



Human Factors: Quick Design Wins

- + Lundbeck's Turnkey Line Packs Ampules, Vials
- + Data Issues Abound as DSCSA Deadline Nears
- + Patient Training Gaps Persist for Self-Injection
- + New Products in Packaging and Automation

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Lundbeck’s Turnkey Line Packs Ampules, Vials

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Human Factors Projects—Quick Wins and Practical Tips

From Pharmapack Europe: A Roche human factors engineer and psychologist by training discussed packaging solutions that unfolded from smaller projects. A key takeaway: not every package update needs to be a major, labor-intensive redesign—sometimes you can find quick wins.

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Op-ed: Data Issues Abound as DSCSA Deadline Nears

Trading partners are working diligently to connect data systems in compliance with the Drug Supply Chain Security Act (DSCSA). But significant challenges remain ahead of the November finish line.

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PMMI Media Group editors fanned out across PACK EXPO International in October in search of packaging innovation. Here’s what they found in pharma and device packaging.

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Study: Patient Training Gaps Persist for Self-Injection

“If you have a better first experience going into a therapy or medication in that first month or that first try, if you feel comfortable and confident or at least informed, the odds of you staying on that therapy go up significantly,” says Tim McLeroy.

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Listerine Advances More Sustainable Oral Care Packaging

New Listerine Cool Mint Zero Alcohol Concentrate Refills in a 100-mL PET bottle use 60% less plastic when compared to a standard 500-mL bottle of Listerine while providing the same benefits.

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The opinions expressed in articles are those of the authors and not necessarily those of PMMI. Comments, questions and letters to the editor are welcome and can be sent to: editors@healthcarepackaging.com. Mailing List: We make a portion of our mailing list available to reputable firms. If you would prefer that we don't include your name, please write us at the Chicago, IL, address.

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Patient-centricity: Beyond Requirements

A curious eye and empathetic messaging can deliver more accessible packaging and healthcare for patients.



It's heartening to see the ways the packaging community uses empathy to create safe and useful medication delivery. Of course, we're all a healthcare patient at some point, and we want easy-to-understand packaging for ourselves and our loved ones.

On pp. 29, we hear from Roche's Tiffany McIntire on a couple of quick wins developed by packaging engineers. She offered examples of the ways that simple features like symbols can be added to existing packages to create a clearer opening point or cues for day and night doses, even when the existing package technically meets regulatory requirements.

Of course, there'll always be room for improvement. Our Q&A

on pp. 51 covers a recent study suggesting that for many patients using autoinjectors, more training is needed. Something that struck me is that when a clinician tells a patient that something is easy, it can potentially do more harm than good. Patients may feel there is something wrong with them if they have issues because it "should be easy." Patient training and messaging that don't discount fear can go a long way.

Also, check out new packaging and machinery innovations. We cover new materials and automation advancements for life sciences in our PACK EXPO feature on pp. 43, as well as our Cold Chain Corner and New Products. Major trends across these systems include sustainability and flexibility. So many companies are looking for the ability to pivot to new product formats on the same line. +

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1 Sterility Issues Cause Glaucoma Medication Recall

According to a recent *FiercePharma* article, Canada's largest generic drug-maker Apotex has issued a voluntary recall of six batches of its glaucoma medication brimonidine tartrate ophthalmic solution due to concerns about potential contamination during the manufacturing process. Per a statement, Apotex detected the sterility issue during its own routine quality control checks, and no adverse events have been reported. The company is advising patients to stop using the affected products and to consult with their healthcare providers to determine if an alternative treatment is necessary. The recall affects approximately 200,000 packages of the medication that were distributed across Canada.

2 Wearable Patch for Cardiac Imaging

Per *Medgadget*, a team of engineers at the University of California San Diego has developed a wearable ultrasound patch for cardiac imaging. The postage stamp-sized patch can be worn on the chest and uses AI and ultrasound waves to perform advanced imaging of the heart, including during exercise. The patch provides information on how much blood the heart is pumping and can be worn for up to 24 hours. The researchers hope the technology will lead to more accessible and widespread cardiac monitoring. The device provides real-time images of the heart and the deep learning model used for image segmentation is the first to be functionalized in wearable ultrasound devices.

3 High-Tech Face Mask Charged by Breath

Researchers at City University of Hong Kong have developed a self-charging face, according to a recent *Medgadget* article. The mask, made from two triboelectric nylon fabric layers, generates an electric charge as the layers move back and forth during breathing, maintaining its ability to adsorb tiny particles, such as SARS-CoV-2 viruses, for much longer than conventional masks. The technology can provide enhanced protection for healthcare staff while reducing fabric waste. Conventional masks lose their electrostatic charge and ability to bind particles over time, particularly in humid environments (like right in front of your mouth). The researchers' self-charging mask enables prolonged electrostatic adsorption, making it an efficient, durable, low-cost air filter. The technology does not require an external power source.

4 Danny Trejo Helps Warn Against Counterfeit Drugs

According to a recent *ABC 7* article, the Los Angeles County Sheriff is leveraging actor Danny Trejo's influence to warn against the dangers of counterfeit pharmaceuticals. Also unveiled during a press conference was the campaign's slogan, "Bad meds kill real people," as well as a public safety video starring Trejo. The effort also includes the LA Police Department, Homeland Security Investigations, the National Association of Boards of Pharmacy, and more.

5 FDA Rejects Neuralink's Human Brain Implant Trial

According to a recent *BioSpace* article, Neuralink's application for conducting a human trial of its brain implant technology has been rejected by the FDA due to incomplete information on its impact on the human body. Neuralink's implantable device is designed to help people with brain and spinal injuries by connecting human brains directly to computers. The FDA requested additional information about Neuralink's technology, including how the device will work, how it will be implanted, and what potential side effects may arise from the implantation. The tech has been tested on animals with major ethical pushback.

6 FDA Changes Animal Testing Requirements

A recent *NPR* article noted the FDA has dropped the requirement for drugs to be tested on animals before humans in trials. It amends the U.S. FD&C Act originally passed in 1938. This has long been the goal of animal rights activists who maintain that animal testing is ineffective and expensive. At the other end of the argument is the National Association for Biomedical Research, which claims animal testing "remains the best way to examine complex physiological, neuro-anatomical, reproductive, developmental, and cognitive effects of drugs to determine if they are safe and effective for market approval." The new law does not ban animal testing; it simply lifts the requirement.

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“I’ve worked at some companies where if you start going above and beyond what FDA asks, [people worry] that you’re going to raise the bar and you’re going to have to keep performing there. And my response to that would be, ‘God forbid we have usable products.’”

—TIFFANY MCINTIRE, ROCHE PHARMACEUTICALS (FOR MORE, SEE PP. 29)

SAFETY IN ROBOTICS:

“As [robots] get easier to use, and more friendly looking, it’s still a machine, and we still need to have training and appropriate respect for it.”

—COURTNEY FERNANDEZ, APPLICATION ENGINEER AT UNIVERSAL ROBOTS

“I truly feel like independent pharmacies, we’re the Flintstones and the rest of the industry are the Jetsons. We’re using sticks and stones to figure out DSCSA, and the reality is many aren’t thinking about it... I hope there’s a clear line drawn around what’s expected of independent pharmacy dispensers.”

—CHRISTOPHER ANTYPAS, PRESIDENT & COO, ASTI’S SOUTH HILLS PHARMACY

1 in 25

OF 25 CANCER DRUG DEVELOPERS REVIEWED, only United Therapeutics received a perfect fair inclusion score for including minority patients in clinical trials over a five-year window, with seven others in the top quartile, per *BMJ* analysis via *Endpoints News*.

37

THE NUMBER of “novel” drugs approved by CDER in 2022, defined as new drugs never before approved or marketed in the U.S.

Source: FDA

2.6%

THE CAPACITY per sterile manufacturing site has had a median increase of only 2.6% in the past five years. Median overall equipment efficiency (OEE) has decreased 2.7%.

Source: McKinsey’s POBOS Program

\$13.9 Bn.

THE APPROXIMATE value of the global pre-workout supplements market in 2022, predicted to grow to approximately \$27.2 billion by 2032.

Source: Extrapolate

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EU Approves Legislative Amendments to MDR

On March 7, 2023, the European Council (EC) voted 27-0 on regulation to extend the deadline for the certification of medical devices under EU’s Medical Device Regulation.

According to an EC press release, producers of medical devices will now have until Dec. 31, 2027, for higher risk devices and until Dec. 31, 2028, for medium and lower risk devices to meet legal requirements put forth by the MDR. “Today we have agreed on measures that will allow the industry to continue bringing essential medical devices to the market and ensure that patients have safe access to medical devices,” said Acko Ankarberg Johansson, Swedish Minister for Health Care. —*Keren Sookne*

Smart Sensors Spot the Unexpected

Predictive maintenance innovations are allowing manufacturers to avoid bottlenecks before they happen. That’s according to PMMI Business Intelligence’s 2022 report, *The Future of Automation in Packaging and Processing*. Data analytics have been used to assess operational conditions for years, with many setups connected to historians to track machine performance. But many more are not connected, and measurements collected by existing infrastructure are not necessarily the ones needed to be most effective at performing predictive maintenance. Enter “smart sensors,” an emerging category of hardware disrupting the status quo of predictive maintenance. Smart sensors are typically small micro-electro-mechanical systems (MEMS) devices with integrated wireless communications and microprocessors, designed to be placed on existing infrastructure creating new points of asset measurement. They have emerged in the last three to four years largely as a result of MEMS technology dropping substantially in cost thanks to its broad uptake in consumer applications. With sensors no longer cost-prohibitive, assets can be retrofitted and monitored in new ways. Data collection and analysis advancements like smart sensors help manufacturers understand where bottlenecks can appear in production lines and what the causes are for downtime, enabling significant jumps in efficiency. Get the free executive summary: hcpgo.to/F22

—*Casey Flanagan*



Upcoming Events

- + PDA Visual Inspection Forum, April 17 - 18, Baltimore, MD
- + INTERPHEX, April 25 - 27, New York, NY
- + ISTA Forum: TempPack and TransPack, April 30 - May 3, Houston, TX
- + the[PACK]out, May 9 - 11, Austin, TX
- + GS1 Connect: Ascend, June 5 - 7, Denver, CO
- + HDA Traceability Seminar, August 29 - 31, Washington, DC
- + PACK EXPO Las Vegas, September 11- 13, Las Vegas, NV



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3 Temperature Control Developments from PACK EXPO

Companies showcased sustainability and pallet advancements for cold chain shipping.

KEREN SOOKNE, EDITOR-IN-CHIEF &

MELISSA GRIFFEN, EDITOR-IN-CHIEF, *CONTRACT MANUFACTURING & PACKAGING*

According to a *Businesswire* report, “In recent years, several healthcare stakeholders have actively undertaken initiatives to replace the conventional packaging materials with sustainable, biodegradable, and recyclable alternatives, in order to reduce the environmental impact. In addition, players engaged in the healthcare packaging industry are incorporating circular economy, which facilitates greater sustainability within supply chains, to offer a systemic approach to address environmental issues.” (*Editor’s note: The word “biodegradable” doesn’t mean much without context.*)

So it’s no surprise that companies presented sustainable packaging options and pallet advancements for cold chain transport at PACK EXPO International 2022.

As temperature during freight travel continues to be a significant focus, especially for companies operating out of multiple locations within the pharmaceutical and medical device industry, **Storopack’s** Renature Thermo packaging is designed to be a sustainable system that meets cold chain standards.

Renature Thermo packaging comes in poly-wrap and paper-wrap substrates, both of which are fully recyclable. The starch inside the wrap is certified BPI-compostable and the entire kit has gone through Western Michigan University’s recyclability study for further certification.

“We do not laminate the poly or the paper with starch because we want the customer at home to be able to open up that pouch, remove the starch, place it in their compost pile, and return that starch back to nature, then recycle that poly or that paper material,” says Tony Iadevito, National Sales Manager at Storopack. He further explains that Storopack can reuse the wraps recycled back to the company within the production of its other product lines.

Storopack customizes the Renature Thermo packaging to meet the size requirements of its customers, along with offering the standard cube-sized kit. This customization helps Storopack’s customers

reduce the amount of substrates otherwise used to fill a space that is too big for their products.

“We’re also going to be introducing, at the start of [2023], custom print capabilities. Because we convert our own poly and paper materials, we’re not stuck to large minimum orders buying master roles from the manufacturers,” says Iadevito. This provides the flexibility to custom design holiday messaging and other print on the packages as Storopack can mandate on a truckload-to-truckload basis to provide that custom print before the customer returns to



❶ Storopack’s Renature Thermo packaging is designed to be a sustainable solution that holds up cold chain standards for healthcare and food & beverage applications.

❷ The starch inside the wrap is certified BPI-compostable.

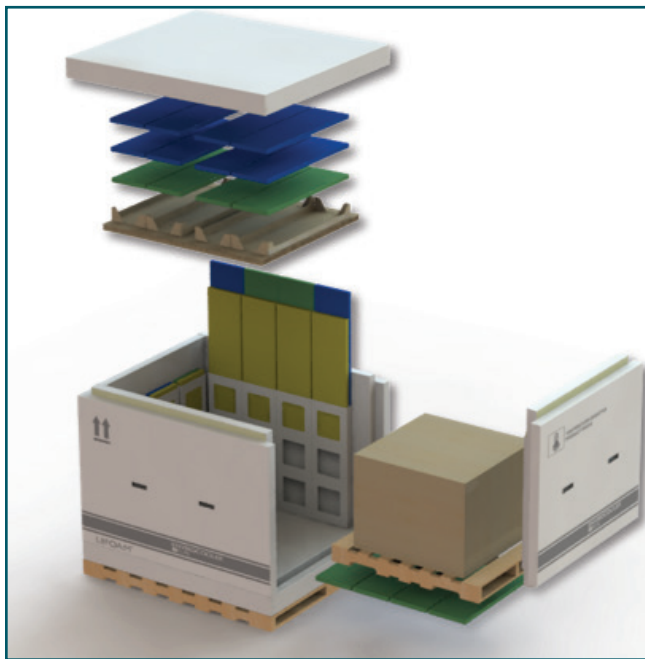
its regular messaging.

Storopack started producing its Renature Thermo product line from its North Carolina production facility at the start of 2022, which will soon be joined by a launch at its California facility. Storopack plans to open up two new facilities within the next four years as well with the ultimate goal to have between eight and 10 production facilities solely tied to the production of its Renature Thermo product line, according to Iadevito.

Elsewhere in the cold chain scene, **Lifoam Industries, LLC**, a division of LifeMade Products LLC, a Jadex Inc. company, has debuted its XP-4 Pallet Shipper, a pallet-in-pallet cold chain shipper for thermal protection during passive transport of pharmaceutical products.

As Alex Arabea, Senior Brand Manager, explains, “The XP-4 acts as an exterior shell working with phase change materials (PCMs), water-based gels, and our ePUR technology which insulates around 30% better pound-for-pound than traditional polyurethane.” Two XP-4s can fit on a standard airline cookie sheet, and the system is designed for reusability. “You can break it down and fold it flat to ship back empty at a fraction of its assembled height, and then build it right back up at your facility to use again,” he says.

The walls of the XP-4 are designed for ease of assembly and disassembly while offering robust protection for temperature-sensitive payload. “For shipping duration, we’re able to achieve 120 hours tested to ISTA 7D between 2 to 8°C, but there is the opportunity to expand based on changing out the phase change materials,” he says.



❸ The walls of Lifoam’s XP-4 pallet-in-pallet shipper are designed for ease of assembly and disassembly while offering robust protection for temperature-sensitive payload.

Outer dimensions of the XP-4 are 67.75” x 59.75” x 62.25,” while payload space is 48” x 40” x 34” (assuming a 5” pallet).

Arabea highlights robust testing and data. “The XP-4 is based off a previous iteration, and we’ve redesigned this model to be lighter, use fewer PCMs, and assemble more easily.” As he puts it, you’re not always going to have Arnold Schwarzenegger assembling pallet shippers at your warehouse or distribution facility, so ease of use is important to be accessible to a wide range of personnel.

Lifoam Industries has also launched its store-drop-off recyclable Propak gel bags. They’ve taken their widely established standard Propak gels and placed them in a recyclable film. Applications for the gel bags range from pharmaceutical shipping to consumer food deliveries—anywhere water-based gels are being used.

“We’ve seen the trend towards sustainability and know that these are going to a lot of home users who want to dispose of gel packs responsibly after their deliveries,” Arabea says. “My typical example is you get a meal kit once and say, ‘Cool. A free gel pack for my kid’s lunch.’ Then you get a second one. ‘Oh nice, another one.’ You get a third, and ask, ‘What do I do with this?’ And you’re wondering how to responsibly dispose of it.”

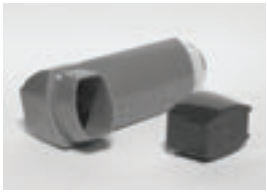
Unlike some gels that cause clogs when poured down drains, the user is able to pour the liquid from recyclable Propak gel bags down their home drain without clogs. “It’s perfectly safe to put this gel down the drain. We have worked with water and wastewater treatment organizations and conducted testing to confirm that it won’t harm anything down the line,” he explains.

The bag has disposal instructions in clear print on the back, using the How2Recycle symbol that consumers are familiar with. Empty Propak gel film is recycled via store drop-off, as curbside recyclable films for this application are not readily available. “Consumers see that How2Recycle symbol on everything from water bottles to food packaging and more, so it helps with that consumer education piece. They’ll know how to properly dispose of these products and take advantage of the sustainability that we built in, without them having to do extra research on their own,” says Arabea.

Branding has also been updated on the bags. “Our gel bags look a little bit different than they have in the past—this is a move towards sustainability. We’ve done all the testing to say that there’s no requalification necessarily, there’s no negative impact. Just a sustainable wrapper around the same gel,” he says. ❖



❹ Lifoam’s widely established Propak gels have a new recyclable film package.



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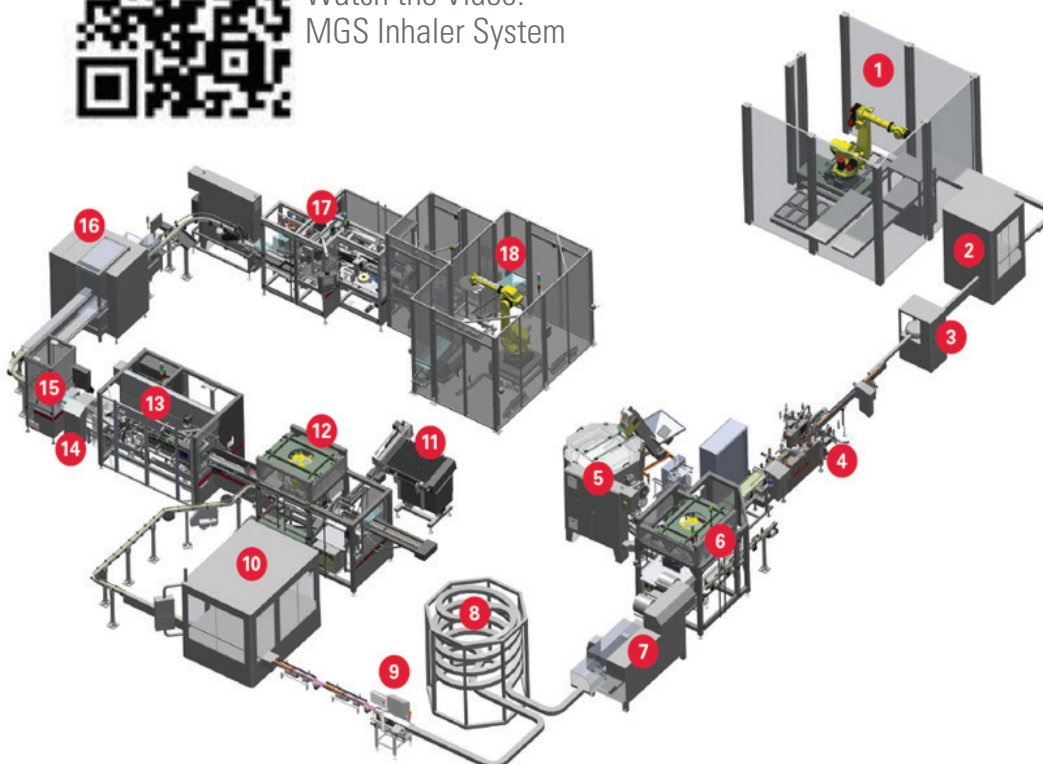
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Paper-thin Smart Label Tracks Location, Temperature, and Shock

With high value placed on traceability and brand protection, this ultra-thin label is designed to ‘snip and ship’ to track goods—from pallets to individual shipments—with near real-time positioning.

KEREN SOOKNE, EDITOR-IN-CHIEF

When you think of logistics and traceability, you may not think of money printing machines right off the bat. But the shipping of just such machines was one of the earliest use cases for a new paper-thin smart label. Find out how this device tracks products, from machines to pharmaceuticals and beyond.

Launched at CES in January 2023, the 2mm-thin Smart Label tracks shipments large and small with an easy cut-and-apply model. The tracking device is the result of collaboration between **Pod Group**, a **Giesecke+Devrient (G+D)** company, in partnership with **SODAQ** and **Lufthansa Industry Solutions (LHIND)**.

The Smart Label uses the low-power cellular 5G connectivity standard (LTE CAT-M) to send data regarding device location and temperature back to a centralized dashboard, “enabling logistics companies to track valuable goods which could be as small and light as an envelope containing important documents or as large as a full-sized oil painting,” reports Pod Group, provider of IoT SIM cards and advanced connectivity solutions for enterprise IoT applications. “The powerful middleware platform provided by LHIND enables the use of geofences with notifications that can be set to alert the user when the package enters or leaves key points along the supply chain.” These alerts offer an added level of transparency, with product diversion on the minds of many logistics professionals managing complex supply chains.

The printed battery keeps the label as light as possible, while the use of low-power connectivity ensures that battery life is optimized and can last up to six months on average. The companies report that the label could be used multiple times, depending on the frequency of the transmission. “It’s quite flexible in terms of how you deploy it. For example, you can have the label pinging once every two hours or once per day,” says Sam Colley, CEO of Pod Group. “While the average lifespan of a Smart Label is six months, it’s measured more in terms of the

amount of pings because it’s not always on—it’s using battery when it pings. We’re guaranteeing around 150 locations on each label per deployment, and we’ve seen it go way beyond that.” He says that number will continue to increase as they work with their hardware manufacturers to optimize the technology.

Excluding the printed battery, the label materials are recyclable. At their end of life, labels are collected by the user to be sent back in sets of 10 to 50 to Pod Group, who works with SODAQ to recycle the label



↑ The user cuts the corner of the adhesive label to activate it, places it on the box/shipment manually, and scans a barcode with a smartphone. (All images credit: POD Group)



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❖ MATERIAL DEVELOPMENTS

materials. The printed battery is non-toxic and can reportedly be disposed of as regular waste.

How it works

Beyond location, the sensors are capable of monitoring temperature, and the opening of a parcel, in what looks like a standard shipping label.

Ease of use was a prime objective. Colley says that over the last six months in particular, there's been considerable optimization to make the customer's unboxing process as seamless as possible, and also to overcome a lot of the challenges with new technology, which include flexible batteries and CAT-M cellular technology.

The user cuts the corner of the adhesive label to activate it, places it on the box/shipping manually, and, using a smartphone, scans a barcode that is then referenced in the Lufthansa platform to track their asset(s), whether they have one hundred devices or thousands. "It sounds a little too simple, almost. But it really is. It can't be complex in these scenarios, because if there's a complex registration process, how do you manage it? That's why we felt this all-in-one solution was an effective way to speak to the market," he adds.

To meet market demands, they sought to create a fully integrated and turnkey option from a labeling perspective that offers reliability, guaranteeing that where coverage is available, the label will connect. Because there are still questions around when or how companies can fully leverage the power-saving elements of that network infrastructure, partnering closely to create a broader offering for the market made sense. "With the embedded systems of G+D in terms of eSIM, and the connectivity, there's quite a lot of integration work that has to go on between hardware and that infrastructure," Colley explains.

Use cases



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Finland
France
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Hungary
Iceland
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Latvia
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Luxembourg
Netherlands
Norway
Poland
Portugal
Romania
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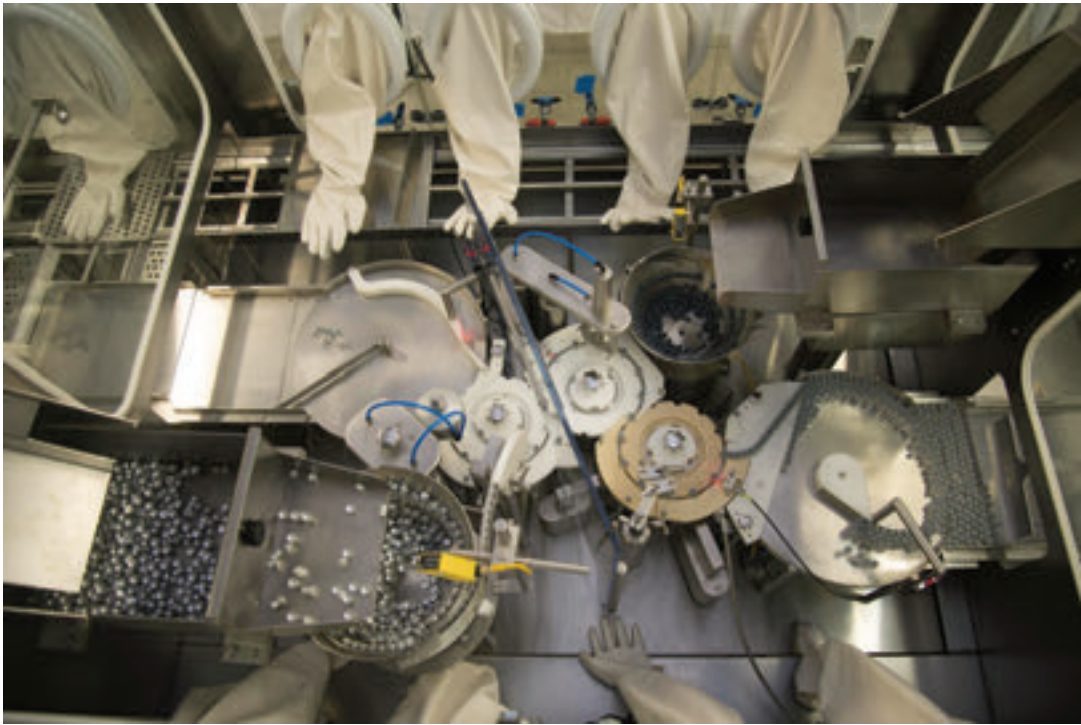
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← The 2mm-thin Smart Label tracks shipments large and small with an easy cut-and-apply model.

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✦ MATERIAL DEVELOPMENTS

One division of G+D builds the aforementioned money printing machines, shipping them to governments and central banks. “They wanted to make sure that these machines had arrived at the customer without any issues—that they hadn’t been left outside for too long, etc. They were looking for a solution that was cost-optimized and easy to use, and that they could just affix to the side of one of these packages and send it internationally. This was when we started to work with SODAQ,” says Colley.

In one of the first proof of concepts, Pod Group tracked machine shipments via freight and air—one traveled halfway across Europe on a truck to another port.

Based on internal examples, Colley notes that it’s evolved into a much deeper partnership for an optimized label along with Lufthansa’s platform to incorporate the SIM card and connectivity. “It creates a whole business model around if you can prove the providence of the package in terms of where it’s been, then it can carry more value, or claims against you can be massively reduced,” he adds. “It’s a very broad supply chain use case.”

Colley says that insurance companies have expressed interest because it allows them to potentially create new business models. “Car insurance models have changed drastically with the introduction of tracking devices in cars. You have the OBD-II [onboard

diagnostic] unit that you can plug into, and then deploy pay-as-you-drive models with telematics. Obviously, this isn’t telematics, but insurance companies can apply this technology similarly, reducing insurance premiums, developing more bespoke offerings, and maximizing the touchpoints they have.”

As Ingo Pietruska, VP of Business Development at LHIND, adds, “Smart mobile devices will play an increasing role in the digital transformation across all industries. Because of its form factor and its unique technology, the Smart Label enables a series of new use cases.”

The technology has been deployed, with one example being Walbing’s Track & Pay Service. Pre-CES, the partners were already receiving orders and they’ve garnered a number of inquiries since the announcement in January.

Pre-integrated solutions—software, hardware, and connectivity—offer benefits. While there’s flexibility if customers have preferences, the idea is that they can order a few thousand labels, take one, snip off the corner, and stick it on the case. He says, “If someone’s looking to incorporate it, there are not too many things they have to worry about. It’s straightforward, plug-and-play. We’ll continue to better optimize what the label can do. Today it’s 150 pings per label, but the next generation could be far greater.” ✦

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Lundbeck Pharmaceutical's Turnkey Line Packs Ampules, Vials

This flexible system by Schubert runs 17 formats with a 30-minute changeover. Features include Transmodul robots and a Beckhoff XTS linear servo transport system.

To modernize the packaging of its medications for neurological diseases, Lundbeck sought a new packaging system for ampules and vials.

The Danish pharmaceutical company specializes in diseases of the brain and has been active in neuroscientific research for more than 70 years. The manufacturer markets products worldwide and requires high-performance and high-quality production. A new state-of-the-art pharmaceutical packaging machine that packs ampules and vials into cartons was needed to replace an existing system.

As these medications were already established on the market, there was no need to develop machine-compatible packaging with all the partitions and compartments from scratch. This accelerated the tendering process to just four months before the contract was awarded to **Schubert-Pharma**, the pharmaceutical division of **Schubert Packaging Systems**, parent company of Schubert North America.

Lundbeck emphasized its need to be able to work without large accumulation in front of the packaging area. To achieve this, only a few products were permitted to be in transit between the upstream processes and the actual packaging process. Therefore, conventional feeding technology was not suitable.

To set up the packaging process as efficiently, reliably, and securely as possible, Schubert-Pharma developed and delivered a fully integrated, turnkey line with all system components procured by Schubert.



↑ Five pipettes are loaded onto one of the Beckhoff transport system's movers.



↑ Schubert developed a format-part-independent forming process for the partitions.

The line consists of a Schubert cartoner, a **B+S labeler**, a bundler from **Pester**, case packer, and palletizer. Schubert-Pharma solved the special, piece-precise feeding of ampoules and pipettes through to cartoning by means of a small accumulation and the XTS transport system from **Beckhoff Automation**.

To implement the entire process—labeling the product, packing into cartons, bundling the cartons, case packing, and palletizing in the production hall—a U-shape was chosen for the packaging machine. Thanks to the flexible design of the transport system, the pillars at the installation no longer posed an obstacle. Schubert also developed a universal forming process for the various inner frames, which is format-independent and therefore takes no additional time during format changeovers.

The packaging machine is designed to pack two sizes of ampoules into one-, two-, five- or 10-count cartons. Furthermore, vials, some with pipettes, are packed individually into four different carton sizes. Partitions are used with all formats to protect the glass containers from damage. Each carton is also supplied with a patient insert or booklet and is then labeled.

The entire line process, from carton and partition forming, to loading the pharmaceutical products and package inserts, to closing and labeling, is handled with the aid of a Schubert Transmodul

transport robot. This creates a safe, secure, and closed packaging process. Schubert's experience in the pharmaceutical sector and advanced robot technology ensures that all specified product and packaging tolerances are met.



↑ A robot picks up one pipette for each carton of vials.

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Piece-wise feeding

A special feature of the packaging machine is feeding the ampules from the labeler and the pipettes from the sorter. Beckhoff's XTS feed system delivers the products quickly and accurately to the cartoner's loading area. Short buffering is possible with the process-safe feed. Thirty so-called "movers," small independent transport modules, move on the rail-based system. They are equipped with




↑ Labeled vials are loaded into cartons.

corresponding format parts for transporting the ampules and pipettes.

Following automatic separation, five products each are loaded into a mover. Then eight movers are grouped together at the Schubert cartoner's loading robot. The robot's tool can pick up 40 ampules or pipettes at once and pre-group them into units of 10. From these pre-groupings, another robot takes the required number for the cartons waiting in parallel on the Transmodul.

The vials, already labeled, are then placed individually into the cartons. Once the package inserts have been added, the cartons are closed and labeled and move on to the bundling machine, the case packer, and finally to the palletizer. In total, the flexible pharmaceutical packaging line processes 17 formats and delivers an output of up to 420 products/min. Due to the line's modular design and optimized carton-forming process, a format changeover takes only 30 minutes.

"Thanks to the extremely high flexibility of the packaging line, the pharmaceutical manufacturer can now benefit from a significant competitive advantage in the market," says Karin Kleinbach, Sales Director at Schubert-Pharma. 

This article first appeared in HCP-Affiliated publication, PACK EXPO International 2022 Show Daily, on Oct. 23, 2022.



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Human Factors Projects—Quick Wins and Practical Tips

KEREN SOOKNE, EDITOR-IN-CHIEF

TOP THREE TAKEAWAYS

- | | | |
|---|--|--|
| 1. Not every package update requires a major, labor-intensive redesign. | 2. Leveraging lo-fi prototypes can save time before usability studies. | 3. This expert hypothesizes that we're years away from digital leaflets. |
|---|--|--|
-

There are a variety of valuable human factors updates that fall outside of what the packaging and medical device communities think of as the “regulated space,” according to Tiffany McIntire, Principal Human Factors Engineer at Roche Pharmaceuticals.

In her years of experience, McIntire—also a psychologist by training—has worked on over 10 submissions with the FDA and has transitioned from working on combination products to looking at the wider portfolio at Roche.

At Pharmapack Europe in February, she discussed packaging solutions that unfolded from smaller projects. A key takeaway: not every package update needs to be a major, labor-intensive redesign—sometimes you can find quick wins.

Leverage lo-fi prototypes: cheap and fast

After learning from human factors workshops with cross-functional teams, understanding production needs and writing requirements, then it's time for early design iterations. McIntire noted

that the team starts out with low-fidelity 3D prototypes—even pulling from other examples or making them from clay to introduce the concept—as well as digital prototypes.

This gives people an idea of the potential look and feel. “With new prototypes, or new fidelity levels of the prototypes, we made sure that we were still being traceable to the requirements, we updated the requirements every time because sometimes when people get something in their hands, new things come to mind. ‘What about this? What about that?’ ‘We don’t want to have sharp edges.’ ‘I don’t think our manufacturing line can actually make this shape.’ So you start to get more out of people,” she noted.

Through those iterations, they down-select before performing usability studies. “You’ll notice we didn’t create a prototype and then directly go to usability testing. That’s the most expensive development path that you can go down, and a lot of companies do it,” McIntire said. In her perspective, it’s preferable to trust your colleagues to do fast and cost-effective iterations using each other’s experience and brains to just go through these iter-



This is Part 2 of a two-part series. Part 1 covers a checklist for identifying when to bring in human factors, the patient-centricity of simplified manufacturing, and more:



PATIENT ADHERENCE

ations yourselves, as she noted, “because if you put it in front of the patient and you ask them, you’re going to spend a lot more time doing that.”

Quick wins

McIntire highlighted examples of two packaging updates from colleagues in which they weren’t starting from scratch, and instead made relatively quick improvements to existing designs. In these cases, projects were initiated by packaging engineers, who checked in with human factors folks throughout. “That’s one of the cool things about having a patient-centric culture is you don’t have to rely on one function to do the job. It becomes everybody’s job to have patient-centricity in mind,” she said.

Evolution of a tamper-evidence seal and openability (from Packaging Development Engineer Monica De Bardi):

- At left, the package has a tamper-ev-

idence seal, and checks the boxes for regulations, but patients had trouble with how to open the box.

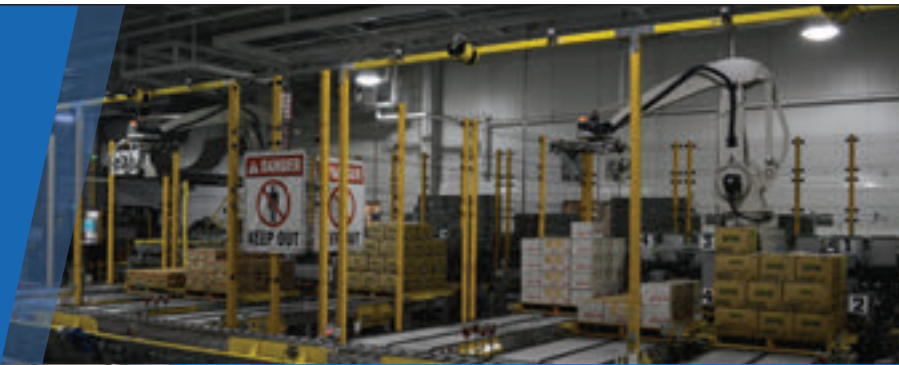
- As McIntire explained of the design at center, “We put an opening underneath

the tamper-evidence seal, but people still couldn’t really see it. In this illustration, you can see it quite clearly. But on the box, it’s a tiny perforation with clear tape. We were still getting reports



↑ At right, added dots and an arrow signify where to open the carton. (Both images courtesy: Roche via Pharmapack Europe).

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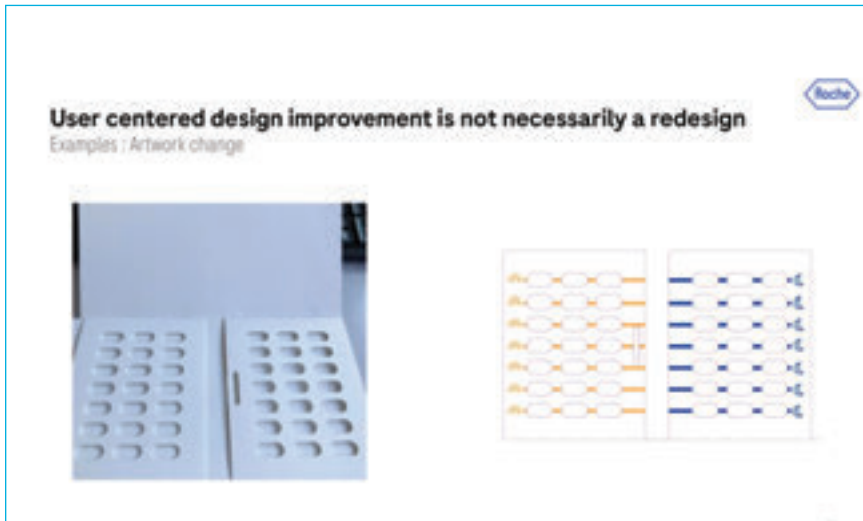
of difficulty and of people using tools to open it, and that's not ideal. That's a requirement of ours now that people shouldn't have to use tools to open a box."

- They arrived at a carton at right which is now their standard. "We have the dots and the arrow featured very clearly. People can see that they push their thumb in and open the box,"

she said. This didn't require requalification, as it was a quick artwork and labeling redesign.

Clinical trial packaging update (a project by Miriam Lauras, Global Packaging Engineer):

- In one clinical trial dosing regimen (*left*), patients had to take three pills in the morning and three pills in the evening. A blister package was selected over a bottle for dose tracking.
- Adding simple sun and moon illustrations and colored lines offered patients helpful cues for which to take in the morning and evening. "They can even keep track themselves—it may sound silly, but even if it's upside down," she said. "If you've ever tried to take medication consistently, at some point, it gets a little disorienting. We had a few different iterations from [Lauras] the packaging engineer. Then our team



↑ Simple sun/moon illustrations and colored lines to a blister offer patients helpful cues.

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reviewed them and gave some quick feedback. In a day or two, we had something that was an improvement. This is the stuff I love doing,” said McIntire.

Digital leaflets

When an audience member asked about digital leaflets, McIntire noted that there are still some difficulties in the market despite sustainability benefits. While Europe as a

whole is closer than the U.S. to eliminating the folded paper leaflet in favor of a digital option, she said QR codes—which have made many headlines for their usability—may not have come quite as far as people think. “In the COVID situation, you would have expected that we were using more QR codes in the U.S.,” she said. “I went to the Human Factors Ergonomics Society last year, and there were some statistically significant studies where over 50% of people didn’t know what a QR code was, didn’t know how it worked. They thought they had to have an app on their phone in order to open it.”

Beyond consumer/patient acceptance, she said there’s work to be done among brand owners themselves. “I think it would take a new department of 120 plus people to be able to actually realize digital leaflets. If you look at the current processes that we’re doing right now, the maintenance behind them, the updates, the cybersecurity, all of that for the different affiliates, it requires a lot of manpower,” McIntire explained. “So, I think until there are regulations that are asking us to have digital leaflets—it’s going to be something where industry might be trying to push the health authorities—but I don’t know if it’s going to happen even in the next 10 years. I would like for it to.” +



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Safety Resource

McIntire highlighted the resources on the Institute for Safe Medication Practices (ISMP) site. They have a newsletter that includes events that have happened in pharmacies. “So you can kind of get a feeling for these case studies, different use errors that are happening,” she said.

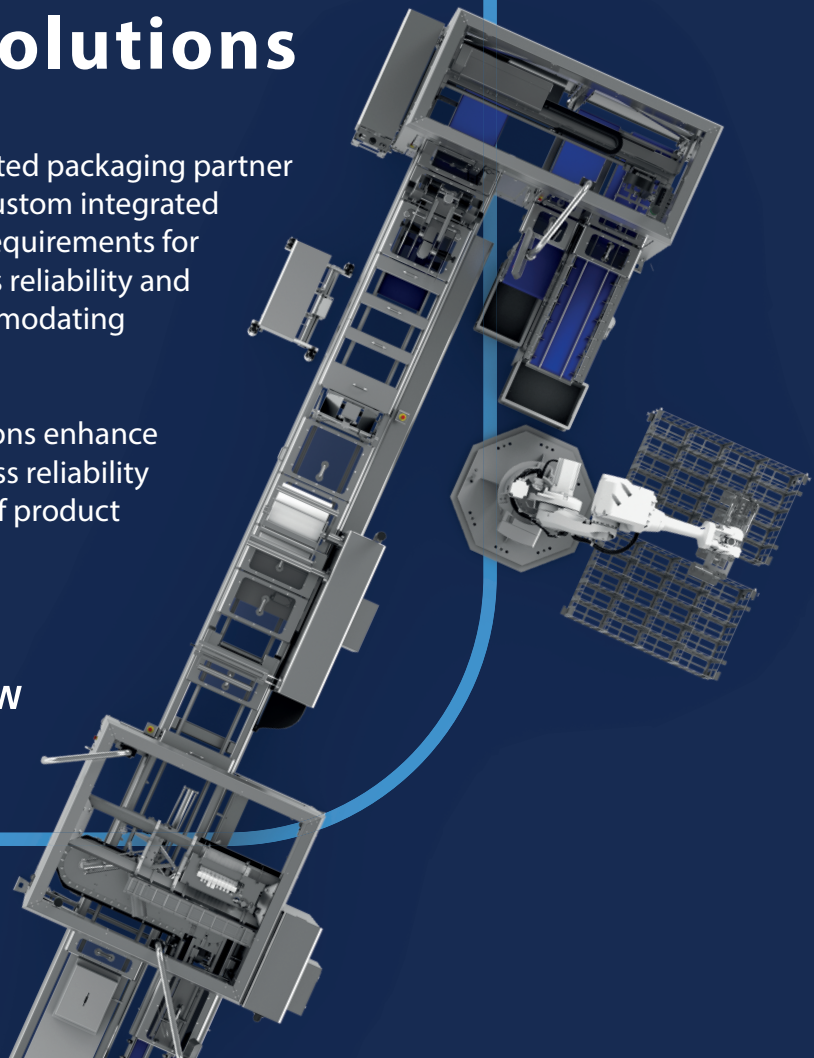
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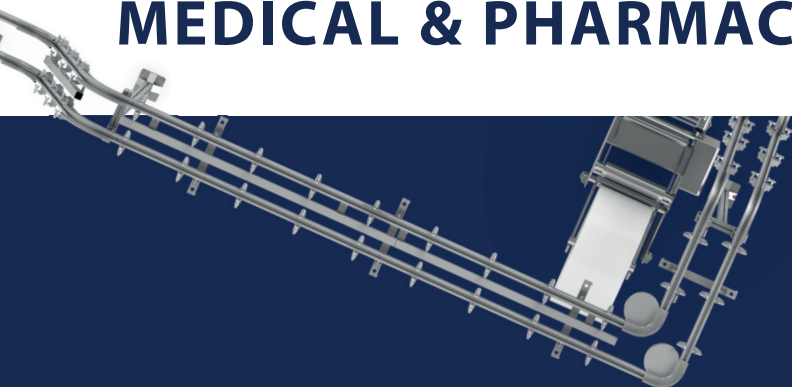
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Op-ed: Data Issues Abound as DSCSA Deadline Nears

ANITA DUCCA, SENIOR VP, REG. AFFAIRS & ELIZABETH GALLENAGH, GENERAL COUNSEL AND SENIOR VP, SUPPLY CHAIN INTEGRITY, *HEALTHCARE DISTRIBUTION ALLIANCE*

TOP THREE TAKEAWAYS

1. Trading partners are working diligently to connect data systems in compliance with DSCSA requirements.

2. Significant challenges remain ahead of the November 27, 2023, finish line when requirements come into force.

3. The supply chain will likely need flexibility as the industry transitions to sharing item-level data in a production environment.

The healthcare supply chain is at a critical inflection point, with fewer than 250 days left to comply with the 2013 Drug Supply Chain Security Act (DSCSA). By November 27, 2023, trading partners will be required to add serialized pharmaceutical product data to the transaction information already provided when a DSCSA-covered product changes ownership.

Once fully implemented, data movement within the pharmaceutical supply chain will be completely transformed, providing additional assurance to Americans that the medicines they pick up at the pharmacy counter are safe and legitimate. However, connecting to trading partners via GS1 Electronic Product Code Information Services (EPCIS) to share serialized item-level data can be a complex and challenging process between product manufacturers and distributors.

While dispenser readiness (1), labeling issues, and outstanding FDA guidance (2) certainly are challenges, significant gaps between manufacturers and distributors should be addressed immediately in this final stretch of DSCSA implementation. Given the data-related issues that exist today, there is the distinct possibility that significant supply chain disruptions—and even product shortages—could occur after November 27.

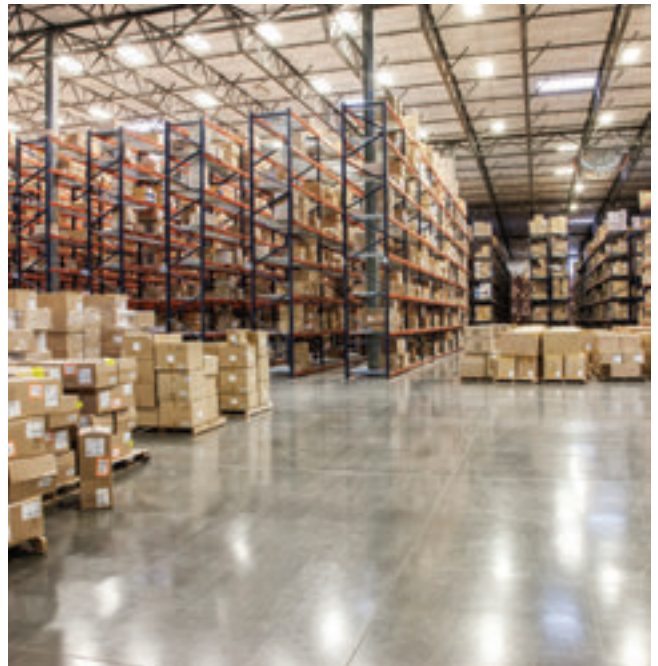
Much progress has been made, but there is much more to do. In comments (3) submitted in early February to the U.S. Food and Drug Administration (FDA), the Healthcare Distribution Alliance (HDA), the national association representing the pharmaceutical distribution industry, flagged several urgent issues while making recommendations to the agency to help keep the supply chain on track for compliance.

Connecting is happening—but slowly

Surveys conducted by HDA and the HDA Research Foundation illustrate supply chain trading partners' implementation progress and perceived challenges among manufacturers and distributors.

According to the Foundation's *Serialization Readiness Survey* (4) conducted in June 2022, manufacturers continue to delay their implementation work well into 2023. At that time, only 32% of the 48 responding manufacturers—a small proportion of all DSCSA-covered product manufacturers—reported the ability to send serialized data to their distributor trading partners, with the majority, 66%, planning to do so by the November 2023 deadline.

Meanwhile, while 62% of the 29 healthcare distributors responding to the survey reported the ability to receive serialized product, nearly half of them indicated manufacturer suppliers were not yet providing data for total product lines as the compliance deadline nears. Additionally, many reported continuing challenges with receiving master data from their trading partners. On one point,



TRACEABILITY/REGULATORY

however, manufacturers and distributors agreed: “collaboration with trading partners” was cited as the top obstacle to compliance.

However, there is positive news coming out of HDA’s latest *EPCIS Implementation Benchmarking Survey (5)* (Q3 2022). In that survey, 45 manufacturers reported 1,584 planned connections to distributors and 51% of those being either “in process” or “completed.” A reported lack of employee resources continues to challenge the segment. Distributors noted similar progress: the number of their “in process” or “completed” connections to manufacturers grew from 17 to 22% for small, mid-sized suppliers, and from 29 to 56% for large suppliers.

Staying the course on implementation

While HDA is pleased to see the progress under way as of the third quarter of 2022, our distributor-member companies continue to report that the supply chain is not where it should be given the long runway required for onboarding and working through data challenges. Indeed, in our comments to FDA, HDA noted that, “Setting up the EPCIS connection with a manufacturer can take weeks, or even months. With so many manufacturers waiting—and all wanting to be onboarded last—there is not going to be enough time to secure all necessary connections by [the deadline].”

Given the interconnected nature of the supply chain, distributors are highly dependent on receiving complete and accurate serialized data from manufacturers to facilitate compliance with the DSCSA, and the industry cannot delay connections any longer. That is why HDA urged FDA to avoid exercising broad enforcement discretion for manufacturers and repackagers’ DSCSA requirements and provide exemptions for companies on a case-by-case basis—which will be less disruptive and likely less expensive for the supply chain.

Stabilization period needed

Under the DSCSA, a distributor cannot accept or sell a product beginning on November 27, 2023, if that product does not have transaction information with the product identifier in an electronic file that meets DSCSA requirements (effectively, meaning in an EPCIS event file). But the transition from sending lot-level to item-level data in this format is complex, and the law doesn’t provide flexibility in how data and file-related issues—that is, errors and exceptions (6)—should be resolved. As much as 35% of products could be affected by these issues. HDA developed recommended guidelines (7) to address some of these exception scenarios as well as held a February workshop on this topic, in partnership with GS1 and the Partnership for DSCSA Governance.

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Without a means to address these exceptions, distributors will be unable to sell the product to dispensers. Simply put, hundreds of thousands of drug packages would be kept out of distribution, leading to significant burdens on industry as well as potential drug shortages for patients.

The supply chain will likely need flexibility as the industry transitions to sharing item-level data in a production environment on November 27. To this end, HDA requested that FDA institute a period for trading partners to fine-tune and stabilize processes, similar to how the agency addressed grandfathering product without product identifiers in an earlier phase of implementation (8).

All hands on deck

From the advocacy stages to implementation, DSCSA has been a highly collaborative, team effort at HDA, as we continue to serve as a forum for stakeholders to work through key issues. From a distribution perspective, the industry has devoted enormous time and resources over nearly 10 years to make interoperable product data exchange a reality, and HDA members will continue to move full speed ahead toward compliance. We call on our manufacturer trading partners to communicate their plans for fulfilling their responsibilities under the DSCSA and continue to work alongside us to

achieve the enhanced supply chain security that Congress envisioned in enacting the DSCSA.

The road ahead may be difficult, but now is the time for industry stakeholders to keep the momentum going as we realize the incredible transformation that has taken nearly a decade to build—and unlock a new era of data management within the pharmaceutical supply chain. +

Resources from the Article

1. DSCSA Resources for Dispensers: hcpgo.to/DispenserEDU
2. Statement on outstanding FDA guidance: hcpgo.to/HDAstatement
3. HDA comments submitted early Feb: hcpgo.to/hdacomments
4. 2022 Serialization Readiness Survey: hcpgo.to/Ser2022
5. 2023 EPCIS Implementation Benchmarking Survey: hcpgo.to/EPCISsurvey
6. Errors and exceptions: hcpgo.to/dataissues
7. Exceptions handling guidance: hcpgo.to/HDAexceptions
8. FDA Grandfathering policy: hcpgo.to/FDA2018

Additional resources are available at HDA.org/pharmaceutical-traceability

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Blister Package Recyclability Meets Machinability

KEREN SOOKNE, EDITOR-IN-CHIEF

TOP THREE TAKEAWAYS

1. With newer materials, companies must test the ability to produce the packaging in large capacities and at high speeds.
2. Amcor and MHI partnered on trials to determine machinability of a novel recycle-ready blister package.
3. For those looking to update materials without purchasing new equipment, determining machinability is a key step.

As pharmaceutical brand owners look to upgrade packaging to newer, more sustainable options—including lightweight, renewable, and recycle-ready offerings—many are facing questions about whether new materials can run on existing packaging machines.

With so many tried-and-true materials used in life sciences packaging, machines are typically built to work with established offerings that have been on the market for years. This is certainly the case for the popular blister package, an ironclad packaging system for tablets, capsules, and other oral solid dose (OSD) medicines and nutraceuticals. Blisters outperform bottles in protecting drugs against moisture, which is crucial for moisture-sensitive products, while also offering patient adherence benefits and child resistance.

In terms of sustainability, blister packaging has lagged over the past decade, but strides have been made in the R&D-intensive journey of developing high-performance blisters compatible with existing recycling streams.

A few companies have brought blisters to market that have recyclability claims—and even then, successfully balancing eco-friendliness with adequate barrier protection remains a challenge. From there, a final hurdle remains: the ability to actually produce the packaging in large capacities and at high speeds, also known as machinability. Simply put, a solution that can't be reliably and rapidly reproduced at-scale isn't really a solution.

With this in mind, **Amcor** embarked on a journey with **Maruho Hatsujyo Innovations, Inc.** (MHI) to ensure its novel recycle-ready blister package could be processed on a commercial-scale packaging line.

Recycle-ready blister

Amcor is a developer and producer of packaging solutions for a variety of sectors, including pharmaceuticals and nutraceuti-

✓ Trials were conducted on MHI's **EAGLE-Rx Blister Machine**, a compact, balcony design, servo-driven unit capable of running up to 100 cycles/min at a format area of 90 x 130 mm.



BLISTER PACKAGING/SUSTAINABILITY

icals. The company supplies a range of flexible and rigid packaging, cartons, and closures.

Among Amcor's offerings is blister packaging, and in April 2021, the company introduced its recyclable AmSky™ Blister System. AmSky is a blister and lidding combination comprised entirely of high-density polyethylene (HDPE). By contrast, conventional systems typically involve a polyvinyl chloride (PVC) blister and an aluminum lid.

"The PVC/aluminum combination exemplifies blister packaging's sustainability challenges, because, together, they are proven to protect drugs but suffer an exceedingly poor sustainability reputation," says Michelle West, Pharma Product Manager for Amcor Flexibles North America. "On the other hand, HDPE is a commonly recycled plastic in many existing streams; in the U.S., for example, HDPE can be placed in the '#2' curbside plastic stream, which includes common items such as milk jugs and laundry detergent bottles. HDPE films also fit the PE film stream, currently a 'store drop-off' option in which consumers take relevant items to store drop-off locations, often at grocery stores, where they are collected and transported to recycling centers for processing."

A key aspect to AmSky's sustainability success is that the blister and lidding are both HDPE. If the blister and lid are in different

streams (or if one is detrimental to recycling), the entire product likely ends up in the landfill rather than the recycling center. Based on company estimates, AmSky can offer a carbon footprint reduction exceeding 50% versus traditional PVC/foil blisters even when it's not recycled. When it is recycled, that figure approaches 70%.

Of course, sustainability must not sacrifice barrier protection. An ever-increasing share of today's oral solid dose (OSD) drugs require at least some degree of protection against moisture. Amcor has reported two claims: (1) that the base AmSky blister package has more moisture barrier than a standard PVC-aluminum system, and (2) that it delivers package moisture barrier similar to PVC/PVdC + foil lid combinations and PVC/Aclar® + foil lid constructions frequently utilized for moisture-sensitive products.

While the initial AmSky featured a white base with clear lidding, some applications require through-the-blister visual inspection. Amcor also has a clear blister with white lidding, or can make both either white or clear—all with preprinting options. It also can be upgraded to a thicker push-through lidding for increased child resistance.

At press time, AmSky is the only entirely HDPE-based blister package listed on the Association of Plastic Recyclers' website as meeting Critical Guidance Recognition, and is the only blister pack-

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aging system for healthcare listed on Walmart's Circular Connector website, which is intended to broaden recognition of preferred sustainable packaging materials. While AmSky could meet pharma and nutraceutical industry needs for safety and end product stability, the difference between a successful prototype and a successful product meant testing whether AmSky could be processed on a commercial scale packaging line.

Testing for machinability

For trials, Amcor turned to blister machinery supplier MHI, the U.S. subsidiary of Maruho Corp. Ltd., which distributes medical packaging equipment whose designs lean upon more than 60 years of manufacturing experience.

Modern blister machines like the ones offered by MHI are designed to produce blisters rapidly and reliably for pharma companies requiring protection for millions upon millions of pills. The most dependable, thermoformable film material is PVC.

An obstacle to wide adoption of recyclable blister packages is the ability of newer, more sustainable materials to be "machinable"—that is, to be produced on a large scale with a precise level of sealing repetition.

Other materials are comparably fickle, and AmSky was no excep-

tion, reports Amcor. The HDPE construct requires different operating parameters, and has a narrower operating window on machines accustomed to running standard PVC + foil packaging. So when Amcor approached MHI, both parties knew that finding the optimal



AmSky's blister and lidding are composed of HDPE.

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production parameters would require some trials and line time.

“The goal was achieving a one-to-one ratio, meaning a scenario where the AmSky system could be produced with the same sealing

and speed efficiencies as PVC blisters,” says Hideo Yonenaga, President, Medical Packaging Machinery Division for Maruho Hatsujyo Innovations, Inc. “In reality, Amcor and MHI knew that even approaching production parity

would be a win. Close counts in horse-shoes, hand grenades, and sustainability initiatives.”

Several tests were conducted, both at MHI’s facility and the production floor of an Amcor customer. The trials were conducted on MHI’s EAGLE-Rx Blister Machine, a compact, balcony design, servo-driven unit capable of running up to 100 cycles/min at a format area of 90 x 130 mm.

Obstacles the teams encountered included some difficulty chopping the trim of the HDPE, as well as some card jamming issues. At Amcor’s customer’s plant, the card jamming was resolved with adjustments to the timing of the suction arm; the trim cutting would require some minor machine modifications. Soon, the team was able to validate material at the customer’s current top line speed.

Amcor and MHI also conducted trials using MHI’s EAGLE-Omni machine, notable for its deep draw thermoforming capabilities. “Tests incorporated a flat upper sealing plate to assist with leak detection. At first, they encountered some issues achieving consistent forming, and reaching maximum run speeds. MHI determined that the challenge revolved around air flow, and was able to rectify the issue. Coupled with more exacting temperature settings, the team was able to achieve top run speeds,” explains Yonenaga.

The successful Amcor-MHI partnership could serve as a roadmap of sorts—one whose destination is the widespread adoption of sustainable blister packaging systems across the pharma and nutraceutical sectors. The pairing of materials science innovation with adjustable thermoforming equipment is a must-have combination to bring next-generation packaging systems to market. 🏥



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Pharma and Med Device Innovations at PACK EXPO International

KEREN SOOKNE, EDITOR-IN-CHIEF

Back after four years, PACK EXPO International convened more than 44,000 attendees during its October run in Chicago's McCormick Place. Here, we profile some of the innovations on show in life sciences packaging and automation.

Recyclability and machinability

Schreiner MediPharm debuted its sustainability-minded versions of two established products (1). There are, of course, a number of ways to define sustainability in life science packaging. The new offerings were designed with three key sustainability considerations: (a) Recycled/renewable materials, (b) Sorted recycling/disassembling, and (c) CO₂ emissions reduction.

“The new label concepts are based on existing items in Schreiner MediPharm’s roster of functional labeling solutions,” says the company, using film materials that are either recycled or produced from renewable raw materials. On show were:

A more sustainable version of its Pharma-Tac label for infusion bottles with integrated hanger and removable documentation parts. The concept label is produced from recycled materials (PE and PET), according to Christian Liebl, Senior Innovations and Process Manager for Schreiner MediPharm.

An eco-friendlier version of their Autoinjector Label featuring its anti-slip functionality.

Liebl explains, “The Autoinjector label is made out of a Schreiner MediPharm proprietary renewable PP [polypropylene], while the paper liner is made from FSC glassine paper. Those two concepts show that functional labels can be easily produced with recycled or renewable materials. We welcome any customer opportunity to produce unique test labels.” For more, visit: hcpgo.to/407

TekniPlex Healthcare showcased its new fully transparent recyclable mid-barrier blister package (reported to be the world’s first as a blister

+ lidding combination). The material (2) is recyclable in geographies where the #5 PP recycling stream is available and features a polyolefin blister film paired with a barrier PP lidding film.

Melissa Green, Head of Global Marketing for TekniPlex Healthcare, explains that the new material is designed for pharmaceuticals, veterinary drugs, nutraceuticals, supplements, and personal care (dental or cosmetic applications). “Anything that requires mid-level barrier (in the 40 to 90 gram PVDC-coated PVC range) can be packaged in this blister + lidding combination. Currently,

For systems that feature more detail on our site, you can visit the individual links throughout these pages. View the full web version of the Pharma and Med Device Innovations Report at:



PACKAGING AND AUTOMATION ADVANCES

only a peelable lidding is available with barrier properties,” she says, adding that if the application requires push-through lidding, the blister + lidding combination wouldn’t be appropriate.

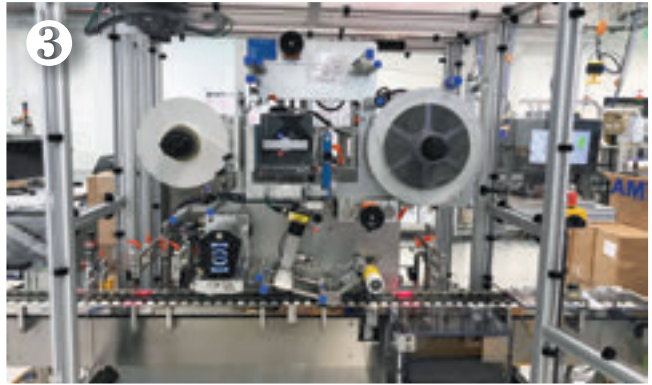
A number of sustainable blister upgrades have come on the market recently—including recyclable non-barrier transparent packages, recyclable barrier packages in white, and recyclable barrier transparent blister film without matching lidding. But Green notes, “The true milestone in the TekniPlex offering is that it is a fully transparent barrier recyclable blister + lidding combination that patients can drop into the recycling bin (where recycling is available).”

From a manufacturing standpoint, initial machinability analyses have been positive, with large-scale tests scheduled for the near future. For more, visit: hcpgo.to/408

Also see **Constantia’s** new monomaterial sachet, Perpetua ALTA, which is based on PP, recycle-ready, and has a high chemical resistance to pharmaceutical products at: hcpgo.to/409

Assembly and labeling

Herma and **Norwalt** debuted a combined system that labels at 30 products/min and accommodates containers from 12 to 30 mm in diameter (3). The HERMA 252 M features HERMA’s H500 Label Applicator—which Norwalt utilizes on its high-speed assembly



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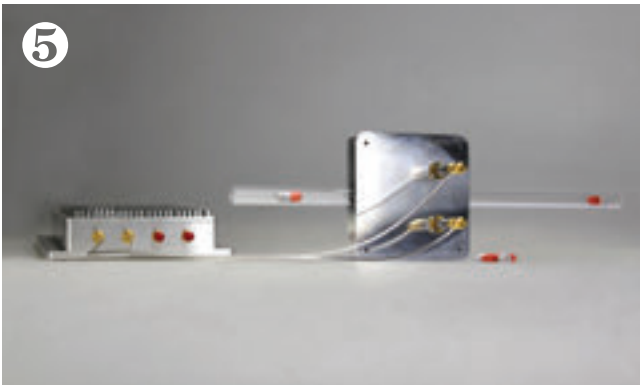
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lines—and Norwalt’s product handling systems, which support a broad range of HERMA’s labeling systems for the pharmaceutical sector.

Offering a look into commercial applications, the system on show was similar in design to a line recently supplied to a major U.S.-based pharmaceutical contract manufacturer. In the system on show, “glass tubes are picked from trays using a robotic arm, and placed onto the labeling system’s infeed. Products are then transported to the labeling station, where a wraparound label is applied to each tube,” per Herma. “Labels are printed with a barcode and lot/expiry information, and a vision system inspects the print, rejecting any label deemed out of specification. Finally, products are checked for label alignment and, in the full production version of the system, rejects are segregated from good products, which are then re-trayed.”

Stevanato Group displayed its new high-speed auto-injector assembly line (4). This off-the-shelf equipment can run at speeds up to 100 parts/min and can be adapted to handle different devices—even coming from different device developers—on the same line for maximum flexibility.

As Stevanato’s Alessandro Zannini notes, “This is unique. Normally, the machine is dedicated to one device, so you can really

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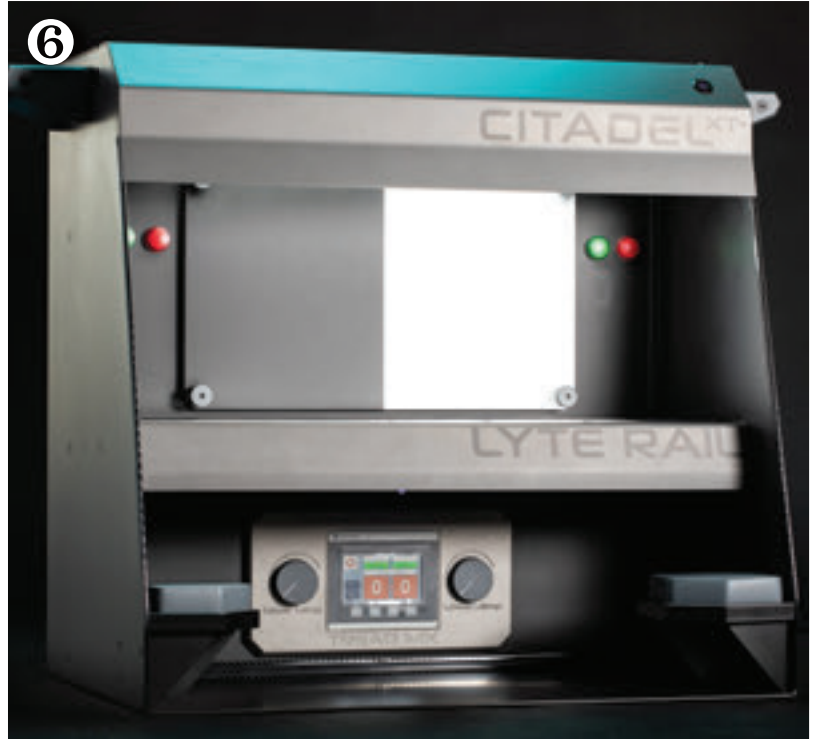
PACKAGING AND AUTOMATION ADVANCES

optimize your investment with this system because you can change the device. It's also scalable for the future, because you can increase the speed without having to change the machine.”

Stevanato Group notes that whether dealing with pen injectors, auto-injectors or wearables, every drug delivery device will have specific requirements when it comes to assembly, which makes flexibility a priority in production environments.

With differing requirements for drug delivery devices, and sudden booms in demand (case-in-point: unprecedented demand for Novo Nordisk's Ozempic and subsequent supply chain shortage), companies must remain agile to meet patient needs.

To meet market challenges, the company uses modular design, combining a smooth transport system and individual process modules to create a tailored assembly platform for their customers, with all processes managed via a single, user-friendly control panel. A company can accommodate a new device by changing carriers, feeding



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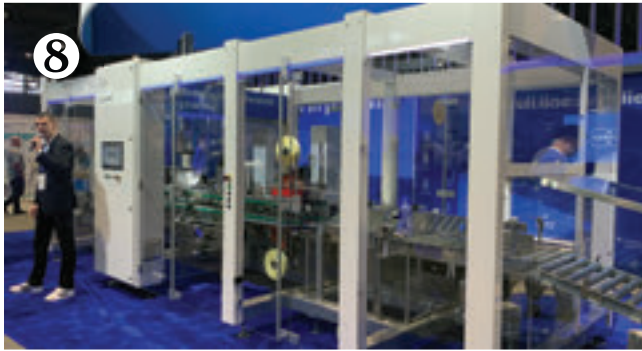
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systems, picking heads, and more.

For more details on the assembly line, as well as Stevanato's new ColleQX data collection tool for assembly environments that helps companies reap the benefits of digitized production lines, visit: hcpgo.to/410

Looking for more on labeling and blisters? Check out the following innovations online.

- Pharmaworks' enhanced FA1 pick and place feeder: hcpgo.to/411
- WLS' VVM label applicator for temperature-sensitive labels: hcpgo.to/412
- NJM Bronco 130 pressure-sensitive labeler and other controls innovations: hcpgo.to/413

Inspection and QC

Capsule and tablet weighers play a critical role in highly regulated pharmaceutical production, ensuring accurate dosages are packaged to be delivered to patients in need. **Work Microwave**, a Germany-based developer and manufacturer of RF electronics technologies and products, showed its WORKsens FT-96 Pharmaceuticals Weight Measurement Sensor (5). The sensor is based on the microwave resonance method and it's small enough to be integrated into

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a filling machine directly to characterize the weight of capsules and tablets in continuous production systems.

With traditional checkweighers, there's a limit to how fast products can move through

machines. As Product Manager Lukas Lischke explains, conventional load cells in pharma checkweighers require that the individual tablets or capsules be at a standstill for a brief period of time for accurate measure-

ment. Systems based on gravitational force are also sensitive to vibration, so checkweighers must be heavy machines (often ~1,000kg) to remain stable in the face of vibration on busy production floors. Most operations also require many load cells to achieve the throughput pharma companies demand.

With the WORKsens FT-96, tablets or capsules flow through a duct tube of 12 mm outer diameter and are measured one at a time without stoppage at up to 15 capsules per channel per second. Units are compact, so they can be stacked to run in parallel for higher throughput. For more detail and a link to video, visit: hcpgo.to/414

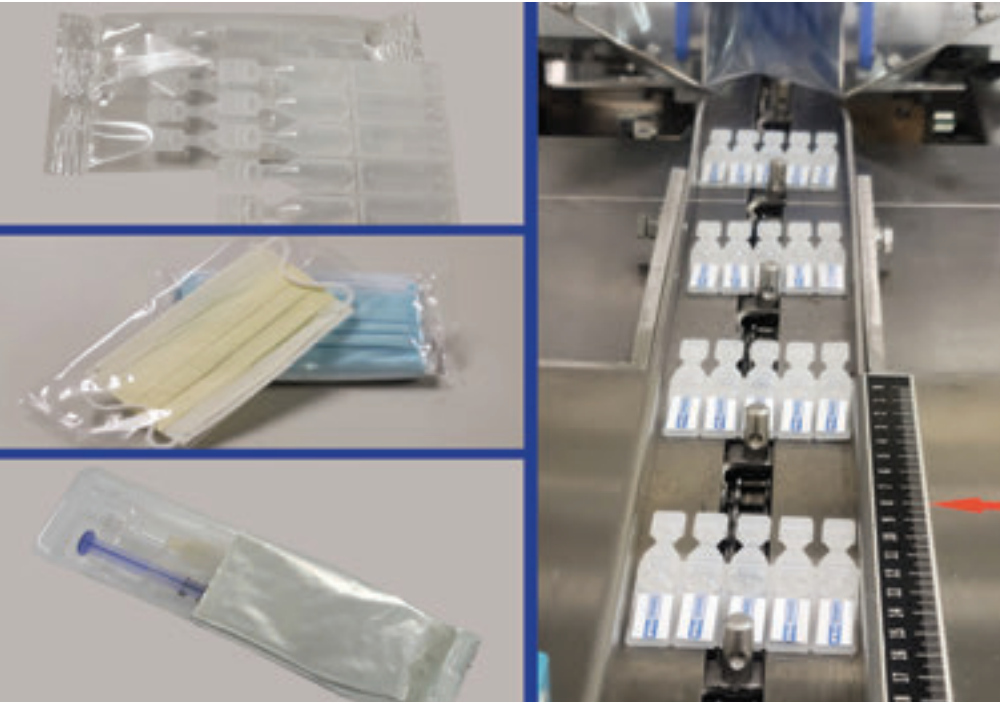
Quantum Packaging Technologies showcased its Citadel XT+ manual inspection hood which eliminates flicker and glare during visual inspection of pharmaceuticals, devices, and drug delivery products (6).

Featuring manual lighting intensity adjustment, the standalone XT+ gives inspectors ease of use with manual light settings coupled with the company's TREAD MX PLC-controlled pacing console with password protected recipes and traceability.

Explains Quantum's Scott Smith, "What we're doing differently in the industry is we're using a higher frequency, full-spectrum LED lamp. For the most part, the industry is still using fluorescent tubes today, as well as some LED but more on the NIR spectrum—more of a red color. We're leaning more on the blue-green side, which is easier on the eye and less of a sharp spectral spike than you'd get from fluorescent lights and better for contrast."

When operators inspect vials looking for particulate matter, fluorescent lamps' flickering lights can cause them to experience a vertigo effect or get tired and need a break. Says Smith, "Because these LEDs emit light so

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quickly, they're truly flicker-free, which is easier on the operators." Quantum employs several technologies to eliminate glare during inspection, including a firearms coating on the hood (also used by the U.S. Navy) which is anti-reflective, anti-glare, and corrosion resistant. For more, visit: hcpgo.to/415

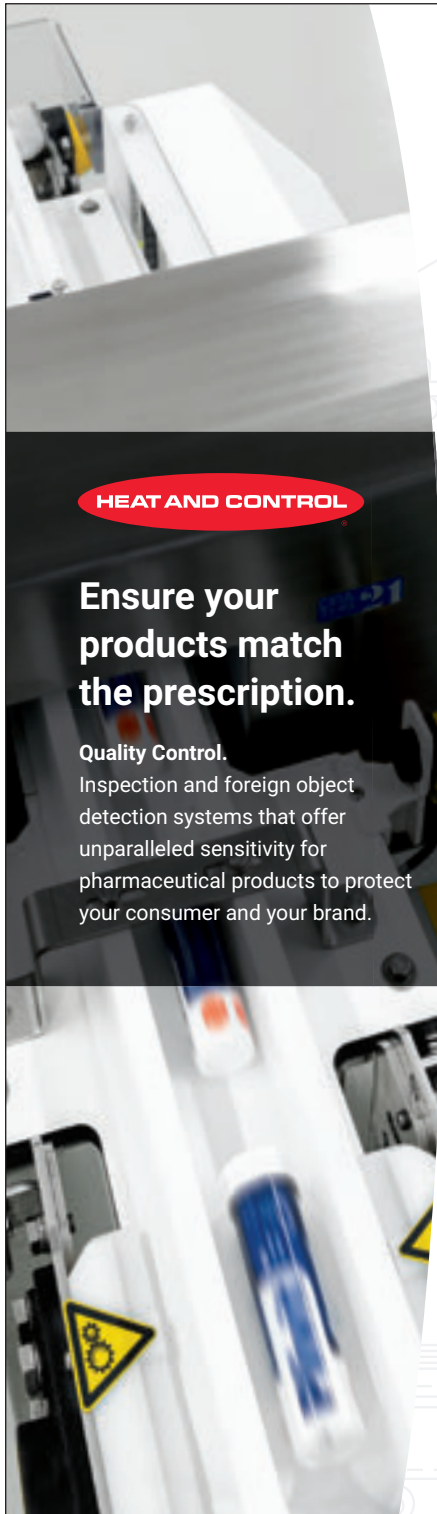
Cartoning and case packing

For pharmaceutical, nutraceutical, cosmetics, and personal care applications, **MG America**, the U.S. subsidiary of MG2 of Italy, showcased its new Cariba C221 intermittent motion cartoner to the North American market (7). "The Cariba C221 features a feeding system based on a twist-and-push motion that transfers bottles. The main advantage of this type of feeding system is that changeover is very fast and simple based on replacing the twist when the bottle diameter changes," says MG America's Michele Leonardi. In a manual or automatic feeding configuration, the Cariba C221 is compatible with a broad range of common primary packaging formats, including blister packs, round/shaped glass and plastic bottles, jars, soft tubes, flow packs, sachets, and stick packs. For more, visit: hcpgo.to/416

Körber Business Area Pharma debuted its K.Pak 665 topload case packer for life science applications (8). Reaching speeds of 12 cases/min, the system is designed to run cartons sized from Körber's cartoning machines—target speeds depend on applications, which also include bottles. "There's a range of steps that require downsizing that speed requirement, handling potentially more cartons per minute but fewer cases per minute," Product Manager Matt Smith notes. The system handles cases from 8"L x 6"W x 4"H to 24"L x 16"W x 16"H. For more, visit: hcpgo.to/417



Next up in the PACK EXPO portfolio is EXPO PACK Guadalajara (June 13-15, 2023) followed by PACK EXPO Las Vegas (Sept. 11-13, 2023; Las Vegas Convention Center, Las Vegas). Information for the upcoming show can be found at packexpolasvegas.com.



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Study: Patient Training Gaps Persist for Self-Injection

KEREN SOOKNE, EDITOR-IN-CHIEF

TOP THREE TAKEAWAYS

1. Patients who have to self-administer are receiving some training.
2. The quality and type of patient training is still lacking or underperforming in many cases.
3. 90% of surveyed patients had a challenge or a negative issue in the first six months.

Recently Noble, an Aptar Pharma company commissioned a study, *The current paradigm for biologic initiation: a confirmatory quantitative analysis of self-injection training practices*, where 277 healthcare providers (HCPs) and 264 patients currently self-injecting biologics were surveyed to identify gaps in self-injection training and onboarding practices.

“The results of the study showed that patients who have to self-administer are receiving some training but it’s the quality and type of training that is still lacking or underperforming,” notes a release from Noble. Key findings from the study include:

- Most patients (91.7%) reported receiving formal self-injection training, commonly conducted over one or two sessions.
- The mean overall training time reported was 37.8 and 30.4 minutes by patients and HCPs, respectively, with only a portion of that time focused on the injection steps themselves.
- Over one-third of patients reported lacking confidence that they could correctly self-inject during the first six months of treatment. As a result, many patients experience heightened anxiety, and the emotional burden is posing a negative impact on adherence to their treatment regimen and diminishing positive outcomes.

In addition, the study reflects how critical patient training and onboarding are for

injectable therapies. In the following Q&A, Tim McLeroy, Executive Director of Marketing & Patient Services at Noble, discusses the study findings and patient onboarding training for self-administration.

Healthcare Packaging (HCP): While understandable, the percentage of

patients that lack confidence is certainly cause for concern. Tell us a little bit about the study results—were the education gaps found in the study what you expected?

Tim McLeroy (TM): Yes and no. What we see is there’s always a disconnect between when a doctor communicates something



↑ The study results showed that patients who have to self-administer are receiving some training, but it’s the quality and type of training that is still lacking or underperforming. (Credit: Noble)

DRUG DELIVERY

and what a patient receives. There's more duress on the side of the patient than there is on the physician.

Especially for a chronic medication being prescribed for the first time, there are typically three things going through the patient's head. The first one is usually "how am I gonna pay for it?" The second one is about side effects, with concerns about whether the cure is worse than the disease. Last is, if it's going to be a type of injection, "How am I going to give myself a shot?" We've seen that around 30 to 40% of the people in the U.S. have some type of needle phobia. So it absolutely doesn't surprise me.

But it's still not being fully mitigated by the physician. Even if the physician has the best information, the best training, the best bedside manner... how much do you retain as a patient by the time you get to your car in the parking lot? This is not to sound flip-pant—there was a lot that just went on for

that patient. This is what we call training decay, and we know that within a couple of days, potentially 90% of the information that the HCP just gave them can be lost. That's why it's always good to have a caregiver or loved one with you during the visits, but that's not always possible.

HCP: What stuck out to you most about the study?

TM: While it's unfortunate that not a lot was completely surprising, one of the stats that jumped out was that within that first six months, 90% of the patients had some type of challenge or a negative issue.

Without being able to delve into the issues, in my experience, a majority of the challenges will happen in that first month of therapy. As we dug into the stats for another product I worked on, we saw that 80% of the patients had an error in the first month of self-administration.

This may sound funny, but it's the reality—I always ask people if they've ever had a bad first date. Most people raise their hand. You can have a bad first date, and it doesn't mean there's zero chance for the second date, but the odds have gone down significantly. It's similar for a patient. If you have a better first experience going into a therapy or medication in that first month—if you feel comfortable and confident or at least informed—the odds of you staying on that therapy go up significantly. The inverse is true, too. If it's too challenging and you're overwhelmed, there's a high likelihood that you're not going to continue the therapy.

HCP: In light of this study and others like it, how does Noble develop resources and training support to minimize patient burdens and achieve better outcomes?

TM: I'll go back to one of the main things in the study—that HCPs don't have that



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time to train. If you can save the physician time, then that's fantastic.

What we're seeing, partly as a result of COVID, is that there are fewer healthcare workers than there used to be, between retirement or those who left due to stress. In the past, physicians would do the training at the outset or would have the patient come back and do the training once they filled their prescription. But there's so many constraints on the medical field right now that time is even more critical than it used to be (and it certainly wasn't a luxury beforehand).

We're looking at how we can relieve that training burden from the HCP, and there's a couple initiatives via different channels like specialty pharmacies. We want to equip other folks to standardize training in a way that's physician-approved, but it gets out to the patient in a multi-sensory way that they can train at home—maybe

with a loved one—including a tactile trainer, instructions for use, and a video that's in "patient language." This language may not be as legalistic as what the pharma company would put out, but would have physician buy-off. We want to take that burden off the HCP's hands and reach out directly to the patient, and help them get educated in the right way to use their medicine. Specialty pharmacy is the direct connection to the patient—we are starting to build programs that help specialty pharmacies be the conduit for this education.

HCP: For clinical trials processes, what is unique about onboarding/training processes, or the device/packaging itself?

TM: It's similar and I think it's even more significant in the way we're looking at packaging and putting these things together. In clinical trials, every patient is so critical. We're not saying a patient outside of clinical

trial isn't important, but the importance of that trial patient getting the dose right can make the difference between a product being approved and not being approved.

Because of COVID, there are a lot more trials done at home versus a central site, what are called decentralized trials. Between packaging and instructions and the things that we put together, it's so important to build a better patient experience for those patients in these trials.

There's already duress and stress for them—beyond an injection—just being in a clinical trial. Am I taking the placebo? Am I taking the untested medicine? Or is it the effective medicine? Is it going to hurt me or is it going to help me? If we can at least relieve some of that stress, we can build a better first-time experience. Opening a package for the first time elicits an emotive response. If you pick something up and the packaging is cheap or it's a bad experience,



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Our Automation Solutions



you may feel like whatever is inside can't be that important. Or it can elicit a response that this must be important, and it makes you want to pay attention. Maybe it's a pleasurable response similar to opening packaging for

an iPhone, or jewelry with heavy springs that convey importance. The same type of emotion can be garnered from a medication package—that it's important but not overwhelming. This is where we want to encompass the full expe-

rience besides just giving information.

HCP: It's a tough balance, especially with sustainability—at times the nicest packages and devices may not be the most sustainable.

TM: I think that's always the tension that you're trying to balance... are you overshooting your investment here or not enough. So, we're trying to find that right balance and I think it's something we will always be questioning. What does that look like?

HCP: What are the hurdles in terms of the sheer numbers of patients self-administering? Is there a shortage of trained trainers? Does clinician burnout come into play?

TM: The biggest challenge we're finding related to patients getting information and training is actually how it's being delivered to them. Most of the companies that produce expensive medications will have a patient service program available... but patients don't think about pharma companies when it comes to their training and treatment.

They listen to their physician, and then they get their medicine either from a pharmacy or a specialty pharmacy. If they have an issue or challenge, they're not thinking about the manufacturer of that product. We've been providing services and trainers to the pharma companies, but they have challenges getting things in the hands of the patients, either due to experience or regulatory constraints around directly accessing these patients.

That's why we're looking at other ways to reach patients through a different distribution channel, either direct-to-patient or through a specialty pharmacy. We want to let pharma be good at being pharma by producing good medicines, let the doctors be good at what they do by diagnosing



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and prescribing, and then let us find the way to bring in what's best for that patient—the right information at the right time on how to use their device. We want to become that trusted training source within the medical industry, because whether from burnout or other issues, there's resource constraints on nurse and physician HCPs.

We've also found that lot of times, physicians tell patients a product is easy to use, but they've never used it themselves. In our human factor studies, the ones with the most issues using a medical device are often the physicians. The patients will be scared enough that they'll read everything and double-check. The physician may be making a mistake, but they're very confident. This is not to be flippant toward doctors, it's just an area that they haven't experienced in most cases.

HCP: Any other issues stemming from gaps in training?

TM: Related to that point, a lot of times their doctor or nurse has said, "It's easy," giving them quick training and figuring the patient has it. The patient goes home and if they make a mistake or they're not sure of themselves, sometimes they're ashamed to bring it back up in front of the physician or give them a call because they think, "The doctor told me it would be easy, I must be stupid." But putting metal in your body is not a default natural thing that we're born with.

We've seen a lot of times where patients will discontinue medicine, but the doctor doesn't know it. When we've asked them if they had something at home and could have practiced on it before or could go through the steps again, they say that would have been helpful.

This is a challenge and it's going to take HCPs, the pharma compa-

nies, specialty pharmacies... a range of different folks looking out for these patients. We want to highlight some of the issues that the patients aren't telling the doctors or pharmacists. We look at it as a mission, and it gets me

fired up to come to work every day. We have a real opportunity—when we do our job right, a patient, caregiver, or a loved one's going to be better for it. +

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Contact Information

Listerine Advances More Sustainable Oral Care Packaging

ANNE MARIE MOHAN, SENIOR EDITOR, *PACKAGING WORLD*

TOP THREE TAKEAWAYS

1. New Listerine Cool Mint Zero Alcohol Concentrate Refills comes in a 100-mL PET bottle.
2. It uses 60% less plastic when compared to a standard 500-mL bottle of Listerine.
3. Directions for use can be accessed via on-pack labeling, a landing page, and more.

Refillable and reusable packaging is a growing trend in the consumer packaged goods space, both for direct-to-consumer companies and for those large brands primarily selling their products at retail. Thus far, many of these products have followed the refill-at-home model, with the majority comprising products in the household cleaning and personal care markets.

Less common in the refill-at-home space are products that are ingested by the consumer, e.g., oral care and food and beverage products. But there are examples in these markets, as well. Not the first, but definitely the most recognizable brand to introduce a refillable/reusable packaging system in the oral care market is Listerine mouthwash from Johnson & Johnson Consumer Healthcare.

Said to be another step toward the brand's goal of "achieving healthier mouths on a healthier planet," new Listerine Cool Mint Zero Alcohol Concentrate Refills in a 100-mL PET bottle are said to use 60% less plastic when compared to a standard 500-mL bottle of Listerine while providing the same benefits.

"Listerine is committed to helping people achieve the best oral care in a way that is responsible and more sustainable to help protect our planet," says Jessica Snell, R&D Director of Global Oral Health at J&J. "The Listerine Cool Mint Zero Alcohol Concentrate product was prioritized by Listerine's scientists and packaging engineers, who worked to ensure that it met our rigorous standards for product safety, quality, and efficacy."

The packaging system was introduced in July 2022 and includes a reusable, 500-mL Listerine bottle made of PET with a polypropylene closure that J&J says can be used with the concentrate refills for up to two years from purchase if directions are followed properly. Both the reusable bottle and the refill bottle, also made of PET with a PP closure, are widely recyclable.

To tackle the challenge around changing consumer behavior, J&J says it is concentrating on education around product usage. "Our marketing and education for the product focuses on the four steps

for diluting the concentrate to help consumers understand the new format," says Lauren Wexler, Head of Marketing, Global Oral Care, J&J Consumer Health. "These steps can be accessed via on-pack labeling, product description pages, the concentrate landing page, and Listerine's social media platforms."

The four simple steps are as follows: (1) Start with an empty and rinsed 500-mL bottle; (2) Fill with room temperature, drinkable water; (3) Add one entire bottle of concentrate. Replace cap & shake gently; and (4) Swish!

The new refillable concentrate packaging system is available from Amazon.com, Walmart, Rite Aid, Walgreens, and Kroger. Options include a starter pack with a reusable bottle filled with mouthwash together with two concentrate refills or a three-count refill pack. Both of these options are packaged in a recyclable paperboard carton. +



READ

Read the full article on Refill-at-home systems from which this story was taken, *Refill-at-Home Packaging Takes Off Across Categories*:

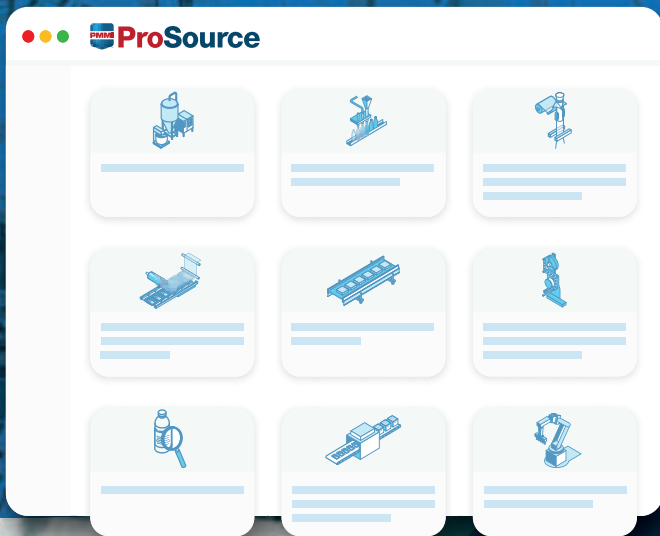


↑ New Listerine concentrate refills in a 100-mL PET bottle are said to use 60% less plastic when compared to a standard 500-mL bottle of Listerine.

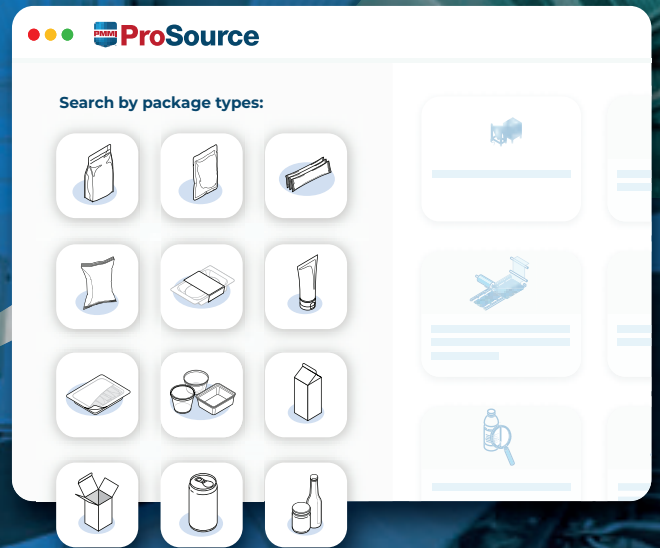
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Capabilities

- Entry-level/budget models available (11)
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Fill Type

- Fill by time (6)
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Print & Check EVO



Mini Manual Station

Antares Vision Group

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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

Digital Factory 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), it 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, and ACSIS in 2022.



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Aphena Pharma Solutions, Inc.

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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.

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

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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.

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.



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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.

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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

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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 over a thousand 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 30 of this issue



Our Mission



Delta ModTech

8445 Bunker Lake 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 INTELLI-MOD® control system
- Drive System: Servomotor Control
- User Controls: Touchscreen HMI Pendant Arm
- Cabinet Construction: Welded Steel Frame, Aluminum Front Plate

*Process Dependent

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.

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**
- Ostomy**
- Wound Care**
- Personal care**
- Electronics**
- Battery**



www.deltamodtech.com

See our ad on page 108 of this issue



Our MISSION



ESS and all the Pacteon Group companies bring integrity, pride, accountability, customer focus and teamwork to every packaging line we install. Our people and these principles form the Pacteon Promise: We make it right.

Key ESS Team Members

VP and General Manager

Tim Cokeley

Director of Mechanical & Assembly

Paul Landers

Director of Controls & Electrical

Michael Morgan

Northeast Regional Sales Manager

Brad Wolff

Northwest Regional Sales Manager

Mike Witowicz

Southeast Regional Sales Manager

Matt Kentfield

Southwest Regional Sales Manager

Mike Sires

Field Service Manager

Andrew Franz

Mechanical Engineering Manager

Steven Easter

Electrical Engineering Manager

David Sandoval



www.esstechnologies.com

See our ad on page 44 of this issue



ESS Technologies, Inc.

3160 State Street, Blacksburg, VA 24060 USA | **PHONE:** 540.961.5716

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

ESS Technologies, Inc. designs, manufactures, and installs automated packaging lines for manufacturers of pharmaceuticals, animal health, diagnostics, medical device, cosmetics, nutraceuticals, and consumer products. Founded in 1993, ESS is part of the Pacteon Group, providing one source for end-of-line packaging solutions. As an authorized FANUC system integrator, ESS can design-in, install, and support all your end-of-line automation needs. ESS also designs custom robotic end-of-arm-tooling (EOAT), which allows the precise handling of components and packaging materials. Our packaging line solutions include:

- **Horizontal Cartoners**
- **Vertical Cartoners**
- **Tray Erectors and Loaders**
- **RSC Case Packers: Top, Bottom or Side Load Options**
- **Wrap Around Case Packers**
- **Robotic Pallet Cells**
- **TaskMate Robotic Systems®**

ESS robotic systems, cartoners, case packers, and palletizers are engineered to meet all applicable standards and production requirements. ESS is a UL-certified builder of electrical panels. We do not lock any portion of the PLC or robotic code in our controls, and ESS provides all OEM part numbers in the Bill of Materials. ESS engineers work closely with our customers to understand the level of automation required, physical limitations, OSHA requirements, flexibility, and future expandability. The result is an ergonomic and cost-effective production line that requires minimal operator training and can be easily retrofitted for future applications. ESS . has extensive experience integrating serialization systems to meet pharmaceutical serialization mandates.



Our MISSION



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**

Formost Fuji Corp.

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

WEBSITE: www.formostfuji.com

As a manufacturer of horizontal flow wrap machines and horizontal bagging machines, Formost Fuji has earned an outstanding reputation for equipment quality, dependable parts and service, and engineering know-how. Formost Fuji flow wrappers (HFFS) are designed to operate efficiently while providing a strong, dependable seal. The Formost horizontal bagging machines have been the most reliable on the market 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.



www.formostfuji.com

See our ad on page 48 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. A rapidly growing organization with more than 850 employees and over 800,000 square feet of combined office, lab, production, and warehouse footprint, 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 contract 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
- Over the Counter

Our pharma-production 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.

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 107 of this issue



G&K-VIJUK INTERNATIONAL

715 Church Road, Elmhurst, Illinois 60126 | PHONE: 630.530.2203

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. 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

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Heat and Control, Inc.

21121 Cabot Boulevard, Hayward, California 94545 USA | **PHONE:** 800.227.5980

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 photon counting dual energy IX-PD series X-ray machine employs an alternative sensor and accompanying image processing technology to give our highest sensitivity and accuracy of low-density and minute foreign object contaminant detection. This technology differentiates with high accuracy between product and foreign objects, reducing the rate of erroneous detection.

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.

Our MISSION



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](http://www.heatandcontrol.com/solutions/pharmaceutical)**



www.heatandcontrol.com

See our ad on page 49 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

Vial labelling at 500 PPM with zero downtime

HERMA has introduced continuous labeling capabilities for its 132M HC Wrap-around Labeler. 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.

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 3.15", and products ranging in diameter from .4"- 4.73".

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 656 ft/min, the HERMA 500 can handle label widths between 3.15"-12.6" and roll diameters from 11.8"-23.6". 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 H500 MB is particularly suited to the automation industry where very small or complex labels must be applied extremely accurately as part of an assembly process. The H500 MB can consistently apply labels at +/- 1/64 inch. HERMA can produce full Solidworks models as part of the configuration process making the integration of the H500 straightforward.

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 28 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 18 facilities across the continental 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 13 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

James Alexander Corp. has expanded its operations floorspace, adding 18,000 square feet to its warehousing capacity and 2,000 feet apiece to manufacturing and office space. The expansion provides additional capacity for servicing key markets including pharmaceutical (OTC & Rx), medical devices, health & beauty products, first aid and diagnostics.

Currently, James Alexander is developing new and innovative materials for JAC's plastics ampoules. Among other aims, the goal is to make the containers compatible with alcohol-based liquids.

JAC's patented single-use plastic ampoules, which have undergone various 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. JAC 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 24 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 page 11 of this issue



Medical Packaging Inc., LLC

8 Kings Court, Flemington, NJ, 08822 USA | **PHONE:** 800-257-5282

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

All-in-One Unit Dose Packaging Solutions

Medical Packaging Inc., LLC (MPI) specializes in designing and producing quality, cost-effective pharmaceutical and medication packaging equipment and materials for customers in a range of health care settings. Our full line of medical packaging products include unit dose packaging machines and barcode labelers for oral solid medications, oral liquid medications, syringes, and more. We also offer Pak-EDGE® UD Barcode Labeling Software, a powerful yet user-friendly tool for streamlining the process of designing customized labels and barcodes for drug products and accessories. Our pharmaceutical packaging equipment and materials deliver trusted performance in a variety of applications, enhancing performance, accuracy, and compliance while improving patient safety.

Assisting the Pharma Market

MPI serves pharmaceutical industry partners with liquid cup unit dose packaging systems that are capable of delivering high-quality, FDA-compliant packages at a low price point with an easy-to-use design. Our packaging solutions for specialty pharma customers are perfect for lower-volume products that cannot be run profitably on high-speed packaging lines.

Our FD-Pharma® represents a cost-effective packaging solution to pharmaceutical manufacturers and contract drug manufacturing organizations (CDMOs) seeking to expand their market base with new and expanded packaging capabilities. The system was developed to address the void that exists for early liquid product development and small batch liquid validation runs as well as lower volume production needs. With quick changeover and ease of operation, it even enables multiple small to medium production runs of varying liquid products on one machine for maximum profitability.

Delivering Speed-to-Market Capabilities

Our Type III Drug Master File (DMF) enables MPI to rapidly support customers' compliance and filing needs within the pharmaceutical industry as well as meet the needs of pharmaceutical drug manufacturers and CDMOs for FDA-compliant liquid cup packaging capabilities. Having a DMF allows us to better support our customers in meeting and exceeding expectations for regulatory and technical requirements, confirming a high-quality, safe product is delivered, and expediting the application process during a New Drug Application or Abbreviated New Drug Filing.

Our MISSION



MPI's mission is to be the premier manufacturer of pharmacy packaging solutions that contribute to saving patients' lives while increasing efficiency and profitability for all customers.

We strive to apply the highest standards of excellence in developing and manufacturing our pharmaceutical packaging systems, software, and MPI-certified consumable materials. We offer high-quality products that deliver the most current functionality while maintaining maximum reliability and ease of use. Customers receive superior client service and technical support in a timely and courteous manner. Based on a foundation of professionalism, we build and foster ongoing relationships with customers, strategic partners, and distributors.

To ensure continued adherence with industry regulations and compliance with government requirements, we are constantly improving our packaging systems. We promote constant employee learning and development to help ensure we remain a leader in our ever-evolving markets.



www.medpak.com

See our ad on page 22 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 54 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

See our ad on page 17 of this issue

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.

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

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

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.



MRP Solutions

1 Plant Street, Plattsburgh, NY 12901 USA | **PHONE:** 518.561.1812
EMAIL: Marketing@mrpsolutions.com | **WEBSITE:** www.mrpsolutions.com

Build your brand and deliver packaging premiumization with MRP Solutions. More than ever, consumers expect quality products packaged to deliver an unmatched user experience and connection to the brand and product.

In the highly regulated pharmaceutical market, reliable child resistant closures are essential. MRP Solutions' child resistant closures safely secure your product while ensuring compliance with rigorous protocol testing to meet Consumer Product Safety Commission (CPSC) standards. MRP's many designs offer just the right option for safe product storage and include text, debossed, embossed, pictorial, smooth and sleek selections.

- **Full line of child resistant closures**
- **Multiple designs**
- **Multitude of functional features**
- **Many color, size and liner options**

Offering experience and innovation with the broadest range of closures and jars for nutraceutical and pharmaceutical applications, the MRP Solutions' product portfolio also includes:

- **A selection of continuous thread closures**
- **A wide range of dispensing closures**
- **Customizable jars to enhance your brand**

Manufactured with a commitment to quality and compliance, MRP products are produced in a

cGMP environment. A Certificate of Compliance is available upon request. We manufacture in an ISO 9001 Certified facility and we are a Type III DMF holder. Combined with our audited quality system, product traceability and robust vendor audit program, trust MRP to fulfill any and all requirements.

With one of the most robust, recyclable plastic closure offerings in the market, MRP is your partner in sustainability. All MRP closures are available in Post Consumer Recycled resin to help achieve your sustainability goals. MRP Solutions takes the obligation to be a sustainable entity very seriously. As a manufacturer in the plastic packaging industry, we recognize the need to be socially responsible. Our sustainability initiatives start with our recyclable products and permeate our processes, energy consumption, design, development and waste stream. In addition to these efforts, MRP now includes PCR pricing on every quote.

Let our experienced, innovative, dedicated professionals help to provide the packaging solutions for your next project. Count on the experts at MRP to support your nutraceutical, pharmaceutical, food, personal care, home care, and health and wellness packaging needs.

Our MISSION



At MRP Solutions, our mission is to lead the market as a trusted partner delivering responsive packaging solutions.

MRP Solutions combines extensive packaging expertise with a consultative approach to reliably uncover customer needs. By understanding your business goals, we can tailor smarter, safer, and more flexible packaging solutions that reduce cost and increase speed to market, helping your businesses capitalize on opportunity. Across category and customer, shared purpose inspires unexpected ideas. By understanding our partners' business objectives and design requirements, we can reimagine our approach and tailor our solutions to achieve their desired outcome, applying decades of packaging expertise to move faster, efficiently, and cost-effectively in an ever-changing market.



www.mrpsolutions.com

See our ad on page 38 of this issue



MULTIVAC, Inc.

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

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

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

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.

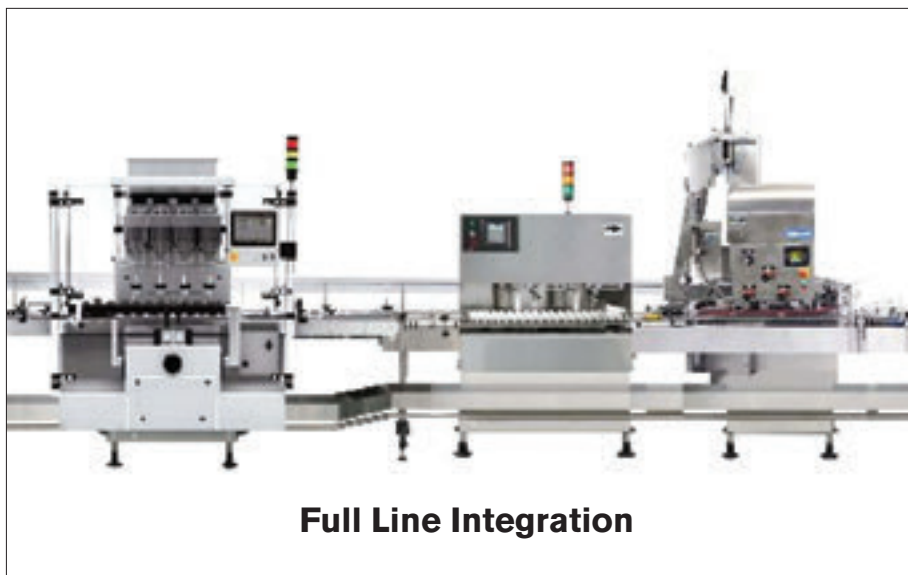
The worldwide MULTIVAC organization is comprised of more than seventy subsidiary companies serving countries on every continent.

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.com/us

See our ad on page 33 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 filling & closing systems for pharmaceutical liquid dosage are offered by our partner, Dara Pharma. NJM is Dara Pharma's exclusive sales partner in the USA and Canada.

Washing Systems and Sterilization & Decontamination Solutions – Washing, sterilization, and decontamination systems for the pharmaceutical industry are offered by our partner, Steelco.

Print & Apply – NJM print & apply labelers label cases, cartons, bags, pallets, drums and tires.

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 – Our Track & Trace systems manage the collection and aggregation of serialized units of production and enable customers to effectively satisfy FDA requirements.

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, washing systems, sterilization & decontamination systems, 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.

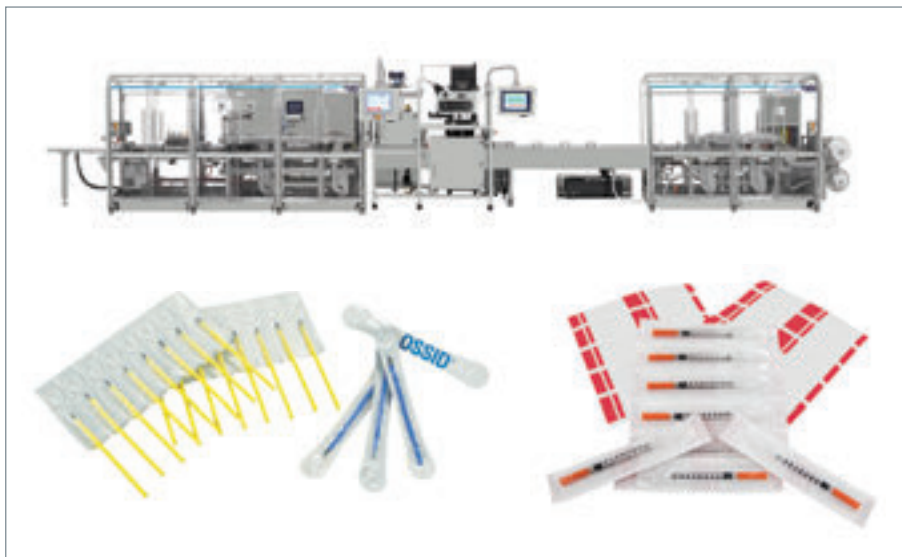
Industries Served:

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



www.NJMPackaging.com

See our ads on pages 19 and 31 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 thermoform 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 thermoform fill and seal 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 device thermoformers 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 machines are ideal for packaging medical devices, dental kits, syringes, pharmaceuticals, and other products.

In addition to thermoformers, Ossid is also a master distributor for the Reepack brand of flow wrappers. With four styles to choose from, flow wrappers can provide a packaging solution ideal for products requiring a hermetic seal or a simple dust covering. Let our team guide you to the best packaging solution for your application.

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. Ossid is a master distributor for Reepack, both are product brands of ProMach, a global leader in packaging line solutions. 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 52 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 7 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 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.



PAXIOM GROUP

We Automate Your Packaging

Weighing Filling Bagging Wrapping Capping Sealing Labeling Cartoning Forming Packing Palletizing

Weighpack **endflex** **VALTARA** **CANAPA** **XPERIENCE CENTER**

LAS VEGAS · MONTREAL · MIAMI · TORONTO · MILWAUKEE · SCHIO, ITALY

[PaxiomXperience](#) [@](#) [PaxiomGroup](#)

Paxiom Group

2037 East Maule Ave, Las Vegas, NV 89119 USA | **PHONE:** 1.833.4PAXIOM

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

The Paxiom Group designs, builds and delivers state-of-the-art packaging machines around the world. Manufactured through our WeighPack, EndFlex and ValTara brands, and supported by Paxiom Service, our primary, secondary and end-of-line solutions are engineered to fit almost any production requirement and budget.

We're not a typical packaging machine company. We're a single-source provider, meaning you get ONE point of contact for design, manufacturing, service and integration. And since we take full responsibility from line layout design, manufacturing and testing through to factory acceptance, installation and technical support, you get peace of mind that your investment is safe.

We've delivered thousands of machines to our clients since 1991, but we know that investing

in packaging automation is not just about the machine. It's about the people you work with, the company behind the machine and their infrastructure, longevity and support. That's why we aim to create long-lasting partnerships based on trust and a genuine desire to see you succeed.

From weighing, filling, bagging, flow wrapping and labeling to cartoning, case erecting, tray forming, case packing and robotic palletizing, we are confident we have the right automation solution for your business.

Let us design a system to increase your production rate and save you valuable time, labor and resources. Come meet us at one of our Xperience Centers near you.

Our MISSION



Customer Commitment

We are much more than our machines. We know that investing in packaging automation is not just about the machine, it's about creating long-lasting partnerships based on trust. We believe in doing things right the first time.

Innovation

While we take pride in designing and building solutions to meet the demands of today, we are always planning for the needs of tomorrow. We are committed to developing the products that our clients will need as they continue to grow.

Passion

Our staff of over 300 professionals is dedicated to finding the right system for your business. We use our decades of expertise to carefully evaluate each customer's distinct application and offer an ideal solution.

Integrity

Honesty, transparency and respect are at the core of everything we do, and we back up these words with our actions. Our roots in this industry run deep and our reputation for reliability, openness and accountability brought us to where we are today.



www.paxiom.com

See our ad on page 53 of this issue



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 32 of this issue



Our MISSION



How it Started

Established in 1924 as the Brooklyn Fiber Broom Company, our founder believed cleaning tools should be designed to eliminate associated safety issues.

Why Choose Us

To this day we develop each product with the same idea in mind. Reliable tools, made from quality materials, to address today's hygienic concerns.

Here and Now

Our TruCLEAN product line leads the critical cleaning industry with autoclave compatible mopping systems built for ultra-high cleanroom standards.

Perfex Corporation

32 Case Street, Poland, NY 13431 USA | **PHONE:** 800-848-8483

EMAIL: perfex@perfex.com | **WEBSITE:** www.perfex.com

Perfex Corporation is your trusted supplier of critical cleaning tools for controlled environments. Our TruCLEAN® product line is designed specifically for compliance with pharmaceutical industry standards. With nearly 100 years in business our cultured team is prepared to pinpoint the ideal products to exceed your sanitation goals.

TruCLEAN® Mopping Systems are manufactured with autoclave compatible components and temperature-resistant polypropylene buckets. Multiple configurations and colorways available, suited for large or small area cleanrooms of any grade. Capture and isolate contaminants to ensure the delivery of pure cleaning agents, no more dirty water or weakened solutions.

TruCLEAN Sponge Mop is the ideal tool for applying cleaning solution to floors, walls, and ceilings. Specifically formulated polyurethane foam with excellent microbial resistance, thick-bodied sponge protects delicate surfaces and conforms to uneven areas. TruCLEAN offers a variety of sponge and fiber mop heads to accommodate any critical manufacturing facility.

Perfex products can be found in diverse industries across the globe such as pharmaceutical, semiconductor, bioengineering, medical device, and life sciences. We keep our mopping supplies well stocked to ensure the safety of your workplace in emergency situations.



www.perfex.com

See our ad on page 34 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 semi-automated blister machine that is great for R&D, low volume type production.
- **Vision Systems** – Pharmaworks is the exclusive distributor of Scanware inspection systems in the USA and Canada.
- **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 for 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 in 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 customers.

Industries served:

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



www.Pharmaworks.com
See our ad on page 1 of this issue.



ProSys Fill LLC

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**
- **Lubricants**
- **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 55 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 46 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.

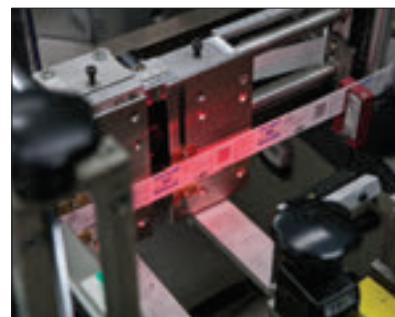
Track & Trace Ready Lines

Reed-Lane has 2 bottle serializations lines and 2 carton serializations lines for unit-level serialization and multi-level aggregation. All lines are compliant with the 2023 DSCSA deadline. The lines' 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 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.

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 the inside front cover of this issue.



Schreiner MediPharm, A business unit of Schreiner Group LP

300 Corporate Drive, Suite 10, Blauvelt, NY 10913

EMAIL info@schreiner-medipharm.com

PHONE 845.848.9000

WEBSITE www.schreiner-medipharm.com

Sustainable Labeling Solutions

Schreiner MediPharm recently debuted sustainability-minded versions of two popular solutions. One is a more sustainable Pharma-Tac label for infusion bottles, with an integrated hanger and removable documentation parts. The other is a more eco-friendly version of an Autoinjector-Label, featuring an anti-slip functionality. For both, Schreiner MediPharm utilized film materials that are either recycled or produced from renewable raw materials.

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.

First-Opening Indication for Pre-filled Syringes

Syringe-Closure-Wrap is a multifunctional label for pre-filled syringes that provides clear first-opening indication. The label wraps around the entire cap and syringe barrel. It is sealed at the top, securing the syringe's integrity until injection. Opening the label activates special security die-cuts resulting in its partial destruction, allowing users to immediately notice prior opening.

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, as can first-opening indication.

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.

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 more than 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.



www.schreiner-medipharm.com

See our ad on the back cover of this issue.



Sepha USA

10100 Progress Way, Harrison, OH 45030 USA

PHONE: 616-888-9081 / UK +44(0)2890 48 48 48 | 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

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 45 of this issue



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.

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.



www.spee-dee.com

See our ad on page 42 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 36 of this issue



Stevanato Group

12337 Parkside Drive, Fishers, IN 46038 USA | **PHONE:** 267 757 - 8747

EMAIL: dave.lamarca@stevanatogroup.com | **WEBSITE:** www.stevanatogroup.com

Founded in 1949, Stevanato Group is a leading global provider of drug containment, drug delivery and diagnostic solutions to the pharmaceutical, biotechnology and life sciences industries. Stevanato Group delivers an integrated, end-to-end portfolio of products, processes and services that address customer needs across the entire drug life cycle at each of the development, clinical and commercial stages. Stevanato Group's core capabilities in scientific research and development, its commitment to technical innovation and its engineering excellence are central to its ability to offer value-added solutions to clients.

Thanks to its unique approach as a one-stop-shop, Stevanato Group is able to offer an unprecedented set of integrated solutions to pharma and healthcare companies for a faster time to market and a reduced total cost of ownership.

As a global player in the industry, we blend our 70-year expertise and your needs to support you all the way from clinical trials to high volume production with our manufacturing solutions,

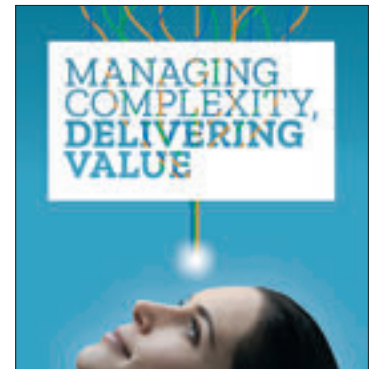
comprising vision inspection machines, assembly systems, packaging and end-of-line equipment. Stevanato Group's wide range of capabilities provide an unparalleled advantage for building out end-to-end solutions, all from one source, for different inspection requirements and drug delivery device projects.

With an holistic problem-solving approach, we unlock the potential of your business, delivering high-yield solutions designed and manufactured to reduce downtimes and increase OEE.

We operate out of US offices for local pre- and after-sales support; contact us today.

**Visit Stevanato Group at the
2023 INTERPHEX Show
New York City, NY
April 25-27, 2023
Stand 1319**

Our MISSION



We cooperate deeply with our partners all over the world, providing our know-how, resources and enthusiasm to turn every project into an achievement.

We are fully committed to be the best, objective-focused partner in the research and delivery of innovative solutions to support the success of our customers.

And we never stand still.

In fact, it's our continual innovation and pioneering of new trends in pharmaceutical glass packaging that ensures we produce the world's most advanced solutions year after year, enhancing the level of product integrity that can be guaranteed to patients and always seeking to exceed customer expectations.



www.stevanatogroup.com

See our ad on page 50 of this issue



Syntegon

869 South Knowles Avenue, New Richmond, WI, 54017 | **PHONE:** 715.243.2386

EMAIL: connectwithus@syntegon.com

WEBSITE: www.syntegon.com/solutions/medical-device-assembly-and-packaging

In demanding times, like the Covid-19 pandemic, Syntegon has been more determined than ever to improve the lives of individuals by offering medical manufacturers intelligent and efficient solutions, including customer services and digital solutions.

For example, Syntegon's Pack 301 LD Flow Wrappers were quickly adapted to begin packaging covid test kits during the height of the crisis. Fortunately, Syntegon's machines are built with flexibility at the forefront, so it was very simple for medical manufacturers that already had the machine to easily reprogram it to wrap these life-saving kits.

Long before helping during the pandemic, however, Syntegon machines have been used to package several commonplace medical products. The Pack 301 LD has hermetically sealed inhalers and IV bags. Whereas, the Pack 202 has wrapped syringes, renal tubs, and even birth control pills. Band sealers, such as the CBS-D 750m

or 1500m, are also used in the medical field to seal sterilized operating room instruments or dental tools.

Syntegon also specializes in automating the packaging process through robotics. Their Robotic Pick-and-Place system (RPP) is used to precisely pick up products and place them in their proper area for wrapping. This is can also be done with an integrated FANUC robot arm, as well. Syntegon also has the ability to add cameras and other equipment for inspection and validation

Syntegon also presents the remote service assistant, Synxio – a hands-free solution that enables remotely located experts to guide maintenance technicians using augmented reality.

Our MISSION



Syntegon offers processing and packaging solutions for a better life.

For more than 50 years, Syntegon has been providing complete solutions for the pharmaceutical and food industries. More than 6,100 employees at 30 locations in more than 15 countries generated a total revenue of 1.3 billion euros in 2019.

The portfolio of intelligent and sustainable technologies includes stand-alone machines, as well as complete systems and services. Fields of application in the medical industry are the production, processing, filling, inspection, and packaging of liquid and solid pharmaceuticals (e.g. syringes and capsules). In the food industry, the portfolio includes process technology for confectionery as well as packaging solutions for dry foods, frozen foods, bakery items, and dairy products.



www.syntegon.com

See our ad on page 41 of this issue



Systech

214 Carnegie Center, Suite 101, Princeton, NJ 08540 | **PHONE:** +1 800.847.7123

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

Systech provides digital identification and traceability solutions that establish essential product data, ensure digital connectivity and enable real-time insights on the packaging line, throughout the supply chain and into the consumer's hands. Our comprehensive platform—deployed in thousands of global implementations—empowers customers to know what is happening to a given product at every stage of its journey. As the pioneer of pharmaceutical serialization, we understand what it takes to achieve regulatory compliance and deliver true supply chain transparency.

Turnkey approach to serialization, line control and vision inspection

Systech delivers full-stack capabilities that can be deployed rapidly on any line, site or enterprise in any region. Our configurable packaging line solutions are unbeatable for ease of implementation and speed to accommodate changing demands across industries, including pharma, medical devices, nutraceuticals and more.

- Create unique product identifiers, automate pallet labeling and aggregate every packaging level for seamless traceability
- Provide site-level master data, serial number management, event reporting and offline serialization packing operations
- Establish enterprise-level connectivity with comprehensive track-and-trace and compliance integrations

Secure, end-to-end traceability

Systech provides a centralized, cloud-based solution for consolidating, sharing, managing and reporting product data from multiple sources across diverse supply chain ecosystems. Our traceability solution makes it easy to create a compliant system of record for your products in changing regulatory environments.

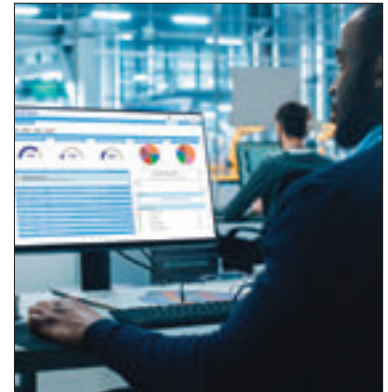
- Get item transfer visibility and secure data exchange across your global supply chain
- Create, modify and order the processing of data based on your requirements
- Address challenges such as regulatory compliance, recalls, warranty management, materials provenance and more

Product authentication

Authentication at the individual item level is the most effective way to prevent counterfeiting and diversion. Systech's non-additive e-Fingerprint® technology turns your existing package barcode into a unique digital identifier for an extra layer of digital protection. Each product becomes instantly connected to verify authenticity and gather actionable supply chain insight.

- Connect physical products to the digital supply chain for item-level authentication and traceability
- Detect product counterfeiting and diversion issues in real time
- Deliver item-specific details and capture feedback using a simple smartphone app

Our MISSION



Provide a comprehensive digital platform for solutions that create unique product data at the line level and deliver meaningful value from that data throughout the supply chain.

Global brands across industries rely on Systech to deliver the supply chain transparency and real-time insights necessary to address market requirements and gain business advantage.



www.systechone.com

See our ad on page 3 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 5 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 & fulfillment

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 4 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

See our ad on page 59 of this issue



Our MISSION



Innovate Boldly. Package Sustainably.

WestRock is a leader in sustainable, fiber-based packaging solutions. With about 58,000 WestRock team members and billions of packages in circulation, we have the responsibility and capability to make significant progress toward a more circular, sustainable economy.

We are materials scientists, packaging designers, mechanical engineers and manufacturing experts, using leading science and technology to drive innovation in packaging.

WestRock has more than 300 production facilities worldwide.

Leveraging our size and scale, we work as One WestRock, we partner with our customers to innovate toward their business and sustainability goals.

WestRock

1000 Abernathy Rd NE, Atlanta, GA 30328 USA | PHONE: +1 (770) 448-2193

EMAIL: healthcare1@westrock.com | WEBSITE: www.westrock.com

WestRock is a global leader in sustainable paper and packaging solutions. We are materials scientists, packaging designers, mechanical engineers and manufacturing experts with a shared purpose: Innovate Boldly. Package Sustainably. Guided by our values of integrity, respect, accountability and excellence, we use leading science and technology to move fiber-based packaging forward.

WestRock's best-in-class innovation engine leverages the largest set of fiber-based substrates, a vast network of converting and distribution capabilities and an unmatched packaging machinery platform to power the next generation of renewable, recyclable packaging. Our broad portfolio is operated in four segments – Consumer Packaging, Corrugated Packaging, Global Paper and Mill Operations. A uniquely integrated Commercial, Innovation and Marketing function

offers unrivaled end-to-end solutions and support to solve our customers' greatest challenges.

Our global operations include:

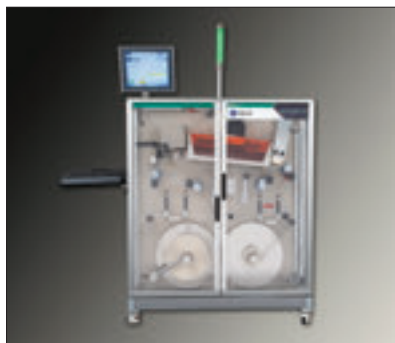
- More than 50,000 employees in the Americas, Europe and Asia-Pacific
- More than 30 containerboard and paperboard mills
- More than 320 operating and business locations
- Products in a wide range of markets, including healthcare, beauty and personal care, beverage, e-commerce, home and garden, media and electronics, packaged food, pizza and retail

Sustainability and innovation are fundamental to WestRock's vision to become the world's best paper and packaging company. By innovating for our customers and their customers, bettering the planet and supporting people and communities, we're imagining and delivering on the promise of a sustainable future.

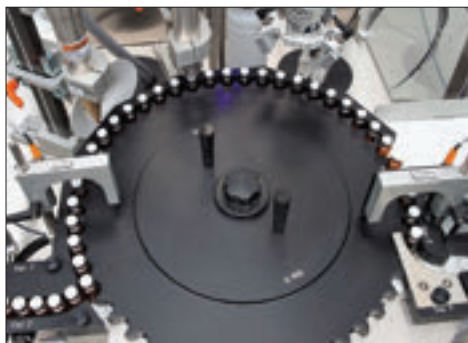


www.westrock.com

See our ad on page 23 of this issue



Autonomy® Digital Label Printer



VCV Vial Coder



VR-72 Trunnion Labeler



RL-420 Rotary Labeler

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/Medical Device**
- **Nutraceutical & Vitamins**
- **Food**
- **Beverage**
- **Consumer Products**

Learn more about WLS at
WeilerLS.com

WLS, a ProMach Product Brand

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

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.

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® is a high-speed, full-color, stand-alone digital label printer with integrated full-label inspection system. Printing variable and serialized data with label artwork.

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.



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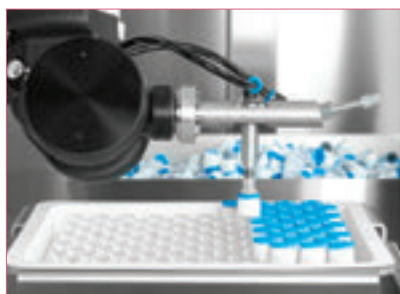
1 Filling and Closing System **GRONINGER**

- + The Groninger flexcare 100 filling and closing system processes a variety of products, such as OTC pharmaceuticals, diagnostics, and dietary supplements in sprays, drops, and syrups.
- + The modular system easily accommodates a variety of different types of closures, and a range of functions can be added, including multi-stage gas-sing, filling, and weight monitoring.

2 Robotic 3D Control/Picking Solution

STERILINE

- + The Steriline system features a robotic arm, a picker, an infrared ray stereoscopic vision system, and software for planning trajectories, accessing recipe databases, and interpreting data.
- + Suitable for capping and stoppering small batches that require an aseptic environment, the 3D Control/Picking Solution limits the release of particles to reduce the risk of contamination.



3 Pouch Handling System **SENCORPWHITE**

- + The SencorpWhite Accu-Pick AP-1016 compact bench-top pouch picker/opener eliminates manual pouch manipulation, increasing operator speed and throughput in manual product load and heat seal applications.
- + Accommodating most types of flat pouches/bags 3- to 10-in. wide and 6- to 16-in. long, it requires no change-parts when switching pouch sizes.



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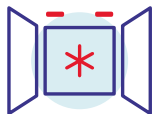


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