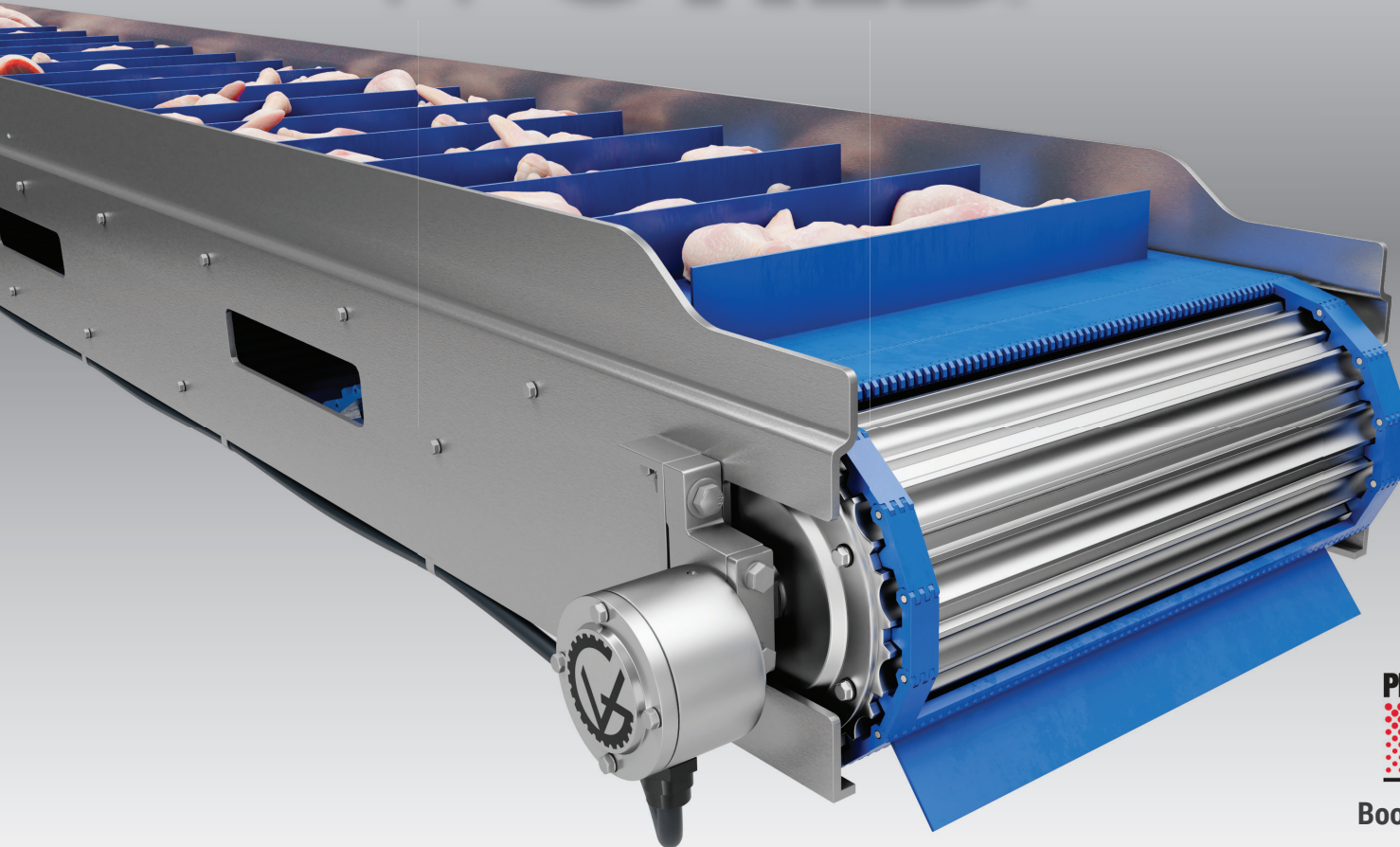


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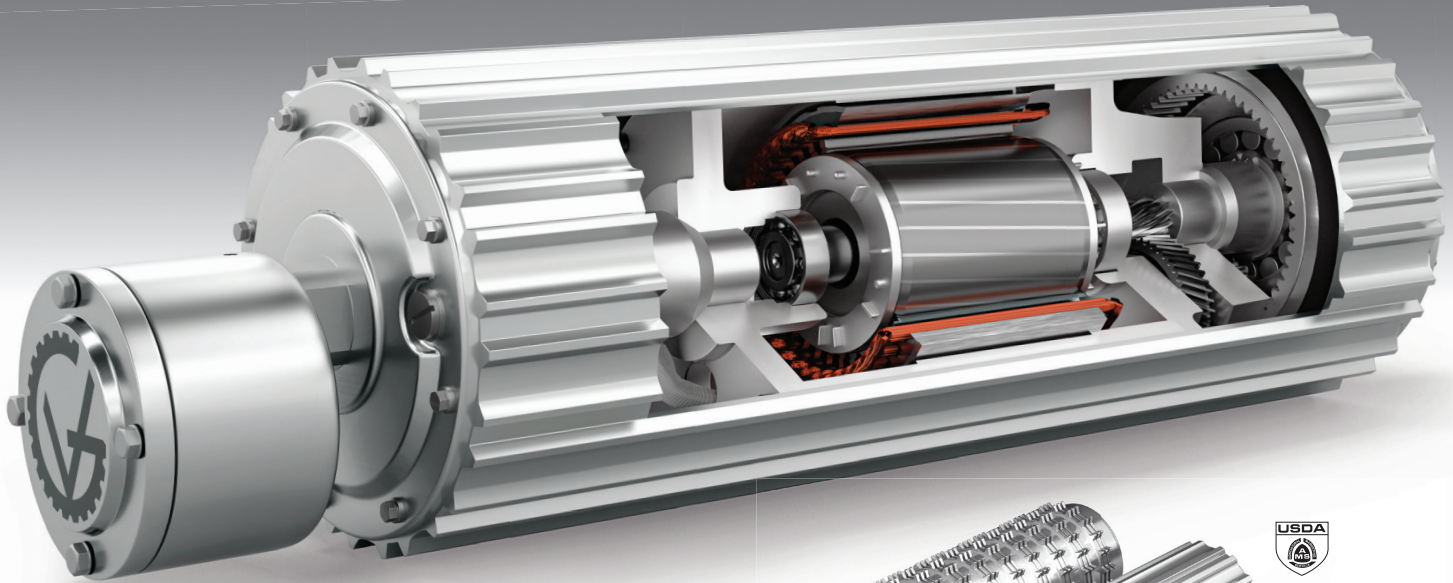
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Sweet Success

Smarties is a purveyor of the famous hard candy rolls that are enjoyed by millions worldwide. Their New Jersey facility stores dextrose in a 12 ft diameter silo that feeds a pneumatic conveying line. The silo was originally fitted with air injectors to promote flow but only erratic and unreliable discharge resulted.

In 2006 Vibra Screw installed a 6 ft diameter Bin Discharger and 6 inch volumetric Versifeeder. Both use controlled vibration to insure positive flow from the silo and uniform feeding to the conveying line.

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Weigh Belt
Feeders





41



58

DEPARTMENTS

6 From the Editor

Looking forward to a fruitful collaboration.

9 In the News

FDA announces Low- or No-Cost Food Traceability Challenge winners.

12 OpX Intel

Use the employee lifecycle approach to address workforce challenges.

17 Packaging Technology

PET kegs meet high pressure processing.

51 Plant Floor New Products

Take an inside look at the latest machinery and technologies for production facilities.

58 Case Study: Ruprecht

Enterprise resource planning becomes essential amid strong market growth.

63 Point of View

Tech companies help the FDA with track-and-trace solutions.

CONTENTS



20

ON THE COVER

Health Comes to the Fore

If one word sums up prevailing consumer attitudes, it's "Health." Though COVID-19 has been a driver, it didn't start out that way. Despite the shakeup amid the ongoing pandemic, many top companies in *ProFood World's* Global 250 Food and Beverage Manufacturers list have maintained their positions.

FEATURES

41 Tech Today: New Advances Meet Merging Challenges

As food and beverage manufacturers face changing market demands, safety requirements, and sustainability goals, mixing and blending technologies are meeting market challenges with increased automation, rapid cleaning, and customized approaches.

REFRIGERATION AND FREEZING SOLUTIONS

46 Case Study: Heekeren

Switching from three oil-lubricated rotary vane vacuum pumps to one frequency-controlled screw vacuum pump, a lettuce grower eliminated maintenance issues and improved process time and energy consumption.

48 New Products

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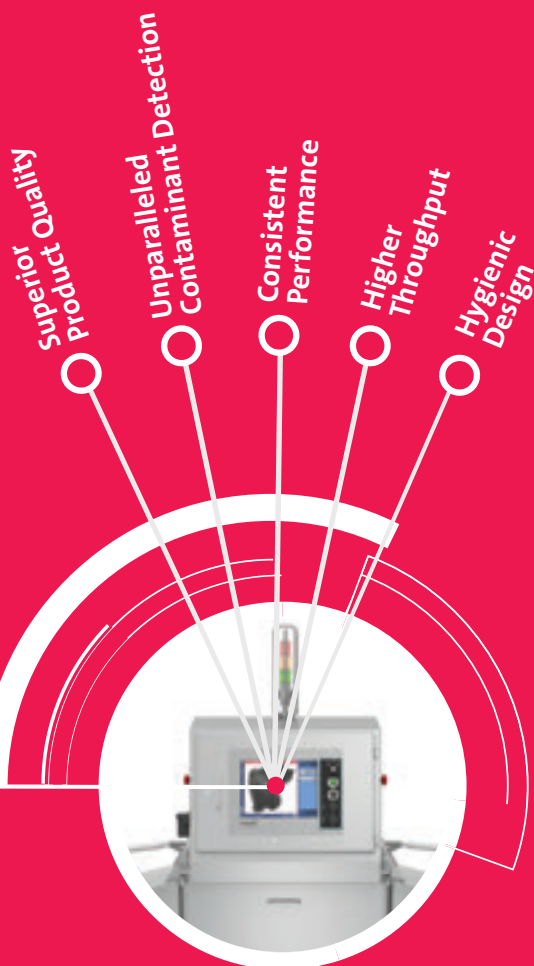
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Looking Forward to a Fruitful Collaboration

Amid helping hands and generous insight, I am grateful for the chance to lead *ProFood World's* editorial coverage of the processes and technologies that make the food industry run.



As we send this issue to the printer, we've just come from a very successful—albeit exhausting—PACK EXPO Las Vegas. In print pages, this is my first appearance as Editor-in-Chief of *ProFood World*. But in terms of meeting the industry's movers and shakers, PACK EXPO was certainly my public debut.

I'm thrilled with how forthcoming, helpful, and friendly everybody was who I met along the way.

Members of the OpX Leadership Network were cordial enough to let me sit in on their Executive Council Meeting, and to join them for conversation over dinner. The opportunity to listen to their most pressing concerns and pain points elucidated perspectives I might never have heard otherwise.

Also during the show, our editorial team at PMMI Media Group took the occasion to meet with several of our magazines' editorial advisers. It's worth noting that the advisers for *ProFood World* showed up in considerably higher numbers. I don't know if that's more a testament to this industry or to the kind of respect and trust my predecessor, Joyce Fassl, has developed over the years. Either way, several of them let me know that they were at my beck and call just as they have been for Joyce.

I come into this role with a solid background in trade publishing—30 years covering manufacturing technologies. But to say I have much to learn in this industry is an understatement. I am stepping into the shoes of somebody who has so far devoted 35 years to knowing and understanding this market, its technologies, its processes—and the people that make all of it work.

Joyce will continue to be an instrumental part of this publication. Though she's chosen to scale back her workload, she's not going anywhere, and for that I am grateful.

I look forward to working with all of you!

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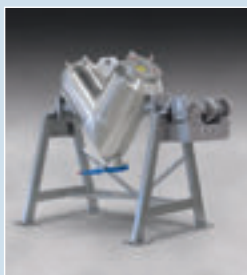
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FDA Announces Food Traceability Challenge Winners

MELISSA GRIFFEN | CONTRIBUTING EDITOR

THE U.S. FOOD AND DRUG ADMINISTRATION (FDA) this summer launched its FDA New Era of Smarter Food Safety Low- or No-cost Tech-enabled Traceability Challenge as part of the America COMPETES Reauthorization Act of 2010. The act calls upon companies to invest in innovation through R&D to improve U.S. competitiveness. The primary goal of this challenge was to encourage stakeholders—from technology providers to public health advocates to innovators—to develop traceability hardware, software, or data analytics platforms that are low or of no cost to end users.

This challenge included additional goals from the FDA's New Era of Smarter Food Safety Initiative and the New Era of Smarter Food Safety Blueprint, which cover end-to-end traceability and the development of creative financial models that are low- to no-cost solutions.

Out of 90 submissions from countries all over the world, the FDA announced 12 winners from the U.S., Canada, and New Zealand. Some commonalities between winners include alignment with GS1 Standards, multilingual options, and label generation. Following are synopses of a few winning entries.

Atma.io, Avery Dennison's connected product cloud—a platform for creating, managing, and assigning digital identities for individual items—is one of the components that provides item-level traceabil-



IMAGE COURTESY OF THE FDA

ity to each participant in the food supply chain, from source to store and from farm to fork, using Avery Dennison systems and proprietary blockchain technology through Mastercard Provenance. Each item-level event is tracked in atma.io and subsequently written to Mastercard Provenance, allowing producers to automatically feed in product attribute information for each SKU—for example, weight, price, and shelf life. With atma.io, parties can also receive alerts in the event of outliers, including customers with real-time information and notification on their products before and after purchase, such as in the case of a recall.

Freshly, from Shopify, is traceability and batch-tracking software designed for small businesses, including retailers, manufacturers, and distributors. Freshly is accessed for free by Shopify merchants, and tracks perishable products, such as baby food, organic produce, and seafood. Products, vendors, barcodes, and SKUs are automatically synced on Freshly once it is downloaded on Shopify. Freshly automatically assigns batches to orders using a

McCormick Named as Global Compact LEAD



McCormick has officially been named a Global Compact LEAD company by the United Nations for its ongoing commitment to the U.N. Global Compact and its Ten Principles for responsible business. McCormick is one of a small group of companies in the world and the only U.S.-headquartered food producer included on this prestigious list.

PepsiCo to Develop Its Largest, Most Sustainable Plant in Europe

PepsiCo held a foundation laying ceremony to celebrate the beginning of its construction of a \$257 million food manufacturing plant in Sroda Slaska, Poland, which will be the company's largest and most sustainable plant in Europe.



Todd Siwak to Lead Ferrero North America

Ferrero Group has announced the appointment of Todd Siwak as president and chief business officer of Ferrero North America. Siwak will be responsible for driving the strategic growth of Ferrero's expanding business in the U.S., Canada, and the Caribbean, including building on its success in confectionery and growing Ferrero's prominence in the cookie category.



Tyson Foods to Build New Plant



Tyson Foods is spending \$300 million to build a new fully cooked plant in Danville, Va. The 325,000-sq-ft, state-of-the-art facility will be used primarily to produce premium-quality, fully cooked Tyson branded chicken products, including Any'tizer Snacks and Chicken Nuggets.


first-expire-first-out or first-in-first-out method; batches can also be manually assigned. This method allows recalled items to be identified easily through any identifiers and for customers who bought those items to be quickly notified. Settings can be modified to specify how far in advance of expiry products should be sold in order to minimize waste.

HeavyConnect provides cloud-based digital traceability and compliance documentation solutions, including an intuitive mobile app that allows producers to capture traceability data in the field and seamlessly share it across the supply chain. The app is the primary tool for data collection and is optimized for real-world field conditions. Managers can access the data in real time from the dashboard. When product is logged on the app, the name of the employee is saved along with the date, time, and location of the report. Relevant dates and pictures of the product can be entered and uploaded onto the app without satellite data or Wi-Fi connection and can be synced to the dashboard afterward, if needed.

Mojix uses industry standards to link traceability events for each individual item and/or lot throughout the food supply chain to enable a low-cost and collaborative open data network. Each item has a uni-

versal ID and when an item is separated into parts, all key data elements (KDEs) and critical tracking events (CTEs) remain associated with the original ID. Distribution centers, processors, and wholesalers can attach information to the item through a digital link. The Mojix network synchronizes data from multiple sources and acts as a global repository.

OpsSmart Global provides an industry-proven, cloud-based traceability software system to meet food safety, recall management, and traceability needs of a complex supply chain. It is created to meet the needs of any size business within the food industry. Data can be input into the software through scan, manual input, or Excel sheets. The data is then used to alert concerning any outliers and can be adjusted to meet regulatory or customer demands. The software further allows customers who find a problem with the product to scan the product barcode and select "report to FDA." Tracing the product that needs to be recalled can then be done by tracing backward, forward, or across the supply chain.

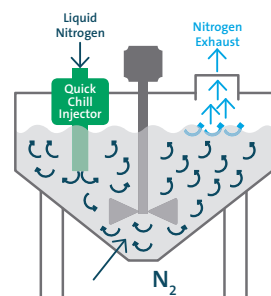
Learn more about the winning projects at <http://pfgwo.to/traceability>. See a related article on food safety and traceability in this issue on page 63. 



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Using the **Employee Lifecycle Approach** to Address Workforce Challenges

With more workers attracted to remote work opportunities, manufacturers must meet the challenge of recruiting and maintaining top talent for the plant floor. Learn how to assess your organization's strengths and weaknesses that can determine whether a potential employee chooses to join and remain at your company.

THE **EMPLOYEE LIFECYCLE** framework is a widely used approach to managing the multiple stages an employee experiences throughout their tenure with a company. How a company manages these stages can make or break the overall experience an employee has with it. This article takes a look at the stages of the employee lifecycle and examines some of the most significant challenges faced by consumer packaged goods companies (CPGs) in managing this framework, as well as some of the solutions

CPGs have implemented to overcome them. In addition, talent accelerator groups (TAGs) are highlighted as one of these solutions.

The employee lifecycle framework generally consists of six key elements that reflect the stages an employee or potential employee experiences in their time with a company:

- 1. Attraction**—what captivates or gets the attention of a potential employee early in their career decision-making process
- 2. Recruitment**—the process that potential employees go through as a company pursues them
- 3. Onboarding**—how a company brings on and prepares employees for the earliest experiences with the company
- 4. Development**—the ongoing training and career path opportunities experienced by employees
- 5. Retention**—the manner in which the company engages and taps into that discretionary effort throughout employees' time with the company (see sidebar on PMMI's OpX Leadership Network Workforce Engagement Framework on page 14)
- 6. Separation**—the time and manner in which employees exit the company

For CPGs and OEMs, one way to look at the entire employee recruitment and retention process is to organize all activities around the employee lifecycle framework to assess a company's relative strengths and weaknesses at all critical control points. How well a company performs at each point can greatly determine whether a potential employee chooses to join and remain at the company.



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CASE IN POINT

Challenges and opportunities in the employee lifecycle



TAMI LUPTON



OLIVIA MUNOZ

To gain additional insights into the employee lifecycle framework and real-life experiences that illustrate some of the challenges and solutions associated with it, FSO Institute interviewed Tami Lupton, director of human resources at Pretzels Inc., and Olivia Munoz, project engineer at Amway. Lupton and Munoz are members of FSO's recently introduced Workforce Engagement Talent Accelerator Group professional peer groups for emerging leaders and high-performing individuals.

FSO INSTITUTE: Out of the six elements of the employee lifecycle, which ones pose the greatest challenges for you at Pretzels Inc.?

LUPTON: The employee lifecycle approach is a very useful tool. However, we tend to focus most of our efforts at Pretzels in the beginning stages—attraction and recruitment. For us, attraction is all about our brand. It became a major focus for us a few years ago, as we became aware of our reputation at one of our plants, where due to our demanding scheduling system—seven days per week, 12 hours a day—we had to change the way we think in order to become more attractive to potential candidates. Through some employee-friendly scheduling changes and leadership changes, we were able to turn things around. Additionally, the sheer growth in our company—especially our recent expansion into Lawrence, Kan.—emerged as a source of attraction, as Pretzels is now seen as an employer of opportunity and job security.

During the early stages of the coronavirus pandemic, we held career drive-throughs that were very effective and efficient, given the challenges we were facing. With restrictions loosening, we've been able to continue our job fairs, live videos, and traditional media outlets. However, our most significant recruitment efforts are now those we conduct via social media.

FSO INSTITUTE: What are some of the solutions you've put in place to address retainment challenges?

LUPTON: Like many companies, we continue to look at onboarding to make a lasting impact on new employees by focusing on nurturing them early in their careers at Pretzels. Although all our positions, including bakers and extruders, have an early train-

ing system in place, we focus intently on packers, since those employees constitute a sizeable portion of our workforce. For them, we offer extensive training during their first three weeks, both in the classroom and on the plant floor. To engage new employees early on, we reach out to them through our Trumpia messaging platform before they begin work. We communicate with them through all types of messaging, including texts, pulse surveys, etc. This platform was especially helpful for us during the pandemic, as many employees were remote, but needed to be kept in the loop on things.

To offer employees the opportunity to work in different roles and to build bench strength for the organization, we offer further development opportunities for cross-training and skills development through our tiered program, our version of pay-for-skills. Having a pool of cross-trained employees greatly improves our scheduling capabilities.

While not always easy to see, these developmental opportunities can pay off in a variety of ways. For example, we made some significant improvements in our safety culture by making safety one of our core values and providing the necessary training to implement a safety-first culture. Our employees bought into it, took ownership of it, and became advocates for it. We were also able to build in a strong recognition program to reinforce it.

The separation stage of the employee lifecycle has a direct link to the attraction stage—the way a company treats its employees going out the door is as important as how it treats them coming in. You always want exiting employees to leave with a good taste in their mouths. In this stage, we are cognizant of our reputation and work hard to understand what motivates employees to leave, especially if they're leaving for reasons we can do something about.

PMMI's OpX Leadership Network Workforce Engagement Framework: A Critical Tool for Retaining a Workforce

PMMI's OpX Leadership Network Workforce Engagement document provides a roadmap for engaging employees throughout their careers. It is based on three foundational elements that must be in place for effective engagement: vision, values, and leadership. The framework itself is focused on three key pillars: empowerment, enablement, and connection. Forty-seven characteristics that define highly engaged employees and companies are spread across these three pillars. For each characteristic, descriptions are presented for a traditional manufacturing facility, including beginner, intermediate, and advanced levels. To help navigate the journey from beginner to advanced, leadership guidance is offered for each characteristic as well.

As an early adopter of the Workforce Engagement Framework, here's what Paul Schaum, COO at Pretzels Inc., says about employee engagement: "We saw early on that regardless of the projects undertaken in pursuit of better business outcomes, none could be successful without a fully engaged workforce to see them through. With help from the FSO Institute and PMMI's Workforce Engagement guidance document, we have made significant improvements in the overall engagement of our employees and continue to move the needle in a positive engagement direction."

The document is available for free download at www.opxleadershipnetwork.org/engagement/download/workforce-engagement.

FSO INSTITUTE: You've been involved in one of FSO Institute's professional peer groups for emerging leaders, the Workforce Engagement TAG. How has that helped your continuing development at Pretzels Inc.? Do you have anything like a TAG internally that enables peer-to-peer engagement?

LUPTON: TAG has provided me with the reassurance that we are not alone in the challenges we face at Pretzels Inc. Having the opportunity to share best practices and brainstorm solutions has been a great benefit, especially during the last 18 months.

FSO INSTITUTE: Out of the six elements of the employee lifecycle, which ones pose the greatest challenges for you at Amway?

MUNOZ: Over the past few years, the company has been going through restructuring efforts, which have become a challenge for both recruitment and retention. As a result of the organizational churn to move in a direction of accelerating sales growth combined with a strong job market, retention has been a challenge, as early-career professionals have been seeking other opportunities. Also, more tenured employees are opting into the voluntary separation packages that the company has offered. Furthermore, some initiatives, such as our internship program, which was

our primary pipeline to bringing talent into the organization and converting them to full-time employees after their graduation, have been scaled back due to both pandemic-related challenges for on-campus recruiting, as well as identifying our future recruitment strategies. As a result of the uptick in the voluntary separations of experienced employees, we now face organizational gaps and will need to hire some business-critical positions. Some of these require more experienced employees than those we would typically have in our internship program.

FSO INSTITUTE: What are some of the solutions you have implemented to address these challenges?

MUNOZ: I can speak to solutions we have implemented for recruiting young professionals into the workforce. For the past few years, I have been managing Amway's engineering division's internship program, and as a prior intern myself, I understand the mutual value to both the students and the company.

To recruit talent very early on a couple of years ago, when we had a significant focus on manufacturing automation initiatives, we partnered with a local high school robotics team and brought on two students between their senior year of high school and freshman year of college for a summer co-op program. This allowed us to retain one of the students

ABOUT THE OPX INTEL SERIES OF ARTICLES

PMMI's OpX
Leadership Network



has produced more than 20 manufacturing process-improvement documents for CPGs and OEMs. The FSO Institute has facilitated the adoption and implementation of these documents, especially for food and beverage manufacturers. This series of articles shows how CPGs are using OpX and FSO documents to improve their overall manufacturing health and collaboration with OEMs and other suppliers. Learn more at www.opxleadershipnetwork.org and www.fsoinstitute.com.

for several summers and provide meaningful opportunities for them, as well as bringing in young talent that can provide new perspectives on process automation. Also, we have partnered with prior interns to serve as “campus ambassadors” that help our recruiting team identify top talent on campus and can candidly speak peer-to-peer about their experiences with our program to provide a first-person perspective to potential talent.

FSO INSTITUTE: You’ve been involved in one of FSO Institute’s professional peer groups for emerging leaders, the Workforce Engagement TAG. How has that helped your continuing development at Amway? Do you have anything like a TAG at Amway that enables peer-to-peer engagement?

MUNOZ: TAG has given me new perspective on how others in the industry tackle similar challenges of recruitment and retention. Recruitment and retention in technical manufacturing roles has been an ongoing discussion industry-wide for years, and combined with a talent pool that is now more attracted to remote work opportunities, this can pose a challenge for companies to attract top talent and can accelerate the necessity for manufacturing automation. Similar to TAG, as part of Amway’s diversity and inclusion networks, we

have a subset of our Women’s Inclusion Network that is dedicated to our manufacturing and distribution groups for both hourly and salary employees in those areas. Broader to west Michigan, there are industry groups that provide networking and education opportunities, such as Inforum ManufacturingNEXT.

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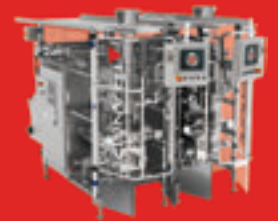
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PET Kegs Meet High Pressure Processing

Hiperbaric teamed up with Petainer, putting its One Way PET Keg under pressure to enable the cold-pressed juice market to take advantage of keg dispensing.

PETAINER'S ONE WAY PET KEG is already somewhat of a game changer in its own right. Originally aimed at the beer market, it reduces the logistical complexity and cost of steel kegs—which must be washed, sanitized, and purged with gas, and then sent back to the supplier once emptied. Petainer's keg, made from polyethylene terephthalate (PET), is already cleaned, sanitized, and purged with gas. And, as its name implies, it goes only one way—to the customer. Once emptied, it gets recycled rather than going back to the supplier. Then the next PET kegs arrive similarly prepped for use.

"The product actually arrives at the brewery, or whoever is going to fill the keg, already sanitized, already clean, and already purged with gas, so there's no oxygen in it," says Andy Brewer, Petainer's director of technical services for North America. "So the brewery...all they have to do is fill the keg with the product. The keg then goes out to trade where it is dispensed. And once it is finished with dispensing, the keg is depressurized, and then crushed, and then put in the recycle bin." The PET Keg uses the same types of fittings and valves as a standard steel keg, he adds, making operation standard.

Fast forward to Petainer's work with Hiperbaric, a leader in high pressure processing (HPP) technology, and the packaging has become even more of a game changer—in markets well beyond beer. Petainer has long been known for putting alternative beverages in its packaging to bring the benefits of draft dispense to multiple markets, including carbonated drinks, water products, juices, cold brew coffee, kombucha, cider, wine, and spirits.

The cold-pressed juice market showed interest in the capabilities of the One Way PET Keg, but that interest came with some unique challenges. As an unpasteurized product, the juice has a much shorter shelf life. Although Petainer's keg has a 12-month shelf life for oxygen purposes, that shelf life does not apply when live organisms in the juice itself corrupt the beverage. To rectify this situation, Petainer needed to partner with Hiperbaric and its HPP technology, thereby increasing shelf life of the juice to months rather than days.



PHOTO COURTESY OF HIPERBARIC

The cylindrical shape of the PET kegs adapts well to the processing chamber of the Hiperbaric HPP in-pack units.

"Anything with alcohol in it obviously has a good shelf life because the alcohol is a preservative," Brewer notes. "But with juices, there are a lot of sugars involved. So HPP has really been a benefit for that market."

The high-pressure process

Unlike pasteurization, HPP provides non-thermal preservation of food and beverage products, using high pressure to inactivate foodborne pathogens. "With juices, there are various ways that you can pasteurize, but HPP is the only one that uses no heat," Brewer comments. "If you put heat onto the product, you're going to start changing the product—especially with juice because there's high amounts of sugars in there, so you're going to sort of caramelize it quite a bit."

HPP, on the other hand, does not change the taste of the juice in any way. "HPP maintains freshness, nutrients, and flavor like freshly squeezed, non-processed juice," says Carole Tonello Samson, commercial applications director for Hiperbaric. "It also provides shelf-life extension and pathogen inactivation."

The process begins by the juice being cold-pressed and then filled into the sterile Petainer Keg that has been purged of oxygen. The keg then goes through

the HPP process—pressurized up to 80,000 psi to inactivate spoilage microorganisms and foodborne pathogens, such as salmonella, E. coli and listeria.

The keg is then taken to a location such as a juice bar, grocery store or café to be dispensed using nitrogen in the same way that wine is dispensed. The use of nitrogen enables the juice to maintain its shelf life in the keg, even if it's dispensed over a period of one to two weeks.

"For juice bars, the Petainer and Hiperbaric technology is a solution delivering safe and premium-quality products conveniently. HPP juices bring the same quality as freshly squeezed but without manual labor for peeling, squeezing, and cleaning," Samson says. "Kegs are much more suited to bars than HPP small juice bottles because they can deliver the exact quantity required for the customer beverage."

The keg format has become more popular in grocery stores as well, according to Brewer. "What we're finding with cold brew coffee, juices, and with kombucha is that people are looking for some form of recyclability. So they're looking at growlers," he says. "People will take the growler into the supermarket, go to a tap, and fill the growler with the product they



PHOTO COURTESY OF HIPERBARIC



The One Way PET Keg uses the same fittings and valves as standard steel kegs.

want, cap it, and then pay for the product. They will then wash the growler themselves and bring it back for reuse."

The cylindrical shape of the kegs adapts nicely to the processing chamber of the Hiperbaric HPP in-pack units, optimizing the filling ratio and the productivity of the system. In addition, the Petainer kegs and fittings are made of 100% recyclable materials and reduce the CO₂ footprint, becoming a more sustainable solution.

Sustainability factors

Though there is often pushback from consumers on the use of plastics, Brewer points to the benefits of



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the PET kegs. “PET is probably the most recyclable plastic there is. The kegs themselves arrive with about 40% recycled material in them already. So they can be recycled,” he says. “And the amount of material that is used for a keg is much lower, per volume, than it would be for a bottle.”

Brewer also argues the benefits of using a plastic keg once vs. using a steel keg repeatedly. “A steel keg will require washing with hot water up to 170 °F. It’s at least 3 or 4 gallons of water that’s needed for that, and you’ve got to take that water from ambient up to that temperature,” he points out. “You also have to use detergents; you also have to use acids. So there’s a lot of energy involved in actually washing a keg.”

Petainer has had to make relatively minimal changes to its kegs in order to make them withstand the conditions of HPP, according to Brewer. “You have a fitting or a valve on the keg that has to be opened so that you can dispense and so you can put the product in. The problem would be that if you just put the keg straight into the Hiperbaric pressure chambers, the pressure would open that valve,” he explains. “We needed a way of blocking that off, so we designed a plug that basically goes onto the

At PACK EXPO Las Vegas in September, a Technology Excellence Award was given to Hiperbaric In-Bulk technology for its innovation in high-volume processing of HPP beverages.

Processing beverages in-bulk prior to bottling, the new technology simplifies the process, improves HPP operation productivity, and reduces processing cost and energy consumption. In addition, it allows the use of any type of container after HPP processing, regardless of material, design, or size.

After months of narrowing down more than 100 qualified entries, two days of onsite voting allowed PACK EXPO Las Vegas and Healthcare Packaging EXPO attendees to be the ultimate judge of the most innovative new technologies at the show.



valve, similar to how a coupler would go on, and it seals it off. So even though pressure may build up, there’s no way that pressure gets to the valve.”

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HEALTH COMES TO THE FORE

AARON HAND | EDITOR-IN-CHIEF

If one word sums up prevailing consumer attitudes, it's "Health." Though COVID-19 has been a driver, it didn't start out that way. Despite the shakeup amid the ongoing pandemic, many top companies in *ProFood World's* Global 250 Food and Beverage Manufacturers list have maintained their positions.

DURING COVID-19 LOCKDOWNS, many consumers shifted their relationships with food. Largely, they were trends that were already beginning to take root, but the pandemic really accelerated many of them. Consumers are looking for healthier diets—more mindful not only of what they're eating, but where it's coming from. They want transparency about how their food is sourced. They're paying more attention not just to calories, but their macros, trying to get the right balance of carbs, fats, and proteins.

Though the COVID-19 pandemic has certainly been

a driver for that healthy behavior, it didn't initially push people in that direction. According to shopping data from Ibotta, 2020 saw American consumers buying 33% more desserts, 16% more cheese, and 12% more chocolate than they did in 2019.

Alcohol purchases were up across the board as well. Consumers bought more brandy (43%), tequila (40%), and whiskey (39%) in 2020 than they did in the previous year, and also more cocktail mixes (30%), flavored wine (73%), and rosé wine (34%).

As the pandemic has worn on, however, consumer atti-

Top 250 Food and Beverage Manufacturers Global Retail Sales

2020 Rank	2019 Rank	Ranking Change 2019/2020	Company	Headquarters	Major industries	Major Brands	Global Retail Food and Beverage Sales (\$Millions)	Number of Manufacturing Plants
1	1	-	The Coca-Cola Co.	United States	Carbonates, Bottled Water, Juices, Iced Tea	Coca-Cola, Diet Coke, Sprite, Fanta	116,171	413
2	2	-	PepsiCo Inc.	United States	Carbonates, Sport Drinks, Sweet and Savory Snacks, Iced Tea	Pepsi, Gatorade, Lay's, 7UP, Doritos	110,442	285
3	3	-	Nestlé SA	Switzerland	Dairy Products, Bottled Water, Breakfast Cereals, Coffee, Confectionery	Nescafé, Nestlé, Maggi, Nespresso, Nestea	100,111	403
4	4	-	Mondelez International Inc.	United States	Confectionery, Biscuits	Oreo, Belvita, Cadbury	42,869	126
5	5	-	Groupe Danone	France	Dairy Products, Bottled Water, Baby Food	Aptamil, Activia, Danone, Evian	39,388	202
6	6	-	Unilever Group	United Kingdom	Ready Meals, Sauces, Tea	Knorr, Magnum, Lipton, Hellmann's	38,767	258
7	7	-	Kraft Heinz Co.	United States	Sauces, Ready Meals, Concentrates	Kraft, Oscar Mayer, Heinz, Philadelphia, Kool-Aid	37,139	82
8	8	-	Mars Inc.	United States	Confectionery, Biscuits, Pet Food	M&M's, Extra/Orbit, Snickers, Mars	28,289	74
9	9	-	Groupe Lactalis	France	Dairy Products, Ready Meals	President, Galbani, Rondelé	21,762	250
10	10	-	Ferrero Group	Italy	Confectionery	Kinder, Ferrero Rocher, Nutella	20,181	18
11	12	▲	General Mills Inc.	United States	Dairy Products, Ready Meals, Breakfast Cereals	Yoplait, Häagen-Dazs, Annie's	18,684	51
12	11	▼	Inner Mongolia Yili Industrial Group Co. Ltd.	China	Dairy Products, Ready Meals	Yili, Ambrosial, Satine	18,631	
13	13	-	Kellogg Co.	United States	Breakfast Cereals, Sweet and Savory Snacks, Snack Bars	Corn Flakes, Pringles, All-Bran	17,907	40
14	14	-	Grupo Bimbo SAB de CV	Mexico	Baked Products	Bimbo, PlusVita, Sara Lee	16,181	194
15	15	-	China Mengniu Dairy Co. Ltd.	China	Dairy Products	Mengniu, Deluxe, Jun Le Bao	14,274	33
16	18	▲	Keurig Dr Pepper Inc.	United States	Carbonates, Sport Drinks, Juices	Dr Pepper, Canada Dry, Snapple	13,723	32
17	17	-	Campbell Soup Co.	United States	Sauces, Ready Meals, Concentrates	Campbell's, Pepperidge Farm, Arnett's, V8	13,396	32
18	19	▲	Conagra Brands Inc.	United States	Sauces, Ready Meals	Rotel, Hunts, Frontera	13,419	51
19	16	▼	Suntory Holdings Ltd.	Japan	Bottled Water, Tea, Spirits	Boss, Suntory Tennensui, Iyemon, Green Dakara	12,749	67
20	20	-	Red Bull GmbH	Austria	Energy Drinks	Red Bull	11,105	2
21	23	▲	The Hershey Co.	United States	Confectionery, Snack Bars	Hershey's, Reese's, Kit Kat	10,778	9
22	22	-	Wilmar International Ltd.	Singapore	Vegetable Oils	Arawana, Gold Ingots, Olivoila	10,589	450
23	21	▼	Ting Hsin International Group	Taiwan	Vegetable Oils, Ready Meals, Sauces, Soft Drinks	Master Kong, Wei Chuan, High Quality	10,018	
24	25	▲	Monster Beverage Corp.	United States	Energy Drinks, Carbonates	Monster, NOS, Burn	9,629	1
25	24	▼	Royal FrieslandCampina NV	Netherlands	Dairy Products, Ingredients	Hollandia, Campina, Dutch Lady	9,249	14
26	34	▲	WH Group	China	Meats	Shineway, Farmland, Armour, John Morrell	7,361	13
27	27	-	Asahi Group Holdings Ltd.	Japan	Bottled Water, Tea, Confectionery	Wonda, Mitsuya, Calpis Water	6,967	95
28	33	▲	Barilla Holding SpA	Italy	Baked Products, Ingredients	Barilla, Mulino Bianco, Voiello	6,900	30
29	31	▲	Meiji Holdings Co. Ltd.	Japan	Dairy Products, Baby Food, Confectionery	Meiji Oishii Gyunyu, Meiji Bulgaria Yogurt, Savas	6,898	12
30	37	▲	Tyson Foods Inc.	United States	Ready Meals, Sauces	Tyson, Jimmy Dean, Hillshire Farm, Ball Park	6,878	241
31	28	▼	Lotte Group	South Korea	Confectionery, Ready Meals, Ice Cream	Lotte, Lotte Icis, Chilsung Cider, Cantata	6,829	
32	29	▼	Arla Foods Amba	Denmark	Dairy Products, Ingredients, Ready Meals	Arla, Lurpak, Yoggi	6,796	3
33	30	▼	Kirin Holdings Co. Ltd.	Japan	Tea, Health Products	Kirin Gogono-kocha, Namacha, Kirin Fire	6,632	
34	32	▼	Uni-President Enterprises Corp.	China	Dairy Products, Tea, Ready Meals	Uni-President, Uni Milk Tea	6,239	44
35	41	▲	Yamazaki Baking Co. Ltd.	Japan	Baked Products, Confectionery	Yamazaki, Hear, Peko, Lunch Pack	5,930	
36	35	▼	Yakult Honsha Co. Ltd.	Japan	Dairy Products, Ready Meals	Yakult, Doshirak	5,899	15
37	42	▲	Ajinomoto Co. Inc.	Japan	Ready Meals, Ingredients, Sauces	Blendy, Maxim, Calpis Water	5,814	
38	38	-	Chocoladefabriken Lindt & Sprüngli AG	Switzerland	Confectionery	Lindt, Ghirardelli, Whitman's	5,749	8
39	57	▲	Upfield Holdings BV	Netherlands	Margarines, Spreads	Flora, Stork, I Can't Believe It's Not Butter	5,701	17
40	43	▲	Nissin Foods Holdings Co. Ltd.	Japan	Ready Meals, Dairy Products, Confectionery	Nissin, Cup Noodles, UFO, Crisp Choco	5,628	25
41	54	▼	Hormel Foods Corp.	United States	Sauces, Ready Meals, Concentrates, Frozen Food, Vegetable Oils	Hormel, Spam, Skippy, Valley Fresh	5,528	75
42	48	▲	McCormick & Co. Inc.	United States	Sauces, Ingredients, Ready Meals	McCormick, Kamis, Vahine, Giotti	5,462	27
43	40	▼	Perfetti Van Melle Group	Netherlands	Confectionery	Mentos, Chupa Chups, Alpenliebe	5,403	32
44	47	▲	Groupe Bel	France	Dairy Products	Leerdammer, GoGo squeeZ, La Vache Qui Rit, Boursin	5,354	30
45	36	▼	Reckitt Benckiser Group Plc (RB)	United Kingdom	Baby Food	Enfamil, Nutramigen, Sustagen	5,351	9
46	49	▲	The J. M. Smucker Company	United States	Ready Meals, Ingredients, Ice Cream, Juices, Coffee	Folgers, Dunkin' Donuts	5,336	26
47	39	▼	Abbott Laboratories Inc.	United States	Baby Food	Similac, PediaSure, Ensure	5,152	11
48	45	▼	Bright Food (Group) Co. Ltd.	China	Confectionery, Ready Meals, Ingredients	Bright, Momchilovtsi, Sunbeam, Tnuva	5,142	
49	55	▲	Indofood Sukses Makmur Tbk PT	Indonesia	Ready Meals, Dairy Products, Ingredients, Tea	Indomie, Supermi, Indomilk, Tiga Sapi	5,140	
50	52	▲	Saputo Inc.	Canada	Dairy Products, Ingredients	Saputo, Alexis de Portneuf, Armstrong, Baxter	5,048	58

Data Source: Euromonitor

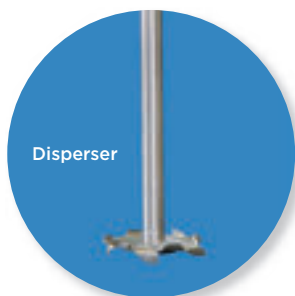
2020 Rank	2019 Rank	Ranking Change 2019/2020	Company	Headquarters	Major industries	Major Brands	Global Retail Food and Beverage Sales (\$Millions)	Number of Manufacturing Plants
51	64	▲	Yangshengtang Co. Ltd.	China	Health Products	Nongfu Spring, Tea Pai, Nongfu Orchard	4,649	2
52	51	▼	Gujarat Co-operative Milk Marketing Federation Ltd.	India	Dairy Products, Ice Cream	Amul, Mithai Mate, Kool Koko	4,642	18
53	50	▼	Savencia SA	France	Dairy Products	Elle & Vire, Caprice des Dieux, G�ramont	4,622	9
54	53	▼	Orkla Group	Norway	Ready Meals, Sauces, Confectionery, Snack Bars, Ingredients	Ham�, Fun Light, Stabburet, Toro, Grandiosa	4,601	79
55	44	▼	ITO EN Ltd.	Japan	Tea, Coffee, Bottled Water	Oi Ocha, Kenko Mineral Mugicha, Ito En Tennen Mineral Mugi Cha	4,528	2
56	46	▼	Froneri Ltd.	United Kingdom	Frozen Food, Ice Cream	Peters, Froneri	4,430	11
57	58	▲	China National Cereals, Oils & Foodstuffs Imp & Exp Corp. (COFCO)	China	Vegetable Oils, Ingredients	Fortune, Xiangxue Flour, Sundry, Le Conte	4,358	
58	59	▲	Pladis Ltd.	United Kingdom	Confectionery, Biscuits	Godiva, McVitie's, Ulker	4,233	10
59	56	▼	TC Pharmaceutical Industry Co. Ltd.	Thailand	Energy Drinks, Carbonates, Snack Bars, Sports Drinks	Red Bull, Kratingdaeng, Sponsor Active	4,209	
60	128	▲	Adani Group	India	Vegetable Oils, Rice, Soy Products	Fortune, Alpha, Raag	4,160	25
61	65	▲	Nomad Foods Ltd.	British Virgin Islands	Frozen Food	Iglo, Findus, Lutosa	4,038	17
62	61	▼	Associated British Foods PLC	United Kingdom	Breakfast Cereals, Ready Meals, Vegetable Oils, Tea	Twinings, Ovaltine, Jordans	4,065	46
63	77	▲	Ebro Foods SA	Spain	Sauces, Ready Meals	Panzani, Brillante, La Cigala, Sundari	4,055	38
64	68	▲	Oetker-Gruppe	Germany	Frozen Food, Ingredients, Dairy Products Beer	Dr. Oetker, Backin, Paula, W�lkchen	3,986	5
65	63	▼	JA Group (Japan Agricultural Cooperatives)	Japan	Rice	N/A	3,919	47
66	70	▲	Feihe International Inc.	China	Milk, Soy Milk, Baby Food, Cereals	Firmus, Opo	3,870	27
67	69	▲	Grupo Lala SAB de CV	Mexico	Dairy Products	Lala, Yomi Lala, MiLeche	3,852	9
68	85	▲	Toyo Suisan Kaisha Ltd.	Japan	Ready Meals, Frozen Food	Maruchan, Sanshoku Yakisoba, Sanshoku Udon	3,791	11
69	62	▼	Fonterra Cooperative Group Ltd.	New Zealand	Dairy Products	Anchor, Mainland, Perfect Italiano	3,782	14
70	73	▲	Intersnack Group GmbH & Co. KG	Germany	Sweet and Savory Snacks	Chio, Curly, Monster Munch, Soletti	3,641	32
71	71	-	Shijiazhuang Junlebao Milk Co. Ltd.	China	Dairy Products	Jun Le Bao	3,590	16
72	76	▲	Megmilk Snow Brand Co. Ltd.	Japan	Dairy Products, Baby Food	Hokkaido, Snow Brand, A1	3,584	18
73	67	▼	Want Want Holdings Ltd.	Taiwan	Biscuits, Snack Bars, Dairy	Wang Zai, Want Want, Tositaka-Kun Shuzawa, Mum-Mum	3,576	100
74	66	▼	Fujian Dali Food Co. Ltd.	China	Baked Products, Ready Meals, Sweet and Savory Snacks, Tea	Hi-tiger, Hegizheng	3,463	
75	75	-	CJ Corp.	South Korea	Ingredients, Health Functional Foods, Desserts, Snacks	Snow White, The Healthier, Go Back	3,337	15
76	60	▼	Arcor SAIC	Argentina	Confectionery, Ready Meals, Juices, Biscuits	Arcor, La Campagnola, bon o bon, Cofler	3,335	40
77	82	▲	Ezaki Glico Co. Ltd.	Japan	Ice Cream, Confectionery, Baby Food, Sweet and Savory Snacks	Pocky, Papico, Bifix, Cratz	3,259	10
78	80	▲	Post Holdings Inc.	United States	Breakfast Cereals, Sweet and Savory Snacks, Frozen Food, Snack Bars	Post, Malt-O-Meal, Uncle Sam	3,227	32
79	91	▲	Almarai Co. Ltd.	Saudi Arabia	Dairy Products, Baked Products, Poultry, Baby Food, Juices	Almarai, L'Usine	3,149	9
80	79	▼	Sigma Alimentos SA de CV	Mexico	Dairy Products, Ready Meals, Frozen Food	Fud, Noche Buena, San Rafael, La Villita	3,139	31
81	81	-	Dean Foods Co.	United States	Dairy Products	Dairy Pure, TruMoo, Dean's, Silk	3,105	70
82	87	▲	Morinaga Milk Industry Co. Ltd.	Japan	Dairy Products, Ingredients, Nondairy Drinks	Parm, Creap, Morinaga Oshii, Piknik	3,058	20
83	89	▲	Haribo GmbH & Co. KG	Germany	Confectionery	Haribo	3,019	15
84	108	▲	Morinaga & Co. Ltd.	Japan	Confectionery, Baked Products, Health Drinks, Desserts	Mt Rainer, Hi-Chew, in Jelly	2,906	9
85	86	▲	Starbucks Corp.	United States	Coffee, Tea, Bottled Water	Starbucks, Seattle's Best Coffee, Teavana	2,868	9
86	94	▲	Nong Shim Co. Ltd.	South Korea	Sweet and Savory Snacks, Ready Meals, Bottled Water	Shin Ramyun, Baeksansoo, Jeju Samdasoo	2,803	11
87	84	▼	Grupo Nutresa SA	Colombia	Confectionery, Meats, Frozen Food, Coffee, Ice Cream, Ingredients	Zen�, Pozuelo, Zuko, Caf� Sello	2,787	46
88	88	-	Cereal Partners Worldwide SA	Switzerland	Breakfast Cereals	Fitness, Uncle Tobys, Cheerios, Nesquik	2,781	14
89	74	▼	Hangzhou Wahaha Group Co. Ltd.	China	Coffee, Carbonates, Tea, Porridges	Wahaha, Nutrition Express, Maoyuan	2,778	60
90	96	▲	Kikkoman Corp.	Japan	Sauces, Ready Meals, Nondairy Drinks	Kikkoman, Del Monte	2,738	3
91	191	▲	HelloFresh SE	Germany	Prepared Meals	HelloFresh	2,722	12
92	103	▲	Flowers Foods Inc.	United States	Baked Products	Nature's Own, Alpine Valley Breads, Mi Casa	2,716	49
93	101	▲	Vietnam Dairy Products JSC (Vinamilk)	Vietnam	Dairy Products, Soy Milk, Baby Food	Vinamilk, Dielac, Dielac Alpha	2,704	9
94	72	▼	Otsuka Holdings Co. Ltd.	Japan	Bottled Water, Soft Drinks	Pocari Sweat, Oronamin, Crystal Geyser	2,684	13
95	78	▼	Strauss Group Ltd.	Israel	Dairy Products, Coffee, Juices, Confectionery, Biscuits	Sabra, Elite, Doncaf�, Pedro's, Frisco	2,641	20
96	90	▼	JDB Group	China	Tea	Jiaduobao, Kunlun Mountain	2,640	
97	97	-	Calbee Foods Co. Ltd.	Japan	Sweet and Savory Snacks, Frozen Food	Calbee, Calbee, Harvest Snaps, Yushoi	2,610	15
98	92	▼	Del Monte Pacific Ltd.	Singapore	Juices, Processed Fruit and Vegetables, Sauces	Del Monte, S&W, Contadina	2,604	12
99	99	-	B&G Foods Inc.	United States	Ready Meals, Sauces	Green Giant, Bear Creek, B&M, Accent, Ortega	2,594	7

Data Source: Euromonitor

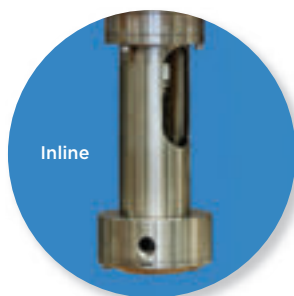
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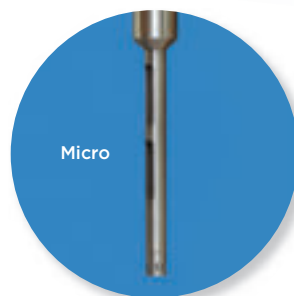
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tudes have taken a turn for the healthier side of life. They're more mindful of the ingredients that are in the foods they continue to cook from home. More and more consumers are venturing into plant-based diets, at least experimentally. And alcohol consumption has continued to drop precipitously.

Plant-based options

Interest in plant-based foods—which avoid not only meats but other animal-derived foods such as dairy—was already surging before the pandemic. Plant-based foods have outpaced conventional animal product sales for the third consecutive year, according to a report from the Plant Based Foods Association (PBFA) and The Good Food Institute (GFI). But COVID-19 has given the sector even more of a boost with an increased focus among consumers on personal health, sustainability, food safety, and animal welfare.

Data from PBFA and GFI showed U.S. retail sales of plant-based foods increasing by 27% in 2020, bringing the total market to \$7 billion. That's almost twice as fast as the total U.S. retail food

market grew during that pandemic year, up 15% with restaurants closed.

Sales of plant-based meats grew 45% in 2020, rising to \$1.4 billion. Here again, this sector grew twice as fast as conventional meat. Refrigerated plant-based meats, which are increasingly shelved beside conventional meats, grew 75%. That's significantly better than frozen plant-based meats, although they still grew 30%—10 times faster than in 2019.

Plant-based milk accounts for 35% of the total plant-based food market. It's a much more established category than the plant-based meats are, but still saw a big boost in 2020 as well—with sales up 20%. Again, that's twice as fast as sales of cow's milk grew. This sector is dominated by almond milk, but oat milk has surged ahead of soy milk.

"2020 was a breakout year for plant-based foods across the store," says Kyle Gaan, an analyst for GFI Research. "The incredible growth we saw in plant-based foods overall, particularly plant-based meat, surpassed our expectations and is a clear sign of where consumer appetites are heading."

Despite the considerable growth in all plant-based

COVID-19 Pandemic Fuels Labor Unrest

AMID ALL THE CHANGES that the industry has been facing throughout the pandemic, an underlying factor coloring it all is a chronic labor shortage. Like so many of the other trends, it's one that was already present but that has been exacerbated by the effects of the pandemic.

Labor shortages take their toll not only on food and beverage manufacturers, but on their existing employees as well. And in several cases, unions are rising up to demand change. Chronic labor shortages and mandatory overtime fueled unrest as the economy began bouncing back from the pandemic, according to a report from the Food Institute. "Employees who risked their lives early in the pandemic are demanding wage increases and

other benefits, and unions see a better chance at succeeding as dissatisfaction grips the workforce," the report notes.

Hundreds of workers at Frito-Lay, owned by PepsiCo, were on strike for nearly three weeks in July to protest working conditions inside the manufacturing plant in Topeka, Kan. They struck for wage increases and an end to forced overtime.

Workers recently ended a strike at the Olymel pork processing plant—one of the largest in Quebec, Canada—in a dispute over pay and conditions. The four-month strike meant that about 180,000 pigs were unable to be sent to the slaughterhouse, according to pork producers in the area.

Workers at five Nabisco plants across the U.S. reached an agreement with the Mondelēz-owned company recently to end a weeks-long strike based primarily on proposed shift changes and overtime rules. There was also concern about the company sending jobs to Mexico.

Exceldor, one of Canada's largest poultry producers, faced a month-long strike, ending in June, from workers at two Quebec plants. They were demanding better wages and working conditions.

Smithfield Foods narrowly avoided a strike in June from meatpacking workers at its pork plant in Sioux Falls, S.D., by agreeing to pay increases and expanded benefits. Nearly 1,300 workers had caught COVID-19 during an outbreak in 2020.

Tyson Foods (No. 30), the largest U.S. meat company by sales, has been working with labor unions to get support for the vaccine mandate that it put in place. On Aug. 3, Tyson said that all U.S. employees must be vaccinated against COVID-19 by November. Agreements with two labor unions include new benefits for workers, including paid sick leave.



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2020 Rank	2019 Rank	Ranking Change 2019/2020	Company	Headquarters	Major industries	Major Brands	Global Retail Food and Beverage Sales (\$Millions)	Number of Manufacturing Plants
100	144	▲	August Storck KG	Germany	Confectionery	Campino, Merci, Bendicks	2,590	3
101	118	▲	The Schwan Food Co.	United States	Frozen Food, Ready Meals	Schwan's, Red Baron, Freschetta, Tony's	2,567	10
102	83	▼	Bunge Ltd.	United States	Ingredients, Vegetable Oils	Espiga, Primor, Nutra-Clear NT	2,539	166
103	95	▼	Guangzhou Pharmaceutical Holding Ltd.	China	Health Drinks	Wong Lo Chai, Wang Lao Ji	2,521	
104	93	▼	McCain Foods Ltd.	Canada	Sweet and Savory Snacks, Frozen Food	McCain, Healthy Choice	2,511	47
105	107	▲	Luigi Lavazza SpA	Italy	Coffee	Lavazza, Carte Noire	2,448	5
106	unranked	NA	Unternehmensgruppe Theo Müller Secs	Germany	Dairy Products, Meats	Müller, Almholf, Homann, Lisner	2,445	19
107	172	▲	Jinmailang Food Co. Ltd.	China	Noodles, Snacks, Flour, Juices	Jinmailang, Want Want, Foco	2,392	38
108	213	▲	Dongwon Group	South Korea	Seafood	Starkist	2,383	7
109	111	▲	Bonduelle Groupe SA	France	Ready Meals, Frozen Food, Vegetables	Bonduelle, Cassegrain, Artic Gardens, Globus	2,346	54
110	104	▼	Sodiaal SA (Société de Diffusion Internationale Agro-alimentaire)	France	Dairy Products, Baby Food, Ingredients	Yoplait, Candia, Entremont, Le Rustique, Viva	2,288	70
111	114	▲	McKee Foods Corp.	United States	Snack Bars	Little Debbie, Sunbelt Bakery, Drake's	2,276	4
112	100	▼	Tine SA	Norway	Dairy Products, Juices	Tine, Go, Iste, Biola, Sommer	2,260	31
113	117	▲	JG Summit Holdings Inc.	Philippines	Snacks, Coffee, Ice Cream, Noodles, Confectionery, Vegetable Oils, Tea	Great Taste, C2 Cool, Jack n' Jill	2,184	
114	116	▲	Shenzhen Ganten Industry Co. Ltd.	China	Bottled Water	Ganten	2,141	10
115	113	▼	Britannia Industries Ltd.	India	Baked Products, Dairy Products, Biscuits	Britannia, Tiger, VitaMarieGold	2,133	13
116	110	▼	Orion Group	South Korea	Biscuits, Confectionery, Sweet and Savory Snacks	Orion, Choco Boy	2,126	12
117	112	▼	China Resources Holdings Co. Ltd.	China	Bottled Water, Tea	C'estbon, Afternoon, Fire	2,120	40
118	122	▲	Kewpie Corp.	Japan	Sauces, Ingredients	Kewpie	2,110	17
119	109	▼	Cargill Inc.	United States	Pet Food, Vegetable Oils, Ingredients	Liza, Pomarola	2,086	
120	119	▼	Agropur Co-operative Agro-Alimentaire	Canada	Dairy Products	biPro, Natrel, OKA	2,083	
121	125	▲	M Dias Branco SA Indústria & Comércio de Alimentos	Brazil	Biscuits, Margarines, Spreads, Flour	Adria, Vitarella, Piraquê	1,967	15
122	115	▼	United Confectioners	Russia	Biscuits, Desserts, Confectionery	Alionka, Bon Roll, Darx	1,943	19
123	131	▲	The Wonderful Co. LLC	United States	Juices, Nuts, Bottled Water, Wines	Fiji, Justin, POM, Wonderful	1,942	9
124	98	▼	BRF SA	Brazil	Pet Food, Frozen Food, Vegetable Oils	Sadia, Qualy, Perdigao, Boccatti	1,940	45
125	121	▼	Parle Products Pvt. Ltd.	India	Biscuits, Confectionery, Sweet and Savory Snacks	Parle, Melody, 20-20	1,938	9
126	141	▲	Link Snacks Inc.	United States	Ready Meals	Jack Link's	1,929	7
127	124	▼	Mayora Indah Tbk PT	Indonesia	Coffee, Tea, Biscuits, Confectionery	Kopiko, Torabika, Energen	1,926	2
128	140	▲	Chobani LLC	United States	Dairy Products	Chobani	1,916	2
129	106	▼	Tiger Brands Ltd.	South Africa	Processed Fruits and Vegetables, Baby Food, Soft Drinks	Koo, Albany, Enterprise, Oros	1,896	5
130	142	▲	Maple Leaf Foods Inc.	Canada	Meats	Maple Leaf, Larsen, Shopsy's, Mitchell's	1,877	
131	129	▼	Dole Food Co. Inc.	United States	Frozen Food, Juices	Dole	1,868	
132	unranked	NA	Patanjali Ayurved Ltd.	India	Ingredients, Baked Products	Ruchi, Patanjali	1,863	
133	127	▼	Premier Foods PLC	United Kingdom	Ready Meals, Sweet and Savory Snacks, Baked Products	Ambrosia, Batchelors, Angel Delight, Mr. Kipling	1,859	10
134	126	▼	ITC Group	India	Noodles, Pasta, Sauces, Ingredients	Sunfeast, Yipee!, Kitchens of India	1,857	
135	120	▼	Karnataka Cooperative Milk Producers Federation Ltd.	India	Dairy Products	Nandini	1,843	27
136	134	▼	Karl Fazer Oy Ab	Finland	Baked Products, Confectionery	Pihlaja, Mignon, Fazer Blue	1,836	22
137	102	▼	Agrofert as	Czech Republic	Pet Food, Frozen Food	Olma, Krahulik, Penam, Tatra	1,810	
138	133	▼	Valio Oy	Finland	Dairy Products, Ingredients	Valio, Valsa, Eila	1,808	18
139	132	▼	KDV Group OOO	Russia	Snacks, Baked Products, Confectionery	Tri Korochki, Chipsoni, Chipsoni Gold	1,764	15
140	152	▲	Blue Diamond Growers	United States	Non-dairy Drinks, Sweet and Savory Snacks, Biscuits	Almond Breeze	1,752	4
141	139	▼	Land O'Lakes Inc.	United States	Dairy Products	Land O'Lakes, Alpine Lace, Kozy Shack	1,732	
142	unranked	NA	Grupo Gloria SA	Peru	Dairy Products, Soft Drinks	Gloria, Pil, Pura Vida, Algarra, Suiza Dairy	1,725	9
143	137	▼	Groupe Fleury Michon	France	Snacks, Sauces, Ingredients, Processed Meats	Fleury Michon	1,722	15
144	138	▼	Chiquita Brands International Inc.	United States	Ready Meals, Fruits	Chiquita, Fresh Express	1,721	9
145	159	▲	House Foods Corp.	Japan	Ingredients, Spices, Sauces	House, Gaban, New Crown Ace	1,659	8
146	unranked	NA	Casa Tarradellas SA	Spain	Baked Products, Meats, Frozen Food, Cereals	Herta, Casa Tarradellas	1,656	
147	143	▼	Britvic PLC	United Kingdom	Carbonates, Sport Drinks, Juices	Robinsons, DaFruta, Club Mixers, Energise Sport	1,612	12
148	167	▲	Australia Ausnutria Dairy Pty Ltd.	China	Baby Food	Ausnutria, Neolac, Allnutria	1,611	
149	135	▼	Aje Group	Peru	Carbonates, Bottled Water, Juices, Sports Drinks	Big, Cielo, Pulp, Cifrut	1,577	32
150	151	▲	Shikishima Baking Co. Ltd.	Japan	Baked Products, Snack Bars	Shikishima Baking Kashipan, Choujuku, Pasco	1,555	15

Data Source: Euromonitor

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markets, this is not an indication that the world is filled with vegans and vegetarians. Combined, they account for only about 6% of consumers, according to Greg See Hoye, market manager for the plant-based protein industry at Dedert, a supplier of drying and evaporation technologies. But what has developed significantly, he said at a recent Powder Show presentation, is the flexitarian sector.

In general, flexitarians, which make up almost a third of the market, recognize the benefits of a vegan or vegetarian diet, but still like meat. This is a big reason why several manufacturers, See Hoye said, are driven to make their plant-based proteins taste more like meat—along the lines of the Beyond Burger or Impossible Chicken Nuggets.

Chocolates with milk alternatives

Some of the biggest names in chocolate are getting into the plant-based game through milk alternatives. In June, Nestlé (No. 3 in the Top 250) released KitKat V, a vegan version of the chocolate product, made with a rice-based milk alternative. The company had previously launched plant-based alternatives for ice cream, coffee creamers, rice- and oat-based drinks, a range of non-dairy cheeses, and others.

Mondelēz (No. 4) has reportedly had a vegan

version of its Cadbury Dairy Milk chocolate bar in the works for some time. And early this year, Mondelēz acquired Hu, a fast-growing provider of plant-based snacks, including vegan and paleo-friendly chocolate bars.

Mars (No. 8) was an early entrant on the plant-based scene, launching a vegan range of its Galaxy chocolate bars in late 2019. Several other top food and beverage manufacturers have joined the plant-based fray in one way or another.

Alcohol alternatives

As consumers rethink their health and wellbeing amid the pandemic, they are also starting to weigh the benefits of reducing their alcohol intake. This is another trend that began before the pandemic, but which has intensified further because of it.

In August 2019, Nielsen published a report that pointed to the rise of the “sober curious” movement. As with many of today’s consumer trends, the Nielsen report says, Millennials are driving the movement toward mindful drinking, with 66% making an effort to reduce their alcohol consumption. That’s well above the 47% among all U.S. consumers 21 and older.

Within bars and restaurants, no- and low-alcohol



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beer is the fifth-fastest growing beer type in the U.S., and has a total value of \$77 million, according to Nielsen. In retail, non-alcoholic beverages were worth \$7 billion more in 2019 than they were just four years prior.

What this means for alcoholic beverage providers is the need to get more creative in their offerings. The void will not be filled with flavorless seltzers and club sodas, but rather a more premium offering that provides the same kind of experience an alcoholic cocktail can provide. "Near-beers, premium soft drinks, mocktails, low- and non-alcoholic options, kombuchas, and botanical tinctures all offer a wealth of opportunity for on-premise establishments to experiment with and promote to consumers," the Nielsen report notes. "Skillfully crafted mocktails...can offer uniqueness, health benefits, and an appearance that fits the occasion—a bar experience without the buzz."

2020 was a difficult year for alcoholic beverages, but consumer demand continues to increase for no/low-alcohol products, according to a report from IWSR Drinks Market Analysis. Total volume of that sector is expected to grow 31% by 2024, the report says.

The bulk of that market is the beer and cider cat-

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2020 Rank	2019 Rank	Ranking Change 2019/2020	Company	Headquarters	Major industries	Major Brands	Global Retail Food and Beverage Sales (\$Millions)	Number of Manufacturing Plants
151	157	▲	Alicorp SAA	Peru	Vegetable Oils, Pasta, Confectionery, Milk, Spreads	Primor, Blanca Flor, Alacena	1,552	
152	147	▼	Sargento Foods Inc.	United States	Cheese	Sargento	1,546	4
153	153	-	Fuji Baking Co. Ltd.	Japan	Baked Products, Cakes, Noodles	Fuji	1,533	6
154	149	▼	Arizona Beverage Co. LLC	United States	Energy Drinks, Iced Tea, Juices, Bottled Water	Arizona, Good Brew, Rickey's!	1,522	1
155	154	▼	Tchibo GmbH	Germany	Coffee	Tchibo, Eduscho, Cafissimo	1,481	
156	145	▼	Eckes-Granini Group GmbH	Germany	Juices, Soft Drinks, Concentrates	Granini, Rynkeby, Mehukatti	1,461	10
157	158	▲	Foshan Haitian Flavouring & Food Ltd.	China	Sauces, Condiments	Haitian	1,457	1
158	136	▼	Hebei Yangyuan Zhihui Beverage Co. Ltd.	China	Non-dairy Drinks	Yangyuan	1,457	
159	156	▼	Kapal Api Group	Indonesia	Coffee, Biscuits, Confectionery	ABC Susu, Kapal Api, Good Day	1,440	1
160	150	▼	Ocean Spray Cranberries Inc.	United States	Juices, Fruit Snacks	Ocean Spray, Craisins	1,418	9
161	160	▼	Tata Consumer Products Ltd.	India	Tea, Coffee, Bottled Water, Dairy Products	Tetley, Tata Tea, Eight O'Clock	1,416	12
162	168	▲	NH Foods Ltd.	Japan	Beef, Poultry, Fish, Dairy Products	NH, NH Foods, Hoko	1,400	92
163	146	▼	Strauss/São Miguel	Brazil	Coffee	3 Coracoes, Santa Clara, Pimpinela, Grao Fino	1,393	34
164	155	▼	National Dairy Development Board	India	Milk, Vegetable Oils	Wamul, Quality Mark, Dhara	1,391	
165	148	▼	Emami Ltd.	India	Health Products, Vegetable Oils	Enami	1,368	3
166	175	▲	People's Food Holdings Ltd.	China	Frozen Meats, Poultry	Jinyu	1,354	
167	unranked	NA	Mizkan Group Corp.	Japan	Sauces, Ingredients	Mizkan, Ragū, Zenb, Bertolli	1,341	24
168	130	▼	Kagome Co. Ltd.	Japan	Dairy Products, Soft Drinks	Yasai Seikatsu 100, Kagome	1,327	7
169	180	▲	Bourbon Corp.	Japan	Sweet and Savory Snacks, Biscuits, Confectionery, Baked Products	Elise, Pikkara, Potelka	1,309	8
170	162	▼	Thai Beverage PLC	Thailand	Beer, Spirits, Bottled Water	Crystal, Chang, Mekhong, SangSom	1,308	20
171	173	▲	Ganaderos Productores de Leche Pura SA de CV	Mexico	Dairy Products	Alpura, Alpura Light, Alpura Kids	1,304	10
172	161	▼	Dydo Drinco Inc.	Japan	Coffee, Bottled Water, Sports Drinks	DyDo, Saka, Wakagokochi, Miu	1,298	
173	216	▲	Hero Group GmbH	Switzerland	Baby Food, Cereal Bars, Jams	Hero, Hero Baby, Hero Muesly	1,289	
174	123	▼	The Hain Celestial Group Inc.	United States	Tea, Grains, Ingredients, Ready Meals, Snack Bars, Juices, Sauces	Celestial Seasonings, Blue Print, Ella's Kitchen, Almond Dream	1,286	
175	177	▲	National Grape Co-operative Association Inc.	United States	Juices, Wines	Welch's	1,283	7
176	unranked	NA	Primo Water Corp.	United States	Bottled Water	RC Cola, Eden Springs, Mey Eden, Alhambra	1,280	
177	226	▲	Hostess Brands LLC	United States	Baked Products	Dolly Madison, Hostess, Twinkies, Donettes	1,274	5
178	170	▼	Ottogi Foods Co. Ltd.	South Korea	Condiments, Vegetable Oils, Ingredients, Noodles, Frozen Food	Ottogi	1,257	
179	188	▲	IDS Borjomi International	Ukraine	Bottled Water	Svyatoy Isthchnik, Borjomi, Morshynska, Myrgorodska	1,247	12
180	219	▲	Anhui Three Squirrels Electronic Commerce Co. Ltd.	China	Snacks, Tea, Fruit Products, Nuts	Three Squirrels	1,242	1
181	181	-	Emmi Group	Switzerland	Dairy Products, Soft Drinks	Emmi Caffé Latte, Comella, Aktifit, Benecol, Emmi	1,239	30
182	201	▲	Americana Group	Kuwait	Meats, Poultry, Frozen Food, Canned Food	California Garden, Farm Frites, Koki, Americana Meat	1,232	29
183	209	▲	Charoen Pokphand Group	Thailand	Ready Meals, Meats, Poultry	Michelina's, Authentic Asia, Kitchen Joy, Thai Thai, Royal Umbrella	1,225	10
184	206	▲	San Miguel Corp.	Philippines	Meats, Ingredients	Baker's Best, Buttercup, Cheezee, Chocolait	1,220	32
185	189	▲	Shenyang Toly Bread Co. Ltd.	China	Baked Products, Cakes	Taoli	1,202	
186	211	▲	Gruma SAB de CV	Mexico	Ready Meals, Baked Products, Flour	Mission, Maseca, Masa Rica, Tortimasa, Guerrero, Tortiricas	1,190	59
187	203	▲	Vital Pharmaceuticals Inc. (VPX)	United States	Energy Drinks	Bang, Redline	1,186	2
188	176	▼	Beijing Sanyuan Foods Co. Ltd.	China	Dairy Products	Ilactou, Sanyuan, St Hubert	1,186	1
189	169	▼	Crown Confectionery Co. Ltd.	South Korea	Sweet and Savory Snacks	Choko Heim, Heim, Jolly Pong	1,181	4
190	178	▼	Cloetta AB	Sweden	Confectionery	Läkerol, Cloetta, Jenkki	1,171	5
191	199	▲	Savola Group	Saudi Arabia	Vegetable Oils, Pasta	Zaaki, Yudum, Shams	1,165	
192	187	▼	Thai Union Frozen Products PCL	Thailand	Fish	Chicken of the Sea, John West, Bellotta	1,162	11
193	190	▼	Granlatte Società Cooperativa Agricola arl	Italy	Dairy Products	Granarolo, Granlatte, Candia	1,150	
194	200	▲	Bofrost Dienstleistungs GmbH & Co. KG	Germany	Frozen Food, Ice Cream	Bofrost	1,145	
195	166	▼	Empresas Carozzi SA	Chile	Confectionery, Sauces, Biscuits, Baked Products	Carozzi, Costa, Ambrosoli	1,138	11
196	212	▲	Kameda Seika Co. Ltd.	Japan	Snacks	Kameda no Kaki no Tane, Tsumami Dane, Usuyaki	1,132	4
197	183	▼	Clif Bar & Co.	United States	Snacks Bars, Sweet and Savory Snacks	Clif Bar, Zbar	1,130	1
198	242	▲	Ready Pac Produce Inc.	Germany	Bread, Baked Products	Harry, 1688	1,128	4
199	231	▲	Johnsonville Sausage LLC	United States	Meats, Ready Meals, Sauces	Johnsonville, Giddy Up	1,120	
200	205	▲	Conservas La Costeña SA de CV	Mexico	Ready Meals, Sauces, Vegetable Oils, Ingredients	La Costeña	1,112	2

Data Source: Euromonitor

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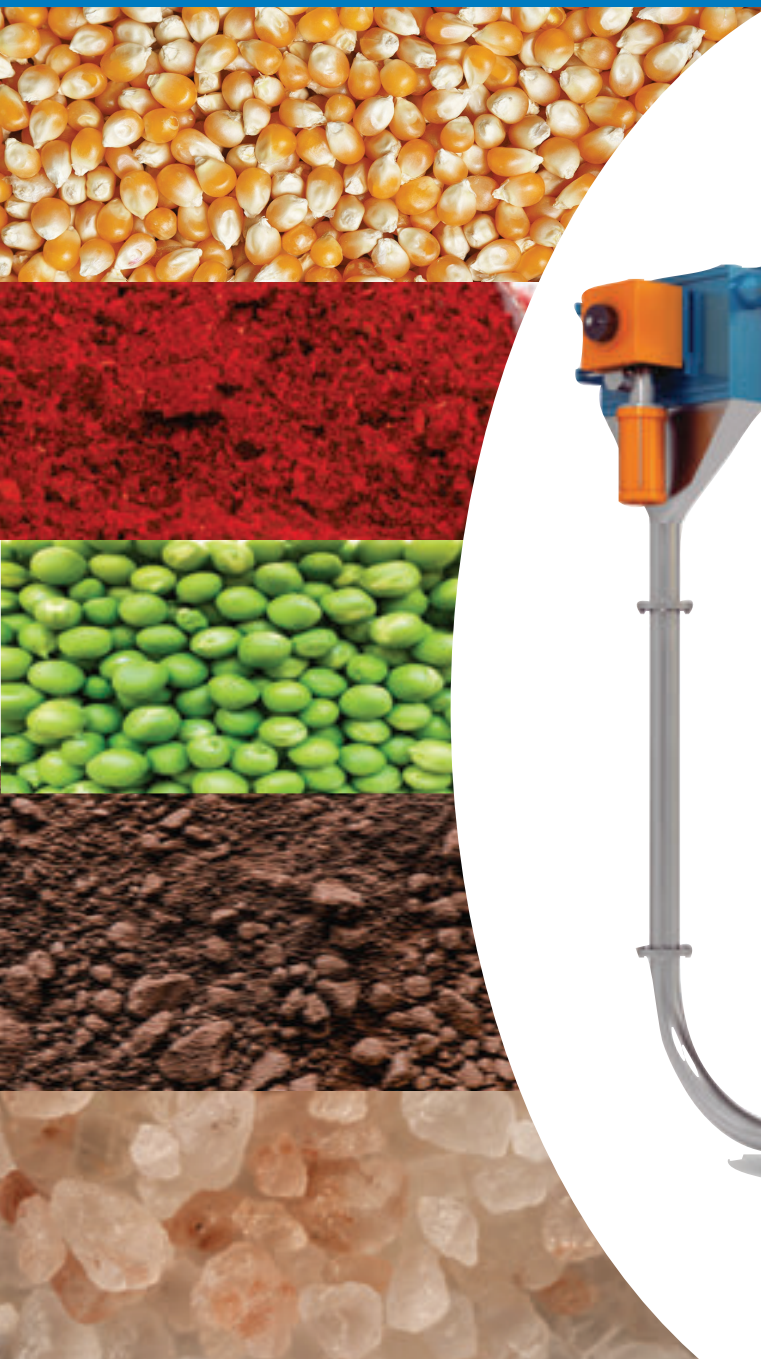
2020 Rank	2019 Rank	Ranking Change 2019/2020	Company	Headquarters	Major industries	Major Brands	Global Retail Food and Beverage Sales (\$Millions)	Number of Manufacturing Plants
201	222	▲	Capri Sun Group Holding AG	Germany	Juices	Capri Sun	1,112	24
202	221	▲	China Resources Enterprise Ltd.	Hong Kong	Rice, Meat, Frozen Foods	Ng Fung	1,106	14
203	234	▲	Lantmännen ek för	Sweden	Cereals, Pasta	Go Green, Axa, Start!	1,104	
204	198	▼	Grupa Maspek Wadowice	Poland	Juices, Ready Meals, Sauces, Ingredients	Tymbarak, Caprio, Kubus, Tiger	1,104	21
205	unranked	NA	Nippon Suisan Kaisha Ltd.	Japan	Seafood	Nissui	1,097	5
206	194	▼	Itoham Yonekyu Holdings Inc.	Japan	Frozen Meats, Processed Meats	Itoham, Yakituba, Niku Dango	1,089	4
207	163	▼	Guangdong Strong (Group) Co. Ltd.	China	Snacks, Instant Seaweed, Milk Tea, Confectionery	U-loveit, Strong, Cici	1,087	3
208	214	▲	Shandong Luhua Group Co. Ltd.	China	Vegetable Oils	Luhua	1,082	17
209	unranked	NA	Talking Rain Beverage Co.	United States	Soft Drinks, Flavored Water	Sparkling Ice, Talking Rain, Tre	1,076	1
210	unranked	NA	Fortenova Grupa d.d.	Croatia	Cereals, Vegetable Oils, Cheese, Bottled Water	Frikom, Jana, Jamnica, Sarajevski Kiseljask	1,069	
211	unranked	NA	Goya Foods Inc.	United States	Frozen Food, Processed Fruit and Vegetables, Confectionery	Goya	1,067	
212	232	▲	Utz Quality Foods Inc.	United States	Snacks	Utz, Bachman, Zapp's, Dirty Potato Chips	1,055	11
213	186	▼	Mastellone Hnos SA	Argentina	Dairy Products	La Serenisima, Yogurísimo, Danonino	1,052	7
214	204	▼	Cooperativa de Productos de Leche Dos Pinos RL	Costa Rica	Dairy Products, Confectionery, Juices, Carbonated Drinks	Dos Pinos, Pinito, Deligurt, Gallito	1,036	7
215	197	▼	Coca-Cola Hellenic Bottling Co. SA	Switzerland	Carbonates, Juices, Iced Tea, Sports Drinks, Bottled Water	Dobry, Rich, Pulpý Dobry, Moya Semya	1,033	14
216	241	▲	Maeil Dairies Co. Ltd.	South Korea	Dairy Products, Baby Food	Baristar Rules, Maeil Milk, Absolute, Maeil Bio	1,028	7
217	unranked	NA	Danish Crown Amba	Denmark	Meats, Ready Meals, Frozen Food	Sokolow, Tulip, Danish Crown, Friland	1,026	91
218	215	▼	New Hope Dairy Co. Ltd.	China	Dairy Products	Sichuan Huaxi, Yangping Milk, Kunming Xuelan Milk	1,020	11
219	223	▲	The Bolton Group	Italy	Sauces, Vinegars, Fish, Canned Meats	Rio Mare, Saupiquet, Palmera	1,019	12
220	202	▼	Tamil Nadu Cooperative Milk Producers Federation Ltd.	India	Dairy Products, Ingredients, Non-dairy Drinks	Aavin	1,018	4
221	195	▼	JBS SA	Brazil	Frozen Meats, Poultry	Seara, Swift, Friboi	1,015	31
222	217	▼	Deoleo SA	Germany	Juices	Capri Sun	1,014	6
223	unranked	NA	Lorenz Snackworld GmbH	Germany	Sweet and Savory Snacks	Country Chips, Crunchips, Crustics, Naturals	1,013	6
224	210	▼	Jiabao Group Co.	China	Ready Meals	Jiabao	1,011	6
225	174	▼	Pandurata Alimentos Ltda.	Brazil	Baked Products, Biscuits	Bauducco, Bauducco Cereale	996	3
226	unranked	NA	Kind LLC	United States	Snacks Bars	Kind	986	
227	208	▼	Wonder Sun Dairy Co. Ltd.	China	Dairy Products, Baby Food, Non-dairy Drinks	WonderSun, Anlicong, Wanda	982	24
228	unranked	NA	Tirta Fresindo Jaya PT	Indonesia	Bottled Water, Soft Drinks	Le Minerale, Teh Pucuk Harum, Kopiko	979	
229	164	▼	Health & Happiness (H&H) International Holdings Ltd.	Hong Kong	Baby Food, Health Products	Biostime, Swisse, Healthy Times	976	4
230	230	-	Shanghai Liangyou Group Co. Ltd.	China	Ready Meals, Vegetable Oils, Ingredients	Lehui, Haishi, Xuege, Weidu	973	20
231	192	▼	Seoul Dairy Cooperative	South Korea	Dairy Products, Juices, Ingredients	Anpan, Seoul Milk, CoffeePoly, Ampang, reeve	969	4
232	218	▼	UCC Holdings Co. Ltd.	Japan	Coffee	UCC, Shokunin No Coffee	964	9
233	224	▼	Ace Cook Co. Ltd.	Japan	Ready Meals, Ingredients, Sauces	Jan Jan, Pho-ccori, King Taste, Acecook	963	5
234	unranked	NA	The GB Foods SA	Spain	Soup, Ready Meals, Pasta	Jumbo, Gallina Blanca, Erasco, Gino	950	14
235	225	▼	Dongsuh Foods Co. Ltd.	South Korea	Coffee, Tea	Maxim, Mocha Gold, Canoe	948	
236	182	▼	Anheuser-Busch InBev NV	Belgium	Carbonates, Ready-to-drink Tea, Energy Drinks	Antarctica, Sukita, Guaraná Antarctica Zero	945	156
237	233	▼	Acqua Minerale San Benedetto SpA	Italy	Bottled Water, Juices, Carbonates	San Benedetto	941	11
238	unranked	NA	Nisshin Seifun Group Inc.	Japan	Ready Meals, Pasta, Sauces	Nisshin Oillio, Welna	935	27
239	235	▼	Shenzhen Eastroc Beverage Co. Ltd.	China	Bottled Water, Juices	Ganten, Eastroc Super Drink	935	6
240	229	▼	Bauli SpA	Italy	Baked Products	Motta, Alemagna, Tartufone Motta, Trinidad, Gran Soffice	931	4
241	236	▼	Carlsberg A/S	Denmark	Carbonates, Bottled Water	Flash Up, Klebny kraj, Taras Kvas	924	
242	248	▲	Soummam SpA	Algeria	Dairy Products	Soummam	924	1
243	239	▼	Andros SAS	France	Desserts, Soft Drinks	Andros, Bonne Maman	920	25
244	243	▼	Kerry Group Plc	Ireland	Ready Meals, Ingredients, Sweet and Savory Snacks, Dairy Products	Low Low, Cheestrings, Dairygold, Charleville	918	14
245	unranked	NA	Roshen Kondyterska Korporatsia	Ukraine	Confectionery	Roshen, Bombonetti	917	8
246	237	▼	Groupe Bigard SA	France	Meats	Charal, Bigard	917	59
247	244	▼	Harry-Brot GmbH	Germany	Bread, Baked Products	Harry, 1688	916	10
248	228	▼	National Beverage Corp.	United States	Bottled Water, Energy Drinks	La Croix, Shasta, Faygo	908	13
249	unranked	NA	Connors Bros Ltd.	Canada	Fish	Bumble Bee, Brunswick, Clover Leaf	901	
250	247	▼	Blue Bell Creameries Inc.	United States	Ice Cream, Frozen Foods	Blue Bell	900	3

Data Source: Euromonitor

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Compiled by Euromonitor International and commissioned by *ProFood World*, this exclusive research features much more data available online at www.profoodworld.com/global-250. It includes information such as the major manufacturing locations of the Global 250 companies, statistics on U.S. sales for each company, U.S. beverage sales by company, U.S. packaged goods sales by company, global beverage sales by company, and global packaged goods sales by company. Sort and search functions are available for both the Global 250 and Global 50 lists at www.profoodworld.com/global-250 and www.profoodworld.com/global-50.

egory, which commands a 92% share of the total no/low alcohol segment, according to the IWSR. "Thanks to the investment in the category from the major brewers, consumers are becoming more familiar and accepting of no/low beer as a quality product," the analysts report. "The segment is likely to become even more of a focus for smaller craft producers who are able to bring a diverse range of products to the market in the future."

The IWSR credits the segment's resilience during the pandemic to its suitability for low-tempo occasions. The most popular occasion for consuming no/low products is when relaxing at home (64%), the study found.

Struggling with declining beer sales, companies like Anheuser-Busch InBev (No. 1 on our Top 50 Alcoholic Beverage Manufacturers list) and Molson Coors (No. 5) are straying outside their alcohol comfort zones into other beverage terrains. Molson Coors has struck up partnerships that take it into non-alcoholic energy drinks with natural ingredi-

ents and vitamins; hard seltzers with probiotics; and grain-based milk alternatives.

Anheuser-Busch announced just recently that it will begin distributing ShineWater—a bottled hydration beverage with 100% of the daily recommended dose of Vitamin D.

Sales of functional or enhanced water—low- to no-calorie beverages that purport to offer health benefits through vitamins, minerals, or other substances—are expected to grow from \$4.11 billion in 2018 to \$5.3 billion in 2022, according to Statista.

The rise of online grocery sales

This past year has been a big one for grocery e-commerce sales. The Hartman Group, in its Food Sourcing in America 2020 report, documented a meteoric rise in online grocery shopping in the summer of 2020. Of those surveyed, 56% of shoppers said they had bought groceries online in the past 30 days. Additionally, 27% of shoppers said they shopped online for groceries more than before COVID-19, and 14% said they had shopped online for groceries for the very first time.

Though e-commerce sales were already on the rise, the COVID-19 pandemic caused them to soar much faster than initially expected, according to Mercatus, an online platform for grocery retailers. Based on a study that Mercatus did with Incisiv, online grocery sales are expected to account for 21.5% of total grocery sales by 2025, reaching \$250 billion.

Early investments put some of the big hitters in an excellent position to take advantage of the boom in e-commerce once the pandemic hit. PepsiCo (No. 2 among Food and Beverage Manufacturers), for example, set up a dedicated e-commerce team back in 2015, according to a report from Digital Commerce 360. Though PepsiCo doesn't sell much directly to consumers online, it still sees e-commerce as a vital part of helping it stay competitive during the pandemic. "Those investments allowed PepsiCo to be ready for the surge in orders across all e-commerce channels as consumers shifted to online shopping because of the pandemic," the report notes.

Kellogg (No. 13), whose online sales are also done primarily through retailers such as Amazon and Walmart.com, made investments over the past two years that helped it respond quickly when lockdowns related to COVID-19 caused online grocery sales to rocket, according to another report from Digital Commerce 360. Online sales account for about 9% of Kellogg's global revenue, about twice the percentage of the previous year, the report notes.



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Top 50 Alcoholic Beverage Manufacturers Global Retail Sales

2020 Rank	2019 Rank	Ranking Change 2019/2020	Company	Headquarters	Major Industries	Major Brands	Global Alcoholic Drinks Sales (Volume, MM Liters)	Number of Manufacturing Plants
1	1	-	Anheuser-Busch InBev NV	Belgium	Beer, Ready-to-drink	Budweiser, Bud Light, Scol, Corona, Harbin, Brahma	50,134	156
2	2	-	Heineken NV	Netherlands	Beer, Ready-to-drink	Heineken, Tecate, Tiger, Nova Schin, Amstel	20,942	165
3	3	-	Carlsberg A/S	Denmark	Beer, Ready-to-drink	Turborg, Carlsberg, Baltika, Kronenbourg, Wusu	11,530	
4	4	-	China Resources Holdings Co. Ltd.	China	Beer	Snow, Blue Sword, Kingway	10,733	98
5	5	-	Molson Coors Brewing Co.	United States	Beer, Ready-to-drink	Coors, Miller Lite, Carling, Keystone, Staropramen	8,550	31
6	6	-	Tsingtao Brewery Co. Ltd.	China	Beer	Tsingtao, Laoshan, Hans	7,749	60
7	7	-	Asahi Group Holdings Ltd.	Japan	Beer, Spirits, Ready-to-drink	Asahi, Zubr, Peroni, Velkopopovicky Kozel	5,986	95
8	8	-	Diageo PLC	United Kingdom	Spirits, Ready-to-drink	Guinness, Smirnoff, McDowell's, Johnnie Walker, Tanqueray	4,025	91
9	9	-	Beijing Yanjing Brewery Co. Ltd.	China	Beer	Yanjing, Liqueur, Huiquan	3,564	37
10	13	▲	Constellation Brands Inc.	United States	Beer, Wine, Spirits, Ready-to-drink	Modelo, Corona, Svedka, Casa Noble, Woodbridge	3,147	44
11	10	▼	Kirin Holdings Co. Ltd.	Japan	Beer, Ready-to-drink	Nodogoshi Nama, Kirin Ichiban Shibori, Kirin Tanrei	3,051	
12	11	▼	Thai Beverage PLC	Thailand	Beer, Spirits	Saigon, 333° export, Chang Beer, Ruang Khao	2,852	21
13	14	▲	Suntory Holdings Ltd.	Japan	Beer, Wine, Spirits, Ready-to-drink	Suntory, Kinmugi, -196°C Strong Zero, Yamazaki	2,517	14
14	15	▲	Castel Groupe	France	Wine, Ready-to-drink	St George, Castel, Nocal, Maison Virginie, Aimé Roquesante	2,255	24
15	12	▼	San Miguel Corp.	Philippines	Beer	Red Horse Beer, San Miguel, San Miguel Light, San Miguel Cerveza Negra	2,255	100
16	16	-	Cervejaria Petrópolis SA	Brazil	Beer, Spirits	Itaipava, Crystal, Nordka	1,582	5
17	17	-	Anadolu Group	Turkey	Beer	Efes, Bely Medved, Gold Mine Beer	1,511	61
18	19	▲	Oetker-Gruppe	Germany	Beer, Wine, Spirits, Ready-to-drink	Radeberger, Jever, Binding, Henkell	1,491	17
19	18	▼	Pernod Ricard Groupe	France	Wine, Spirits, Ready-to-drink	Imperial, Royal Stag, Absolut, Havana Club, Chivas	1,429	101
20	23	▲	Hite Jinro Co. Ltd.	South Korea	Beer, Wine, Spirits	Chamisul, Hite, Terra, Filite	1,365	6
21	25	▲	Cia Cervecerías Unidas SA	Chile	Beer, Spirits	Cristal, Escudo, Schenider, Royal Guard	1,219	23
22	22	-	Guangzhou Zhujiang Brewery Co. Ltd.	China	Beer	Zhujiang, Supra Beer	1,178	20
23	20	▼	UB Group	India	Beer	Kingfisher Premium, Zingaro, UB Export	1,157	79
24	21	▼	Boon Rawd Brewery Co. Ltd.	Thailand	Beer	Leo, Singha Beer, Singha Light Beer, Thai Bee	1,140	8
25	24	▲	Grupo Mahou-San Miguel SA	Spain	Beer	San Miguel, Mahou, Mixta Shandy, Alhambra Especial	1,031	5
26	26	-	E&J Gallo Winery Inc.	United States	Wine	Barefoot, Carlo Rossi, Twin Valley, Peter Vella, Liberty Creek	1,015	
27	28	▲	Blue Ribbon Intermediate Holdings LLC	United States	Beer	Pabst, Old Milwaukee, Colt 45, Jacob Best	922	
28	27	▼	Henan Jinxing Brewery Group	China	Beer	Jin Xing, Landmark	892	
29	40	▲	Mark Anthony Brands Ltd.	Ireland	Spirits, Ready-to-drink	White Claw Hard Seltzer, Mike's Hard Lemonade, Cayman Jack	829	
30	35	▲	The Boston Beer Co. Inc.	United States	Beer, Ready-to-drink	Samuel Adams, Twisted Tea, Truly Spiked & Sparkling, Angry Orchard	772	7
31	43	▲	Paulaner Brauerei GmbH & Co. KG	Germany	Beer	Paulaner, Original Münchner, Hacker Pschorr	690	1
32	30	▼	Bitburger Braugruppe GmbH	Germany	Beer	Bitburger, König Pilsener, Köstritzer, Wernesgruener	674	5
33	32	▼	Distell Group Ltd.	South Africa	Wine, Spirits, Ready-to-drink	Hunter's, Savanna, 4th Street, Bernini	625	
34	34	-	Oettinger Brauerei GmbH	Germany	Beer	Oettinger Pils, Oettinger Bock, Oettinger Gold	622	4
35	31	▼	Beijing Shunxin Agriculture Co. Ltd.	China	Spirits	Niulanshan Er Guo Tou	584	2
36	36	-	Bacardi & Co. Ltd.	Bermuda	Spirits, Ready-to-drink	Bacardi, Martini, Grey Goose, Havana Club	579	30
37	38	▲	Krombacher Brauerei Bhd Schadeberg GmbH & Co. KG	Germany	Beer	Krombacher	575	1
38	33	▼	Cia da União de Cervejas de Angola SA	Angola	Beer	Cuca, Nova Cuca	569	2
39	37	▼	Hanoi Alcohol Beer & Beverages Corp. (Habeco)	Vietnam	Beer, Spirits	Hanoi, Bia Lon, Anh Dao, Bia Ha Noi	469	25
40	39	▼	Damm SA.	Spain	Beer	Estrella Damm, Damm, Xibeca Damm, Voll Damm	451	2
41	42	▲	Khmer Beverages Co. Ltd.	Cambodia	Beer	Cambodia Beer	431	1
42	41	▼	Accolade Wines Ltd.	Australia	Wine	Hardys, Stanley, Berri States, Grant Burge	419	2
43	44	▲	Brown-Forman Corp.	United States	Wine, Spirits	Jack Daniel's, Brown Brothers, New Mix, Early Times, Old Forester	360	11
44	unranked	NA	Olvi Oyj	Finland	Beer	Lidskoe, Fortas, A. Le Coq, Sandels, Olvi	360	7
45	45	-	The Wine Group Inc.	United States	Wine	Franzia, Inglenook, Almaden, Benziger	347	
46	48	▲	Treasury Wine Estates Ltd.	Australia	Wine	Beringer, Wolf Blass, Yellowglen, Penfolds	360	6
47	49	▲	Obolon PAT	Ukraine	Beer	Polar, Solera, Solera Light	354	5
48	unranked	NA	Brauerei C & A Veltins GmbH & Co. KG	Germany	Beer	Veltins	325	1
49	unranked	NA	Viña Concha y Toro SA	Chile	Wine	Concha y Toro, Casillero del Diablo, Don Melchor, Frontera	319	3
50	unranked	NA	Takara Holdings Inc.	Japan	Spirits, Ready-to-drink	Takara, Sho Chiku Bai	317	

Data Source: Euromonitor

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Still eating at home

Though a study from Ibotta found that 33% of shoppers are tired of cooking at home and almost three-fourths of those surveyed have been missing dining out at restaurants, that isn't translating into reduced retail sales. Feeling more comfortable with shopping in grocery stores these days—and entertaining friends in their homes—25% of consumers actually say they've been spending more on groceries in recent months.

And despite missing restaurants, 51% of respondents said they prefer cooking at home over dining out or ordering in. They want to use all those new cooking skills they acquired during lockdown.

A study from LendingTree compared data from April 2020 to January 2021 to see how U.S. consumers' food spending changed over the course of the COVID-19 pandemic. A key finding, according to data from the U.S. Census Bureau, was that Americans spent 23.1% more at restaurants and takeout places this past January than they did at the beginning of the pandemic in April 2020. Meanwhile, spending on food at home, including groceries, increased by only 10.7% in that time.

Revenue Management Solutions (RMS), through other studies, turns that focus to the amount of in-home dining that's taking place despite increased spending at restaurants. Delivery and takeout ser-

vices kept restaurants operating in 2020, and these and other contactless channels will help restaurants recover at a higher level as well, according to Joel Davis, chief strategy officer for RMS.

"As dine-in returns, we believe that it won't replace delivery/pickup," Davis said in an RMS webinar. "A new audience arose during COVID who recognize the value of delivery/takeaway from the local restaurant or favorite chain. They are likely to continue this behavior after dine-in returns to pre-pandemic levels."

In a survey that RMS conducted in November 2020, 30% of respondents reported using drive-thru and takeout options more or much more than pre-pandemic levels.

Keeping it healthy

The RMS survey also discussed many of the trends the food and beverage industry is seeing in terms of healthy eating and drinking. While 72% of respondents indicated no real change in their dietary habits since COVID-19, the remaining 28% reported changes that are worth paying attention to.

The bulk of those changes, 21%, have come in the form of healthier eating. That involves 11% of respondents cooking more at home, and 6% on a diet of some kind. Another 4% are eating less primarily to save money or make things last longer. 🌱



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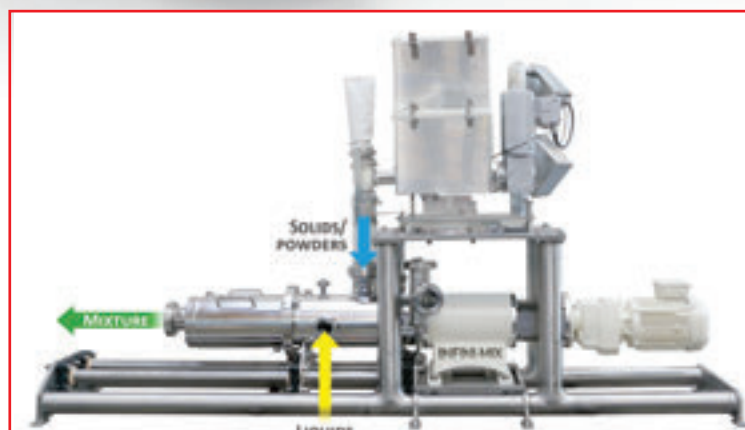
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New Advances Meet Merging Challenges

As food and beverage manufacturers face changing market demands, safety requirements, and sustainability goals, mixing and blending technologies are meeting market challenges with increased automation, rapid cleaning, and customized approaches.

FACED WITH PANDEMIC-RELATED demand swings, supply chain disruptions, and a tough economic climate, food and beverage processors need help. Mixing and blending equipment suppliers are responding with technology that improves operating efficiency, mixing uniformity, and product quality through design, materials, and automation.

An example of these factors at work can be found at Sydney-based Pablo & Rusty's Coffee Roasters (P&R), which installed a new 75 cu ft rotary batch mixer from Munson Machinery to improve quality and increase throughput. Both goals were critical, with the company having doubled revenue in three years and wanting to stay on that path.

"We wanted to make sure that we can scale up, and with this piece of equipment, we can grow capacity about two to three times," says Abdullah Ramay, P&R's CEO. "We can also scale down, which was needed when COVID-19 happened."

Munson's rotary batch mixers come in sizes up to 600 cu ft capacity, according to Steve Knauth, Munson's marketing and technical manager. What the various models have in common is a four-way mixing action that gently folds, tumbles, cuts, and turns the material. The mixers are horizontal, rotating on external trunnion rings at both ends. Consequently, there are no internal shafts or bearings that come in contact with the material being mixed.

Blending time runs a few minutes. As the mixing vessel rotates, internal baffles, also known as lifters or mixing flights, create a four-way tumble-turn-cut-fold mixing action. In the case of the Australian roastery, an important point is that this mixing happens with little or no bean breakage. This was a



In this rotary batch mixer at Pablo & Rusty's Coffee Roasters, internal flights direct beans toward and through a stationary discharge as the vessel rotates until fully evacuated.

PHOTO COURTESY OF MUNSON MACHINERY



Fristam's Powder Mixer combines its FZX liquid ring pump with the FS Shear Blender into a single compact system.

PHOTO COURTESY OF FRISTAM PUMPS

prime reason for getting the Munson mixer, according to Ramay. The gentle handling leads to less bean breakage than P&R was getting with its previous equipment, which agitated instead.

Another benefit was a reduction in cycle time from as much as 15 minutes down to 5 minutes or less. Combining that with a tripling in capacity has resulted in a substantial throughput increase.

That gain is made even greater by what happens when the mixer is not in use—during the cleaning and sanitation process. Food producers have pushed for the ability to rapidly sanitize between batches, Knauth comments. In response to that, Munson's rotary batch mixer design eliminates the need for internal shafts and material contact with shaft seals. This eliminates residual material following discharge and also food waste, and allows for fast cleaning and sanitizing.

Uniform mixing

No matter the market segment or product, a vital need is for uniformity of output, notes Daniel Osiedacz, mixing and blending sales manager for Fristam Pumps USA. A customer recently came to Fristam for help in making syrups for flavoring coffee. The producer needed to ensure that flavor and quality remained consistent while switching from product to product.

"We worked with them to establish their SOPs [standard operating procedures] for valve settings to induct a wide range of powders," Osiedacz says. "Once we finished, they had an automated valve setup that allows the operator to hit the same settings batch after batch."

To help meet standards set by the Food Safety and Modernization Act (FSMA), the food processor had to guarantee its product met a particular droplet size. Simply throwing powder into a tank and using an agi-

tator to mix it into a liquid might not work, Osiedacz notes, because the powder could stick to the sides of the tank and form clumps instead of dispersing. A potentially inefficient and likely costly solution is to increase the level of solids being added until the output reaches the right ratio of solid to liquid.

A better approach, according to Osiedacz, is to come up with a recipe and then bring pre-weighed solid and liquid ingredients to a mixing station. After adding the liquid to a tank, a pump can start it recirculating. Then the powder or other solid can be added at a given rate, with the result being that the induction of the solid into the liquid takes place more consistently and uniformly.

The match between powder characteristics and process ensures that throughput is high, quality good, and raw material usage minimal. For such mixing and blending applications, Fristam makes the FS Series Shear Blender and FSI Series Shear Pump. A key difference between the two is that the blender does not include an impeller. Because the impeller in the Shear Pump uses a centrifugal-style method to move material, it works best for liquids that are below 1,000 cps, or about the consistency of chocolate milk or a really thin pancake batter, Osiedacz says. One reason to separate the impeller from the blender functions, as with the Shear Blender, is that sometimes what is needed is emulsification, breaking up and distributing the materials evenly on a very fine scale throughout the final product. Separating the blending and pumping processes can make emulsification more efficient, Osiedacz adds.

Fristam products are easy to clean without disassembly, according to Osiedacz. Automation can make that job even easier, says Gregory Collier, vice president of beverage technology systems at Statco-DSI. A clean-in-place (CIP) approach, which the system integrator can provide for Fristam pumps, saves time and energy. It also eliminates any possibility of damage caused by taking a machine apart and then putting it back together.

Scheduling a CIP cycle at a time when it has the least impact on production might require doing it between shifts or another time when there might not be an operator available. This is where automation capabilities can pay dividends. "We automate not only the production side of the equipment but also cleaning and the clean-in-place of the system in an automated fashion as well," Collier says.

Growing and changing markets

Production of food and beverage products in the rapidly growing pet food arena is highly automated, notes Don Simpson, a consultant with Food Processing Solutions. Most factories are geared toward high-volume

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The GMS Multiflux batch mixer provides flexibility, with an unrestricted number of ingredients and the ability to adjust a recipe after every batch.

production, and that presents issues for boutique producers trying to break into the market. The desired volumes tend to be smaller, the ingredients more expensive, and the specifications for liquid coatings tighter on such products as pet food kibble. These requirements can interact, making production a challenge in large factories where machinery is often run at maximum speeds.

"If you have a very expensive ingredient that you want to put on at very precise levels, then you may need to slow things down a bit," Simpson says.

For one client, Simpson looked into ribbon blenders from Charles Ross & Son. Ribbon blenders are a good choice for straightforward powder blending or coating solids with a minor liquid ingredient, according to Christine Banaszek, sales manager for Ross.

Banaszek recalls an instance in which a pet food company needed to secure a blender quickly to test market a new product. Ross offers a rental program, which allows customers to get equipment quickly without having to make a purchase commitment. In this case, Ross had a 52 cu ft ribbon blender ready to ship within two weeks.

Such a situation is typical during a scale-up process, Banaszek says. New formulations are often created in a kitchen or R&D lab in small batches with off-the-shelf commercial mixers. When it comes time to ramp up production for a test run or full-scale manufacturing, there can be issues making the transition. In these cases, getting access to equipment without having to go through a purchase commitment might be the best solution. There was a sharp increase in rental orders during the pandemic, according to Banaszek, as producers adjusted to demand changes and battled supply chain disruptions.

Whether for rent or for purchase, Ross works with end users to customize various aspects of the mixer or blender to make it more practical and ergonomic for a specific application, Banaszek says. Automation of the systems—with recipes controlled through programmable logic controllers (PLCs) and touchscreen capabilities—can make it easier for manufacturers to switch quickly from one product or process to another.

"A well-specified and high-quality mixer plays a critical role in gaining overall efficiency," Banaszek says. "Without it, inefficiencies can manifest in a number of ways, including long cycle times, frequent reworks, defects or low product quality, difficulties in maintaining temperature, losses in raw material or finished product, and intensive cleanup."



PHOTO COURTESY OF GERICKE

Blending new requirements

More changes are predicted as the food and beverage industry moves toward increased sustainable production, says Fabian Müller, product manager for mixing at Gericke. Energy consumption during processing will need to be reduced and some ingredients replaced because of their environmental impact. There is also a trend toward healthier food products, as well as foods that are suitable for people with a wide variety of health conditions and dietary requests.

"We're seeing a clear trend towards individualized mass production," Müller says. "This involves smaller lot sizes, which demands frequent recipe changes. Fast cleaning to prevent downtime becomes more critical as it has more and more a direct influence on the capacity."

Gericke offers both single- and double-shaft mixers, with the latter available only for batch processes. The company's single-shaft mixers come in either batch or continuous configurations.

The company's double-shaft mixer, the GMS Multiflux batch mixer, offers the greatest flexibility, with an unrestricted number of ingredients and the ability to adjust a recipe after every batch, Müller notes. Double-shaft mixing works best for fragile products, where efficient distribution of micro ingredients, optimal dispersion of liquids into particles, or hygienic requirements are the challenges.

For continuous mixing, Gericke offers a compact solution, dubbed TCM, that integrates a feeding and mixing unit. This system can be positioned directly in front of the next reactor or packaging, depending on the line. Energy requirements are reduced because the process is continuous, and material spends a short time in a smaller mixing chamber.

There are many options for mixing and blending systems. Though the primary need is to make a product that meets quality and cost targets, industry is faced with satisfying changing market demands, safety requirements, and sustainability goals. 🌱

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Vacuum Pump Improves Lettuce Cooling Process

Switching from three oil-lubricated rotary vane vacuum pumps to one frequency-controlled screw vacuum pump, a lettuce grower eliminated maintenance issues and improved process time and energy consumption.

SERVING DISCOUNT STORES and supermarket chains throughout Germany, Jörg Heekeren has grown his business, Heekeren GbR, to produce more than 10 million heads of iceberg lettuce each season, along with other lettuce varieties. To give that lettuce the longest possible shelf life without any loss of quality, he's been relying on vacuum cooling for eight years, transferring the heads of lettuce to a vacuum chamber as soon as they are harvested.


It's a common approach for vegetables and leafy greens, but Heekeren was having difficulties with his vacuum pumps. Given the size of the vacuum chamber—designed to hold 11 europallets stacked with lettuce crates to a height of almost 3 m—three parallel oil-lubricated rotary vane vacuum pumps were connected. The operating fluid oil in the pumps tended to cause issues, requiring the oil and filters to be changed regularly.

Heekeren has now traded out the three vacuum pumps for a single Cobra Plus screw vacuum pump from Busch Vacuum Solutions. Not only has this enabled reduced cooling times and energy consumption, its oil-free operation has reduced maintenance efforts.

The cooling process

Placed in crates that are stacked onto pallets, the lettuce is loaded into the chamber, where vacuum is applied. Any moisture in and on the lettuce starts to evaporate and is extracted from the chamber as water vapor. Besides quickly cooling the lettuce to about 37°F, it cools the heads from the inside out, further speeding the process. Also, less moisture is lost than in conventional air cooling. After the required cooling temperature is reached, the vacuum chamber is ventilated, the lettuce is removed, and it's transported to a refrigerated warehouse for interim storage.

The challenge comes when the water vapor is suctioned out of the vacuum chamber along with the air. The mixture of air and water vapor is fed from the vacuum pump through a cold trap upstream, where the air is cooled, condensing out the water vapor. This ensures that no water vapor makes its way into the downstream vacuum pump. With Heekeren's previous setup, however, any water vapor that was not fully condensed out via the cold traps would mix with the operating fluid oil in the vacuum pumps, causing maintenance issues.

Heekeren installed the Cobra Plus at the start of the harvesting season in April 2020. The pump ran for the entire season, through the end of October, without any interruptions and requiring no maintenance work. Because the screw vacuum pump is frequency-controlled, it adapts its pumping speed to actual demand. At the beginning of the vacuum chamber's evacuation phase, when air needs to be extracted quickly, the motor runs at a high rotational speed. Once the pressure in the chamber drops, the pump automatically reduces its speed, thereby reducing energy consumption. 

Busch Vacuum Solutions
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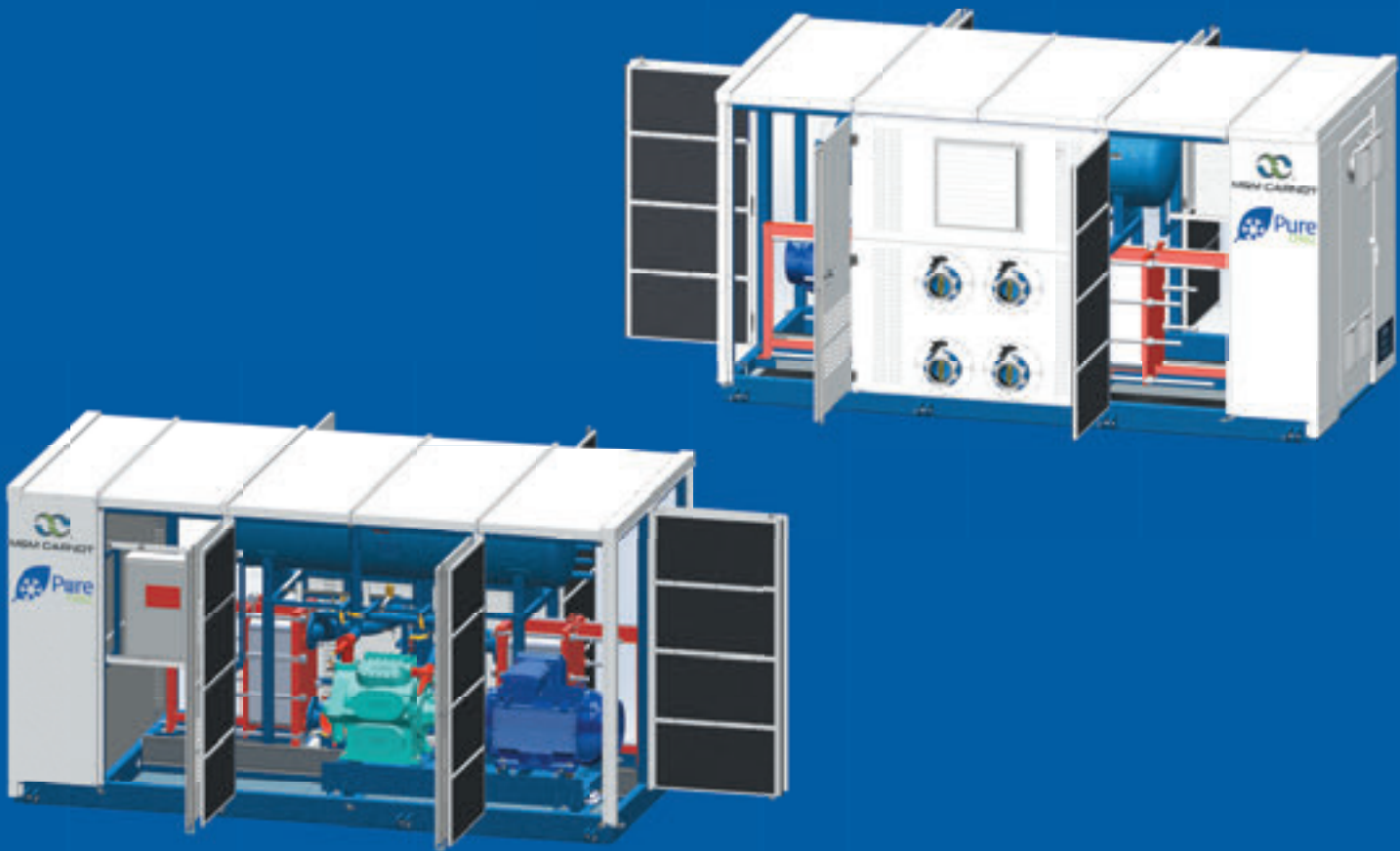
PHOTOS COURTESY OF BUSCH VACUUM SOLUTIONS

(Above) One Cobra Plus screw vacuum pump replaced three rotary vane vacuum pumps.

(Right) The vacuum chamber has space for 11 pallets, which can be loaded up to almost 3 m high.



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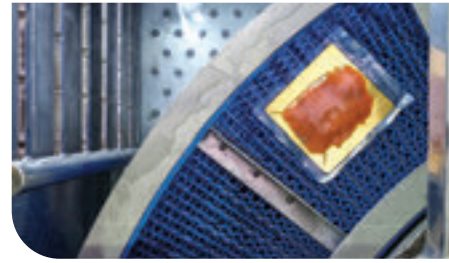
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Vastex International | vastex.com



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Madison Chemical | madchem.com



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Designed to be altered quickly and adapt to product changes, the **mk North America pallet-handling conveyor system** is able to convey products with unusual shapes or geometries. Guided by side rails, the VersaFlex P08 flexible chain conveyor system can simultaneously carry multiple pallets, with loads up to 22 lb each. The system features a 150-mm pallet width; 150-, 200-, or 250-mm pallet lengths; an 85-mm frame width; 83-mm chain width; and conveyor lengths up to 30 m. It offers speeds up to 165 fpm, with constant or variable speed options.

mk North America | mknorthamerica.com

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Nutec Manufacturing | nutecmfg.com



CLEANING TOOLS ADD LAYER OF SAFETY

Made with materials approved by the FDA for food contact, **Hillbrush cleaning tools** come in five colors for use in color-coded cleaning segregation and to meet HACCP compliance. The Essentials Line of tools consists of hand brushes, brooms, floor scrubs, squeegees, tank brushes, handles, dustpans, and a drain brush.

Hillbrush | hillbrush.com



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The **Formost Fuji ground meat wrapper** packages ground meat without the use of a foam tray, eliminating the need to purchase, ship, store, and handle trays. With the unit, the paper or absorbent pad can remain under the ground meat while it is gently transferred to the conveyor and into the flow wrapper. The ground meat wrap produced by the system has excellent seal strength for product protection and package integrity, while creating a smaller package that takes up less room on store shelves. The package also allows consumers to remove the product without having to handle the contents.

Formost Fuji | formostfuji.com



COOKING SYSTEM CAN BE USED WITH WIDE RANGE OF JELLING AGENTS



The **Chocotech continuous cooking system** is suitable for all types of jellies and marshmallow-based masses containing agents such as gelatin, agar-agar, gum arabic, pectin, carrageenan, and modified and high-amylose starch. The Princess Jellymaster unit is comprised of a mixing/slurry buffer tank, pressure dissolver, and vacuum vessel, all on one skid. The cooker features first-in first-out product flow with determined guidance of the streaming product and a PLC, with synchronized components in a completely hygienic design, which can be connected into existing CIP systems.



Sollich North America | sollichna.com

HANDHELD DEVICE MERGES INDUSTRIAL-GRADE SAFETY WITH HMI TABLETS



The **IDEC handheld device** simplifies holding a tablet securely in an industrial setting. The Safety Commander device has a slider and adjustable grippers to accommodate tablets ranging from 8- to 11-in. diagonal size. Features include key-locking provisions to keep the tablet secure in the device, an ergonomic hand grip and strap, a hardwired e-stop button with an LED indicator, a hardwired three-position enable switch, USB Type-C port for tablet charging, and 5-m cable. The device allows a tablet to be rotated to any vertical/portrait or horizontal/landscape orientation.



IDEC | us.idec.com

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ROTARY TABLE COMBINATION TRANSFERS AND ACCUMULATES BULK PRODUCTS

The **Multi-Conveyor rotary table combination** includes an unscrambling rotary table and a rotary accumulation table connected by a 30-ft plastic, straight-running chain conveyor. Constructed of mild steel, the unscrambling rotary table accepts bulk, random product that sweeps through two flexible deflector arms that guide it into a single file and onto the mat-top conveyor chain. Labels can be applied by a user-supplied labeler before product is discharged onto the rotary accumulation table, where an attached staging shelf assists manual hand-packing into cases. Stainless-steel rotary top discs feed the guided, seamless transfers that are positioned at both the unscrambler discharge and accumulation table entrance.

Multi-Conveyor | multi-conveyor.com

PUMP HAS COMPACT DESIGN, SMART FUNCTIONS



Featuring an advanced laser balancing system for rotors, the **Pfeiffer Vacuum pump** operates with reduced vibration and noise emissions. The HiPace 80 Neo turbopump vacuum pump has an integrated rotor temperature measurement system, micro-USB interfaces with automatic accessory recognition, and a hybrid bearing that consists of an oil-lubricated, ceramic ball bearing on the fore-vacuum

side and a permanent-magnet radial bearing on the high-vacuum side. The pump can be integrated into portable and mobile applications.

Pfeiffer Vacuum | pfeiffer-vacuum.com

SHEAR MIXERS SOLVE 3 PROCESSING STEPS



Able to reduce clogging and prevent agglomerates from forming, **Ross in-line mixers** induct powders, homogenize, and pump. The close tolerance of the rotor and stator of the SLIM mixers exposes 100% of liquid product to high shear and exerts a secondary pumping effect, while the solids/liquid injection manifold rotor generates a powerful suction that allows large quantities of powders to be dispersed directly into the mix chamber. The mixers are available with a NEMA 4 Class II, Div. 2, Group G purged control system programmed to operate both the mixer and the pneumatically actuated 1½-in. powder feed valve, managing the flow of the dry phase.

Charles Ross & Son | mixers.com



TURNKEY SOLUTION PROVIDES RELIABLE PROCESSING AND PACKING OPERATION

A product handling and distribution line, the **Layton Systems turnkey solution** handles a range of products from the processing room to a linear or radial scale. The solution includes a hopper feeder that regulates product flow and reduces line surges, while the ribbon-wall incline belt with replaceable UHMW wear strips transports product upward for further processing. The scale feeder features a single moving part construction that ensures vibration isolation and a discharge with a circular section sized for optimal feeding to the scale head. The scale has an OSHA-compliant platform. After processing, final product is delivered to the pack-off table, consisting of an incline belt and rotary table for removing the finished product.

Layton Systems | laytonsystems.com



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Awards to be presented at



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Each year, *ProFood World* recognizes outstanding food and beverage processing and packaging innovation projects via the Sustainability Excellence in Manufacturing Awards competition.

Multiple awards will be named in the program and project categories including:

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Entries are due March 1, 2022.

Enterprise Resource Planning Essential Amid Strong Market Growth

A sous vide cooked protein maker integrates an ERP system purpose-built for food processing to build its Industry 4.0 foundation, helping operations better align with—and gain insights into—finance matters.

FOUNDED IN 1860 in the heart of the city's meat-packing district, Ruprecht is the oldest operating beef processor in the Chicago area. But its manufacturing technologies are anything but outdated—the company is using digital innovations to optimize its growth.

Ruprecht provides raw and fully cooked proteins for restaurants, foodservice, club store, and retail outlets. It has been growing rapidly over the past 10 years with investments in R&D and an expanded focus on sous vide protein products. Since its pur-

chase in 2014 by a private equity fund, the company has been positioning itself for growth and scalability. CFO Frank Patton has been instrumental in that growth since joining Ruprecht, helping the company achieve its goals through Industry 4.0 innovations. Key to that has been his efforts to integrate an enterprise resource planning (ERP) system from Syspro.

Before a manufacturer can digitalize, it needs a strong digital foundation on which to build. When Patton arrived in 2018, Ruprecht was managing its finances with QuickBooks and a home-grown ERP system, neither of which was integrated with other systems in the company.

It's the same story that's been told time and again about multi-generational family businesses, Patton contends. Technology investments are not typically top of mind. "At Ruprecht, there were some pretty decent investments made. When I walked in the door, I was rather impressed to see that they actually had a data warehouse in existence, and they had some BI [business intelligence] capabilities," he says. "But what it really lacked was a backbone that made some sense for the foreseeable future. We were operating on a homegrown ERP package that essentially evolved from pencil and paper."

That system was designed to remove some burden from the operations team, but it lacked a lot of the financial capabilities that Patton considers essential for manufacturing operations, such as bill of materials, standard costing capabilities, production scheduling, and the ability to track inventory on the shop floor.

"As a food and beverage manufacturer, we have some unique characteristics, specifically on the protein side with being able to yield products," Patton notes, commenting on the raw primal that has to be cut into specific sized portions, with byproducts and scraps needing to be accounted for as well.



PHOTO COURTESY OF RUPRECHT



Ruprecht provides proteins cooked sous vide, a safe cooking process that vacuum seals the food and places it in temperature-controlled water.

As Ruprecht looked for the ERP system that would be the right fit for its operations, it didn't want to "buy a Ferrari and drive it like a Chevy," Patton says. "We wanted to make sure we could actually get the value out of it." Above all, he wanted to get away from the feeling that the business was managing them vs. them managing the business.

He explains how the company's make-to-order model tended to work: "We would scramble around here and try to do what we needed to do, and would be highly successful, but we really didn't understand the labor content. And to the extent that we really could, we didn't understand what that cost meant to our business," he says. "It was the same with the ability to measure things like labor utilization. If I have a standard build, and it says it should take me two hours to produce this product, if it took me three, I would never know it." Patton could calculate margins on a meaningful level only at the end of the month, he adds, missing insights throughout the month about how various products are performing.

Aligning operations and finance

Over the course of the journey to improve financial insights in particular, Patton deployed an integrated ERP system built for food manufacturing and created a cloud-based data lake. He is now in the process of implementing a system to monitor the movement of raw material as it progresses through the facility to identify waste and improve efficiency.

Ruprecht also needed a robust set of application programming interfaces (APIs) so it could be easily integrated with other systems. Syspro gives Ruprecht capabilities it previously lacked, such as production scheduling, full inventory visibility, and manufacturing standard costing. These capabilities alone have already saved Ruprecht more than \$1 million annually.

Patton says the Syspro platform is the best in its class because of its API layer approach. Syspro recognizes that it might not have all the answers on advanced functionality, he says, so it provides the capability for Ruprecht to develop some functions

in-house or go to a third-party vendor to integrate some functionalities.

Customer conversations

The sous vide products that Ruprecht provides enable restaurants and other institutions to spend 20 minutes cooking—or even as short as 10 minutes—rather than two or three hours. This has become a very attractive proposition for Ruprecht's customers, accelerated even more by the COVID-19 pandemic. "We're seeing an increased demand for our products, just given how the industry is changing, and how the consumer sentiment is changing," Patton says. "The velocity by which we are asked to do business would have never been supported in the system we had previously."

With a cloud-based data lake for all the data Ruprecht's operations produce, the processor will continue to get more out of that data as time goes on. This base has enabled more advanced applications that are being deployed, such as raw material tracking throughout the facility, and artificial intelligence that analyzes internal and external data to forecast the price of meat with precision.

Syspro
us.syspro.com



PHOTO COURTESY OF RUPRECHT



Sous vide products enable restaurants and other institutions to spend 20 minutes or less cooking rather than two or three hours.

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Each year, *ProFood World* recognizes outstanding food and beverage processing and packaging innovation projects via the Manufacturing Innovation Awards competition.

Types of food and beverage projects eligible for the awards:

- Major plant expansion or renovation
- Greenfield or brownfield facility
- Major line expansion incorporating ground-breaking technology
- Major plant automation upgrades
- Major plant food safety upgrades

Judging criteria:

- Level of technology advancement in processing and packaging equipment
- Level of automation, software and controls
- New-to-the-industry use of technology
- Major efficiency and cost savings
- Line changeover, flexible manufacturing, sustainability or maintenance achievements

Submission deadline is January 17, 2022

Join the ranks of past winners, including the J.M. Smucker Company, Hermes Boissons, Dairy Farmers of America, Clemens Food Group, MWC, CTI Foods, Royal Cup Coffee and Tea, Just Born, HP Hood, and Kraft Heinz.

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Automation24 Inc. www.automation24.com	43	PPM Technologies Holdings LLC https://ppmtech.com	31
BUNTING www.buntingmagnetics.com	53	ProFood World's Leaders In Processing 2021 www.profoodworld.com	62
Central States Industrial www.csidesigns.com	25, 45	ProFood World's Manufacturing Innovation Awards 2022 www.pfwgo.to/mia	60
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Tech Companies to Help FDA With Track-and-Trace Solutions

A traceability system that meets the aspirations of the FDA's New Era of Smarter Food Safety Blueprint is a must for food manufacturers. However, traceability goals will require more than just the power of regulations; a partnership between technology providers and food manufacturers will be essential.

THE FOOD AND DRUG ADMINISTRATION'S (FDA) traceability initiatives are fairly clear. The agency wants to encourage technology stakeholders to develop traceability hardware, software, or data analytics platforms that are low cost, or preferably no cost, to enable food operations of all sizes to implement traceability systems that are affordable, create shared value, and are adaptable for timely, widespread adoption.

The traceability initiative is derived from a need for more efficient, effective recalls as the U.S. food industry continues to struggle with foodborne illness outbreaks and allergen recalls. In fact, the Centers for Disease Control and Prevention (CDC) estimates that one in six Americans still gets food poisoning each year—leading to about 128,000 hospital stays and 3,000 deaths. The CDC says it has seen an increase in foodborne illness outbreaks that span multiple states in recent years. As well as foodborne pathogens, around half of all recalls involve allergen problems.

The current traceability requirements, as outlined in the existing Food Safety Modernization Act (FSMA), require many of the human and animal food operations to establish and maintain records to identify the immediate previous sources and the immediate subsequent recipients of foods (commonly referred to as “one-up, one-back” recordkeeping). However, a traceability system that meets the aspirations of the FDA's New Era of Smarter Food Safety Blueprint will need to be more digital and should be enabled by current technology to accomplish interoperability of electronic records and comprehensively cover the majority of the food chain (i.e., end-to-end traceability) from source to table. The FDA says today's consumer packaged goods companies (CPGs) need to develop better traceability systems, and the agency believes it has a suitable strategy to accomplish its traceability objectives.

The days of paper records may be numbered,

and companies using software like Microsoft Excel is a step in the right direction, but it is not what the FDA envisions as high-tech enough. It is now clear to the FDA that the new traceability goals will require more than just the power of regulations, and that a partnership with technology and CPG companies will be essential to the success of this initiative.

To initiate a partnership approach, the FDA launched the FDA New Era of Smarter Food Safety Low- or No-Cost Tech-Enabled Traceability Challenge in June. This was part of the U.S. Department of Health and Human Services' (HHS) America COMPETES Reauthorization Act of 2010.

The primary goal of this FDA challenge is to encourage stakeholders—including tech providers, public health advocates, entrepreneurs, and innovators from all disciplines—to develop hardware, soft-



IMAGE COURTESY OF THE FDA

ware, or data analytics platforms for enhanced food traceability. The results will identify traceability solutions that utilize affordable economic models that could encourage widespread adoption by CPGs and help accomplish the New Era of Smarter Food Safety food traceability goals.

The FDA's traceability challenge was open for entrants until the end of July. On Sept. 13, the FDA announced 12 winners of the FDA New Era of Smarter Food Safety Low- or No-Cost Tech-Enabled Traceability Challenge. There were 90 submissions, with the winning teams representing the U.S., Canada, and New Zealand." Learn more at www.fda.gov/food/new-era-smarter-food-safety/announcing-winners-fdas-low-or-no-cost-food-traceability-challenge. Rules and guidance for the challenge participants were fairly straightforward. Submission guidelines to the challenge included:

- Participants could enter as individuals or as part of a team, with both domestic and international entrants being eligible to submit their solutions to the organization called precisionFDA.
- Tech-enabled solutions could be new or based on existing systems or datasets. Existing platforms or technologies could be updated, modified, or repurposed, with an explanation of how the solution redesigns or builds upon the existing systems or datasets to create a new scalable, cost-effective, tech-enabled traceability solution.
- Submissions were required to be written and digital, and had to contain A/V recorded materials, in English, that included: a video uploaded to YouTube, not to exceed five minutes in duration, describing the solution and providing a demonstration of the fully functional prototype using a hypothetical situation and/or dataset, as appropriate; a completed submission form containing the URL for the uploaded YouTube video; and a summary of the solution in a PowerPoint presentation containing no more than 10 slides.

Challenge evaluation criteria

A panel of judges from the federal government with experience in the fields of technology, public health, and/or the food industry was chosen by the FDA to select the highest-performing entrants as winners of this challenge.

Judging was based upon the following weighted evaluation criteria:

- **Needs-based:** Importance of addressing the specific traceability challenge for the target segment of the food supply chain—the ability of the solution to fulfill that need.
- **Innovation:** Uniqueness and innovation in the use of hardware, software, and/or data analytics plat-

forms, including any additional enhancements.

- **Usability:** Use of design elements to increase utilization among CPG companies of the targeted segments of the food supply chain, with a focus on ease of navigation and interfaces to support the solution.
- **Affordability:** A low-cost or no-cost option to enable traceability approaches that are viable for food operations of all sizes.
- **Scalability and Interoperability:** Meeting the needs of the target segment of the food supply chain and enabling them to share information across data platforms used by other segments of the food supply chain.

Digital data covers an applicable segment of the food chain and results in better management of human and animal food and ingredient recalls. These new solutions will help the FDA and CPGs do a better job in protecting public health in a smarter way. Improved track and trace, as envisioned by the outcome of the challenge, should allow CPGs and the FDA to move more quickly to identify the source of a defective or contaminated product, reduce the scope of product recalls, and conduct more timely investigations to learn the root cause of the problem.

Learning how and where the contamination occurred can lead to developing food safety approaches to prevent future outbreaks. It is certain the FDA will share the challenge results with the public and further develop partnerships with industry to improve traceability systems that become more timely, more comprehensive, and suitable for CPG companies' budgets. 🌐

REFERENCES

- Barach, J. 2017. FSMA and Food Safety Systems: Understanding and Implementing the Rules. John Wiley & Sons Ltd., West Sussex, UK.
- Barach, J. 2019. Blockchain for Foods: Can It Be a Solution for Supply Chain Transparency Issues?, <https://www.profoodworld.com/automation/software/blog/13279698/blockchain-for-food-a-solution-for-supply-chain-transparency-issues>.
- CDC, 2020. CDC Could Further Strengthen Its Efforts to Identify and Respond to Foodborne Illnesses, <https://www.gao.gov/products/GAO-21-23>.
- FDA, 2020a. New Era of Smarter Food Safety Blueprint, <https://www.fda.gov/food/new-era-smarter-food-safety/new-era-smarter-food-safety-blueprint>.
- FDA, 2020b. Proposed Rule: Requirements for Additional Traceability Records for Certain Foods, At-a-Glance, <https://www.fda.gov/media/142303/download>.
- Federal Register, 2004. Establishment and Maintenance of Records Under the Public Health Security and Bioterrorism Preparedness and Response Act of 2002. Vol. 69, Dec. 9, 71561 (BT Act).
- Federal Register, 2020. Requirements for Additional Traceability Records for Certain Foods. Vol. 85, Sept. 23, 59984 (Traceability Proposed Rules).
- Yiannas, F. 2018. A New Era of Food Transparency Powered by Blockchain. Innovations: Blockchain for Global Development/ Vol. 12, No. 1/2. The MIT Press Journals.



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