.com

Semi- and Fully-Automatic

BCM Transtech from Denmark and Hitek Equipment from Kenosha, Wis., have established themselves as a leading global supplier of tooling storage in the corrugated industry since the late 1990s. BCM has developed storage solutions for everything from small print plates to fully automatic rotary and flat dies.

Constant research and development of these systems has led BCM and Hitek to collaborate with customers worldwide. These partnerships have led BCM to take a different approach. The company has acted as more of a consultant, helping customers plan their internal logistics with the tooling, pre-press sheets, and finished goods flow. Utilizing

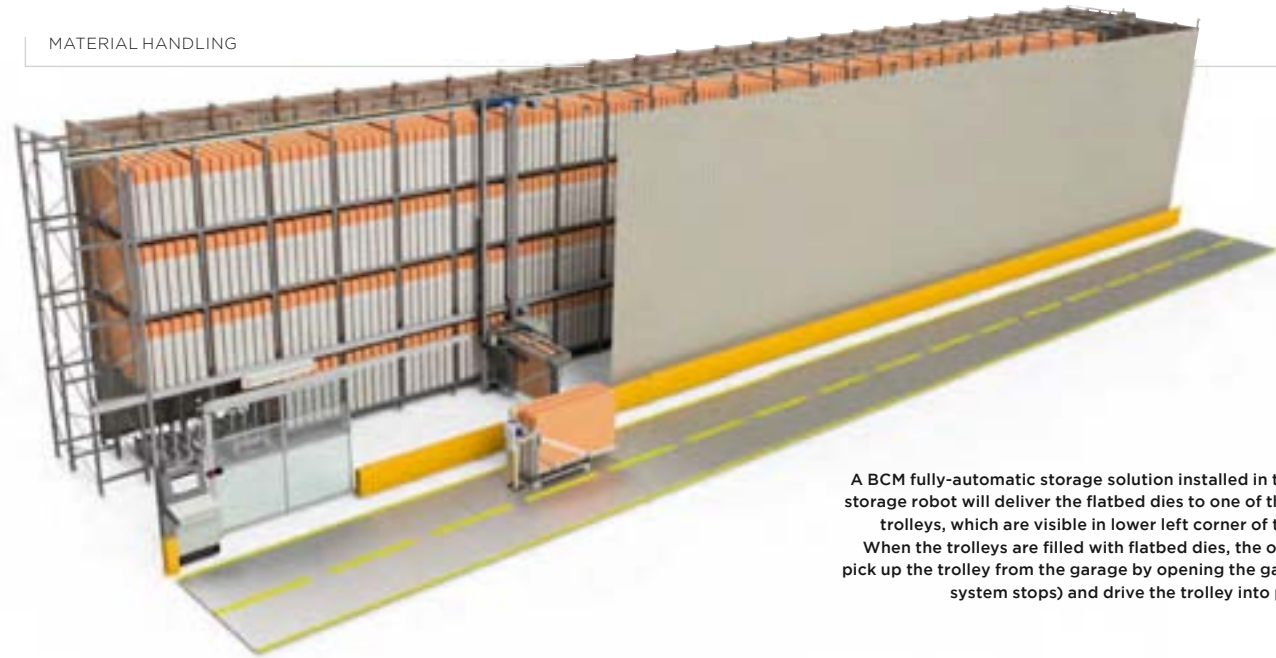
America. As customer's needs changed, so did the solutions. Over the last seven years, more customers are investing in semi- and fully-automatic systems. Many customers have been looking to be as efficient as possible. This desire for efficiency has led to the shift in a centralized tooling area for all of print plates, cutting dies, and ink buckets.

Every project being custom allows customers to input how the solution is designed and logistically carried out. The main component often overlooked in many plants is how the tooling will be physically delivered to the machine centers. BCM has two options for this. One is a manual pushcart that the operator will push to the machine center. The other is a hybrid solution where the cart is manually delivered to the customer's conveyor system and automatically brought to the machine center.

The next evolution of this scenario is to have all of the tooling brought to the machines automatically. Torben Christiansen, Managing Director of



One of BCM's fully-automatic storage installations in the U.S. The storage robot will deliver rotary dies to a BCM trolley parked in a garage. An operator will pick up the trolley when the storage robot has filled it with rotary dies and drive the trolley into production.



A BCM fully-automatic storage solution installed in the U.S. The storage robot will deliver the flatbed dies to one of the two BCM trolleys, which are visible in lower left corner of the storage. When the trolleys are filled with flatbed dies, the operator will pick up the trolley from the garage by opening the gate (storage system stops) and drive the trolley into production.

BCM, says, "The main challenge in most factories in bringing tooling automatically to the machine is the space and access."

Every customer's factory layout is different, so all solutions need to be customized to maximize the plants' space, daily logistics, and safety. Early planning in the layout of a plant is a crucial factor in developing the best solution. BCM can partner with customers in these early stages to optimize space, daily logistics, and increased safety. When a proper solution is put in place, it ensures lower labor costs, and tooling is delivered to the machines faster, less downtime at the machines, safer handling for the tooling, safer conditions for the operators, and a minimal amount of space is used in the plant.

Hitek Equipment is the North American agent for BCM Transtech. www.askhitek.com
www.bcm.dk

Roll Transport

In general, the manual handling of loads represents a potential danger for workers and should always be avoided. All the more reason, if the recommended limits are exceeded, measures should be taken to avoid performing the task manually.

In the paper and paperboard

industry operators manually move carts across the plant. Sometimes there's just not enough space for forklifts or other material handling systems to move freely. Keeping in mind operator safety, Renova has introduced Movicaart, the new battery powered cart mover series. Cousin to the Moviroll series, it is designed to safely move carts of any shape and dimension, both on wheels or rails, without any effort for the operator. Handy and heavy-duty, it is able to move carts up to 5 tons. It is a convenient alternative to forklifts or transpallets. The omnidirectional wheels help to effortlessly change cart direction, and the control panel is designed to put everything at your fingertips.

Once the battery is inserted, the battery status LED will light up to indicate the charge level. The maximum speed can be regulated, up to a maximum of 100 ft/min, and it can move both in forward or reverse gear.

For the operator's safety, Movicaart is

equipped with an anti-crushing system. In fact, when moving in reverse gear, Movicaart will momentarily reverse direction if the emergency stop belly button hits the operator, thus avoiding being stuck between the cart and other obstacles.

After placing Movicaart under the cart, the operator can activate the lifter to hook the frame. In order to adapt every type of frame, Movicaart is provided with different cart gripper optionals of various heights and shapes.



Handy and heavy-duty, Renova's Movicaart is able to move carts up to 5 tons and is a convenient alternative to forklifts or transpallets.



Battery powered models are equipped with two 24 V DC IP 44 motors powered by a high performance and plug & play 24

V lithium battery. The life span of the battery is equal to about 500 recharges and it rapidly recharges in a maximum of four hours. Movicaart

is provided with an optional second battery. Plug & Play batteries allow quick battery changes in less than 10 seconds without the use of tools and/or electrical disconnection, thus ensuring continuity of the operation.

Movicaart battery powered cart movers are maintenance free, with a battery warranty of two years.

The Movicaart roll movers are designed, manufactured, and assembled on-site at Renova in Milan, Italy. This allows Renova and its exclusive U.S. representative and distributor, CST Systems, to offer competitive pricing and support customers with high quality standards and to produce projects designed completely to customer specifications.

www.renova-srl.com
www.cstsystems.net



movicaart

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INDUSTRY SUPPLIERS OFFER A SNAPSHOT OF THEIR SOLUTIONS FOR MONITORING PRODUCTION FLOOR PERFORMANCE AND TRACKING RESULTS.



Process improvement encompasses a wide range of tools, techniques and strategies. When properly deployed, production floor data collection and monitoring systems can help plant floor managers leverage key data metrics, including overall

equipment effectiveness (OEE) and machine performance by measuring uptime and pinpointing bottlenecks or other problems. Without the necessary production floor monitoring solutions, board converters cannot effectively employ OEE metrics and Lean manufacturing,

making it difficult to deliver high quality products to customers on time.

The following write-ups from industry suppliers provide a summary of the available production floor monitoring solutions developed specifically for corrugated plants.

Automation Technology

Over 40 years ago, Kiwiplan embarked on expanding dynamic corrugator and plant scheduling in its software to an advanced level. The importance of plant automation for scheduling with production recording for the shop floor then became resident in the company's development DNA.

Connectivity between machines and Kiwiplan's Scheduling Suite was accomplished with the technology of the time. Many machines did not utilize computer controllers to provide communications, thus Kiwiplan made multiple connections and functions (primarily at the corrugator) to merge the production output. Technology and stellar engineering work by the machinery companies and third-party engineering firms have contributed to advancements and the realization of robust value-added productivity data collection into Manufacturing Execution Systems.

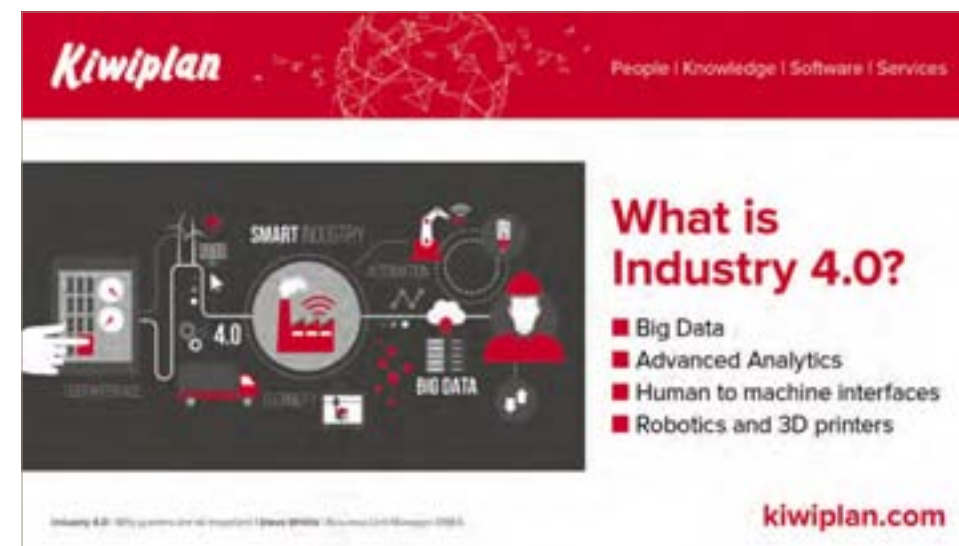
Converting machines on the shop floor initially lagged the corrugator technology a bit regarding exportable

data so were augmented by Machine Data Collection devices early on. These practical devices provide production accuracy for non-controller machines to Kiwiplan's applications so users may view results in real-time. The resultant data populates the scheduling programs and provides a continually updated forecast of all jobs while simultaneously downloading a treasure-trove of performance data into the database for reporting and analysis.

Customers utilizing automated data collection devices/interfaces

immediately observed the benefits in data accuracy and reduction in data input errors, positioning plant lead teams with a path for turning strategic initiatives into specific actionable tasks.

This set off a second phase of enhancement to communicate with the new generation of specialty and high-speed converting machines and collection devices. Automated setup capabilities and live machine-based output are primarily specification-centric to accurately repeat items and denote special requirements. Kiwiplan in partnership with its customers noted that for scheduling and post-production trend analyses, a demarcation of production orders be accounted for in the interfaces just like the corrugator protocols. These interfaces with the assistance of the machinery partners are being refined constantly on new technology platforms. Connectivity areas that extend Industry 4.0 and automation include raw material receipts, wet end quality systems, starch



Kiwiplan People | Knowledge | Software | Services

What role does it play in corrugated?

- Reduced staff in plants
- Higher level of automation
- Improved quality through consistency
- AI and Predictive scheduling



Industry 4.0 / Why Systems are so Important! Steve Whittle | Business Unit Manager, EMEA

kiwiplan.com

dosing, roll stands, slitter/scorers, dry end chop knives, stackers, takeoff and plant conveyors, converting machines, bundlers, labelers, inline and offline quality devices, strapper/unitizers and warehousing and shipping/loading operations with RF Chip Technologies.

This strategic information converts shop floor data into KPIs and dashboards. Staff can be messaged and alerted of operational events of their choosing. Quality checks are automatically prompted or collected from measurement systems. This information is available to box plant customers via Certificates of Compliance. The collection systems automatically populate web portals allowing extended customer interaction for placing orders, checking inventory levels, account activity and orders disposition. Corporate and plant leadership can view

plant floor operations live on their mobile devices.

The ability to accurately capture raw data has now made possible an opportunity for alignment of systems to support variable business condition modes in the software.

Customers look to Kiwiplan to improve process issues, unite variable technologies, and provide a consolidated view of their business. www.kiwiplan.com

Automate to Communicate

As a result of the pandemic and subsequent large spike in online purchasing, customers were faced with a greater demand for their packaging products. This increase in business necessitated the need for them to manage their businesses even more efficiently. Amtech Automation has provided a way to do this quickly and effectively via its ScoreKeeper production monitoring system.



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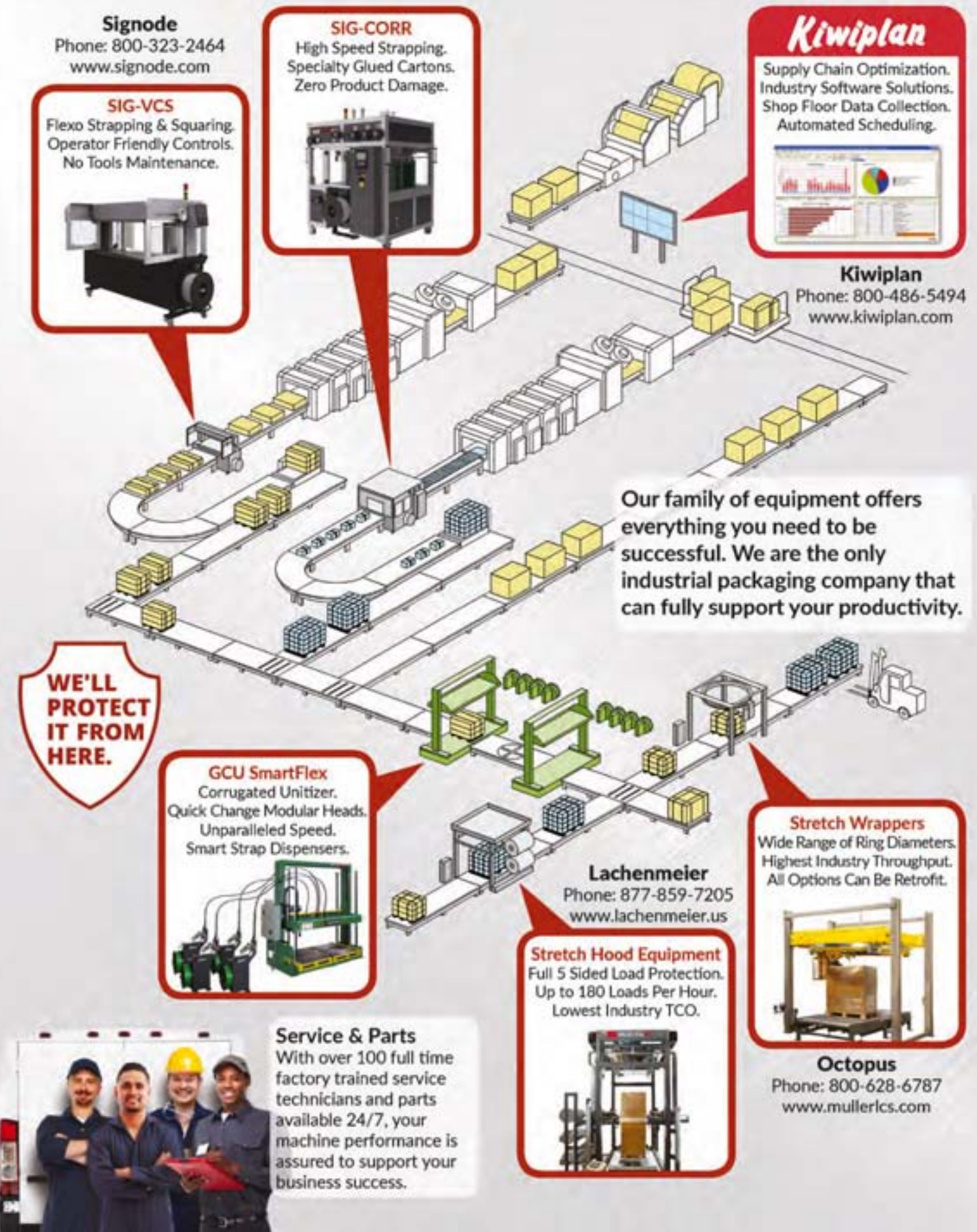
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ScoreKeeper leverages IIoT to monitor and provide data and KPIs while eliminating data silos and minimizing overall hardware footprint. Regardless of whether your operation is single or multi-site, in one country or many, ScoreKeeper centralizes all important performance and efficiency data points for a single view and version of the truth.

Many customers report a 15% or more increase in production efficiency in under 30 days after the system is operational. Amtech delivers the "Industrial Internet of Things" (IIoT) to the corrugated, printing, folding carton and fulfillment industries allowing "these things" to talk to "those things" without years of developmental efforts. The solutions focus on allowing you to intelligently manage your operations while finding areas for cost reduction, efficiency improvements, and overall gains.

The bottom line? Where work is being done, ScoreKeeper can measure it.

Whether you are looking to measure your corrugator, printing press, flexos, flatbeds, rotaries, specialty FGs or even manual operations, efficiency and performance data is captured with a single, out-of-the-box solution and delivered via dashboards accessed from any device and on large TV digital signage. Multi-up displays in areas like maintenance, scheduling, and management give high visibility to current production along with shift and month-to-date totals to provide valuable feedback to employees and managers. Provide real-time data to all your operators and management to improve performance. You no longer have to be in the plant to see what is happening there. A mobile app provides "on-the-go" access to current production information from anywhere, anytime.

Customers can quickly and

easily install ScoreKeeper and begin collecting and displaying important performance and efficiency data in just a few hours. Assess and measure all machine and work centers out of one system that is easily integrated with your ERP in the following areas:

- Machine efficiency performance
- Actual uptime and the reasons for downtime
- Motivate crews and reward them for performance goal attainment
- Utilize run data to incorporate Lean manufacturing practices and concepts
- Improve processes and provide instant OEE measurements

With ScoreKeeper, converters will be able to collect, analyze, and make fast operational decisions with the real-time insights it offers. Amtech Automation is quickly changing the way the industry works. Whether it's enabling predictive analytics to detect bearing outages or providing real-time production data to uncover additional capacity in finishing or driving visibility and control over the corrugator control systems to improve production, the IIoT solution – and the software solutions powered by it – are driving powerful business outcomes. Now these "things" can talk to "those things" like never before.

www.amtechautomation.com

The Smart Plant

Amtech Software is continually innovating to bring customers the latest technologies available enabling them to streamline their manufacturing and business operations while quickly adapting to extreme market changes. The flagship system, EnCore by Amtech, combined with its intelligent scheduling solutions for corrugated and converting, along with many optional modules delivers customers an integrated Smart Plant. The system intuitively guides users through the steps they need to perform their functions allowing them

inksave

A staggering 50% reduction in water consumption



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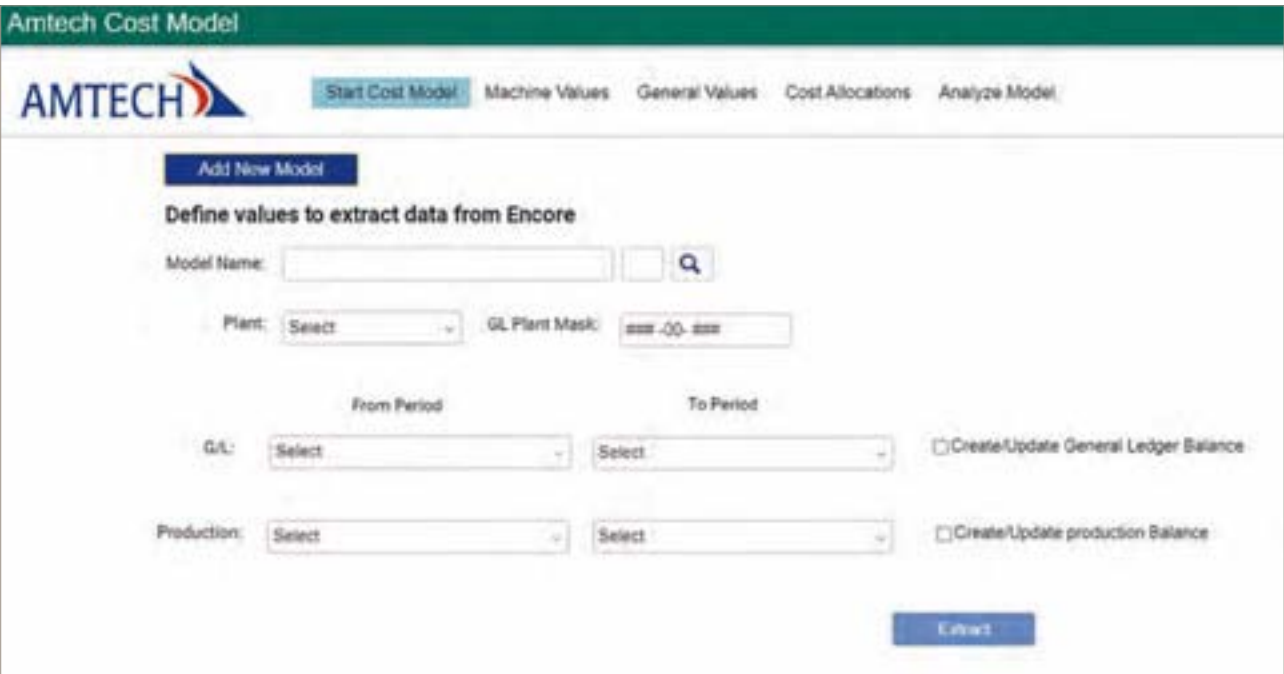
Model 32 Score Bend Tester

- A portable testing instrument that measures the initial force required to break the "Score" on a corrugated sheet.
- The 32 SBT offers a "NUMERIC VALUE" to that initial force required to break the Score to the Same Force Environment used on Automatic Case Erectors.
- Repeatable/Reliable Digital Force Gauge.
- Enables the Sheet Feeder and Box Plant to establish an "Agreed Number" for approved score designs.
- This answers the question as to which profile to use with the many different types of paper/liner combinations that we use today.



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EnCore by Amtech intuitively guides users through the steps they need to perform their functions allowing them to operate through real-time alerts, smart guides, and logical sequences.

to operate with real-time information through real-time alerts, smart guides, and logical sequences.

With plants trying to do more with less during these changing times, Amtech’s technological advancements have remained ahead of market dynamics through integrated solutions and latest advancements. **Cost Model Updating:** Dynamic supply chains and recent cost changes have created an upheaval in the industry. The Automated Performance Costing Solution, released in 2020, provides customers the ability to intelligently revise their cost models efficiently and quickly without the need for outside consultations. Integrated into the Amtech database, the solution offers logic, smarts, and a quick ROI.

Intelligent Scheduling: Integrated into the heart of EnCore, the scheduling solutions deliver the perfect schedules for precise production balancing with real-time information. Leveraging intelligent algorithms that learn a business’s operational

preferences over time, the solutions allow board converters to schedule based on what is important for their business enabling them to leverage every moment of available time and effectively optimize machines. Schedules are communicated throughout every functional area within the business departments. Sales and customer service can accurately commit to customers ensuring that orders will be delivered on-time...as committed.

Real Plant Monitoring: The most important part of an integrated factory floor is getting real-time information from the machines. The RPM module leverages PLC’s and sensors to seamlessly communicate accurate setup times, run speeds, and counts so the scheduling system is updated in real-time. Providing machine operators with target setup times and speeds motivates crews to perform and provides all the information needed to validate and update the estimating system. It can also mandate operators supply

user-defined downtime reasons and waste reconciliation prior to starting the next job to ensure it captures data needed for each job, shift, machine, and plant.

API Integration: Smart Factory 4.0 is an integrated environment. With open APIs, not only is the entire family of solutions integrated, Amtech offers integration into other tools such as such as Esko WebCenter for corrugated and digital printers, keeping customers working as efficiently as possible, preventing errors, and optimizing everyone’s valuable time.

www.amtechsoftware.com

Web-based Scheduling

Advantzware now offers the Advanced Manufacturing Solution (AMS) which includes a web-based scheduling system fully integrated with a Direct Machine Interface (DMI) for real-time data collection directly from your equipment. It is built with the latest web-based technologies, is highly secure and scalable and is easy to



AMS Shop Floor Data Collection works in conjunction with Machine Data Terminals (MDT) to provide real-time visibility.

install and maintain. Deploy in the Cloud or on existing on-premise servers.

The AMS system uses a Gantt chart with drag and drop functionality along with sophisticated algorithms to automate the scheduling process and plan the most efficient workflow of all job tasks for on-time delivery to customers. The system features an intelligent automatic optimization engine to help gain visibility and utilize resources more effectively to deliver reliable results with a single workflow view. Turn strategy into an actionable plan based on priorities, resources and delivery dates to achieve success. Instantly optimize the entire manufacturing operation and eliminate bottlenecks automatically. The system shows the bottlenecks in a plant and provides options for adding overtime, additional shifts or moving jobs around to relieve the bottlenecks and optimize delivery schedules. Customize the optimization engine to fit unique requirements and resolve bottlenecks for optimal production so schedulers can focus on resolving resource constraints to maximize efficiency. The system features custom definable machine switchover and limit rules, multi-plant and multi-language capabilities and direct machine interface capabilities for continuous real-time updates

The AMS Order View allows users to achieve visibility into both pending and in-process orders and drill down into the order details. View

the details of every order in production, including customer, order description, parts to produce, required materials and tooling, and customer attributes. Drill into the order details to view

the PERT diagram to view all related manufacturing steps required to complete the order with upstream and downstream tasks clearly defined. Also, for each resource, you can view and update user-definable machine switchover and limit rules.

The AMS solution includes a fully integrated direct machine interface for

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Advantzware's AMS system uses a Gantt chart with drag and drop functionality along with sophisticated algorithms to automate the scheduling process and plan the most efficient workflow of all job tasks for on-time delivery to customers.

increased efficiency and profitability with real-time data collection and visibility into any manufacturing process. This centralizes data company-wide in real-time to make faster, more effective decisions while driving growth. Real-time data provides actionable insights into machine and employee efficiency, productivity, downtime, waste, estimated costs vs. actual costs, and more.

AMS Shop Floor Data Collection works in conjunction with Machine Data Terminals (MDT) to provide real-time visibility into any manufacturing process – from a single plant to a multi-site operation. Manage production, machines, people and OEE in real-time and improve the productivity of any discrete darts manufacturing process and equipment without native data connectivity. Connect directly to all types of

production equipment through a family of Machine/Operator Data Transducers. Match data collection, data display, operator interface and ERP integration requirements to individual machine functionality.

157 42" Flexo	Speed (PPM)	Pieces Per Hour	Average (PPM)
	211	12,964	216
181 50" Flexo	Shift Total	Uptime	Downtime
	85,990	84%	01:04:02-08
184 Folder Gluer	Speed (PPM)	Pieces Per Hour	Average (PPM)
	0	17,438	290
	Shift Total	Uptime	Downtime
	115,666	64%	02:24:06-58
	Speed (PPM)	Pieces Per Hour	Average (PPM)
	140	6,457	107
	Shift Total	Uptime	Downtime
	25,072	56%	02:45:41-03
Copar Corporation		13:38:39	

Office production display

Additional features include:

- Downtime Tracking: Automatically capture, display and analyze causes for equipment downtime from any production machine and capture reasons for downtime events.
- Production Reporting: Production monitoring software collects data from any production machine and provides analytical reports reflecting true job costs.
- OEE, Lean Six Sigma: Automate OEE (Availability, Performance, Quality) data collection for DMAIC. Implement low cost, dynamic visual factory displays.
- Predictive Maintenance: Replace calendar PM with actual equipment run hours and cycle count scheduling.

www.advantzware.com

Highly Visible Data

Copar's plant production network offers accurate, timely, and highly visible production data that can help operators and management track

performance on the converting equipment. Values for performance goals are color coded to indicate if a set target is being achieved, and daily/monthly production reports are emailed automatically,

The system is offered as a standalone or linked to an existing production system. Real time information is available on mobile devices, remote computers and office displays through VPN access.

Installation is simple by utilizing the plant's existing network or Copar's private network. Information displayed is configurable per the plant's request.

LED HD TVs can be supplied by the plant or purchased through Copar. One Solid State Industrial Grade Tower Computer handles up to 16 displays.

Remote access for support, software upgrades, and any requests for modifying the displayed information is handled through VPN access.

www.copar.com

Data Driven

The Fourth Industrial Revolution (4IR) / Industry 4.0 is characterized as a fusion of data-driven advances. At the heart of 4IR implementation is the desire to profit from the exploitation of "Big Data." Data has become the most strategic asset: success depends on how data is utilized. The more data, and the more types of data that can be reliably captured from devices in the factory, the more opportunities there will be for software to support additional advanced functions. Capturing and analyzing this data provides opportunities for process improvement (OEE), energy consumption analysis, and conservation as well as maintenance and repair.

FIN is the answer to turn data into a strategic asset. it is powerful,

intuitive, low cost and easy-to-use. It can connect directly to all of a plant's PLCs and machines, not just one or two machines or a few externally added sensors that only give speed, run time, downtime etc. The system also connects seamlessly with external databases to collect roll IDs, order information, paper information,

customer data and much more. Tying into the "brain" of every machine and monitoring down to the component level, FIN puts visibility of the critical data, components, conditions, and potential issues in the hands of those who need it most.

Automation & Control Inc. (ACI) developed FIN (Factory Intelligence

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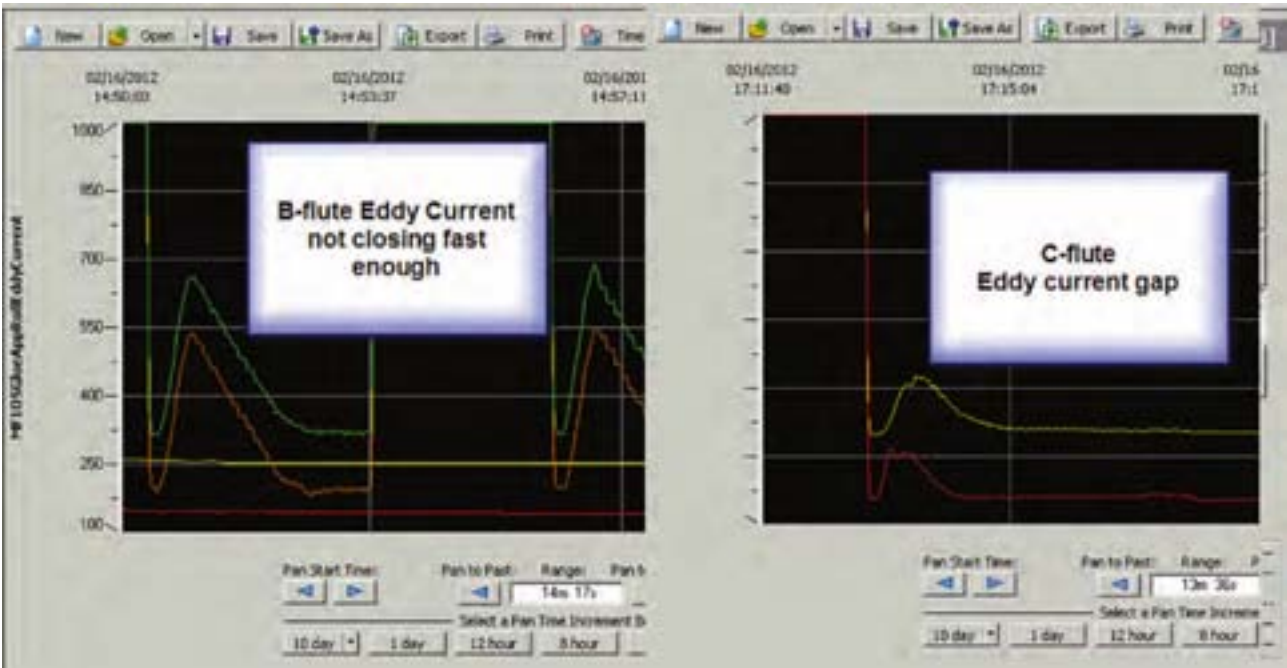
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In addition to providing the analytical tools to isolate, identify, and correct issues, FIN delivers an on-demand, web-based graphical display of essential data customized to how customers wish to view it. An example of one plant's display of its rolls used over a specified time period is shown above.

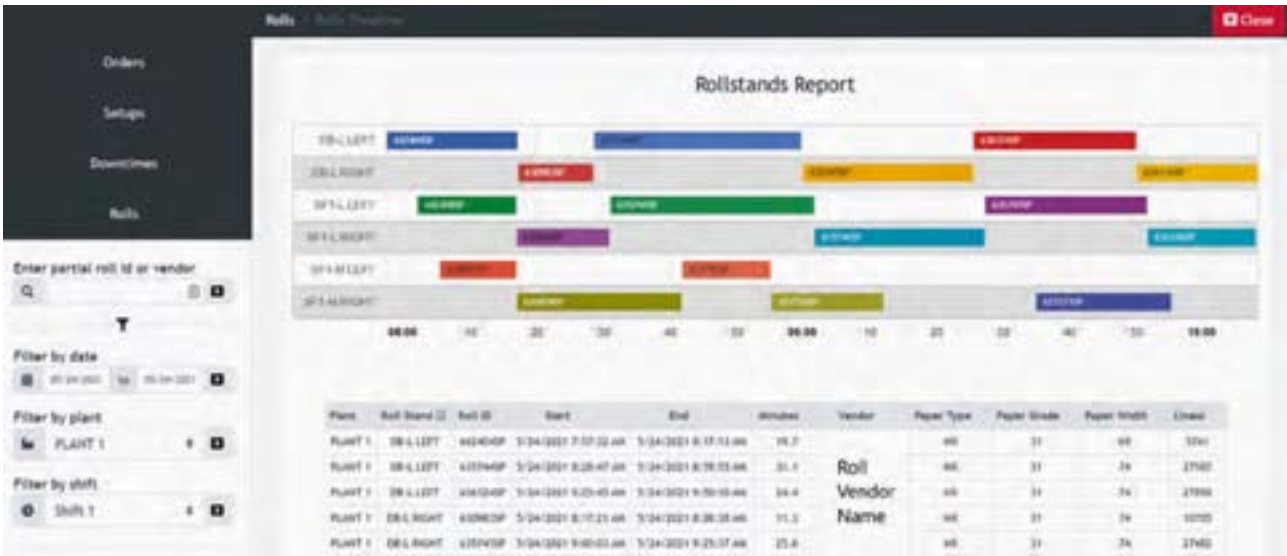
Network) software 20 years ago at the request of a customer desperate to solve quality control and waste issues. ACI solved those issues and today the entire ~1M SF plant is tied into FIN, monitoring over 20,000 data points per second and providing plant

personnel with access to real-time and historical data, dashboards and on-demand web-based reporting.

Another example of how FIN improved a plant's quality control is shown above. This trend shows how a sheet plant used FIN to confirm its

theory that its B-flute glue roll was closing slower than its C-flute. Without having actual real-time data from the sensor measuring the position of the glue roll, the plant would not have been able to resolve this issue.

www.automation-control.com



FIN software combined with ACI's vast electrical installation and engineering experience in the corrugating industry accelerates all manufacturer's journey to becoming a modern, smart, data-driven factory and the foundation for continued growth and profitability.

Market Challenges

Consumer demands are forcing packaging manufacturers to be more agile and responsive in their planning and execution of these ever-changing needs. Buzzwords such as IOT, machine learning, cloud, mobile data, big data, smart manufacturing, and lot size of 1 abound; and packaging manufacturers are left trying to filter through the hype cycles to determine how best to plan their operations efficiently and profitably. Furthermore, no matter which technology is chosen, the success relies heavily on accurate and timely production data.

Many of the planning systems in today's market follow an outdated way of running a plant. They tend to be somewhat batch-oriented, repetitive, and reactive. "Schedule the corrugator, schedule converting machinery, report production, repeat." The problem with this methodology is that once the perfect plan is put in motion, a sudden rush order appears, raw material is found to be defective, a machine breaks down. Supply chain planning can no longer be linear, the solution must be interconnected (internally and externally), open, responsive, adaptive, and self-tuning.

For over three decades OMP has provided planning solutions for the paper packaging industry. In addition, it has a strong market position in the consumer goods, food & beverage, and chemical industries. OMP understands the challenge these industries put on the box maker and can bring guidance on industry best practices and supply chain excellence. Unique to the OMP solution, beyond corrugator optimization, conversion planning, and automated shop floor data collection, is its tactical planning

solutions that enable converters to plan on a longer time horizon. Utilizing advanced forecasting engines and optimized Sales & Operations planning, box makers can be more proactive in their decisions aligning sales with where to place volume and maximize contribution amongst their operations.

Box makers produce a large variety of packaging solutions. With thousands of orders produced each month, there is a wealth of data generated about product and order trends, machine, operator, and shift efficiency. The challenge is to effortlessly convert gigabytes of data into actionable information. There is a degree of magic needed to make this happen and OMP's Data Genie, fueled by AI and ML, seamlessly analyzes the data to support intelligent reporting and more importantly, continuously enrich the automated planning decisions inherent in the OMP solution.

OMP's solutions for paper converters, covers all aspects and levels of planning, but it also offers guidance for the production team. Operators are presented with concise information about the orders to be produced, at the same time they are also automatically coached to improve production performance over the last run of the same or similar box. Prompts for quality checks appear on the operator console, guaranteeing consistent quality data collection. Supervisors can quickly surveil OMP's large digital display boards to determine if a machine line needs assistance.

The OMP solution delivers a wide array of advanced, automated supply chain planning solutions, enabling box makers to make smarter planning decisions every day.

www.omp.com

OMP's solutions for paper converters, covers all aspects and levels of planning.

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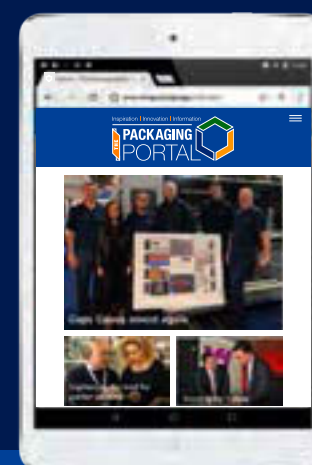


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