

2021 Beverage Trends Driving Change



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The consumer trend in beverages is toward healthier and functional ingredients that are sustainably sourced and fortified with vitamins and probiotics.

— *Sr. Packaging Engineer,
Global Beverage Leader*



INTRODUCTION

In the years ahead, beverage manufacturers are striving to meet consumer demands for more sustainable packaging, functional and convenient beverage formats, and healthier product offerings.

In this report, beverage manufacturers discussed the operational challenges the industry faces to meet consumer demands, material supply shortages that are driving change, and why IIoT automation and robotics implementations are advancing at unprecedented levels to increase output.

Beverage companies interviewed and the statistics throughout the report cover the beverage segments of soft drinks, juice, water, sport/energy drinks, functional/nutritional drinks, coffee/tea, and water (alcoholic beverages and dairy products are not included).



89%

of beverage companies interviewed

are looking to incorporate more recycled plastic materials in their packaging to support the sustainability goals of reducing global plastic pollution.

One of the leading beverage manufacturers interviewed stated they are working toward achieving 100% recyclable packaging and in the next decade plastic bottles will incorporate over 50% PCR (post-consumer recycled) content.

► Dominant Trends in the Beverage Industry

In recent years, the beverage industry has been in a state of ongoing change as manufacturers adapt to shifting consumer preferences and demands. Beverage consumers have become more discerning in their purchases, requiring manufacturers to make adjustments to everything from the basic formulation of their products to protective packaging.

Consumers are more often looking for beverage products that provide added functionality to their lives, enhance their overall health, and are available in convenient formats for hassle-free consumption. In addition to these traits, consumers are increasingly concerned about the sustainability of beverage packaging. All of these trends have led to a significant expansion of SKUs in the beverage industry as manufacturers roll out new products, new formats, and new packaging to adapt to consumer desires.

Top Challenges Ahead

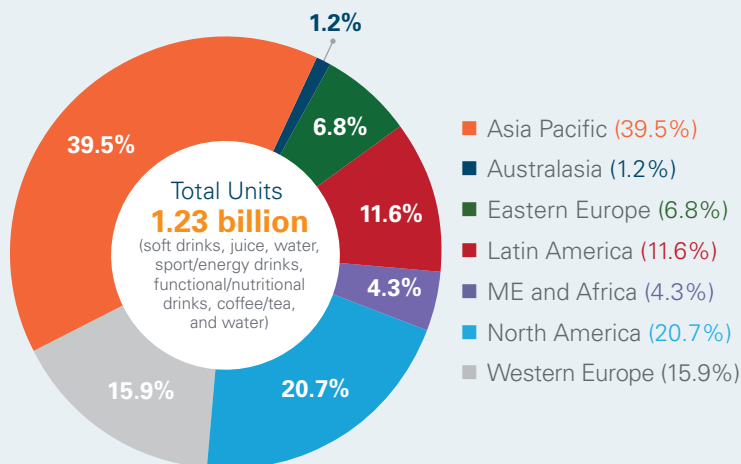
Beverage manufacturers list their top challenges in the years ahead as:

- Keeping up with consumer demands and trends
- Maintaining sufficient production capacity
- Reliably sourcing ingredients and materials in the supply chain
- Finding adequate skilled labor
- Upgrading outdated technology



Size and Growth of the Beverage Market

Total Beverage Product Units Sold at Retail by Region



Source: 2020 Euromonitor International; Packaging-Beverages data from trade sources/national statistics

Forecasts of Revenue Growth for the Global and US Beverage Market

Beverage Market
Globally

6%

CAGR to 2025

Beverage Market
US

5.21%

CAGR to 2025

Note: growth numbers are CAGRs aggregated from numerous industry predictions. All CAGR values represent predicted growth in revenue for their respective markets/industries. All growth presented is predicted through 2025.

► Opportunities Abound for Beverage Suppliers

“

There is a growing demand across the industry to produce beverages at a lower cost and our production volumes will be strained to make more for less.

— Sr. Production Engineer,
Leader in Juice

”

The dominant trends in the beverage industry - sustainability, functionality, convenience, and health consciousness – are driving SKU expansion and the demand for innovative products. Beverage manufacturers are working on new flavors, new formats, and new packaging, creating challenging production realities. Many of those interviewed stated these challenges have also created a need for equipment and line improvements.

In addition to these trends already changing the face of the beverage industry, the pandemic has generated increased interest in e-commerce, product safety, and active health management. The events of the past year disrupted traditional supply chains and nearly all the beverage manufacturers interviewed stated they are experiencing sourcing shortages for both materials and ingredients.

Beverage leaders interviewed report significant impact on business operations due to supply shortages. This includes trouble with sourcing basic materials essential to production such as aluminum, PET and rPET, and corrugated. Manufacturers also report rising prices for ingredients and resins.

“

The can shortage is global; we delayed moving a product from PET to cans since we are already on allocation now with our suppliers.

— Director of Engineering,
Global Beverage Leader

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To keep up with consumer demand, beverage manufacturers are having to reexamine key aspects of their production and packaging. In general, they are seeking to add greater efficiency to their entire operation by making machines “smarter” and updating older equipment with modern technology. Beverage producers are turning to digital technology and automation/robotics as strategies to streamline production, maximize uptime, minimize product waste, and reduce user interface.

These improvements often necessitate new machines and new lines, in addition to building a team of expert advisors to achieve production goals. OEMs have a large role to play in responding to these goals and beverage companies are increasingly looking to OEMs that can provide turnkey solutions. With 50% of beverage manufacturers interviewed stating they expect their capital budgets for equipment to increase in the next few years, OEMs have ample opportunity to collaborate with beverage companies and secure new partnerships.

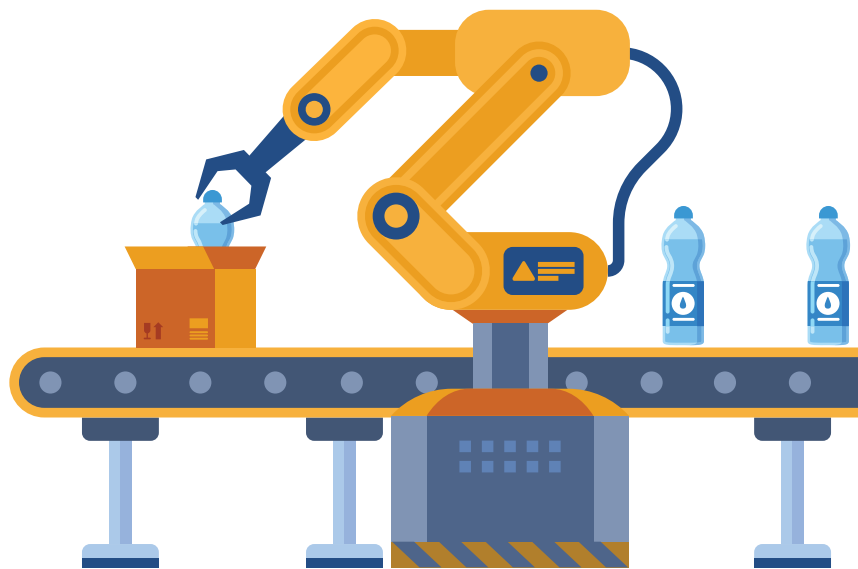
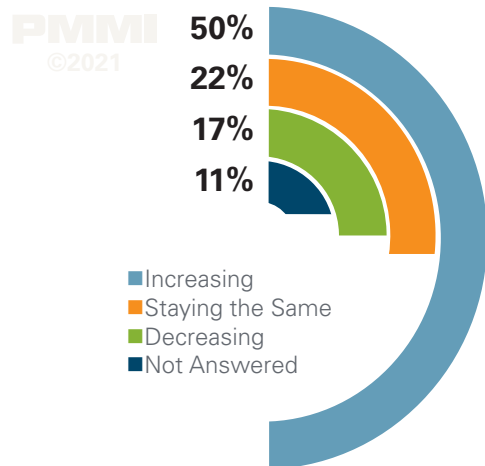
“

We are looking at advancements in data management, machine learning, and robotics to automate the process of packing a variety of products during palletization for re-distribution to stores.

— Packaging Engineer, Global Beverage Leader

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Manufacturers interviewed report changes in capital budgets in the next few years to meet output demands:



Long-Term Purchase Forecast:

56% of manufacturers interviewed } Are purchasing processing equipment (mixers, hydration equipment, fillers, batchers, agitators, and canners were named)

44% of manufacturers interviewed } Are purchasing packaging equipment (robotic palletizers/de-palletizers, case packers, tray packers, labelers, conveyors, shrink wrappers, and pallet wrappers were named)

“

Overall, the industry is going to need more canning lines and pasteurization tunnels.

— Beverage Industry Consultant

We've been leasing equipment in order to upgrade and eliminate manual labor, but we are still hand-packing variety packs.

— CEO, Co-Packer

”

M&As: Slowed by COVID-19, But Roaring Back¹

Mergers and acquisitions are a key part of the market strategy for larger beverage producers. M&As slowed during the pandemic, but are picking back up again. The second half of 2020 was defined by a growing number of smaller dollar amount transactions.

Large beverage players use M&As to:

- Add successful brands to expand their portfolio and accommodate changing consumer demands
- Add additional capabilities to their production they are currently lacking
- Build up their core competencies and enhance their existing operations
- Expand their offerings into new geographic locations

In 2019, it is estimated there were

3,000

beverage manufacturing locations in the US.²

These include contract manufacturers and packagers.

(Represents soft drinks, juice, water, sport/energy drinks, functional/nutritional drinks, coffee/tea, and water)

► Manufacturers Respond to Consumers Looking for Sustainability

One of the top concerns for today's beverage consumers is the overall sustainability of the products they are purchasing. Specifically, consumers are looking for packaging that is more sustainable, especially packaging that finds ways to reduce or eliminate plastic usage. This trend has been gaining steam in both the US and Europe, with 53% of consumers in the US and 65% of consumers in the UK stating that they prefer products that are environmentally friendly.³ This trend is especially strong among Millennials, with 61% stating that they are happy to pay more for products that are eco-friendly. Beverage manufacturers are responding to this trend with the awareness that Millennials are expected to become the single largest consumer demographic by 2026, commanding a 46% share of the market.⁵

“

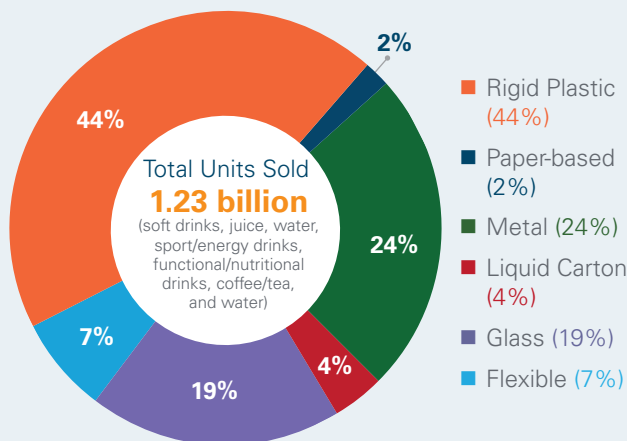
Overall, our focus is on bio-sourced or PCR (*post-consumer recycled*) materials to achieve 100% recyclable packaging in the years ahead.

— Sr. Packaging Engineer, Beverage Leader

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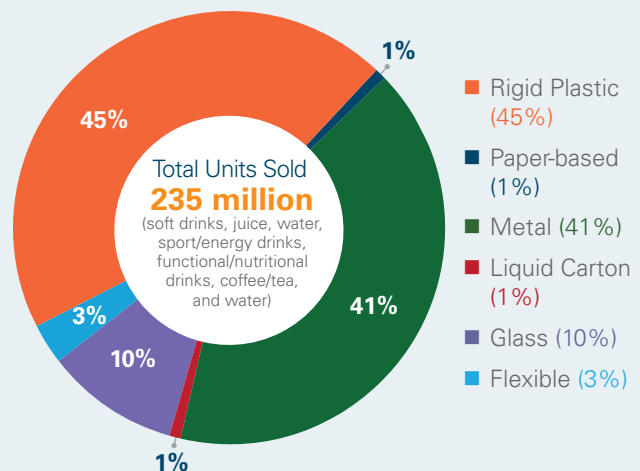
There are several strategies that manufacturers can consider to make their products more sustainable, but by far the most important is reducing the overall amount of plastic utilized in their packaging. Plastic has become a hot-button issue for consumers, especially given the mounting statistics demonstrating the damage improperly discarded plastic does to the environment. The beverage industry faces a particularly challenging problem with plastic, as 45% of the US market is made up of rigid plastic packaging, yet only 25% of those plastic bottles are actually recycled in the US every year. To achieve lower levels of plastic usage, manufacturers have turned to a variety of solutions that include reducing their overall packaging material requirements, exploring sources of renewable and recycled plastics, and adopting alternatives to plastic altogether.

Global Data: Percent of Units Sold at Retail by Material Type



Source: 2020 Euromonitor International; Packaging-Beverages data from trade sources/national statistics

North American Data: Percent of Units Sold at Retail by Material Type



Source: 2020 Euromonitor International; Packaging-Beverages data from trade sources/national statistics

To achieve lower levels of plastic usage, manufacturers have turned to a variety of solutions that include reducing their overall packaging material requirements, exploring sources of renewable and recycled plastics, and adopting alternatives to plastic altogether.



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The demand for sustainability is the leading trend: even the plastic carrier rings for beverages will be biodegradable in the future.

— *Director of Engineering, Industry Leader*

Our target is to have 25% of our beverage products utilize more recycled plastic content in the next few years.

— *Sr. Packaging Engineer, Private Label Beverage Manufacturer*

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Plastic Reduction

One of the most common strategies being deployed by beverage manufacturers to make their products more sustainable is reducing the amount of plastic in packaging. Manufacturers are now making bottles with thinner side walls and actively finding ways to significantly reduce the plastic required to form adequate neck and closure systems. While this strategy seems straightforward in regards to sustainability, it creates a host of challenges for manufacturers when it comes to actually producing these light-weighted bottles at full speed to achieve maximum output. These material reductions result in thinner overall barriers on bottles, meaning they often cannot be handled in the exact same way. In many cases, careful adjustments must be made to machinery to prevent issues such as tears and malformation that can slow or stop production. In some cases, these variances in strength and speed tolerances necessitate the purchase of new machinery, and sometimes entirely new production lines. This has made machinery that is capable of running at a variety of speeds and handling an array of recycled content in materials increasingly attractive to beverage manufacturers.

“

Our emphasis and focus continues to be on plastic reduction and sustainable packaging.

— *Packaging Manager, Food Safety and Innovation, Global Beverage Leader*

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Increasing rPET

A growing solution to plastic reduction being explored by beverage manufacturers is switching from virgin plastic to recycled plastic, commonly referred to as rPET. This is a rapidly growing trend, with 89% of manufacturers interviewed actively looking to incorporate more recycled material into their packaging, and 67% already in the process of transitioning PET bottles to rPET. The plastic reductions realized through these strategies are significant, especially at the largest beverage producers: one leading

beverage company expects to eliminate 46.3 million pounds of virgin plastic usage annually by switching to rPET,⁸ while another leading beverage company states their overall virgin plastic usage will be reduced by 20% across the board by switching only select brands to rPET.⁹ These reductions are significant, although challenges still remain in both sourcing and utilizing rPET.

With the low PET recycling rate of 30%¹⁰ in the US (which is even lower for bottles specifically, at 25%¹¹), many manufacturers utilizing rPET are running into supply chain shortages that hamper production and slow future product development plans. In addition to supply chain challenges, rPET creates a new set of considerations on the production side, as the material is not as reliable or consistent as virgin plastic. Manufacturers have had to address problems with undesirable haziness in the material, as well as unpredictable variances in quality that affect overall strength.

These challenges have spurred beverage manufacturers to seek out machines that are flexible and easy to adjust, allowing them to accommodate fluctuations in the quality of rPET. It is particularly important that machine manufacturers focus on equipment that can be easily recalibrated to handle a variety of strength tolerances and speeds, and can be quickly cleared and reset in the event of unexpected stoppages caused by rPET material variances.



“

Some products are being introduced with 100% recycled plastic content, but it's difficult to achieve a clear bottle.

— *Director of Engineering, Beverage Leader*

After investing in robotics to accommodate variety packs, our next initiative is moving to more PCR (post-consumer recycled) content in our packaging.

— *Operations Manager, Beverage Co-Packer*

”

Returnable Programs: Still Finding Their Niche

Returnable container programs have been a hot topic for many years now, but the model has yet to take off, especially in the beverage industry. While 33% of manufacturers interviewed have stated they are exploring or even actively experimenting with returnable packaging, none of the programs are on a large scale. The returnable model is more popular in European countries, but even there it is only just finding its legs. COVID-19 may have also dealt a significant blow to this strategy, as consumers retreat to products that focus on safety and hygiene.

“

We've commercialized our rPET container that is returnable and refillable. This is similar to other programs underway in Mexico, Germany, and Brazil, but we're also working on a proprietary circular method that is different from anything consumers have seen in the past.

— *Sr. Packaging Engineer, Global Beverage Leader*

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New Material Types

One of the most obvious ways to reduce plastic usage is to switch to an entirely new format of packaging altogether, such as glass, metal, or paperboard. While these formats are less popular than the dominant PET share, beverage manufacturers are increasingly looking at alternatives to plastic packaging. Consumers are aware of the sustainability benefits that can be derived from packaging other than plastic; for instance, 51% of consumers rated glass as “extremely eco-friendly” when surveyed.¹² While glass currently makes up only 10% of the US beverage market, industry experts have noted a recent uptick of interest in glass packaging.¹³

“

We moved a latte product to glass from a tetra-pak to achieve greater consumer appeal.

— *Packaging Engineer, Private Label Contractor*

”

Cans, Cans, and More Cans

There has been recent interest amongst beverage manufacturers in using more aluminum cans as a way to improve sustainability, especially in the US, where cans are recycled at a rate of 50%.¹⁴ When compared to PET, these recycling rates alone make aluminum cans an attractive sustainable option, which is enhanced by aluminum’s ability to be recycled and reused almost indefinitely.

These format changes for beverage packaging often require manufacturers to make several additional equipment purchases, especially when making major shifts such as moving from PET bottles to aluminum cans. To mitigate some of these costs, machine manufacturers should aim to make their equipment capable of handling a wide variety of formats, such as filling machines that can accommodate both glass and plastic, or equipment that can adapt to a number of different shapes and sizes. While no machine can realistically accommodate all format types and efficiently seal them, OEMs can still strive to make their machines as versatile and Industry 4.0 ready as possible.



Paper Bottles: PR or Real Potential?

Paper-based bottles have attracted attention recently as a potential alternative to plastic and a solution to the growing amount of plastic waste in the environment. While they are theoretically more sustainable, only 11% of manufacturers interviewed are exploring this option.

There are a few major beverage companies actively testing this format, but significant and fundamental hurdles remain, such as preventing the packaging from leaching into the product, staving off flavor degradation, and improving the ability to hold up to environmental stressors.

“

Paper-based bottles are the holy grail – we have tried this material for some products, but the beverage suffers from long term flavor degradation and it’s difficult to attain for the neck and cap.

— *Sr. Packaging Engineer, Beverage Leader*

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Many of our customers are moving from plastic bottles to cans.

— *Owner, Beverage Consultant*

There is a growing demand for can lines; nearly a third of our products are in cans now.

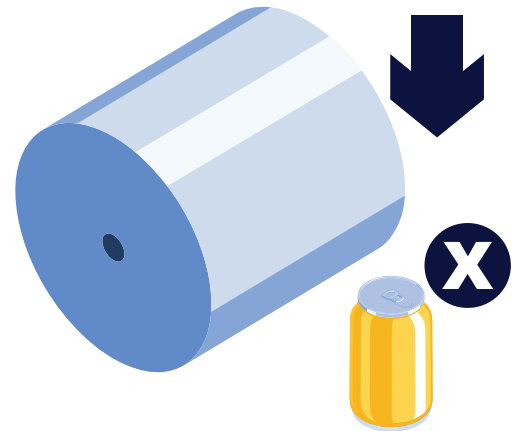
— *Sr. Packaging Engineer, CM/CP*

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The Can Crunch: Aluminum Shortages

As formats such as the tall, sleek can have gained popularity amongst consumers for products such as carbonated waters, seltzers, and coffee, can manufacturers are increasingly challenged with sourcing adequate amounts of aluminum. This has created a general shortage of aluminum cans within the beverage industry, with 42% of manufacturers interviewed stating they are struggling to consistently source adequate quantities of cans. This problem has been exacerbated by the COVID-19 pandemic as supply chains around the world faltered under increasing strain.

Smaller beverage companies reported more difficulty in sourcing cans than the industry leaders during the pandemic. The general manager at an emerging beverage company said, “As aluminum shortages rose to record levels, our delivery has been as long as three months. This makes it more difficult to compete and we recently had to shut down our can line as a result.”



“

We are primarily moving toward using a greater percentage of recycled plastics in our bottles and some new brands are being considered in different can sizes, but with aluminum shortages we’ve had to seek out new vendors.

— *Packaging Engineer, Leader in Beverage*

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Sustainability Requires Flexibility

More than anything else, the shifting strategies employed by beverage manufacturers to achieve greater sustainability require machines that are highly flexible and dynamic, including being capable of handling a range of speeds, strengths, sizes, and shapes. By designing machines to address these needs, equipment manufacturers can help beverage producers position themselves to readily accommodate future sustainability strategies and growth.

“

We continue to require flexible equipment that can handle varieties in neck size and contour.

— *Packaging Engineer, Beverage Leader*

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► Beverage Functionality and Convenience Continue to Grow

Consumers' lifestyles have evolved in the last decade, becoming busier and more mobile (with the notable exception of COVID-19 in 2020, which will be addressed later in this paper), and they are looking to incorporate beverages that cater to these new daily realities. Specifically, consumers are turning to functional beverages that can improve their daily health and are looking for these offerings to be in convenient formats that cater to their active routines. Beverages that regulate mood, improve mental fitness, and promote physical performance are becoming increasingly popular with consumers. In addition, they are looking to consume these offerings in convenient formats such as single-serve and ready-to-drink (RTD) packaging. These categories are experiencing robust growth, with RTD beverages slated to grow at a CAGR of 6.1% over the next five years,¹⁵ and functional beverages expected to expand at a CAGR of 8.6% in the next five years.¹⁶ Beverage manufacturers are responding to these demands, especially given that 35% of consumers are turning to beverages as a way to incorporate functional ingredients into their diets.¹⁷

“

We continue to seek new flavors, healthier ingredients, and new packaging for greater consumer appeal to meet increasing competition.

— *Packaging Engineer, Beverage Leader*

”

Functional Offerings

On the functionality side, beverages that regulate mental faculties (called nootropics) and beverages that help balance physical body functions (such as prebiotics, probiotics, and postbiotics) are growing in popularity amongst consumers. A recent survey found that 24% of consumers are specifically turning to food and beverages as a source of probiotics in their diets.¹⁸ And while the digestive health market is currently five times larger than the brain health market, the category of nootropics is rapidly gaining traction and has significant room to grow. To incorporate these new functional aspects into beverages, manufacturers are being pushed to introduce new ingredients or even entirely new offerings into their portfolios. In many cases, these new ingredients that improve a beverage's functional properties necessitate packaging alterations for better preservation, as they are often delicate and more sensitive to environmental factors.

Be it changes in thickness, opacity, chemical composition, or even entirely new materials, these packaging alterations require reciprocal adjustments to production setups. Much like sustainability initiatives, these packaging changes are ongoing and dynamic, and have pushed beverage manufacturers to seek out machines that are highly flexible to accommodate current and future changes to the size, shape, and composition of packaging materials. In addition to packaging, some of these ingredient formulations and new product offerings create new ranges of viscosity and acidity for beverage manufacturers to contend with as they transition from one recipe to another.

“

We need our OEMs to be able to evaluate the entire line instead of one piece of equipment at a time, offering turnkey solutions that reduce manual labor and manual errors.

— *Packaging Manager Food Safety and Innovation, Beverage Leader*

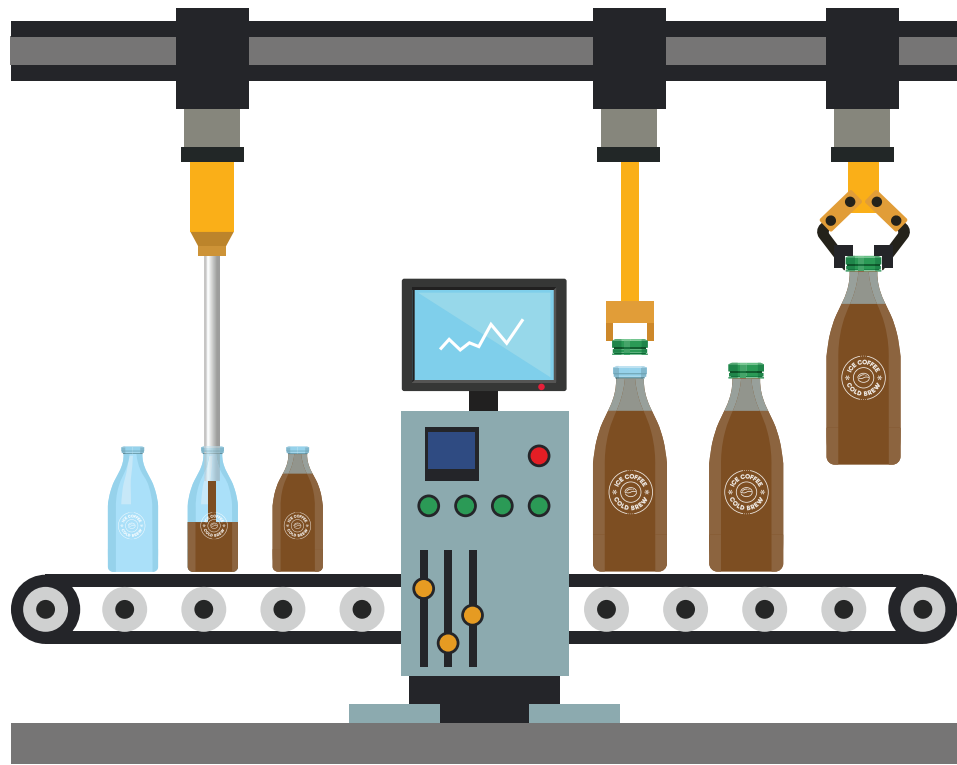
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Convenient Sizes

When it comes to convenience, consumers are most interested in beverages offered in smaller, single-serve sizes that are ready to drink. While these smaller sizes and easily consumable formats provide added convenience to consumers, they often create new challenges for beverage manufacturers. To keep up with demand for these products, beverage producers often have to run at ever-higher rates of efficiency, be that higher speeds, maximized uptime, continuous production, or a combination of all of the above.

To accommodate these needs, OEMs should strive to design machines that can demonstrate consistent, highly productive uptime.



“

There are now more beverage companies targeting specialty product categories and private label brands will continue to be strong competitors.

— *Packaging Manager, Food Safety and Innovation, Global Beverage Leader*

Supply costs for resins and ingredients are the main drivers of change in our processing operations.

— *Sr. Production Engineer, Juice Manufacturer*

”

Premiumization

To differentiate their offerings, some beverage manufacturers are seeking to give their products a premium look and feel. Consumers associate materials such as glass and metal with higher quality and beverage companies can further add to this premium image with novel shapes and closures. In addition, manufacturers are using labeling as a way to convey premiumization: high gloss/high color offerings, intricate label art produced by known artists, and limited time or collectible labels are all being utilized.

“

Glass is still in demand for premium products, even though freight costs are variable as the price of oil is increasing; some customers are moving to cans to reduce costs.

— *CEO, Co-Packer*

We moved some of our specialty drinks to glass - it's what consumers wanted.

— *Packaging Engineer, Private Label Manufacturer*

”



► Health Consciousness Is a Key Driver of Change

Another key trend in the beverage industry is the growing awareness of health consciousness amongst consumers. A full 80% of consumers have expressed that they are focusing specifically on what they eat and drink as a way to take better care of themselves.¹⁹ For example, 74% of consumers have expressed a desire to actively limit their sugar intake.²⁰ Evidence of this trend is already reflected in statistics for the beverage industry, with carbonated soft drinks, one of the most sugar-rich offerings, posting negative growth (-0.8%) for the first time ever in 2017.²¹ Consumers are also apparently willing to put their money where their mouth is, so to speak, with 54% stating they are willing to spend more on beverages that will contribute to improving their overall health and wellbeing.²² To address these desires, beverage manufacturers have been reformulating their historically successful offerings into new health-conscious varieties, as well as striving to more clearly communicate the health benefits of their products through labeling.

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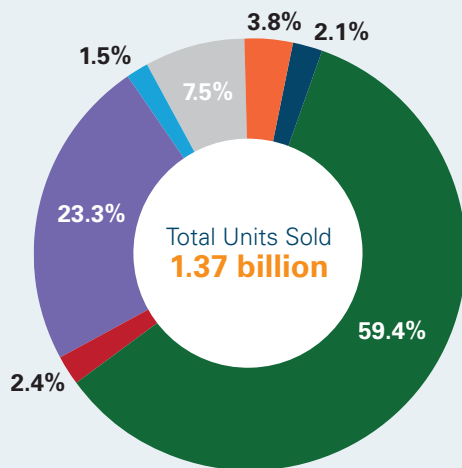
Moving away from corn syrup for a new product introduction required us to commission more advanced processing equipment.

— Process and Automation Engineer, Beverage Leader

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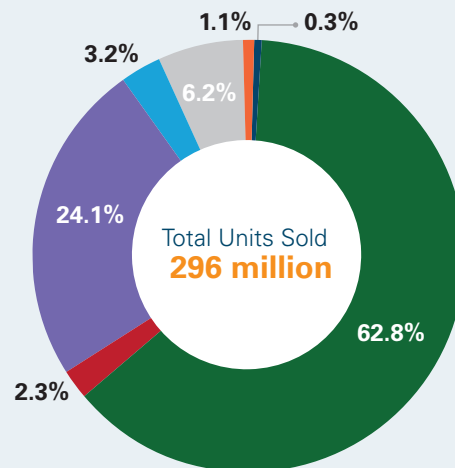
Global Data: Percent of Units Sold at Retail by Product Type



■ Soft Drinks (59.4%) ■ Juice (7.5%)
■ Energy Drinks (2.4%) ■ Coffee (3.8%)
■ Bottled Water (23.3%) ■ Tea (2.1%)
■ Sports Drinks (1.5%)

Source: 2020 Euromonitor International; Packaging-Beverages data from trade sources/national statistics

North American Data: Percent of Units Sold at Retail by Product Type



■ Soft Drinks (62.8%) ■ Juice (6.2%)
■ Energy Drinks (2.3%) ■ Coffee (1.1%)
■ Bottled Water (24.1%) ■ Tea (0.3%)
■ Sports Drinks (3.2%)

Source: 2020 Euromonitor International; Packaging-Beverages data from trade sources/national statistics

Beverage Reformulation

One strategy catering to the growing health consciousness of consumers is reformulating popular offerings into healthier options by adjusting ingredient formulations. This trend is in full swing, with 83% of manufacturers interviewed stating they are actively altering ingredients specifically to meet consumer health demands. Much like strategies utilized to increase the functionality of beverages, these ingredient changes often alter the basic characteristics of the product. These changes also necessitate new considerations to packaging format, material, and composition to properly preserve the integrity of the product. This is especially true for alterations being made to old favorites, which require beverage producers to adhere as closely as possible to the original flavor and texture profile, while still improving overall healthiness. In addition to packaging changes, new ingredients may also require tolerance and temperature modifications on filling machines, which can sometimes require entirely new machine purchases or necessitate technical upgrades to existing lines.

“

We are focusing on a clean label, reducing the number of ingredients by half.

— *Packaging Engineer, Private Label Manufacturer*

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Clean and Clear Labeling



While altering formulations to make beverages healthier is important when catering to consumer health consciousness, beverage manufacturers also need to effectively communicate these new health advantages to consumers. The most efficient means of communicating the specifics of these new healthy offerings is through clean and clear labeling. Consumers are paying more attention to labels and examining them to discern whether or not a particular beverage aligns with their health goals. For instance, 61% of consumers say that claims of being free from artificial sweeteners is an extremely important statement they look for on labels, and 30% of consumers will pay more for beverages advertising such a claim.²³ 55% of beverage shoppers also say they carefully review added sugar content in their products, and 57% say they specifically look at what type of sweetener is being used when making a beverage purchase.²⁴

It is more important than ever for beverage manufacturers to have clear, concise, and readily visible health information on their labels, especially when it comes to what exactly is being used to achieve a desired flavor profile. One effective strategy is utilizing smart packaging, such as RFID, NFC, and QR codes to give customers access to detailed information about the products they are buying. This trend is gaining traction amongst beverage manufacturers, with 33% of those interviewed stating they are actively exploring smarter packaging solutions.

One cutting edge solution, using augmented reality (AR) to give consumers easy access to expanded label information, has experienced significant growth, particularly among Millennials. Millennial interest in AR labeling has driven 120% growth in the technology for beverage packaging in just two years.²⁵

“

We are engaging the consumer more often now with QR codes, loyalty programs, and limited-edition gift packs.

— *Packaging Engineer, Beverage Leader*

Smart packaging has become a product differentiator in communicating our sustainability goals to our consumers.

— *Packaging Engineer, Private Label Brands*

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▶ SKU Expansion for Most Beverage Manufacturers

As beverage manufacturers adjust to consumer demand, the phenomenon of SKU proliferation has accelerated significantly in the beverage market. The trends in the beverage market are aggressively driving this expansion. Beverage manufacturers are offering products in new formulations and sizes to cater to sustainability and convenience trends. Old products are being reworked into new formulations to address functionality and health goals, often offered side-by-side with the original product. Beverage manufacturers are also creating entirely new offerings to address these trends. As a whole, beverage manufacturers are pressured on all fronts by numerous trends that require them to continue to expand their number of offerings, contributing to the explosion of SKU counts.



“

We need fillers and cappers to be one unit so they can work in tandem to accommodate the number of increasing SKUs.

— *Packaging Engineer,
Private Label Contractor*

The material shortages are causing us to miss deadlines and lose business - it's been a disaster with lead times up to 16 weeks for caps and nearly 3 months for specific sizes in HDPE and PET.

— *Vice President, Co-Packer*

”

Sizes, Shapes, and Materials

The increased expansion of SKUs has created new considerations for beverage manufacturers, who must accommodate an ever-growing number of packaging shapes, sizes, and materials, as well as contend with complex needs for processing and filling new formulations and entirely new products. In practical terms, this has created a need among beverage manufacturers for machines that are equally as dynamic as the product SKUs they must juggle.

Beverage manufacturers now more than ever require machines that are highly flexible in all aspects of production and are able to handle a wide variety of product formulations, as well as a diverse set of packaging sizes, shapes, and materials. In addition, equipment must be intuitive, easy to operate, and offer automated product inspection.

“

We are basically making improvements along the entire line: upgrading processing equipment, modernizing filling capabilities, and changing packing formats - all due to expanding product diversity.

— *Process and Automation Engineer,
Beverage Leader*

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Customization

The customization trend, which largely began in the beverage market through names being printed on labels, has continued to gain popularity. Now customers can design their own unique labels online, including uploading custom images and selecting text. This trend has been greatly aided by the advancement of laser-printing technology, which is now capable of printing directly onto PET bottles.

IIoT Automation and Digitization

To keep up with the production demands required by the growing number of SKUs, beverage manufacturers are also turning to automation and digitization to streamline their processes and improve overall efficiency. Beverage manufacturers are expanding automation along their production lines, with a particular focus on automating physical processes and adding robotics. Manufacturers are looking to use smart automation to streamline changeover speeds, automate complex packaging operations such as building variety packs, and improve efficiency through intuitive and comprehensive HMI and PLC interfaces. These alterations are even more important in the face of ongoing skilled labor shortages in manufacturing.

In addition to physical automation, beverage manufacturers are increasing their level of digitization, adding smarter technology up and down production lines to gather data and monitor processes. These new sources of data are being used to analyze individual machine functions, as well as overall production operations, in an effort to identify and eliminate inefficiencies to maximize uptime and output.

“

We rely on our suppliers from the beginning commissioning stages through start-up and ongoing support.

— Sr. Production Engineer,
Juice Processor

We need help from our suppliers to achieve connectivity with our ERP and MRP.

— Director of Operations,
Specialty Beverages

”

Beverage manufacturers are turning to OEMs and suppliers that can proactively offer solutions to their struggles at all points in the manufacturing process.

72%

of manufacturers interviewed

are increasing their levels of data and technology-based solutions

33%

of manufacturers interviewed

are specifically looking at adding more robotics to their operations

► COVID-19: The New Variable

It is now impossible to have a comprehensive discussion in 2021 about any industry in manufacturing without examining the newest variable introduced into the equation: the COVID-19 pandemic. Like nearly every industry, the beverage market has been pushed to rapidly adapt their strategies as consumer preferences and buying patterns have shifted during these tumultuous times. The pandemic has altered how and when people shop, and beverage purchases have not been immune to these changes. Specifically, the pandemic has driven the expansion of e-commerce in the beverage industry. In addition to impacts on buying channels, COVID-19 has also shifted some consumer preferences, particularly regarding product safety and how actively consumers are managing their newly expanding health consciousness.

“

Since the outbreak of COVID-19, we have implemented and plan to continue to use UV-C sanitizing and a germicidal cleaning technology in our facility.

— Sr. Packaging Engineer, Beverage Leader

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E-Commerce Boom

The pandemic drastically upended how people shopped for groceries in 2020, expanding the share of e-commerce for grocery items significantly. This is true for beverages as well: despite the shift in channels, consumers continued to purchase their beverages alongside their other grocery items; they were simply doing it online. Growth in online grocery shopping was already expected to accelerate quickly, with the amount spent globally predicted to more than double, from about \$150 billion in 2017 to around \$330 billion by 2022.²⁶ By 2025, online grocery shopping was expected to make up a full 25% of the entire grocery market.²⁷

The pandemic has accelerated this trend however, as consumers relied more heavily on online orders to obtain basic necessities. 61% of consumers in a recent survey stated that they shop online now more than they did pre-pandemic.²⁸ The statistics are even more stark when examining grocery purchases: in early 2021, 73% of consumers said they had purchased groceries online in the last three months, up from only 17% in 2017.²⁹

73%
of consumers

} said they purchased groceries online in the last three months

“

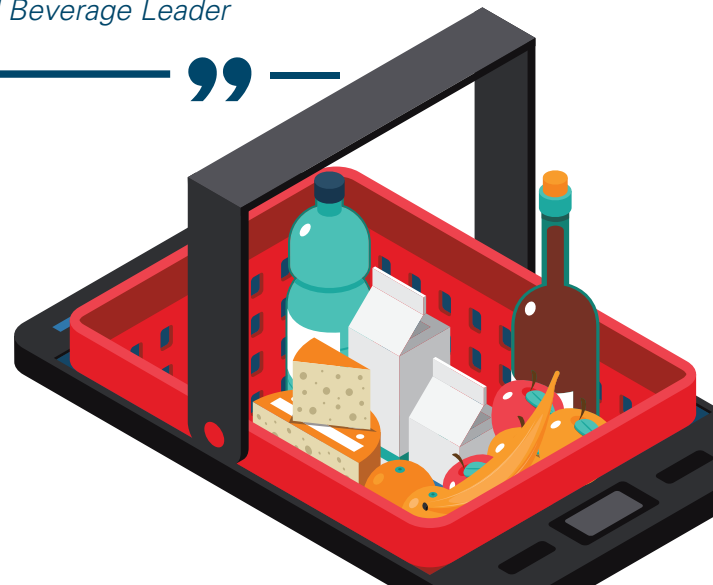
Shipping direct to consumer (DTC) is costly and we need to rethink the existing package.

— Packaging Engineer, Beverage Leader

There are global plans in place to add lines that are dedicated to the demands of e-commerce.

— Sr. Packaging Engineer, Global Beverage Leader

”



Direct to Consumers

In addition to purchasing beverages alongside online grocery orders, direct sales to consumers from beverage manufacturers have also become more common: 44% of manufacturers interviewed stated they are shipping at least some of their products directly to consumers through e-commerce orders.

The shift to e-commerce grocery and beverage ordering has altered consumer preferences for a variety of reasons. Consumers are making fewer purchases from grocery stores in larger quantities as a result of utilizing e-commerce channels, creating a shift in size and packaging preferences. Specifically, consumers are moving away from mid-size beverage options, instead favoring larger bulk formats or multipacks of smaller sizes. Gallon sizes and multipacks (especially variety packs) of single-serve sizes have expanded in popularity, while sizes such as the 20oz bottle have fallen out of favor. It is widely predicted that market share gains made by online grocery shopping will endure at least partially beyond the pandemic, meaning that consumer preferences for products like multipacks of smaller sizes are likely to continue in some form. This is an important consideration for beverage manufacturers as they weigh the future of their operations and machine needs.

44%
of manufacturers
interviewed

are shipping at
least some of their
products direct to
consumers

“

Our operations were constrained by our equipment capability and over the last year we heavily invested in robotics for variety packs.

— *Operations Manager, Beverage Co-Packers*

Market strategies will continue to evolve post-pandemic; overall we saw individual single-serve beverages decline, since people were staying at home, but we anticipate demand to return for individual single-serve.

— *Packaging Manager, Food Safety and Innovation, Global Beverage Leader*

”



A Shift in Production

The sudden shift in consumer preferences regarding beverage sizes brought on by the pandemic has required beverage manufacturers to quickly readjust their strategies or accelerate previously laid out plans to address the e-commerce channel. This shift to multipacks for smaller size products in particular has required manufacturers to be nimble, as the production requirements for these configurations are typically more challenging. Multipacks require more units to be produced overall, and the growing popularity of variety multipacks creates additional logistical challenges in production. Machines need to be reliable, flexible, and capable of running at high speeds to increase overall production and minimize waste during rapid changeovers to accommodate the growing thirst for variety packs.

With a need to produce more products in a greater variety, the urgency in maximizing uptime is especially acute. In addition, the formation of variety multipacks places extra strain on packaging lines, and reliance on manual operations for these tasks can greatly slow down production. As a result, beverage manufacturers are looking to fully automate these processes, often through robotics. Some manufacturers are even going all-in on their own e-commerce channels, with 22% of manufacturers interviewed stating they intend to add brand new production lines to accommodate online orders.

22%

Nearly one in four beverage companies interviewed intend to add new production lines to accommodate online orders.

“

We have already adapted distribution centers in various locations to handle direct-to-consumer shipping.

— *Packaging Manager, Food Safety and Innovation, Global Beverage Leader*

We have investigated offering direct shipments to the consumer and would consider adding a specific line, but there is not enough need for it right now.

— *Sr. Production Engineer, Juice Manufacturer*

”

► Role of Contractors

Contractors in the beverage industry are often used for highly specialized production runs or to fill gaps and make up production shortages.

Of manufacturers interviewed, 61% stated they use contractors for 10% or less of their overall production.

Reasons to use contractors include:

- ✓ Testing new products or conducting product R&D
- ✓ Accommodating overflow capacity and production shortages
- ✓ Accessing specialized production or filling capabilities not met by current operations

46%

Nearly half of beverage companies interviewed foresee increasing their use of contractors in the future.

“

We outsource less than five percent; it is difficult to find companies that can meet our very stringent standards, but we see the use of contractors increasing.

— *Production Manager, Leader in Beverage*

Our business is increasing as leading beverage manufacturers look for a source to run smaller volumes of start-up or specialty products, often in new packaging formats.

— *Operations Manager, Contract Services*

”

Product Safety Will Not Diminish After the Pandemic

The COVID-19 pandemic has also made consumers much more aware of the general hygiene and safety of the products they purchase. This is especially true for beverages, as most beverage packaging is explicitly designed to be consumed in its original format, requiring consumers to actually place portions of the packaging on their lips. This is obviously a more fraught proposition than before the pandemic and consumers have responded by showing new preferences in their beverage purchasing habits.

Specifically, consumers are now more interested in beverage packaging that protects critical contact surfaces, such as screw-top bottles. Consumption surfaces exposed to the environment, such as the metal closure on cans, are less attractive to consumers during the pandemic than closures that fully enclose the consumption surface. While it is possible that these preferences may abate as the pandemic recedes, especially given the previously rising popularity of cans, it is still an important consideration for beverage and machine manufacturers in the short term.

Safe and Hygienic Production

In addition to packaging considerations, the pandemic has placed new emphasis on the need for safe and hygienic production practices at beverage manufacturers. While beverage companies have mostly managed to avoid the large outbreaks associated with other segments like the meat packing industry, consumers are now much more concerned with how their products are being handled during production. This has pushed beverage manufacturers to demonstrate to their customers that proper precautions are being taken during production, especially when it comes to cleaning and human contact. These new procedures have created additional considerations for beverage manufacturers and machine builders alike.

“

<p>We have automated the batching process, creating more digital documentation and process control to ensure product quality.</p> <p>— <i>Sr. Packaging Engineer, CM/CP Retail Brands</i></p>	<p>In the long term, taking measures to keep employees healthy and the environment safer will continue.</p> <p>— <i>Process and Automation Engineer, Beverage Leader</i></p>
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To accommodate new hygiene practices, many beverage manufacturers have increased or amended their facility cleaning protocols. Specifically, manufacturers have placed a greater emphasis on more frequently washing down equipment in their production spaces. This has driven demand for machines that are easy to clean, making quick clean-in-place (CIP) equipment offerings more attractive to beverage manufacturers. In addition to more frequent cleaning, manufacturers are also striving to decrease the frequency of human contact needed during production.

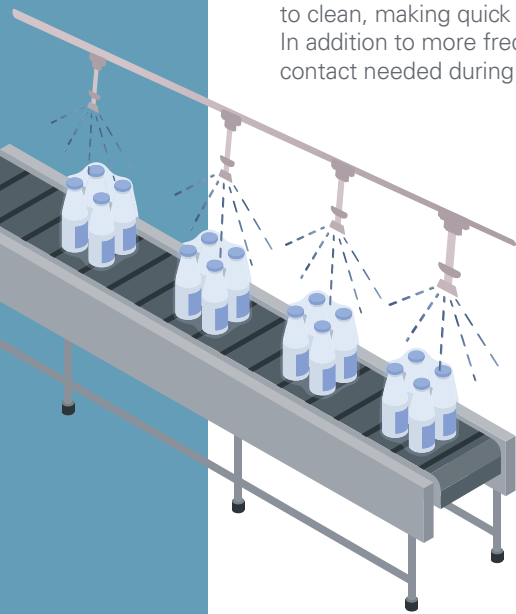
This has spurred beverage companies to more aggressively add automation and digitization to their operations to reduce the need for human labor required for production, which reduces contact points overall. This trend has had a tack-on effect to the already building trend for smarter automated processes due to a lack of labor, accelerating many beverage manufacturers' plans to harness an industry 4.0 model, which often necessitates new equipment purchases.

“

We are looking for more autonomous equipment and robotics that require less user interface.

— *Director of Operations, Specialty Beverages*

”



Active Health Management

Health consciousness has been a growing consumer trend in the beverage industry since before COVID-19, but it has taken on a new edge of urgency during the pandemic. Consumers have been stating for a while that they intend to make healthier choices, but previously the trend has progressed slowly. With COVID-19, this shift toward health consciousness has noticeably accelerated. Rather than *intending* to make healthier choices, consumers are now taking immediate steps to actively manage their health goals.

The data surrounding consumer health management during the pandemic paints a clear picture of accelerating health consciousness. 77% of consumers have stated that they are actively seeking to live a healthier lifestyle than before the pandemic, and beverage choices now play a more central role in those goals.³⁰ A recent survey conducted in 2020 asked participants a set of questions in April, and then repeated those same questions in May. The findings are illuminating: 80% of participants in May stated they plan to make healthier choices with food and beverages, an increase from 73% in April. In addition, 57% of respondents in May stated they are reducing their sugar intake, an increase from 45% in April; 32% in May were more conscious about their weight, up from 21% in April.³¹ In another survey, 50% of consumers stated they are actively seeking beverage alternatives to alcoholic drinks as a result of the pandemic.³²

“

Right now, our bottleneck is in the blending department as we formulate healthier ingredients and new flavors, so we're making process improvements and equipment changes.

— *Lead Process Engineer,
Global Beverage Leader*

”

As cited previously, the demand for healthier beverages has spiked rapidly and beverage manufacturers are having to expedite timelines on product reformulations and new releases to keep up with demand. This has made ensuring that machinery is highly flexible, is turnkey ready for line integration, and is able to handle a variety of product formulations and packaging formats even more urgent.

“

Currently, a staff of process advisors work daily at analyzing data to maintain ingredient consistency and quality in our products at all manufacturing plants.

— *Process Engineering Leader, Global
Beverage Leader*

”



► The THC/CBD Question

Beverage manufacturers are aware of the growing consumer interest in drinks that incorporate THC, CBD, or in some cases both, but producers are wary of jumping into this market.

Only 11% of manufacturers interviewed are considering including these ingredients, while 78% are definitely not considering THC or CBD. Overwhelmingly, manufacturers expressed reluctance to explore this market due to the federal illegality of THC and the lack of FDA approval for CBD as a food/drink additive.

“

We are talking about adding CBD or THC as an ingredient but there are definitely no concrete plans.

— *Packaging Engineer,
Beverage Leader*

We've had a lot of inquiries about adding CBD as an ingredient, but none of our customers have done it yet.

— *CEO, Beverage Co-Packer*

”

▶ Beverage Manufacturers' Machine Needs

With all the change occurring in the beverage industry, many brand manufacturers are looking to efficiently keep up with demand by making new machine purchases at all points on the production line. Beverage producers are overwhelmingly looking for machines that are able to meet the goals of a smarter plant floor.

OEMs that provide a diverse set of capabilities – both machines and services – will be positioned to offer beverage manufacturers the solutions and technologies that will grow with them into the future.

**Beverage Packaging
Equipment Forecast to
Grow Globally**

3.73%
CAGR to 2025

Note: growth numbers are CAGRs aggregated from numerous industry predictions. All CAGR values represent predicted growth in revenue for their respective markets/industries. All growth presented is predicted through 2025.

Packaging Equipment Needs Prevail

When it comes to packaging machinery, beverage manufacturers are looking for equipment that is highly flexible. When interviewed, 67% of manufacturers stated they have long-term plans to add additional packaging equipment to their operations. For example, a process and automation engineer at a beverage manufacturer shared that they have completed a project to update end-of-line machinery to accommodate the diversity of product formats.

With the proliferation of new sizes, shapes, and materials, combined with the general expansion of SKUs, packaging machines for the beverage industry should focus on being able to handle a wide range of size options with a seamless process for recipe changeover and machine recalibration.

“

Our business is strong and growing - driven by packaging innovation in beverages.

— *Operations Manager,
Beverage CM/CP*

Cartoners need to be more flexible to handle a number of different sized RSCs.

— *Packaging Engineer,
Private Label Brands*

”

New machines are incorporating digital and intuitive solutions by adding technology, including artificial intelligence (AI), machine learning, robotics, intuitive HMI/PLC inputs, smart motion components, and automated inspection, especially since maximizing output on every line is top of mind for beverage leaders. The machine operations need to be simple, with the ultimate goal of minimizing human error. In addition, next generation machines should be able to tolerate a wide range of material strengths to account for growing variances in quality when using recycled materials, including film, paperboard, corrugated, and rigid plastic.

“

Our strategic goal is to move away from corrugated cartoning to more film wrapped bundling.

— *Director of Engineering, Beverage Leader*

”



Beverage Processing Equipment Forecast to Grow Globally

4.98%
CAGR to 2025

Note: growth numbers are CAGRs aggregated from numerous industry predictions. All CAGR values represent predicted growth in revenue for their respective markets/industries. All growth presented is predicted through 2025

Changes to Processing and Filling Equipment

Like packaging machinery, processing and filling equipment for the beverage industry should be as versatile as possible. When interviewed, 56% of manufacturers stated they have long term plans to add additional processing machinery, while 44% indicated they intend to purchase filling equipment. Some also mentioned the need for new sterilization systems.

As industry trends and consumer desires push beverage manufacturers to alter product formulations and expand into innovative offerings, processing and filling equipment should be flexible enough to grow with the diversity in production. Changes in viscosity, acidity, and fill temperatures are increasingly common, and processing and filling equipment needs to be nimble enough to handle these changes without compromising the quality of the product. In addition, new machines should be easy to swap from one product to another, with a focus on reducing the duration that CIP requires.

“

We are increasing our capacity in batching and mixing agitation in the future to handle the complexity in ingredient formulations.

— *Operations Manager, Beverage Co-Packer*

We are looking mostly for filling equipment to retrofit into our lines to increase production; probably moving to ESL or aseptic in the future.

— *Sr. Packaging Engineer, Global Beverage Leader*

”

► Sterilization is Driven by Product Formulations, Cost, and Equipment Capabilities

Sterilization is essential to the quality, safety, and shelf life of beverage products, as it removes biological contaminants that lead to spoilage. While sterilization is a topic unto itself, a brief mention of the processes that leading beverage manufacturers are using across their plants is useful. Hot fill remains the predominant sterilization method, but beverage leaders shared their intentions of incorporating more aseptic fillers in the future.

► Sterilization Methods in Use

61%	Hot Fill
33%	Aseptic
28%	UHT (ultra-high temp)
22%	Cold Fill
17%	ESL (extended shelf life)
12%	Pasteurization

Source: Statistics are from interviewed companies only.

“

We are considering using more aseptic in the future for beverages containing sensitive ingredients in order to offer a healthier product to the consumer.

— *Packaging Engineer, Beverage Leader*

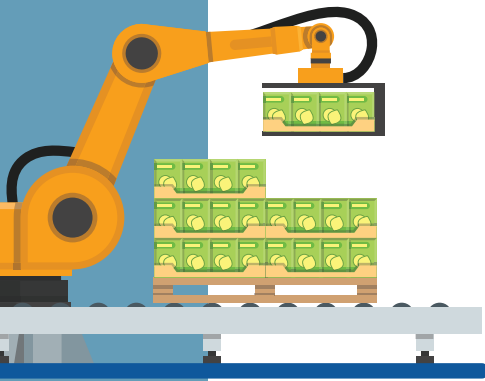
Hot fill is our main filling technology now, but aseptic usage will likely become more prevalent in the future.

— *Senior Packaging Engineer, Beverage Leader*

Most of our customers require hot fill, since preservatives are needed with cold fill and aseptic is still too costly.

— *CEO, Beverage Co-Packer*

”



Smart Automation, Robotics, and Data Technology

To keep up with the increased demand in the beverage industry, manufacturers are also turning to smarter automation and data-driven technology to meet production requirements. When interviewed, 72% of manufacturers expressed intent to expand automated, data-driven solutions in their operations. Beverage producers are looking to automate more processes like changeover, vision inspection, and the construction of variety packs, as well as increase the amount of data they are collecting and analyzing through sensor deployment and increased integration.

These needs are becoming acute as consumer pressure and production realities place greater strain on operations. Beverage companies not only have to keep pace with growing consumer demand, they also have to accommodate an ever-expanding number of SKUs, requiring a renewed focus on efficiency in predictive and preventive maintenance. In addition, beverage producers are also contending with an ongoing shortage of skilled labor, making automated processes and robotics technology even more important.

“

We have tripled our use of robotics in the last five years along the entire line – labeling, capping, stacking and defect removal.

— *Sr. Packaging Engineer, Beverage Leader*

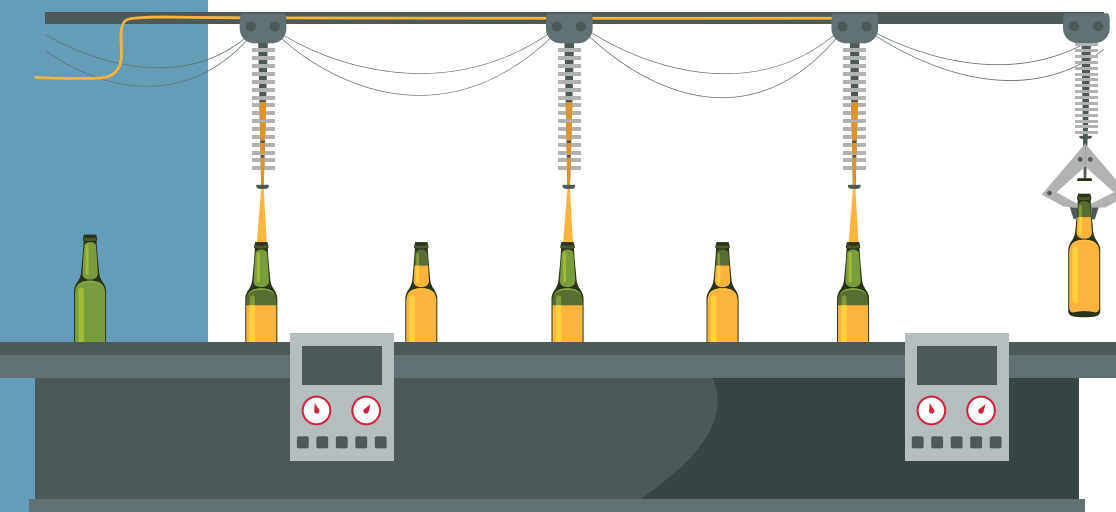
Robotics are used to reduce maintenance and increase production for packaging orientation for flexible pouches; robotics are also used for palletizers and case packers.

— *Sr. Production Engineer, Juice Manufacturer*

Working with our suppliers, we installed a flexible line with separate fillers for glass and canned products. Products are then conveyed to a shared labeler, cartoner, case packer, and palletizer.

— *Packaging Engineer, Private Label Manufacturer*

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▶ Beverage Manufacturers Turn to OEMs and Suppliers for Guidance

Beverage Manufacturers are Looking for Partners to Understand their Business and Provide:

- ▶ Turnkey equipment
- ▶ Full line evaluation
- ▶ Simplified integration solutions
- ▶ Comprehensive training with ongoing programs



With all of the challenges and shifting dynamics in the beverage industry, producers can easily become overwhelmed with the pace and scope of the changes required to keep up with demand. Now more than ever, beverage manufacturers are turning to OEMs and suppliers for guidance, seeking out knowledgeable partners that can help guide them through necessary improvements to their processes. Specifically, beverage companies have stated they are looking for partners that have a deep knowledge of not just the beverage industry, but also their specific operational needs.

“

We are looking for production equipment for our entire line from one vendor - with turnkey installation from processing to palletizing - to meet the growing demand of all beverage products.

— Sr. Packaging Engineer, CM/CP

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Beverage producers are seeking out companies that can proactively offer solutions and suggestions based on an intricate understanding of a client’s needs and pain points. Manufacturers are most interested in OEMs that can offer these solutions throughout their production operations, providing true turnkey services from processing to packaging.

In addition, beverage manufacturers have expressed a desire for more in-depth and tailored training from OEMs, both to bring less-skilled labor up to speed and to keep their experienced employees up to date on new technology developments. More than anything else, beverage manufacturers are looking to build relationships with companies that will work closely with them to understand their operations, analyze their needs, and act as trusted partners as they navigate the evolving demands of the beverage industry.

45%



Of interviewed participants agree that the greatest challenge in the year ahead is keeping up with the rising demand for all beverage products.

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PMMI HEADQUARTERS
 12930 Worldgate Dr., Suite 200
 Herndon, Virginia 20170
 T: (571) 612-3200
 F: (703) 243-8556
 E: pmmi@pmmi.org
www.pmmi.org

PMMI LATIN AMERICA
 Homero 418 Piso 7
 Col. Miguel Chapultepec
 Miguel Hidalgo, D.F. 11570 Mexico
 T: + (52 55) 5545 4254
 F: + (52 55) 5545 4302
 E: latina@pmmi.org
www.pmmi.org.mx/es

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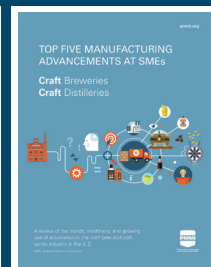
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