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- + Temperature-Controlled Logistics Trends
- + New Products on PP. 58

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A man in a light grey turtleneck sweater is scanning a white medicine box with a smartphone in a pharmacy. In the background, a pharmacist is visible behind a counter. The scene is brightly lit with shelves of medicine.

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Product Protection from Sterility Assurance to Traceability

An initiative puts sterile packaging under the microscope, while others tackle e-commerce and automation projects.



Every December, *Healthcare Packaging* counts down the top 10 most-read online articles of the year. It was no surprise that traceability made our list four separate times. From regulatory requirements to brand protection, manufacturers are seeking out ways to ensure products arrive safely. One such example is our story on pp. 19, covering a luxury supplement brand's new labeling that delivers on consumer engagement and anti-counterfeiting in a display-worthy secondary package.

For out-of-the-box thinking, look no further than our cover story (pp. 29) profiling Kilmer Innovations in

Packaging, an industry initiative “solving wicked problems in healthcare packaging” in the name of innovation and patient safety.

Ever popular in our top 10: advancements in manufacturing technologies. Our PACK EXPO Las Vegas Innovations Report (pp. 35) covers new machinery, robotics, and containers delivering healthcare to patients. With in-person events returning—with proper health and safety protocols—check out our preview of PACK EXPO East (pp. 55), convenient to the life sciences rich Northeast corridor from Mar. 21 to 23 in Philadelphia. ✦

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1 Mark Cuban Launched His Generic Online Pharmacy

According to a recent *USA Today* article, billionaire Mark Cuban has entered the online pharmacy sector with a mission to lower prescription drug costs. The Mark Cuban Cost Plus Drug Company will offer drugs for diabetes, heart health, gastrointestinal issues, mental health, cancer, and antibiotics.

The company's press release gave the example of Imatinib, a leukemia drug that costs \$9,657 per month and a price of \$120 per month with a voucher. Cuban's company will offer the same drug for \$47 per month. Cuban's direct-to-consumer model aims to eliminate middlemen and their fees to essentially offer prescription drugs at wholesale prices.

2 Home COVID-19 Tests Exclude Blind People

A *New York Times* article discussed COVID-19 tests and accessibility to blind people. Because many can't drive themselves to testing facilities, and most tests require precisely-placed liquid drops that require eyesight, many blind people opt to self-isolate rather than test regularly. There are some workarounds that can help including video apps like Be My Eyes and Aira. Pregnancy test tech could be modified that uses battery-operated motors that transform chemical changes on strips into raised bumps that can be read like braille. Another solution could be tests that change in smell or temperature to indicate results. However, scent isn't always available for patients affected by the virus.

3 Medical Drone Saves First Heart Attack Patient in Sweden

According to *The Verge*, a drone flew a defibrillator [AED] to a 71-year-old man who had a heart attack while shoveling snow. Luckily, a bystander was a doctor on his way to work, and he used the AED and provided CPR to save the man's life. The drone was developed with the Center for Resuscitation Science at the Karolinska Institutet, SOS Alarm, and Region Västra Götaland. In their pilot study, 14 heart attack alerts were eligible for drones. In 12 of those cases, drones were deployed, and seven of them arrived before ambulances.

4 Casts for Pet Fractures Get a Big Upgrade

An astounding 60% of animals with casts experience additional injuries because casts aren't designed for their specific anatomy. This can cause sores, pain, and stiffness for man's best friend, and since they can't communicate the discomfort, complications can progress quickly. Thankfully, a recent *NEWSWIRE* article discussed a new suite of splints that are designed around the specific anatomy of animals. OrthoPets just launched the splints, which are made from breathable and heat-molded moodcast material, which is both stronger and lighter than fiberglass. The pre-shaped casts give pets a wider range of mobility, allowing them to move naturally and prevent sores and discomfort for quicker healing without complications.

5 This COVID-19 Vaccine Doesn't Require Cold Chain

A recent *Medgadget* article discussed a new type of vaccine that doesn't require cold chain for transport. The vaccine, which was developed by researchers at the University of Queensland and Vaxxas, comes via a high-density microarray patch for a minimally invasive delivery without the use of needles. However, the most impressive part is the formulation's stability; it can be stored for a month at room temperature, and a week at 104 degrees Fahrenheit. A video with more info can be seen at: hcpgo.to/397

6 Sunken Boat Spills Billions of 'Nurdles' into Indian Ocean

A recent article from *The Guardian* discussed the X-Press Pearl container ship that sank in the Indian Ocean in May. The heavy fuel oil onboard was expected to be the largest source of pollution, but it was actually the 87 containers containing 1,680 tonnes of nurdles that spilled from the flaming wreckage. Nurdles are lentil-sized pellets, aka "pre-production plastic pellets" that are the building blocks for all plastic products, including packaging. According to the UN, it is the largest plastic spill in history. The greatest impact of the spill is on sea animals—which are also the main source of protein for 40% of Sri Lanka's population—who mistake the tiny pellets as food. Nurdles also fragment into nanoparticles with more complex hazards in the environment, and spread with the ocean's currents.

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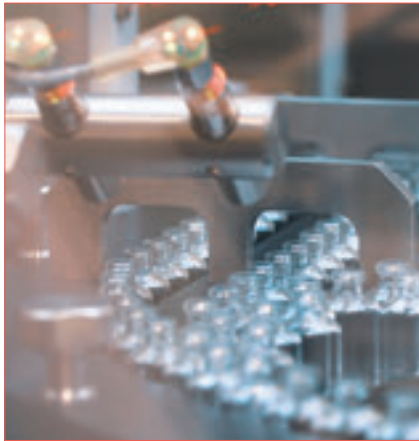
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Life Sciences Outpace Other Industries in Investments and SKUs

COVID-19 has spurred the need for new production and packaging lines, but it's not the only driver of growth. "Throughout 2021, PMMI's *Quarterly Business Indicator* showed steady growth in the Pharmaceutical/Medical Devices industry outpacing all other industries. Expansion in equipment investments and SKUs manufactured continue to be on the rise and should maintain this pace moving into 2022," says Paula Feldman, Senior Director, PMMI Business Intelligence. "Advances in regulatory standards worldwide and the focus on population health management are a few of the drivers for this expansion. In addition, the uptick in the demand for over-the-counter medicines and a more informed customer base are also impacting market growth." Download PMMI's complimentary economic reports at: hcpgo.to/394

—Keren Sookne

EPA Considers Reporting Requirements for EtO Usage

The EPA is under pressure to decrease ethylene oxide (EtO) usage in sterilization facilities. However, the FDA has warned that facility closures will lead to medical device shortages. According to a recent *MedTechDive* article, the EPA may soon require reporting on usage for sterilization at manufacturing facilities. Facilities run by Boston Scientific and Sterigenics were specifically called out, but the EPA wrote to operators of 31 medical device sterilization facilities in Oct. 2021 outlining its plan and requesting information. The facilities were chosen based on their EtO use and proximity to populous areas. For more on EtO, visit our recent coverage at hcpgo.to/eto

—Tim Hayes



Pantone Color of the Year 2022 Unveiled

Pantone has introduced a new blue shade, PANTONE® 17-3938 Very Peri, a dynamic periwinkle blue hue with a vivifying violet red undertone as the 2022 Pantone Color of the Year. According to Pantone, blending the faithfulness and constancy of blue with the energy and excitement of red, this happiest and warmest of all the blue hues introduces an empowering mix of newness. "PANTONE 17-3938 Very Peri is a symbol of the global zeitgeist of the moment and the transition we are going through," the company explains of this transformative time. "As we emerge from an intense period of isolation, our notions and standards are changing, and our physical and digital lives have merged in new ways."

—Anne Marie Mohan

Upcoming Events

Events listed as of press time:

HDA Distribution Management Conference and Expo, March 6 to 9, 2022, *Austin, TX*

Natural Products Expo West, March 8 to 12, 2022, *Anaheim, CA*

PACK EXPO East, March 21 to 23, 2022, *Philadelphia, PA* (See preview on pp. 55.)

PDA Annual Meeting, April 4 to 6, 2022, *Dallas, TX*

ISTA Forum TransPack & TempPack, April 11 to 13, 2022, *San Diego, CA*

MD&M West, April 12 to 14, 2022, *Anaheim, CA*, coincides with Sterile Packaging Day, April 13, 2022

HDA PCSC Educational Seminar, April 19 to 20, 2022, *Whippany, NJ*



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Temperature-Controlled Logistics Trends to Watch

KEREN SOOKNE, DIRECTOR OF EDITORIAL CONTENT

In a banner year for cold chain products thanks in part to COVID-19, experts remain hard at work furthering industry standards and best practices, promoting collaboration among pharmaceutical end users, suppliers, distributors, and service providers.

At the ISTA Pharma Committee's annual Technical Exchange, stakeholders gathered virtually for an open discussion about trends in temperature-controlled logistics and what the industry is facing with regards to operations and regulatory bodies.

See recordings of Session 1 and Session 2 at hccpgo.to/393

Regulators seeking PQ data

One attendee noted that they're now being asked to provide more actual shipping data vs. lab testing or operational qualification (OQ) data as representative.

Arminda Montero, Associate Director, Global Supply Chain Quality at AbbVie Inc., confirmed, "Yes, we're seeing an increasing trend by regulators wanting to have PQ [performance qualification] data in submissions, not for CRT [controlled room temperature], but for frozen and cold chain products. We've seen more and more countries asking for that beyond Brazil, the U.S., Canada, and Australia."

Regulators want to see that the design or the chamber testing is actually representative of the shipping conditions. As Montero noted, there's an ongoing discussion about whether that data needs to be from a PQ or from a performance verification process. The key takeaway: regulators are seeking actual shipping data.

Climate change and temperature profiles

Climate change impacts the frequency and severity of weather events, and temperature-controlled logistics experts will continue to navigate these changes. Is the profile data collected in the past keeping pace with current events?

Bill Mayer, Director of Research and Development at **Peli BioThermal**, said that this is a relevant topic they've discussed in group review sessions regarding gathering lane data for the new *Ambient Temperature Profile Best Practice Guidance*. The group is still considering what should be gathered over what time period and how often this data should be reviewed.

Looking toward the future, Craig Vermeyen, Director, Global Packaging and Distribution at Kite Pharma, added that ultimately the hope is that the industry is moving toward real-time data acquisition with data analysis and predictive capabilities built into profile development.

Ideally, as temperature changes occur, testing profiles will be automatically updated for the next time a company tests based on that real-time data.

Lingering challenges from COVID-19

Carolyn Williamson, President at **Parenteral Supply Chain**, has been managing frozen shipments since 2004. In light of the pandemic, she's seen a shift in industry shipping knowledge—particularly with dry ice after a year of scaled-up COVID-19 vaccine distribution.

There's more focus now on what the materials can withstand under ultra-cold conditions beyond merely shipper temperature. This includes whether the environment is causing condensation and if the dunnage, payload box, and labeling can handle the conditions. She also noted that while the industry has discussed re-icing shippers for quite some time, the risk can be high with this practice in reality. Networks aren't always set up to re-ice successfully, and more work is needed on this front.

"I feel that we've worked on [COVID-19 shipments] very well, but I think it would be nice if out of that we really started to come up with [best practices] as a whole for the industry. You don't have to rethink it all, such as what materials worked out best... almost a huge 'lessons learned' to help everybody for the future," she said.

Value in standard profiles remains

Standard ambient profiles still have their place in the industry. As panelists noted, this need is more often coming from smaller and mid-size biopharma companies, wholesalers, and pharmacies. Large pharmaceutical companies have invested significant funds into gathering their own lane data, but smaller players often don't have the resources.

That's not to say big pharma doesn't leverage standard profiles at

❖ COLD CHAIN CORNER

all. Bryan Cardis, Sr. Consultant Engineer at Eli Lilly and Company, said, “I think it’s always nice to have a standard profile as a starting point, especially when you have limited data or new lanes. Then over time, optimize it to those lanes.” As companies collect data they can begin to understand whether the standard profile was efficient or too robust, needing modification.

One attendee remarked that having a standard profile leads to better leveraging of vendor data, explaining, “If the manufacturer and vendor had the same profile, it would be very easy to adopt a shipping system, because right now they’re writing 12-page justification letters as to why vendor data is applicable.”

Smaller companies should be aware though that a standard profile—while generally helpful—will not always be a perfect fit. Williamson said, “Some of these companies have far less money to spend on shipping, both for the actual package and for transportation costs. A standard profile may lead them to have a more expensive box, which increases their costs.”

From the vendor perspective, Anthony (TJ) Rizzo, Chief Commercial Officer at **Cold Chain Technologies, Inc.**, noted that having the same profile would make things a bit more straightforward. “One of the challenges is navigating the maze of ambient profiles. Some people use 7D, some people use 7E, some are using

their own qualifications and they can be significantly different. So I think there is an appetite from both sides to try to adopt the same standard when we’re qualifying,” he explained. “I think that the challenge is how do you do that and meet the different risk tolerances of different organizations, and weigh that against the cost. Obviously the more severe a profile, usually the more costly the solution is. Some companies have stability data, some don’t, some are a little bit more open to risk due the cost of their other products. Personally, I think it leads to something of a good/better/best type of approach, where you could have different levels and different solutions at different performance and cost levels as a result. But it’s definitely something that we are interested in taking on as a group.”

Stay tuned for more as the ISTA Pharma Committee reevaluates Standard 20 and ISTA 7E. Said Rizzo, “We want to engage as many people from the industry as possible in those discussions from different parts of the table: end users, testing facilities, packaging providers, and any professional service providers within the industry.” ❖

The 2022 ISTA Forum, including TempPack, takes place in-person from April 11 to 13 in San Diego, CA. Topics will include sustainability case studies in re-use vs. single-use, COVID-19 lessons, and more.

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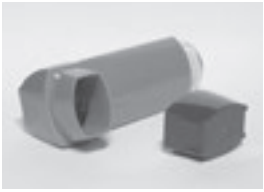
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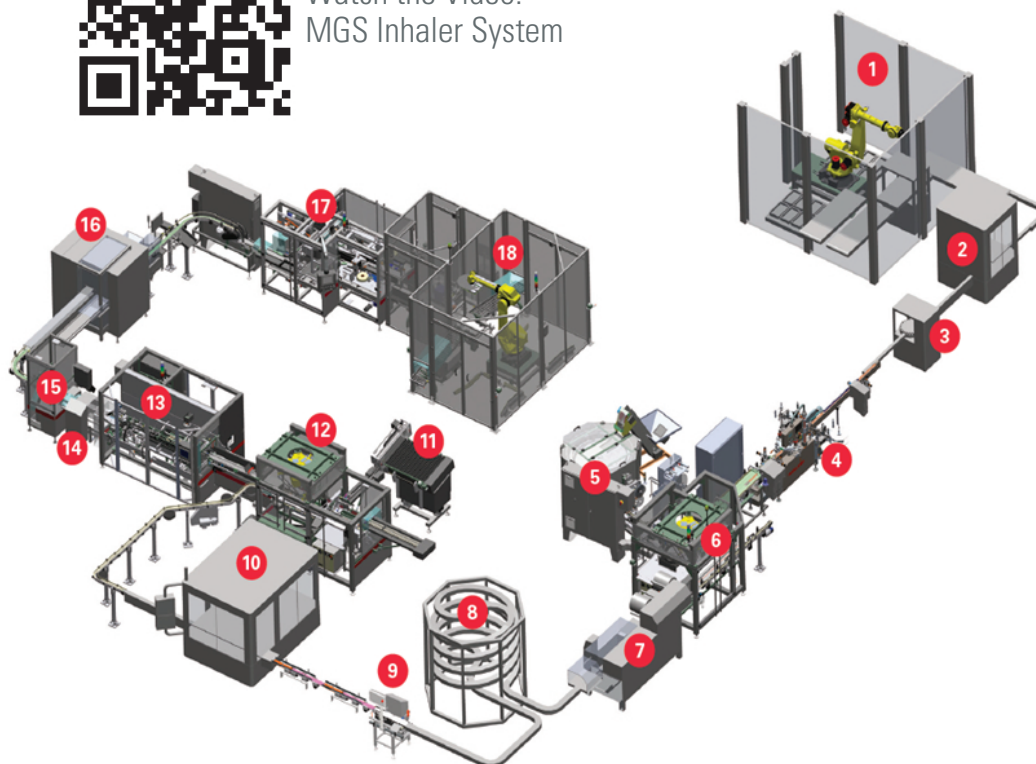
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Compostable Skincare Packs Signal Shift in Tattoo Culture Values

ANNE MARIE MOHAN, SENIOR EDITOR, *PACKAGING WORLD*

Once a symbol of counter culture, tattoos are quickly becoming part of mainstream culture with more than a third of Americans between the ages of 18 and 25 having at least one tattoo.

The normalization of tattoos over the last decade stems mainly from more exposure to tattoos through social media and popular culture from musicians to sports stars, as well as the strong individualism of the Millennial and Gen Z generations.

“This change is also evident in the requests and choices of tattoo clients. People want art that represents them and their beliefs about life and the world. Nature-oriented botanical tattoos have increased heavily in popularity. It makes perfect sense that tattoo enthusiasts also want products that support their values,” says Hamburg-based Tattoo Artist Mik Rahner.

Rahner wanted to offer his clients high-quality aftercare products, but nothing on the market was both effective, organic, and sustainably packaged. With vegan cosmetics strongly on the rise, there was a gap in the market for a new kind of tattoo aftercare product.

To meet this need, Rahner, along with Naturopath and Herbal Medicine Expert Manou Rahner and Manuel Camacho, Natural Cosmetics Manufacturer, founded Manik Skincare for people with strong environmental and self-care values.

“Regular aftercare products are okay but did not truly meet the criteria I had in mind. The three of us sat down to put together the concept of Manik, and then we began to work on recipes. It took us two years to develop the two vegan products—the balm and the soap, using selected medicinal herbs and plant oils,” says Mik Rahner.

The packaging also had to meet Manik’s strict requirements for eco-friendliness and recyclability, which meant that fossil fuel-based plastics were not an option.

“Sustainability is one of the most important criteria in our product development, from the raw materials to the packaging. The real value of our products lies not only in the benefits for the user but also in avoiding any harm to the environment. Ecology before economy, environmental protection before profit—that is our mantra. When we found **Sulapac** [cosmetics packaging supplier], we didn’t even have to consider other options—it was a perfect match for us,” says Manou Rahner.

For its Herbal Tattoo Series products, the brand chose the indus-

trially compostable Sulapac® Nordic Collection by Quadpack. Sulapac’s packaging material is made from FSC-certified wood chips from industrial waste streams and plant-based materials. The material also degrades without leaving permanent microplastics behind. The brand’s logo and a botanical design are screen-printed on the lid of the balm jar. ✦



↑ For its Herbal Tattoo Series products, the brand chose industrially compostable Sulapac Nordic Collection by Quadpack.



↑ The brand’s logo and a botanical design are screen-printed on the lid of the balm jar.

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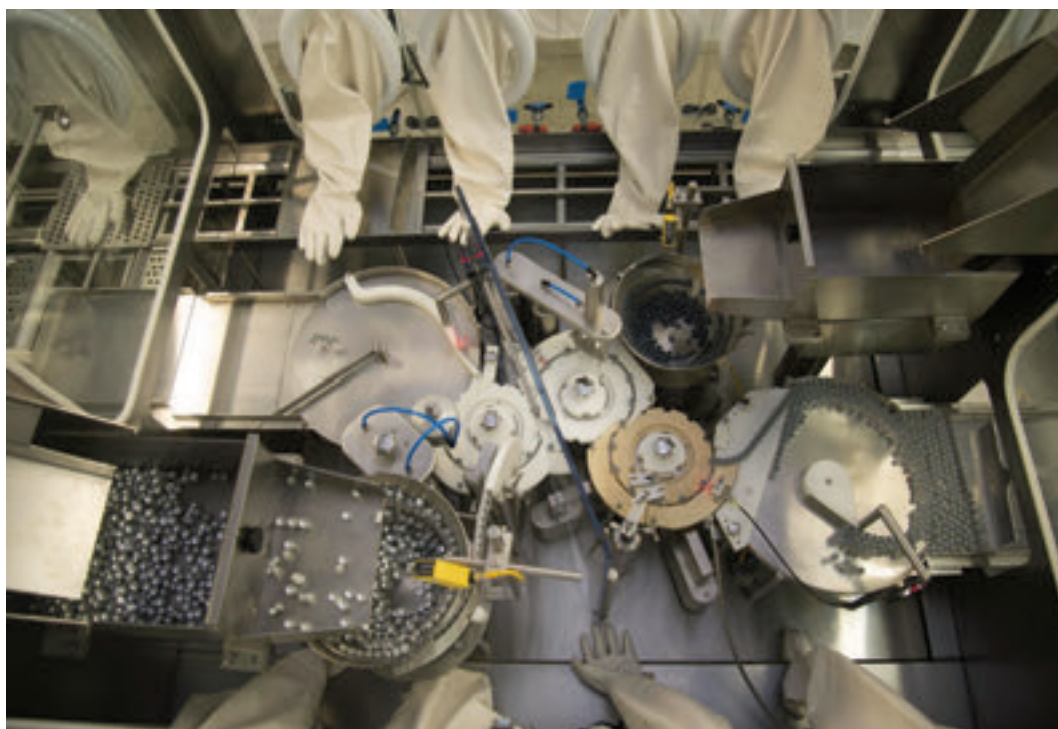
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Part 1: Supplements' Tamper-Evident Label Delivers Authentication, Engagement

MATT REYNOLDS, EDITOR, *PACKAGING WORLD*

TOP THREE TAKEAWAYS

1. HEBE LIFE's D2C products offer a high-end look and feel to a discerning customer base.
2. Packaging, including glass and wood, is designed to be durable and be displayed.
3. Counterfeit-resistant labels offer peace of mind with holography and more.

Packaging's primary function has always been to protect a product and keep it intact as it travels through the supply chain to reach its end consumer. This foundational duty has been put to the test as packaging originally designed for retail evolves to accommodate the many-touch, multiple-handler world of e-commerce and direct-to-consumer (D2C).

And for high-end, high-margin products that are using these emerging D2C channels, the functional expectations placed on packaging go even further. A product in the luxury space often requires a pack to match in style, aesthetic, and expanded ability to engage with the consumers using smart technology. Plus, if that luxury product is intended to be consumed or applied to the body—as is the case with high-priced personal care products, nutraceuticals, or supplements, alcoholic beverages, and cosmetics—packaging is often tasked with additional security and anti-counterfeiting measures.

HEBE LIFE®, a UK-based supplements and nutricosmetics company, launched in 2019 its SE85® and Core ASX® supplements—rejuvenating products that check all the boxes listed above. These are D2C, luxury-minded, all-natural supplements with a discerning customer base that will expect to receive their purchase in packaging that exhibits a lot more care and consideration than can be imparted by a standard kraft corrugated shipper containing HDPE pill bottles.

“We offer premium supplements with high-end ingredients, and we are targeting A++, VIP customers who are lifestyle and health oriented,” says Heba Elshourbagy, Director of HEBE LIFE. “We designed our products inside-out to be high-end with regard to the ingredients, using all-natural, premium raw materials and ingredients that are highly efficient and deliver very good results.”

To get an idea of a HEBE LIFE target consumer, a kit of SE85 HEBE LIFE supplements, which contains six labeled bottles, each

➤ Presentational secondary packaging for the SE85 supplement, which contains a six-month supply of product, is durable and intended to be displayed.





↑ Primary packaging for HEBE LIFE's two nutraceutical offerings involve durable, p-s labeled glass jars using a desiccant and metallized foil seal.

with 60 soft-gel capsules (a six-month supply), is sold D2C for £3,185 (US\$4,388). A separate, single-bottle Core ASX product is sold for US\$371. Further, due to scarcity of the ingredients HEBE LIFE sources, would-be buyers are asked to inquire about product availability before they are even able to make a purchase. Clearly, these can be considered premium, expensive products. And those in the industry know that when nutraceuticals carry such a heavy price tag, counterfeiters may smell opportunity. This is doubly true when there's a distribution, shipping, and handling gap between original producer and the end consumer.

"In thinking about providing these products to customers, we thought about how or what possible ways that these products could be copied [counterfeited], which is something that happens all the time," Elshourbagy says. "We started to search how to authenticate our products, how to give credibility to our products, and how to provide a very special customer experience and trust within our products."

The HEBE LIFE product line was launched in December 2020, and from the very beginning, Elshourbagy sought to bake authentication into the whole system, starting with the product design and ingredients and extending to both the primary and secondary packaging.

Primary and secondary package considerations

The primary package is a reusable tinted glass bottle that uses counterfeit-resistant labels by **Royston Labels**. Elshourbagy says these labels are printed in such a quality of text and decoration that it would be prohibitively difficult to approach reproducing the existing quality and specification, much less duplicate with equivalent reprints.

While the closure is standard and no child-resistant features are necessary, a metallized film seal is applied after filling the bottles and before adding the closure, accomplishing both enhanced shelf life and improved tamper evidence. The product doesn't require an oxygen barrier, but a **Clariant** desiccant is added prior to sealing and closing the bottle to combat moisture. Batch number and expiry date are coded onto each bottle to further enhance traceability and protect against counterfeiting.

The sturdy glass bottles used in the application are durable and intended to be kept in the consumer's home long after fulfilling their initial purpose. Still, there's no getting around the fact that glass of any kind can be tricky to ship through e-comm and D2C channels.

Ahmad Attar, Marketing Director at HEBE LIFE, says that the secondary package the company uses simultaneously fulfills the pack's top-line protective job while also delighting discriminating

customers expecting a luxury experience. Made of a lightweight natural wood with a piano-style finishing, plus a leather sleeve, the secondary pack is as much a presentation case as it is a protective vessel.

“Secondary packaging ensures safe transport, but it is not only for transport,” Attar says. “For the SE85 product, each case contains a six-month course of supplements, so the purpose of the package is to keep the bottles and everything else in it for six months, perhaps even on display. ... We made it rigid, so it can keep and protect the glass during storage and transportation. At the same time, it will be good looking and presentable when someone puts it in the bedroom or office.”

Attar notes that among many of HEBE LIFE’s affluent customer base largely in the U.S. and the Persian Gulf region, health products like these are often given as gifts. The secondary package not only scores high from a presentation perspective when the high-end gift is given to a recipient, it also continues to beautifully display the product through the six-month life of the kit. The wood presentation cases are enclosed in more traditional recyclable shippers, but even these packs smack of luxury. Supplied by **Wrapology**, the heavy-gauge paperboard cartons are debossed and covered with a slick, black stock paper topsheet that’s printed black on black in UV ink, and also uses silver foil for the SE85 product logo.

Meanwhile, the lower price point (per-unit) Core ASX product, sold as a single glass bottle with no presentation case, uses only the Wrapology heavy paperboard carton shipper as secondary packaging. This product’s shipper is also topsheet-covered and debossed, allowing it to stand out on a doorstep just like the pricier SE85 kit.

Despite being decidedly high-end—to the point of shipping product in piano-finished wood—packaging to this point has been reasonably standard for both HEBE LIFE’s offerings. But at the shipper level, HEBE LIFE employs a unique printed seal, imbued with smart packaging characteristics via encrypted QR code and attendant software, that allows for all sorts of nifty features befitting expensive D2C nutricosmetic products.

Tamper evidence for nutricosmetics

To scratch the authentication itch, Elshourbagy approached European specialty and secure label maker **Eltronis** with a problem in need of a solution. Initially, she was simply looking for a secure tamper-evident seal that would reliably adhere to the shipper—she had had some trouble with earlier tamper-evident seals and strips that hadn’t been able to adhere to the sleek printed carton. Eltronis

solved that problem with a proprietary adhesive that cures on the carton in such a way that it allows for complete adherence prior to distribution, so the partnership was off to a good start.

The basic goal of the seal, of course, was to provide customers the peace of mind that the supplements received were the real, authentic product from HEBE LIFE, and no tampering had occurred along the supply chain. But after some discussion about this underlying goal, Eltronis and Elshourbagy saw even more opportunity via Eltronis’ new engage™ cloud-based software intended to provide brands with a tool to link products to the internet through consumers’ smartphones.

“Engage is the result of quite a lot of market-led innovation that we’ve done, and it’s evolved over time to where it is now,” says Pete Smallwood, Business Development Manager, Eltronis. “It came from some work that we did to help some of our pharmaceutical companies with the implementation of the Falsified Medicines Directive and our work with several governments looking at authentication labels. Alongside this we have worked with a number of global brand owners to develop the brand protection side of engage. And more recently, we’ve launched the marketing side as well.

“Our focus has always been on having products which are accessible to customers and consumers and this is particularly so with engage. There are no barriers to entry and no CapEx involved for the brand owner. Consumers do not need to download any apps or software to use engage, they simply use their camera on a standard smartphone.”

In the HEBE LIFE application, Eltronis’ engage seal is a circular label with adhesive only applied to its upper and lower quarters. A central band portion of the round seal remains adhesive free, intended to straddle the open gap between the side walls and top or cover panel of the paperboard carton shipper. The belly portion of the seal is die cut to create a tear strip that is printed underneath with additional information that remains hidden until the strip can be removed.


The seal adheres to the side wall and top panel of the printed paperboard shipper to act, at its most basic functional level, as a physical tamper-evident indicator. When the tear-off strip is removed, the remaining top and bottom portions of the label remain adhered to the packaging. If the seal has already been broken, that tells consumers that the package has been compromised. Like the labels used on the glass jars, printing is done with such quality—including the HEBE LIFE logo using holography via rainbow cold foil—that counterfeit reproduction should be prohibitively difficult. The authentication process goes much further than top notch label design. 📌

Stay tuned for Part 2 covering HEBE LIFE’s QR codes and more in our next issue.



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21st Century HealthCare Increases Output for Tablets, Capsules, and Softgels

KEREN SOOKNE, DIRECTOR OF EDITORIAL CONTENT

TOP THREE TAKEAWAYS

1. The new NJM line offers 25% more uptime than existing lines.
2. The technology offers precision cap placement and torque.
3. The line can also run child-resistant caps without difficulty.

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“We had a few primary goals for our new packaging line—increase throughput, improve efficiency, and ease changeover while maintaining the highest product quality. We knew that NJM would give us everything we wanted and then some,” says Favio Contreras, Chief Operating Officer at 21st Century. “Having a fully integrated line ensures all the machines work together cohesively, which eases implementation and improves line performance. Giving that entire responsibility to NJM means we get their great service as well as the best-in-class technology.” See the line in action in this video: hpcgo.to/21st

“We package close to 3000 different bulk tablets, capsules, and softgels in a variety of bottle shapes and sizes, cap styles, and label



↑ The integrated supplement line begins with NJM's Unisort 32 bottle unscrambler (pictured), followed by an Abox PD2XL desiccant pouch dispenser before the tablet counter.

MACHINERY

configurations. By design, our new packaging line can handle it all, no problem,” explains John Horsefield, Vice President of Operations at 21st Century. “Plus, this line gives us about 25% more uptime than any of our other lines. Part of that success is due to the benefits of seamless integration. With such high output, our line operators feel even more accomplished at the end of every shift, which is great for morale. And the high output also allows us to fulfill customer orders quickly.”

The integrated line begins with NJM’s Unisort 32 bottle unscrambler, followed by an **Abox** PD2XL desiccant pouch dispenser. A **Cremer** 622 tablet counter, which is currently equipped with three fill heads and fed by NJM’s TE10 bulk tablet elevator, anchors the line. Next is **Mettler-Toledo’s** Signature 300 metal detector, NJM’s beltorque® BT-ICL Lite capper, **Enercon’s** Super Seal Touch induction sealer, a buffer table, and NJM’s Trotter 127 labeler, followed by NJM’s belt transfer and a **Leibinger** Jet2 Neo inkjet coder. Capable of reaching speeds of up to 150 bottles/min, depending on the fill count, 21st Century averages approximately 100 bottles/min across their range of products.

“We run this line in two 10-hour shifts per day and try to schedule no more than six changeovers per week. With so many different products, it is important that our changeovers are fast, smooth, and easy. We started this line five weeks ago [as of press time], so we’re still improving. It only takes 30 minutes to fully changeover this line—that includes cleaning the line during a formulation change as well as changing the bottle, cap, and label,” says Horsefield. “Easy



↑ 21st Century’s Favio Contreras (L) and John Horsefield (R).

✓ NJM’s beltorque BT-ICL Lite capper is gentle and precise with caps, including those with child-resistance features.



↑ The Cremer 622 tablet counter is currently equipped with three fill heads.

changeovers reduce downtime. They also help us clear, clean, and set up the line to run the next product correctly, which helps maintain our high quality product.”

Contreras explains, “We like Cremer 622 tablet counters for their accuracy and flexibility. They can handle every solid dose product we have, with quick and easy toolless changeovers, and always hit the right count. In fact, on our 12 packaging lines, we now have four Cremers, all installed within the

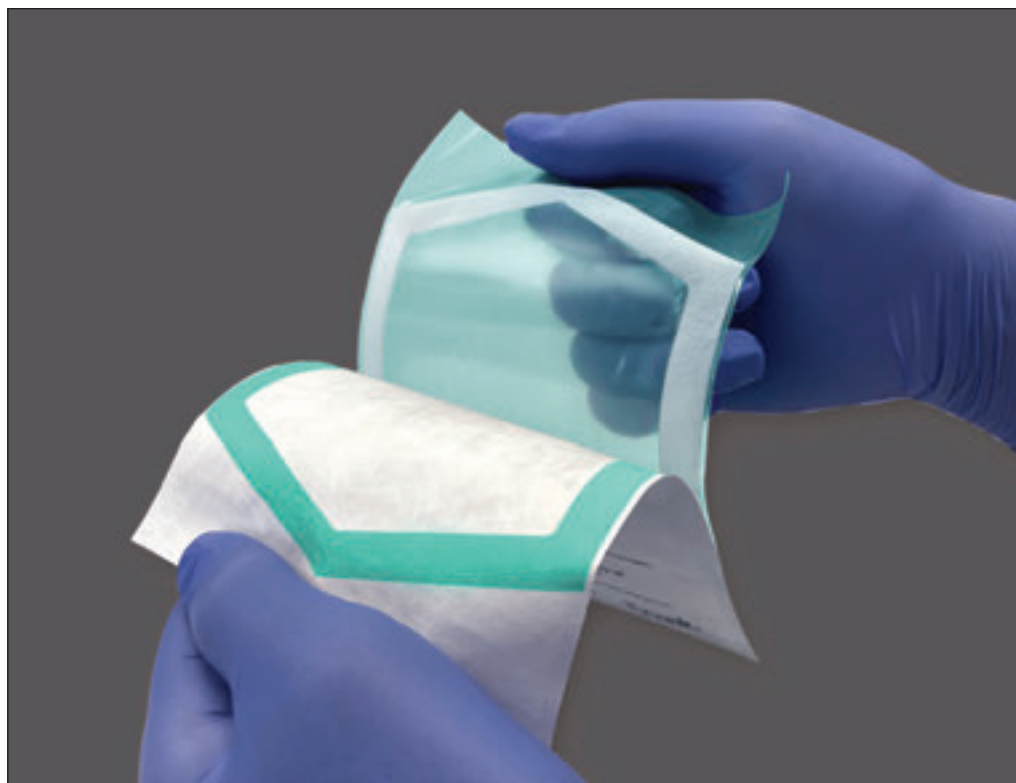
past 18 months. The Cremer 622 on our new line can be equipped with four fill heads, which is a space saver compared to counters that require two machines to accommodate more than two fill heads. Currently, we have three

fill heads on this counter—we can easily add the fourth one later, plug and play, if needed. Plus, a bulk product elevator feeds the counter, which means one less person has to be dedicated to the line.”

A Focus on Workforce

Since the company was founded 30 years ago, 21st Century has earned a reputation for high quality products and exceptional customer care. This focus has paid off. They’ve experienced double-digit annual growth over the past several years. Today, their campus in Tempe, AZ, includes six facilities that, combined, total 305,000 sq ft of space, where more than 500 employees are treated like family. Line operators are trained to handle all the aspects of the machinery, including changeovers and sanitation in addition to production. The company encourages professional development and promotes from within, both of which help retain good talent.

“Experience has enormous value,” concludes Contreras. “We choose to work with NJM because we appreciate their industry expertise as well as their technology and customer support. They listen to our objectives and understand our challenges—then they design the best integrated solution for us. We know the equipment will be robust and the line will perform as expected. We also know they’ll stand behind the promises they make.”



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MACHINERY

The beltorque BT-ICL Lite cappers at 21st Century also maximize production versatility and contribute to product quality. Compared to traditional cappers that use discs or spindles that can skew and scuff caps, beltorque features two pairs of belts that gently rotate and tighten caps by synchronizing the speed of the containers with

the rotating speed of the closures. “This technology doesn’t damage caps, and the precision of the cap placement and torque lead to accurate capping and better induction sealing. In general, child-resistant caps are the hardest to apply, but not with the beltorque,” says Horsefield. “Right after we installed our second beltorque, we ordered four more for other packaging lines.”



↑ 21st Century packages close to 3000 different bulk tablets, capsules, and softgels in a variety of bottles, cap styles, and label configurations. This line offers about 25% more uptime than their other lines.

21st Century selected NJM’s Trotter 127 labeler for their new integrated line based on their experiences with their older Trotter labelers. This multi-functional pressure sensitive labeler can apply wraparound, front-and-back and 3-, 4- and 5-panel labels to round, square, rectangular, and oval bottles. “Applying a three-panel wrap-around label along with a back label to a rectangular bottle, especially at the speeds we run, can be difficult—most manufacturers would shy away from that. Our success with this challenging application is pretty incredible,” notes Horsefield. +

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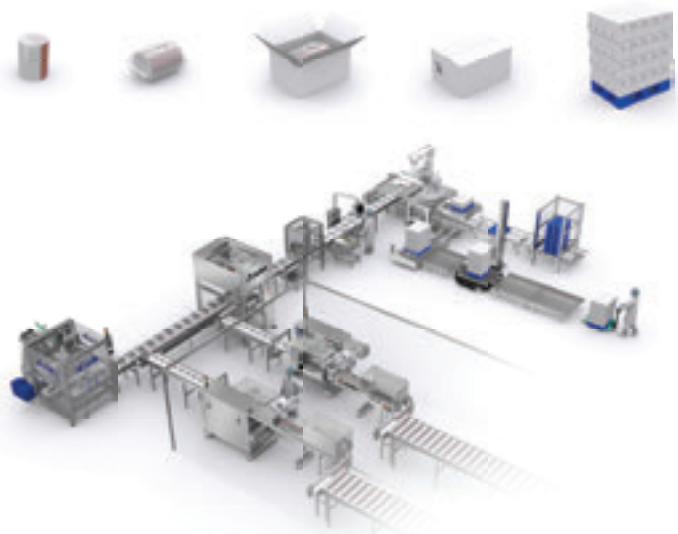


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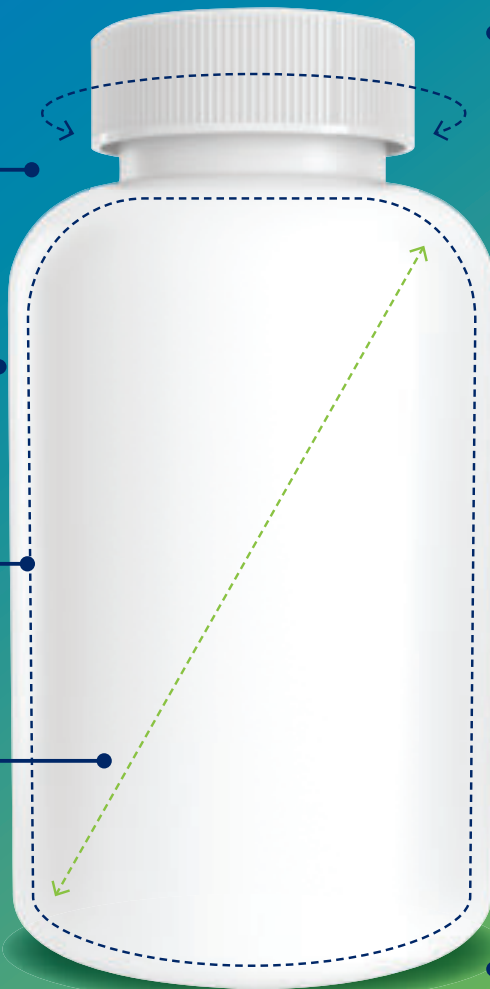
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Kilmer Innovations in Packaging Tackles ‘Wicked Problems’ in Med Device Sterility

KEREN SOOKNE, DIRECTOR OF EDITORIAL CONTENT



TOP THREE TAKEAWAYS

1. KiiP is an industry initiative ‘solving wicked problems in healthcare packaging’ comprised of volunteers.

2. They’re gathering passionate team members to tackle nebulous topics, ultimately improving patient safety.

3. Silos must be broken down, not just between suppliers, manufacturers, and healthcare providers, but often within company groups.

Kilmer Innovations in Packaging (or KiiP) is a sterility assurance value chain collaborative effort focused on medical device packaging with the intent of fostering bold, unprecedented innovation. Their slogan is “solving wicked problems in healthcare packaging,” adopting a phrase originally coined by Dr. Laura Bix at a previous HealthPack conference; Dr. Bix brought it back into the conversation as KiiP was being formed. The idea behind KiiP and its slogan is that solutions to these wicked problems will lead to improved patient safety— while enhancing the experience of healthcare workers—among other benefits.

For a bit of background: The Kilmer Conference is put on by Johnson and Johnson once every three years, and the next is scheduled for 2022. It’s a prestigious, invitation-only event focused on sterility assurance.

Jennifer Benolken, MDM & Regulatory Specialist, Packaging Engineering at **DuPont** explained that a group of colleagues sat down at the last Kilmer Conference in 2019 and asked how they could get more people at the next conference who are passionate about packaging. What started out as a conversation about socializing the concept of the Kilmer Conference amongst packaging profession-

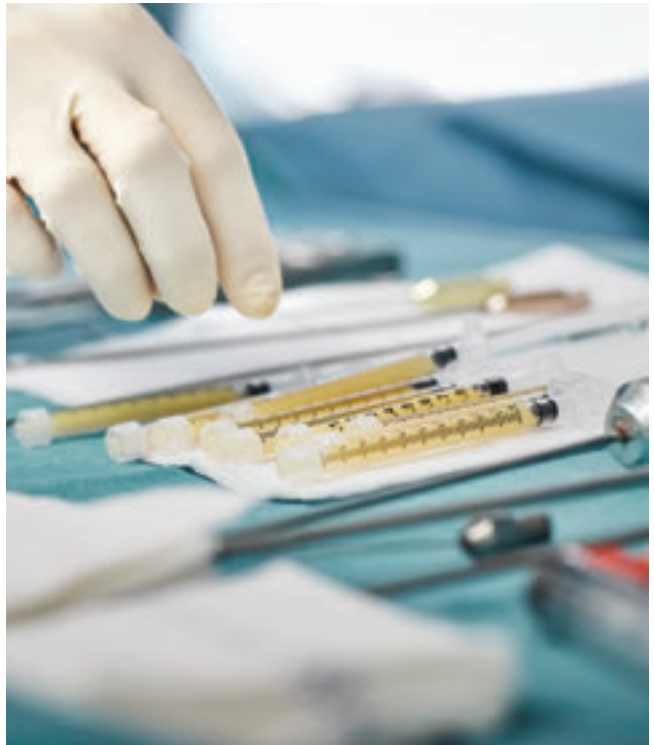
als has turned into an industry initiative in the spirit of the Kilmer Conference to collaborate to innovate. They've made a lot of progress in the last two and a half years, and it's blossomed into a KiiP group on LinkedIn of over 300 members who have broken down value chain silos from medical device manufacturers through to the end user and healthcare professionals.

The four areas of focus for the programs within KiiP are:

- The Last 100 Yards
- Aseptic Handling
- Speeding Things Up
- Sustainability

Benolken, who leads The Last 100 Yards group, said that the interesting thing about KiiP's efforts is they require a mindset shift for many participants. Generally, in the medical device industry, there's a pretty clear target or end state (and process to get there). Whether it's updating a standard, implementing a new package or machine, etc., there are defined processes, workflows, stage gates, and more.

Innovation in KiiP is far less straightforward, without a prescribed path to take. It requires participants to be open to questions, without a clear goal... until it emerges. In many ways, it is akin to the research phase of a new product development process—they need to find the problem that needs to be solved before determining how to solve



Q&A with KiiP

What's an overarching concept being tackled across all groups?

KiiP is creating awareness about the importance of packaging. Packaging often goes unnoticed until something goes wrong. If we're doing our jobs correctly, users are not necessarily tuned into the packaging because it seamlessly and efficiently did its job of protecting what's inside. So that makes our job interesting—how do we get packaging to be recognized when our objective is not to be seen?

Is there involvement with regulatory folks, such as FDA or notified bodies in Europe?

KiiP has had some discussion with regulatory bodies, but they won't be a major part of the conversation until we have identified potential solutions or paths to them. Not all of KiiP's projects will be regulatory in nature.

What are some of the biggest hurdles?

- + It's worrisome to potentially expose gaps or issues in established concepts. We're asking tough questions in the name of innovation and patient safety and searching out either validation of existing or improvement to a better place.
- + KiiP wants these initiatives to be free enough for creativity, while still having some structure to move the needle forward.
- + There are also tangible hurdles like how KiiP processes money to fund projects. If we're not formally established as an association or non-profit, how can we accept funds without conflicts of interest occurring? We're working to find the right way to get this done. Also, some companies have expressed worry about IP when collaborating with others—we are quite focused on working on topics that there are currently no solutions for, in a way that collaborates a solution for all to help us get there more quickly than when we work on it individually. In many cases, KiiPsters are finding that the challenges are bigger than any one individual or company can tackle.

You're asking big questions. Have you had any failures or innovations yet?

This is a huge learning process. We are grateful to be able to work on these important topics with our fellow KiiPsters—while no “failures” have occurred so far, we've had many pivotal moments and conversations about direction... Successes include the podcasts IAHCSSM has invited KiiP to participate in, and participation in events such as MD&M West and other venues to get people talking about what “could be” in going about solving these big, wicked problems the industry has been asking itself for years.

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it. It's far outside a lot of comfort zones but will ultimately lead to important learnings—via failing, pivoting, and finding new wins—to push the industry forward outside of a single company's constraints. By breaking down

silos, the conversations are rich and learning is immense. They are finding that it's taking time to understand how the same concept is important to others in the value chain—they often are using similar vernacular, but how

they are applied and understood are sometimes different. It gets to be a lot to wrap one's head around.

Benolken highlighted that there are still some silos that may exist. This isn't just between suppliers, manufacturers, and healthcare providers, but often within companies themselves. For example, sterility assurance and packaging groups typically report to different leaders and have different metrics. Conversations are being had about how the groups could work together more closely to find ways to build stronger connections and address issues together—while also preventing potential pitfalls, as sterility assurance and packaging cannot execute their mission completely in their own right.

On the sustainability front

One of the key takeaways from their summer panel at MD&M West was that sustainability is more than just recycling (something *Healthcare Packaging* has covered in the past—including the video, *6 Sustainability Drivers in Logistics*: hcppgo.to/391). Of course, there are groups working concurrently, like the Healthcare Plastics Recycling Council (HPRC), focused on making strides in recycling efforts.

As Jenn Goff, Global Director, Product Strategy at **Oliver Healthcare Packaging**, noted, KiiP is also looking upstream at how to engineer waste out of the system before it's even introduced. There are so many ways to make sustainable choices and being innovative in package design can result in cutting waste as a byproduct. One thing that the panelists touched on is that health systems look at sustainability in purchasing decisions now, offering a competitive advantage for companies who are making and articulating more climate-friendly choices.

Kiley Djupstrom, Commercial Devel-



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opment Leader at **Plastic Ingenuity**, discussed that they've been in talks with groups like Practice Greenhealth, who released a sustainable procurement guide for health systems last year.

Relevant Links

If you're looking to get involved in KiiP, check out their LinkedIn group. They're looking for people to participate on a volunteer basis, and there is no cost to join.

- + Kilmer Innovations in Packaging (KiiP) LinkedIn: [hcpggo.to/kiip](https://www.linkedin.com/company/hcpggo-to/kiip)
- + Kilmer Conference: [kilmerconference.com](https://www.kilmerconference.com)
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Incubator concept

"A lot of folks on our team come from large companies and piloting something at a large company can be a little daunting, getting through that stage-gate process," said Djupstrom at the MD&M panel. "So, if we want to rapidly test something or pilot an idea, we came up with this incubator concept and it's a dynamic framework to pilot a sustainable solution whether that's a process, a design, or material."

For example, the group could take a material being proposed as a sustainable alternative through the advanced recycling process and perform a scientific study.

The incubator concept goes beyond sustainability, and Benolken noted that in the whole of KiiP, the different programs can ultimately be considered incubators in their own right.

When new materials or means are developed by suppliers, it typically takes a long time for manufacturers to be able to implement them. "The KiiP

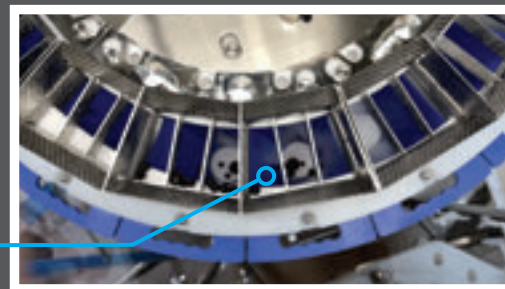
teams can provide the platform so that basic data and testing is available to everyone right off the bat, and make that product or process have validity from day one instead of waiting for someone to adopt it," she said. "So, I think

that's going to be a beautiful outcome of this as well. We may be able to introduce different materials and processes a lot quicker than how they've been done in the past by a single company." ❖



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PACK EXPO Las Vegas 2021 Innovations Report

PMMI MEDIA GROUP EDITORS

At a time when COVID-induced uncertainty seems to color nearly everything we see and hear, it was mighty nice to experience the in-person, hands-on, rock-solid, kick-the-tires certainty of a major trade show like PACK EXPO Las Vegas. It was the largest packaging and processing trade show in North America in 2021, drawing more than 23,000 attendees who showed up hungry for solutions. They were able to engage with more than 1,500 exhibitors across four expansive halls and more than 740,000 sq ft of exhibit space at the Las Vegas Convention Center. Jim Pittas, President and CEO of show producer **PMMI**, summed it up this way:

“PACK EXPO Las Vegas and Healthcare Packaging EXPO was clearly a success. Exhibitors and attendees alike were energized by the number of people who attended and by the business conducted from the moment we opened the doors on Monday.”

Returning favorites at the show included the Processing Zone and The Forum, and there were also new features like the PACK to the Future exhibit. Networking flourished at events like the Packaging & Processing Women’s Leadership Network breakfast, which saw more than 500 attendees, as well as the ever-popular Emerging Leaders Reception.

As in years past—including 2020 when PACK EXPO International was canceled, and instead we covered a virtual event called PACK EXPO Connects—the editors of PMMI Media Group fanned out to see what kind of innovations the show exhibitors had on display. Our report, which begins on the next page, covers categories including innovative containers, machinery, robotics, and more in pharmaceuticals, medical devices, supplements, and cannabis.. This report is brought to you by:

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Innovative containers

An especially clever tablet and capsule container in the plastic category was shown by a company called **R&D Leverage** (1), which is primarily a tool maker for injection molding, blow molding, and injection stretch blow molding machinery. But it has now come up with a patent pending concept for an injection stretch blow molded bottle called DispenseEZ with a sort of a ramp on one inner sidewall where the shoulder meets the neck. So when you reach inside to pull out a tablet or capsule, it slides right out on the ramp rather than getting hung up on the inner shoulder. This is clearly aimed at the elderly and others whose dexterity makes pill and tablet dispensing challenging at best.

Senior Molding Expert Kent Bersuch at R&D Leverage is the one who came up with the idea after finding himself frustrated by vitamins and medications getting bunched up in the shoulder of the bottle. "I'd wind up dumping many more pills than I wanted, or the pills would bounce out of my hand and go down the drain," says Bersuch. "Eventually I heated a bottle with a heat gun and molded the shoulder of a bottle to create a ramp." And thus was born DispenseEZ.

R&D Leverage, remember, is a maker of tooling, so management has no plans for making bottles on a commercial basis. Instead, says

CEO Mike Stiles, the firm is looking for a brand that would either purchase or license the Intellectual Property behind the concept. "We have multiple inquiries from prospects who are currently evaluating our patent documentation and considering options," says Stiles.

Stiles adds that while development work on the DispenseEZ packer bottle relied on using the two-stage reheat-and-stretch-blow process, the convenient dispensing feature can also be incorporated in any of the following methods:

- Single-stage ISBM in PET, PP, and (perhaps) HDPE
- Injection blow in PP or HDPE
- Extrusion-blow using a variety of resins

The feature is functional over a wide variety of finish sizes (33 mm



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Tabletop Model

Designed for lightweight products and smaller pouches. Topstop guide shown is an available option to assist with seal alignment.



Fully Framed Model

Includes crank handle for height adjustment of sealing head to position over existing variable speed conveyor.



Conveyorized Model

Synchronized conveyor to support pouches while travelling through extended heating and cooling zones.



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and larger) and can be incorporated into containers with existing tamper-evident or child-resistant requirements.

Watch a descriptive video of this innovation at: pwgo.to/7414

Next, we look at diagnostics, the demand for which has been soaring. Yet packaging diagnostic reagents can be challenging for a number of reasons:

- Strong reagents can interact, or even attack, sealants used with traditional push-through foil options.
- While providing strong barrier, the lidding should pierce easily. Devices require a high degree of repeatability.
- There is a broad range of materials used to create the reagent wells, so lidding must accommodate the container while also being capable of hermetically sealing to narrow sealing surfaces.

Paxxus' AccuPierce pierceable foil lidding (2) is a composite material consisting of a highly controlled aluminum foil paired with Paxxus' chemically resistant, high-barrier Exponent™ sealant—it allows for a clean, quick puncture by probes requiring low force in sensitive testing environments.

Designed for accuracy in diagnostic applications, it can be used as lidding or as a component within the device itself.

At PACK EXPO, Dwane Hahn explained one very large reason for

the boom in diagnostics innovation: “COVID-19 has been for the diagnostic industry what NASA was for materials sciences. When we were trying to land someone on the moon, significant innovation and capital were needed to support the creation of mission critical materials simply because so many had not been invented yet.”

While the emergence of COVID-19 is an undeniable tragedy, a by-product of the pandemic has been the influx of innovation and investment. “With COVID-19, the need to scale at an unheard-of pace without sacrificing accuracy presented many challenges. Of course, to solve these challenges, new ideas and concepts were generated as the inherent by-product. When this phenomenon occurs, the investment community takes notice and capital becomes



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available for startups and large established players alike. The significant investment will undoubtedly change the landscape for diagnostics and in particular the companies that fill the new expectation from consumers for

both speed and at-home testing capabilities,” says Hahn.

To meet these changing dynamics and market needs, Paxxus developed lidding that is suitable for use with many compounds

including dimethyl sulfoxide (DMSO) reagents, organic solvents, ethanol, and isopropanol.

The product is versatile in that it is heat sealable to the most common reagent well materials—polypropylene, polyethylene, and COC—and is compatible with multiple sterilization processes. It is suitable “for DNase, RNase, and human DNA applications,” the company reports. “This is not the case for the traditional push-through foil technology which is incompatible with some sterilization processes.”

Next, safe sample transport is an important part of healthcare operations, but many portable carriers that protect temperature-sensitive samples are bulky and heavy. These can be burdensome for sales reps to carry throughout a typical 8-hour workday.

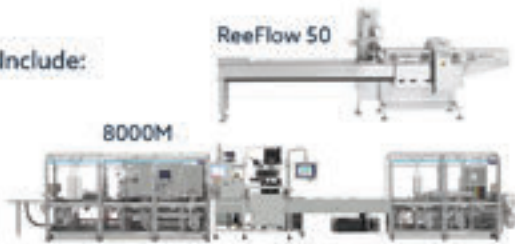
At Healthcare Packaging EXPO, **CAVU Group** introduced its prote-go: a lightweight sample transportation system that protects temperature-sensitive pharmaceuticals and medical devices from the first meeting of the day through the last (3).

The company developed the system to transport a variety of content—pharmaceuticals, medical devices, and other biomedical samples—with diverse temperature requirements in all seasons. Weighing less than eight

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pounds, the carrier is a lightweight product convenient for a salesperson to carry.

The prote-go is a soft-sided, leak-proof tote that can be personalized. “With over 25 L of payload space, the tote has added room for a laptop or other accessories,” says CAVU Product Manager David Haan. “Best of all, the prote-go sample carrier does not require lengthy or complicated packing and conditioning processes. Because the system is engineered with phase change material, the system resets by simply storing the tote overnight, open, and at room temperature.”

Solutions where volume is not so huge

Sometimes in the life sciences arena it’s the solutions that are suitable for small to mid-sized outputs that matter a whole lot. Several of these were on display at PACK EXPO Las Vegas, beginning with **Antares Vision Group**. The firm showcased its new standalone module for manual case aggregation (4).

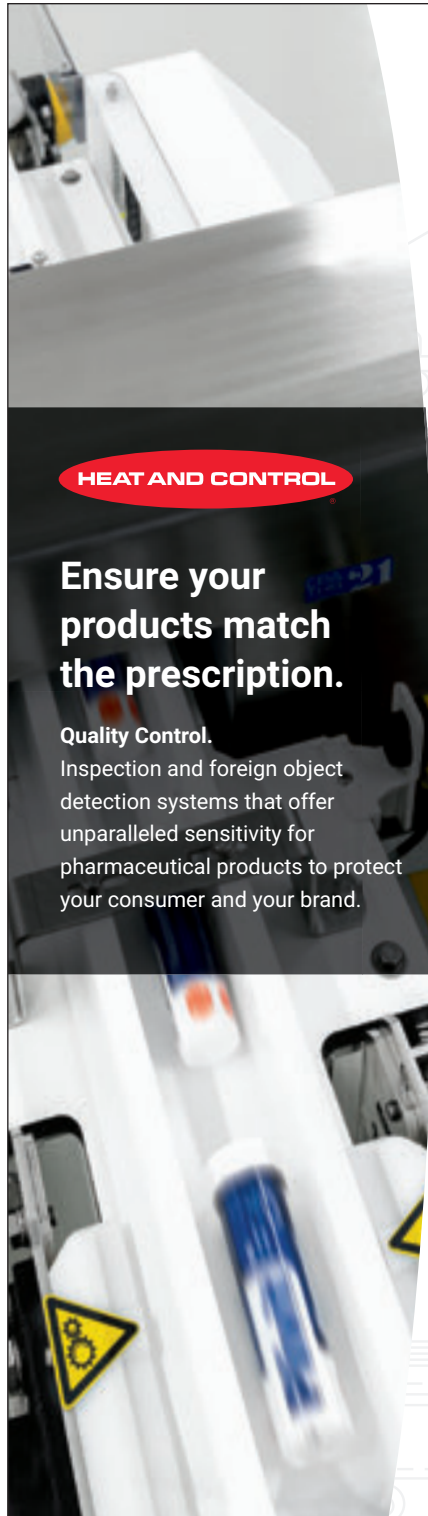
Also capable of supporting post-lot reworking operations in warehouses and distribution centers, the system is a fit for those looking to meet upcoming DSCSA supply chain security requirements with small to mid-sized volume



outputs that don’t require full automation.

Aggregating product is a necessary pre-requisite to sending aggregated data. The recent HDA *Serialization Readiness Survey* pointed out, “More than 50% of manufacturers were plan-

ning to aggregate by the end of 2019 and 2020; now a little less than half are currently aggregating and nearly 40% will do so by 2023. This number is up from a quarter last year, indicating companies have shifted their timelines.”



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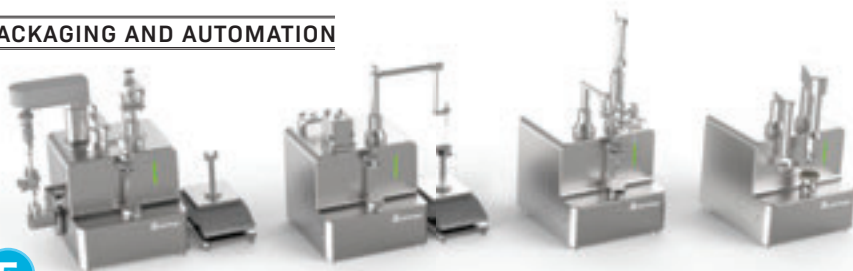


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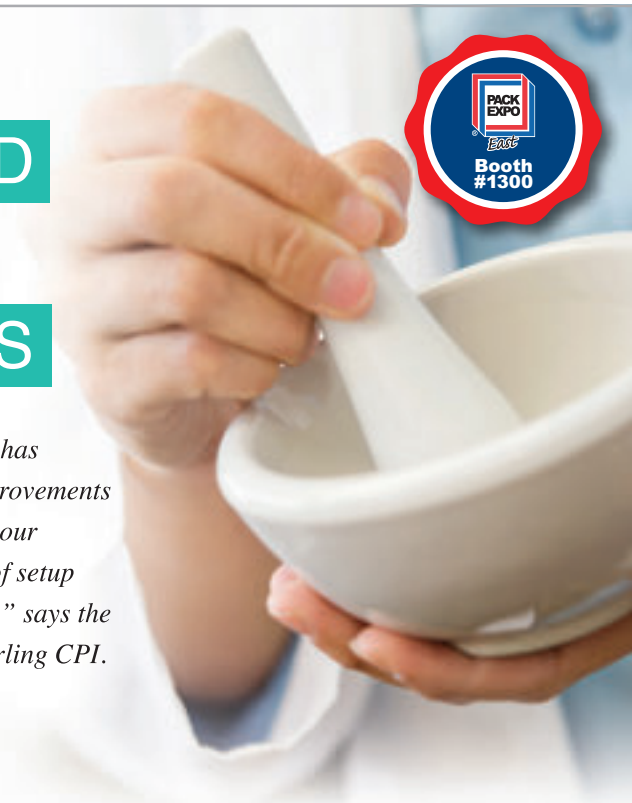


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Manufacturers will need to implement systems quickly to comply with regulations.

Chris Collins, Sales Manager for Antares Vision Group, notes, “The Mini Manual Station was developed in consideration of the limited amount of real estate most packaging operations are dealing with. Antares wanted to offer a flexible and cost-effective solution to the market with a compact design.”

Antares says that following the situation-specific recipe—for example, the number of cartons per case—the Mini Manual Station aggregation unit issues the upper level “parent” container label once the pre-set quantity of items has been scanned into the system.

As a manual system, the unit is designed ergonomically with easy, multi-point access and an always-on handheld scanner for fast, reliable code reading. The Mini Manual Station is currently operating in pharma, med device, and nutraceutical facilities.

Next, the four benchtop machines that make up **groninger’s** LABWORX Series are designed to help pharmaceutical companies move from bench to market, as well as meet needs in R&D, clinical trials, and compounding pharmacies (5).

The portfolio includes two liquid filling units—with peristaltic pump or rotary piston pump—and stopper placing and crimping systems for vials and syringes. Designed for “off-the-shelf” needs, the modules accommodate prefillable objects such as vials, syringes, and cartridges, and feature short lead times and groninger’s Quick-Connect technology for fast turn-around times.

As groninger’s Jochen Franke explained at the show, the systems meet market needs for modernized tabletop systems for several applica-



6

tions, including personalized medicines and cell therapies. Two-hand control of the systems means guarding is not necessary, while hygienic design makes cleaning fast and easy. They are built for laminar flow (LF) hoods and isolators and highly resistant to H₂O₂.

“The machines are not cam-driven. They’re designed with servo motors, which are better for transferring to commercial production systems,” says Franke. He demonstrated changeover at the booth, which required less than one minute.

Wireless control via tablet or laptop helps to eliminate extra personnel in cleanrooms while providing connectivity to one or multiple bench-top systems from a single handheld device. Data is more easily accessed for analysis and decision-making. The machines feature responsive HTML5-based HMI design and offer automated batch records as PDF files.

For blisters that accommodate small volume production, **Pharmaworks**, a ProMach product brand, debuted its TF1 Blister Machine (6).

“We listened to our customer base, and we heard that some of our entry-level customers and customers with low volumes want to buy a Pharmaworks blister machine, but sometimes budget prevented it,” said Ben Brower, General Manager of Pharmaworks. The design team went to work on an affordable system resulting in the TF1.

The company set out to build a system that requires minimal training and maintenance, while offering blister capabilities present in more complex

machines such as contact heating, motor driven stations, and servo indexing with print registration.

Its footprint is compact while capable of thermoforming up to a 90mm x 165mm blister

with a maximum draw depth of 25mm, and the system accommodates a variety of materials or cold form operations. Compliant with cGMP standards, the TF1 operates up to 40 cycles/min and can integrate the same feed systems

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PACKAGING AND AUTOMATION

and printers that are used across the TF1 family of machines.

Design simplicity and scaled down control system complexity yield an easy-to-use system with fewer wear parts and spare parts than similar systems which reduces maintenance needs. The company reports the user can “very clearly see the process, set up the machine, and make changes—with changeovers routinely taking less than 10 minutes.”

Packworld USA debuted its new PW4214 remote sealer for life sciences, incorporating a sealing head capable of accepting films up to approximately 13 in wide and a divorced control cabinet with a touchscreen HMI (7).

According to Packworld’s Brandon Hoser, the machine developed from the need to fit a more compact sealing head into a glove box. “Having the seal head separate from the controls/HMI allows the operator control access outside of the glove box while reducing the machine footprint inside the glove box,” says Hoser.

This compact seal head design is ideal for use within laminar flow cabinets. Easy cleaning surfaces complement biologics and tissue applications, while Packworld’s touchscreen interface allows for 21 CFR Part 11 compliance. All Packworld machines are compliant with ISO 11607.

The PA-based company notes that an important differentiating

feature of Packworld’s heat sealers lies in the TOSS technology used—referred to as VRC (Variable Resistance Control)—which does not use thermocouples. Other heat sealers use thermocouples to measure and control the energy heating the seal bands, and a thermocouple’s inherently slow characteristics, singular point of measurement, and consumable nature can create consistency issues. TOSS VRC technology “instead measures the resistance of the heat seal band throughout its entire length and width,” says Packworld.



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“It knows what resistance the band needs to be in order to achieve the seal temperature,” resulting in quick, accurate, consistent heat seals critical for healthcare applications.

New in RFID: product traceability continues to gain traction in both the life sciences and the consumer packaged goods arenas. Offerings are now touting high-speed applications that do not disrupt production output. At PACK EXPO Las Vegas, **WLS**, a ProMach brand, introduced its latest RFID labeling solutions (8). The company has adapted its high-speed pressure-sensitive label applicators and label printers to incorporate new RFID technology for vials, bottles, tubes, syringes, and devices. The offerings featured at the show can also be applied to industries beyond healthcare for authentication and inventory control.

The RFID labels are dynamic in that they can lock in select variable data, while allowing other variable data to be updated through the life of the product. While batch numbers and other identifiers remain static, manufacturers and health systems benefit from dynamic product tracking and updates such as dosages and expiration dates. As the company explains, “This simplifies inventory control for end users while providing product verification and authenticity for manufacturers.”

Because customer needs vary from new labeler implementation

to modular, off-line options, WLS is launching labelers, label application systems, and print stands:

- RFID-Ready Labelers apply pressure-sensitive labels embedded with RFID inlays from the converter, while preserving the integrity of the RFID chips and antennas. “The RFID labels are read, written (encoded), locked or unlocked (as required), verified, applied to the product, and re-verified (as needed),” WLS reports. Variable data printing with vision inspection systems can be coupled with RFID-Ready Labelers.



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- For customers looking to keep their existing labels and incorporate RFID, WLS offers a flexible option in its RFID-Enabled Label Application Systems. The first label head releases a standard pressure-sensitive label onto the vacuum drum while the second label head releases the wet RFID tag, synchronized and centered, onto the standard pressure-sensitive label, enabling the vacuum drum to apply both the wet RFID tag with the standard pressure-sensitive label onto the product. Encoded and verified wet RFID tags are married to the standard label and applied to the product, with a re-verification option if needed.
- For an off-line solution, RFID-Ready Print Stands are designed to print on pressure-sensitive labels embedded with RFID inlays from the converter. “Utilizing an off-line, stand-alone, on-demand RFID-Ready Print Stand allows WLS customers to adopt RFID labeling without altering or upgrading their existing labelers,” says the company. “The high-speed RFID-Ready Print Stands incorporate full-label vision inspection with rejected label removal and verification, verifying the printed label and the encoded RFID tag.”

Says Peter Sarvey, Director of Business Development at WLS, “The adoption of RFID labels is being driven by pharmaceutical and medical device manufacturers that want to offer improved traceability and product authentication as well as end users who require products with a dynamic fingerprint to track dosages and inventories. RFID labels can be valuable to any industry interested in improving traceability and product authentication, not just hospitals and pharmacies.”

Sidebots and cobots

What do you get when you mash up the words “sidekick” and “robot?” The answer was clear enough at **Wyzo’s** PACK EXPO Las Vegas booth, where the world’s first “sidebot” was on full display.

Wyzo is a high-speed delta-style pick-and-place robot capable of 90 picks/min that is designed to work safely beside people—i.e., a robot that is a sidekick, otherwise known as a sidebot. It relies on two laser scanners from **SICK** that constantly screen the environment around the machine and notify the controller which of three zones an operator is in. If the operator is in the farthest zone, the speed of the delta robot is reduced. If the operator is in the middle zone, speed is reduced further. And if the operator is in the zone closest to the robot, speed is reduced yet again. Should the operator be so close as to come in contact with the robot, all motion comes to a halt.

Also making the Wyzo stand out is its use of the **Genesis LiveDrive® LDD 1800 Series** of actuators, a high-torque direct drive solution designed for robotics and automation in food, packaging, pharma, and the electronics industries. These actuators provide high enough torque that robots can now be created without the need

for a gear box. That brings a number of benefits. First, it means no lubrication, and because a typical delta style robot has its gearbox mounted directly above the product being packaged, these new Genesis actuators mean no more leaking of oil onto product. It also means a maintenance-free drive train. And finally, it greatly reduces the amount of space a finished machine occupies.

With unpredictable demand and mass customization pushing manufacturers to engage in less make-to-stock and more just-in-time manufacturing, flexible conveyance systems that allow for rapid changeover and batch sizes of one have grown in popularity. At PACK EXPO Las Vegas, **B&R Automation** showcased its ACOPOS 6D planar conveyance system to address the trend.

The ACOPOS 6D consists of separate movers that allow individual products to be transported as batches of one. However, rather than using motor modules to move along a track, the system employs planar movers that magnetically levitate above a tiled surface. By allowing for entirely free-form movement unimpeded by the limitations of a set track, the ACOPOS 6D can facilitate more precise and flexible positioning of products, while also reducing wear and tear on the system itself. The planar movers can also perform several special functions such as swirling liquids in small canisters, thus allowing solutions to be mixed in pharmaceutical applications. All objects being shuttled can also be weighed, easing the process of both measurement and quality control.

According to Patrick McDermott, President of B&R Automation, ACOPOS 6D and their Mini-Geo conveyance system (also showcased at PACK EXPO) seek to help end users navigate, as trends from the consumer market such as mass customization and increasing small batch orders trickle down to the industrial world. In addition, McDermott says that with smaller, more varied product runs becoming the norm, software changeover that allows for digital rather than physical line reconfiguration may become increasingly vital for companies struggling to keep up.

In-line digital printing for f/f/s

V-Shapes is a supplier of the convenient, hygienic, and sustainable single-dose form/fill/seal packaging machine known as Alpha. At PACK EXPO Las Vegas, the firm debuted its unique AlphaFlex system, which adds inline digital printing to the form, fill, and seal capabilities. This compact, professional-grade dosing and delivery system features high-quality synchronized digital printing on both sides of the sachets.

Notable is that AlphaFlex is powered by **Memjet DuraFlex®** digital printing technology and **ColorGATE**, a modular solution for managing color and data throughout the whole package production chain. The V-Shapes AlphaFlex dosing and delivery technology makes it possible for vertical integration of high-volume production of the patented V-Shapes single-dose sachets, eliminating the need



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to outsource printing and giving complete manufacturing control back to the brand owners and co-packers.

V-Shapes says it was no small challenge to develop synchronized feeds and professional

quality printing of the patented single-dose sachets, and the firm adds that the revolutionary filling/converting machine was made possible through a variety of important partnerships, including Memjet, **Siemens**, and

SIHL, as well as the V-Shapes engineering team. SIHL is the converter that produces the flexible film materials used to make the sachets. Several different adhesive laminations—some including aluminum foil for barrier purposes and others not—can be used depending on the specific application.

The AlphaFlex features integrated in-line printing into the V-Shapes six-lane ALPHA machine, enabling packaging converters/fillers to accomplish the complete manufacturing process of V-Shapes' unique single-dose sachets under one roof with a compact footprint and full color branding capabilities—in line, on demand, and with the industry's highest quality. In the AlphaFlex configuration, the printing module prints a single side of the single-dose sachets inline, synchronized with each other, and precisely married for die cutting, filling, and sealing.

Also new to the portfolio of equipment offered by V-Shapes is its VS dflex near-line digital printing solution. An early adopter of this system is Health Supply US of Mooresville, NC, which identifies, sources, and delivers safety and medical supplies to frontline workers and first responders. Health Supply US is already operating two V-Shapes Alpha single-dose packaging machines. "Once we installed our first Alpha and were on our way to our second, it also became clear that we could easily do on-site printing with the VS dflex printer rather than outsourcing it," says Managing Partner Cesar Garcia.

The VS dflex nearline reel-to-reel printer, which also features Memjet DuraFlex® inkjet printing technology, makes it easy to print flexible packaging on site, eliminating the need to outsource printing or to tie up other printing equipment in the plant, especially for shorter runs of customized

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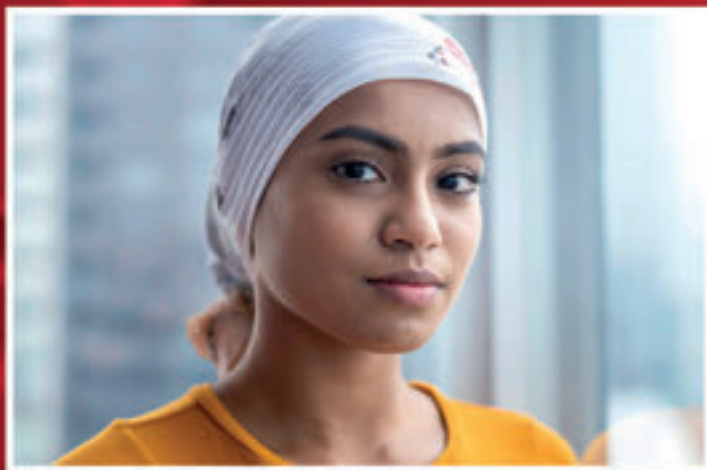


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sachets. For Health Supply US, these acquisitions dramatically transformed the design and approval process for single-dose products, making it easier to meet tight customer delivery deadlines and setting the company apart from the competition.

“I have a printing background, and I looked at all the possibilities of being able to show our clients right away what their packaging would look like instead of putting a file together, sending it to an outside printer, having them print a massive run, and then coming back and putting it on our Alpha for filling,” says Garcia. “By using both the Alpha and the VS dflex, I am able to do everything on site and on demand; and that saves me about 2.5 weeks at a minimum for each project, dramatically improving our cycle time. Now I can go see a client in the morning, and in the afternoon I’m printing out sample sachets for them that I can show them the next day!”

The VS dflex produces full-color printing with aqueous inks at 1600 DPI at a speed of up to 24.7 m/min (90 ft/min). Specialized film from SIHL allows the inks to absorb instantaneously without the need for UV treatment or drying, and the speed at which the dflex runs means it can be used for production runs, not just for samples. The flexibility offered by the combination of the V-Shapes Alpha and the VS dflex has also opened up new opportunities for the firm. Garcia says, “While we were originally looking at packaging sanitizer, we are now also looking at producing various types of creams and lotions. In addition to the need for medical gels that can be conveniently and hygienically dispensed, we also see opportunities for packaging high-end sauces or sampling for cosmetics, as well as products for other industries. It enables us to deliver a complete,

end-to-end solution to our clients that goes beyond simply filling the sachets.”

Cannabis applications

Since medical marijuana represents a

portion of the briskly growing cannabis market, we opted to include two innovative cannabis-related packaging technologies.

A primary challenge with packaging cannabis is that the weight variance of the empty



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jar is often greater than the total weight of the product being packaged. A tare gross weighing system eliminates any inconsistencies by weighing the empty jar and then subtracting the weight of the empty jar from the gross weight of the filled jar to determine the actual net weight of product in each jar.

Spee-Dee Packaging Machinery Inc. used PACK EXPO Las Vegas to unveil just such a system. It's a fast, accurate cannabis filling system that accounts for those tiny fluctuations in glass jar weight, thus eliminating problematic inaccuracy that wastes product.

The system's accuracy of 0.01 g reduces costly product loss for fill sizes from 3.5 to 7 g. Vibratory settling helps product flow into containers. The system rejects under and overweights. Integrated with a multi-head weigher, the system provides the fastest, most accurate fills of flower or ground cannabis on the market, according to the company.

In terms of speeds, the system is able to operate more quickly than many producers will need. It accurately fills as many as 40 jars/min with a range of 1 g to 28 g of flower or ground cannabis per jar.

In addition, this new cannabis filling system features a simple design that enables thorough cleaning. A sanitary funnel and conveyor system ensures hygienic filling with quick changeover while a stainless-steel frame and open base eliminate harborage

areas and allow for easy cleaning. Tool-less, quick-change star wheels and rails enable fast product changeovers.

Orics introduced a new M10 machine designed specifically for a special child-resistant package that holds CBD-infused candy bars. The intermittent-motion machine has two tools mounted on a rotary table. The operator loads thermoforms into the four cavities on one tool and then puts a candy bar in each. The operator then presses two buttons to activate the machine. The freshly loaded tool rotates into an evacuation, backflush, and lidding application station. When lidding is in place, the four-cavity tool rotates out of the sealing station, the operator removes the finished packs, and the cycle is repeated.

While much of this is fairly routine MAP procedure, what makes this application notable from an innovation standpoint is that the thermoformed PET container has two notches left and right that are designed to fit into a slot in the paperboard carton into which the primary package is inserted. Children can't read the package-opening instructions on the carton, and thanks to the notches left and right on the primary package, they won't know how to pull the primary package out of the carton. There's also a flap designed into the top of the pack to further impede a child's access to the primary package. **Watch video of the machine in action at: [pwgo.to/7413](https://www.pwgo.to/7413)**



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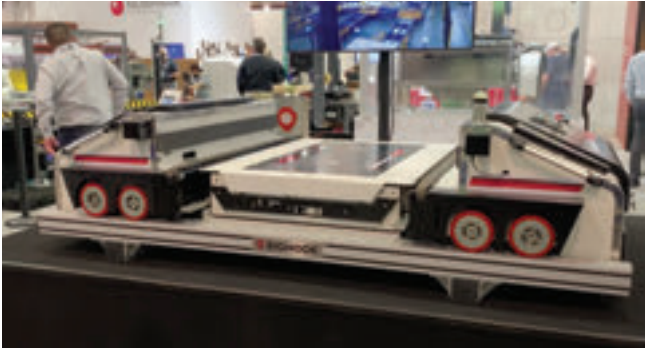
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Logistics

Recently named a winner in the FDA’s Low- or No-Cost Food Traceability Challenge, **Wiliot’s** Sensing as a Service (SaaS) platform consists of stamp-sized computers called IoT Pixels that can be affixed to any package to detect and understand various conditions including package location, temperature, tamper-detection, humidity, motion, fill rate, as well as product identification.

In real time, the IoT Pixels are built to securely communicate the information to the Wiliot Cloud via Bluetooth from phones and nearly all WiFi access points, thus becoming the IoT Pixels’ infrastructure. From the Wiliot Cloud, information can be accessed and analyzed by brands, manufacturers, distributors, and retailers



9

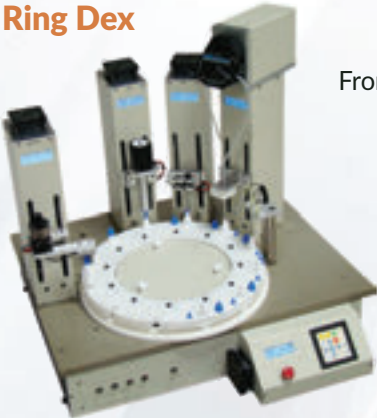
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to make more informed decisions along the supply chain.

At PACK EXPO Las Vegas 2021, Wiliot showcased its IoT Pixels applied to reusable plastic containers (RPCs) such as product

and parcel crates, pallets, and vaccine vials. From the show floor, data from these containers was fed to the Wiliot Cloud so attendees could view live updates, detailing the travels of the “smart” RPCs.

“We enable the internet of things to scale from being the internet of expensive things to the internet of everyday things,” says Stephen Statler, SVP of Marketing, Wiliot. “We do that based on a tag we call Wiliot IoT Pixels that powers itself by harvesting radiofrequency energy. We’re in the Reusable Packaging Pavilion here at the show, and that’s doubly appropriate because we reuse the radio waves that surround us to power these tiny computers.”

When companies can closely monitor the status of goods in Wiliot-enabled RPCs, they can more accurately match supply and demand so they’re not over-producing but increasing revenue; they can more efficiently deliver goods where they need to go, using fewer vehicles or shorter delivery routes to reduce emissions; and they can gain greater visibility into inventory to improve business performance and offer superior service to their customers. Wiliot’s platform works across many different packaging options for various industries, from pharmaceuticals to food and beverages to auto parts.

Next, designed for high-capacity storage and retrieval in warehouse environments, **Signode’s** StorFast Automated Storage and Retrieval systems (AS/RS) feature carts that automatically and quickly move pallets in and out of storage positions in the warehouse, along with StorFast’s range of robot-based depalletizing, palletizing, and material handling solutions (9).

The AS/RS boasts enhanced capabilities this year, operating at twice the speed of the previous generation with improved control for acceleration and deceleration of the robotic carts.

The technology is suited to many sectors—it accommodates ambient, cold storage, and deep freeze applications. As Signode’s Don Overberg explains, “Customers using this type



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of product have warehouse space constraints, and the [AS/RS] helps them optimize that space... with how they handle, pack, and store material.” The AS/RS works within building constraints regardless of layout and floor plans, in some cases precluding the need for expansion or relocation.

An all-electric Aisle Cart transports a pallet to (or from) an assigned row, the Row Shuttle then “undocks” from the cart, carrying the pallet to store (or retrieve) from a specific row position. Signode reports that the movement of both the cart and shuttle is automatically controlled by system software using PLC technology communicating to a main controller. The Storfast system is intended for high density areas, using two aisles per level, resulting in greater flow of goods in and out of storage simultaneously.

The enhanced StorFast components have improved robustness to handle pallets weighing up to 4,400 lbs. The company notes that with individual cart movement, energy consumption is considerably lower than crane-based systems.

Watch video from PACK EXPO at: hcppgo.to/396

Cybersecurity

To address growing industry concerns, Siemens' SiberProtect cybersecurity platform was on display, along with the company's real-time locating system (RTLS).

Read about these technologies at the end of: hcppgo.to/controls21

A mixer and a capper

Rounding out our coverage of PACK EXPO innovations in the pharmaceutical and medical device spaces is a set of machines, one for product processing and one for packaging. On the process-

ing side we look at **Marchesini Group's** TurboMek. It was introduced in 2017, but a new version of the TURBO-MEK 1000 vacuum turbo-emulsifier for processing liquid and cream products appeared at the show offer-

ing a more compact and eco-friendly design.

The global skincare market size alone was valued at over \$129 billion in 2020 according to Grand View Research, and this is likely to be bolstered further by escalating demand for



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sunscreens, face creams, and body lotions—some medicated—across the globe.

The TurboMek system is produced by Dumek, a Marchesini Group company that specializes in machinery for processing cosmetics and pharmaceutical products. The new TURBO-MEK 1000 has been designed to accommodate hygiene and cleaning guidelines with energy and water savings during wash cycles.

The system's energy efficiency is thanks to Dumek's patented SMART TC, an intelligent control system that offers energy savings during the heating and cooling stages, as well as more precise control of processing stages for greater repeatability.

High efficiency sprayballs facilitate tank cleaning and a fully automatic clean-in-place (CIP) system allows optimization of wash water consumption.

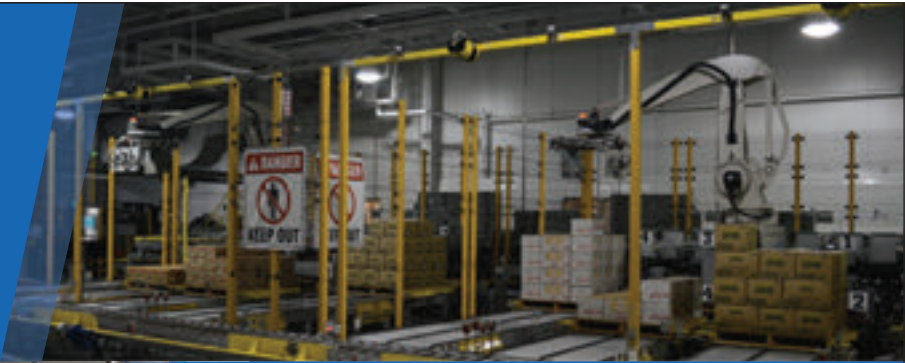
The turbo-emulsifier features a new touchscreen control panel designed to interface with mobile devices for monitoring and control of processing parameters. A large internal database allows for storage of production recipes. The new version can be easily integrated into a production environment with centralized management using MES/MOM systems.

The final item in this innovations review is the beltorque® BT-ICL Lite Capper from NJM, a ProMach brand (10). If this system

10

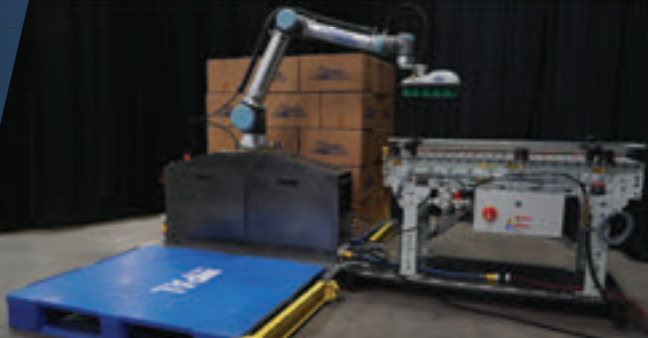


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sounds familiar, that may be from reading our supplement line story on pp. 23.

The continuous-motion system offers the same patented torque technology as the standard, high-speed beltorque, but at an entry level price point and at 150 bottles/min. Gentle handling for a variety of bottle shapes and sizes is attributed to two pairs of belts to gently rotate and tighten caps. The speed of the bottle is synchronized with the rotating speed of the closure, which “applies precise torque that eliminates damage to the closure and minimizes cap skew and slippage,” according to the company.

“Many customers tell us that before they installed a new BT-ICL, their traditional disc or spindle cappers were finicky and required near constant supervision. Even during production shifts, their spindle cappers needed manual readjustment to ensure proper handling, which was very labor intensive,” says Omar Azam, Inside Sales Manager at NJM. “The BT-ICL is entirely automated, offering repeatable performance without operator monitoring. Customers say the BT-ICL significantly increases their line performance and efficiency.”

Suited to nutraceuticals (where systems have already been implemented), cosmetics, personal care products, pharmaceuticals, foods, and more, the system handles round, oval, square, or rectan-

gular bottles made of plastic or glass from 2 to 12 in (51 to 305 mm) in height and from 0.5 to 8 in (13 to 203 mm) in diameter.

It can apply child-resistant, flip-top, screw, or snap caps made of plastic or metal in sizes up to 4.75 in (121 mm).

A number of features help manufacturers accommodate a variety of container shapes:

- A container spacing wheel or other spacing device can be added to accommodate various container shapes and sizes as well as product weights.
- When running heavy bottles, dual spacing wheels are used to control container back pressure.
- When running large bottles, fully adjustable dual container gripper belts hold the bottle steady during capping.
- An optional cap inspection system identifies skewed caps, missing caps, missing foil, or fallen bottles and triggers an automatic, heavy-duty reject device. Torque monitoring is also an option.

Seven feet in length, the capper has a compact footprint and can be mounted on a standard bottle conveyor. Typical changeovers can be performed in 15 min without tools.

Check out our PACK EXPO East preview on pp. 55 for what’s in store at the upcoming show in Philadelphia Mar. 21 to 23. +



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PACK EXPO East Brings the Latest Packaging & Processing Solutions to the East Coast

SEAN RILEY, SENIOR DIRECTOR, MEDIA AND INDUSTRY COMMUNICATIONS, PMMI

TOP THREE TAKEAWAYS

1. PACK EXPO East returns to Philadelphia in March, building off its largest show ever in 2020.
2. Explore the latest packaging and processing technology in person and connect with suppliers.
3. Professional development and networking opportunities abound, including the popular Forum sessions.



With 400 exhibitors at the Pennsylvania Convention Center, PACK EXPO East 2022 (March 21 to 23, Philadelphia) attendees get the best of both worlds—the ability to see a comprehensive range of packaging and processing technologies yet still have time for personal, productive discussions with suppliers.

The biennial event, produced by **PMMI, The Association for Packaging and Processing Technologies**, provides professionals from the consumer packaged goods (CPG) and life sciences rich Northeast corridor with a convenient and rewarding opportunity to explore the latest packaging and processing technology in person,

connect with suppliers, and find applicable solutions in a changing marketplace.

“Technology and machinery solutions have changed a lot in the two years since PACK EXPO East 2020,” said Laura Thompson, Vice President, Trade Shows, PMMI. “Our return to Philadelphia is the ideal chance for busy professionals to bring entire project teams by car or train, to see the latest solutions in person.”

For the most up-to-date PACK EXPO East booth listings visit:
hcpgo.to/pxe2022

Attendees and exhibitors alike will have access to some must-see highlights at this year's show:

- **The Forum** (Booth 1026) will feature free, interactive 45-minute open sessions on the latest industry trends by the OpX Leadership Network, Institute of Packaging Professionals, Contract Packagers Association and PMMI Business Intelligence, followed by small group discussions and Q&A sessions.
- In the center of the action, the free, 30-minute seminars on the **Innovation Stage** (Booth 2226) offer ample opportunity for attendees to learn about breakthrough technologies, innovative applications, and proven approaches from the experts themselves.
- **Packaging & Processing Women's Leadership Network (PPWLN) Reception:** The Packaging & Processing Women's Leadership Network serves to recruit, retain, and advance women in packaging and processing. PPWLN invites all interested industry professionals to a networking reception on Tuesday, March 22, starting at 3:00 p.m. after the show floor closes, at the Pennsylvania Convention Center.
- **Young Professionals Reception:** Hosted by PMMI's Emerging Leaders Network, young professionals in packaging and processing can learn more about the industry and how to get



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involved with the Emerging Leaders Network at this free reception on Monday, March 21, 5:00 -7:30 p.m.

- **The Workforce Development Pavilion** is the one-stop shop for resources to strengthen your current workforce and grow the existing workforce. Learn about PMMI U offerings, including popular training workshops. PMMI Partner Schools will present mechatronics, packaging and processing offerings, and attendees and exhibitors can meet students interested in careers in the industry. The **Future Innovators Robotics Showcase** (Booth 625) features design, engineering, and troubleshooting skills from high school robotics teams in the Philadelphia area.
- **Association Partner Pavilion:** This pavilion houses leading associations dedicated to advancing the packaging and processing industry, offering significant resources, insights, and expertise all in one central location. Participating associations already confirmed include the Reusable Packaging Association (RPA), Institute of Packaging Professionals, the Contract Packaging Association, Flexible Packaging Association, OMAC – Organization for Machine Automation & Control, and the Foundation For Supply Chain Solutions (F4SS) with many more to come.

- Once the show floor closes on day one, gather with peers at the PACK EXPO East **Welcome Reception** on Monday (March 21) for some refreshments and hors d'oeuvres to wind down the day.

After a highly successful PACK EXPO Las Vegas 2021 led the way in bringing the industry together again, PMMI has proven its top priority remains reuniting the industry with health and safety in mind. PMMI will continue to monitor any updates from our partners at the Pennsylvania Convention Center and federal, state, and local directives to implement the PACK Ready health and safety plan. Visit packexpoeast.com/packready for the most updated information.

Just a drive or train trip away for most of the East Coast, no other event will offer such a wide range of state-of-the-art packaging and processing solutions as PACK EXPO East.

For more information and to register, visit packexpoeast.com +



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2 Integrated Systems and Software

Mettler-Toledo Production Inspection

- + Mark & Verify systems and software enable the printing and verification of 1D and 2D codes and alphanumeric text used for accurate identification of individual products and those aggregated into containers
- + Integrated smart cameras verify the presence of required labels and information, and that printing and labeling quality is high, with no damaged labels or smeared ink



3 Adapter Fixation

Schreiner MediPharm

- + The Luer adapter fixation plastic ring interlocks with a Luer adapter, equalizing any difference in radii between adapter and syringe body, reducing risk of incorrect or incomplete hypodermic needle screw-ins; integrated RFID chip available
- + Compatible with Schreiner's Cap-Lock security concept for prefilled syringes; applied without heat



4 Capsule Checkweigher

MG America

- + The Anritsu KWS9002 checkweigher provides vertically oriented transport to eliminate "pinch" points for capsules
- + Individual load cells allow for the removal/replacement of single weigh position, while internal weights for daily calibration preclude the need for manual placement of weights



5 Medication Adherence Packages

Jones Healthcare Group

- + Qube Pro, FlexRx™ One, and FlexRx™ Reseal packaging for pharmacies use medically approved bioplastic, made from renewable resources, to lower environmental footprints
- + The packaging is compatible with a range of automated robots that fill blister packs with medications, as well as semi-automated filling technologies



6 Combination Inspection Unit

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- + The all-in-one inspection unit combines X-ray foreign object detection and precision checkweighing with an enhanced vision system capable of verifying label placement, barcode legitimacy, film detection, and validation of expiration
- + Rejected product is placed in a predetermined category, so operators can immediately understand the problem and adjust accordingly; features intuitive HMI



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62	Antares Vision Group	77	Heat and Control, Inc.	92	Pharmaworks, a ProMach Product Brand
63	Aphena Pharma Solutions, Inc.	78	HERMA US, Inc.	93	Prosys Servo Filling Systems
64	Bell-Mark	79	Jadex Inc.	94	QProducts and Services
65	Bonfiglioli Engineering S.r.L.	80	James Alexander Corp.	95	Reed-Lane, Inc.
66	Chase-Logeman Corporation	81	Klockner Pentaplast	96	Schreiner MediPharm, A business unit of Schreiner Group LP
67	Columbia Machine, Inc.	82	Markem-Imaje	97	Sepha Ltd.
68	Columbia/Okura LLC	83	METTLER TOLEDO	98	Spee-Dee [®] Packaging Machinery, Inc.
69	DDL, Inc.	84	MGS, a Coesia Company	99	Starview Packaging Machinery, Inc.
70	Delta ModTech	85	Morrison Container Handling Solutions	100	Uhlmann Packaging Systems LP
71	Dispense Works Inc.	86	MULTIVAC, Inc.	101	Veritiv
72	Domino North America	87	NJM, a ProMach Product Brand	102	Weiler Engineering, Inc.
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• Conveyorized Model

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Compact, Easy to Integrate Serialization Unit Handles 300 Cartons/min

Antares Vision's Print & Check EVO is among the most widely used integrated serialization solutions on the market. Quick and easy to integrate into packaging lines, the unit occupies just 705mm of floor space as it prints and verifies on carton flaps. Upper and lower conveyors keep cartons stable for reliable printing and unsurpassed verification accuracy. The Print & Check EVO can handle cartons up to 120mm wide and 200mm in height at a maximum speed of 300 units per minute.

Mini Manual Station Aggregates Small- to Mid-Sized Batches

Ideal for small- to mid-sized production, the Mini Manual Station maximizes manual aggregation productivity and, among other benefits, efficiently supports post-lot reworking operations in warehouses and distribution centers. Following the situation-specific recipe – for example, the number of cartons per case – the Mini Manual Station aggregation unit issues the upper level, "parent" container label once the preset quantity of items has been scanned into the system. The unit features an ergonomic design for easy, multi-point access and an always-on handheld scanner for fast, reliable code reading.

Vision System for Whole Label inspection

The high-resolution AV Print Inspector vision system provides inline layout inspection for webs and labels at speeds up to 80 m/min, and can be incorporated into new or existing labeling, printing or packaging machines. Antares Vision created the system to meet increasingly sophisticated and print-on-demand applications. The technology supports quality control across a wide range of layout features including 1D/2D barcodes, optical character recognition (OCR) and verification (OCV), color check, and pattern matching. It can define as many as 40 unique regions of interest, each with independent parameters and reportable defect statistics

Tool for Leveraging Serialization Data to Improve Production Practices

AVionics is a comprehensive software tool designed to monitor equipment performance and efficiency throughout the production process. The solution satisfies pharmaceutical companies' increasing desire to leverage data initially generated to comply with serialization mandates in the US and abroad. By tracking various key performance indicators (KPIs), AVionics streamlines data into a user-friendly dashboard for intuitive operator decision-making. Information collected from production and packaging lines can then be used to improve business processes at all levels.

Our MISSION



Antares Vision Group guarantees protection of products, people and brands through inspection systems for quality control, Track & Trace solutions for anti-counterfeiting and supply chain transparency, smart data management tools for maximized efficiency and digitalization of the supply chain, from raw materials to the final consumer. The Antares Vision Group is active in the pharmaceutical market, Life Sciences (biomedical devices and hospitals), beverage, food, cosmetic and consumer-packaged goods. The Group reaches over 60 countries in the World with complete and flexible solutions, hardware and software. With twenty years of experience in vision technologies, the Antares Vision Group is supplier to ten of the leading pharmaceutical companies, more than 25,000 inspection systems ensuring product safety and quality, 6,500 quality controls and more than 3,500 serialization modules on lines installed around the world. In 2020, Antares Vision Group expanded their capacity services through the acquisitions of Convel, Adents, Applied Vision and Applied Vision, and rfxcel in 2021.



www.antareshvision.com

See our ad on page 48 of this issue



Aphena Pharma Solutions, Inc.

1976 Chocolate Drive, Cookeville TN 38501 | **PHONE:** 866.465.4506

EMAIL: sales@aphenapharma.com | **WEBSITE:** www.aphenapharma.com

Aphena Pharma Solutions is an industry leader providing contract packaging and manufacturing solutions for the pharmaceutical industry. With two separate FDA and DEA registered sites in the U.S., Aphena is fully compliant with the FDA's current cGMPs. You can trust Aphena will handle all of your product needs to the standards you expect from a pharmaceutical contract service provider.

Aphena truly partners with clients to develop the solutions they need to succeed in a highly competitive marketplace. Aphena's strength lies in management's ability to understand clients' unique environments and create dynamic solutions. Aphena will continue to invest in technology, advanced packaging systems and rigorous cost controls to stay competitive, allowing cost savings over the life of agreements to keep our customers competitive.

Products Handling

Solid Oral Dose (Tablets, Capsules, Softgels) Lotions; Ointments; Liquids; Gels; Creams; Powders

Quality & Regulatory Accreditations

FDA Registered, meets and exceeds standards for 21 CFR (Parts 111, 210, 211, 820), DEA Licensed (CII-V), cGMP compliant, ISO 13485:2016, 9001:2015 (BSI), UL certified, USP verified, eQMS System, DSCSA compliant, LIMS System, Board of Pharmacy licenses, Serializing Hardware (Optel), Serialization Software (RFxcel)

Packaging Capabilities

Bottling Packaging (Plastic and Glass); Blister Packaging (Thermoforming and Cold Forming); Blister Carding (Heat Sealed); OTC Stretch Carding; Vial Labeling and Kitting; Tube Filling (Plastic and Aluminum); Metered Dose Pen Filling; Powder Pouching; Child-Resistant Packaging; Medical Device Packaging; Towelette and Swab Pouching; Sachet Filling; Wick Saturations, Nasal Inhalers; Labeling (Shrink Film, Standard, ECLs, Pressure Sensitive); Clinical Packaging; Kitting Assembly; Custom Packaging Development

Manufacturing Capabilities

Liquids, Creams, Gel and Suspension-Based Products; Hot and Cold Blending; Aqueous and Solvent-Based; Flammable and Nonflammable; Various Viscosities; Pressurized Tanks for Suspensions; Light-Sensitive Blending Area

Value-Added Services

Onsite Extensive Analytical and Micro Labs; Test Method Development and Transfer; Cleaning Method Development; Stability Protocol Creation; Stability Testing; Cold chain services (-20°C to -8°C); Full Product Transfer Support; Dedicated Project Managers; Kit and Tool Design; Engineering and Validation Support; Turnkey and Supply Chain Management

Our MISSION



EXECUTIVE VICE PRESIDENT OF SALES AND MARKETING

ERIC ALLEN, sales@aphenapharma.com

Aphena Pharma Solutions, Inc., specializes in providing pharmaceutical packaging and manufacturing services.

Major Markets

- *Pharmaceuticals (Rx, OTC)*
- *Biologics*
- *Personal Care*
- *Medical Devices*

Aphena is a leader in designing client focused processes that are robust and capable of exceeding expectations.

Our team of seasoned experts collaborates with clients and addresses every aspect of their product. We partner with clients to develop the solutions they need to succeed in a highly competitive marketplace, and we're committed to delivering an end result that is on schedule and cost effective.



www.aphenapharma.com

See our ad on page 4 of this issue



Our MISSION



For over 55 years BELL-MARK has been developing innovative in-line printing and coding solutions that are easily retrofitted to all packaging machines, and can satisfy print requirements for Medical, Pharmaceutical and Food Packaging Applications.

We offer many in-line printing technologies including Full Color Piezo Inkjet, Thermal Inkjet, Thermal Transfer, Flexographic, and Ink Coder, all of which satisfy requirements to print directly onto many substrates.

Bell-Mark

331 Changebridge Road, Pine Brook, NJ 07058

PHONE: 973.882.0202 | WEBSITE: www.bell-mark.com | EMAIL: info@bell-mark.com

Medical Device Packaging

The accuracy of coding on your product package is crucial. Expiration dates must be clearly identifiable and easily human readable. Bar Codes must be verifiable & scannable. BELL-MARK addresses these needs with systems that provide the highest quality print available.

packaging machine will have to meet specific wash-down expectations, and will have the ability to print Graphics, Nutritional Facts, Bar Codes, Lot/Exp. Dates and Safe handling instructions. BELL-MARK printers can either eliminate the need for pre-printed materials, or print directly to your pre-printed substrate.

Pharmaceutical Packaging

Product identification can make or break the entire package. Typically, your printer will have to be able to print UDI GS1 Codes, RSS, 2D Bar Codes, Lot/Exp. dates, and variable information. Product Codes must be clearly identifiable and easily human readable. Bar Codes must be verifiable & scannable. There are no exceptions when you are talking about the risks associated with medications.

Industry Leading Reliability

BELL-MARK in-line printing and coding equipment delivers industry leading reliability and durability. High resolution print quality that is consistent affords you the peace of mind in knowing that your codes will not fail. While other companies may claim it, BELL-MARK leads the way in lowest cost of ownership, and highest Return on Investment.

Meat, Poultry and Prepared Foods Packaging

Sell-By dates and Lot numbers are crucial to the safety of your customers, and the reputation of your product. Typically, a printer on your



www.bell-mark.com

See our ad on page 42 of this issue



Bonfiglioli Engineering S.r.l.

US Sales: 2440 W Corporate Preserve Drive, Ste. 600, Oak Creek, WI 53154 | **PHONE:** +1.414.574.4344

EMAIL: us.sales@bonfiglioliengineering.com | **WEBSITE:** www.bonfiglioliengineering.com

Building the Ultimate Testing Solution

Ensuring that every blister, ampoule, bag, and syringe is properly filled and sealed is critical to ensuring the health and safety of patients. But leak testing pharmaceutical products does more than protect patients. Regular leak testing and analysis of results can lead to innovations in packaging and even increases in production efficiencies.

Building the ultimate testing solution for pharmaceutical products requires extensive knowledge of production operating environments, international regulations, and material characteristics. Bonfiglioli Engineering's experience in the pharmaceutical industry means we can advise at every step of the process, from testing and packaging technologies to regulations.

Bonfiglioli Engineering offers leak testing equipment capable of non-destructive test methods that ensure the integrity of every package, protecting the amount and purity of every dose. We provide customized leak detection and package integrity solutions that deliver on our expertise in Container Closure Integrity Testing, Headspace Gas Analysis and Automatic Visual Inspection.

Container Closure Integrity Testing

The closure of a pharmaceutical container must

maintain an aseptic environment to protect the sterility and viability of the medicine within. Container Closure Integrity Testing (CCIT) is a non-destructive inspection method that identifies seal and structural integrity defects in every pharmaceutical product that leaves the line.

Headspace Gas Analysis

Using lasers to determine the molecular makeup of the atmosphere within a container, headspace gas analysis (HGA) provides confirmation of the environment inside the container as well as container integrity, delivering non-destructive quality assurance for every container you prepare. When properly analyzed, results of HGA can identify malfunctions in your packaging line, helping you avoid potential problems and realize additional production efficiencies.

Automatic Visual Inspection

Non-destructive visual inspection of pharmaceuticals provides quality assurance that protects your brand and your patients. Automatic Visual Inspection (AVI) equipment from Bonfiglioli Engineering improves on this, delivering quality assurance that is reliable, accurate, and fast. We've even incorporated Artificial Intelligence into our AVI equipment, harnessing the power of AI's machine learning capabilities to enable reliable, accurate inspection results that continually improve.

Our MISSION



A member of TASI Group, Bonfiglioli Engineering offers non-invasive and non-destructive inspection technologies, ensuring absence of leaks, integrity of headspace gas content, and absence of visual defects.

Established in 1974, in Ferrara, Italy, Bonfiglioli Engineering has continuously invested, innovated and evolved, making breakthroughs in leak testing while offering a portfolio of inspection solutions for all packaging requirements. By combining its remarkable engineering expertise with proactive solutions and technological developments, Bonfiglioli Engineering is able to offer superior quality control solutions that are customizable and designed for performance, accuracy, and flexibility, all backed by a global service support network.

Not just a machine manufacturer, Bonfiglioli Engineering is your trusted partner for packaging integrity testing and analysis through feasibility studies, technical expertise, validation packages, product handling and custom-built solutions.



www.bonfiglioliengineering.com

See our ad on page 54 of this issue



Our MISSION



Chase-Logeman Corporation's goal since its inception in 1961, is to design and build the highest quality, most reliable and technologically innovative packaging machinery possible for the benefit of our customers.

Our staff of highly qualified engineers, designers, assemblers, machinists, sales, and service people are dedicated to the proposition that serving our customers' needs is the reason we are in business.

Chase-Logeman Corporation

303 Friendship Drive, Greensboro, NC 27409 | PHONE: 336.665.0754 | FAX: 336.665.0723

EMAIL: info@chaselogeman.com | WEBSITE: www.chaselogeman.com

Monoblock Fillers:

Chase-Logeman is synonymous with the development of the monoblock filler. Developed to minimize space requirements, Chase-Logeman incorporates many functions into a single equipment design. This concept saves on floor space while providing the desired packaging system desired.

Equipment:

Built on the foundation of monoblock filling, Chase-Logeman offers designs for most liquid filling needs from microliters to 125ml.

Incorporating proven filling systems are the heart of any filler. Chase-Logeman offers many styles of piston, peristaltic, gear and lobe dispensing systems. Microtubes to glass or plastic containers can be filled with precision using these designs.

A wide range of functions and options can be incorporated into the Chase-Logeman monoblock fillers. Bulk bottle unscrambling, tipping/plugging, cap placement and tightening, ChaseWeigh™

checkweighing system, and applied torque feedback are just a few of the many popular options requested to automate the fill-finish process. There are additional options available for filling flammable liquids and processes requiring Containment Isolators.

These machines serve a wide range of applications in Pharmaceutical, Chemical, Diagnostic, Food Ingredient, Homeopathic Remedies, Nutraceutical, and Automotive manufacturing sectors. Each machine is custom designed to work with container and components supplied by our customer to make sure the equipment meets all of their requirements. Every machine designed and built by Chase-Logeman is assembled for in person customer demonstration and training once completed.

Location:

Located in the heart of the piedmont, Chase-Logeman designs, assembles and supports all of our equipment from Greensboro, NC. Our offices are located very near Greensboro's airport making customer visits convenient.

www.chaselogeman.com

See our ad on page 18 of this issue



Our MISSION



The mission at Columbia Machine is to be the preferred supplier of engineered product solutions in the targeted markets we serve. We provide exceptional customer value through strategic marketing, innovative product development and unparalleled customer service. We value safety, integrity, trust, fairness, professionalism and teamwork in relationships with our customers, employees, business partners, suppliers and shareholders. We “always” see our business through “the eyes of our customers,” and provide them with superior solutions through innovation, quality, reliability and continuous improvement.

Columbia Machine, Inc.

107 Grand Blvd., Vancouver, WA 98661 | **PHONE:** 360.694.1501 | **FAX:** 360.750.9221

EMAIL: pallsales@colmac.com | **WEBSITE:** www.loadtransfer.net

Reduce Contamination in Production Areas

The Load Transfer Station (LTS) product line, offered by Columbia Machine, helps to reduce contamination from entering production areas, streamlines operations & reduces costs. Columbia manufactures a complete line of pallet transfer solutions including stand-alone stations to fully automatic solutions that allow pallet load transfer to be completed in less than one minute, without requiring the operator to leave the safety of the forklift.

Industry Leading Standard Safety Features

Columbia Machine's LTS solutions come standard with the latest safety features. These include Category 3 electrical safety components, up-stacker guarding with A-B SensaGuard RFID interlocked door switches, multiple emergency stops, and muted light curtains on the automated systems. Every Columbia Machine LTS has been engineered to exceed the requirements of pharmaceutical processors who are working to meet FSMA regulations.

Flexible Product Handling

Columbia's LTS is capable of transferring products that are packaged in cases, super sacks, glass vials,

pails, barrels, drums and bags from one pallet type to another, including Plastic, Chep and GMA pallets that are commonly used in both receiving and shipping applications.

System Integration

To ensure that all Columbia equipment works smoothly with upstream and downstream machinery, complete systems integration services are available—including project management, controls, installation, wiring, commissioning and preventive maintenance plans. As a family-owned company with a total commitment to customers, employees and a long-term financial perspective, Columbia is your premier partner for load transfer solutions.

Columbia Machine, Inc.

The Load Transfer Station (LTS) product line is part of the Palletizer Division of Columbia Machine, a leading American palletizer manufacturer. For more than 80 years, Columbia has manufactured complete palletizing and material handling solutions.



www.loadtransfer.net

See our ad on page 51 of this issue



Our MISSION



We believe in the transformative power of automation.

Columbia/Okura LLC

301 Grove St, Vancouver, WA 98661 USA | **PHONE:** 360.735.1952

EMAIL: colcsales@colmac.com | **WEBSITE:** www.columbiaokura.com

Columbia/Okura LLC designs, integrates and commissions end of line robotic palletizing solutions for most major industries. Our team applies their expertise via defined production line surveying and problem solving processes allowing us to understand our customers challenges, identify critical need areas, and design and apply the appropriate solution. Ultimately we aim to lower the cost of ownership and generate profitable returns for our customers.

Cases, bags, pails, or just about any packaging type, we can handle it. No matter what palletizing requirement you have, let us provide a solution for you.

Safety, flexibility, and performance are key deliverables in providing the right solution for the application. Our team is skilled at listening to client needs and objectives to deliver innovative solutions. With hundreds of successful installations all over the world, we draw upon our years of experience and palletizing expertise for every project we touch.

SAFETY

We help our customers reduce overall operating costs by developing an ergonomically friendly system that will reduce labor intensive heavy-lifting and repetitive motion injuries. Our systems are also equipped with industry leading safety technology.

FLEXIBILITY

Our systems are designed to meet the flexible packaging and production needs our customers are seeking.

PERFORMANCE

Columbia/Okura LLC strength is providing high performance systems, accomplishing speeds and throughput not attainable by others.



www.columbiaokura.com

See our ad on page 52 of this issue



DDL, Inc.

10200 Valley View Road • Eden Prairie, MN 55344 | 9400 Toledo Way • Irvine, CA 92618

551 Raritan Center Parkway • Edison, NJ 08837

MINNESOTA LAB: 952-941-9226 | **CALIFORNIA LAB:** 714-979-1712 | **NEW JERSEY LAB:** 732-346-9200

EMAIL: ddlinforequests@ddltesting.com | **WEBSITE:** <https://www.ddltesting.com>

Package Testing

DDL's package testing services evaluate the strength and integrity of packaging systems before and after simulating the anticipated distribution and storage conditions that the systems may undergo. Packaging professionals use this combination of simulation and evaluation to validate package compliance with ASTM, ISO, ISTA and other accepted industry standards. DDL offers full service package testing in Eden Prairie, MN and Irvine, CA, and select package testing capabilities in Edison, NJ.

Materials Testing

Material properties testing is a critical step in understanding how your materials will perform or react under a wide variety of stresses. DDL's material testing services include: coefficient of friction, flexural bend testing, film testing, fatigue testing, polyurethane foam testing, shear testing, Sutherland rub test, puncture & impact testing, peel adhesive testing, tear testing, and tensile testing.

Medical Device and Combination Product Testing

DDL specializes in testing medical devices and combination products such as luer fittings (ISO 80369), syringes (ISO 7886) pre-filled syringes (ISO 11040),

needle-based injection systems (ISO 11608), needles (ISO 7864 & 9626), catheters (ISO 10555), guidewires (ISO 11070), infusion sets (ISO 8536), and surgical sutures. DDL also provides vibration, physical shock, thermal shock, friction, flow rate, force to operate, leakage and compression testing. Custom test development and protocol creation are also available.

Stability Storage

DDL provides stability storage space for products requiring environmental conditions based on ICH Q1A guidelines as well as customizable storage conditions. Our facilities contain over 38,000 cubic feet of validated storage space for long-term and short-term shelf life studies under various temperature and humidity requirements.

Container Closure Integrity Testing

Package integrity verification requires careful examination of package leakage given the specific product and its life cycle. DDL's CCI services include both the most recent deterministic capabilities, as well as probabilistic methods, as outlined in USP <1207>. We can provide tailored expertise to design and execute a CCI study based on your system, providing the support you need.

Our MISSION



Who We Are

DDL is a full-service ISO/IEC 17025:2017 accredited testing lab that provides packaging, materials, medical device and combination products testing to the medical device, pharmaceutical, biotech and consumer products markets. DDL's team of engineers, technical and quality experts is devoted to helping customers worldwide succeed by taking an independent, involved and informed approach to ensuring regulatory compliance. DDL's commitment to customer service is supported by an upfront approach, unmatched technical expertise, a robust quality system, fast turn-around, and scalable capacity. All of our testing services are delivered with integrity, professionalism and a commitment to meeting the timing needs of our customers.

Visit www.DDLTesting.com for more information.



www.DDLTesting.com

See our ad on page 53 of this issue



Delta ModTech

8445 Bunker Lane Blvd. NW, Ramsey MN | PHONE: 800.279.3358 • 763.755.7744

PHONE (EUROPE): + 46 706 97 24 34 | WEBSITE: www.deltamodtech.com

For over 40 years Delta ModTech has been a leader in web converting and packaging innovation. We are dedicated to providing flexible automation solutions for converters and manufacturers worldwide.

Delta ModTech systems feature a variety of processes including heat-seal pouching, rotary die cutting, laser cutting, tight tolerance registration, printing, laminating, coating and drying.

Seal to print registration

The packaging solution for process applications where speed, flexibility and consistent seal quality are important.

For the manufacturing of:

- Heat-seal/Cold-seal pouches
- Resealable pouches
- Liquid dispense pouching
- Sachet filling

Improve your capability

We've developed several solutions to meet the package and pouching needs of our customers and their end users. Our experience with building machines to meet the demands of the most stringent specifications will give you confidence in meeting your production goals.

Common options:

- Mod-Track® Vision Inspection – Part-in-pouch, closed

loop registration, date/bar code reading, rejecting

- Reject conveyors/marketing equipment
- Part handling Conveyors for: stacking, shingling, sorting, turning, etc.
- Printing for date, lot and bar code printers – inkjet, thermal transfer, laser, etc.
- Case packing and cartoning integration

Packaging and Pouching Machine Specifications

- Web Width: 10" (254 mm), 13" (330 mm), 18" (457 mm), Custom Widths Available
- Max speed – Reciprocating Packager: 13" 80 ft/min (24 m/min)*, 18" 55 ft/min (16.75 m/min) *
- Seal Repeat – Up to 24" (609 mm)
- Control System: Delta ModTech INTELL-MOD® control system
- Drive System: Servomotor Control
- User Controls: Touchscreen HMI Pendant Arm
- Cabinet Construction: Welded Steel Frame, Aluminum Front Plate

*Process Dependent

Now with Frontier Coating Technology - In 2016, Delta ModTech acquired Frontier Industrial Technology (now Frontier LLC). Frontier has successfully developed custom coating and drying solutions for 30 years. This partnership allows us to provide turnkey solutions from lab scale to production.

Our Mission



We deliver web converting and packaging systems for the most complex and demanding jobs in the medical, pharmaceutical, label, RFID and cosmetic industries. Our systems are designed to meet your application requirements, improve your profitability, and reduce your risk.

Service and Support

Serving our customer's has always been Delta's highest priority. We focus on quick, efficient solutions to keep your machines running to their full potential. To back up this philosophy, we have a full-service staff on call, made up of Engineers and Technicians. We have the process knowledge and proven modules to ensure the longevity of your machine.

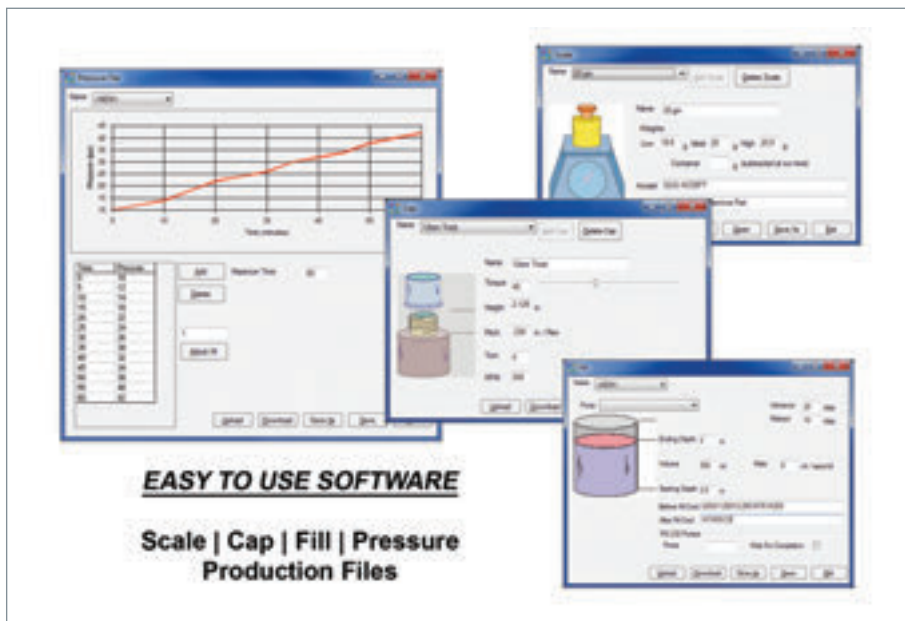
EQUIPMENT SOLUTIONS FOR A VARIETY OF PRODUCTS:

- Diagnostics**
- Drug Delivery**
- Electronics**
- Ostomy**
- Wound Care**
- Personal care**



www.deltamodtech.com

See our ad on page 32 of this issue



Dispense Works Inc.

4071 Albany Street, McHenry, IL 60050 | **PHONE:** 815-363-3524 | **FAX:** 815-363-8089

EMAIL: info@dispenseworks.com | **WEBSITE:** www.dispenseworks.com

Dispense Works Inc., located in McHenry, IL, leads the industry with the best built, most industrialized robotic dispensing machines available. From compact benchtop designs to full scale production machines, we have the equipment to fit your needs. These systems are quickly becoming the “operator’s choice” with features that redefine the terms simple, easy and operator friendly.

Over 15 years ago we decided to create a true file based control system that can be built on, expanded, and updated in the future. Unlike many “me too” solutions, this type of software provides our customers with not only hundreds of pre-programmed functions, the entire control system may be upgraded in the future as new features arise by just downloading one file. This investment has evolved into a truly unique control system that simply out distances the competition. Seamless communication including Ethernet and RS232 connectivity, dual USB ports, large CF card memory.

With manufacturing requirements being more challenging and demanding than ever, having information such as production data and history files automatically logged with information including dates, cycle times, etc., is increasingly important.

Our machines offer an industry proven control system which combines real time motion control, I/O logic and vision with a rich list of pre-programmed functions in a tightly integrated package. No external PLCs, valve controllers or PCs required.

Today, our systems are hard at work in many different industries, such as Pharmaceutical, Food, Healthcare, Chemical, Industrial and other Packaging Industries, setting new benchmarks for performance. This multi-industry experience and success can be combined and applied to address your specific application whether standard or customized. All of our products are 100% designed and manufactured at our US facility. All software and machine firmware including the sub-systems for motion control vision software, etc., are developed and maintained in house as well.

Our MISSION



Dispense Works is one of a few USA manufacturers that builds the robotic product line in its entirety. This includes controls from board level and all software and firmware.

Our ongoing commitment to developing the best solutions in fluid applications has made us the First Choice in robotic dispensing systems as we move forward with new product development.

We are constantly challenging existing “methods” with a new generation of ideas and can provide better solutions to help you meet and exceed your dispensing needs. Whatever your industrial dispensing requirement, Dispense Works already has or can develop a solution.



www.dispenseworks.com

See our ad on page 49 of this issue



Domino North America

1290 Lakeside Drive • Gurnee, IL 60031 | **PHONE:** 800.444.4512 | **FAX:** 905.829.1842

EMAIL: solutions@domino-na.com | **WEBSITE:** www.domino-printing.com

Global legislation on pharmaceutical track and trace and medical device coding - and the fight against falsified drugs and counterfeit pharmaceutical products - continues to grow. To ensure you adhere to pharmaceutical labeling requirements and other legislations, Domino is here to help.

Global traceability initiatives, such as the DQSA, are designed to hinder the production and distribution of life-threatening imitation or counterfeit pharmaceuticals. These initiatives can require identification and authenticity features on primary, secondary and tertiary packaging levels typically in the form of unique, non-predictive, serialized and machine readable codes. This level of product identification aims to impair the ability of counterfeiters to successfully replicate pharmaceutical products and packaging.

Secure processes and trustworthy partners are essential to ensure patient safety and product availability. As a GS1 Solution Partner and the world's leading provider of reliable and future-proof coding, marking, labeling and printing technologies, Domino offers innovative solutions tailored to the specific requirements and needs of the life sciences industry. When coding matters, trust in Domino.

Our role is designed to support seamless partnerships with the Manufacturers, CMOs and OEMs, to understand and support your serialization needs. While our technology is more than adept at supporting the DQSA requirements, the experience behind our name makes the difference. Put your trust in the experts.

Our MISSION



At Domino, when we're at our best we're not just selling printing machinery and software...we're selling our customers **SIMPLICITY**.

We sell smart, integrated solutions that keep production lines running smoothly. We sell on-demand support from Domino team members who help solve problems quickly.

And ultimately, we're selling our customers a more simple work day, giving them the space to invest in what matters most to them—building a career they can be proud of.

Less waste means more consistency.
Less risk means more compliance.
Less headaches mean more opportunity.

Less...is More

**For more information,
please visit us at:
www.domino-printing.com**



www.domino-printing.com
See our ad on page 7 of this issue



Our MISSION



Formost Fuji Corp.

19211 144th Avenue NE, Woodinville, WA 98072 | PHONE: 425.483.9090 | FAX: 425.486.5656

WEBSITE: www.formostfuji.com

As a market leader in flexible packaging, Formost Fuji has been providing horizontal wrappers and baggers that are EFFICIENT, RELIABLE, and SIMPLE to operate for over 55 years.

Our **Horizontal Flow Pack Wrappers** are built with the end-user in mind having an easy to operate HMI that includes graphics and step by step instructions. The HMI can be customized for simplicity with icons or photos representing each product for a one touch changeover. This innovative flow wrapper has a simple to thread film process that saves time and a shortened film route that saves money. The center fin seal unit tilts down allowing easy access for sanitation and maintenance.

B16 Box Motion End Seal Technology offers four times the sealing pressure and longer dwell time with improved design. This provides high performance hermetic seals on difficult to seal films.

The **Swing Arm Rotary End Seal Option** for Horizontal Wrappers provide increased dwell time

and seal quality at high speeds, allowing flexibility for a wide range of product and film sizes.

The **Formost GTS Bagger** provides performance proven technology with speed, versatility and dependability. Built to run up to 90 bags per minute, it is ideal for gently bagging a wide range of products including medical drapes.

Proven superior design and engineering are combined with the latest technology to bring you the **High-Speed Box Motion** horizontal wrapper. Capable of packaging speeds up to 400 per minute (application dependent), the high-speed box motion wrapper boasts high efficiency, tight wrapping, low vibration, and direct drive servos.

Formost Fuji provides **sustainable, and efficient packaging solutions** for the healthcare industry. Items such as masks, IV bags, inhalers, blister packs, syringes, tube sets, and many other medical and pharmaceutical products are wrapped and bagged on performance proven Formost Fuji equipment.

First and Formost, we strive to put you the customer first. Meeting and exceeding your expectations is our gold standard. Whether it be in design, manufacturing, or service, you can expect Formost Fuji to deliver a solution you are proud of. Throughout 55 plus years in this business our ideals have remained the same; build it right and deliver on time, all at a value to our customers.

Our team of experienced people listen to you, and understand your needs.

- **Horizontal Wrappers**
- **Baggers**
- **Automation Solutions**
- **Special Applications**



www.formostfuji.com

See our ad on page 47 of this issue



Formulated Solutions

11775 Starkey Road, Largo, FL 33773 | **PHONE:** 727 373 3970 | **FAX:** 727 398 1524

EMAIL: WebSales@formulatedsolutions.com | **WEBSITE:** www.FormulatedSolutions.com

Formulated Solutions is now known as one of the most innovative contract manufacturing and formulation development companies (CDMO), focused exclusively on consumer healthcare, in North America. With over 650 million units of annualized production capacity, Formulated Solutions exists to enhance consumer healthcare products through creativity and invention, delivering our Marketing Partners unmatched formulations, innovative packaging and cost-effective reliable supply of semi-solids, Aerosols, Bag on Valve, and our exclusive eN2fused™ WHIPPED dispensing platform.

These days every contact manufacturer claims to innovate. We're different... We walk the walk! Every year we commit 30% of our research and development efforts to purely speculative development. Why? So that we stay on the **cutting edge of consumer healthcare** technologies, and are able to ensure that you, our brand partner, is in a perfect position to offer your customers differentiated **products that they will love.**

We have a reputation for creative problem solving. We open the doors no one else can.

Our expert team of scientists and engineers will work alongside your in-house R&D, supply chain, or marketing staff to **develop that difficult to formulate/difficult to fill consumer healthcare solution.** Our uniquely inventive thinking creates tremendous value for our brand partners and makes us the ideal choice for **full turnkey consumer healthcare CDMO solutions.** Formulated Solutions does not market any of its own products, nor manufacture store brands.

Industries Served:

- Consumer Healthcare
- Branded Rx
- Medical Device
- OTC

Our **pharma-grade facilities and manufacturing** equipment are impressive, but we are so much more than buildings and machines. We are your invested consumer-focused partner. We want to help you create game-changing innovations that will result in products your consumers love to use and will drive your bottom line and our expert team of scientists and engineers stand ready to do so.

Our MISSION

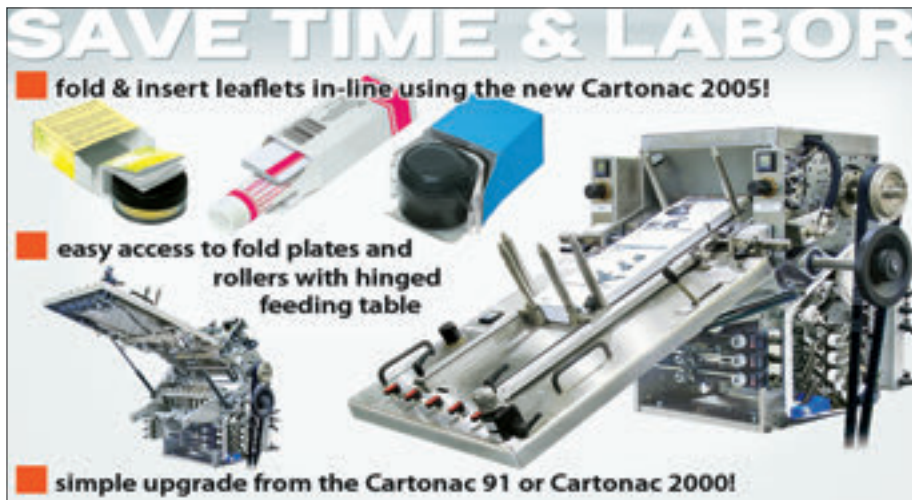


"Formulated Solutions is and shall always be a company of people with the knowledge and dedication to provide our Marketing Partners, regardless of their size or marketplace, a single source solution for delivering quality and innovative products to market. We shall embrace changes and new opportunities as a vehicle to continually develop profitable and sustainable relationships. As a company we shall never accept anything less than a culture that fosters creativity, growth and profitability for both our Partners and the company."

Our focus on innovation allows us to offer you, and your customers, products that other CDMOs simply can't.



www.FormulatedSolutions.com
See our ad on page 37 of this issue



G&K-VIJUK INTERNATIONAL

715 Church Road, Elmhurst, Illinois 60126 | **PHONE:** 630.530.2203 | **FAX:** 630.530.2245

EMAIL: info@guk-vijuk.com | **WEBSITE:** www.guk-vijuk.com

OPTIMIZE PACKAGING PRODUCTION

GUK packaging-line equipment runs on the packaging line's drive or can be equipped to run independently.

In-line leaflet folding enables immediate insertion of leaflets into product cartons, along with the product. The **NEW** servo-driven **GUK Cartonac 2005** has a hinged feeding table for easy access to the fold plates and rollers, and improved suction rollers and air blasts on the feeder table allow efficient feeding of folded products—up to 3 panels thick. It is a simple upgrade from the Cartonac 91 or Cartonac 2000. The **Cartonac 2003DS** is PLC controlled for quicker, easier setup, and the feeder and folder is servo driven for better control and greater speed.

The **GUK-Sigma Pick & Place Station** precisely tips flat or 3-dimensional (and difficult-to-handle) items onto products in production lines.

GUK PA21 Leaflet Feeders feed inserts (and outserts) in-line for insertion into or cartons, handling leaflets up to 8 mm thick, depending on the model. The **GUK PA15 Leaflet Feeder** feeds leaflets, turned 90°, and can be mounted parallel to the packaging line to save space. It is also used with gluing or tabbing equipment in off-line leaflet/outsert bundling systems.

GUK RS Roll-Fed Folders offer economical leaflet production, as roll printing saves paper, cutting, and labor costs—while minimizing probability of leaflet mix-up.

BOOKLET / LEAFLET / OUTSERT PRODUCTION

Make spine-glued booklet leaflets on the **GUK FA53 Folder**. Fold up to 28-3/4 inch sheets for larger med-guides on the **GUK FA73 Folder**. Choose from a number of **G&K-Vijuk Outsert Systems** with varying capabilities of folding outsert leaflets with from up to 90 panels to up to 350 panels.

Meet **TRACK & TRACE** requirements with the **G&K-Vijuk CTM Coding and Serializing Station** on MV Outsert Systems. Print industry standard 1- and 2-dimensional codes using black or UV inks. A 3-camera system verifies the dimensional qualities of outserts, and verifies and logs the printing and print quality of the codes.

Save time and labor with the **GUK-Sigma PPM Auto Stacker**, which automatically collects outserts and packs them compactly into trays that move in, then move out when full, in continuous production.

Our MISSION



World leader in outsert-producing machinery, G&K-Vijuk has been specializing in miniature-leaflet folding solutions for over 40 years.

Member of the GUK Group headquartered in Germany (manufacturer of folding machinery since 1949), we continue to assess the needs of the pharmaceutical industry, as shown by recent developments in machinery to fold a greater number of panels and fold wider sheets—both for more print space on a single leaflet—and machinery for bundling leaflets for dispensing even more information on two to four leaflets.

GUK recently acquired MB Bäuerle, manufacturer of automated folding and inserting systems in Germany, and Sigma Engineering, manufacturer of pick and place product-handling machinery in the Netherlands, to further our goal to provide innovative, time-saving equipment to improve our customers' efficiency in providing products and services for their customers.



www.guk-vijuk.com

See our ad on page 26 of this issue



Harpak-ULMA Packaging, LLC

85 Independence Drive, Taunton, MA 02780 | **PHONE:** 508.884.2500 | **FAX:** 508.884.2501

EMAIL: info@harpak-ulma.com | **WEBSITE:** www.harpak-ulma.com

Harpak-ULMA packaging systems can handle all your medical primary and secondary packaging equipment requirements – from single components through completely automated systems. Our full-service solutions address installation, training, spare parts, service and customer support, while capabilities span robotics and automation, thermoforming, tray sealing, filling, flow pack, stretch, blister, skin pack, and vacuum. Our secondary equipment can prepare products for retail ready displays, create multipacks for bundling of products, and erect and load cartons to get your product out the door. We provide the total solution – from beginning to end, product to pallet – for the medical industry.

Our medical packaging solutions offer maximum product protection, hermetic sealing, the ability to customize the package shape, blister packs for retail sale, hygienic individual and multipacks, easy open options, and protection during transport and handling. These solutions meet the strictest standards required by the medical sector. We can meet them all, like ISO 11607, EN 868, ASTM D1585, ASTM F2097 and ASTM F3475-11. Packages are suitable for sterilization processes and maintain these conditions until opened. You can also expect to be in accordance with CFR 21 Part 11 for documentation.

We have in-process controls like vision inspection for product and printing, product in package height detection, and automatic rejection. Process monitoring includes alarm conditions for critical parameters out of range like time, temperature and pressure. There's also a data integrity option for track and trace of operator in the HMI, plus trending of critical parameters. When it comes to calibration, our critical parameter equipment comes calibrated from the factory, and access points are provided for routine calibration.

Customers seeking to prototype, design, build, implement and maintain packaging automation solutions rely on Harpak-ULMA. We can help you navigate today's complex, rapidly changing packaging landscape; balancing cost and functionality with innovative or emerging processes, materials, and advanced technologies that enhance profitability and improve market performance of primary and secondary packaging operations.

Look to Harpak-ULMA Packaging to prototype, design, build, implement and maintain packaging automation solutions for today's complex, rapidly changing packaging landscape.

Our MISSION



Harpak-ULMA's mission has always been to offer customers a wide range of fully integrated packaging solutions and superior technical support. With over 40 years of combined experience and a comprehensive offering of Primary and Secondary packaging equipment and Automated Systems, Harpak-ULMA is uniquely positioned to offer total packaging solutions customized to each customer's specific requirements.

With technicians strategically located throughout the US and Canada, Harpak-ULMA is committed to addressing customers' needs with ongoing service, training and technical support. Harpak-ULMA is dedicated to being your single source supplier for all your packaging equipment needs.

SALES CONTACT, JERRY RUNDLE

jerryrundle@harpak-ulma.com
508.884.2500

OTHER LOCATIONS:

**3035 Torrington Dr.
Ball Ground, GA 30107
770.345.5300**



www.harpak-ulma.com

See our ad on page 27 of this issue



Our MISSION



Heat and Control, Inc.

21121 Cabot Boulevard, Hayward, California 94545 USA | **PHONE:** 510.259.0500

EMAIL: info@heatandcontrol.com | **WEBSITE:** www.heatandcontrol.com

Providing safeguards that help ensure your products match the prescription.

Anywhere along the line, protect your consumer and your equipment. Efficient detection of foreign objects is critical to consumer safety, brand survival, and will also protect machinery and prevent downtime. We offer a complete line of metal detectors, checkweighers, and Xray inspection systems from our strategic partners: CEIA® and Ishida.

Metal Detection

CEIA, is a world leading innovator of industrial metal detection systems for products such as powders, capsules, tablets, and liquids. Quality control is at the core of CEIA development of the most advanced electronic and mechanical technologies for detection of contaminants accidentally present in products.

CEIA metal detection systems are:

- **Industrial metal contaminant detection**
- **Fully-HACCP and GMP compliant**
- **ISO 9001 certified and constructed of EC and FDA approved materials**
- **Available for free-falling product applications**

X-Ray

The Ishida X-ray (IX) series raises the bar in performance and usability with a global range that meets all local territory standards. Offering customers easy maintenance and stress-free operation, the range includes a robust fail-safe system that prevents a contaminated product reaching the consumer in the event of a power outage or breakdown, helping to minimize the potential for costly recalls.

All models offer exceptionally sensitive foreign body contaminant detection and additional benefits such as the ability to identify damaged and missing products or components, helping the pharmaceutical industry achieve a rapid return on investment. Quick commercial returns are also achieved by ensuring that high quality product leaves the factory gate, safeguarding reputations.

Checkweighers

Ishida also offers high-precision weight checking you can depend on. Checkweighing is key for delivering what your consumers expect by providing accurate verification of a package's weight or count and detecting missing components. Rely on a range of features to handle different products and incorporate new functions to meet the latest requirements. Promote quality control and customer satisfaction with Ishida's extensive know-how in weighing technology.

Rising to the challenge, advancing processes, and helping to bring the best products to the world using science, technology, and creative thinking.

We are process and product technologists committed to advancing pharmaceutical and other industries with science and imagination. Whether you measure success by efficiencies, improvement, or innovation, count on us to deliver results.

Providing sales, service and spare parts expertise across the globe for metal detection, X-ray and checkweighing anywhere along a production line, Heat and Control works closely with strategic partners to bring new technologies and solutions that meet the strictest of quality standards.

To view the entire line up of pharmaceutical solutions offered please visit:
www.heatandcontrol.com/solutions/pharmaceutical



www.heatandcontrol.com
See our ad on page 39 of this issue



HERMA 132M HC

HERMA 211 HC Wrap-around Labeler

HERMA US, Inc.

39 Plymouth Street, Suite 300, Fairfield, NJ 07004 | **PHONE:** 973.521.7254

EMAIL: info-usa@herma.com | **WEBSITE:** www.herma.us

COVID Vaccines and More: Continuous Labeling for Premium Wrap-around Labeler

HERMA has introduced continuous labeling capabilities for its 132M HC Wrap-around Labeler. Adding speed without sacrificing accuracy, the offering comes amid the dramatic push to produce billions of doses of COVID-19 vaccines at an unprecedented pace. The continuous operation is made possible by two new modules – EasySplicer and EasyCutter – that can be retrofitted onto existing machines.

The new add-ons allow label and backing paper reels to be changed or disposed of without production interruption. Considering that reels on high-speed labelers such as the HERMA 132M HC require replacement approximately every 10 minutes, the result is significantly improved output through downtime elimination. With the new EasySplicer and EasyCutter modules, label reels can be changed, and the backing paper reels disposed of, without the machine coming to a standstill.

Ultra-Compact Labeler for Small-batch & Biopharm Production

The HERMA 211 HC Wrap-around Labeler is designed to meet demand for a fully FDA-compliant labeler in a highly compact footprint. The semi-automatic unit is particularly helpful in the transition from

clinical trials to full production, as well as for the smaller-batch manufacturing typically found in biopharmaceutical settings. The HERMA 211 HC is suitable for labeling a wide range of cylindrical products including syringes, tubes, glass vials and ampoules. Capable of applying approximately 30 labels per minute, the HERMA 211 HC can handle webs as wide as 80mm, and products ranging in diameter from 10-120mm.

Next-generation IOT-enabled Label Applicator

The HERMA 500 Label Applicator is an IOT-enabled machine utilizing real-time metrics to optimize production efficiency and consistency, even in a multifactory setting. Capable of achieving labeling speeds up to 200m/min, the HERMA 500 can handle label widths between 80-320mm and roll diameters from 300–600mm. HERMA has enjoyed impressive sales of its signature HERMA 400 Label Applicator, selling more than 4,000 of the label applicators in 2018 alone – half of which were provided to original equipment manufacturers (OEMs). The HERMA 500 is a next-generation label applicator that builds upon its predecessor's best features and integrates Industry 4.0 connectivity. Exceptionally fast, the HERMA 500 has a maximum speed of 650ft/minute, and also offers short make-ready time and industrial-grade Ethernet connection.

Our MISSION



CEO

Peter Goff

HERMA US Inc. is a subsidiary of HERMA GmbH, a Germany-based provider of labeling machinery and self-adhesive labels and materials to the global packaging marketplace. HERMA GmbH's comprehensive range of products spans the labeling production process to include labeling machinery, a variety of adhesive materials, and finished self-adhesive products.

In the United States, HERMA is best known for its equipment. HERMA's flexible labeling machines are designed, developed, and built for integration into industrial processes, while its self-adhesive paper and film compounds are manufactured with unsurpassed precision. The company's range of finished adhesive products includes labels for a broad set of industries, including healthcare and pharmaceuticals, automotive and electrical, chemicals, food, cosmetics and logistics. The company's three divisions comprise nearly 1,000 personnel.



www.herma.us

See our ad on page 31 of this issue.



Jadex Inc.

1393 S. Batesville Road, Greer, SC 29650, USA | PHONE: (864) 879-8100

EMAIL: info@jadexinc.com | WEBSITE: www.jadexinc.com

WE HELP PEOPLE MAKE A MATERIAL DIFFERENCE EVERY DAY.

Jadex Inc. is a US-based manufacturing and material science company utilizing innovation and technology to develop sustainable products that serve the medical, industrial, and consumer markets. The range of products includes custom-designed plastic components, engineered nylon resins and monofilaments, zinc products, and temperature-controlled products that solve both medical and consumer challenges. Jadex Inc. operates out of 19 facilities across the US, UK, and Puerto Rico and has approximately 1,800 employees.

Jadex is the parent company of Alltrista®, Lifoam™, LifeMade™, Shakespeare®, and Artazn®.

Sustainable solutions for cold-chain shipping

Inventors of the world's first foam ice chest, Lifoam™ has been a pioneer in thermal protective products for both industrial and consumer use for nearly 60 years. Now, Lifoam™ works with companies who are looking to reduce the environmental footprint of their cold-chain

shipping operations by providing leading-edge sustainable solutions marketed under their Envirocooler™ product line. Envirocooler™ EVG utilizes additive-infused expanded polystyrene (EPS) that breaks down in a landfill in less than four years while maintaining the thermal and material properties of traditional EPS. Made from 100% biobased materials, Envirocooler™ with Bioffex™ technology allows for landfill degradation in less than four months without leaving microplastics behind.

Material science expertise

For nearly 50 years, Alltrista® has been striving to positively impact people's lives with their products. Experts in the design and manufacture of rigid packaging and custom molded solutions, Alltrista® specializes in innovative, high-volume, precision manufacturing for the medical, pharmaceutical, nutraceutical, specialty, and high-end consumer markets. By incorporating new technologies, such as Compression Blow Forming (CBF), Alltrista® can offer reduced base material, lightweight packaging that minimizes impact on the environment while maximizing cost and efficiency.

Our MISSION



As a material-science thought leader, Jadex™ is driven to provide essential product solutions that protect the health of our consumers and the environment. We are focused on cutting-edge innovations that provide our customers with the most sustainable and responsible ways to deliver everyday necessities -- how, where, and when they're needed.

Our role

The CATALYST for change; enabling customers & consumers to use materials more sustainably.

Our people

MAKERS of essential materials and products that not only we cannot do without, but also that there is no future without.

Our Products

Making sustainable solutions PRACTICAL for our customers and their consumers, today and tomorrow.



www.jadexinc.com

See our ad on page 28 of this issue



James Alexander Corp.

845 Route 94 Blairstown, NJ 07825 | **PHONE:** 908.362.9266 | **FAX:** 908.362.5019
EMAIL: info@james-alexander.com | **WEBSITE:** www.james-alexander.com

Stemming from an uptick in demand, James Alexander Corp. is currently adding manufacturing space to its facility, a project scheduled for completion in Q2 2022. The expansion will provide additional capacity for servicing the company's key markets, including pharmaceutical (OTC & Rx), medical devices, health & beauty products, first aid and diagnostics.

James Alexander Corp.'s patented single-use plastic ampoules, which have undergone a series of enhancements since their initial market introduction, are available in a variety of colors and with an array of applicators, offering singlehanded activation in a customizable format. Meanwhile, the company's glass ampoules can be filled and assembled in single-use swab or dropper packages.

The company also recently introduced a winged device, "The Activator," which provides easier activation for these glass formats. Other services include autoclave sterilization for glass ampoules, blister packaging and formula compounding.

Plastic Unit-Dose Dispensing Systems

James Alexander Corp.'s revolutionary plastic ampoule combines style and ease of use

through single-handed activation. With just a gentle squeeze, the inner membrane ruptures, allowing the contents to be dispensed by the user. The plastic ampoule is available in sizes up to 5ml, as well as a range of colors and applicators.

Unit-Dose Glass Swabs

James Alexander Corp.'s unit-dose swabs offer the stability of glass in one- or two-part systems allowing for convenient application of pharmaceuticals and health aids. JAC also produces single-use glass ampoules for inhalation and dropper tip assemblies for the dispensing of liquids.

The DuoDispersion System® Tandem Package

James Alexander Corp.'s DuoDispersion System® is a refinement to the company's well-regarded tandem swab package. Safe and easy to use, the tandem dropper or swab can be customized to hold two separate liquids, or a powder and a liquid; each individual formula is hermetically sealed in its own ampoule. The DuoDispersion System® can hold a combined volume of 1.2mls that are kept separate until the point of application. Two versions of the DuoDispersion System® are available: a dropper tip and a swab for topical application.

Our MISSION



CEO

Francesca Fazzolari

PRESIDENT

David Robinson

Located in northern New Jersey, James Alexander Corporation (JAC) is a leading contract manufacturer and custom filler of single-use crushable glass and plastic ampoules. Founded in 1976 by Francesca Fazzolari and Alexander Davidson, JAC is a privately-owned, ESOP company that still services several of the same customers it originated with 45 years ago.

James Alexander Corp.'s manufacturing facility features unique, company-designed equipment and produces its patented plastic ampoules, among other product offerings. The company makes great efforts to ensure that most of its components are made in the USA, aligning with its goal of investing in local communities, regional job markets and the American manufacturing sector at large.



www.james-alexander.com

See our ad on page 22 of this issue



Klockner Pentaplast

3585 Klockner Rd., Gordonsville, VA 22942 | **PHONE:** 540-832-3600

EMAIL: kpainfo@kpfilms.com | **WEBSITE:** www.kpfilms.com

Focused on delivering its vision: The Sustainable Protection of Everyday Needs, kp is a global leader in rigid and flexible packaging, and specialty film solutions, serving the pharmaceutical, nutritional supplement, medical device, label film, and durable application markets. With a broad and innovative portfolio of packaging and product films and services, kp plays an integral role in the customer value chain by safeguarding product integrity, protecting brand reputation and improving sustainability. kp's "Investing in Better" sustainability strategy solidifies its commitment to achieving ten clear targets for long-term improvement by increasing recycling and recyclability of products, cutting carbon emissions and continuous improvement in employee engagement, safety, and diversity, equity and inclusion. kp has earned a gold rating from EcoVadis, the leading platform for environmental,

social, and ethical performance ratings, putting kp in the top 3% of companies rated in the manufacturing of plastics products sector.

Founded in 1965 kp has 31 plants in 18 countries and employs over 5,900 people committed to serving customers worldwide in over 60 locations. Collaboration is integral with each opportunity. With a cooperative approach, kp's expert technicians visit you on-site to consult, troubleshoot, train, and provide all the necessary solutions to help optimize film performance. You can also work together with a designated team at the kp i.center, designed specifically, to serve the pharmaceutical, nutritional supplement and thermoforming industries. Equipped with state-of-the-art machinery and expert staff, kp is dedicated to help you improve current packaging and create new sustainable solutions.

Our MISSION



In order to achieve our vision – sustainable protection of everyday needs – we must use our core values and core behaviors in everything that that we do, to create a culture. With our core culture in place we will use this to achieve our strategic imperatives, to add value to our customers, create partnerships and be an employer of choice. Generating these goals our customers will endorse our strategic value proposition in becoming global leaders in recycled content products and high-barrier protective packaging, with the best talent in the industry to achieve best-in-class productivity for our customers.



www.kpfilms.com

See our ad on the inside front cover.



Markem-Imaje

214 Carnegie Center, Suite 101, Princeton, NJ 08540 | **PHONE:** +1 800 847 7123

EMAIL: info@systechone.com | **WEBSITE:** www.systechone.com

Systech solutions by Markem-Imaje provide packaging and industrial coding, product authentication and traceability solutions to help our customers optimize processes, achieve compliance and combat supply chain threats. Built on decades of Systech experience as the leader in pharmaceutical serialization and Markem-Imaje's trusted product identification expertise, our comprehensive brand protection and packaging intelligence suites deliver accurate, real-time insight, actionable product data and digital connectivity.

Packaging intelligence solutions

We understand the operational complexity of running multiple packaging lines in the most efficient way without downtime. The Systech Packaging Intelligence Suite™ helps our customers maximize uptime while ensuring their packaging and coding is accurate and traceable.

Message Management | Manage complex message designs and data for many products accurately and consistently

Verification | Ensure high-quality packaging and readable, accurate codes

Line Control | Optimize coding and printing processes for greater uptime, instant visibility and maximum OEE

Printer, packaging and brand intelligence empowers our customers to:

- Make production lines more efficient and reliable
- Achieve critical sustainability and regulatory compliance objectives
- Connect, protect and track products across the supply chain
- Strengthen consumer confidence in their brands

Brand protection solutions

Total brand protection begins on the packaging line with the right code on the right product. The Systech Brand Protection Suite™ harnesses cutting-edge technology to combat counterfeiting, meet global regulations and engage consumers. The world's leading pharmaceutical companies rely on us to secure their supply chains.

Serialization | Flexible, fast and proven level 1–4 identification platform

Traceability | Seamless and secure data exchange enables end-to-end supply chain tracking

Authentication | 100% unique, non-additive and data-enriched digital identity

Our MISSION



Markem-Imaje delivers intelligent identification and traceability solutions, services and expertise to empower our customers with the right information across the supply chain—keeping products authentic, safe and connected.

Our vision

To connect and protect every product from production to the consumer's hands, strengthening trust and confidence in brands around the world.

Our brand promise

We partner with our customers to unlock the power of information in codes. Through an extensive global network, we innovate and deliver smarter printing, brand protection and consumer engagement solutions. Together we optimize supply chain efficiencies, achieve sustainability and compliance objectives, connect products and protect brands.

This is intelligence, beyond the mark.



www.systechone.com

See our ad on page 3 of this issue



Our MISSION



METTLER TOLEDO
Product Inspection Division
813-889-9500
www.mt.com/pi
pi.marketing@mt.com

Key Pharmaceutical Contact:
Robert Conrad
Sales Director Pharma
813-889-9500
Robert.conrad@mt.com

Manufacturing Facilities:
1571 Northpointe Parkway
Lutz, FL 33558

METTLER TOLEDO

1571 Northpointe Parkway Lutz, FL 33558 | **PHONE:** 813.889.9500

EMAIL: pi.marketing@mt.com | **WEBSITE:** www.mt.com/pi

METTLER TOLEDO is your single source for product inspection solutions offering Safeline metal detectors and x-ray inspection systems, Hi-Speed inline checkweighers, CI-Vision machine vision systems and PCE Track & Trace, serialization, and aggregation solutions. Our broad product inspection line ranges from very basic and economical systems to sophisticated, state-of-the-art systems with customized material handling solutions. Depending on your specific requirements, our systems can ensure perfect product presentation, create codes, verify package and label integrity, ensure weight range compliance, provide tamper-evident sealing, detect physical contaminants and inspect contents inside the closed package.

Track & Trace

METTLER TOLEDO PCE Systems are available to mark packs with individual serial numbers for full traceability of the production or packaging process and collect critical corresponding process data. All packaging formats from single cartons and bundles through to shipping cases and ready to ship pallets can be marked and verified.

Machine Vision

METTLER TOLEDO CI-Vision inspection systems

ensure that products consistently meet manufacturers' quality standards and specifications resulting in perfect product presentation every time.

Metal Detection

METTLER TOLEDO Safeline metal detection systems prevent costly recalls by ensuring your products are free of ferrous, non-ferrous and stainless steel contaminants which can be introduced during processing.

X-ray Inspection

METTLER TOLEDO Safeline x-ray inspection systems can detect ferrous, non-ferrous, stainless steel, glass and stone contaminants, detect mass and check for missing or damaged product inside closed packages.

Checkweighing

METTLER TOLEDO Hi-Speed dynamic checkweighing systems ensure 100% quality control, minimize costly giveaway and give you total peace of mind.

Connectivity & Service

We also offer connectivity and data management solutions and global service support for increased productivity and profits brand protection, and regulatory compliance.

METTLER TOLEDO

www.mt.com/pi

See our ad on page 50 of this issue



ABOUT US



At MGS, we design and manufacture state-of-the-art packaging automation solutions for pharmaceutical, medical device and nutraceutical applications. Our people are experts at integration, and our passion for problem solving and commitment to delivering an exceptional customer experience make us uniquely qualified to solve your toughest challenges.

Whether you're looking for one machine or a large-scale integration, we make sure you have the right equipment to get you to full production efficiency as quickly as possible. As part of the Coesia group of companies, we have experts in nearly every technology and industry around the world to help you find innovative solutions for every packaging product.

MGS

**9900 85th Avenue North
Maple Grove, MN 55369**

**Toll Free: (800) 790-0627
Telephone: (763) 425-8808
Fax: (763) 493-8818**

**Website: www.mgsmachine.com
Email: info@mgsmachine.com**



www.mgsmachine.com

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MGS, a Coesia Company

9900 85th Avenue North, Maple Grove, MN 55369 | **WEBSITE:** www.mgsmachine.com

PHONE: (Toll Free) 800.790.0627 • 763.425.8808 | **FAX:** 763.495.8818 | **EMAIL:** info@mgsmachine.com

Automated Packaging Solutions for the Life Sciences

Medical Device and Pharmaceutical manufacturers are facing new and complex regulations, coupled with increased demand. At MGS, we partner with our Life Science customers to help them achieve faster production, end-to-end traceability, and improved product quality and customer safety.

- Compliance packaging
- Transdermal patches
- Sachets
- Bottles
- Vials and vial cards
- Ampules
- Tubes
- Syringes

Trusted by leading Life Science brands around the world, we've developed complete solutions for:

Medical Device:

- Sutures
- Inhalers
- Stents
- Injectable pens
- Diagnostic kits
- Syringes and vial kits
- Transdermal patches
- Breast augmentation/reconstruction kits
- Vision and contact lens kits

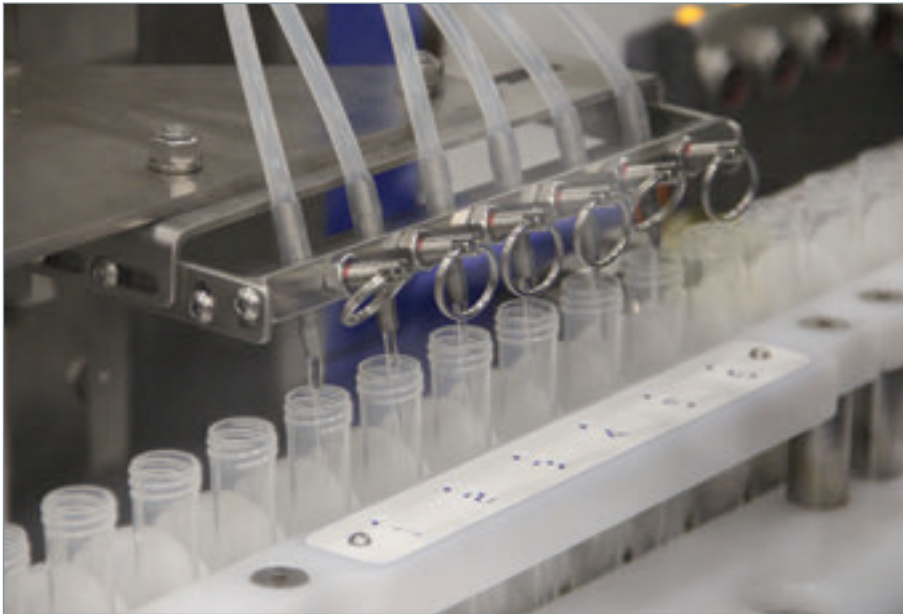
Pharmaceutical:

- Kit packaging
- Blister cartoning/wallet cards

We support all OEM equipment, including engineering, FAT, installation, service and training. Our pharmaceutical validation assistance documentation sets industry standards. Providing these documents to you greatly reduces your commissioning efforts.

RUN YOUR LINE TO ITS FULL POTENTIAL WITH MGS

Bring us your toughest challenges. We'll partner with you to deliver a comprehensive packaging solution that minimizes your risk and gets you to full production as quickly as possible.



Morrison Container Handling Solutions

335 W. 194th Street, Glenwood, IL, 60425 | **PHONE:** 708-756-6660

EMAIL: info@morrison-chs.com | **WEBSITE:** www.morrison-chs.com

Morrison Container Handling Solutions designs innovative packaging solutions for your unique container handling needs.

Innovation, in the pursuit of greater line efficiencies, has kept Morrison Container Handling Solutions the leading manufacturer of custom container handling equipment for over 50 years. Our services are all backed with design expertise and our legendary Support Built In[®], our customer service philosophy, for any questions you have or technical support you need before, during, and after installation.

Our mission is to utilize our experience and design innovation to provide flexible and responsive solutions to the packaging industry. We strive to be the industry standard by providing an exceptional work environment that allows us to meet our customers' needs and exceed their expectations with our promise of Support Built In[®].

Utilizing a variety of our product lines to create custom integrated systems or single solutions that

solve container handling challenges, we approach every line with a unique opportunity to improve throughput and container handling.

As the leading manufacturer of timing screws in North America, we custom design not only screws but also drive units, change parts, down bottle reject integrations, can openers, and Auto Adjust Rails[®]. These solutions address a variety of line related productivity issues from the perspective of your container. For customers looking for robust solutions, we can provide turnkey systems that handle their containers for a variety of packaging applications complete with controls.

With PMMI Certified Trainers on staff, as well as a team of Field Service Engineers and Container Handling Experts, we back all our products with Support Built In[®], so every step of the way, you'll have a partner, from design, to install, to spare parts, and maintenance.

We know moving your containers efficiently is key to packaging success. Our objective is simple: perfectly move your container for the application you need every single time. No two containers are the same, so your handling systems shouldn't be either. We expertly move containers to make filling, capping, labeling, check weighing, metering, indexing, code dating, and just about everything else - easier.

Before arriving at your plant for installation, each custom designed has been tested and approved. So, you can have peace of mind throughout the whole process that our service, commitment, and support starts day one. Leading the industry in fast service and expert follow up, when you work with Morrison, you're working with a team of dedicated solution providers that are excited to enhance your plant productivity and container throughput.

We look forward to being a partner in your productivity. With over 50 years of knowledge and experience, we are determined to analyze problems and provide solutions for your container handling needs - with Support Built In[®].



www.morrison-chs.com

See our ad on page 56 of this issue



Our MISSION



MULTIVAC is the global leader in horizontal thermoform fill-seal packaging equipment. Our thermoform equipment package a wide range of products efficiently and cost-effectively, including medical and pharmaceutical products, food products and industrial and consumer goods. Our product range is the broadest in terms of size, performance and equipment: compact equipment for small volumes, high-speed equipment for large volumes and specialized machines for producing applications including FormShrink and MultiFresh™ packaging.

The worldwide MULTIVAC organization is comprised of more than seventy subsidiary companies serving countries on every continent.

Additionally, MULTIVAC agencies ensure the most advanced packaging equipment is available to medical and pharmaceutical, food, consumer and industrial product manufacturers virtually anywhere in the world. No matter where a MULTIVAC equipment is purchased and installed, our sales and technical service professionals are committed to helping our customers achieve their goals with the world's most innovative and reliable packaging solutions.

MULTIVAC, Inc.

11021 N Pomona Avenue, Kansas City, MO 64153 | PHONE: 800.800.8552 | FAX: 816.891.0622

EMAIL: muinc@multivac.com | WEBSITE: us.multivac.com

The thermoform packaging equipment with MULTIVAC Clean Design™ are solutions for sensitive pharmaceutical and biotech products, such as combination packs, pre-fill syringes, ampoules, vials and injectors. This GMP-compliant equipment concept separates the process area and equipment for maximum control and reliable packaging.

Flexibility

The thermoform packaging equipment with MULTIVAC Clean Design™ provide a high level of flexibility in terms of formats, packaging materials and process validation. The quick conversion of the equipment, for small and medium batch sizes, can be achieved by a simple format change.

Modular construction

The modular construction makes a high level of flexibility possible in the equipment design.

Sensitivity

The innovative equipment concept allows the process area to be strictly separate from

the equipment. Transparent enclosures with large-area doors guard against direct access and environmental influences. At the same time, they provide perfect visibility and cleanability.

Process reliability

The thermoform packaging equipment with MULTIVAC Clean Design™ are equipped with the proven MULTIVAC IPC control to guarantee reliable and reproducible packaging outcomes. The aim of the design in all equipment with MULTIVAC Clean Design™ is maximum visibility and the avoidance of cross contamination.

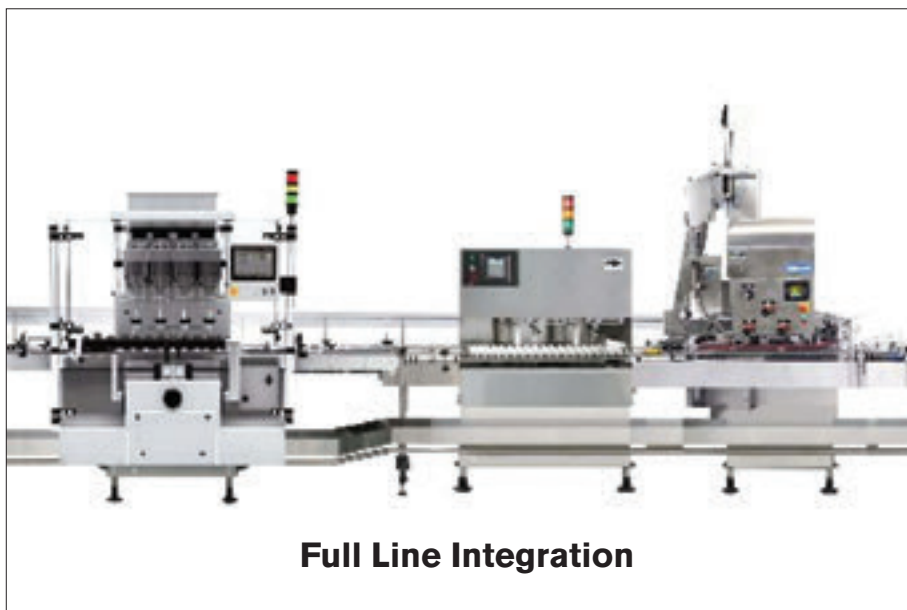
Accordingly, particular emphasis was placed on a equipment design with the following features:

- Strict separation between the product processing area and the equipment technology area
- Visibility of all process-related areas
- Deflector plates in the inside of the equipment
- Widest possible avoidance of hidden voids
- Minimum gap dimensions
- Cable and pipe work routing in enclosed ducts



us.multivac.com

See our ad on page 5 of this issue



Full Line Integration

NJM, a ProMach Product Brand

5600 Kieran, Montreal, QC H4S 2B5 Canada | **PHONE:** 1.800.811.6990

EMAIL: info@NJMPackaging.com | **WEBSITE:** www.NJMPackaging.com

NJM Products Include:

Line Integration – NJM can integrate a tablet, powder or liquid packaging line. As part of this service, we provide equipment and then integrate turnkey systems at the customer's plant, and offer in-plant training, documentation and validation support.

Unscramblers – NJM unscrambling equipment is compact and ideal for packagers. Our unscrambler is designed for round, rectangle, square or oval bottles.

Cappers & Retorquers – NJM cappers include inline belt, inline disc and rotary continuous models. Our compact design makes our cappers easy to incorporate into your packaging operation. We also supply retorquers of inline belt or inline disc type.

Cottoners – NJM cottoners are simple yet precise, with a guillotine tearing device as standard equipment, and options such as missing cotton detection and wisp detection.

Labelers – NJM labelers are customized for labeling applications, and all are built in the same way:

robust, reliable and versatile, with electronic controls and up-to-date container handling features.

Liquid Filling & Closing – Aseptic liquid filling & closing systems for the pharmaceutical liquid dose industries are offered by our partner, Dara Pharmaceutical. NJM is Dara's exclusive sales partner in the USA and Canada.

Print & Apply – NJM print & apply labelers label cases, cartons, bags, pallets, drums and tires. They can be purchased individually, or as part of a turnkey system that includes case erecting, taping, and check weighing. RFID tagging is also available.

Tablet Counters – NJM offers tablet counters from our partner, Cremer. Cremer counters feature thoughtful design, robust construction, quality and accuracy. Cremer tablet counters are also simple to take apart for cleaning, without tools.

Serialization – We offer highly flexible serialization & aggregation or Track & Trace. We successfully integrate OEM components into packaging machines. The standardized interfaces support perfect serialization & aggregation IT integration.

Our Mission



NJM, part of ProMach Pharma Solutions, has been a trusted automated packaging systems manufacturer, integrator, and support resource for over a century. We offer a broad range of technologies and applications, specializing in the needs of pharmaceutical, nutraceutical/vitamin, and personal care product packagers. Complementing NJM's manufacturing and integration expertise, we supply quality packaging line equipment from other leading manufacturers.

The full range of NJM's services – manufacturing, representation of NJM's distributed brands, and integration – makes NJM a one-stop packaging solutions provider offering expert knowledge and experience from the earliest stages of planning through implementation and production. NJM's extensive portfolio includes unscramblers, tablet counters, bottle filling, cottoners, cappers, liquid aseptic processing/filling equipment, labelers, printers and coders, end-of-line equipment, as well as custom solutions and software. With this portfolio and over 100 years of successful experience supporting our customers, NJM is a premier single source provider for fully integrated lines and serialization solutions.

Industries Served:

- **Pharmaceutical Oral Solid Dose**
- **Pharmaceutical Liquid Dose**
- **Nutraceuticals & Vitamins**
- **Personal Care**



www.NJMPackaging.com

See our ad on page 9 of this issue.



OSSID

4000 College Rd, Battleboro, NC 27809 | **PHONE:** 1-800-334-8369 • 1-252-446-6177

EMAIL: ossid@promachbuilt.com | **WEBSITE:** www.ossid.com

Ossid LLC, a ProMach brand, is committed to providing our customers with a superior line of medical packaging machines. Ossid is the leading manufacturer of high-speed packaging and labeling equipment, including tray overwrappers and sealers, weigh price labelers, flow wrappers, case scales, and horizontal form fill seal machines. Working with customers in the medical industry, Ossid provides sterile, safe, and effective packaging equipment solutions.

There's nothing standard about medical devices. Ossid understands the unique and complicated requirements of the medical industry and strives to meet those needs with precision and safety at the forefront of the design. That's why Ossid's line of horizontal form fill and seal (HFFS) machines are flexible to fit your specialized needs, no matter the specifications. If you can imagine it, our team of engineers, with a combined 75 years of experience, will work to design it.

Ossid's medical HFFS machines are versatile; packaging both flexible and rigid medical

package types and are built in accordance with UL 508A standards and AMI sanitary principles. These machines offer many features and benefits including an auto web aligner, static eliminator, hinged upper tooling, servo actuated presses, and a robust framework and guarding package. These HFFS machines are ideal for packaging medical devices, dental kits, syringes, pharmaceuticals and other products.

In addition to HFFS machines, Ossid also is the US master distributor for the Reepack brand of flow wrappers. Flow wrappers can provide a packaging solution ideal for products such as medical mask, alcohol wipes, and more.

Our comprehensive customer service program, including service technicians, parts and training teams know how to help you keep your equipment running at maximum efficiency. Ossid helps its packaging customers protect and grow the reputation and trust of their consumers. ProMach is performance, and the proof is in every package.

Our MISSION



Our mission at Ossid, LLC is to provide our customers with cost-effective packaging and labeling solutions. Ossid works to give our customers a complete flexible packaging solution. Providing customers with excellent service nationwide, we can respond quickly to customers experiencing downtime needs and offer preventive maintenance programs to reduce overall downtime concerns. Our goal is to build long term relationships with our customers. Our committed sales, service and aftermarket parts teams work collectively to quickly and effectively assist customers with their needs. As part of the ProMach Flexibles & Trays business line, Ossid helps our packaging customers protect and grow the reputation and trust of their consumers. ProMach offers end to end capabilities nearly everywhere on the packaging line. ProMach can offer solutions for any customer project or application needs by providing best in class stand-alone equipment from industry leading product brands, partial line integrations, and complete large multi-brand turnkey packaging line integrations. ProMach is performance, and the proof is in every package.



www.ossid.com

See our ad on pages 38 of this issue



Our MISSION



From the start, Packworld USA's sole mission has been to redefine conventional impulse heat sealing by employing the advanced, Variable Resistance Controlled (VRC), TOSS Technology in every machine it builds. Today our entire company is committed to the design and engineering of precision VRC heat sealing machines that are validatable, repeatable, and consistent - capable of producing "Perfect Seals... Every Time".

Our entire team is driven by Packworld USA's core values: quality, trust, honesty, integrity, respect for the individual, teamwork, partnerships, and excellence.

Added together, Packworld USA, with their complete line of benchtop, vacuum/purge, and seal/cut heat sealers has become one of the world's most recognized brands of high-quality heat-sealing machines in today's medical device, biotech, and pharmaceutical markets.



www.PackworldUSA.com
See our ad on page 41 of this issue

Packworld USA

539 South Main Street, Nazareth, PA 18064 | **PHONE:** 610.746.2765 | **FAX:** 610.746.2754
EMAIL: info@packworldusa.com | **WEBSITE:** www.PackworldUSA.com

Packworld USA offers a complete line of precision-controlled heat-sealing equipment engineered with the advanced TOSS Technology – The Optimum Sealing System. Designed specifically for today's medical device, biotech, and pharmaceutical markets, Packworld USA machines produce validatable, repeatable, and consistent seals on all types of medical pouches and related polymeric products. Complementing the line of straight bar heat sealers, Packworld USA also offers machines equipped with Vacuum & Purge and Seal & Cut capabilities for a variety of materials and pouch shapes.

What sets Packworld USA apart from all the rest is its use of the high response, state-of-art, TOSS Technology. All their sealers come equipped with advanced TOSS® PIREG® Heatseal Temperature Control. Unlike other sealing methods, only the PIREG® controller uses Variable Resistance Controlled (VRC) technology to monitor the resistance on the heatseal band responding in milliseconds to adjust temperature precisely over the full length and width of the heat-sealing element accurately up to 500°C.

Packworld USA's energy and engineering resources are dedicated to designing heat seal machines

meeting today's stringent validation requirements of the FDA/GMP/NIST demanded by the medical, pharmaceutical, and bio tech industries. You can be sure they'll meet your needs no matter the application with validatable, repeatable, and consistent seals from one machine to another, from the first pouch to the last.

Packworld USA continues to develop and incorporate additional advanced features. The new touch screen interface provides graphical display of time/temperature/pressure, password protection, recipe storage, data logging, multi-point calibration, and the ability to run in 21 CFR Part 11 compliance. Vacuum/purge, automatic knife cut, safety gates, electronic adjustable stand heights, and automatic bag stretching are all possibilities on Packworld USA precision heat sealers.

Along with its line of validatable pouch sealers, Packworld USA also specializes in the design and manufacturing of custom heat seal tooling for applications requiring contoured shaped heating elements. Packworld USA is so confident in the quality of their machines their entire line is backed with a 30-Month Warranty.



PAXXUS

Americas: 320 South Stewart Avenue, Addison, IL 60101 • **Asia:** 9 Tuas Avenue 4 | Singapore 639365

Europe: Ballyvourney | Macroom | County Cork P12 PX72 | Ireland

PHONE: +1 630.628.1700 | **WEBSITE:** www.PAXXUS.com

PAXXUS is a leading supplier of flexible packaging for the global healthcare market. With over 85 years in the packaging industry, PAXXUS' team of material science experts, packaging engineers, and chemists have created an extensive portfolio of engineered flexible materials to draw from. Providing a wide range of options from off-the-shelf to custom, PAXXUS is known for collaborating with their partners to ensure requirements are well understood and considered every step of the way.

PAXXUS has been recognized and awarded by several industry organizations for technological advancements in flexible material design. Many of PAXXUS' best innovations have been directly inspired

by the complex regulatory requirements of the medical device, pharmaceutical, diagnostic, and life sciences industries. PAXXUS provides state-of-the-art solutions to meet compliance and regulatory requirements around the globe.

In addition to expertly designed products, partners of PAXXUS greatly benefit from the company's comprehensive manufacturing capabilities alongside agile and responsive service. Better quality control, shorter lead times, and real-time project updates are direct results of choosing a vertically integrated supplier like PAXXUS. From project start to finish, the team at PAXXUS is dedicated to providing the highest-quality flexible materials and best-in-class service.

Our MISSION



MISSION:

**Improving the quality of life –
now and for future generations –
through engineered flexible materials**

CHIEF EXECUTIVE OFFICER:

DHUANNE DODRILL

CHIEF TECHNOLOGY OFFICER:

DOUG DODRILL

MANAGING DIRECTOR,

PAXXUS ASIA:

EDDY CHAN

MANAGING DIRECTOR,

PAXXUS EUROPE:

CIARAN FOLEY

CHIEF STRATEGY OFFICER,

VP OF SALES & MARKETING:

DWANE HAHN

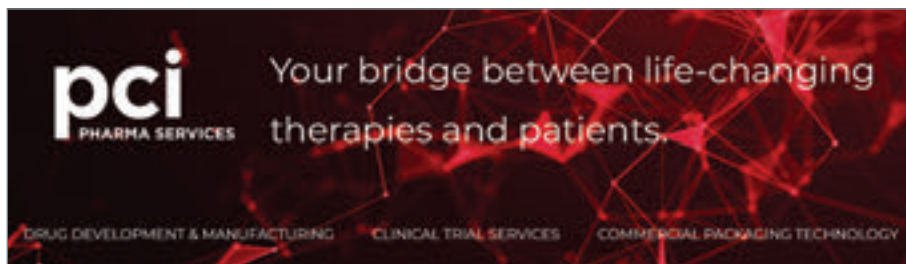
VP OF RESEARCH & TECHNOLOGY:

HENK BLOM



www.PAXXUS.com

See our ad on page 25 of this issue



PCI Pharma Services

Corporate Headquarters: 3001 Red Lion Road, Philadelphia, PA 19114

PHONE: 215.613.3600 | EMAIL: talkfuture@pciservices.com | WEBSITE: www.pci.com

PCI Pharma Services is a global, integrated CDMO, a proven and trusted partner to leading companies in the global healthcare industry. We offer unparalleled expertise and experience in taking compounds from the earliest stages of development through to successful commercialization, delivering speed-to-market and commercial success for our customers.

FACILITIES

State-of-the-art cGMP facilities in North America, Europe, and Asia-Pacific support products destined to over 100 countries; site segregation for Sch II-V, Controlled Substances, as well as a Biotech CoE specializing in injectable & parenteral Cytotoxins, SafeBridge™ Band 1-5 Potent Compounds; Cold Chain packaging and distribution at 2-8°C, -20°C, -40°C, -80°C, and -196°C for Advanced Therapeutic Medicinal Products (ATMPs); low humidity packaging; and modified environments for oxygen and light sensitive products.

DRUG DEVELOPMENT & MANUFACTURING:

Full service Formulation Development including Analytical Development/Characterization. Contained manufacturing for clinical and commercial medicines. PCI's state-of-the-art, purpose-built, contained manufacturing site handles potent compounds with OELs down to 0.01 µg/m³. Contained potent compound manufacturing is further supported by segregated, purpose-built packaging facilities in both Europe and North America.

CLINICAL TRIAL SERVICES:

Tablet, Capsule, Powder and Liquids Manufacturing, Analytical Development, Stability Testing, Clinical Packaging & Labeling including product Blinding &

Randomization, Global Storage & Distribution, sterile & non-sterile drug manufacture for early stage studies, as well as Returns Management & Destruction.

COMMERCIAL SERVICES:

Commercial drug manufacturing including Commercial scale-up. Packaging Services for Oral Solids, Powders, Creams, and Gels, as well as a Biotech Center of Excellence specializing in Injectable & Parenteral including Device Assembly. Analytical & Stability Services in support of commercial supply.

LYOPHILIZATION & STERILE FILL FINISH MANUFACTURING

Our global manufacturing capabilities in complex formulations, and lyophilization covers a broad range of injectables including nanoparticles, mRNA, mABs, proteins, oligonucleotides, and other biologics across multiple delivery formats from vials and bottles to pre-filled syringes and autoinjectors.

RECENT DEVELOPMENTS

Feb 2022 - Added three new exceptional automated sterile fill-finish machines in our San Diego and Melbourne facilities.

December 2021 - PCI acquired Lyophilization Services of New England, Inc. (LSNE), a premier contract development and manufacturing sterile fill-finish organization (CDMO) headquartered in Bedford, New Hampshire.

March 2021 - Expanded cold chain clinical supply storage and distribution capabilities at our Berlin location, a major investment that will provide global access to regional customers.

Our TEAM

CEO: SALIM HAFFAR

CFO: TOM DE WEERDT

CHIEF HUMAN RESOURCES OFFICER:
ANGI CALKINS

CHIEF OPERATING OFFICER:
BRAD PAYNE

CHIEF SCIENTIFIC OFFICER:
MATT HALVORSEN

CHIEF COMMERCIAL OFFICER:
TIM ROBERTS

Other Locations:

North America

Rockford, IL USA
Cincinnati, OH USA
San Diego, CA USA
Madison, WI USA
Bedford, NH USA
Burlington, ON Canada
Mississauga, ON Canada

Europe

Berlin, Germany
Dublin, Ireland
León, Spain

United Kingdom

Hay-on-Wye, Wales UK
Tredgar, Wales UK
Bridgend, Wales UK

Australia

Melbourne, Australia



www.pci.com

See our ad on page 46 of this issue



TF1pro "the latest in Blister Machine technology"

Pharmaworks, a ProMach Product Brand

2346 Success Dr., Odessa, FL 33556 USA | **PHONE:** 1.727.232.8200

EMAIL: Sales@Pharmaworks.com | **WEBSITE:** www.Pharmaworks.com

Pharmaworks Products Include:

- **NEW: TF1 Blister Machine** – A simple and cost-effective blister packaging solution. The TF1 blister machine is perfect for entry-level packagers where budget matters.
- **TF1e Blister Machine** – Features a compact footprint, quick changeover, and the latest in servo technology. The TF1e is perfect for small, medium, or clinical production.
- **TF1pro Blister Machine** – The latest in blister packaging technology, the TF1pro is built for today's demanding cGMP and changeover requirements.
- **TF2 Blister Machine** – A medium output workhorse that is great for deep-draw medical devices and consumer products.
- **TF3 Blister Machine** – All the features expected in a high output machine.
- **TF4 Blister Machine** – With ultra-high output production, this machine is perfect for high volume projects.
- **BlisterMate** – A standout semi-automated blister machine that is great for R&D, low volume type production.
- **Vision Systems** – Scanware blister and print vision inspection systems.
- **Ci6 Cartoner** – The ultimate in pharma-grade intermittent cartoning.
- **Feeding Systems** – Pharmaworks provides a variety of feed systems featuring pick & place, flood feeding, dedicated, and custom robotic technology. All of our feed systems can be integrated with virtually any intermittent blister machine.
- **Blister Machine and Cartoner Rebuilds** – Not ready to invest in new blister packaging equipment? Pharmaworks is the clear leader with over 20 years of experience rebuilding and upgrading third-party equipment.
- **Tooling & Change Parts** – As the leading OEM, Pharmaworks is the go-to source for tooling any of our packaging machines as well as a variety of third-party equipment.

Our Mission



Pharmaworks, part of ProMach Pharma Solutions, is the premier supplier of blister packaging machinery for North America and has a worldwide installed base. Backed by the power of ProMach, Pharmaworks can turnkey any size blister project from our expanded production facility in Odessa, FL.

For 20 years, Pharmaworks has set ourselves apart from other OEMs by not only selling our line of blister machines and equipment, but by rebuilding and upgrading other OEM brand equipment. This uniquely positions Pharmaworks to be a full-service provider for our packaging customers.

Industries served:

- **Pharmaceutical**
- **Medical/ Medical Device**
- **Animal Health**
- **Nutraceutical**
- **Personal Care**
- **Consumer Products**



www.Pharmaworks.com

See our ad on page 11 of this issue.



ProSys Servo Filling Systems

422 E. Fountain Rd., Webb City, MO 64870 | **PHONE:** 417.673.5551 | **FAX:** 417.673.7971

EMAIL: info@prosysfill.com | **WEBSITE:** www.prosysfill.com

ProSys is a premier manufacturer of manual, semiautomatic, and fully automatic equipment for filling Cartridges, Squeeze Tubes, Syringes and Rigid Containers. A global supplier of filling equipment since 1985 with U.S. sales, manufacturing and customer service facilities located in Southwest Missouri.

GLOBAL INSTALLS

- Pharmaceutical
- Cosmetic
- Chemical
- Adhesive
- Sealant
- Grease
- Food

FLEXIBLE COMBINATION FILLING SYSTEMS

- Plastic & Metal Tube Filling Systems
- Tube & Airless Pump Filling Systems
- Tube & Cartridge Filling Systems
- 10, 14 & 30 oz. Cartridge Filling Systems

Squeeze Tube Filling Machines-

speeds from 15 to 300 per minute.

Syringe Filling Machines-

speeds from 20 to 300 per minute.

Airless Pump Filling Machines-

speeds from 15 to 300 per minute.

Cartridge Filling Machines-

speeds from 10 to 250 per minute.

Custom Filling Systems

FEATURES & BENEFITS

- Fill Accuracy to +/- 0.1% by Volume
- Turnkey & Custom Designs
- Air-Free Filling
- Vertical Bottom Up Filling
- Mix & Fill Solutions

(Class 1 Division 1&2, ATEX 0&1)

Our MISSION



Building Quality, Integrity & Value In Our Team, With Our Customers, and in The Equipment We Design, Build & Deliver.

- Tool-free Release System for Simple Changeovers
- "Digital Readout Indicators" for Fast & Accurate Adjustments
- On-line Service & Support
- Recipe Storage & Recall
- Creams, Lotions & Viscous Pastes to 3 Million Centipoise
- Designed & Built in the U.S.A.



www.prosysfill.com

See our ad on page 40 of this issue



Our TEAM



**VICE PRESIDENT OF
TECHNICAL SERVICES**

Peter Mirabella, sales@qsales.com

QProducts & Services

16720 Mozart Ave. Hazel Crest, IL 60429 | **PHONE:** 708-887-2878

EMAIL: sales@qsales.com | **WEBSITE:** www.qsales.com

For over 25 years, QProducts & Services has designed, engineered and manufactured cost saving solutions for transporting temperature sensitive commodities. We provide passive temperature protection products for a number of industries including food and beverage, pharma, healthcare, life sciences, chemicals and transportation.

We strive to continue serving our customers and partners as they navigate the global cold chain during these challenging and uncertain times. Our extensive line of passive thermal protection products are manufactured in the USA in our facility located near Chicago, IL.

Made with our patented insulating systems and designs, our products are known for their durability and optimum performance. With an emphasis on the importance of solid supply chain management for the global economy, QProducts & Services is committed to developing industry leading solutions that protect product integrity with a global footprint servicing many parts of the world.

We believe that the safe delivery of goods, from pharmaceuticals to fresh produce, can protect both your business and your customers. Our mission is to deliver industry leading products and services to every one of our customers, without exception, while maintaining our focus on safety and continuous improvement.

At QProducts & Services, we take our customers' needs and challenges to heart. Our team takes pride in developing long lasting relationships that help you solve the individual needs of your unique supply chain. We're committed to providing not just our quality products, but outstanding service as well. From conducting live temperature studies to annual business reviews, we are committed to your long-term growth toward supply chain excellence.

With strict regulations from governing organizations globally, the validity of passive thermal solutions comes under great scrutiny from a quality assurance standpoint. Our Technical Services division executes temperature testing and validation protocols with subsequent technical reports on the design, operational and performance qualification of our full line of products. Headed by Peter Mirabella, lead contributing author of the Parental Drug Associations Technical Report 72 "Passive Thermal Protection Systems for Global Distribution: Qualification and Operational Guidance," the Technical Services team's main goal is to ensure quality compliance above all else. QProducts & Services engineers are equipped to validate your unique solution using a mix of computer simulated testing, chamber testing and live temperature studies.



www.qsales.com

See our ad on page 14 of this issue



Reed-Lane, Inc.

359 Newark Pompton Tpke., Wayne, NJ 07470 | **PHONE:** 877.290.1090 | **FAX:** 973.709.1091

EMAIL: info@reedlane.com | **WEBSITE:** www.reedlane.com

Reed-Lane is a pharmaceutical contract packager that has been providing innovative solutions to leading RX, OTC, branded and generic pharmaceutical companies since 1959. Its four main specialties are: blister packaging, bottling, pouching and convenience vial filling. Because it is privately held, Reed-Lane serves the complex, ever-changing needs of its customers with great speed and agility. Quality assurance remains paramount at Reed-Lane, where all staff maintain an exemplary standard of cGMP and FDA compliance.

Second Track & Trace-ready Cartoning Line

Reed-Lane has introduced its second Track & Trace-ready cartoning line for unit-level serialization and multi-level aggregation. The line debuts as pharma companies look to initiate aggregation practices well ahead of the looming 2023 DSCSA deadline. The line's configuration allows Reed Lane to serialize individual cartons; aggregate cartons to cases; aggregate cartons to bundles; aggregate bundles to cases; aggregate cases to pallets; or rework previously serialized items according to customer needs. It also offers the ability to add tamper evidence elements.

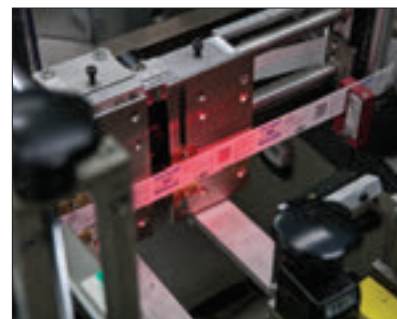
Cold Chain Room for Vial and Ampoule Kitting

Reed-Lane has added a dedicated room for vial and ampoule kitting to its cold chain capabilities. Located adjacent to its existing cold chain infrastructure for limited intra-facility travel and product excursion, the space is capable of labeling vials and ampoules, then kitting them with other components including printed literature. Once products are kitted they are brought to Reed-Lane's carton serialization suite, which can handle serialization from the unit level to full pallet aggregation.

Additional Suites for Secondary Packaging Processes

Reed-Lane also is adding three more packaging suites for secondary packaging processes. The new space adds capacity to accommodate growth in labeling and kitting of vials and syringes as well as general assembly operations. To limit intra-facility travel and product excursion, the areas are located near both the CPO's cold chain infrastructure and two carton serialization rooms.

Our MISSION



Reed-Lane is based at a 132,000-square-foot facility in Wayne, NJ, with more than 27 dedicated production suites for pharmaceutical (Rx and OTC) packaging. The space includes rooms for individual air handling and HEPA filtration systems in primary suites, temperature-controlled storage for bulk and finished goods, and strict environment and security monitoring throughout. The facility is FDA and DEA registered and UL audited.

Packaging and Services Capabilities

- Solid dose bottle filling
- Thermoform and cold form blister packaging
- Pouching for solid dose
- Convenience vial filling and carded blistering
- Secondary packaging such as wallet cards, blister cards and cartoning
- Compliance packaging
- Vial labeling, kitting and hand assembly
- Cold chain storage from 2°-8°C
- Serialization from unit level to full pallet aggregation of bottles and cartons
- Full turn-key services to include component and material sourcing and laboratory services sourcing



www.reedlane.com

See our ad on page 17 of this issue



Schreiner MediPharm, A business unit of Schreiner Group LP

300 Corporate Drive, Suite 10, Blauvelt, NY 10913

PHONE 845.848.9000

EMAIL info@schreiner-medipharm.com

WEBSITE www.schreiner-medipharm.com

Reliable End-to-end RFID Functionality

Robust RFID-Label features an integrated RFID tag secured via the label's special construction, avoiding damage to RFID chips due, for example, to mechanical impact during manufacturing or handling. This assures RFID chip performance from production to final use – especially on round containers with narrow radii.

Tamper-evident Security for Luer-lock Syringes

Cap-Lock is a combination of cap adapter and label that firmly seals prefilled syringes for reliable first opening indication. The specially constructed plastic cap adapter is positioned atop a syringe's primary closure to equalize any difference in diameter between syringe body and closure. A label with integrated perforation for tamper evidence wraps around the syringe body and bottom part of the cap adapter.

Needle-Trap Safety Device

Needle-Trap features a safety mechanism incorporated into a self-adhesive syringe label – allowing needles to be safely secured after use. The cost-efficient solution suits existing dispensing systems and uses standard secondary packaging. Detachable label parts, graduation and counterfeit protection features also can be integrated.

Syringe Label with First-opening Indicator

Syringe-Closure-Wrap features a label that wraps around the syringe barrel and the complete cap. When the user pulls off the upper part of the label, the integrated

first-opening indication is triggered. Due to special security die cuts, the label is irreversibly destroyed and cannot be closed again unnoticed. The solution enables healthcare professionals to quickly ascertain the drugs they administer are originals that have not been tampered with or previously opened.

Customized Seals for Tamper Protection

Schreiner MediPharm develops tailor-made closure seals optimally adapted to the respective application and packaging material. The sealing solutions provide reliable tamper evidence and irreversible first opening indication. They can be combined with analog and digital authentication features for counterfeiting protection and enhanced product security.

Multi-functional Features for Autoinjector-Labels

Schreiner MediPharm offers customizable features for its Autoinjector-Labels, including irreversible first-opening indication with anti-recapping functionality. An integrated NFC chip offers interactive user support and clear digital indication of label opening.

Smart Blister Enhances Medication Adherence

Schreiner MediPharm has developed a smart blister pack to enhance medication adherence by clinical trial participants. When patients push tablets from the pack, real-time data such as medication type, extraction time and specific cavity is stored and transmitted to a database via smartphone app or reader.

our MISSION



Schreiner MediPharm is a global leader in the development and manufacture of innovative specialty labels with value-added benefits that have set the standard in the highly demanding healthcare and pharmaceutical industries. Schreiner MediPharm's expertise is based on 70 years of experience as a high quality supplier and reliable partner to the biggest names in the healthcare market. Schreiner MediPharm has its world headquarters in Oberschleissheim, near Munich, Germany, and U.S. headquarters in Blauvelt, New York, 30 miles from New York City.

Schreiner MediPharm develops and produces customer-specific, intelligent labeling solutions with value-added functions that simplify the dispensing and administering of pharmaceuticals to enhance safety and reduce process costs. The company's products include specialty peel-off labels; labels with integrated hangers; multi-page labels; brand protection and RFID solutions; and functional syringe labels.

schreiner
MediPharm

www.schreiner-medipharm.com

See our ad on the back cover of this issue.



Sepha Ltd.

Unit 25 Carrowreagh Business Park, Carrowreagh Road, Dundonald, Belfast, BT16 1QQ United Kingdom

PHONE: +44 2890 48 48 48 / USA 616-888-9081 | EMAIL: info@sepha.com | WEBSITE: <https://sepha.com>

Sepha provides the pharmaceutical industry with a range of non-destructive leak testing solutions, deblistering machines and laboratory-scale blister packing machines for use in the manufacture of pharmaceutical blister packs, medical devices and healthcare products.

Leak Test & CCIT Solutions

Sepha offers a range of innovative, non-destructive leak test and CCIT solutions developed to detect leaks in a wide variety of pharmaceutical blister packs, vials, ampoules, bottles, pre-filled syringes, blow fill seal strips, sachets, pouches and medical device packaging.

Key features:

- Non-destructive & deterministic test methods
- Enable to identify leaks as small as 1µm
- In line with ASTM standards & USP 1207 guidelines
- Can form part of 21 CFR Part 11 compliant system

Packaging Solutions

Sepha has developed a range of small-scale, high-quality blister and medical device packaging solutions that can handle all thermoform and cold-form materials and offer high quality packs for all requirements including child resistant/peelable blister packs, medical devices and monitored unit dose packs.

Ideal for:

- Clinical trials and stability studies
- Package development
- Marketing samples
- Low volume production of specialist drugs

Deblistering Solutions

Sepha provides a comprehensive range of automatic, semi-automatic and manual deblistering machines that enable the safe recovery of valuable product from all types of rejected blister packs.

Key features:

- Suitable for push-through, child resistant and peelable blisters
- Deblistering capacity up to 60 blister packs per minute
- Handles thermoform/alu and coldform/alu blisters
- No product or foil contamination

Contract Packaging Services

Our dedicated packaging facility offers a range of blister packaging equipment that provides cost-effective, low volume batch runs of blister packs or medical device trays within short timelines.

Our MISSION



With over 40 years' experience in the pharmaceutical packaging industry, Sepha has a great understanding of the packaging requirements and role primary packaging plays in bringing new drugs to market.

We have established a global reputation for innovation and development of tailored, high-quality equipment for use in the manufacture of pharmaceutical blister packs, parenterals, medical devices and healthcare products.

In line with our philosophy to ensure quality and safe products for patients and their families, we have partnered with hundreds of pharmaceutical companies across the globe. We understand their needs to ensure product security through package integrity and the importance of extended shelf life and speed-to-market. Their success is our success.

We endeavour to develop lasting partnerships with all our customers, irrespective of their location across the world. In many cases, we have become regarded as a natural extension of their R&D, production, and packaging departments.



<https://sepha.com>

See our ad on page 43 of this issue



Spee-Dee® Packaging Machinery, Inc.

1360 Grandview Parkway, Sturtevant, WI 53177 | TOLL FREE: (877) 375-2121 PHONE: (262) 886-4402

EMAIL: info@spee-dee.com | WEBSITE: www.spee-dee.com

Fill with Confidence

Since 1981, Spee-Dee has earned a reputation for building reliable, accurate and durable dry filling systems. Customers trust Spee-Dee to improve efficiency, productivity and profitability. Our test lab is second-to-none and offers the ability to simulate your full production line at our facility.

Highly Accurate Auger Fillers

Servo technology eliminates time-consuming manual adjustments. Ideal for dry fill applications such as powdered drink mixes, nutraceuticals and more.

Hygienic, High-Speed Rotary Fillers

Fill rigid containers with ease and accuracy. Changeovers are a breeze with patented magnetic funnels and all tool-less change parts. An open design allows 360 degree access. Ideal applications include nutraceutical gummies and powders. A patented segmented carousel assembly streams gummies without bridging, guaranteeing an accurate fill, every time.

PLC-Based Checkweighers

Electro-Magnetic Force Restoration (EMFR) weighing technology is ten times more accurate than strain gauge models. Tool-less belt changes, USB port for easy data collection and calibration by your technician - all in a small footprint. Sanitary, heavy-duty and inclined models available.

Reliable, Durable Volumetric Cup Fillers

Quick-change cups are easily inserted in minutes. Telescoping cups offer the ability to fine tune the fill weight for fill and weight accuracy. Designed to handle a variety of applications from simple hand-fills to interfacing with automatic equipment. Speeds up to 140 fills per minute.

Fast, Accurate Cannabis Filling Systems

Ensure fast and accurate filling with a unique tare/gross jar weighing system that checks both jar tare and gross weights—all while being easy to clean and helping maintain a sanitary environment. Easily integrates with a variety of multihead weighers. Reach speeds of up to 40 jars per minute as you fill jars with a range of 1 to 28 grams of flower cannabis.

Our MISSION



Spee-Dee® Packaging Machinery, Inc. supplies filling solutions and checkweighers for the food, pharmaceutical and nutraceutical industries. Designed for specific applications with simplicity in mind, Spee-Dee systems achieve accurate, reliable filling and weighing, and are backed by a commitment to service and quality. Since 1981, companies around the world have trusted Spee-Dee fillers and checkweighers to improve efficiency, productivity and profitability.



www.spee-dee.com

See our ad on page 33 of this issue



Starview Packaging Machinery, Inc.

1840 St. Regis Blvd, Dorval, Quebec H9P 1H6 Canada | TOLL FREE: 888-278-5555

EMAIL: sales@starviewpackaging.com | WEBSITE: www.starviewpackaging.com

Starview Packaging Machinery, Inc. is the leading manufacturer of packaging machinery for high-visibility packaging with over 30 years of supplying standard and custom packaging systems to our customers and distributors.

Providing the Medical Device and Pharmaceutical Industry with innovative packaging machines for:

- **Medical Device Packaging**
- **Pharmaceutical Packaging**
- **Blister & Clamshell Packaging**
- **Customized Packaging Equipment**
- **Systems with Automation and Integration**

We design, engineer, and manufacture a comprehensive line of manual, semi-automatic, and automatic sealing machines. Available in shuttle, rotary, carousel, and inline conveyor configurations, a variety of standard and custom sealing areas are available to meet the specific requirements of customers and maximize productivity. Machines are configured to suit the specific application such as retail-carded packages, sterile medical device packages, or pharmaceutical wallet packages.

With over a century of combined experience, Starview's management team strives to continuously exceed our customer's needs and

expectations. Our distinct competitive advantage is in providing a complete range of both standard and customized quality packaging systems backed by solid machine designs, robust machine construction, and superior service.

Starview offers many value-added features for our machines such as product sensing, printing and/or verification, hydro-pneumatic cold seal presses, robotic product loading, automatic packaging materials loading, automatic inline fold-over, finished package unloading with reject feature for non-compliant packages, RFID tooling identification and all-electric machine models.

Additional features can include process controls for third party validation, direct access with on-screen adjustments for critical value calibration, and an ethernet connection for real-time data acquisition. Quick-change mechanisms for tooling sets, on-screen sealing press adjustments, machine performance tracking, and ANSI Class 4 safety make Starview machines an excellent choice.

Machines are offered worldwide through a network of Authorized Distributors who provide sales and service as well as the packaging materials used in conjunction with our machines.

Our MISSION



The owners, management, and staff of Starview are dedicated to designing and manufacturing packaging machines in North America with the highest quality fit, and finish backed up with industry leading customer service.

Starview's directive is to produce a full range of sealing machines for medical device packaging, pharmaceutical packaging and retail high visibility packaging. We offer standard machines with an array of custom and pre-designed options to provide our clients with machines to match their manufacturing requirements. Starview offers to design, manufacture, and integrate many value-added features including materials verification, custom automation, and robotics for its clients.



www.starviewpackaging.com

See our ad on page 6 of this issue



IBC 150 Integrated Bottle Center

Our MISSION



S500 Labeler

Uhlmann Packaging Systems is the world's leading manufacturer of high-quality packaging machinery for the pharmaceutical industry.

Equipment includes:

- Blister machines, from compact models to complete, full-featured, high-speed blister lines
- Cartoning systems for blister, bottle, pouch, vial and kits
- Integrated bottling lines
- Casepackers, overwrappers, bundlers, and palletizers
- System engineering and line integration
- Validation and training service, including Topman training
- Inspection systems, peripheral products & services
- Custom-designed tools & format parts

From its northern NJ-based U.S. headquarters, Uhlmann provides sales support, service technicians, on-site training, parts inventory, and onsite engineering for line integrations. The company's 600,000-sq.-ft. world headquarters is located in Laupheim, Germany.



www.uhlmannpackaging.com

See our ad on page 1 of this issue

Uhlmann Packaging Systems LP

44 Indian Lane East, Towaco, NJ 07082 | PHONE: 973.402.8855 | FAX: 973.316.9330

EMAIL: info@uhlmann-usa.com | WEBSITE: www.uhlmannpackaging.com

IBC 150 Integrated Bottling Center sets market standard for monoblock design

Uhlmann's IBC 150 Bottling Line features fast, simple format changeovers, short setup times, and optimally linked stations integrated into its monoblock line architecture. Additionally, Uhlmann's fully integrated IBC 150 bottling line is compact, easy to operate, customizable and easily adapted to run canister or packet desiccants at maximum 150 bpm while providing Cremer's renowned 100% tablet and capsule counting accuracy. Designed for small to medium-sized batches of solid dose products, the bottling line combined with Uhlmann's Labeler S500 and end-of-line Case Packaging Center 10 for comprehensive, bottle-to pallet packaging.

The IBC 150 Bottling Line also is equipped with an end-to-end bottle tracking system to combat counterfeiting and ensure product reliability.

Measuring less than five meters in length, the line integrates bottle transport, counting modules and an automatic capping unit. It operates up to 20 percent more efficiently than a solution made up of separate components, and handles bottles ranging in diameter from 25 to 125mm. Micro-stops and ramp-up phases are eliminated, a format-free bottle transport guarantees continuous product flow, and a touchscreen HMI provides intuitive operation.

Other highlights from Uhlmann's machinery portfolio include:

New S500 Labeler + Inspection Machines:

An essential element of every Track & Trace by Uhlmann application is the in-house software developed to record, aggregate, and manage serialization data collected from the machine. This is transferred to line and site management levels. The S500 bottle labeler is designed for throughputs up to 150 bottles per minute. It comes equipped with thermal ink jet printing and optional serialization. The system has the ability to reject labels at the application point or downstream.

The S500 360[®] Inspection system is designed to couple 2D helper codes on topserts or the bottom side of bottles to enable automatic aggregation at Uhlmann's UAP system. Benefits:

- Existing packaging lines – whether from Uhlmann or other suppliers – are quickly capable of serialization
- Flexible, modular system for individual configuration and extension
- Fast and straightforward format adjustment without format parts
- Ergonomic operation and easy accessibility
- GMPcompliant machine design for easy maintenance and cleaning
- Uhlmann HMI: SmartControl operating panel for all functions – including camera and printer



Veritiv

1000 Abernathy Rd, Building 400, Suite 1700, Atlanta, GA 30328 USA | PHONE: 1.844.VERITIV

WEBSITE: veritivcorp.com/healthcare-packaging

Packaging for protection

Just as our individual bodily systems affect our health as a whole, packaging impacts your entire business. Veritiv's healthcare packaging is full spectrum and includes material, cost, form and delivery.

Packaging design

To ensure integrity, our structural and graphic designers create designs that increase protection, enhance tamper evidence, maintain sterility, improve traceability, protect your brand and more.

Testing & validation

We validate and certify your packaging's integrity through comprehensive testing. Then we evaluate results against prescribed parameters to support your quality management system requirements.

Vendor managed inventory

Be confident in a reliable supply chain with our vendor-managed inventory programs. We provide supply chain visibility to help you predict product availability and improve the overall flow of materials.

Automation

Whether you need a fully integrated system or a plug-and-play solution, Veritiv equipment solutions get you to market faster, giving you more control and improved forecasting.

LEAN expertise

Our LEAN Advisors are experts at discovering hidden

waste in packaging processes and creating strategies to eliminate it.

Kitting & fulfilment

Veritiv helps you streamline operations for measurable savings—whether you're experiencing rapid growth, expanding into a new market, or simply interested in reducing space, staff and equipment.

Sourcing & materials

Stay on schedule and maintain compliance with our global sourcing capabilities. We take a material-neutral approach and offer everything from sterile packaging to cold chain materials.

Sustainable packaging

We help you meet your sustainability goals by evaluating your entire packaging lifecycle and identifying improvement opportunities along the way. Our responsible designs and use of recyclable or renewable materials helps get you there.

The result? More value, reduced complexity and increased speed to market.

When demand outpaces supply and lead times start to lengthen, you need a partner like Veritiv who delivers dependably. One who can recommend alternatives when appropriate. A partner who can rely on longstanding supplier relationships. Veritiv proactively presents opportunities to strengthen and grow your business.

Our MISSION



As a North American leader in packaging solutions, Veritiv® Healthcare Packaging protects the products that protect lives. Our approach and expertise enable us to bring insights and opportunities that go beyond the packaging itself incorporating design, testing, validation, security, brand protection, efficiency, quality, sustainability and compliance. It's not just a package—it's your product, and that is our purpose.



veritivcorp.com/healthcare-packaging

See our ad on page 57 of this issue



Weiler Engineering, Inc.

1395 Gateway Drive, Elgin, IL 60124 | **PHONE:** 847.697.4900 | **FAX:** 847.697.4915

EMAIL: solutions@weilerengineering.com | **WEBSITE:** www.weilerengineering.com

Weiler Engineering, Inc., a leading provider of aseptic custom Blow/Fill/Seal liquid packaging equipment for pharmaceutical and healthcare applications, is committed to the highest standards of excellence and to further expanding products and systems to enhance patient care. Weiler's proprietary ASEP-TECH® B/F/S packaging machines produce shatterproof, durable, aseptically-packaged products in one uninterrupted operation. This hands-free manufacturing process ensures that parenterals, ophthalmic solutions, and respiratory drugs reach the marketplace sterile, in the most cost-effective manner possible - every time. The ASEP-TECH® System is the culmination of 60 years of innovation in machine design and sterile process development, producing the most advanced aseptic liquid packaging process machinery available today.

The Weiler design incorporates the three-step process of blow molding, aseptic filling, and hermetic sealing of liquid products in one sequential operation on a compact machine frame. Weiler's patented electronically controlled fill system, automatic sterilization system with integral data collection, and filter integrity test system are

provided as standard equipment for each machine configuration. Each machine is also equipped with a HEPA air shower to ensure a Class 100 environment under dynamic conditions in the nozzle shroud area.

Weiler's latest innovation is the NEW compact ASEP-TECH® **LAB+** Blow/Fill/Seal machine, which is ideal for Stability and Clinical batches for pharmaceutical products and/or small development batches using advanced aseptic technology. This revolutionary small footprint design focuses on ease of changeover and product range flexibility. The versatile ASEP-TECH® **LAB+** machine features servo-driven motion controls and a modular platform that offers options such as Single-Use Technology (SUT) or conventional Clean-in-Place (CIP) and Steam-in-Place (SIP) technologies, a new patent pending Grade A filling zone and Particulate Matter Removal (PMR) system.

ASEP-TECH® Blow/Fill/Seal machines are proudly manufactured in the USA, designed and built by Weiler Engineering, Inc. in a 140,000 ft², state-of-the-art manufacturing plant. Weiler's manufacturing facilities and corporate offices are conveniently located near Chicago's O'Hare International Airport.

ABOUT US



INNOVATION DRIVEN BY SCIENCE!

FACTS:

- Recognized as an advanced aseptic technology by the USFDA
- 60 years serving global markets
- Experience gained from 25 years operating a captive pharmaceutical CMO
- Close operation with regulatory authorities – compliance is key!
- Quality + Operational Know-how + Integrity

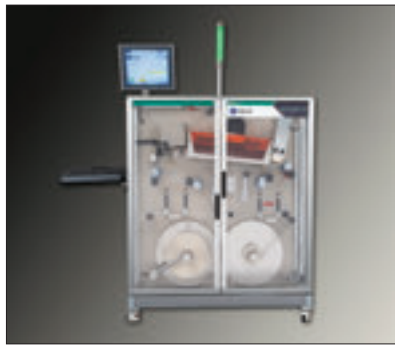
GOALS:

- Focus on the science of the technology for maximum customer benefit
- Simplicity of design to maximize product flexibility and minimize footprint
- Optimum service support throughout the markets we serve = high customer satisfaction!

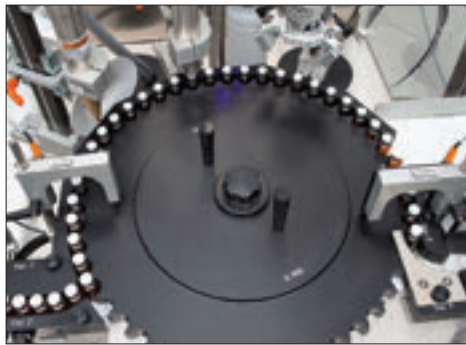


www.weilerengineering.com

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Autonomy® Digital Label Printer



VCV Vial Coder



VR-72 Trunnion Labeler



RL-420 Rotary Labeler

WLS, a ProMach Product Brand

1256 N. Church Street, Moorestown, NJ 08057 USA | **PHONE:** 1.856.273.3377 | **FAX:** 1.856.295.9903

EMAIL: WLS@ProMachBuilt.com | **WEBSITE:** www.WeilerLS.com

Rotary Labelers – Pressure-sensitive labelers for labeling a variety of product shapes vertically.

Vertical In-line Labelers – Pressure-sensitive labeler for labeling a variety of cylindrical products vertically.

Horizontal In-line Labelers – Pressure-sensitive labeler for labeling a variety of cylindrical products horizontally.

Label Heads – Pressure sensitive label heads with label print and inspection options including serialized codes and RFID tags.

New! Label Presence Inspection – WLS's new ViaView label presence inspection stand-alone station is ideal for verifying label presence prior to final packaging.

Label Coders – For stand-alone or integrated high-speed coding of labels, including serialized codes.

Label Printers – Autonomy® drop-on-demand digital ink label printers with UV curing and full label inspection.

Vial Coders – For code printing on vials or bottles using ink jets or lasers.

Documentation & Certifications – DDS, FAT, SAT, IQ/OQ and Trace Matrix documents as well as UL, Seismic and CE certifications.

Field Service – US and European field service team also offering equipment training courses and maintenance contracts.

ProMach Pharma now offers sales and service capabilities through our European office.

Our Mission



About WLS

WLS, part of ProMach Pharma Solutions, is an industry-leading designer and manufacturer of high-speed rotary and in-line labeling machines and serialization, coding and label printing solutions for the pharmaceutical and medical packaging markets as well as the food, beverage, personal care, and consumer markets. With over three decades of experience, our mission is to improve our customer's labeling capabilities and ensure that our labelers provide them with the highest possible OEE.

Industries Served:

- **Pharmaceutical**
- **Medical**
- **Nutraceutical**
- **Food**
- **Beverage**
- **Consumer Products**

Learn more about WLS at
WeilerLS.com



www.WeilerLS.com

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Ready plan and Philadelphia's
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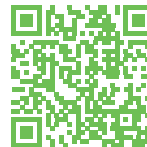
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Our award-winning Needle-Trap is a cost-effective solution to help prevent accidental needlestick injuries. The simple, economical design of its integrated safety mechanism allows the needle to be quickly and safely secured after use. Needle-Trap can be easily incorporated into conventional labeling systems and is adaptable to the most common syringe types.

To learn more, scan the **QR code** below, go to **www.needle-trap.com** or **call (845) 848-9000**.

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Learn more about Needle-Trap's reduced environmental footprint:
www.needle-trap.com/en/advantages

Innovative labels. Smart solutions.

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