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State of the Industry Report

2025

PMMI Business Intelligence

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How To Use This Report

This report provides a high-level view of the U.S. packaging machinery market. It is designed to help PMMI members, OEMs, and industry stakeholders understand overall market performance, key trends, and the projected outlook by industry and major machine categories.

What the Report Covers:

- Total shipment values and growth forecasts for the U.S. market
- Breakdowns by major industries (e.g., Food, Beverage, Pharmaceutical, Personal Care)
- Shipment values by primary machine categories
- Market drivers and demand signals influencing investment decisions
- High-level shipment estimates for Canada

For more granular data—including sub-machine breakouts and industry-specific filters—PMMI members can access the interactive **State of the Industry Dashboard** at: pmmi.org/content/soti-dashboard

PMMI Dashboard Highlight

Looking for more detailed insights? The PMMI State of the Industry Dashboard complements this report by offering interactive access to the full dataset — with significantly more granularity. Available to PMMI members, the dashboard allows users to:

- **Machine Type and Subcategory** – View shipment values and growth projections by main machine types and their detailed subcategories (e.g., depalletizing, load stabilization).
- **Industry Filters** – Filter by specific industry sectors to view only relevant machine shipments and projections.
- **Country View** – Toggle between U.S. and Canada data.
- **Shipment Value Tables** – Compare shipment values by industry and subcategory side by side.

To access the dashboard, visit the **PMMI State of the Industry Dashboard** at: pmmi.org/content/soti-dashboard

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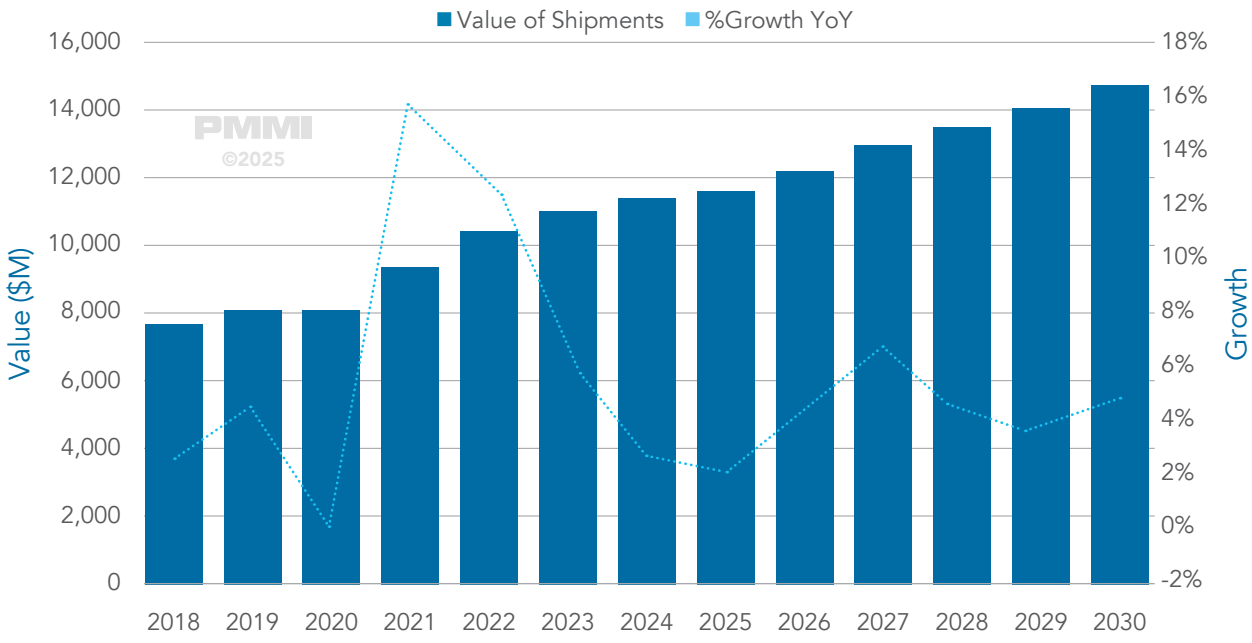

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Uncertainty Continues to Slow Growth

Growth in 2024 was slower than in previous years, largely due to persistent economic uncertainty. As interest rates remained high, many companies delayed placing orders. In the second half of the year, the Federal Reserve announced an interest rate reduction, which led to a modest uptick in activity. Additionally, as the U.S. election approached and talk of tariffs gained traction, some companies rushed to place orders ahead of potential policy changes. Still, overall uncertainty weighed on the market, resulting in a growth rate of 2.7% over 2023.

Heading into 2025, many expected the "wait and see" mentality to ease. The Fed had signaled further rate cuts, and the election outcome was expected to bring additional clarity to the macroeconomic future. However, the first half of the year brought more turbulence than anticipated. Tariff announcements were issued, withdrawn, and reinstated across multiple countries, creating policy whiplash for manufacturers. Faced with these unpredictable trade conditions, many companies chose to pause capital investments in new machinery and equipment.

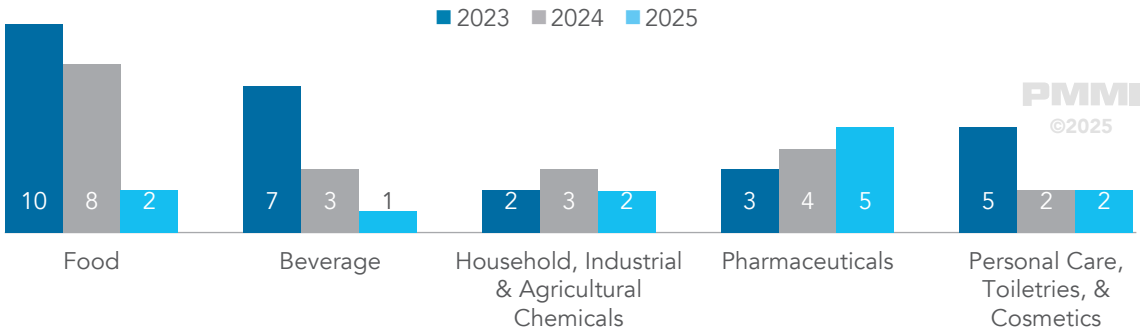
Looking to the second half of 2025, uncertainty is expected to persist. Equipment orders remain delayed or on hold as companies reassess their plans in this unstable environment. While a contraction is not expected, 2025 is projected to be a low-growth year, with a modest 2.2% increase over 2024.

MARKET SECTOR OVERVIEW – END-USER SECTOR INVESTMENTS

End Sector Investments Slow in 2024

Following a period of high growth in the post-pandemic era, investments in new facilities in 2024 continued but slowed compared to previous years. This slowdown is largely attributed to the sustained increase in interest rates affecting the US economy. As uncertainty persists into 2025, coupled with ongoing discussions about tariffs, we have observed a noticeable decline in major capital expenditures across various sectors. However, some key players have decided to establish new manufacturing plants in the US in response to these tariffs. We anticipate that this will lead to gradual and steady growth in the coming years as the construction of these facilities progresses towards completion.

Fig. 2 US Number of Plant Investment Announcements per End-User Sector (2023-2025)



Source: Interact Analysis. Based on publicly available plant investment announcements from major U.S. end-user companies. Selected announcements are detailed in Tables 7–11.

MARKET SECTOR OVERVIEW – INDUSTRY BREAKDOWN

Food

The food industry continues to be the largest sector, making up 43.5% of the value of packaging machinery shipped in 2024. Plant investment activity in the food sector moderated slightly in 2024 compared to 2023, with just under $200 million directed toward pet food alone. Major players such as Nestlé and Campbell Soup Co. announced more than $575 million in combined investment across six facilities, reflecting a steady, if somewhat scaled-back, pace of expansion (see Table 7).

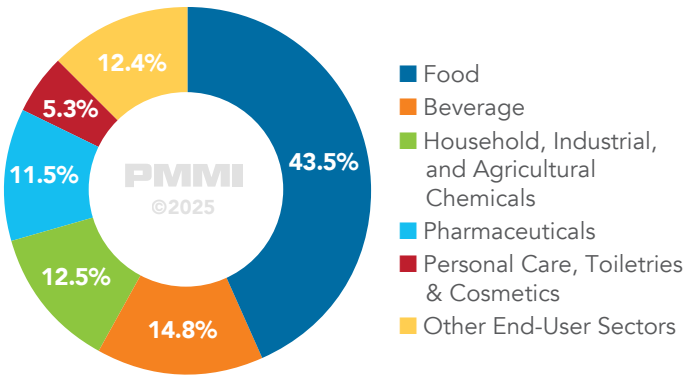
Beverage

The second-largest end market at 15%, the beverage sector experienced a slight dip in large-scale investment activity in 2024, following a strong rebound in 2023. Construction remains underway on several multi-million-dollar facilities announced last year, and early indicators from 2025 point to renewed momentum. While investment has slowed, experimentation has not as brands continue testing new drink formats and shift away from plastic.

Household, Industrial, & Agricultural Chemicals

The chemicals sector is expected to experience slow growth over the next couple of years, with a projected growth rate of 1.3% in the US for 2024 compared to 2023. Announcements regarding new developments remain limited in 2024, with the exception of Eastman Chemicals' $1.3 billion expansion in Texas. We expect that the value of shipments in the US will reach $1.7 billion by 2030.

Fig. 3 US Packaging Machinery Shipments by Industry - 2024 ($11.3B)



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MARKET SECTOR OVERVIEW – INDUSTRY FORECAST

Pharmaceuticals

In 2024, the pharmaceutical sector demonstrated a growth rate of 5.5%, matching the strong performance of the previous year and remaining the highest among all sectors in the U.S. There is a notable increase in plant investment announcements for 2025, with total investments exceeding $100 billion as major companies commit to onshoring efforts in the United States likely as a result of the tariff policies.

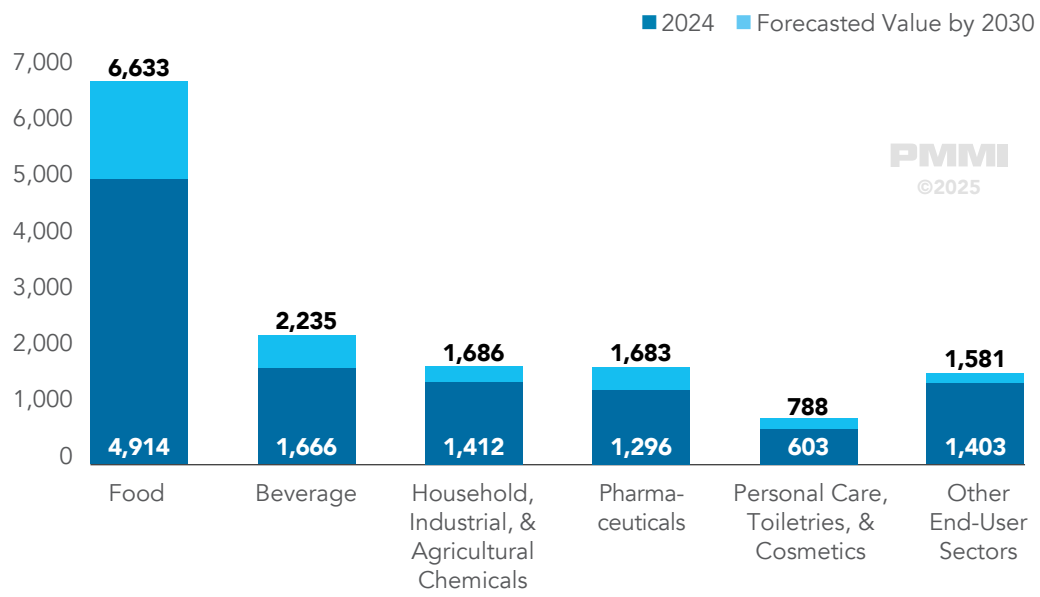
Personal Care

While personal care is the smallest of the end-user sectors by shipment value, it has still seen a handful of notable plant investment announcements in 2024 and 2025. One of the most significant is Johnson & Johnson's commitment to invest $55 billion in U.S. operations over the next four years. The total value of shipments for this sector is expected to reach $788 million by 2030.

Other End-User Sectors

The other end-user sectors, which represent 12.4% of the market, is projected to see the slowest growth during the forecast period. This segment, which includes industries such as automotive and cannabis, is expected to reach nearly $1.6 billion by 2030, reflecting a modest CAGR of 2.0% from 2024 to 2030.

Fig. 4 US Packaging Machinery - Value of Shipments by Industry Sectors - 2024 - 2030 ($M)



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SUMMARY OF THE CANADIAN PACKAGING MACHINERY INDUSTRY

In 2024, Canada Packaging Machinery sales reached **$1.2bn**

The value of packaging machinery sold in Canada reached an estimated $1.2billion in 2024, growing 3.1% despite the headwinds of persistently high interest rates, mirroring the economic challenges seen in the U.S. With financing conditions still tight and ongoing uncertainty related to U.S. tariff policy, machinery shipments are expected to remain relatively flat in 2025, with projected growth of just 0.8%.

Looking longer term, the value of machinery shipments in Canada is forecast to reach $1.4billion by 2030, reflecting a CAGR of 3.1% from 2023 to 2030. In 2024, Cartoning, multipacking, and case packing machines are projected to post the highest growth at 4.3%, followed closely by palletizing and load stabilization machines at 4.2%.

This growth is largely driven by demand for end-of-line automation, as Canadian manufacturers continue to grapple with the rising cost of human resources and persistent staffing shortages, trends that parallel those seen in the U.S. The push toward more sustainable packaging also plays a role: increased investment in cartoning equipment is being supported by Canada's bans on single-use plastics and new requirements around recyclability and packaging material content.

Fig. 5 Canada Packaging Machinery Shipments by Industry - 2024 ($1.2B)

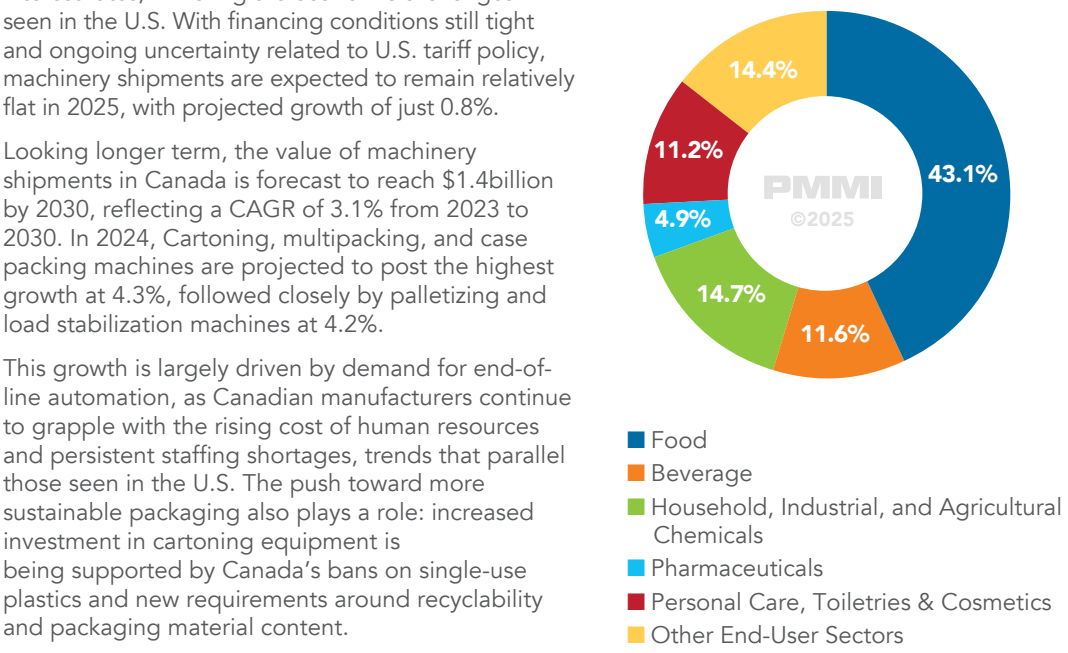
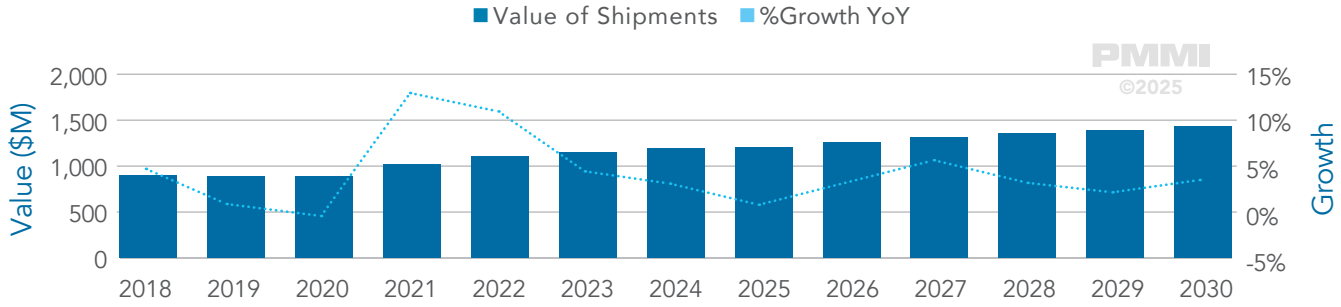


Fig. 6 Canada Packaging Machinery Forecast - Value of Shipments & % Growth YoY



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US SECTOR FORECAST

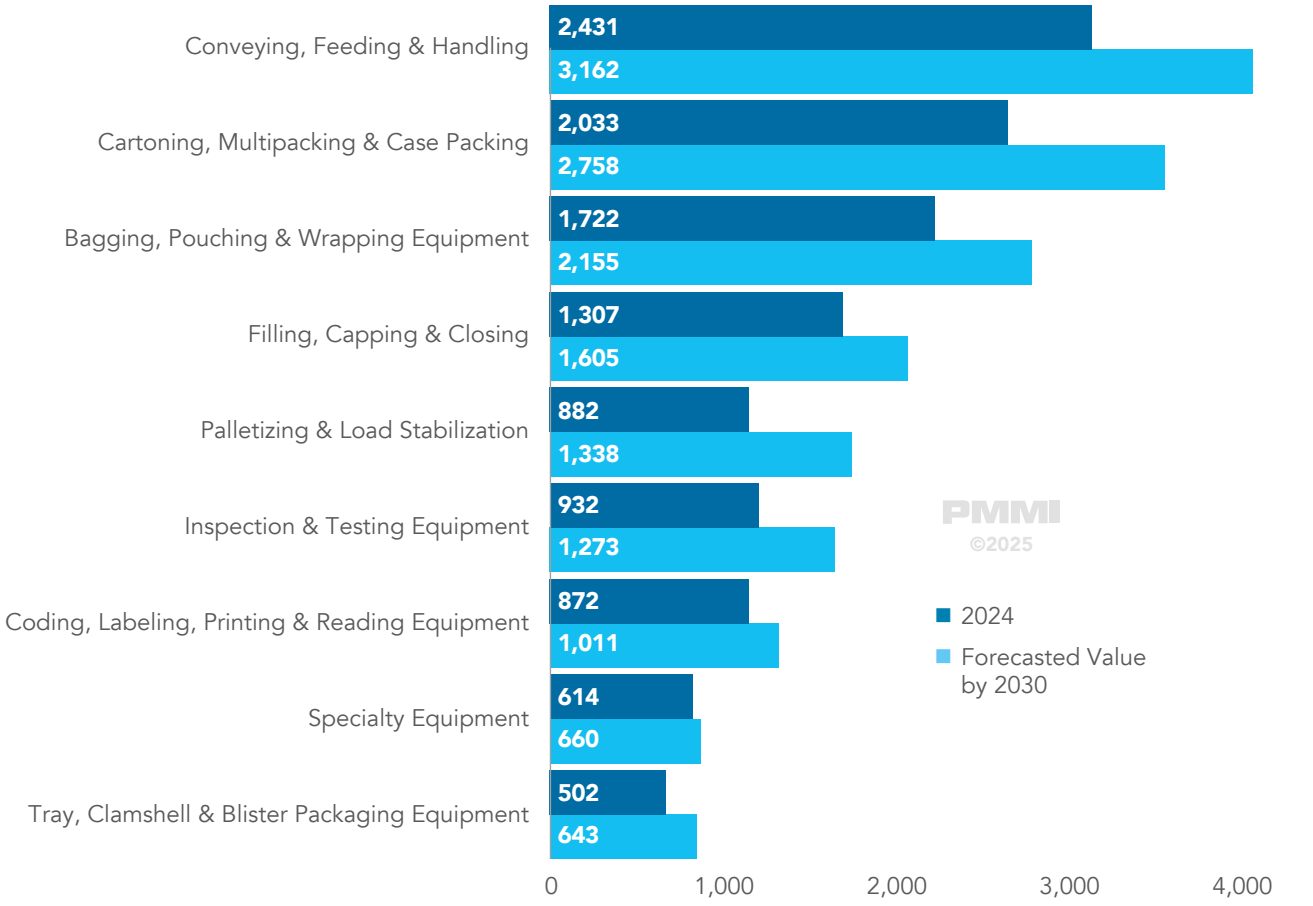
Table 1 - US Total Packaging Machinery Value by End-user Sector - USD M

	2023	2024	2025	2026	2027	2028	2029	2030	CAGR
Food	**$4,754**	**$4,914**	**$5,059**	**$5,341**	**$5,752**	**$6,055**	**$6,295**	**$6,633**	4.9%
		3.4%	2.9%	5.6%	7.7%	5.3%	4.0%	5.4%	
Beverages	**$1,627**	**$1,666**	**$1,714**	**$1,806**	**$1,937**	**$2,030**	**$2,111**	**$2,235**	4.6%
		2.4%	2.9%	5.3%	7.3%	4.8%	4.0%	5.9%	
Household, Industrial & Agricultural Chemicals	**$1,395**	**$1,412**	**$1,433**	**$1,444**	**$1,528**	**$1,605**	**$1,648**	**$1,686**	2.7%
		1.3%	1.5%	0.8%	5.8%	5.0%	2.7%	2.3%	
Pharmaceuticals	**$1,228**	**$1,296**	**$1,312**	**$1,371**	**$1,462**	**$1,533**	**$1,609**	**$1,683**	4.6%
		5.5%	1.3%	4.5%	6.6%	4.8%	5.0%	4.6%	
Personal Care, Toiletries & Cosmetics	**$584**	**$603**	**$608**	**$639**	**$689**	**$724**	**$749**	**$788**	4.4%
		3.4%	0.8%	5.1%	7.7%	5.1%	3.5%	5.2%	
Other End-User Sectors	**$1,404**	**$1,403**	**$1,414**	**$1,441**	**$1,497**	**$1,514**	**$1,538**	**$1,581**	1.7%
		-0.1%	0.8%	1.9%	3.9%	1.1%	1.6%	2.7%	
Grand total	**$10,993**	**$11,294**	**$11,540**	**12,041**	**$12,866**	**$13,461**	**$13,950**	**$14,606**	4.1%
		2.7%	2.2%	4.3%	6.8%	4.6%	3.6%	4.7%	

Source: Interact Analysis

US MARKET SIZE AND FORECASTED MACHINERY GROWTH

Fig. 7 US Value of Shipments by Machine Categories - 2024 - 2030 ($M)



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Conveying, Feeding, & Handling Equipment

This category represents the highest value of packaging machinery shipped in the US for 2024, with an estimated revenue of $2.4 billion. The sector has remained robust over the years and is projected to grow to nearly $3.2 billion by 2030. This equipment is used in all lines and continues to see high demand, especially as many facilities are now optimizing their floor plans by building vertically rather than expanding horizontally.

Cartoning, Multipacking, & Case-packing Machinery

This category forms the second largest in terms of the value of US machinery shipped in 2024, with an estimated revenue of $2.0 billion. Revenue from these machines is expected to experience significant growth, increasing by $725 million from 2024 to 2030, bringing the sector's value to nearly $2.8 billion. One main driver is the reduction of shelf space, which is pushing for smaller cartons and more diversified products.

Palletizing & Load Stabilization Equipment

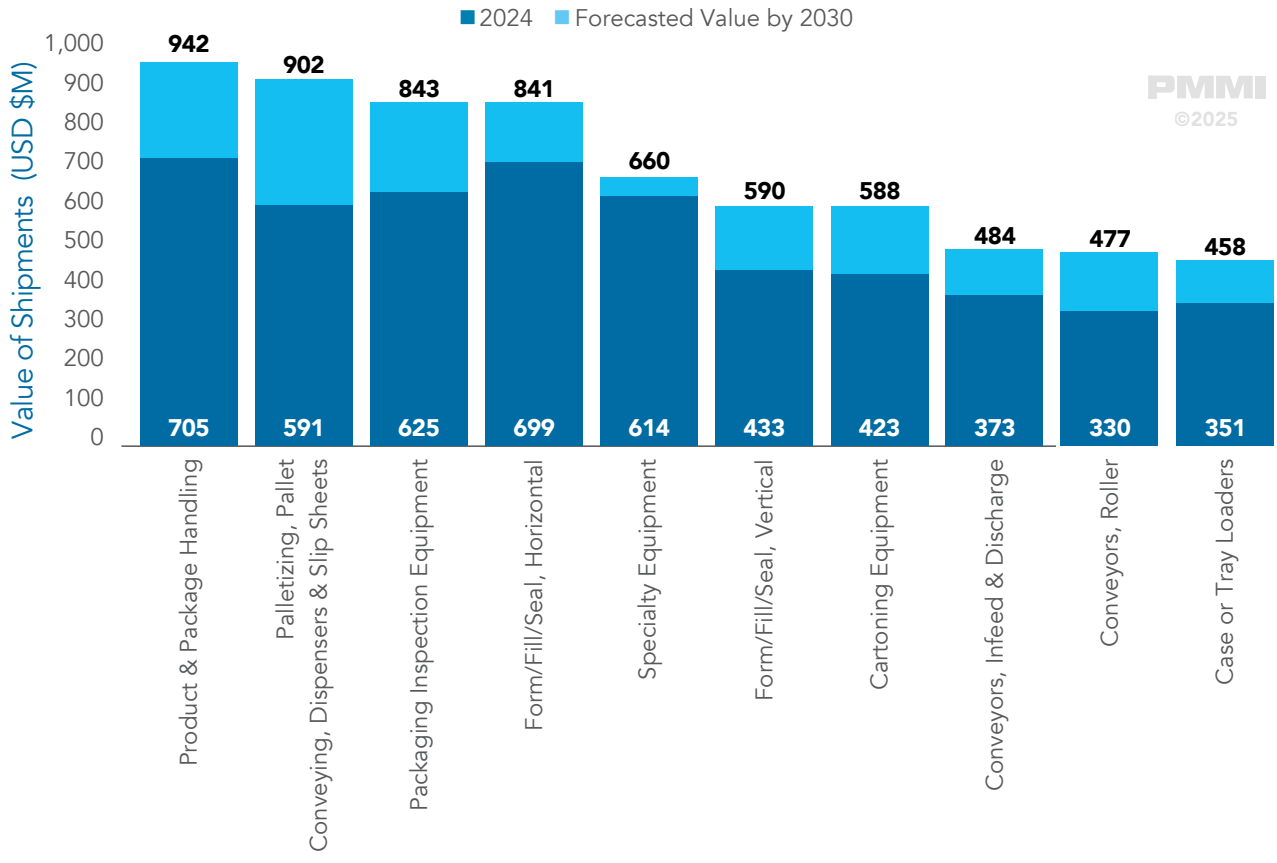
This category has the highest CAGR in the forecast for the US, at 7.2% for the 2024–2030 period. It is expected to have an anticipated value of $1.3 billion by 2030. The growth is largely driven by the automation of end-of-line solutions, which have traditionally been slower to adopt automation compared to front-of-line packaging.

Inspection & Testing Equipment

This category has the highest growth rate in 2024 for the US, at 4.6%. Currently estimated at $932 million, this sector is projected to grow to nearly $1.3 billion by 2030. One large factor is the need to reduce manual inspection, which further fuels the demand for automated inspection and testing equipment.

FASTEST GROWING SUB-MACHINE CATEGORIES

Fig. 8 US Packaging Machinery Value of Shipments - 2024 vs 2030 - 10 Largest Sub-Machine Categories ($M)



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Product & Package Handling Equipment

Expected to reach a shipment value of $942 million by 2030, product and package handling systems are poised for significant growth. This growth is driven by the need for fewer touchpoints and the increasing complexity of production lines, which require more equipment capable of handling high throughput.

Palletizing, Pallet Conveying, Dispensers & Slip Sheets

Projected to achieve a shipment value of $902 million in 2030, this category is also experiencing rapid expansion. The growth is supported by the ability to eliminate labor-intensive work, making these solutions more attractive and cost-effective.

Packaging Inspection Equipment

This sector continues to attract strong investment, supported by manufacturers' ongoing efforts to improve product quality and ensure compliance. With an estimated shipment value of $843 million in 2030, demand is being driven by the growing complexity of packaging formats and the need for automated, inline quality checks. As production speeds increase, inspection systems are becoming essential for catching errors in real time, without slowing down operations.

Form/Fill/Seal Horizontal Machines

Projected to reach $841 million by 2030, horizontal form/fill/seal machines continue to gain traction due to their speed, flexibility, and wide application across the food sector. Their high throughput and role in extending product shelf life have helped make them one of the highest-value machinery categories in terms of shipment revenue.

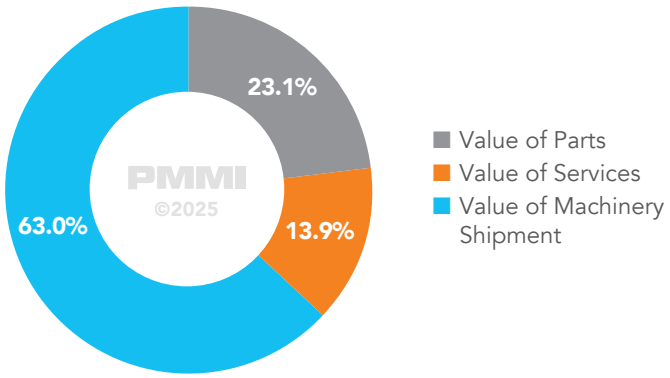
PARTS & SERVICES - OVERVIEW

Parts

In 2024, the market for parts for packaging machinery in the US is estimated to be at $4.1 billion. By 2030, the market is projected to reach $5.3 billion, reflecting a CAGR of 4.2%.

Parts sales remain a steady, high-margin business throughout all cycles, as customers prioritize keeping lines running, whether by replacing worn components during periods of high production or opting for retrofits when delaying new capital investments.

Fig. 9 US Revenue Share by Business Segment - Machinery, Parts, Services - 2024 ($17.9B)

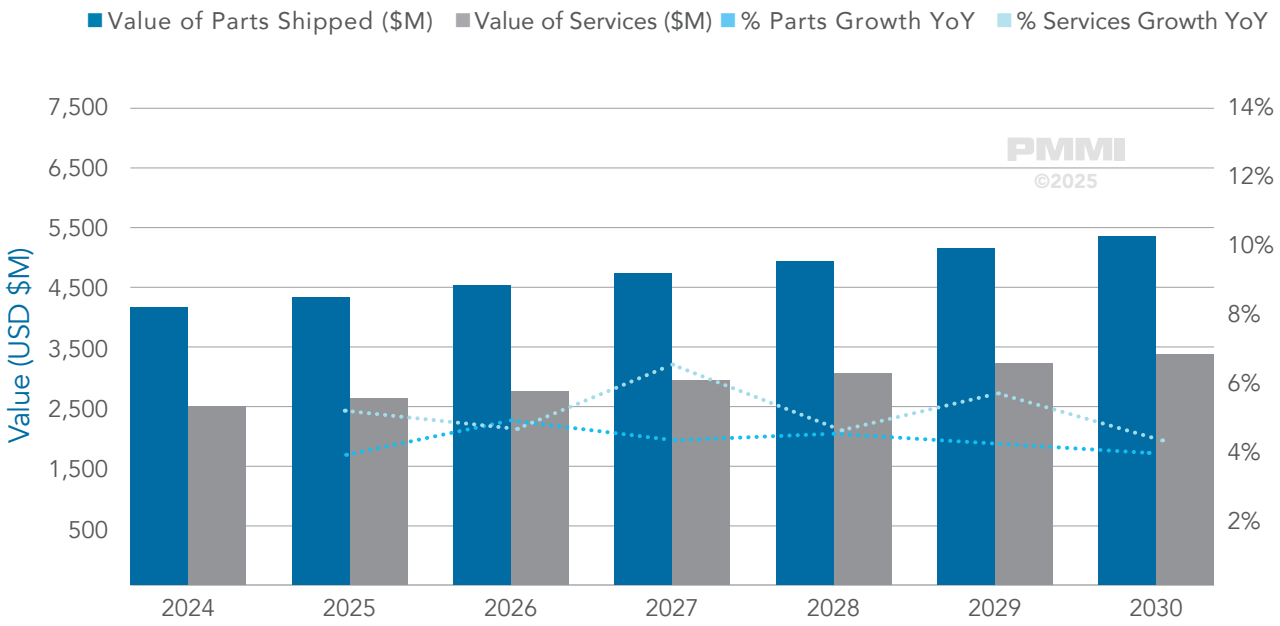


Services

In 2024, the market for services for packaging machinery in the US is estimated to be nearly $2.5 billion. By 2030, the market is projected to reach $3.4 billion, reflecting a CAGR of 5.1%.

Service demand continues to grow alongside the installed base, as customers increasingly adopt structured plans, remote support, and predictive diagnostics to extend the life and performance of their equipment during capital investment slowdowns.

Fig. 10 US Packaging Parts Forecast (2024-2030) - Value of Shipments & % Growth YoY



PARTS & SERVICES - FORECAST

Table 2 - Parts, Services, & Machinery Forecasts for Packaging Machinery Market

United States	2024	2025	2026	2027	2028	2029	2030	'24-'30 CAGR
Parts	**$4,147**	**$4,308**	**$4,517**	**$4,710**	**$4,919**	**$5,125**	**$5,322**	**4.2%**
Annual Growth Rate		3.9%	4.8%	4.3%	4.4%	4.2%	3.8%	
Services	**$2,490**	**$2,615**	**$2,735**	**$2,912**	**$3,046**	**$3,215**	**$3,355**	**5.1%**
Annual Growth Rate		5.0%	4.6%	6.5%	4.6%	5.6%	4.3%	
Machinery	**$11,294**	**$11,540**	**$12,041**	**$12,866**	**$13,461**	**$13,950**	**$14,606**	**4.1%**
Annual Growth Rate		2.2%	4.3%	6.8%	4.6%	3.6%	4.7%	
Parts, Services, & Machinery	**$17,931**	**$18,463**	**$19,293**	**$20,488**	**$21,426**	**$22,291**	**$23,282**	**4.4%**
Annual Growth Rate		3.0%	4.5%	6.2%	4.6%	4.0%	4.4%	

Canada	2024	2025	2026	2027	2028	2029	2030	'24-'30 CAGR
Parts	**$439**	**$450**	**$468**	**$483**	**$500**	**$515**	**$531**	**3.2%**
Annual Growth Rate		2.5%	3.9%	3.3%	3.4%	3.0%	3.1%	
Services	**$264**	**$275**	**$287**	**$304**	**$316**	**$332**	**$344**	**4.5%**
Annual Growth Rate		4.4%	4.2%	5.9%	4.1%	4.8%	3.7%	
Machinery	**$1,197**	**$1,206**	**$1,244**	**$1,315**	**$1,357**	**$1,386**	**$1,434**	**3.1%**
Annual Growth Rate		0.8%	3.2%	5.7%	3.2%	2.2%	3.4%	
Parts, Services, & Machinery	**$1,900**	**$1,931**	**$1,998**	**$2,102**	**$2,173**	**$2,233**	**$2,309**	**3.3%**
Annual Growth Rate		1.7%	3.5%	5.2%	3.4%	2.7%	3.4%	

Source: Interact Analysis

PARTS & SERVICES - THE RELATIONSHIP OF MACHINERY, PARTS, AND SERVICES

While packaging machinery remains the primary source of revenue for most machine builders, the aftermarket for parts and services has matured into a standard portion of the business. In our survey, the split among these three segments was relatively consistent across respondents, with machinery accounting for about 63% of total revenue, parts for 23%, and services for 14% (see Figure 9).

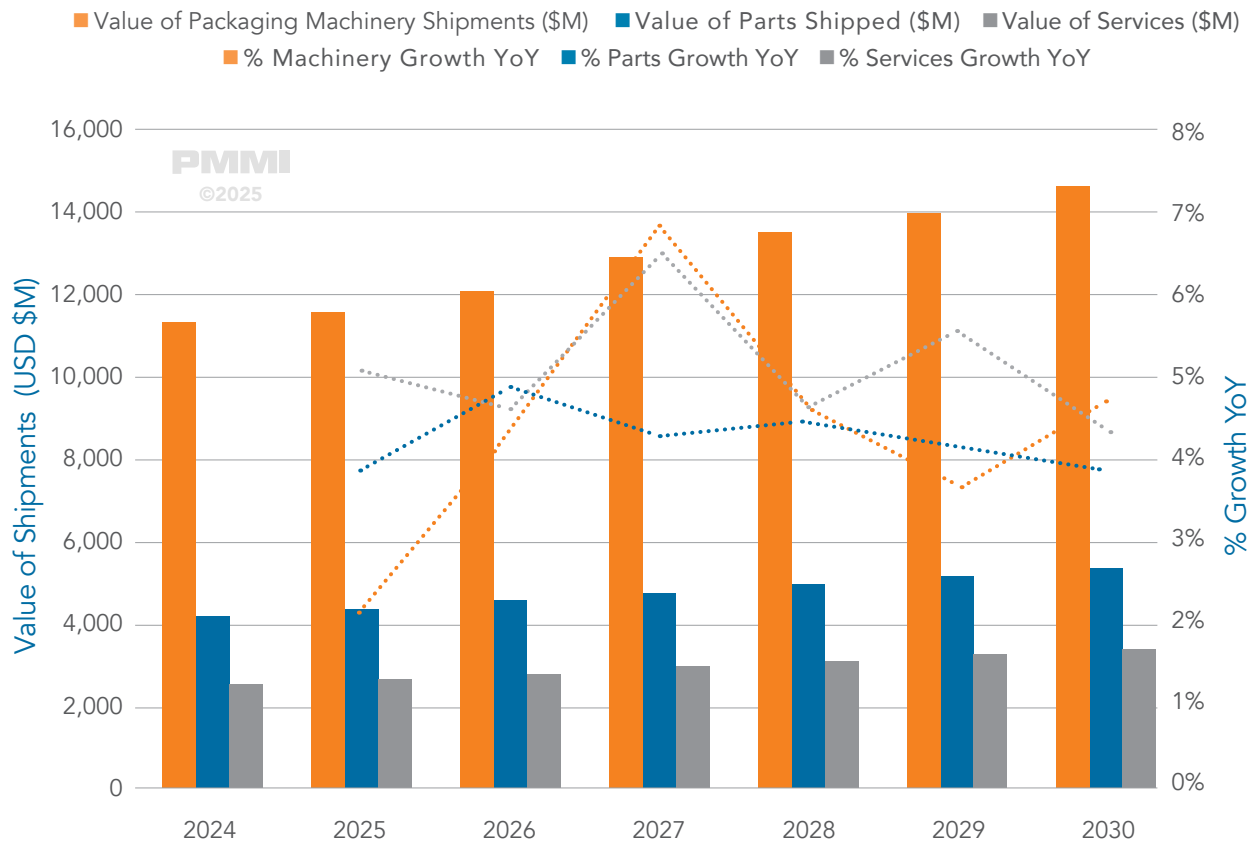
Services: Growing with the Installed Base

As shown in Figure 11, services are expected to outpace machinery growth in 2025 and again in 2028. These inflection points align with moments of slower capital investment, when buyers pull back on new equipment and instead extend the life and output of what they already own. Several machine builders told us that services have become a key source of recurring revenue, particularly as more customers request structured service plans, remote support, or predictive diagnostics. As the installed base grows, so does the need for ongoing maintenance, troubleshooting, and operator training, further fueling demand for service offerings.

Parts: Steady Through All Cycles

In contrast, the market for spare parts is relatively stable. Whether demand is high or low, facilities rely on parts to keep operations running. When production is strong, machines are pushed harder and wear parts out more quickly. But even when production slows, many customers delay capital expenditures and instead invest in component upgrades or retrofits. As a result, the parts segment sees less volatility but continues to offer attractive margins.

Fig. 11 US Packaging Machinery Market: % Growth Comparison by Segment (2024–2030)



TOTAL US PACKAGING MACHINERY VALUE OF SHIPMENTS

Fig. 12 US Packaging Machinery Imports by Country - 2024 ($3.7B)

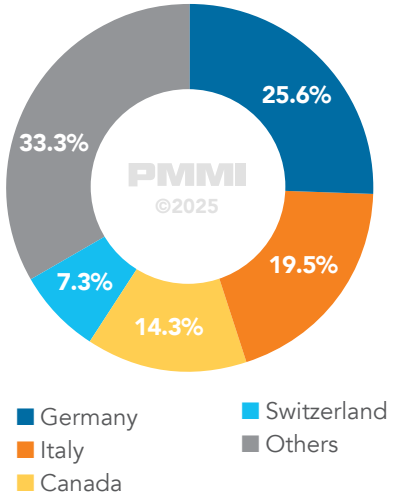
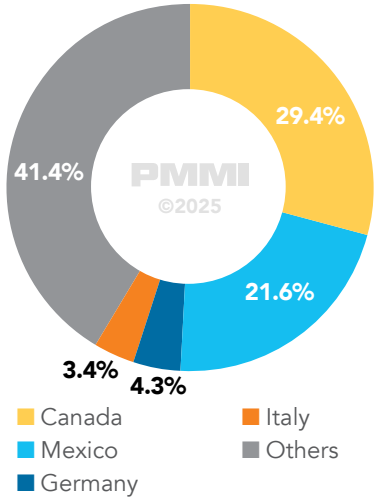


Fig. 13 US Packaging Machinery Exports by Country - 2024 ($703M)

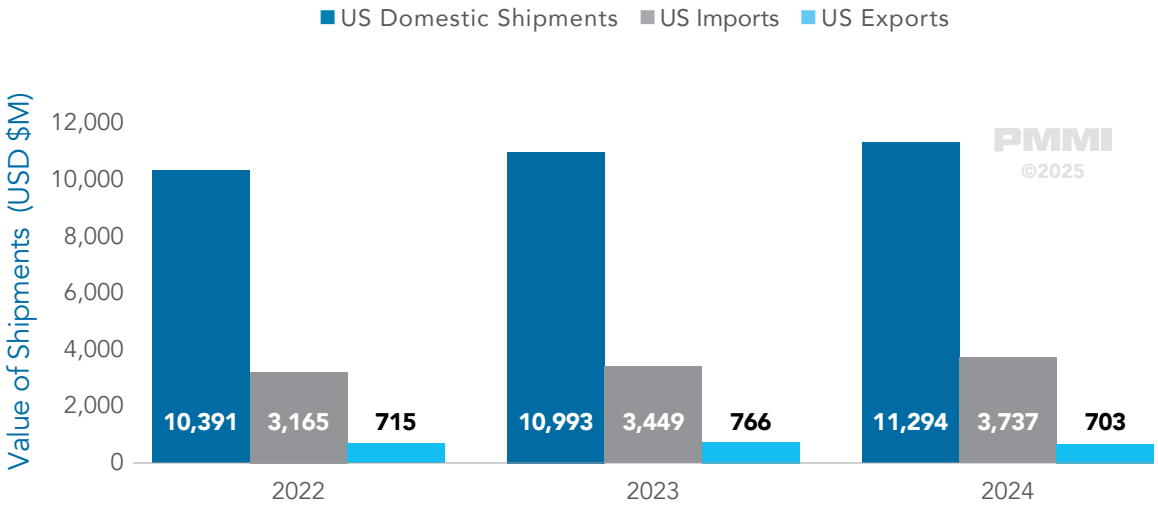


In 2024, U.S. domestic shipments of packaging machinery were valued at $11.3 billion, with imports totaling $3.7 billion and exports at $703 million. Combined, domestic shipments and imports amounted to an estimated $15 billion of packaging machinery sold into the U.S. market in 2024, with imports accounting for about 25% of the total.

The largest share of U.S. packaging machinery imports in 2024 came from Germany, totaling $957 million (26%), followed by Italy at $727 million (20%), Canada at $536 million (14%), and Switzerland at $272 million (7%). The remaining $1.2 billion (33%) came from other countries.

On the export side, the U.S. shipped approximately $703 million in packaging machinery abroad in 2024. The two largest destinations were Canada ($206 million, 29%) and Mexico ($152 million, 22%), together accounting for just over half of total U.S. exports.

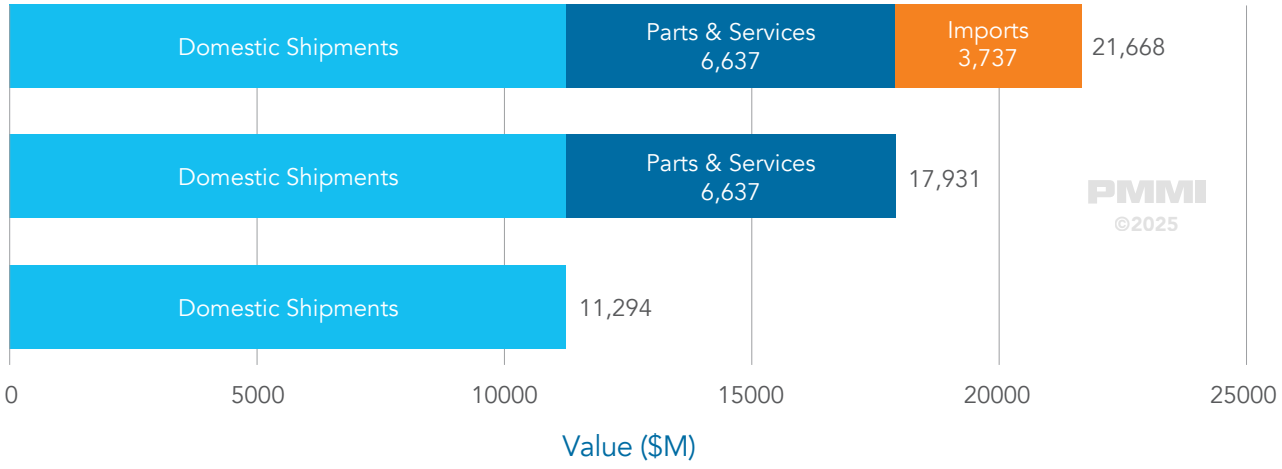
Fig. 14 US Packaging Machinery Values: Domestic, Imports, Exports - 2022 - 2024



TOTAL US MARKET – DOMESTIC, PARTS & SERVICES, AND IMPORTS

In 2024, US domestic packaging machinery shipments were valued at $11.3 billion. Including parts and services, the market size increased to $17.9 billion, reflecting the significant contribution of aftermarket revenue. When imported equipment is also accounted for, alongside domestic shipments, parts, and services, the total US market value reached $21.7 billion.

Total US Market – Domestic, Parts & Services, and Imports



TOTAL CANADIAN PACKAGING MACHINERY VALUE OF SHIPMENTS

Fig. 16 Canada Packaging Machinery Imports by Country - 2024 ($515M)

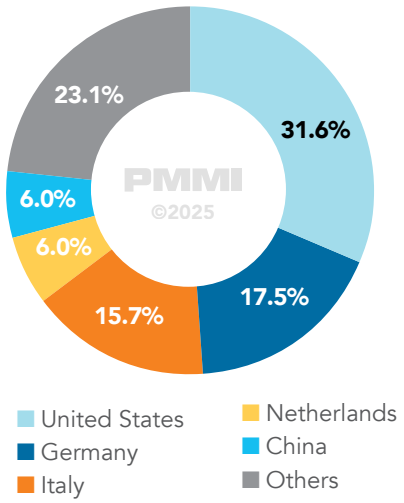
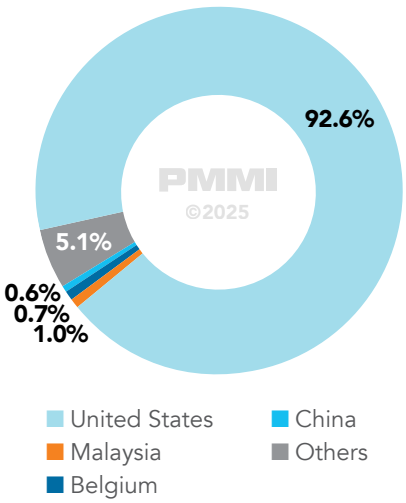


Fig. 17 Canada Packaging Machinery Exports by Country - 2024 ($613M)

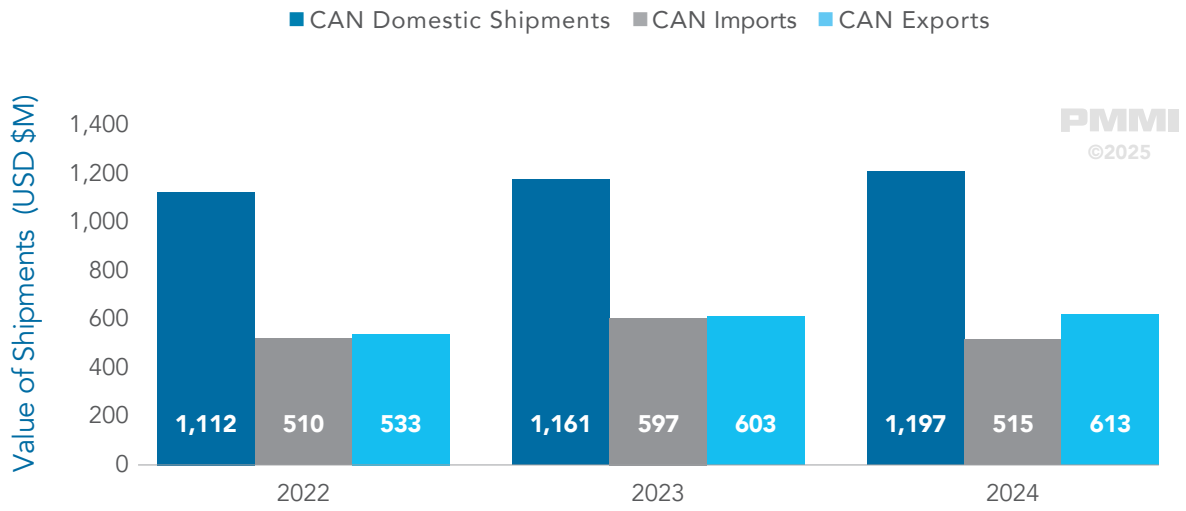


In 2024, Canada's domestic shipments of packaging machinery were valued at approximately $1.2 billion, with imports totaling $515 million and exports at $613 million. Combined, domestic shipments and imports amounted to an estimated $1.7 billion of packaging machinery sold into the Canadian market in 2024, with imports accounting for about 30% of the total.

The largest share of Canada's packaging machinery imports in 2024 came from the United States, totaling approximately $165 million (32%), followed by Germany ($88 million, 17%), Italy ($82 million, 16%), Netherlands ($31 million, 6%), and China ($31 million, 6%). The remaining $118 million (23%) came from other countries.

On the export side, Canada shipped approximately $613 million in packaging machinery abroad in 2024. The vast majority of these exports went to the United States ($570 million, 93%), with smaller shares to Malaysia (1%), Belgium (1%), China (0.6%), and other destinations making up the remaining 5%.

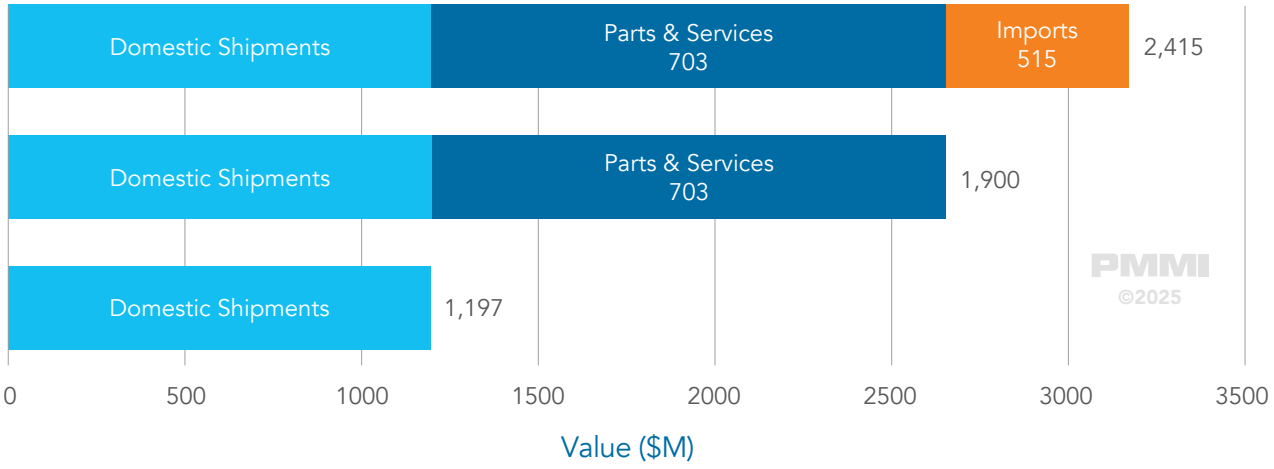
Fig. 18 Canada Packaging Machinery Value: Domestic, Imports, Exports - 2022 - 2024



TOTAL CANADIAN MARKET – DOMESTIC, PARTS & SERVICES, AND IMPORTS

In 2024, Canada's domestic packaging machinery shipments were valued at $1.2 billion. Including parts and services, the market increased to $1.9 billion, highlighting the importance of aftermarket activity. When imported equipment is also included, along with domestic shipments, parts, and services, the total Canadian market value reached nearly $2.4 billion.

Fig. 19 Canada Packaging Machinery Market Value - Domestic, Parts & Services, and Imports (2024)



MACRO-TREND OVERVIEW ECONOMIC EFFECTS & WORKFORCE

Economic Effects on Packaging Machinery

In 2024, the U.S. packaging machinery market experienced a marked slowdown, shaped by broader economic headwinds and heightened policy uncertainty. While inflation eased and interest rates began to decline late in the year, new tariff announcements in early 2025 introduced fresh uncertainty, prompting many businesses to delay capital investments. Industrial machinery production showed signs of recovery exiting 2024, but growth remains fragile as the effects of policy-driven uncertainty are expected to weigh more heavily in the second half of 2025. Packaging machinery manufacturers reported continued caution among customers, with many holding off on new equipment purchases and focusing instead on maintaining existing assets.

Despite these short-term challenges, the sector's long-term outlook remains positive. The packaging machinery market, which historically follows 3–5 year investment cycles, is expected to reach its current trough in 2025 before rebounding toward 2027. However, growth at the next peak is likely to be more modest than the double-digit gains of earlier years, as the overall size of the market now makes such high growth rates less attainable.

Workforce

Workforce remains one of the most influential factors shaping the packaging machinery market. In 2024, hiring and retention challenges began to ease slightly, with companies reporting modest gains driven by stronger onboarding and changing economic conditions. However, long-term pressures persist, particularly the shortage of skilled tradespeople, technician burnout, and limited internal capacity to scale with demand. In response, many machine builders are investing in workforce development, including apprenticeships, internal training programs, and partnerships with local institutions.

At the same time, workforce dynamics are increasingly shaping machine design and buyer expectations. As staffing limitations persist across end-user facilities, customers are placing more value on automation, operator-free systems, and remote service capabilities. Some OEMs are even incorporating aptitude levels scales into proposals to help buyers evaluate operational readiness and unlock training budgets. While workforce challenges continue to evolve, they remain deeply embedded in both the internal operations of machine builders and the broader value proposition offered to their customers.

MACRO-TREND OVERVIEW SUSTAINABILITY, & TARIFFS

Sustainability

Sustainability continues to shape decisions across the packaging machinery market, though priorities have shifted as customers balance environmental goals with cost and operational realities. While material changes, such as the transition from PVC to rPET and early experiments with compostables, remain ongoing, many end users have slowed their implementation in response to infrastructure limitations and cost pressures. Regulatory and retailer-driven initiatives are helping to maintain momentum, particularly outside the U.S., with growing demand for paper-based alternatives and commitments from major North American retailers to transition toward recyclable or reusable packaging by 2030.

Meanwhile, the rise of external sustainability certifications, such as EcoVadis, reflect how customers are increasingly evaluating suppliers' environmental and ethical performance more formally. As these trends mature, builders with flexible designs, strong collaboration capabilities, and demonstrated sustainability credentials are likely to be better positioned to meet the evolving expectations of their customers.

Tariffs

Tariffs have become the dominant topic effecting machine builders this year. Many described the current U.S. trade policy as unpredictable, with shifting announcements making it difficult to plan. While some global OEMs said they would consider adjusting operations most have held off on major investments, viewing the current environment as too volatile to justify costly changes.

MACRO-TREND OVERVIEW
MACHINERY, PARTS & SERVICES, & BIG DATA

Machinery

Evolving packaging requirements continue to shape how machinery is designed and specified, with flexibility, efficiency, and user-friendliness emerging as central themes. Customers are interested in equipment that can handle high SKU counts and innovative formats with minimal downtime, driving demand for automated changeovers, servo-driven systems, and machines versatile enough to accommodate both legacy and novel packaging styles.

At the same time, customers remain focused on practical considerations, favoring compact machines that fit within existing brownfield sites, systems that reduce operator headcount, and designs capable of handling thinner, more delicate materials without damage. Lastly, enhanced ergonomics and intuitive HMIs have become key differentiators, as buyers seek equipment that is easy to operate and maintain, even in environments with high workforce turnover and limited technical expertise.

Parts & Services

The aftermarket for parts and services has evolved from a secondary support role into a central part of machine builders' business strategies. Both segments have become vital to customer retention, profitability, and operational resilience, especially as workforce shortages, rising turnover, and budget-conscious customers drive demand for support beyond the initial sale.

Big Data

Machine builders are moving past the hype of AI and big data, focusing instead on targeted, practical applications that solve real problems. Vision systems remain the most mature example, with sharper cameras and smart software enabling defect detection, promotional pack assembly, and even emergency stops when products fall out of place — features that have helped builders win orders. Newer developments, like AI-powered HMIs that translate error codes and guide operators, are gaining interest as a way to support less-experienced staff in high-turnover environments.

Predictive maintenance continues to draw interest, with adoption beginning to accelerate. While some end users remain skeptical of its cost and are hesitant to move away from established preventive maintenance routines. Builder report progress when predictive systems are integrated into the HMI with simple, actionable alerts. Meanwhile, data connectivity strategies are evolving as customers remain cautious about external links; builders are offering hybrid approaches, such as USB-based diagnostics, to improve uptime while respecting cybersecurity concerns. Together, these developments reflect an industry stepping cautiously into the big data era, prioritizing operator-friendly, high-impact features over sweeping AI overhauls.

2

Macroeconomy & Packaging Market Forecast

THE ECONOMIC BACKDROP: WHAT'S SHAPING INVESTMENT IN 2024–2025

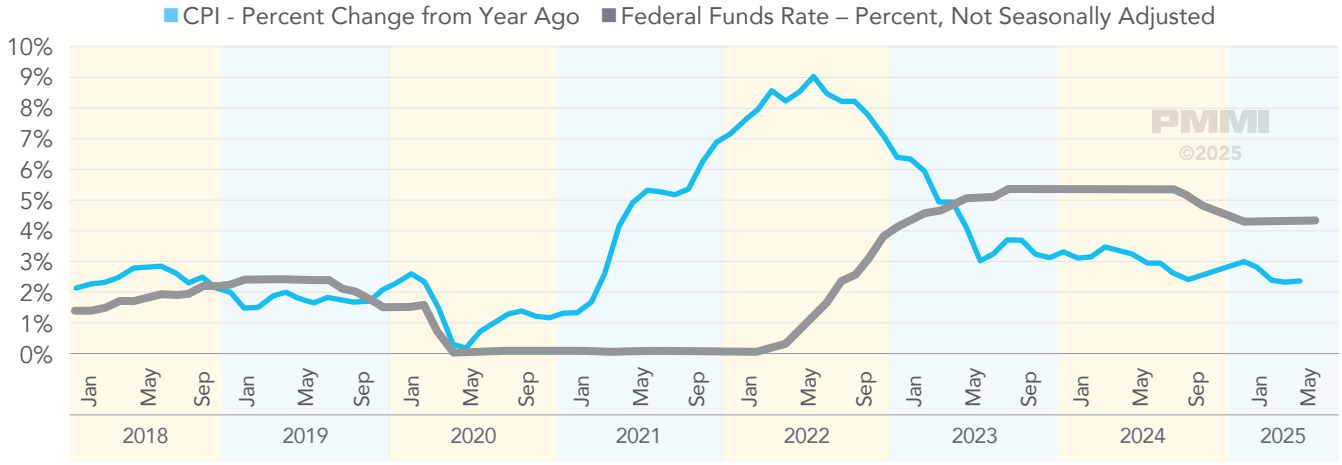
As we dissect the state of the packaging machinery market, it's important to zoom out and consider the broader U.S. economy. Factors such as interest rates, inflation, and economic uncertainty will always play a critical role in shaping capital investment, and by extension, the demand for packaging machinery.

In last year's report, we flagged inflation and the Federal Reserve's interest rate policy as key risks to short-term growth. At the time, inflation had cooled significantly from its 2022 peak of nearly 9%, and the federal funds rate had reached 5.3%, where it remained through the end of 2023. Given those conditions, we anticipated that the Fed would begin cutting rates in 2024, which could ease financing costs and stimulate new machinery orders.

That expectation largely played out at first. Inflation trended downward, and the Fed implemented three rate cuts in the final months of 2024. But just as optimism began to build, new sources of uncertainty emerged. Trade policy became a dominant theme in early 2025, with tariffs being announced, adjusted, and reimposed on a range of goods. These shifts have introduced fresh hesitation among capital buyers, especially those with global supply chains or import exposure.

As a result, while inflation has remained relatively stable, the broader investment environment has grown more cautious. This backdrop is essential context for understanding the packaging machinery market's performance in 2024 and the adjusted outlook for 2025.

Fig. 20 Inflation Rate vs Federal Funds Rate



AHEAD OF TARIFF ANNOUNCEMENTS, US MACHINERY MANUFACTURING HAD GOOD MOMENTUM

The two graphs below display the performance of US Machinery production over time under two different frequencies, annually and monthly. The monthly graph zooms into the performance of industrial machinery production dating back to 2022. The purpose of showing this is to give perspective for the momentum machinery manufacturing was gaining as we exited 2024.

You'll observe that the growth of industrial machinery manufacturing bottomed out in the early months of 2024. As we approached 2025, we began to observe growth once again. By January, growth registered just under 2% on a year over year basis. This is important to note as we explore the potential impacts of tariffs on the growth of packaging machinery manufacturing.

Fig. 21 US Industrial Production: Machinery - % Growth YoY - Annually

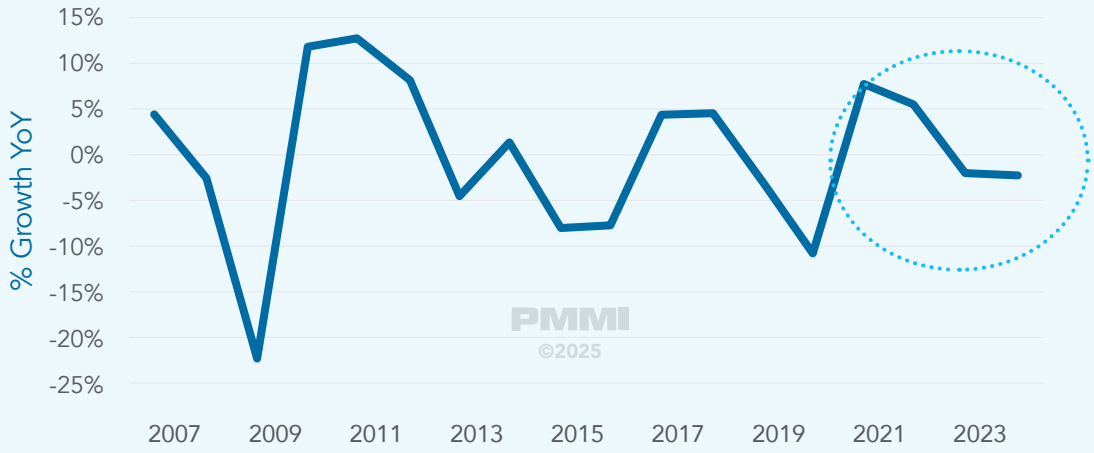
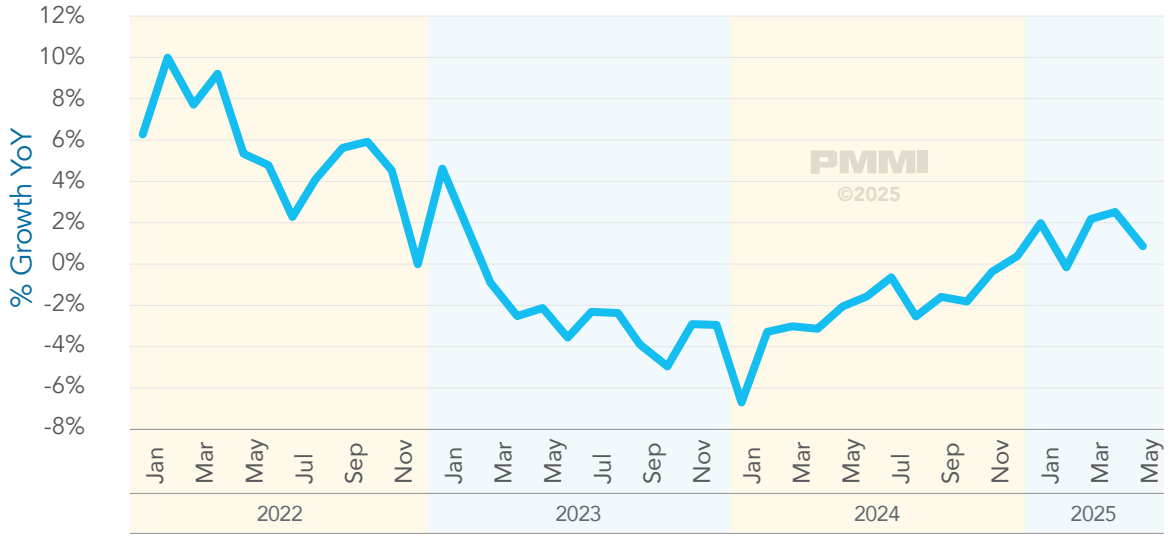


Fig. 22 US Industrial Production: Machinery - % Growth YoY - Monthly



Source: U.S. Board of Governors of the Federal Reserve System (FRB) and Federal Reserve Bank of St. Louis (FRED). Series: IPG333S

THE WEIGHT OF UNCERTAINTY ON INVESTMENT DECISIONS

The largest threat to growth in 2025 is the uncertainty caused by broad sweeping tariff policy.

The Bureau of Economic Research produces an index which attempts to measure the level of uncertainty as it relates to economic policy across the US. The index tracks the number of articles published by 10 major newspapers across the US which includes the words related to the economy, uncertainty, and policy. The count of articles containing these words is then normalized to create a trackable index.

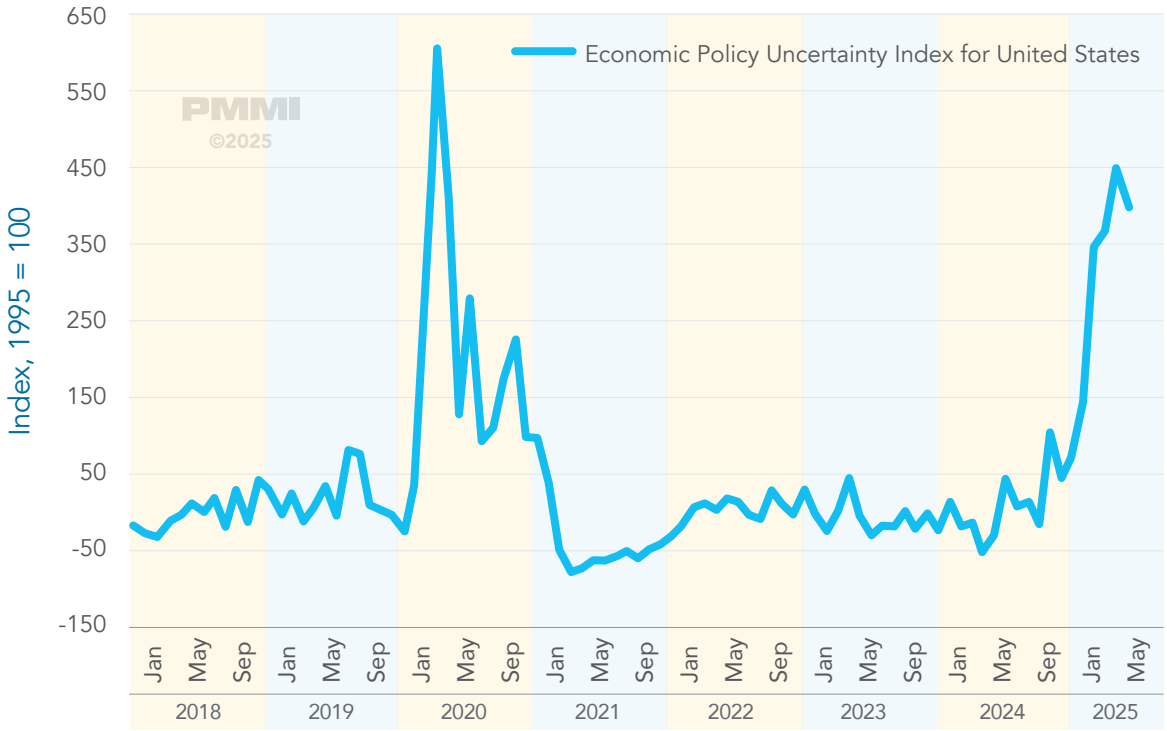
During the analysis of this index, the creators found that significant jumps in the index value resulted in precipitous declines in the performance of industrial production in the months following the increase in uncertainty. When uncertainty is high, there is a tendency to conserve spending. Large expansionary capital investments stagnate, and resultingly, machinery sales are negatively impacted.

Tariff Announcements Caused Uncertainty to Surge

The economic policy uncertainty index is shown to the right. As you'll note, the uncertainty surrounding economic policy has surged in the early months of 2025. As the Trump administration has announced tariffs and has since used them as a negotiating tactic with other countries, business in the US have engaged in a 'wait and see' mentality.

This 'wait and see' mentality is something we've experienced a lot of in the last few years. It first related to the increased inflation and interest rate hikes from the Federal Reserve. During that time, we saw the market for packaging machinery slow to low single digits. We expect 2025 will also be negatively impacted by this phenomenon.

Fig. 23 Economic Uncertainty Index in the US



Source: Baker, Bloom, and Davis; U.S. Economic Policy Uncertainty Index (USEPUINDXD), retrieved from the Federal Reserve Bank of St. Louis (FRED).

THE 'WAIT & SEE' MENTALITY HAS NOT DRASTICALLY IMPACTED MACHINERY PRODUCTION YET

The impact of tariff uncertainty is a delayed fuse. In its analysis of the index, the bureau of economic research found that the largest impacts on industrial production resulting from increased uncertainty were felt on average 6 months after the spike. Under this assumption, the largest impact on production is not likely not to be felt until around September.

The graph below is displaying year over year % growth of machinery production monthly across the US. As you'll note, there has been slight growth in March, April, and May. In the months following the November election, there was a sharp uptick in orders. Since this time, the order growth has seemingly stagnated. As a result, We expect Q1 and Q2 will represent the strongest quarters for machinery production as machine builders work to fill orders placed in late 2024. However, as the impacts of tariff uncertainty manifest, slower growth will be expected in Q3 and Q4.

Given the poor performance of machinery production in the US during 2024, there will still likely be growth YoY in the value machinery production. However, this growth is likely to be at a lower rate it than would have been had tariff uncertainty not been present.

Fig. 24 US Industrial Production: Machinery - % Growth YoY - Monthly

Source: Federal Reserve Bank of St. Louis (FRED).

PACKAGING MACHINERY GROWTH PRESENT BUT NEGATIVELY IMPACTED IN 2025

In 2024, The US Packaging Machinery Market Reached **$11.3bn**

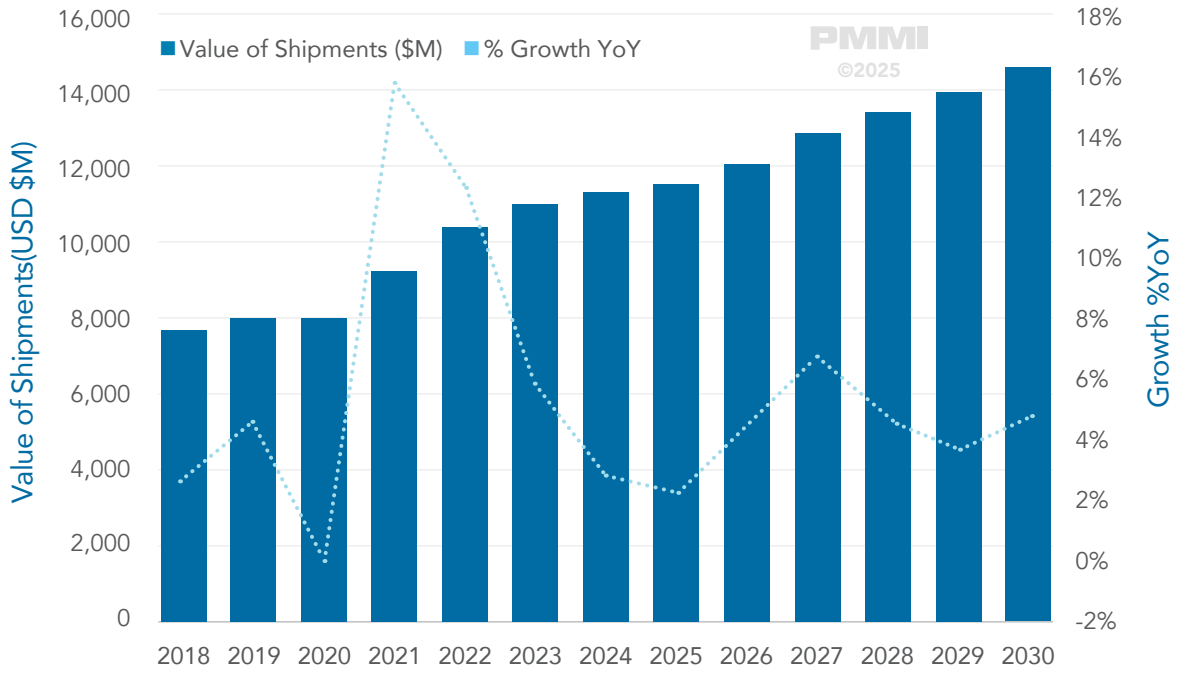
In 2025, market to grow an estimated **2.2%**

As we zoom out to the full 2018 – 2030 forecast, we anticipate continued growth for the U.S. packaging machinery market, albeit at a slower and more uneven pace compared to prior years. The turbulence of 2024, marked by elevated uncertainty and cautious capital spending, led to a noticeable slowdown in growth, which is reflected in the forecasts trough of ~2% impacting 2024 - 2025. Many companies reported holding back on investment, unsure of when conditions would stabilize in 2025.

Our interviews of machine manufacturers entering 2025 echoed this sentiment: cost sensitivity and caution were still prevalent, and few expected a meaningful turnaround in the near term. That said, the packaging machinery market remains fundamentally resilient. Even in years of weak demand, the market benefits from its essential role in production and distribution.

The packaging machinery market has 3–5 year growth cycles, and 2025 is expected to mark the low point of the current cycle. This cyclical pattern reflects the nature of capital investment in the sector, which tends to accelerate and then cool as installed capacity catches up to demand. Looking further ahead, our forecast shows growth strengthening again through 2027, in line with historical patterns. Growth at that peak, however, is expected to reach approximately 6.8%, which is lower than the double-digit highs seen earlier in the decade. This suggests that while the market remains healthy and resilient, it may also be that the size of the packaging machinery market is becoming too large to support the same double-digit growth we've observed in the past.

Fig. 25 US Packaging Machinery Forecast - Value of Shipments & % Growth YoY



PMMI members can visit https://www.pmmi.org/content/soti-dashboard to explore interactive forecast data by machine type, subcategory, industry, and more

DIFFERENCES IN THE FORECAST: 2024 RELEASE VS 2025 RELEASE

Revisions to 2023-2024: Slight Upward Adjustments

Our forecasts for 2023 and 2024 have been revised slightly upward compared to last year's edition. These adjustments reflect improved survey participation: more companies provided detailed sales data this cycle, revealing that some machinery segments, particularly cartoning, multipacking & case packing and bagging, pouching & wrapping equipment, were modestly underrepresented in the previous edition. With the new inputs, we now have a more accurate (and slightly larger) baseline for the market in those years.

2025–2028: Moderate Downward Adjustments

Conversely, our forecast from 2025 through 2028 has been adjusted downward modestly, with annual growth rates revised lower by approximately 1 - 2 percentage points. This reflects a more cautious outlook following increased market uncertainty, notably impacted by persistent tariff challenges and ongoing economic pressures in the U.S.

While the packaging machinery market is typically resilient, interviews conducted in 2025 have highlighted significant customer hesitation, order delays, and cancellations lasting well beyond normal planning horizons. Tariff-related uncertainty particularly affected large multinational corporations that struggled to determine strategic direction, leading to prolonged pauses in decision-making. Smaller and mid-sized manufacturers have faced additional financial pressures, as persistently high interest rates in 2024, coupled with the Federal Reserve's pause in rate cuts during 2025, limited their access to financing and complicated capital expenditure planning.

Long-Term Growth Outlook: Normalizing after Peak Growth

We see the market settling back to a steadier trajectory after an extraordinary period of expansion from 2020 to 2023. Packaging machinery demand is increasingly behaving like that of a maturing capital-goods sector, closely tied to broader economic cycles and sensitive to policy signals. As such, we expect growth to track more closely with overall U.S. industrial output once the current bout of uncertainty eases.

Fig. 26 US Forecast Update - US Domestic Shipments ($M)

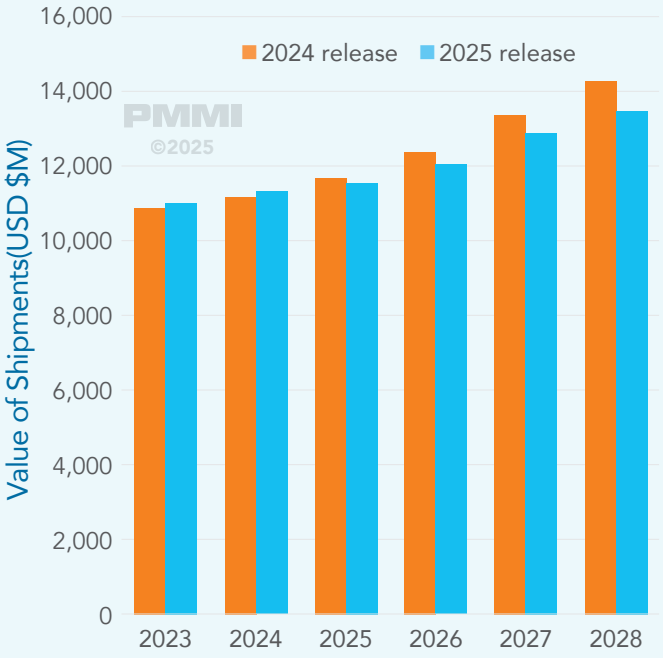
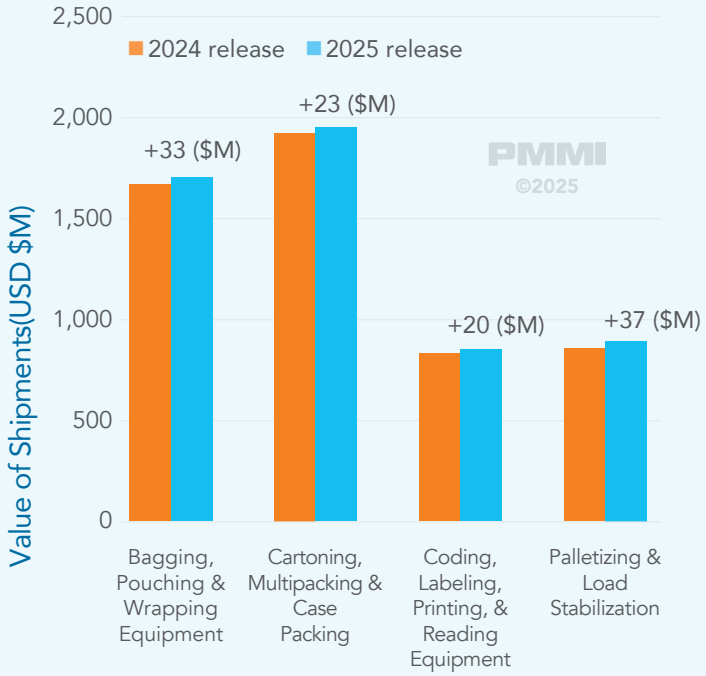


Fig. 27 Change in 2023 US Machine Values Between 2024 and 2025 Release



DIFFERENCES IN THE FORECAST: 2024 RELEASE VS 2025 RELEASE

Table 3 - The US Market Variance for Packaging Machinery (by edition)

2024 Release	2023	2024	2025	2026	2027	2028	2029	2030
Value of Shipments ($M)	**$10,879**	**$11,151**	**$11,675**	**$12,364**	**$13,359**	**$14,254**		
Annual Growth (YOY %)	5.8%	2.5%	4.7%	5.9%	8.0%	6.7%		
2025 Release								
Value of Shipments ($M)	**$10,993**	**$11,294**	**$11,540**	**$12,041**	**$12,866**	**$13,461**	**$13,950**	**$14,606**
Annual Growth (YOY %)	5.8%	2.7%	2.2%	4.3%	6.8%	4.6%	3.6%	4.7%
Differences								
Value of Shipments ($M)	114	143	-135	-323	-493	-794		
Annual Growth (YOY %)	-	0.2%	-2.5%	-1.6%	-1.2%	-2.1%		

Source: Interact Analysis

3

Market Trends

WORKFORCE • MACHINERY • PARTS & SERVICES
BIG DATA • SUSTAINABILITY • TARIFFS

MARKET TRENDS EXPLORED IN DETAIL DURING THIS SECTION

A short summary of the key themes derived from interviews with suppliers

For this year's edition, we revisited several of the major themes explored in our previous report, most notably workforce, sustainability, and big data. These sections have been expanded to reflect new insights and shifting dynamics, including updates on how machine builders are adapting and where momentum has stalled.

We also introduced a few new focus areas in response to recurring themes in this year's interviews, including services and the evolving landscape of imports and exports. While sanitation was a notable topic in last year's edition, it did not emerge as a major point of discussion this year and has therefore been excluded. Below, we provide a short overview of each of them.

Workforce

Workforce remains one of the most consequential forces shaping the packaging machinery market. While retention has improved and hiring pressures have eased slightly, long-term challenges persist. We explore efforts to build talent in-house, reduce technician burnout, and address workforce-related needs among buyers.

Machinery

Buyers continue to prioritize flexibility, ease of changeover, and support for thinner or more sustainable materials. We discuss emerging technology and requests that continue to be asked of machine builders.

Parts & Services

Beyond standard offerings like emergency repairs and training, machine builders are expanding into optimization and digital tools. We shed light in what machine buyers believe are growing and share some unique offerings.

Big Data

Machine builders are cautiously exploring AI, while interest in machine vision has grown. We explore where machine builders are with AI and their use of other big data forms.

Sustainability

Sustainability demands have slowed as customers become more cost-sensitive. We review regulations and pledges that will have an impact on material shifts in the near future.

Tariffs

Tariff uncertainty was one of the most widely cited concerns in this year's interviews. We discuss how this has impacted machine builders and what factors influence imports and exports.

WORKFORCE – AN UPDATE ON KEY FACTORS

Workforce pressures are reshaping machine design, services, and hiring strategies

Hiring & Retention Begin to Stabilize

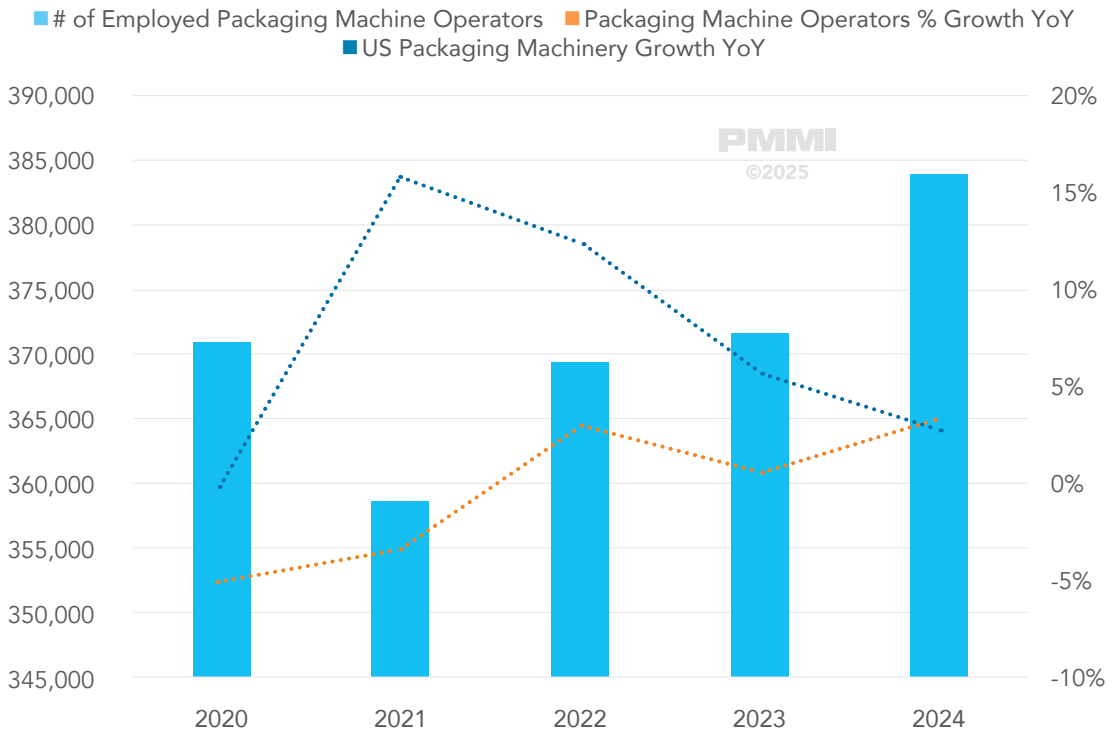
Workforce continues to be one of the most consequential forces shaping the packaging machinery market. It acts as both a catalyst for growth in automation and a persistent constraint on operations and capacity expansion for machine builders.

In the previous edition, we emphasized how hiring and retention issues were limiting machine builders' ability to scale. A key trend in 2023 was high turnover, as skilled workers jumped from company to company amid intense competition. That dynamic began to settle in 2024. Many companies noted modest improvements in retention, attributing these gains to a combination of stronger onboarding programs, more structured career paths, and broader macroeconomic cooling, which reduced the appeal of frequent job changes. Still, hiring remains far from easy, particularly for the increasingly specialized skill sets needed to support today's machinery.

Workforce Capacity vs. Machine Growth

As shown in Figure 28, the number of employed packaging-machine operators in the U.S. has grown slowly, generally under 5% per year. While packaging-machinery shipments expanded at a much faster pace from 2020 to 2023. The gap underscores why end users continue to prioritize automation that reduces operator headcount. Notably, 2024 is the first year in which operator employment growth outpaced new-machine sales, suggesting a brief pause in capital spending as companies focus on extracting more throughput from existing assets.

Fig. 28 US Packaging Operator Employment vs Machinery Market Growth



Source: U.S. Bureau of Labor Statistics, Occupational Employment and Wage Statistics (OEWS), Series ID OEUN0000000033271051911101

WORKFORCE – MACHINE BUILDERS STRATEGIES

An Overview of Strategies Machine Builders are Using to Retain Workforce Talent

Although headline pressures have eased slightly, the long-term challenges persist: a shrinking pool of skilled tradespeople, rising compensation expectations, and a taxing travel life continue to affect how machine builders operate and grow. These pressures influence everything from machine design to service offerings. This year's interviews highlight how workforce is not just a constraint, it's also a catalyst. The drive for operator-free equipment, remote service capabilities, and even new internal training initiatives all stem from the industry's ongoing need to do more with fewer people.

What follows is an overview of how these dynamics are evolving.

Developing Skilled Technicians Internally

Several machine builders noted rising customer demand for highly customized equipment, posing additional challenges due to ongoing shortages of skilled technicians and engineers. Many builders simply do not have enough technical talent available to scale at the same pace as incoming requests.

Recognizing the skill gap, builders are investing in internal workforce development to elevate their teams' capabilities. Structured in-house training programs have become a strategy to accelerate skill development beyond what is typically provided by university or trade-school education. These training initiatives can also foster a sense of community and company culture, which can likely improve retention rates.

Apprenticeships and Local Partnerships

As discussed in the previous edition, apprenticeship programs continue to grow in popularity among machine builders. By partnering closely with local trade schools, technical colleges, or apprenticeship programs like Registered Apprenticeship Programs, builders can attract and cultivate talent locally. These programs also provide potential new hires with direct exposure to job tasks, skill requirements, and career opportunities within the machinery sector.

Addressing Technician Burnout

Burnout due to extensive travel remains a notable concern for machine builders. Technicians regularly spend extended periods on the road, sometimes traveling up to 80% of the year, which increases the risk of turnover. Recent improvements in remote service technologies, such as Augmented Reality (AR) and Virtual Reality (VR) headsets, have substantially reduced the need for on-site technician visits. With AR/VR tools, remote technicians can troubleshoot and even guide on-site staff virtually, reducing travel and lowering burnout risks.

How the Workforce Market has Shifted for Machine Builders

Shifting Workforce Dynamics in 2024

The cooling workforce market over the past year has brought notable shifts. Factors such as the high availability of remote work, which intensified during the pandemic, have significantly receded. As more companies roll back remote-work policies, jobs requiring on-site presence are again perceived as stable, attractive options. Additionally, layoffs and volatility in technology and other remote-heavy sectors have reinforced perceptions of job security within manufacturing and field service roles.

Retention Strategies Holding Strong

Despite these shifts, long-term retention still requires investment. Builders who are retaining talent most effectively tend to offer more than just competitive pay. Several emphasized the importance of workplace culture, mentorship, and a clear path for professional development. These softer factors are especially important for younger technicians, who may be weighing several different career paths.

Workforce Framing Now Extends to the Buyer Conversation

Beyond internal strategies, workforce continues to influence how machine builders position themselves with their customers. As machines become more sophisticated, so do the staffing requirements needed to operate and maintain them. Some OEMs are responding by adding workforce guidance directly into their proposals. One machine builder shared that they use a custom "aptitude level" scale, ranging from basic operator skills to advanced engineering knowledge, to help customers assess whether their teams are equipped to support a given system.

This type of framing, while not yet widespread, can offer a couple of functions. For larger end users, it may help unlock internal budgets for workforce training. In some cases, including this information prompted buyers to engage their HR or training departments, who could then allocate funds for training. For smaller companies, it may simply offer clarity, providing a concrete sense of what skills are needed before investing in a new line.

Several interviewees also mentioned that buyers are becoming more sensitive to workforce-related ROI. In past years, customers may have focused more on automation as part of broader sustainability or throughput goals. Now, the focus seems to have shifted slightly, with more emphasis on how many operators can be reassigned or how much support a system will require post-install. This shift aligns with continued resource constraints among end users and reflects a broader push to streamline operations.

MACHINERY – TRENDS IN MACHINERY DESIGN & FUNCTIONALITY

Shifts in packaging requirements continue to influence machine design and operational capabilities. In this section, we explore recent insights from industry participants on evolving machinery requirements and some of the features shaping purchasing decisions.

Enhanced Flexibility to Handle High SKU Counts

Demand remains strong for machinery capable of handling a large number of Stock Keeping Units (SKUs). Machines with versatile configurations and rapid, automated changeovers help customers manage increasingly complex production environments, enabling them to efficiently produce everything from small-batch e-commerce orders to large-scale retail packs.

Automated Changeovers

Interviewees particularly emphasized the growing necessity for automated changeover capabilities. Buyers serving diverse channels, from online retail platforms like Amazon, with small batch sizes, to wholesale outlets like Costco, requiring large multi-packs, value machinery that reduces downtime during format changes. Even though these highly automated systems carry a premium price, customers are willing to pay when the equipment can seamlessly cover such a broad product portfolio and eliminate the hidden costs of frequent manual changeovers. Though some manual adjustments remain, partial automation still delivers significant operational efficiencies and competitive advantages.

Growing Preference for Servo-Driven Systems

Servo-driven actuation is gaining momentum, especially among larger brand owners, because it offers a compelling mix of tighter motion control, faster cycle times, and easier integration with modern PLCs and HMIs. By eliminating many pneumatic functions, servos also sidestep the leaks, compressor upkeep, and energy waste that can afflict these systems. At the same time, their digital drives can feed performance data into predictive-maintenance dashboards. The trade-off is a higher upfront price, which keeps some smaller, cost-conscious buyers on traditional pneumatics. To straddle both camps, some machine builders will quote dual configurations.

Versatility with Legacy and Innovative Packaging Formats

Machine builders face a growing demand to design equipment that accommodates both traditional packaging formats and emerging, innovative designs. Customers want flexibility to switch between legacy and novel packaging styles without extensive retooling or significant downtime. This trend reflects the increasing pressure on brand owners to differentiate on crowded shelves, respond to retailer-specific packaging requirements, and manage growing SKU counts.

MACHINERY – RFID (RADIO FREQUENCY IDENTIFICATION) INFLUENCE

Incorporating RFID for Enhanced Inventory Management

RFID technology continues to gain traction across the packaging landscape, particularly as retailers push for better item-level tracking and faster inventory reconciliation. Interviewees report an uptick in retrofit requests, sometimes even at the case-packer or palletizer stage, to incorporate RFID tagging.

While the operational benefits are clear, the sustainability profile of conventional RFID is prompting fresh questions. Most legacy inlays include a thin metal antenna bonded to plastic, which complicates curbside recycling and can undermine brand owners' circular packaging goals. Although this concern has not slowed adoption yet, it is becoming part of the conversation whenever new lines or upgrades are specified.

One development that many are watching is PulpaTronics' metal-less RFID tag, produced by laser-etching conductive traces directly onto paper. If the concept scales, it could offer a lower-cost, curbside-compatible alternative. For now, the technology remains pre-commercial, but its progress bears monitoring. A viable paper-based inlay could trigger a new wave of machinery updates aimed at handling the next generation of RFID formats.

MACHINERY – FACTORS IMPACTING DESIGN

Though not necessarily new trends, the following factors continue to influence customer decisions around machine design.

Compact Machine Footprints for Brownfield Sites

Interviewees continue to emphasize that buyers increasingly prioritize smaller-footprint machines suitable for integration into existing (brownfield) facilities, rather than investing in new greenfield plants. Compact designs allow incremental capacity increases without substantial facility expansion costs.

Machines Supporting Reduced Operator Requirements

Advances in automation, sensor technology, and user-friendly controls have made it possible to significantly reduce the number of operators required per line. Interviewees noted examples where newer machinery allows a single operator to effectively manage production lines previously requiring two or three people. Such efficiency gains are increasingly attractive to purchasers evaluating total ROI and headcount reduction.

Handling Delicate & Sustainable Materials

Sustainability initiatives and cost-saving measures have led brands to increasingly adopt thinner and more delicate packaging materials, both paper-based and plastic. Consequently, packaging machines must be engineered to handle these fragile substrates gently to prevent damage during high-speed operations.

Machine builders report that handling thinner films, compostable bags, or lightweight carton board now demands greater precision in tension control, sealing technology, and material feeding systems.

Operator-Focused Ergonomics & Simplicity

With persistent workforce shortages, particularly in warehousing and fulfillment operations, there's a strong push toward machines designed to be intuitive and ergonomic enough that nearly any operator, regardless of skill level, can run them effectively. Enhanced Human-Machine Interfaces (HMIs) with clear, visual fault indicators and quick-reset functionalities continue to improve, eliminating extensive training requirements and reducing operational complexity.

Machine builders increasingly highlight simplicity and ease of use as key selling points to address ongoing challenges with turnover among lower-skilled workforce segments.

PARTS & SERVICES - GROWING IMPORTANCE IN CUSTOMER RETENTION AND PROFITABILITY

The aftermarket for parts and services has become a critical and consistently growing revenue stream for machine builders. Once considered a secondary support function, this segment is now central to long-term customer retention, uptime optimization, and profitability.

Parts

Spare parts continue to offer reliable revenue, often with significantly higher margins than machinery sales, thanks to lower production costs and steady demand. Some machine builders drop-ship components directly from third-party manufacturers or regional warehouses, creating an efficient and low-effort income source. Ordering has also become more streamlined. Advancements in data logging and predictive maintenance tools enable operators to quickly identify needed parts, minimizing service delays and reducing costs.

Demand for parts remains strong, especially as more facilities extend the lifecycle of their equipment. Machines are now commonly in operation for 15 years or more. When budgets are tight, many companies choose to replace worn components rather than invest in entirely new systems. This aging installed base often requires non-standard or obsolete parts, creating opportunities for retrofit sales and higher-margin replacements.

While this trend isn't new, its implications continue to evolve. Subscription-based models are now more common, with some machine builders bundling discounted parts into multi-year support packages. These offerings generate recurring revenue and enable customers to manage costs more predictably.

Services

On the service side, long-term workforce shifts have reshaped how machine servicing is handled. In the past, in-house line workers were trained during machine installation and became the primary experts in maintenance and troubleshooting. But over the last decade, accelerated by early retirements during the pandemic, much of that legacy expertise has left the workforce.

With newer hires lacking the same depth of knowledge and turnover rates remaining high, companies have struggled to maintain in-house servicing capabilities. As a result, more of the servicing responsibility has shifted back to the machine builders themselves. In last year's report, we noted this trend was gaining traction; this year, it has clearly solidified. More builders now offer structured service plans, rather than ad hoc support, which includes remote diagnostics, regular maintenance visits, and even full-service contracts.

Many of these offerings have evolved into subscription-based service models, providing customers with access to virtual support, prioritized technician response, and digital training tools. Others are layering in remote monitoring and predictive maintenance features to minimize unplanned downtime. While service models vary, the message is clear: servicing is no longer just a support function—it's a strategic differentiator and a growing source of recurring revenue.

SERVICES - AN OVERVIEW OF SERVICES OFFERED IN THE INDUSTRY

In our interview process, packaging machinery suppliers shared a wide range of services they offer to support customers beyond the initial equipment sale. Many of these services were consistently cited across the board and can be considered standard for most OEMs. These are categorized as "Common" in Table 4 and include offerings such as emergency repairs, safety audits, training programs, and routine maintenance visits. While foundational, these services remain essential, particularly as workforce shortages and technician turnover heighten the need for reliable, responsive support.

At the same time, a growing number of machine builders are expanding their service portfolios in response to changing customer demands. These "Growing" services, flagged with an upward arrow in the table, reflect increased attention to optimization, remote support, and sustainability transitions. For example, efficiency reviews and control system upgrades are being offered more frequently to extend the lifespan of existing equipment. Predictive maintenance and digital troubleshooting tools are also gaining traction, although adoption varies depending on the customer's comfort level with data sharing and remote diagnostics.

Finally, a smaller set of "Emerging and Unique" services, marked with double exclamation points, stood out as less common but potentially indicative of where the market is headed. These include digital twin models, smart technology integration, and bundled performance improvement packages based on OEE benchmarking. While not yet widespread, these offerings are often used by suppliers looking to differentiate themselves or appeal to high-value customers seeking advanced capabilities.

By categorizing these services, we aim to highlight not only the most frequently cited options but also the areas where service innovation is emerging. As OEMs continue to invest in aftermarket strategies, the ability to offer flexible, data-driven, and value-adding services may be key to sustaining long-term customer relationships.

Table 4 - Overview of Common and Emerging Services Offered by Packaging Machine Builders Service

Service		Description
Emergency Repairs	★	Rapid technician deployment for urgent machine breakdowns.
Site Equipment Maintenance	★	Scheduled preventative maintenance visits, ensuring equipment compliance and reliability.
Safety Audits & Reviews	★	Routine inspection and evaluation to ensure machinery and facility safety standards compliance.
24/7 Support Lines	★	Round-the-clock phone or online support availability, often via dedicated hotline numbers. These duties are sometimes outsourced or completed via rotating on-call shifts with experienced technicians.
Training Programs (Classroom & Hands On)	★	General operator and technician training provided either at vendor locations or customer sites, frequently at the time of Factory Acceptance Tests (FATs).

KEY: Common (★) , Growing (↑), Emerging & Unique (!!)

Table 4 - Overview of Common and Emerging Services Offered by Packaging Machine Builders Service

Service		Description
Material Change Modifications	★	Adjustments or retrofits for machines to handle new sustainable materials (e.g., recyclable films, paper-based substrates). Includes modifications to sealing, welding, or adhesive systems.
Efficiency Reviews (Performance Optimization Audits)	↑	On-site assessments to identify optimal operating speeds or efficiency improvements, increasingly popular when customers seek cost-effective alternatives to full machinery replacements.
Control System Upgrades	↑	Significant upgrades to PLCs, HMIs, and software, typically carried out to extend equipment life or integrate new digital capabilities. Often costly, which can near the expense of a new machine.
Predictive Maintenance (Data-Driven Audits)	↑	Integration of sensors and analytics to predict part wear or failure before issues occur. Increasingly offered proactively, although adoption varies due to differing comfort levels with customer data sharing.
Step-by-Step Digital Troubleshooting	↑	Provision of detailed, vendor-produced video or interactive guides, which can be hosted online or via QR-linked HMIs or found online via YouTube. These videos can empower customer teams to resolve common issues without technician visits.
Internal Testing for New Materials	↑	Vendors increasingly offer pre-emptive testing services to recommend specific machine settings or modifications for new customer packaging materials, particularly valuable amid sustainability-driven material transitions.
Digital Twin Technology & 3D Imaging	!!	Virtual replicas of machinery or production lines for simulation, training, and predictive troubleshooting. Adoption is currently limited, but interest is rising, particularly for complex or high-value systems.
Advanced AI and Smart-Technology Integration	!!	High-end solutions leveraging machine learning, real-time analytics, and AI-based adaptive controls. Currently limited to custom, high-end packaging solutions but expected to expand into broader market segments.
OEE (Overall Equipment Effectiveness) Improvement Packages	!!	Services built around OEE benchmarking and enhancement. Some machine builders will offer a free one-time check and tune, then monetize through subsequent improvement initiatives. This is particularly appealing during downturns when customers seek incremental performance gains.
Extended Warranty Plans with Preventive Maintenance Subscriptions	!!	Bundled subscription packages combine warranty extensions with regular preventative maintenance, creating predictable customer costs and consistent revenue streams for vendors.

KEY: Common (★) , Growing (↑), Emerging & Unique (!!)

BIG DATA – AI IS HERE

A Look Back at Early Expectations

In our previous edition, we noted growing curiosity around the role of AI in packaging machinery. At the time, most machine builders were in early exploration mode. Several shared ideas about using AI to assist operators via the HMI, analyze OEE in real-time, or enable predictive diagnostics based on sensor data. These applications, while promising, faced two key hurdles: the reluctance of end users to share machine data, and the added costs of implementing AI systems. For many smaller or mid-sized customers, these barriers were seen as too high.

AI Conversations Have Matured

This year, conversations about AI were notably more grounded. Interest has grown, and comfort with the idea of integrating these tools into machines has improved. While full-scale AI deployment is still uncommon, the number of companies testing or preparing for limited applications has increased.

AI for Quality Control

The desire for more intelligent quality-control tools was a recurring theme. One interviewee described plans to introduce a machine learning-based vision system to detect defective products more quickly and accurately. However, the system struggled with reliability, ultimately requiring a traditional sensor backup to ensure consistent results. The takeaway wasn't that AI doesn't work, but rather that we're still in a transition phase, where confidence in newer tools is being built gradually.

That said, companies remain committed to figuring out how to best implement these systems. A few interviewees even mentioned hiring staff specifically to work with AI models, or expanding their digital teams to better support future rollouts.

Large Language Models in the HMI

One of the more novel developments mentioned this year is the integration of LLM-style AI, similar to ChatGPT, directly into the HMI. In some cases, these systems can translate error codes into plain language and provide step-by-step guidance to the operator. In other setups, the AI monitors the machine's performance and sends alerts to both operators and supervisors when components appear to be operating out of range.

This capability has clear appeal for customers struggling with high turnover or less-experienced operators. It replaces the older model of manually cross-referencing error codes in a physical manual and moves toward an interface that can both understand and respond to user questions in simple terms.

BIG DATA – PREDICTIVE MAINTENANCE

Signs of Momentum

Predictive maintenance remains a valuable but evolving aftermarket feature, with adoption beginning to show signs of catching up to its potential. According to PMMI's Aftermarket Parts and Service Report, 35% of end user respondents indicated they plan to increase spending on predictive maintenance in 2025 compared to 2024, suggesting growing interest in these capabilities. Interviews confirmed that more machine builders now include predictive options in their standard offerings, often bundled with service contracts, and more customers are starting to see their value.

Practical barriers remain. Cost continues to deter some buyers, particularly smaller ones who struggle to justify the short-term ROI. Even when systems are implemented, operators don't always act on diagnostic warnings, undermining effectiveness. And some facilities still rely on reactive maintenance habits, making cultural and procedural shifts necessary.

That said, the outlook is improving. Interviewees shared examples of successful implementations, particularly when diagnostic alerts are delivered in plain, actionable language via the HMI and tailored to operator skill levels. These improvements help close the gap between data collection and corrective action.

As these systems become more intuitive and aligned with customer workflows, predictive maintenance is expected to gain more traction, particularly among larger, highly automated operations. Growth remains gradual, but momentum is building.

BIG DATA – CURRENT REALITIES

As AI has not fully entered the scene, there are other big data systems that are starting to take hold.

Machine Vision Moves Beyond Verification

While broad applications of AI are still emerging in the packaging sector, machine builders are already leveraging data in very real and practical ways. One of the clearest examples is machine vision. Thanks to improvements in camera quality and embedded electronics, today's vision systems can offer sharper sensing, faster counting, and more precise orientation than was possible just a few years ago. These enhancements are doing more than just boosting speed; they're enabling problem-solving applications that were previously too complex or expensive to implement, especially in mid-range systems.

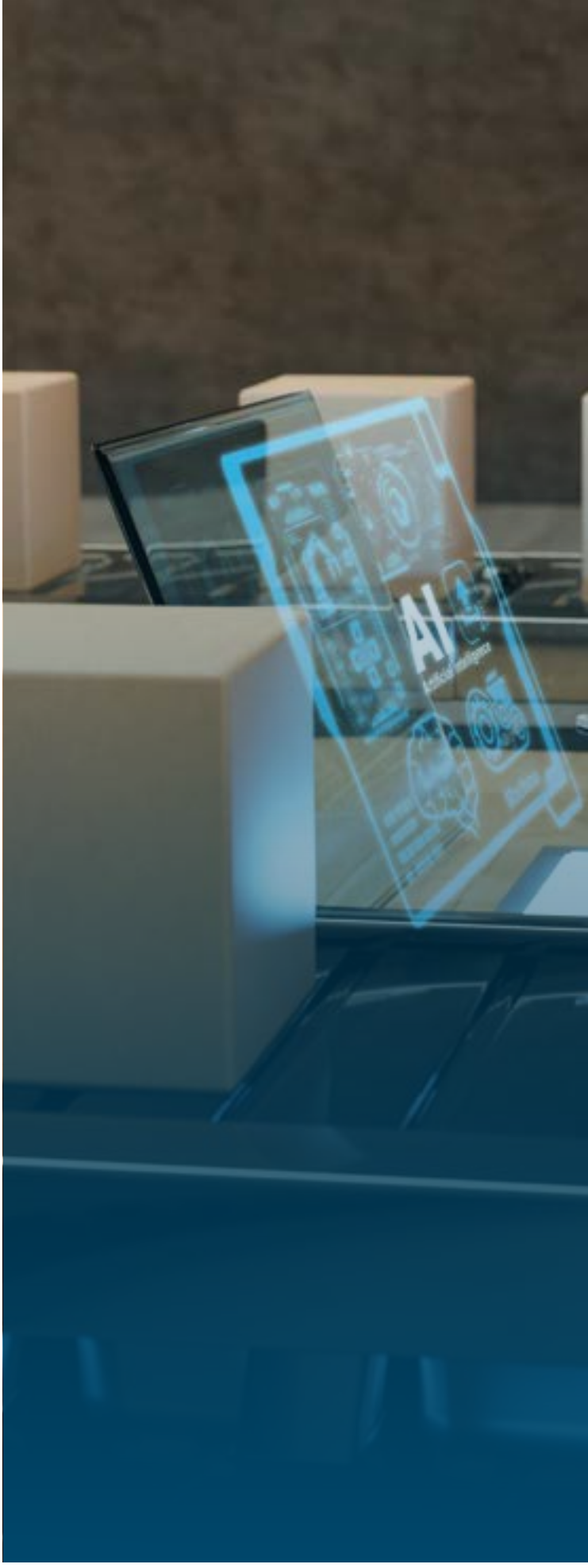
Vision Systems as a Competitive Differentiator

Vision tools, once limited to label and code verification, are now central to how builders differentiate their machines. For instance, one builder shared how their system uses vision to detect when a product falls off a conveyor, triggering an emergency stop and notifying the operator, thereby preventing more serious mechanical damage. Others described camera-guided rainbow packing and color-based pick-and-place systems for multi-flavor bundles or seasonal kits. These packaging formats, often tied to promotional campaigns that change frequently, make them a strong use case for vision-driven systems. Builders noted that in some cases, the added vision capabilities helped them win orders.

Balancing Data Connectivity With Cybersecurity

At the same time, data collection and connectivity present a more complicated picture. While customers have become more open to internal data collection for predictive maintenance or performance monitoring, they are still hesitant to allow machines to connect externally. Cybersecurity remains a concern, as many customers don't want their machines to have a connection to the outside world. To navigate these concerns, builders are adopting new approaches. Rather than using a cloud-connected system, some now offer simple USB-based diagnostics. One interviewee explained that their machines come equipped with a port where users can upload software updates or pull performance logs, without requiring live connectivity. This strikes a balance, improving uptime and maintainability while still satisfying strict internal IT policies.

Together, these developments indicate a packaging industry that is cautiously entering the "big data" era, not through sweeping AI overhauls, but through targeted, practical applications that address real-world problems while respecting the operational realities of their customers.



SUSTAINABILITY – MARKET TRENDS

Material Shifts: Balancing Sustainability With Cost Sensitivity

Cost Concerns Take Priority Over Sustainability

Material changes remain an ongoing area of focus, though the level of urgency seems to have shifted. Interviewees noted that while sustainability goals are still a factor, most customers are more cost-sensitive at the moment. Cost sensitivity and operational uncertainty are taking priority over big changes to packaging formats. That said, several material shifts are still moving forward, and machine builders are being asked to accommodate them.

Shifting From PVC to rPET in Thermoforming

One example is the move away from PVC toward rPET, particularly in thermoforming applications. This change is being driven in part by large retailers who are asking suppliers to phase out materials with less favorable recycling profiles. While PVC is known for being more forgiving and easier to run on older machines, rPET requires tighter tolerances and greater precision to handle its rigidity and thinner gauge. Machine builders supporting thermoforming lines are being asked to help customers make this transition smoothly, which may involve mechanical adjustments or more advanced temperature and pressure controls.

Compostable Materials Lose Momentum

There's also growing attention on curbside recyclability in general. Although compostable materials have generated interest over the past few years, several interviewees suggested that the momentum has slowed. A few noted that customers are still exploring compostable films, particularly in food applications, but many are pausing on implementation. A key challenge remains infrastructure. In the U.S., most municipalities do not have the industrial composting capabilities required to process these materials at scale. As a result, some brands are choosing to focus instead on improving the curbside recyclability or plastic reduction of their packaging.

Brand-Driven Moves Toward Compostable Formats

Still, there are pockets where compostables are seeing more activity. One interviewee noted a growing interest in compostable K-Cups, which waste-conscious customers prefer due to their perception as more sustainable. These changes are often driven more by brand identity and consumer perception than by regulation, but they still have implications for machine performance. Compostable materials often behave differently than traditional ones, requiring precision equipment modifications to avoid tearing, slipping, or sealing inconsistencies.

Regulatory Policies Drive Paper-Based Alternatives

Similarly, machine builders serving global entities are being asked to support material shifts in response to regulatory pressure outside the U.S. One trend mentioned was the move away from polybags and toward paper-based alternatives. In part, this is a proactive response to policies like those in Canada and parts of Europe that restrict single-use plastics (see Table 5). Even U.S.-based customers are feeling the effects of these regulations as they aim to maintain consistency in packaging across markets. This shift creates new challenges for automated bagging and sealing equipment. Paper has less stretch and is more prone to wrinkling or jamming, so machine builders must ensure that machines are tuned for more delicate handling and accurate forming.

Machine Builders Must Adapt to a Wider Range of Packaging Materials

These material transitions, whether driven by regulation, cost, or brand image, are not happening all at once. But they are adding to the complexity that machine builders must support. OEMs that can offer flexibility in material handling, along with clear communication on how new materials may impact throughput or uptime, will likely have an advantage as these shifts continue.

Table 5 - Regulations That Will Likely Impact Packaging

Rule / Regulation	Country / State	In Effect	Summary
North America			
Extended Producer Responsibility (EPR) - US & Canada	Multiple U.S. states (e.g., CA, OR, ME) and Canadian provinces (e.g., BC, QC, ON)	2021	Both countries are shifting packaging responsibility to producers. In the U.S., several states have enacted EPR laws requiring producers to fund recycling systems and meet recyclability standards. In Canada, provincial programs are being standardized, with full producer responsibility and mandatory reporting. Federal requirements under the National Plastics Registry begin in 2025.
Plastic Pollution Prevention & Packaging Producer Responsibility Act (SB 54)	California, USA	2024 (rule updates in 2025)	Requires all single-use packaging to be recyclable or compostable by 2032 and a 25% reduction in single-use plastic by then.
Single-use Plastics Prohibition Regulations	Canada	2022	Bans on specific single-use plastic items (e.g., stir sticks & ring carriers) rolled out in phases, with full bans effective by December 2025.
Canada's National Plastics Registry	Canada	2025	Requires producers to report annually on plastics placed on the market. Categories will expand in 2026 and beyond. Federal policy development under Canada's Zero Plastic Waste Agenda.
Europe			
Single-use Plastics Directive	European Union	2021 (amended 2024)	Bans select single-use plastic products, extends producer responsibility, mandates packaging labeling, and raises collection targets for beverage containers.
Eco-Design for Sustainable Products Regulation	European Union	2024	Expands eco-design to cover broader durability, reparability, and recyclability requirements under the circular economy action plan.
Plastic Packaging Tax (PPT)	United Kingdom	2022 (amended 2023)	A tax imposed on plastic packaging containing less than 30% recycled plastic content, encouraging recycled material use.
German Packaging Act (VerpackG)	Germany	2019 (amended 2021)	Stricter recycling mandates, expanded producer registration/reporting, and encouragement of sustainable packaging design.

Source: Interact Analysis

SUSTAINABILITY – A CASE STUDY ON BATTERIES

In our last report, we noted Gillette's move away from traditional blister packs in favor of carton-based packaging. This year, a similar shift is unfolding in the battery category. Both Duracell and Energizer have announced transitions to paper-based blister packs, starting with Walmart locations. Duracell began rolling out its new packaging in January 2025, with Energizer following approximately two months later.

As shown in the image here, the new packaging eliminates the plastic peg hook and is instead designed for shelf display. While Walmart is currently the primary retail partner for this rollout, we anticipate that other major retailers will follow in the coming years. For direct-to-consumer shipping through platforms like Amazon, many sellers have already transitioned to thicker corrugated boxes. Duracell's version of this can be seen here.

This shift reinforces the broader trend of brands moving away from blister packs in favor of paper-based solutions, while also developing tailored packaging formats for different retail environments.

Traditional Blister Pack

Paper Blister Pack

Corrugated Carton for DTC

SUSTAINABILITY – RETAILERS' COMMITMENTS

While material changes are increasingly being mandated by regulations both within and outside North America, major retailers are also setting their own internal goals to reduce virgin plastic and transition to recyclable materials. As shown in Table 6, several of the largest retailers in North America, including Walmart, Target, and CVS, have committed to making 100% of their packaging recyclable, reusable, or compostable by 2030. That deadline is just five years away.

These goals are already showing up in how products are packaged on shelves. Walmart's collaboration with Duracell to launch paper-based battery packaging is likely tied to the retailer's pledge to cut virgin plastic by 10% by 2025. Similarly, Target has piloted new packaging innovations, such as fiber-based wine bottles, for some of its private-label brands. While many of these efforts begin with store-brand SKUs, they often serve as early signals of what could be more broadly adopted across categories.

For packaging machinery builders, these shifts create two clear areas of opportunity. First, customers may need help adapting existing machines to run new materials or formats, especially those like rPET or paper substrates, which demand greater precision in sealing, forming, or temperature control. Second, as brands experiment with design in response to retailer targets, machine builders with modular systems or strong design-collaboration capabilities will be well positioned to respond quickly and flexibly.

Target

Table 6 - Retailer Packaging & Recyclability Commitments

Retailer	Packaging Goals	Deadline
Walmart	• 100% of packaging recyclable by 2030 • Reduce virgin plastic by 10% • Increase recycled content by 20%	2030 – 2025
Target	• 100% recyclable/reusable/compostable packaging • 30% of plastic from recycled content or bio-based	2025
Amazon	• Reducing plastic mailers with paper mailers in North America • Offers SIOC (Ships in Own Container) certification support	Ongoing
Walgreens	• Make 100% of Walgreens-brand packaging recyclable/reusable • Increase recycled content in plastic to average 3% • Reduce plastic packaging by 30% for US owned brands	2030
Kroger	• 100% recyclable, compostable and/or reusable packaging for '*Our Brands*' products	2030
CVS Health	• Reduce plastic use in our operations by 50% • Reduce single-use virgin plastic in store brand packaging by 50% • Ensure all store brand packaging is 100% reusable, recyclable or compostable	2030

SUSTAINABILITY – EXTERNAL RATING SYSTEM

As major corporations face growing pressure to meet sustainability targets and reduce carbon emissions, some are beginning to prioritize partnerships with vendors that have been externally verified for environmental and ethical performance. For instance, EcoVadis was mentioned by multiple interviewees as a useful credential.

Though the process comes at a price and can be time-consuming, interviewees noted several benefits to pursuing a rating. First, companies with higher scores are often perceived as more competitive when bidding for large-scale projects, especially with multinational customers that incorporate sustainability performance into their vendor selection criteria. One supplier noted that having a current EcoVadis score was helpful in landing contracts with major global brands.

Second, the rating can serve as a marketing asset. Some machine builders have begun highlighting their EcoVadis scores in promotional materials, trade show booths, and website messaging as a way to differentiate themselves from competitors. Even when customers are not actively requesting it, the badge communicates a level of transparency and commitment to sustainability that may resonate with environmentally conscious buyers.

As sustainability standards across the value chain become more formalized, platforms like EcoVadis are poised to become a more visible part of how packaging equipment suppliers build credibility and secure business, particularly among large enterprise clients seeking to advance their corporate ESG goals.

TARIFFS – MACHINE BUILDERS FACE WHIPLASH

Why Tariffs Dominate Today's Import/Export Conversation

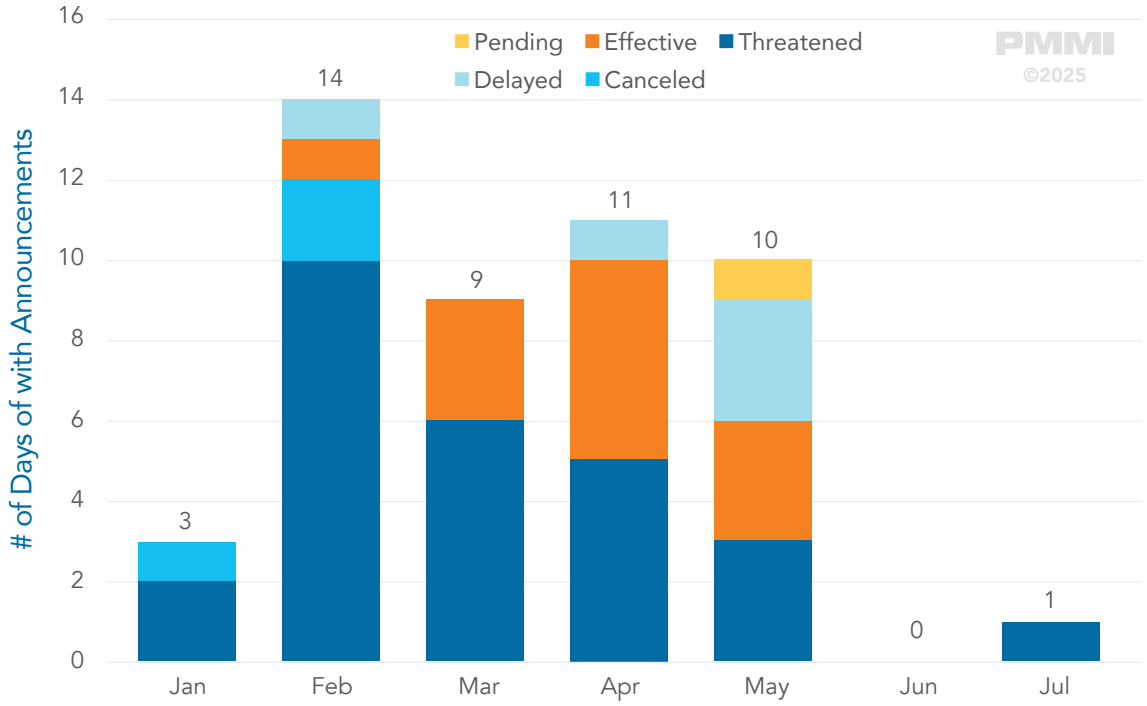
For this edition, we set out to understand how imports and exports typically shape strategy for U.S. machine builders. Interviewees pointed to factors like currency exchange rates, regulatory compliance in foreign markets, and supply chain considerations as the primary drivers of decisions about where and how to build machines.

Early in the interview process, however, it became clear that one theme dominated the conversation: tariffs. Recent and proposed U.S. trade policies have created significant frustration and uncertainty for machine builders. Many described the unpredictability of tariffs as the most significant barrier to planning and investment decisions.

As shown in Figure29, tariff-related announcements surged in the first half of 2025, with dozens of days marked by new, revised, or threatened trade actions. This flurry of activity has made it nearly impossible for builders to forecast costs and make confident long-term decisions.

While currency fluctuations and compliance requirements still influence export strategies, most builders agreed that these considerations have been overshadowed by the volatility of U.S. trade policy and its effects on competitiveness, sourcing, and customer demand.

Fig. 29 Days with US Tariff Announcements by Month (2025)



Source: Atlantic Council, Trump Tariff Tracker

Note: Multiple tariff actions may have occurred on a single date. This figure tracks the count of individual days with announcements categorized by status (e.g., Effective, Pending, Canceled)

TARIFFS – UNCERTAINTY IN PLANNING AHEAD

How Machine Builders Are Responding to Tariff Uncertainty

Uncertainty Is Driving Hesitation

Machine builders told us they would be more willing to adjust operations by upgrading U.S. plants, shifting sourcing, or relocating production if tariff policies were clearly defined and consistent. Instead, many described the frequent changes and lack of clarity as a barrier to action, making it difficult to justify costly, long-term investments when future policy direction remains uncertain.

Global Players Are Considering Adjustments

Among global players, some are exploring ways to mitigate tariff vulnerability. A few described exploring expanding the capabilities of U.S. facilities to handle more complex machine production, while others are considering shifting shipments to countries with lower tariffs. These strategies are generally only viable for larger, globally integrated builders with multiple international locations to draw on.

Delays and Lost Orders Are Already Happening

Even without widespread operational changes, the impacts of tariffs are already being felt. Several machine builders reported delayed or cancelled orders, as well as contracts lost to both U.S. and foreign competitors. In a market where machinery costs can reach six or seven figures, even a slight price difference tied to tariffs or input costs can influence buying decisions.

U.S.-Focused Machine Builders Feel More Insulated

Machine builders focused entirely on U.S. customers generally feel they are better positioned, as they do not export and source most components domestically. However, they are not completely insulated. Rising input costs, particularly for steel and aluminum, have affected even fully domestic operations. U.S.-sourced steel prices have climbed during tariff periods, narrowing the gap between domestic and imported material costs and putting pressure on margins.

4

Market Statistics by Industry

FOOD • BEVERAGE • HOUSEHOLD, INDUSTRIAL, AGRICULTURAL CHEMICALS • PHARMACEUTICALS PERSONAL CARE, TOILETRIES, COSMETICS

MARKET SECTOR OVERVIEW

Food Sector

The food sector remains the foundation of the packaging machinery market, making up an estimated 44% of shipments in 2024, or roughly $4.9 billion. This year's interviews suggest that while food's resilience persists, buyers are increasingly focused on investments that help manage SKU proliferation and sustainability demands. Machinery capable of handling more delicate, thinner materials or switching seamlessly between product sizes and formats is becoming more desirable, particularly as major food brands adjust packaging to meet retailer and regulatory targets.

Beverage Sector

The beverage sector contributed about 15% of the 2024 market, or nearly $1.7 billion, and remains resilient despite some slowdown in new facility construction. Recent investments have focused on upgrading existing lines to handle sustainable materials and accommodate changing consumer preferences, such as the shift away from single-use plastics and the rise of alternative beverages.

Household, Industrial, & Agricultural Chemicals Sector

At 13% of the total market, with an estimated value of $1.4 billion in 2024, the chemicals sector remains the most volatile, with peaks and troughs tied closely to broader economic conditions. This year, we highlight customer interest in machinery that minimizes operator exposure, with higher safety certifications and more automation to reduce human contact in hazardous environments.

Pharmaceuticals Sector

The pharmaceutical sector, estimated at $1.3 billion in 2024, continues to prioritize highly regulated, cleanroom-compliant machinery. We highlight the increasing demand for automation to reduce human touchpoints and maintain consistency, with growing adoption of robotics, vision systems, and AI-driven defect detection.

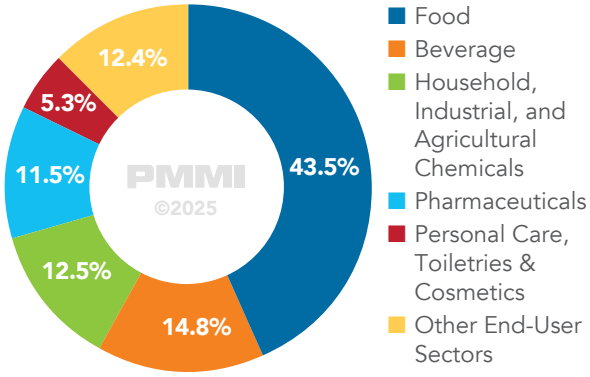
Personal Care, Toiletries & Cosmetics

The smallest of the sectors, at approximately $603 million in 2024. Companies in this space are experimenting with more creative, "chaotic" packaging formats to stand out on shelves, from unique container shapes to novel materials.

Other End-User Sectors

The 'Other' end-user sectors, which include emerging markets such as E-commerce and automotive, also represent a significant portion of the industry, totaling $1.4 billion in 2024.

Fig. 30 US Packaging Machinery Shipments by Industry - 2024 ($11.3B)



PMMI members can visit https://www.pmmi.org/content/soti-dashboard to explore interactive forecast data by machine type, subcategory, industry, and more

FOOD SECTOR OUTLOOK – FORECAST & PACKAGING TRENDS

Overview

In 2024, the value of domestic shipments of packaging machinery within the food sector in the US reached an estimated $4.9 billion. This sector is projected to grow to $6.6 billion by 2030, reflecting a CAGR of 5.1%.

In Canada, the food sector's machinery shipments were valued at an estimated $516 million in 2024. This figure is expected to increase to $629 million by 2030, with a CAGR of 3.4%.

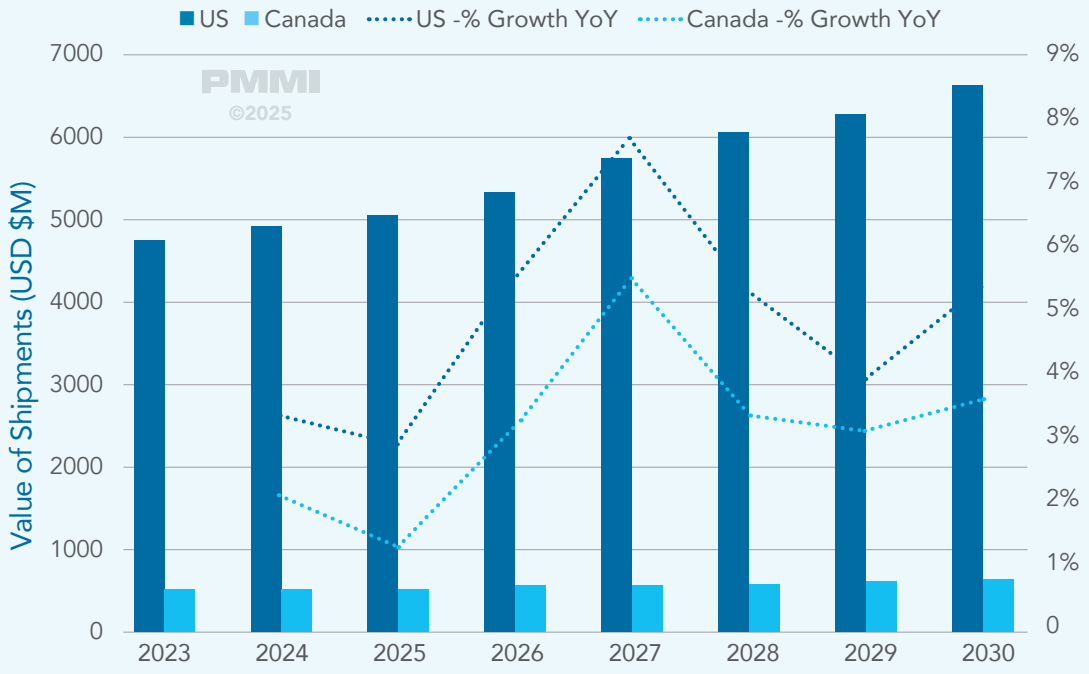
Packaging Trends

The food industry remains a large and complex segment for packaging machinery. Trends in sustainability, workforce, and product variety continue to shape equipment needs. While many of last year's trends, such as size variability and material experimentation, still hold relevance, interviews conducted this year reveal new developments in both packaging strategy and machine design priorities.

Sustainability continues to influence packaging decisions, particularly through material reduction and simplification. Interviewees shared that some food companies are eliminating secondary packaging altogether. For example, they are shipping items directly on pallets without outer cartons to reduce waste and labor.

While non-food sectors are transitioning more easily to paper-based formats, food applications face more constraints due to strict shelf-life and hygiene requirements. Nevertheless, we expect interest in material reduction and packaging redesign to persist, especially as major retailers tighten expectations around recyclability and the use of virgin plastic.

Fig. 31 Packaging Machinery Shipments, % Growth YoY - Food Sector - 2023 to 2030



PMMI members can visit https://www.pmmi.org/content/soti-dashboard to explore interactive forecast data by machine type, subcategory, industry, and more

FOOD SECTOR OUTLOOK – SNACKS, SANITATION, & SIZE

Snacks & Single-Serve Packaging

Consumer demand for shelf-stable snacks and frozen foods remains strong. One OEM noted an increased demand for snack bar production equipment, particularly from private-label manufacturers and co-packers, leading to requests for higher-speed, flexible machines.

Single-serve packaging is experiencing continued growth, driven by rising on-the-go consumption as more workers return to offices. Packaging formats that balance convenience with portion control, such as snack bars, single-serve produce, and prepared meals, are gaining traction. Suppliers emphasized that throughput and adaptability are key priorities for customers in this segment.

Sanitation & Food Safety

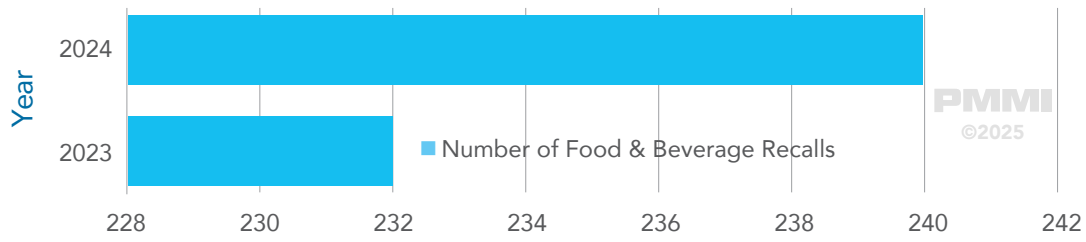
Despite continued recalls in 2024 (See Figure 32), most interviewees reported that they haven't seen a widespread surge in demand for ultra-hygienic machines. However, OEMs are proactively promoting easy-to-clean systems that meet USDA and other sanitation standards, expecting that safety requirements will continue to tighten.

Size Variability

As noted in our previous edition, there is still a pressing need for equipment that can accommodate multiple product sizes. Brands selling across various channels, from club stores to e-commerce platforms, are offering a broader mix of pack formats, which increases demands on flexible packaging machinery.

Simultaneously, some interviewees mentioned a push to reduce variability associated with regional packaging differences. This effort is likely driven, in part, by sustainability initiatives and regulations abroad, as well as a broader push to simplify operations and reduce emissions from over-customized product lines.

Fig. 32 US FDA Food and Beverage Recalls - 2023-2024



FOOD SECTOR OUTLOOK – DEL MONTE'S BANKRUPTCY & SHRINKFLATION

Del Monte's Bankruptcy

A notable development this year was Del Monte Foods filing for bankruptcy. Known for its canned fruits and vegetables, the brand cited multiple challenges: rising interest payments, shifting consumer preferences towards fresh and private-label products, and higher warehousing costs linked to seasonality. Tariffs on steel and aluminum further strained margins.

The bankruptcy of Del Monte, a longstanding and highly recognizable name in the food aisle, underscores the increasing financial pressures even in the traditionally stable food sector. Such events are uncommon in this

space and illustrate how shifting consumer preferences, debt burdens, and cost pressures are creating headwinds for legacy brands.

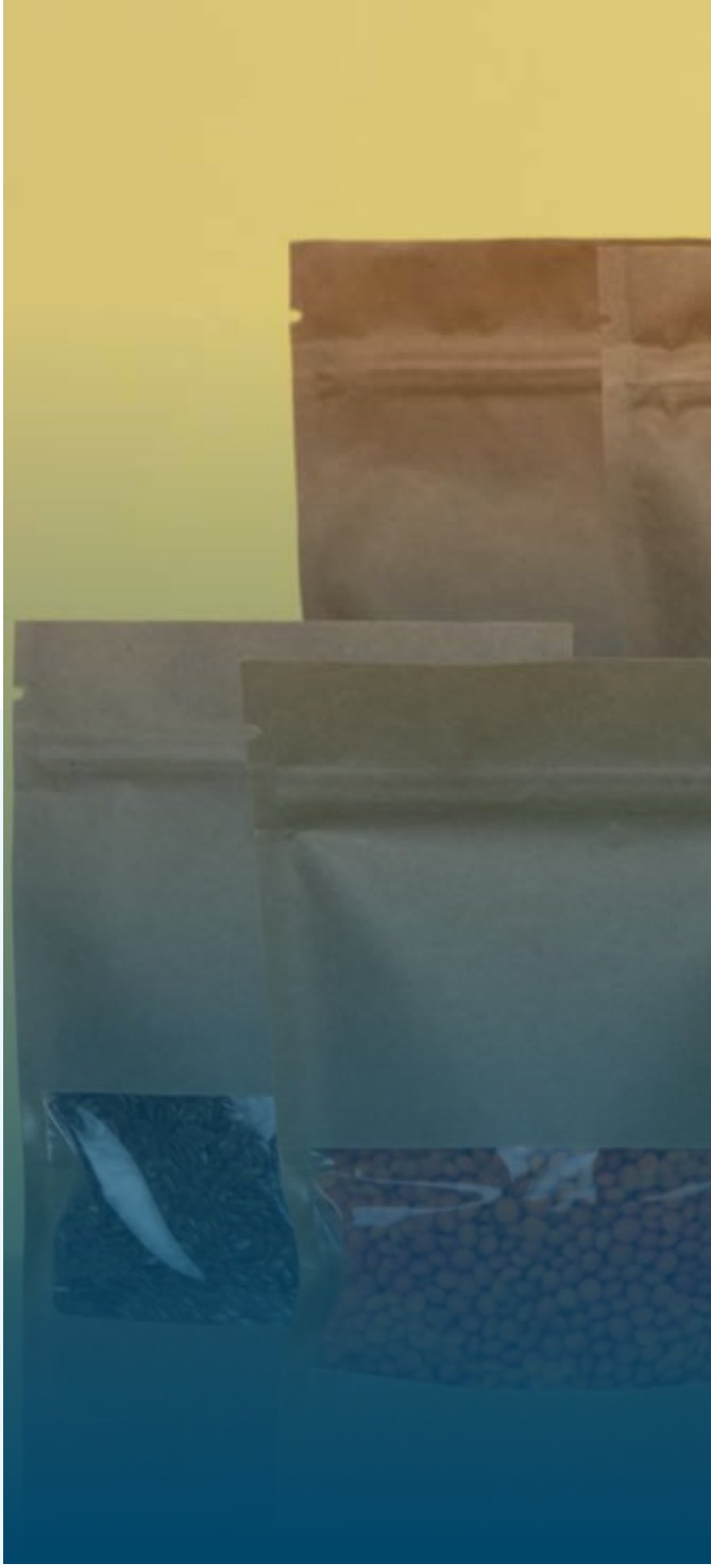
Shrinkflation

Last year, we highlighted the rising use of shrinkflation as a way to manage inflationary pressures. This year, the topic was largely absent from interviews. Despite ongoing economic uncertainty, a second wave of shrinkflation seems unlikely.

In fact, consumer backlash is likely contributing to the decline of this trend. A 2024 LendingTree study found that 82% of respondents felt deceived by shrinkflation, and 66% reported they stopped purchasing products due to it. Additionally, a bill introduced in early 2024 aimed to limit the practice, though it has not been voted on at the time of writing.

Fig. 33 Consumer Reactions to Shrinkflation (2024)

Source: Lending Tree



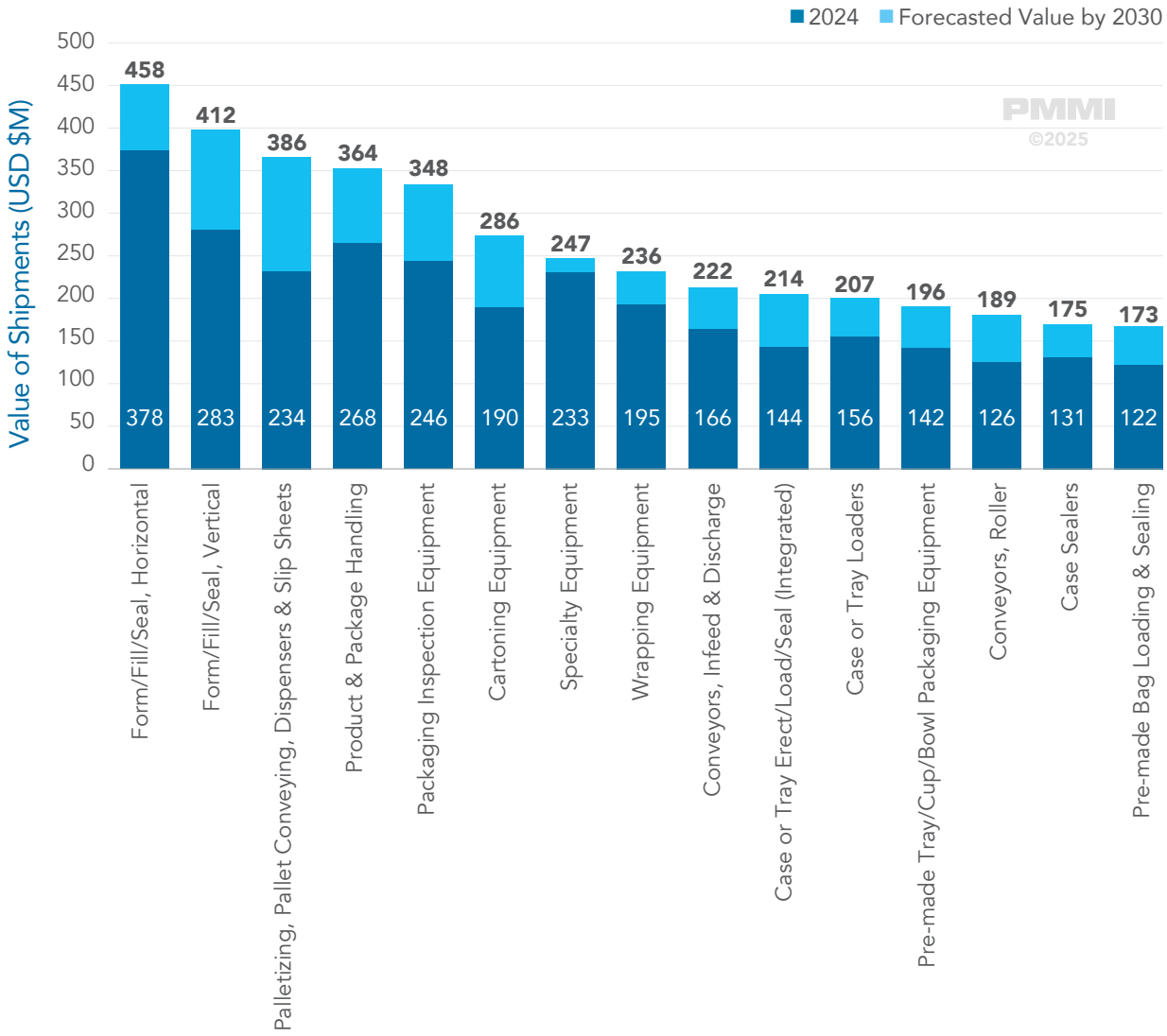
FOOD – LARGEST SUB-MACHINES CATEGORY USAGE

The sub-machines with the largest estimated shipment values in 2024 are Form/Fill/Seal machines. The horizontal and vertical types are leading at $378 million and $283 million, respectively. Both of these machines are expected to reach over $400 million by 2030.

These machines remain a staple in the food industry, packaging everything from granola bars to chips. Their ability to handle a wide range of products at high speeds has cemented their position as the preferred choice in this sector, and we expect them to remain the largest sub-machine category through 2030.

In 2030, Palletizing, Pallet Conveying, Dispensers & Slip Sheets, and Product & Package Handling machines are anticipated to reach $386 million and $364 million, respectively. Palletizing machines are expected to see some of the fastest growth in the market as manufacturers continue automating end-of-line operations to eliminate repetitive, labor-intensive tasks. Similarly, product and package handling is poised for steady growth as facilities look to reduce manual touchpoints and maximize efficiency, particularly in tighter production spaces.

Fig. 34 US Shipment Value by Largest 15 Sub-Machine Categories - 2024 vs 2030 - Food Sector ($M)



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ANNOUNCEMENTS FROM LARGEST FOOD MANUFACTURERS

Table 7 - Signals of Growth by Largest Food Manufacturers

Company	Announcement	Year	Summary
Campbell Soup Co	Campbell Soup to spend $150 million, add 100 jobs in Robeson	2024	The Maxton expansion is the biggest part of itscapital investments of approximately $230 million through fiscal 2026, with approximately $80 million spent to date.
Campbell Soup Co	Campbell Soup Company will expand Milwaukee County plant, creating 40 new jobs	2024	Campbell Soup Co. is expanding its tortilla chip production and creating 40 new jobs at its Franklin plant near Oakwood Park Drive and Ironwood Drive. The New Jersey-based company will invest $8 million into the Franklin plant.
Campbell Soup Co	Campbell's to invest $72M in Hanover plant	2024	Campbell Soup will pour $72 million into its Hanover, PA plant to install additional potato-chip kettles and create 72 new jobs, enhancing production capacity as part of a broader $240 million network-wide upgrade.
Kraft Heinz	Kraft Heinz plans more than $90-million in improvements at Columbia plant; they're seeking property tax abatement	2024	Planned to modernize the Columbia facility on Waco Road, including replacement of three packaging lines, decarbonization efforts, and sustainability upgrades. The company is also pursuing a ~$3.75 million property tax abatement over 10 years. The project is expected to retain ~450 jobs, as Kraft Heinz is Columbia/Boone County's 16th largest employer.
Kraft Heinz	Ketchup maker Kraft Heinz investing $3 billion upgrading US manufacturing	2025	Nationwide manufacturing overhaul including capacity expansion, sustainability initiatives, automation upgrades, and supply chain enhancements. Massive scale – framing it as a multi-year modernization strategy.
Mars	Mars builds on long-term U.S. investment with the opening of new $450 million Royal Canin facility in Ohio	2025	Mars opened a new pet nutrition plant in Ohio, focused on the Royal Canin brand. The facility represents a long-term commitment to US pet nutrition market growth. Officially operational as of March 2025.
Mars	Mars announces $237 million Nature's Bakery facility in Salt Lake City	2024	Mars, Incorporated announced a new $237 million cutting-edge baking facility for Nature's Bakery in Salt Lake City, Utah. The facility, spanning 339,000 square feet, will create over 190 new jobs, and is scheduled to be fully operational in July 2025.
Nestlé	Nestle Purina PetCare starts 2024 with big industrial acquisition in Fairburn	2024	Nestlé Purina purchased two manufacturing/distribution buildings, along with 38 acres, in a transaction nearly matching Atlanta metro's top industrial deals in 2023.

Table 7 - Signals of Growth by Largest Food Manufacturers

Company	Announcement	Year	Summary
Nestlé	Purina PetCare may expand Fort Dodge, Iowa cat food plant	2024	Iowa, city council committed US $1.6 million to expandNestle Purina PetCare'scanned cat food production facility in the city and one ofseveral pet food plants in Iowa.
Nestlé	Nestlé Purina PetCare Opens $450M Pet Food Factory in Eden, North Carolina	2024	Nestlé Purina PetCare has opened its newest pet food factory in Eden, about 36 miles north of Greensboro, N.C. Situated on 1,350 acres, the $450 million development is the first Nestlé factory in the state.
Nestlé	Nestlé Purina announces $195 million expansion at Wisconsin facility	2024	Expanding its production facility in Jefferson, Wisconsin. The US $195 million projectwill increase production of wet pet food brands in Jefferson by nearly 50%.
Nestlé	Nestlé invests $150M to expand South Carolina frozen food plant	2024	The Stouffer's and Lean Cuisine manufacturer said the money will be used to build a new production line for single-serve frozen meals and to enhance automation and digital technology.

Source: Interact Analysis

BEVERAGE SECTOR OUTLOOK – FORECAST & PACKAGING TRENDS

Overview

In 2024, value of domestic shipments of packaging machinery within the beverage sector in the US reached an estimated $1.7 billion. This sector is projected to grow to $2.2 billion by 2030, reflecting a CAGR of 5.0%.

In Canada, the beverage sector's machinery shipments were valued at an estimated $139 million in 2024. This figure is expected to increase to $167 million by 2030, with a CAGR of 3.1%.

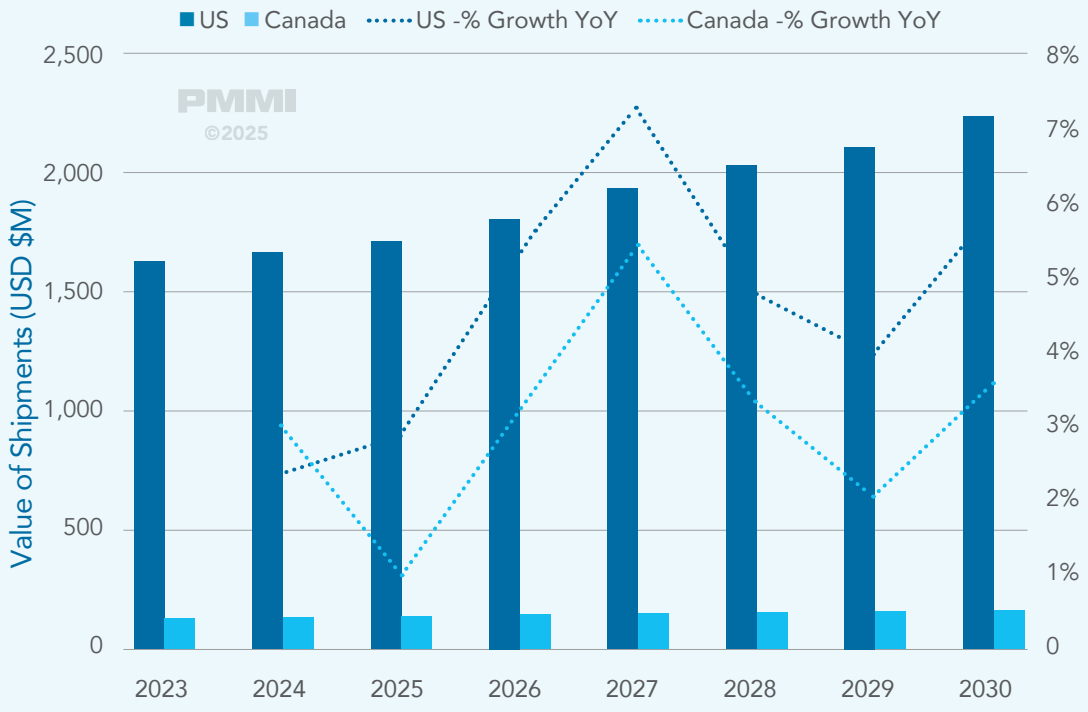
Packaging Trends

The beverage industry remains a dynamic segment for packaging machinery, with ongoing shifts in sustainability, customization, and automation shaping equipment needs. While trends noted in our previous edition—such as SKU proliferation and the pivot away from plastic bottles—remain relevant, interviews this year highlighted more nuanced priorities.

Labeling & Regulatory Shifts

Regulatory changes and branding needs are also reshaping labeling practices. Liner-less labels are gaining traction in lower-speed applications, such as foodservice, but their adoption in high-speed beverage lines remains limited due to technical constraints. At the same time, regulations like California's Prop 65 and Washington's phenol bans are forcing some brands to rethink label materials. Buyers are also seeking systems that can seamlessly handle both full-color branding labels and secondary tracking codes, ensuring compliance without sacrificing efficiency.

Fig. 35 Packaging Machinery Shipments, % Growth YoY - Beverage Sector - 2023 to 2030



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BEVERAGE SECTOR OUTLOOK – SUSTAINABILITY, WORKFORCE, & CUSTOMIZATION

Sustainability

Sustainability remains a central driver of change in beverage packaging, particularly as brands navigate consumer expectations, retailer mandates, and regulatory pressures. Aluminum continues to grow in popularity thanks to its strong recyclability profile and consumer perception as a more eco-friendly alternative to plastic. At the same time, glass maintains a foothold among premium and niche products due to its association with higher quality, despite its weight and cost being drawbacks.

Across all materials, companies are pursuing material reduction wherever possible, with thinner gauges of aluminum and lightweight plastics now more common. These adjustments support both sustainability goals and cost savings while preserving shelf appeal. Cartoned beverages continue to expand, particularly in alternative milks and health-oriented drinks, as brands target consumers seeking packaging that avoids both plastic and traditional cans.

We've also seen more experimentation with can shapes and sizes, as brands seek to differentiate themselves on crowded shelves. Some are borrowing design cues from alcoholic beverages, such as tall, slim cans, for non-alcoholic offerings, a strategy popularized by brands like Liquid Death and now imitated across categories.

For machine builders, these shifts reinforce the need for flexibility. The ability to handle a wider variety of materials, formats, and sizes is increasingly valued as beverage companies experiment with packaging that strikes a balance between sustainability, consumer appeal, and operational efficiency.

Workforce

Workforce shortages remain a significant challenge for beverage producers, particularly in warehouse and end-of-line operations. Interviewees consistently highlighted the strain on manual labor at the end of the line, where workers are responsible for keeping pace with increasingly high-speed front-end production. As upstream throughput continues to rise, it has become difficult to case, palletize, and wrap products fast enough using manual processes alone.

This has driven growing interest in automation at the end of the line, with buyers prioritizing solutions that reduce both headcount and the number of touchpoints. In particular, companies are seeking integrated systems that can handle multiple tasks in a single, streamlined process.

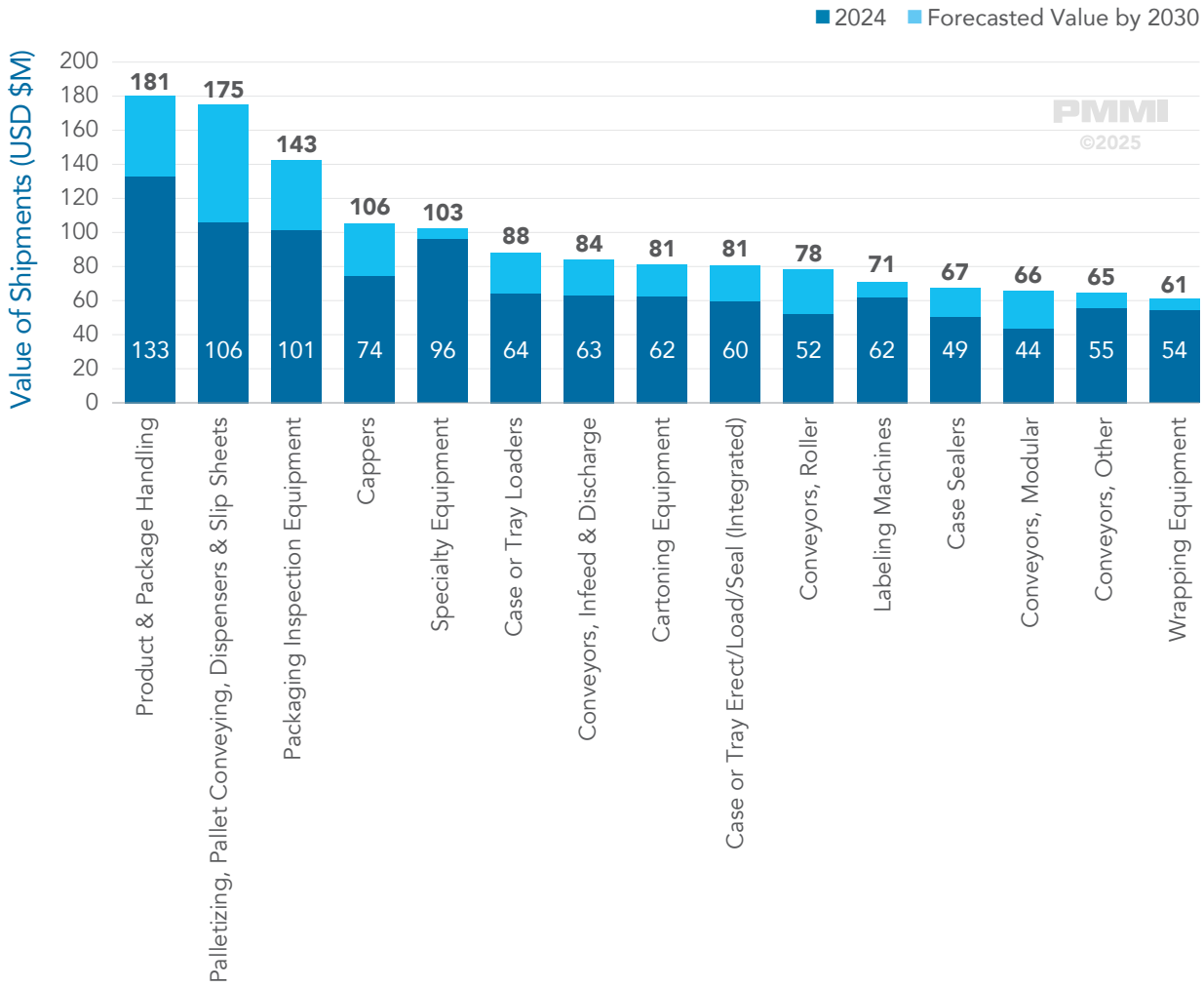
Customization & SKU Flexibility

The need for SKU flexibility remains one of the most pressing challenges for beverage producers in 2025, and it continues to shape machine design priorities. Consumer demand for variety packs, particularly in the alcoholic beverage segment, has stayed strong, as brands compete to offer unique flavor combinations and seasonal assortments. This year, interviewees also noted the growing role of co-packers in the beverage space, as more brands outsource production. These co-packers are seeking equipment that can adapt quickly to different SKUs and carton sizes to serve multiple clients.

BEVERAGE – LARGEST SUB-MACHINES CATEGORY USAGE

The largest estimated machine type for the beverage industry is Product & Package Handling, with an estimated value of $133 million in shipments in the US for 2024. This figure is projected to grow to $181 million by 2030. The high growth in this machine type continues to be bolstered by the need for machines that can handle products efficiently as production lines continue to grow in complexity in smaller spaces.Palletizing, Pallet Conveying, Dispensers, and Slip Sheets are anticipated to hold the second place rank in 2030, with an estimated value of $175 million. Similar to the food industry, the beverage sector is expected to see significant growth in automation at the end-of-line processes, driving the reduction in manual labor and need for faster output. Packaging Inspection Equipment, which is estimated to be at $101 million in 2025, is expected to grow to over $140 million in 2030. This growth is likely to be driven by the increasing demand to ensure products meet the highest standards and prevent recalls.

Fig. 36 US Shipment Value by Largest 15 Sub-Machine Categories - 2024 vs 2030 - Beverage Sector ($M)



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ANNOUNCEMENTS FROM LARGEST BEVERAGE MANUFACTURERS

Table 8 - Signals of Growth by Largest Beverage Manufacturers

Company	Announcement	Year	Summary
Anheuser-Busch	Anheuser-Busch announces $15.5M infrastructure investment in Fort Collins brewery	2024	Anheuser-Busch announced a $15.5 million investment in its Fort Collins brewery, which will go toward upgrading its bottling lines from packed to bulk glass. Shifting away from packed glass allows Fort Collins to streamline production in-house, strengthening its supply chain, reducing emissions, and driving efficiencies across the business.
Anheuser-Busch	Anheuser-Busch to invest $7M in facility upgrades to Fairfield, California brewery	2024	This $7 million investment will go toward facility structural repairs and updates to ensure the brewery continues to brew, package, and distribute Anheuser-Busch beer.
Coca-Cola	Coca-Cola consolidated pouring additional $50 million into Sandston facility	2024	Our most recent $50 million investment, including a state-of-the-art 210,000 square foot warehouse, shows our continued commitment to the community and customers and the state.
Coca-Cola	Coca-Cola bottler plans $168M expansion in north Fort Worth	2024	Arca Continental Coca-Cola Southwest Beverages said it plans to spend $168 million at its Fossil Creek facility over the next three years. The expansion will add two production lines and more than double its warehouse space to 400,000 square feet.
Coca-Cola	Coca-Cola UNITED breaks ground on new $330M facility in Birmingham	2025	Coca-Cola Bottling Company United, Inc. (UNITED) hosted a ceremony last week to commemorate the groundbreaking of its new facility in Birmingham's Kingston community – an approximate $330 million investment.
Coca-Cola	Coca-Cola celebrates grand opening of $15M Lafayette facility	2025	Coca-Cola invested more than $15 million in the Lafayette facility for renovations that will benefit its employees, customers, and the surrounding community.
Coca-Cola	Billings celebrates opening of $100 million Coca-Cola facility	2024	The nearly $100 million facility will employ over 100 people. The new facility will support the manufacturing, sales, and distribution of over 450 different varieties of sparkling soft drinks and still beverages.
Nestlé	Nestlé prepares to start operations at new manufacturing plant in West Valley	2024	The $675 million plant will produce creamer for Nestlé's Coffee Mate, Coffee Mate Natural Bliss and Starbucks brands with potential for expansion of other beverage products in the future.
Chobani	Greek-yogurt maker Chobani to invest $1.2 billion in New York plant	2025	$1.2B investment to expand Greek-yogurt capability in New York.

HOUSEHOLD, INDUSTRIAL, AGRICULTURAL CHEMICALS SECTOR OUTLOOK – FORECAST & PACKAGING TRENDS

Overview

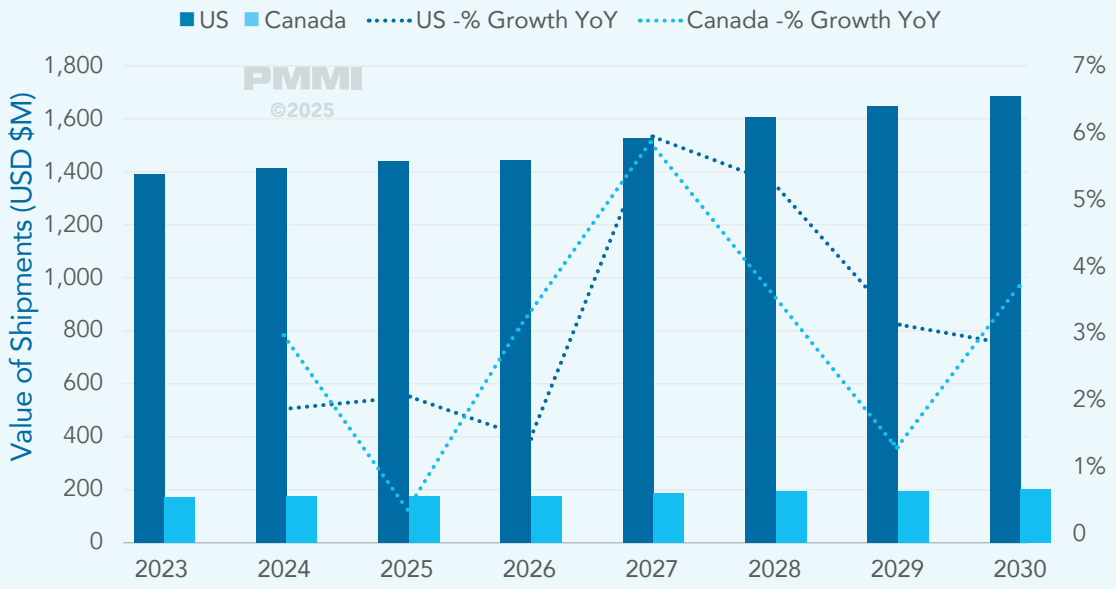
In 2024, the household, industrial, agricultural chemicals sector in the US reached an estimated $1.4 billion in value of machinery shipped domestically. This sector is projected to grow to nearly $1.7 billion by 2030, reflecting a CAGR of 3.0%.

In Canada, the sector's machinery shipments were valued at an estimated $176 million in 2024. This figure is expected to increase to $204 million by 2030, with a CAGR of 2.5%.

Packaging Trends

The chemical sector's inherently hazardous environment will likely drive demand for machines with advanced safety standards and greater levels of automation. While U.S. safety regulations have historically lagged behind European directives, as noted in our previous edition, buyers in the U.S. are increasingly requesting machines that meet more stringent safety certifications. Looking ahead, we expect demand in this sector to center on equipment that combines robust safety features, user-friendly operation, and designs that minimize the number of operators required on the floor.

Fig. 37 Packaging Machinery Shipments, % Growth YoY - Household, Industrial, Agricultural Chemicals Sector - 2023 to 2030



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HOUSEHOLD, INDUSTRIAL, AGRICULTURAL CHEMICALS SECTOR OUTLOOK – SAFETY STANDARDS, AUTOMATION, DURABILITY

Safety Standards Likely to Gain Importance

Given the risks associated with chemical handling, machinery with robust safety features is likely to see stronger demand. Buyers are expected to place more weight on equipment that incorporates enhanced enclosures, automated safety interlocks, and certification to higher safety standards. These features help reduce the risk of injury for operators and maintenance personnel, a priority that remains central for facilities operating under stricter regulatory scrutiny.

Greater Automation Expected

To further limit worker exposure, this sector is expected to favor machinery that minimizes the need for direct human interaction. We anticipate that features such as automated changeovers and hands-free adjustments are likely to become more prevalent as facilities look to improve safety while maintaining efficiency. Machinery that can be monitored and troubleshot remotely may also become more attractive as companies seek to limit the number of personnel on the production floor.

Demand for Durable, Corrosion-Resistant Equipment Anticipated

The harsh operating conditions common in chemical production including corrosive materials and frequent, aggressive cleaning are likely to drive continued interest in machinery built for durability. Equipment with protective coatings, sealed components, and chemical-resistant materials is expected to be a key factor for buyers looking to extend the life of their equipment.

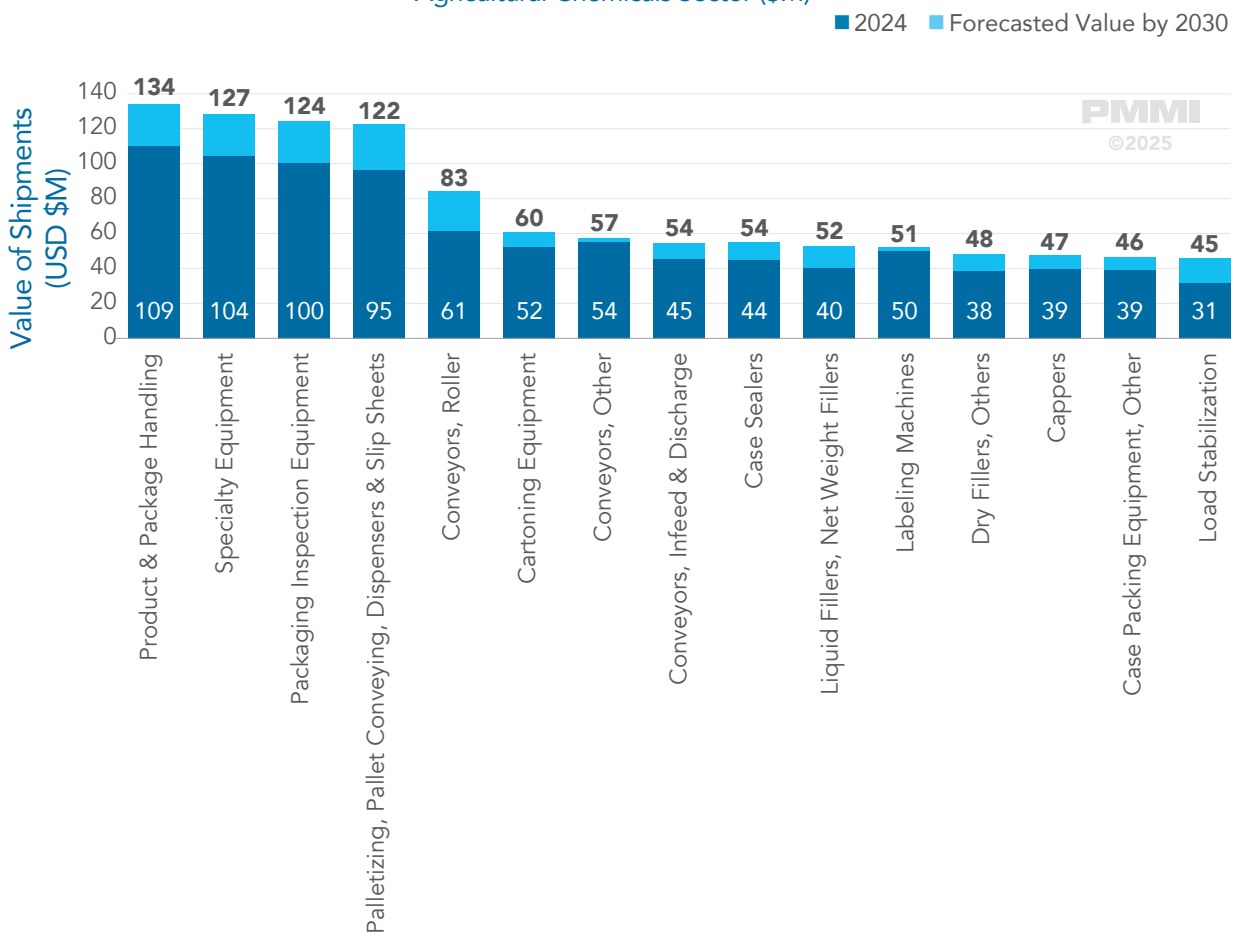
We expect investment decisions in the chemical sector will be sensitive to safety, durability, and automation considerations. Manufacturers who tailor their offerings to meet these needs are likely to be well-positioned to capture demand in this specialized but resilient market.

HOUSEHOLD, INDUSTRIAL, AGRICULTURAL CHEMICALS – LARGEST SUB-MACHINES CATEGORY USAGE

Product & Package Handling remains the largest machinery category in the Chemical Sector, with U.S. shipments estimated at $109 million in 2024 and projected to reach $134 million by 2030. This growth reflects the broad applicability of these machines across diverse chemical production and packaging processes.

By 2030, Specialty Equipment and Packaging Inspection Equipment are expected to take the second and third spots, with projected shipment values of $127 million and $124 million, respectively. Demand in these categories is being fueled by a continued push toward automation and greater precision. As chemical manufacturers look to reduce manual handling and strengthen quality assurance, investment in advanced inspection systems and specialized machinery is expected to rise accordingly.

Fig. 38 US Shipment Value by Sub-Machine Categories - 2024 vs 2030 - Household, Industrial, Agricultural Chemicals Sector ($M)



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ANNOUNCEMENTS FROM LARGEST BEVERAGE MANUFACTURERS

Table 9 - Signals of Growth by Largest Household, Industrial, Agricultural Chemicals Manufacturers

Company	Announcement	Year	Summary
DuPont	Corteva, DuPont plan multi-million-dollar expansions	2025	A $27.5 million new build project will retain 45 high-quality jobs at Corteva Agriscience. The project received an Industrial Facilities Tax Exemption from the City of Midland and is being considered for state business development incentives.
Eastman Chemical Co.	Eastman Chemical announces $1.3B expansion plan for Longview facility	2024	Eastman Chemical Company will invest $1.3 billion to expand its Longview facility.
PPG Industries	PPG to build new paint and coatings manufacturing facility in Tennessee as part of $300 million investment in advanced manufacturing in North America	2024	PPG today announced it will invest $300 million in advanced manufacturing in North America to support increased demand for paints and coatings in the automotive industry. These investments will commence in 2024 and span a four-year period.
PPG Industries	PPG to invest $380 million to build new U.S. manufacturing facility in Shelby, N.C. for aerospace coatings and sealants	2025	PPG announced that it will invest $380 million to build a new aerospace coatings and sealants manufacturing facility in Shelby, N.C. Construction on the 62-acre site, which will initially include manufacturing and warehousing units, is set to commence in October 2025 and is expected to be completed in the first half of 2027.
S.C. Johnson	S.C. Johnson to invest $50M in Canadian plant it threatened to close	2024	S.C. Johnson & Son Inc., which had threatened to close a 250-employee plant in Canada if a residential project proceeded on an adjoining property, announced it resolved the situation and will invest $50 million in new production lines and dozens of new jobs there.

Source: Interact Analysis

PHARMACEUTICALS SECTOR OUTLOOK – FORECAST & PACKAGING TRENDS

Overview

In 2024, the value of domestic shipments of packaging machinery within the pharmaceutical sector in the US reached an estimated $1.3 billion. This sector is projected to grow to nearly $1.7 billion by 2030, reflecting a CAGR of 4.5%.

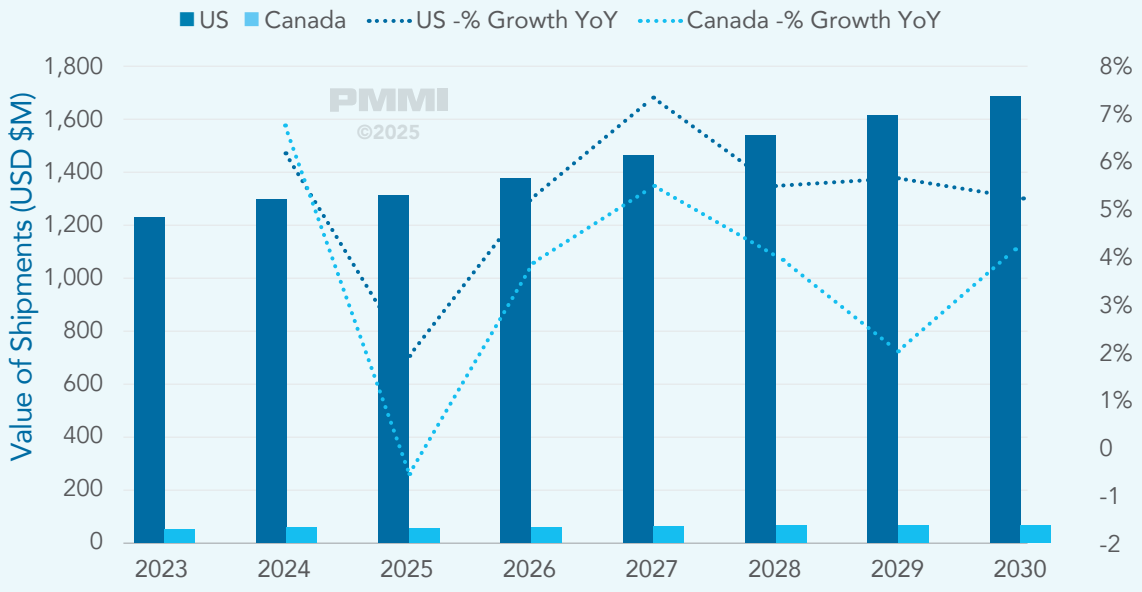
In Canada, the pharmaceutical sector's machinery shipments were valued at an estimated $59 million in 2024. This figure is expected to increase to $68 million by 2030, with a CAGR of 2.5%.

Packaging Trends

The pharmaceutical packaging machinery market remains highly sensitive to medical innovation, with demand often spiking around the introduction of new therapies or drug delivery methods. Recent history illustrates this dynamic clearly: during the pandemic, demand for COVID-19 test kit packaging surged, only to recede as the crisis abated. In 2024, a similar pattern emerged around weight-loss drugs like Ozempic and other GLP-1 receptor agonists, which drove a wave of orders for equipment capable of filling and packaging pre-filled syringes and auto-injectors.

Interviewees emphasized that this cyclical growth is not limited to any single trend. New drug delivery innovations, such as nasal sprays, transdermal patches, or novel injectable formats, can quickly reshape demand.

Fig. 39 Packaging Machinery Shipments, % Growth YoY - Pharmaceuticals Sector - 2023 to 2030



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PHARMACEUTICALS SECTOR OUTLOOK – SANITATION, MACHINE VISION, & AUTOMATION

Sanitation and Regulatory Compliance

Pharmaceutical packaging remains one of the most highly regulated segments, requiring specialized, precision-engineered machinery that meets rigorous cleanliness standards. Machines often need Class 7 cleanroom compliance, IPA-wipeable surfaces, minimal particulate exposure, and specialized airflow considerations. These stringent regulations heavily influence where equipment can be manufactured, how it is assembled, and how it must be maintained throughout its lifecycle.

The Drug Supply Chain Security Act (DSCSA) also remains a critical regulatory driver. As the industry moves toward full electronic interoperability for tracking medications, serialization requirements continue to shape packaging equipment specifications.

Accelerated Adoption of Machine Vision and AI

Machine vision technology and artificial intelligence (AI) continue to gain ground in the pharmaceutical sector, driven by the industry's focus on rigorous quality control. AI-driven machine vision systems are being leveraged for predictive maintenance, advanced defect detection, and vision-guided robotics, improving both quality and compliance. Interviewees expect this trend to accelerate, especially as the cost of these technologies decreases and regulatory expectations around quality assurance continue to tighten.

Automation to Address Workforce Constraints

Pharmaceutical manufacturing environments present distinct human resource challenges, making automation particularly appealing. Facilities are highly regulated, often requiring strict temperature and humidity controls, specialized cleanroom attire, and rigorous protocols, which contribute to physically and mentally demanding working conditions. These factors complicate employee retention and exacerbate the already limited pool of skilled workers available to operate and maintain sophisticated machinery.

Interviewees noted that, as a result, the pharmaceutical sector has been among the earliest adopters of automation. Robotic cells are increasingly deployed for labeling, packaging, and quality inspection, minimizing human touchpoints and maintaining compliance with stringent sanitation and contamination controls. Beyond minimizing reliance on manual labor reduction, these systems also help improve consistency and accuracy, which are critical in a sector where even minor errors can have regulatory or patient safety implications.

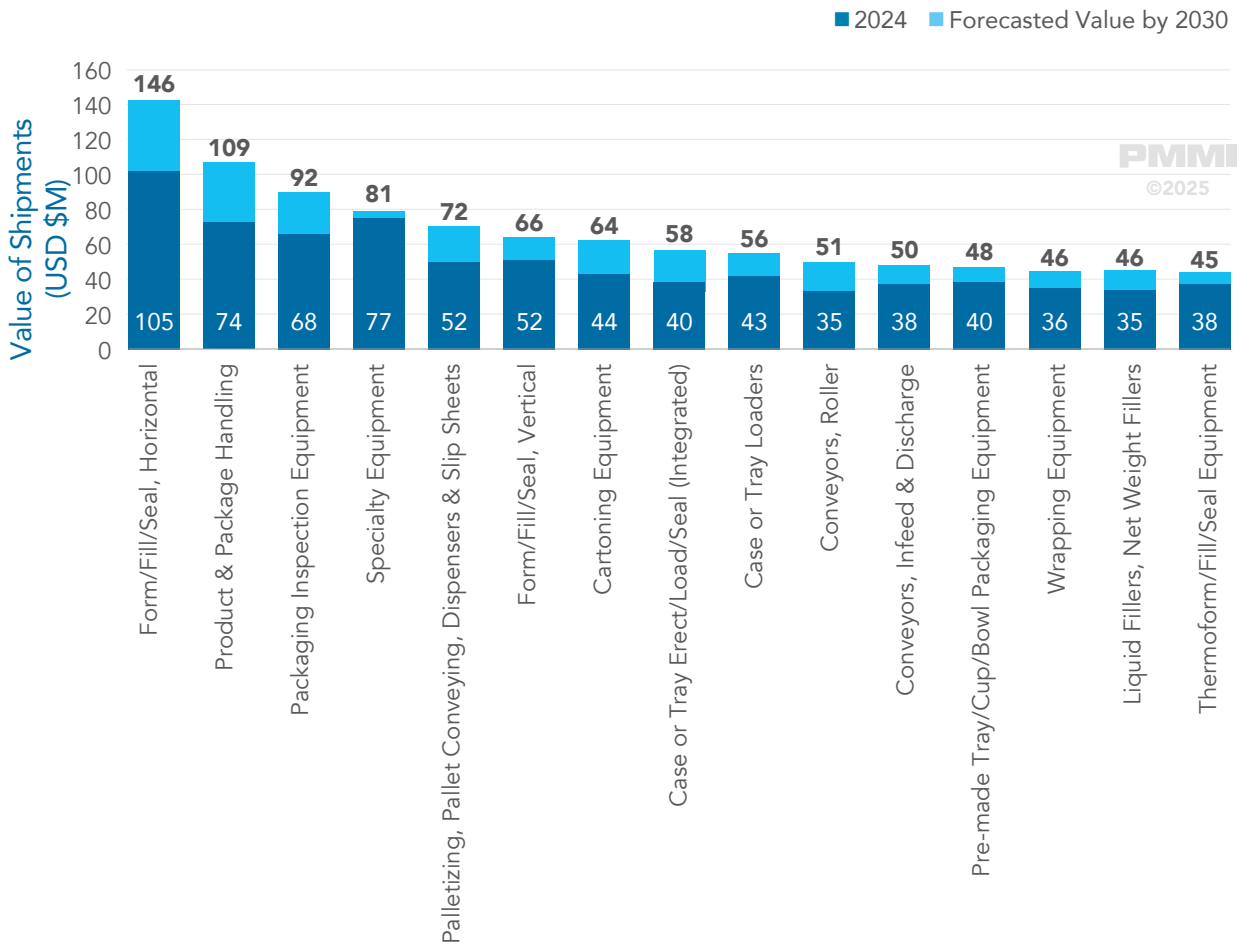
Additionally, customers are relying more heavily on OEMs for service support. Many pharmaceutical facilities lack sufficient in-house expertise to maintain and troubleshoot their growing fleets of advanced machinery. This has led to stronger demand for preventative maintenance contracts, remote diagnostics, and on-call servicing from machine builders. For OEMs, this trend represents both an opportunity to deepen customer relationships and a competitive differentiator in a market where downtime and compliance risks carry heavy costs.

PHARMACEUTICALS – LARGEST SUB-MACHINES CATEGORY USAGE

The largest estimated machine types with the highest shipment values in 2024 are Form/Fill/Seal, Horizontal, and Product & Package Handling equipment. The values for these machines are estimated to be $105 million and $74 million, respectively. Both types are expected to see growth, reaching over $146 million and $109 million by 2030.

By 2030, we anticipate that Packaging Inspection Equipment will surpass Specialty Equipment, reaching an estimated value of $92 million. This high growth will likely come as a result of the pharmaceuticals space's high priorities of ensuring products are free of defects and abnormalities. Specialty Equipment is anticipated to have a slower growth rate in our forecast and is expected to reach nearly $81 million by 2030.

Fig. 40 US Shipment Value by Largest 15 Sub-Machine Categories - 2024 vs 2030 - Pharmaceuticals Sector ($M)



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ANNOUNCEMENTS FROM LARGEST PHARMACEUTICALS MANUFACTURERS

Table 10 - Signals of Growth by Largest Pharmaceutical Manufacturers

Company	Announcement	Year	Summary
Amgen	Amgen boots up Ohio 'smart facility' where it plans to employ 400—and a trio of robots	2024	Set to employ 400 full-time employees and leverage the "latest innovation and technology,"; Amgen has invested $474 million in the site; the facility features open workspaces for collaboration and has been designed to meet stringent environmental sustainability standards.
Amgen	Amgen announces $1B expansion in NC (Holly Springs)	2024	Second drug substance manufacturing site in Holly Springs, building on previous $550M investment.
Amgen	Amgen announces $900 million manufacturing expansion, creation of 350 new jobs in Ohio	2025	Announced a $900 million expansion of its Ohio manufacturing facility.
Eli Lilly	Eli Lilly to invest $27B in four new U.S. manufacturing plants	2025	Plans include three API sites and one sterile injectable plant, marking a significant scale-up in domestic pharma manufacturing.
Gilead Sciences	Gilead adds $11B in U.S. manufacturing expansion	2025	Brings total planned spend to $32B by 2030; focused on biologics and drug substance capacity.
Johnson & Johnson	J&J to invest $55B in U.S. pharma facilities through 2029	2025	Plan includes four new plants, the first in Wilson, NC, and upgrades to existing sites.
Johnson & Johnson	J&J to invest >$2 B in new pharma campus (Wilson County, NC)	2024	New biologics-focused campus expected to create ~420 jobs and boost resilient U.S. production capacity (drugdiscoverytrends.com, industryselect.com).
Lilly	Lilly increases manufacuring investmet to $9 billion at newest Indiana site to boost API production for Tirzepatide and pipeline medicines	2025	This expansion will enhance Lilly's capacity to manufacture active pharmaceutical ingredients (API) for Zepbound®(tirzepatide) injection and Mounjaro®(tirzepatide) injection so that more adults with chronic diseases like obesity and type 2 diabetes may benefit from these important treatments.

Source: Interact Analysis

PERSONAL CARE, TOILETRIES, & COSMETICS SECTOR OUTLOOK – FORECAST & PACKAGING TRENDS

Overview

In 2024, value of domestic shipments of packaging machinery within the personal care, toiletries, & cosmetics sector in the US reached an estimated $603 million. This sector is projected to grow to $788 million by 2030, reflecting a CAGR of 4.5%.

In Canada, the sector's machinery shipments were valued at an estimated $134 million in 2024. This figure is expected to increase to $166 million by 2030, with a CAGR of 3.6%.

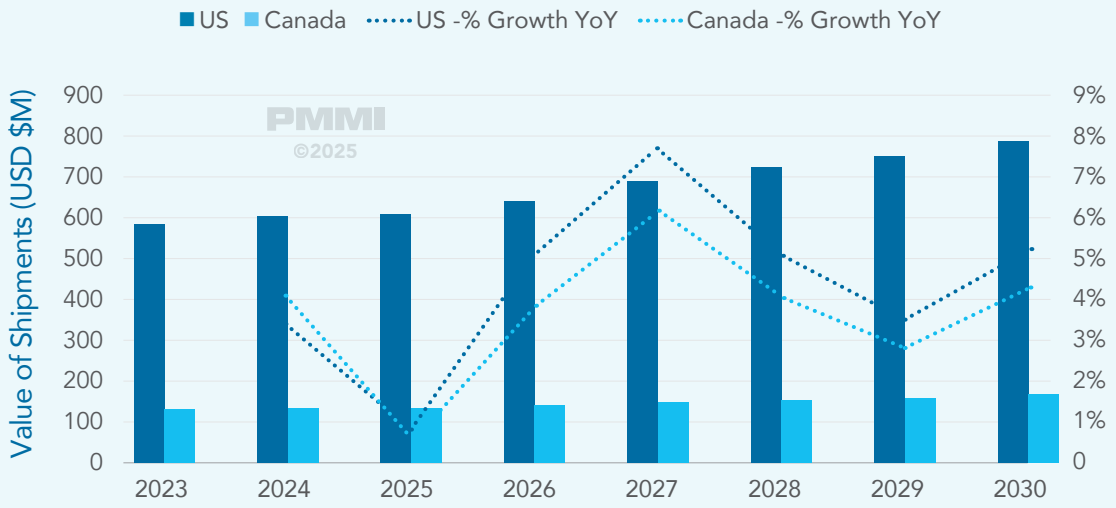
Packaging Trends

The personal care sector continues to evolve, with shifting consumer preferences and competitive retail dynamics driving changes in packaging formats and production needs. Based on recent interviews and observed trends, machinery investments in this space are likely to reflect three key priorities: accommodating higher SKU variety, enabling more sustainable packaging, and addressing persistent workforce challenges.

Sustainability

Compared to food and beverage producers, personal care manufacturers have been quicker to adopt sustainable packaging materials, as their products typically face fewer constraints around shelf life and freshness. Many brands have already transitioned to cartons or other paper-based formats where feasible, and this trend is expected to continue. Equipment capable of efficiently handling recyclable and renewable materials is likely to be a key factor as brands pursue corporate sustainability targets and respond to consumer expectations.

Fig. 41 Packaging Machinery Shipments, % Growth YoY - Personal Care, Toiletries, & Cosmetics Sector - 2023 to 2030



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PERSONAL CARE, TOILETRIES, & COSMETICS SECTOR OUTLOOK – CHAOS PACKAGING

The Rise of "Chaos Packaging"

The fight for shelf space in personal care aisles has led to an increasing variety of packaging formats, as brands experiment with distinctive designs to stand out. Products such as sunscreen packaged in whipped-cream-style dispensers and tampons sold in ice cream tub-style containers illustrate how unconventional formats are gaining traction. Even familiar products like razors now come in a range of formats, from loose razor heads in simple cartons to blister packs and rigid plastic containers. These creative approaches aim to stand out on the shelf but often require significant adjustments on production lines.

This rise in *chaos packaging* may also create opportunities for certain machinery types to enter the personal care sector in ways not historically expected. Suppliers with equipment capable of handling a wide range of package styles and materials could find themselves well-positioned if a major brand standardizes a novel format. Conversely, smaller players experimenting with highly customized packaging may turn to machinery providers willing to develop or configure equipment to handle new and unconventional designs. In either case, flexibility and responsiveness to evolving packaging trends are likely to be critical for equipment suppliers serving this space.

Here We Flo

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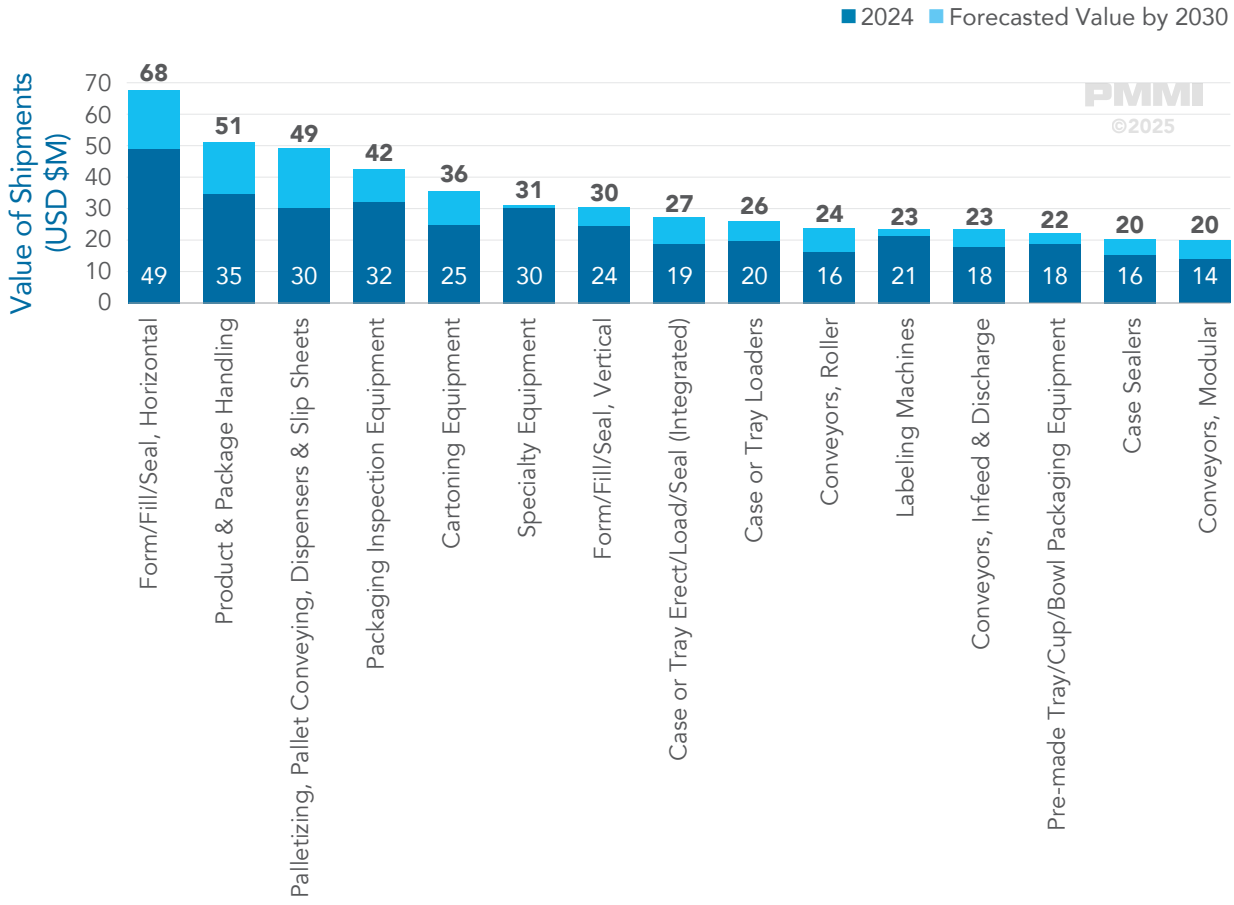
PERSONAL CARE, TOILETRIES, & COSMETICS – LARGEST SUB-MACHINES CATEGORY USAGE

Form/Fill/Seal, Horizontal machines led the rankings in 2024 with an estimated value of shipments of $49 million. They are expected to hold the rank and grow to $68 million in 2030. We anticipate these machines will continue to be used heavily in this sector as more companies switch to paperboard for their packages.

Product & Package handling is expected to grow by $16 million, and it is expected to grow to $51 million in 2030. This equipment is used widely in this sector and is expected to continue to be used as automation takes hold.

Palletizing, pallet conveying, dispensers & slip sheets, and Packaging Inspection Equipment are expected to reach $49 million and $42 million, respectively, in 2030. Similar to other industries, we believe that palletizing equipment will become more common with automation. As companies strive to enhance the quality of their products, we anticipate a surge in the adoption of packaging inspection equipment.

Fig. 42 US Shipment Value by Largest 15 Sub-Machine Categories - 2024 vs 2030 - Personal Care Sector ($M)



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ANNOUNCEMENTS FROM LARGEST PERSONAL CARE, TOILETRIES, & COSMETICS MANUFACTURERS

Table 11 - Signals of Growth by Largest Personal Care, Toiletries, & Cosmetics Manufacturers

Company	Announcement	Year	Summary
Johnson & Johnson	Johnson & Johnson increases U.S. investment to more than $55 billion over the next four years	2025	J&J plans to invest more than $55 billion across new sites, capacity expansion, and advanced manufacturing technologies in the U.S. over four years.
Kimberly Clark	Possible Kimberly-Clark manufacturing plant in Warren could bring hundreds of new area jobs	2024	Kimberly-Clark invested $9.935M to purchase 560 acres of former steel-mill land for a possible new manufacturing plant—potentially bringing hundreds of jobs.
Kimberly Clark	Kimberly-Clark to invest over $2B in US operations	2025	A major expansion across U.S. operations—including baby-care brands like Huggies and Kleenex—spanning several states.
Procter & Gamble	P&G announces $96M expansion of Louisiana facility	2024	A $96 million expansion of a P&G plant in Louisiana, focused on modernizing production lines and increasing manufacturing capacity.
Unilever	Unilever expands Jefferson City, Missouri, operations	2024	Global consumer goods company Unilever plans to invest $25 million to expand its operations in Jefferson City, Missouri. The company will construct a new warehouse on its current property that will be integrated with its existing factory to support shipments and repack operations.

5

Market Statistics by Machine Type

BAGGING, POUCHING & WRAPPING EQUIPMENT

In 2024, the total estimated value of shipments within the bagging, pouching, and wrapping equipment sector in the US was $1.7 billion. The majority of this equipment is sold to the food sector, which accounted for 59% of the US market in 2024.

This machinery experienced a growth rate of 1% from the previous year in the US. For 2025, we anticipate a growth rate of 1.4%. By 2030, we expect the value of shipments to reach nearly $2.2 billion, reflecting an overall CAGR of 3.4% from 2023 to 2030.

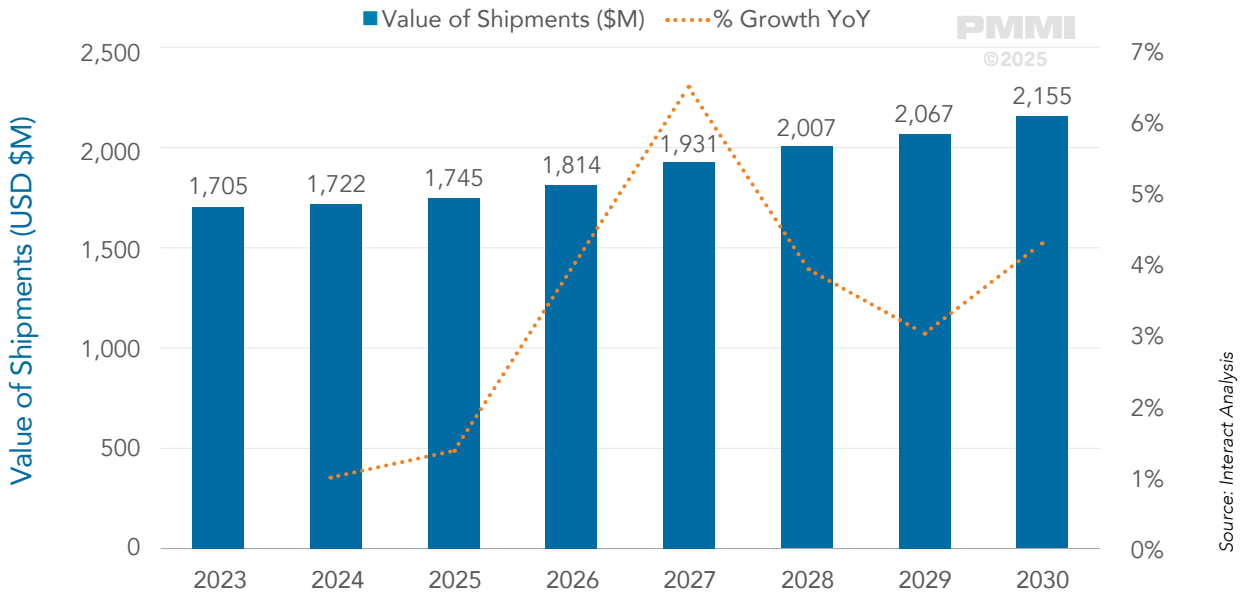
Sustainability is playing an influential role in the wrapping equipment segment, especially as much of this machinery serves the food sector, where packaging formats are evolving to meet goals. Machine builders are adapting flow wrappers and form-fill-seal equipment to handle thinner, recyclable films and are increasingly retrofitting older machines to run on newer PET materials.

Table 12 - US Bagging, Pouching & Wrapping Equipment by Industry

Industry	2024 Value of Shipments ($M)	Share %
Food	$1,013	59%
Beverage	$112	7%
Household, Industrial, & Agricultural Chemicals	$105	6%
Personal Care, Toiletries, & Cosmetics	$100	6%
Pharmaceuticals	$204	12%
Other End-User Sectors	$187	11%
Total	**$1,722**	

Source: Interact Analysis

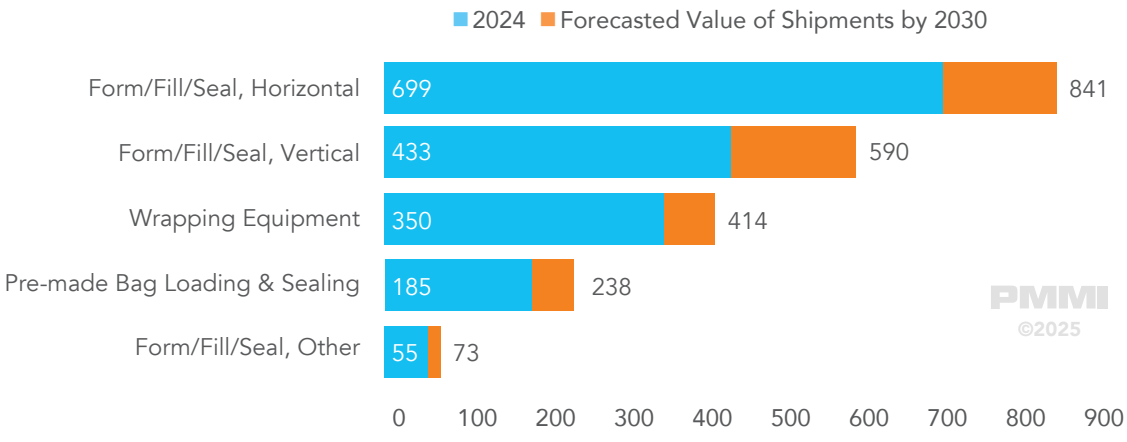
Fig. 43 US Bagging, Pouching & Wrapping Equipment Forecast - Value of Shipments & % Growth YoY (2023-2030)



Source: Interact Analysis

BAGGING, POUCHING & WRAPPING EQUIPMENT SUB-MACHINES

Fig. 44 US Shipment Value by Bagging, Pouching & Wrapping Equipment Sub-Machine Categories - 2024 vs 2030 ($M)



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CARTONING, MULTIPACKING & CASE PACKING

In 2024, the total estimated value of shipments within the cartoning, multipacking, and case packing equipment market in the US was $2.0 billion. The food sector holds the predominant share of this market, accounting for 45% in 2024.

This machinery experienced a growth rate of 4.3% from the previous year, in 2024. However, we anticipate a more moderate growth rate of 2.9% in 2025. By 2030, we expect the value of shipments to reach nearly $2.8 billion, reflecting an overall CAGR of 5.1% from 2023 to 2030.

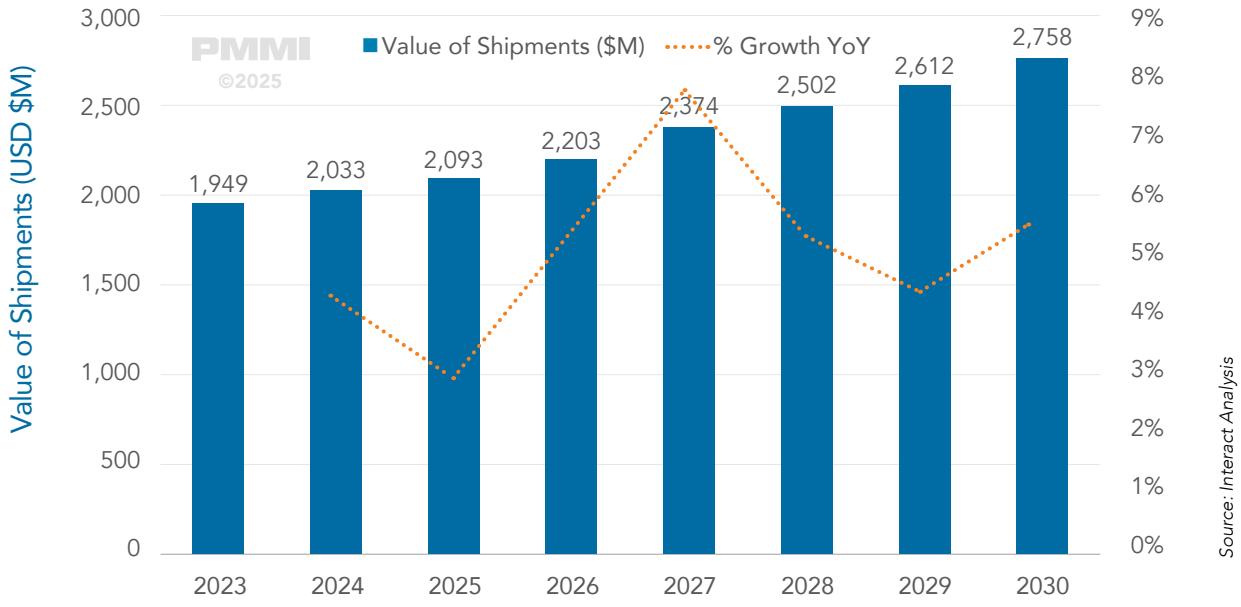
Demand for cartoning equipment remains strong as manufacturers respond to sustainability goals, workforce challenges, and growing preference for turnkey, integrated lines. The shift from plastic to paper-based packaging, combined with the need for flexible, automated machines that can handle diverse formats, has made cartoners an increasingly attractive solution across food, personal care, industrial, and even e-commerce sectors.

Table 13 - US Cartoning, Multipacking & Case Packing by Industry

Industry	2024 Value of Shipments ($M)	Share %
Food	$905	45%
Beverage	$345	17%
Household, Industrial, & Agricultural Chemicals	$193	9%
Personal Care, Toiletries, & Cosmetics	$112	6%
Pharmaceuticals	$223	11%
Other End-User Sectors	$256	13%
Total	**$2,033**	

Source: Interact Analysis

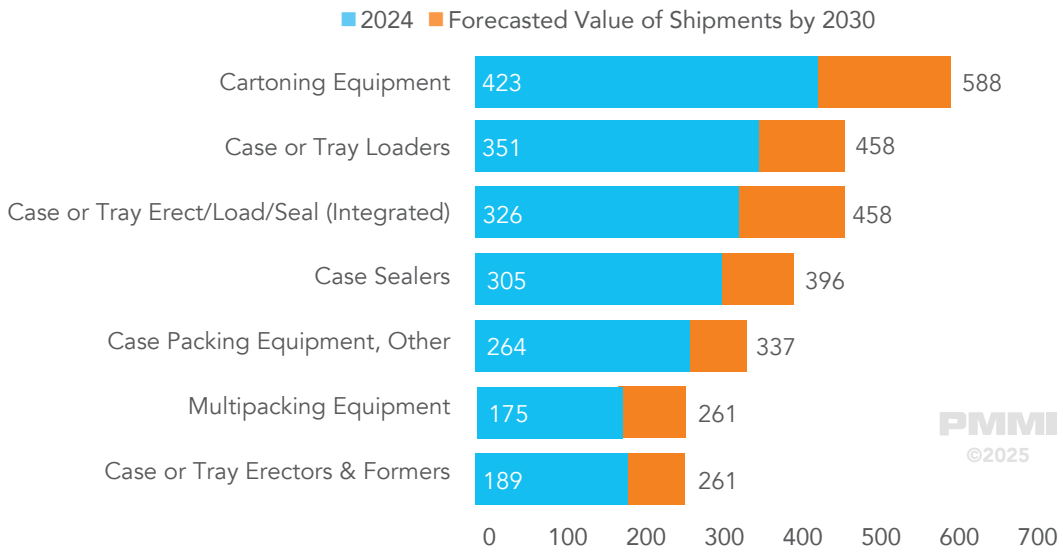
Fig. 45 US Cartoning, Multipacking & Case Packing Forecast - Value of Shipments & % Growth YoY (2023-2030)



Source: Interact Analysis

CARTONING, MULTIPACKING & CASE PACKING SUB-MACHINES

Fig. 46 US Shipment Value by Cartoning, Multipacking & Case Packing Sub-Machine Categories - 2024 vs 2030 ($M)



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CODING, LABELING, PRINTING, & READING EQUIPMENT

In 2024, the total value of shipments within the coding, labeling, printing, and reading equipment market was $872 million USD. The food sector holds the largest share, accounting for 40%.

In 2024, this machinery experienced a growth rate of 2.5% from the previous year. However, we anticipate a slow to 0.7% growth in 2025. By 2030, we expect the value of shipments to reach $1.0 billion USD, with an overall CAGR from 2023 to 2030 of 2.5%.

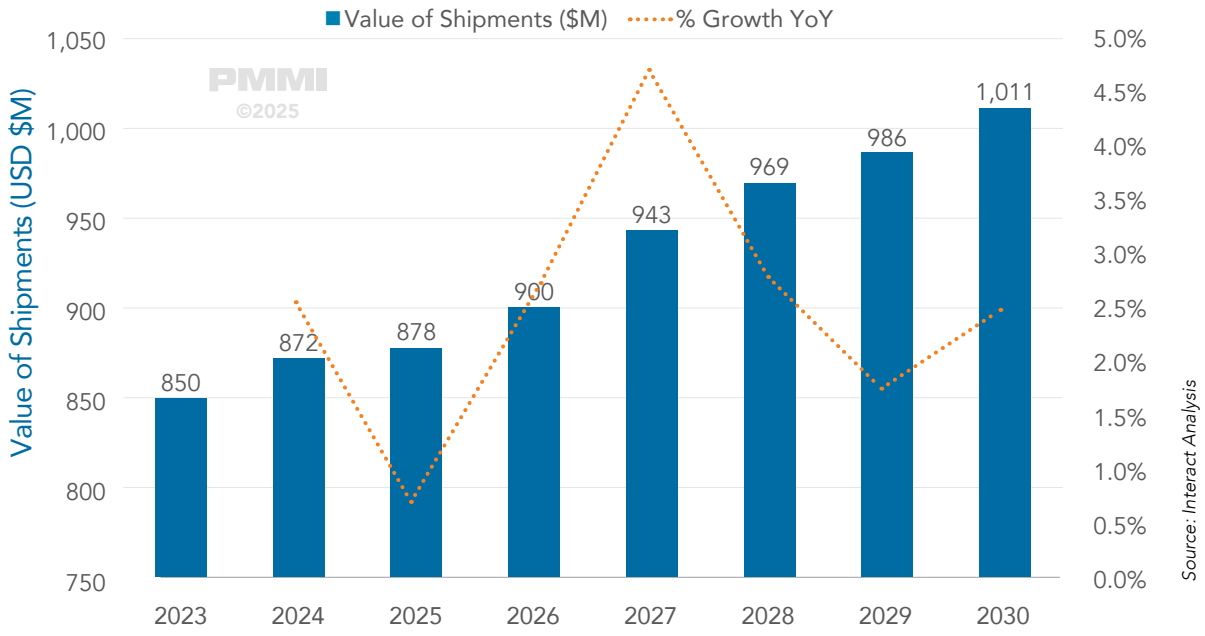
Companies are adopting digital and thermal inkjet technologies for higher uptime and lower maintenance, while regulatory changes like California's Proposition65 are prompting a shift away from direct thermal labels toward more sustainable alternatives. Linerless labels are also gaining attention, though their adoption in high-volume U.S. operations remains limited due to cost and compatibility challenges.

Table 14 - US Coding, Labeling, Printing, & Reading Equipment by Industry

Industry	2024 Value of Shipments ($M)	Share %
Food	$345	40%
Beverage	$149	17%
Household, Industrial, & Agricultural Chemicals	$126	15%
Personal Care, Toiletries, & Cosmetics	$49	6%
Pharmaceuticals	$94	11%
Other End-User Sectors	$108	12%
Total	**$872**	

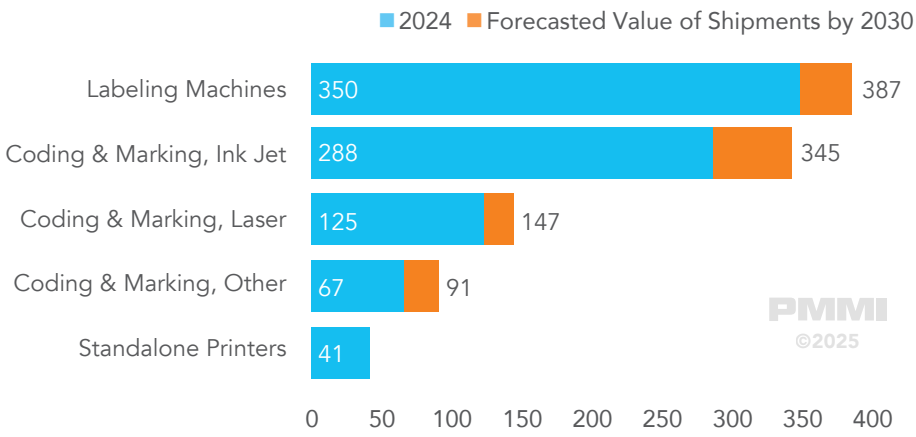
Source: Interact Analysis

Fig. 47 US Coding, Labeling, Printing, & Reading Equipment Forecast - Value of Shipments & % Growth YoY (2023-2030)



CODING, LABELING, PRINTING, & READING EQUIPMENT SUB-MACHINES

Fig. 48 US Shipment Value by Coding, Labeling, Printing, & Reading Equipment Sub-Machine Categories - 2024 vs 2030 ($M)



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CONVEYING, FEEDING & HANDLING

The total value of shipments within the conveying, feeding, and handling equipment market was $2.4 billion USD in 2024. The food sector holds the predominant share, with 41%.

In 2024, this machinery experienced a growth rate of 3.7% from the previous year. We anticipate a deceleration to 2.6% growth in 2025. By 2030, we expect the value of shipments to reach nearly $3.2 billion USD, with an overall CAGR from 2023 to 2030 of 4.4%.

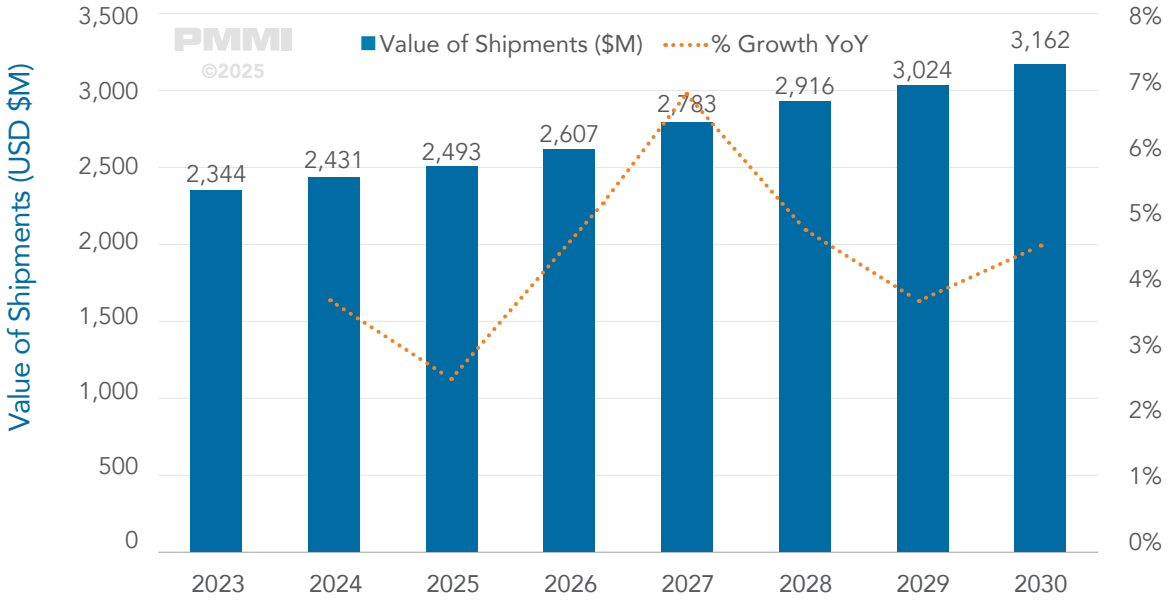
Equipment is being designed for longer unattended run times, washdown compatibility, and improved safety, with upgrades like USDA-compliant feeders, cleanroom-ready conveyors, and smarter controls for precise orientation and tracking. Sanitation and flexibility remain central, as companies incorporate advanced materials, servo-driven systems, and modular designs to handle delicate or sensitive products efficiently.

Table 15 - US Conveying, Feeding & Handling by Industry

Industry	2024 Value of Shipments ($M)	Share %
Food	$991	41%
Beverage	$423	17%
Household, Industrial, & Agricultural Chemicals	$346	14%
Personal Care, Toiletries, & Cosmetics	$123	5%
Pharmaceuticals	$255	11%
Other End-User Sectors	$293	12%
Total	**$2,431**	

Source: Interact Analysis

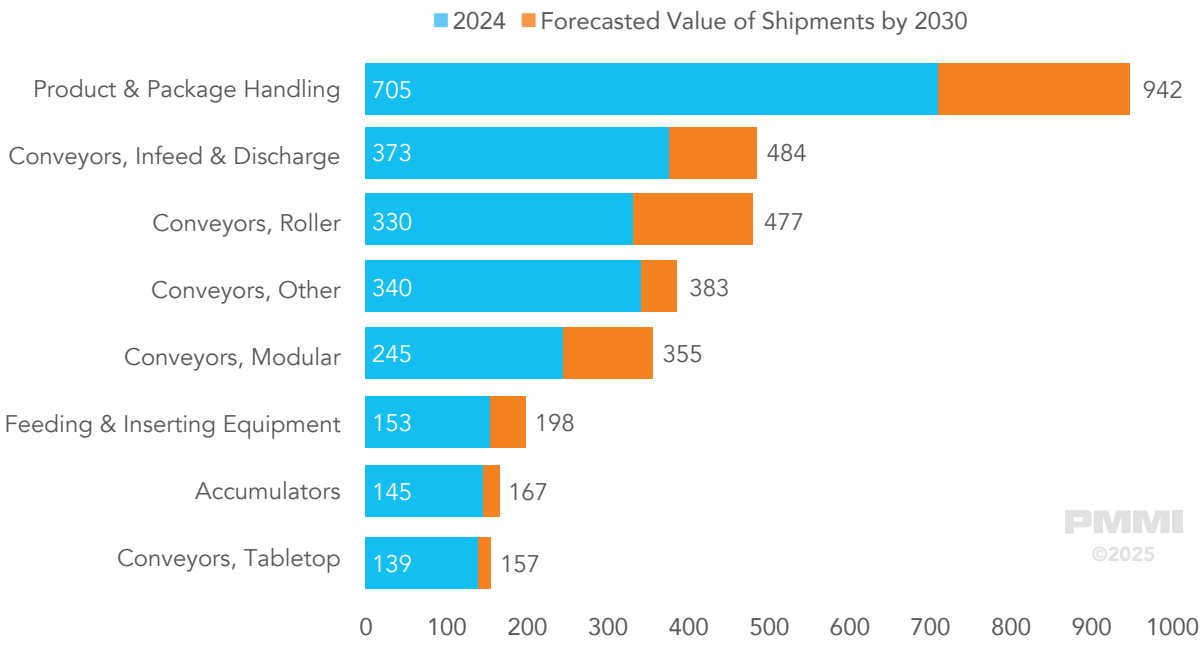
Fig. 49 US Conveying, Feeding & Handling Forecast - Value of Shipments & % Growth YoY (2023-2030)



Source: Interact Analysis

CONVEYING, FEEDING & HANDLING SUB-MACHINES

Fig. 50 US Shipment Value by Conveying, Feeding & Handling Sub-Machine Categories - 2024 vs 2030 ($M)



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FILLING, CAPPING & CLOSING

In 2024, the total value of shipments within the filling, capping, and closing equipment market was $1.3 billion. The food sector holds the largest share, accounting for 32%.

In 2024, this machinery experienced a growth rate of 1.2% from the previous year. We anticipate a similar growth for 2025 at 1.1%. By 2030, we project the value of shipments to rise to $1.6 billion, reflecting an overall CAGR of 3.2% from 2023 to 2030.

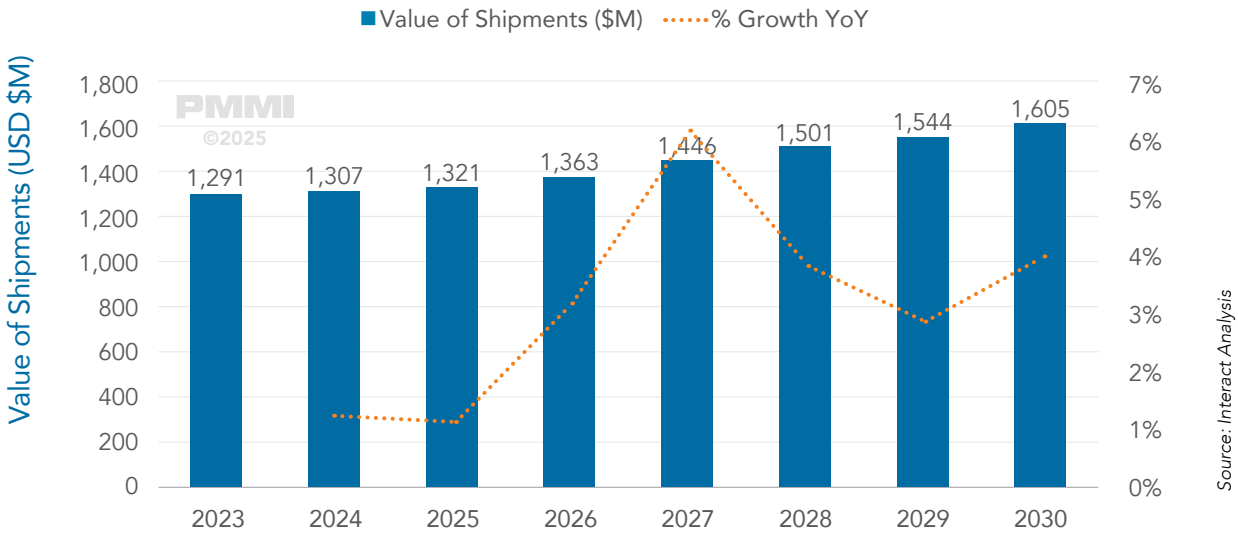
Most changes in containers and closures are incremental, requiring minimal redesign of machinery, and core technologies like induction sealing continue to perform well as long as foil liners are used. However, sustainability trends are starting to influence material choices, and while foil alternatives are not yet widespread, they could gain momentum as customers seek more recyclable or eco-friendly solutions.

Table 16 - US Filling, Capping & Closing by Industry

Industry	2024 Value of Shipments ($M)	Share %
Food	$413	32%
Beverage	$234	18%
Household, Industrial, & Agricultural Chemicals	$241	18%
Personal Care, Toiletries, & Cosmetics	$72	5%
Pharmaceuticals	$175	13%
Other End-User Sectors	$173	13%
Total	**$1,307**	

Source: Interact Analysis

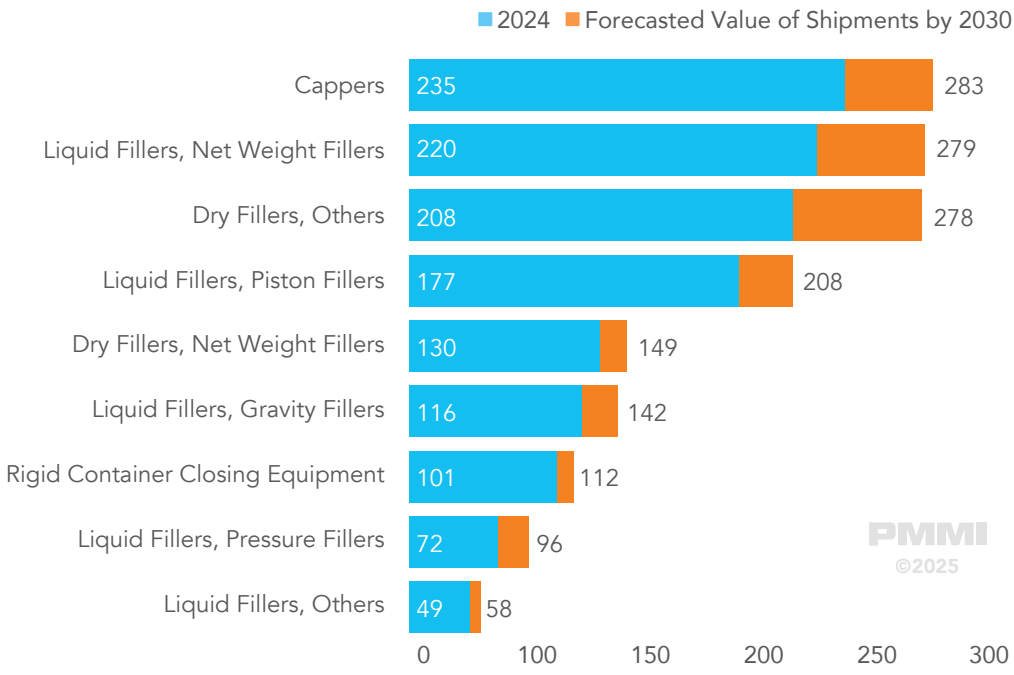
Fig. 51 US Filling, Capping & Closing Forecast - Value of Shipments & % Growth YoY (2023-2030)



Source: Interact Analysis

FILLING, CAPPING & CLOSING SUB-MACHINES

Fig. 52 US Shipment Value by Filling, Capping & Closing Sub-Machine Categories - 2024 vs 2030 ($M)



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INSPECTION & TESTING EQUIPMENT

In 2024, the total revenue within the inspection and testing equipment market was $932 million. The food sector holds the predominant share, accounting for 43%.

In 2024, this machinery experienced a growth rate of 4.6% from the previous year. However, we anticipate a slight dip to 3.4% growth in 2025. By 2030, we project the value of shipments to reach nearly $1.3 billion, reflecting an overall CAGR of 5.2% from 2023 to 2030.

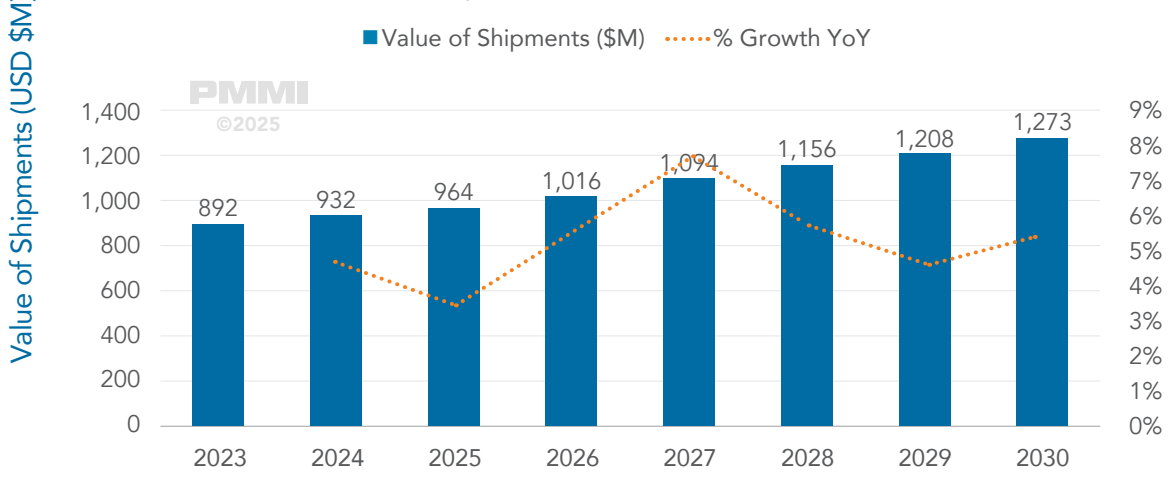
Inspection equipment is on the rise as the integration of machine vision systems becomes increasingly prevalent in the industry. These systems are being used for label verification, product verification, and ensuring packaging integrity. These systems are often offered as modular add-ons rather than standard features.

Table 17 - US Inspection & Testing Equipment by Industry

Industry	2024 Value of Shipments ($M)	Share %
Food	$397	43%
Beverage	$135	14%
Household, Industrial, & Agricultural Chemicals	$129	14%
Personal Care, Toiletries, & Cosmetics	$48	5%
Pharmaceuticals	$104	11%
Other End-User Sectors	$119	13%
Total	**$932**	

Source: Interact Analysis

Fig. 53 US Inspection & Testing Equipment Forecast - Value of Shipments & % Growth YoY (2023-2030)



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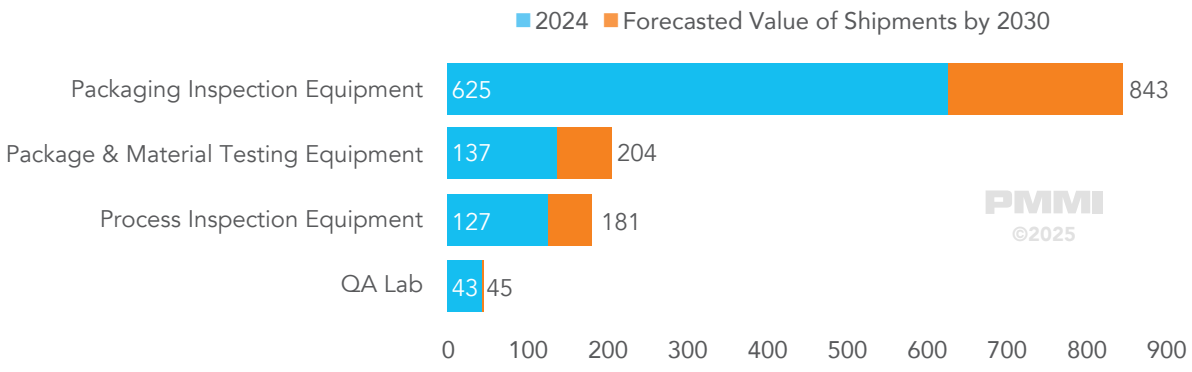
Source: Interact Analysis

INSPECTION & TESTING EQUIPMENT SUB-MACHINES

Fig. 54 US Shipment Value by Inspection & Testing Equipment Sub-Machine Categories - 2024 vs 2030 ($M)



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PALLETIZING & LOAD STABILIZATION

In 2024, the total revenue within the palletizing and load stabilization equipment market was $882 million USD. The food sector holds the largest share of the market at 39%.

In 2024, this machinery experienced a growth rate of 4.1% from the previous year. However, the growth rate is expected to increase to 5.1% in 2025. By 2030, we project the value of shipments to reach $1.3 billion USD, reflecting an overall CAGR of 6.7% from 2023 to 2030.

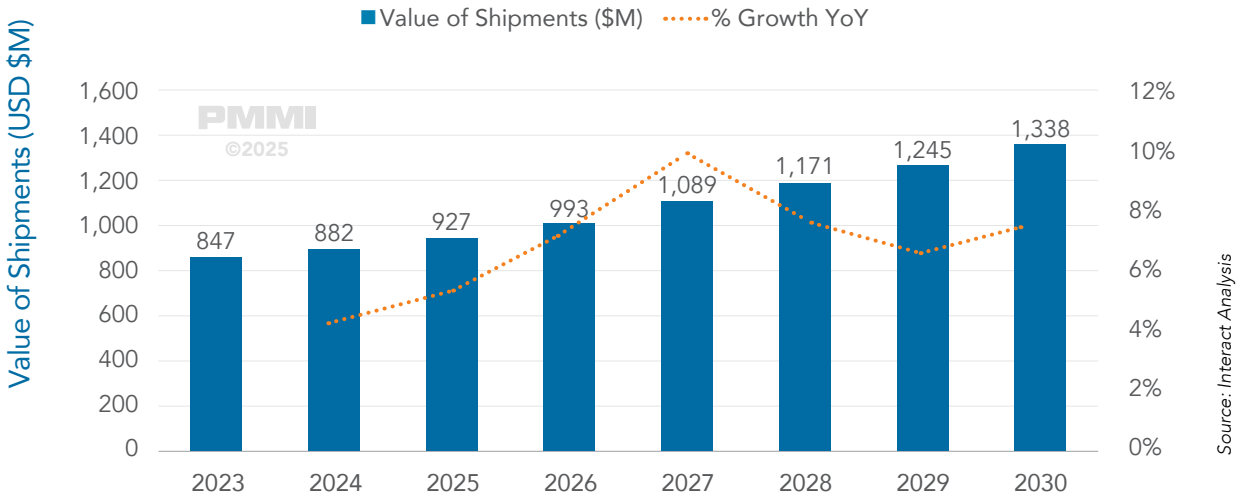
Palletizing remains one of the strongest-performing equipment categories, with demand fueled by persistent workforce shortages and the need to improve throughput, particularly in high-volume sectors such as food and beverage. Customers seek systems that are easy to operate and integrate seamlessly into full end-of-line automation.

Table 18 - US Palletizing & Load Stabilization by Industry

Industry	2024 Value of Shipments ($M)	Share %
Food	$344	39%
Beverage	$163	18%
Household, Industrial, & Agricultural Chemicals	$147	17%
Personal Care, Toiletries, & Cosmetics	$42	5%
Pharmaceuticals	$76	9%
Other End-User Sectors	$110	12%
Total	**$882**	

Source: Interact Analysis

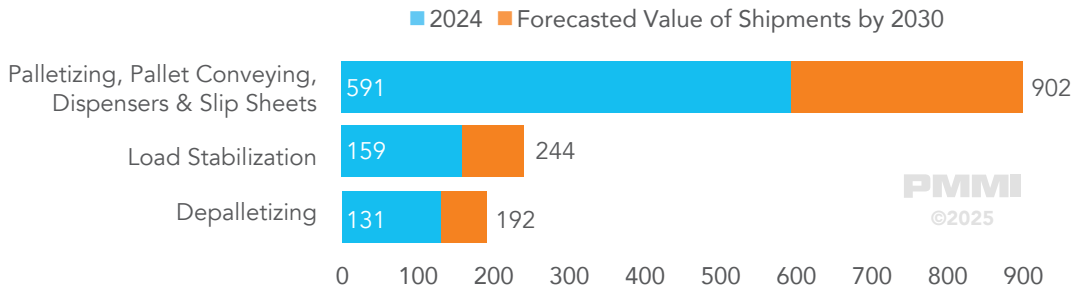
Fig. 55 US Palletizing & Load Stabilization Forecast - Value of Shipments & % Growth YoY (2023-2030)



Source: Interact Analysis

PALLETIZING & LOAD STABILIZATION SUB-MACHINES

Fig. 56 US Shipment Value by Palletizing & Load Stabilization Sub-Machine Categories - 2024 vs 2030 ($M)



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SPECIALTY EQUIPMENT

In 2024, the total revenue within the specialty equipment market was $614 million USD. The sector is fragmented, with the food industry holding the largest share at 38%.

In 2024, this machinery experienced a slight contraction of -1.6% from the previous year. We anticipate a continued slight contraction of -1.2% in 2025. By 2030, we project the value of shipments to reach $660 million USD, reflecting an overall CAGR of 0.8% from 2023 to 2030.

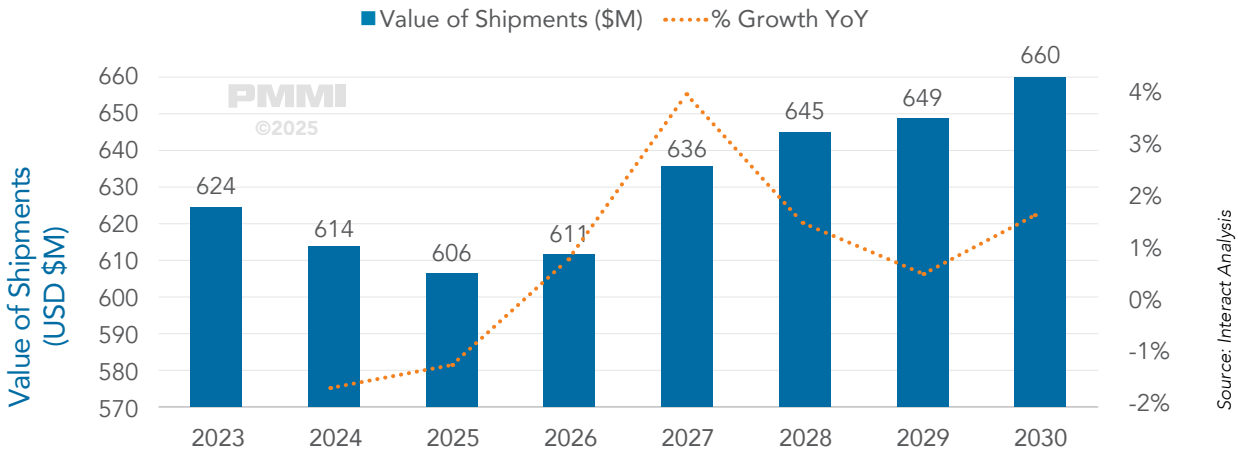
The specialty equipment segment, which includes machines such as adhesive applicators, splicers, static eliminators, corona treaters, and air-drying systems, remains a stable but relatively low-growth part of the packaging machinery market.

Table 19 - US Specialty Equipment by Industry

Industry	2024 Value of Shipments ($M)	Share %
Food	$233	38%
Beverage	$96	16%
Household, Industrial, & Agricultural Chemicals	$104	17%
Personal Care, Toiletries, & Cosmetics	$30	5%
Pharmaceuticals	$77	13%
Other End-User Sectors	$74	12%
Total	**$614**	

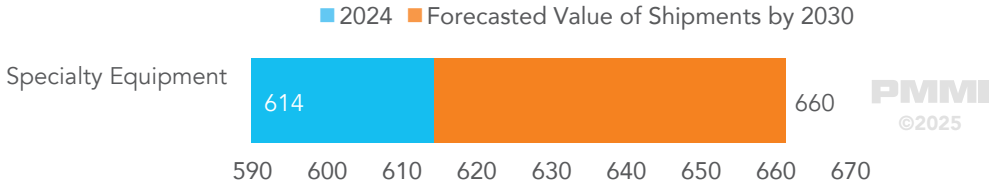
Source: Interact Analysis

Fig. 57 US Specialty Equipment Forecast - Value of Shipments & % Growth YoY (2023-2030)



SPECIALTY EQUIPMENT SUB-MACHINES

Fig. 58 US Shipment Value by Specialty Equipment Sub-Machine Categories - 2024 vs 2030 ($M)



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TRAY, CLAMSHELL & BLISTER PACKAGING EQUIPMENT

In 2024, the total revenue within the tray, clamshell, and blister packing equipment market was $502 million. The food sector holds the predominant share, accounting for 55% of the market.

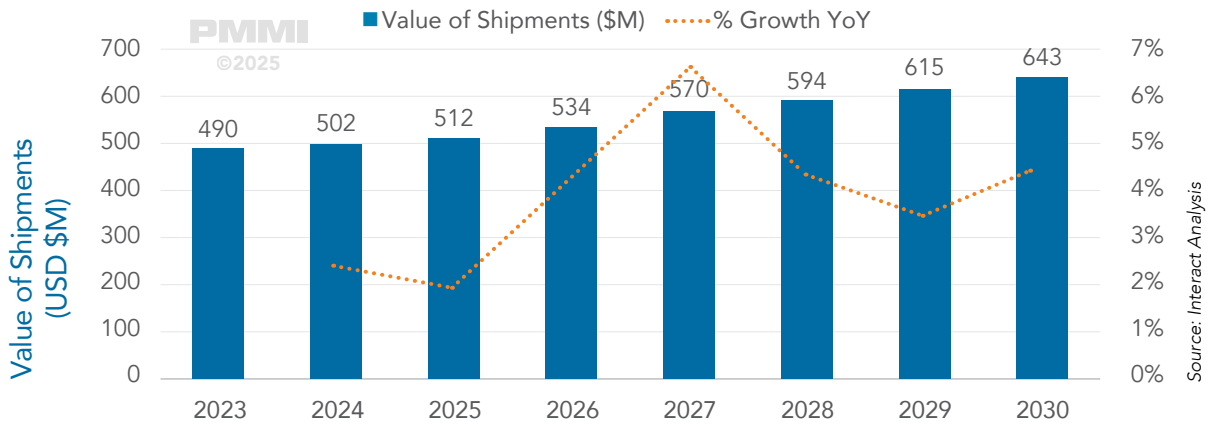
In 2024, this machinery experienced a growth rate of 2.4% from the previous year. However, we anticipate a slight slowdown, with the growth rate expected to decrease to 1.9% in 2025. By 2030, we project the value of shipments to reach $643 million, reflecting an overall CAGR of 3.9% from 2023 to 2030.Sustainability goals continue to drive material transitions, with manufacturers moving from PVC to ARPET and from plastic to paper-based blisters, particularly in products like razors and batteries. These newer materials often require tighter process control and machine upgrades, prompting more retrofitting, quick-change tooling, and modular designs to maintain flexibility

Table 16 - US Filling, Capping & Closing by Industry

Industry	2024 Value of Shipments ($M)	Share %
Food	$274	55%
Beverage	$10	2%
Household, Industrial, & Agricultural Chemicals	$21	4%
Personal Care, Toiletries, & Cosmetics	$28	6%
Pharmaceuticals	$87	17%
Other End-User Sectors	$83	17%
Total	**$502**	

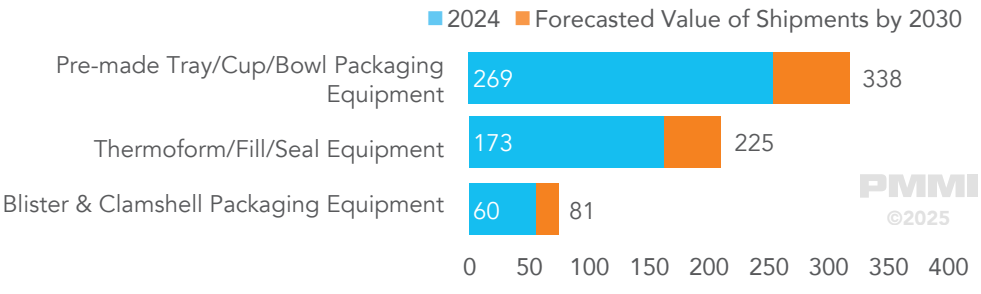
Source: Interact Analysis

Fig. 59 US Tray, Clamshell & Blister Packaging Equipment Forecast - Value of Shipments & % Growth YoY (2023-2030)



TRAY, CLAMSHELL & BLISTER PACKAGING EQUIPMENT SUB-MACHINES

Fig. 60 US Shipment Value by Tray, Clamshell & Blister Packaging Equipment Sub-Machine Categories - 2024 vs 2030 ($M)



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6

Appendix

RISKS ASSOCIATED WITH FORECAST

2025 Growth Revision Reflects Tariff Concerns

We have revised our 2025 forecast downward to reflect widespread concerns about tariffs, which many machine builders say are delaying orders, raising costs, and dampening investment plans. These headwinds are expected to weigh on growth in the near term.

Upside Potential Remains if Conditions Improve

While we believe our current outlook appropriately reflects known risks, the market could outperform if economic and trade conditions improve. If tariffs are eased or buyer confidence rebounds more quickly, growth could exceed these projections.

The recently enacted One Big Beautiful Bill also introduces new tax incentives for capital investment, which may encourage buyers to accelerate purchases in the second half of 2025 to capture these benefits.

Slower Growth Reflects Market Scale

Finally, the packaging machinery market's expansion over the past decade means that sustaining earlier double-digit growth has become more difficult at its current scale. This does not preclude stronger growth in the future, but our forecast reflects a more measured trajectory as the market adjusts to its larger base.Uncertainty in Sub-Machinery Forecasts

The sub-machinery sector forecasts in this report are based on a combination of survey responses and discussions with industry experts. While we received valuable input across many segments, some subcategories were underreported, and in those cases, we relied on available data and informed judgment to project trends. As a result, forecasts for these smaller segments carry a higher degree of uncertainty.

Thank You for Your Participation

We extend our gratitude to those who participated in the PMMI's survey for this report. Your responses were instrumental in helping us understand the growth patterns in this market. For those who contributed through interviews, your insights were invaluable. We recognize that your time is valuable, and your willingness to share information about the industry's current state has significantly enhanced the depth and accuracy of this report.

SEGMENTATIONS FOR MARKET SIZES AND FORECASTS

By Region

- USA
- Canada

By Machine Category

- Filling, Capping & Closing
- Bagging, Pouching & Wrapping Equipment
- Tray, Clamshell & Blister Packaging Equipment
- Conveying, Feeding & Handling
- Coding, Labeling, Printing, & Reading Equipment
- Inspection & Testing Equipment
- Cartoning, Multipacking & Case Packing
- Specialty Equipment
- Palletizing & Load Stabilization

Data was collected and presented in terms of total shipments for the calendar year 2024, represented in terms of US dollars. A forecast for the years 2024 through 2030 is also presented.

Market figures and forecasts are presented by industry in the full dataset. An interactive **dashboard** of the full dataset is included separately from the written report to provide PMMI members the ability to interrogate the data based on their specific needs.

By Sub-Machine Category

- Liquid Fillers, Piston Fillers
- Liquid Fillers, Gravity Fillers
- Liquid Fillers, Pressure Fillers
- Liquid Fillers, Net Weight Fillers
- Liquid Fillers, Others
- Dry Fillers, Net Weight Fillers
- Dry Fillers, Others
- Cappers
- Rigid container closing equipment
- Form/Fill/Seal, Horizontal
- Form/Fill/Seal, Vertical
- Form/Fill/Seal, Other
- Pre-made Bag Loading & Sealing
- Wrapping Equipment
- Thermoform/Fill/Seal Equipment
- Pre-made Tray/Cup/Bowl Packaging Equipment
- Blister & Clamshell Packaging Equipment
- Accumulators
- Conveyors, Infeed & Discharge
- Conveyors, Modular
- Conveyors, Roller
- Conveyors, Tabletop
- Conveyors, Other
- Product & Package Handling
- Feeding & Inserting Equipment
- Coding & Marking, Ink Jet
- Coding & Marking, Laser
- Coding & Marking, Other
- Labeling Machines
- Standalone Printers
- Package & Material Testing Equipment
- Packaging Inspection Equipment
- Process Inspection Equipment
- QA Lab
- Cartoning Equipment
- Multipacking Equipment
- Case or Tray Erect/Load/Seal (Integrated)
- Case or Tray Erectors & Formers
- Case or Tray Loaders
- Case Sealers
- Case Packing Equipment, Other
- Specialty Equipment
- Palletizing, Pallet Conveying, Dispensers & Slip Sheets
- Load Stabilization
- Depalletizing

By Industry

- Food
- Beverage
- Pharmaceuticals
- Personal Care, Toiletries, Cosmetics
- Household, Industrial, Agricultural Chemicals
- Other

All data is presented in terms of US Dollar revenues.

RESEARCH METHODOLOGY

Our methodology follows a multi-phase approach, detailed below. The core of our methodology is our thorough bottom-up analysis of the market. Instead of relying on modeled market sizes, our goal is to produce market sizes based on actual reported figures. As the research progresses, we will take steps to further enable this approach.

In general, the more deeply you delve into a dataset, the more assumptions are needed to develop estimates. We are confident in our estimates at the total market and industry levels. However, when examining the market at the level of individual machine types, it's important to note that there was less available reporting at this level compared to other areas of the report. Consequently, estimates were more heavily based on modeling at the machine-type level. The main reason for this more modeled approach is the variation in machine definitions across the supplier base and the lack of ability by suppliers to report machine level revenue. As the research progresses, our estimates will continue to improve as historical resolution increases.

Feedback on our estimates will be sought as part of next year's research process. We view research as a collaborative and evolving process and take explicit steps to ensure that feedback is incorporated into updated reports.

Issue Survey & Analyze Results	Interviews + Desk Research	Create Base Year Model	Build Forecast & Final Output
For this edition, we updated the annual survey to focus on revenue at the submachine level and growth. Upon receiving the results from the survey, we parsed the results to perform an analysis of the differences reported between editions. The results of the survey were one input towards creating our database of supplier revenue used to determine market size.	In conjunction with the survey data, interviews were conducted with suppliers to gain a better understanding of the factors behind the numbers. These interviews focused on key trends impacting packaging machinery and the factors affecting growth figures. Additional research was conducted on the mentioned trends to gain a better understanding of their effects on the market.	A market size database is developed over the span of ~3 months using supplier reporting and estimates made through secondary research. The market size is further modeled by industry and machine types using a combination of data from previously mentioned steps.	A forecast is derived from underlying manufacturing growth of key sectors. This growth is leveraged up or down to account for packaging machine usage by machine type. This forecast is iterated upon in collaboration with interviewees and other analysts within Interact Analysis. A final output is created based on interview notes, secondary data, and the dataset produced through primary sources.

Table 31 • NAICS Codes by Industry

Industry	NAICS Code	Descriptor
Food	311	Includes: • Animal food manufacturing • Grain and oilseed milling
Beverage	3121	Includes: • Soft drink manufacturing • Ice manufacturing • Bottled water manufacturing • Breweries • Wineries • Distilleries
Household, Industrial, & Agricultural Chemicals	325*	Includes: • Synthetic dye and pigment manufacturing • Basic inorganic/organic chemical manufacturing • Resin synthetic rubber, and artificial and synthetic fibers and filaments manufacturing • Pesticide, fertilizer, and other agricultural chemical manufacturing • Paint, coating, and adhesive manufacturing • Soap, cleaning compound, and toilet preparation • Other chemical product and prepartion manufacturing
Personal Care, Toiletries, & Cosmetics	325620 322291	Includes: Toilet Preparation Manufacturing Includes: Sanitary Paper Product Manufacturing
Pharmaceuticals	3254	Includes: Pharmaceutical and Medicine Manufacturing

Source: Interact Analysis

**excludes 32563, 3254, 32511, and 32512*

DEFINITIONS OF MACHINERY CATEGORIES

Machine Categories in Scope

Filling, Capping & Closing:

Equipment that fills liquid and dry product into containers such as bottles, cans, and other rigid plastic containers, as well as flexible packaging. The category also covers a range of equipment that seals or closes the package.

- Liquid Fillers, Piston Fillers
- Liquid Fillers, Gravity Fillers
- Liquid Fillers, Pressure Fillers
- Liquid Fillers, Net Weight Fillers
- Liquid Fillers, Others
- Dry Fillers, Net Weight Fillers
- Dry Fillers, Others
- Cappers
- Rigid container closing equipment

Bagging, Pouching & Wrapping Equipment:

Liquid and dry fillers that deposit product into flexible bags and pouches, including form/fill/seal machines and equipment for filling premade bags. Also includes wrapping equipment for individual products, such as shrink wrappers and flow wrappers.

- Form/Fill/Seal, Horizontal
- Form/Fill/Seal, Vertical
- Form/Fill/Seal, Other
- Pre-made Bag Loading & Sealing
- Wrapping Equipment

Tray, Clamshell & Blister Packaging Equipment:

Equipment that thermoforms, fills and seals rigid and semi-rigid blisters, premade bowls and trays, as well as machines that load and seal packages like trays, cups and clamshells.

- Thermoform/Fill/Seal Equipment
- Pre-made Tray/Cup/Bowl Packaging Equipment
- Blister & Clamshell Packaging Equipment

Conveying, Feeding & Handling:

Machinery and accessories for moving products and packages through a line, from conveyors, accumulators and lane dividers to vibratory feeders, unscrambling equipment and pick-and-place equipment.

- Accumulators
- Conveyors, Infeed & Discharge
- Conveyors, Modular
- Conveyors, Roller
- Conveyors, Tabletop
- Conveyors, Other
- Product & Package Handling
- Feeding & Inserting Equipment

Coding, Labeling, Printing, & Reading Equipment:

Equipment for printing, stamping, and marking packages with graphics and codes and for applying labels, from ink jet coders and tabletop printers to pressure-sensitive labelers.

- Coding & Marking, Ink Jet
- Coding & Marking, Laser
- Coding & Marking, Other
- Labeling Machines
- Standalone Printers

Inspection & Testing Equipment Machinery:

Package integrity testing equipment used for quality and safety applications (metal detectors, fill level inspectors) as well as other equipment to analyze materials, test product attributes and log data.

- Package & Material Testing Equipment
- Packaging Inspection Equipment
- Process Inspection Equipment
- QA Lab

Cartoning, Multipacking & Case Packing Machinery:

Machines that erect, form, load and close paperboard cartons as well as those who make case erectors, packers and sealers, as well as equipment that packs primary containers into corrugated trays. Also in this category is a wide range of multipacking equipment from shrink bundlers and carrier equipment, sleevers and banders and related machines that package individual items together.

- Cartoning Equipment
- Multipacking Equipment
- Case or Tray Erect/Load/Seal (Integrated)
- Case or Tray Erectors & Formers
- Case or Tray Loaders
- Case Sealers
- Case Packing Equipment, Other
- Specialty Equipment

Palletizing & Load Stabilization:

Mechanical or robotic systems that loads and unloads pallets or stabilizes them from stretch wrappers and palletizers to pallet conveyors and depalletizing systems. Also included here are related supplies, such as pallets and slip sheets.

- Palletizing, Pallet Conveying, Dispensers & Slip Sheets
- Load Stabilization
- Depalletizing

Machine Types Included in Scope

Filling, Capping & Closing

Liquid Fillers, Piston Fillers: Volumetric fillers that dispense products of various viscosities with a piston that draws liquid from a hopper and pushes it through a nozzle to fill a container.

Liquid Fillers, Gravity Fillers: Also called gravimetric fillers, these liquid filling machines dispense typically water-thin or low viscosity liquids from an upper chamber by dropping the product into a container, such as a bottle.

Liquid Fillers, Pressure Fillers: These liquid filling machines, also known as pressure gravity fillers, dispense higher viscosity liquids by placing pressure on the liquid through displacement pumps.

Liquid Fillers, Net Weight Fillers: Also called net weighers, these fillers use load cells beneath each filling station to dispense liquid products by exact tare weight in liquid filling operations.

Liquid Fillers, Others: This would not include piston fillers, gravity fillers, pressure fillers, or net weight fillers. For example, vacuum fillers, flow meter fillers, and aerosol & dispensing filling systems.

Vacuum Fillers – Used in applications for filling highly viscous and pasty products such as cream cheese or yogurt, these liquid filling machines use a rotary valve pump that creates a vacuum to suck product down into a chamber above the container.

Flow Meter Fillers – Flow meter filling machines dispense liquid products at rates determined by the product's flow characteristics through a valve above a container.

Aerosol & Dispensing Filling System – Machines that fill liquid substances into a container so that the substance can be released as a spray using an actuator that is mechanically primed or uses compressed gas as the propellant.

Dry Fillers, Net Weight Fillers: This dry filling equipment, also called net weighers, loads cells beneath each filling station to dispense dry products by exact tare weight.

Dry Fillers, Others: This would not include net weight fillers. For example, auger fillers, piece counters, tablet counters, combination scales, vibratory fillers, pocket fillers, and loss-in-weight fillers.

Auger Fillers – Auger fillers employ a rotating screw to dispense product through a tube for even, volumetric distribution, such as powdered milk or granulated sugar.

Piece Counters – Machinery that dispenses parts or pieces to precise specifications, such as a 50-count screw bag or box.

Tablet Counters – Often used in pharmaceutical and nutraceutical packaging operations, these counters dispense a set quantity of tablets into a container. Slat counters are part of this family of products.

Combination Scales – Also known as combination weighers and weigh scalers, this equipment uses multiple weighing heads that, during simultaneous filling, combine the total product weight in each head to determine that a specified weight has been reached before discharging to a container, such as on a potato chip bag line.

Vibratory Fillers – Equipment that vibrates to dispense small, dry or granular items whereby multiple lanes distribute products from a bulk hopper to a container to reach a specific weight or count, such as in peanut packaging applications.

Pocket Fillers – Volumetric fillers that are also known as cup fillers. This packaging machine dispenses dryproducts such as cat treats or nuts by moving products from a hopper to a defined-size chamber that drops products during filling.

Loss-In-Weight Fillers – Systems that measure how much product has been dispensed by detecting the reduction in weight of a scale-mounted hopper as product exits the hopper.

Cappers: Packaging equipment that feeds and applies caps or other closures to plastic or glass bottles on liquid filling lines.

Crown Cappers – Machines that crimp and apply metal crown seals (also known as crown corks) over the tops of bottles, such as in beer bottle capping.

Roll-on Cappers – Machinery that applies aluminum roll-on pilfer proof (ROPP) caps, such as aluminum caps for non-alcoholic sparkling grape juice, as a tamper-evident sealing feature.

Press-on Cappers – Specialized cappers that apply caps or closures that snap onto the mouth of a container, such as child-proof aspirin bottles. Also called push-on or snap-on capping machines.

Screw Cappers – Used to apply threaded plastic caps that are twisted down over the mouth of a container to a set torque, such as plastic capping for most soda bottles.

Overcappers – Packaging machinery that applies an outside cap over a container with a plug, pump, or other type of seal, such as a protective cap applied to a pump hairspray product.

Retorquers – Machines that tighten lug or screw cap closures into the body of a product after the closure has been placed over the open mouth, such as applications tightening a nozzle closure into the bottle of a plastic bottle of household cleaner.

Rigid container closing equipment: Equipment used to seal, lid, or otherwise close highly rigid containers for solids or liquids including processes such as crimping aerosol cans, applying pumps to plastic bottles, and sealing pails of paint.

Can Seaming Equipment – Machines that close a filled aluminum or other metal can by folding and pressing another metal piece over the opening thereby forming a leak-proof seal, such as seaming beer or cat food cans.

Corking Machines – Closing equipment used to seal glass bottles by inserting a cork into the top of the bottle in applications such as wine bottles.

Crimper – Used for applications such as perfume spray bottles, crimping machines apply caps or buttons that are joined to the main metal seal to add the functionality of releasing liquid products from the package when depressed.

Plug & Fitment Applicators – Packaging machinery that applies plugs and fitments to a container, such as vial plug in a liquid pharmaceutical operation.

Pump Applicators – Also known as pump placers, these closing machines place a dispensing pump or spout onto the mouth of a rigid container, such as in window cleaner bottles. Pump sorters are also included here.

Induction Sealers – Using an electromagnetic field, these rigid container sealers heat to apply inner foil seals, often as a tamper-evident feature for glass or plastic bottles before they are overcapped.

Bagging, Pouching & Wrapping Equipment

Form/Fill/Seal, Horizontal: Bagging or pouching equipment that works in a horizontal orientation to form bags or pouches from roll stock film. Horizontal Form/Fill/Seal (hf/f/s) equipment makes a vertical cut in a horizontal flow of film to form individual pouches and bags. After forming and filling, bags are sealed via heat, ultrasonically or another method.

Form/Fill/Seal, Vertical: Bagging or pouching equipment that forms individual bags or pouches from roll stock film in a vertical orientation. Vertical Form/Fill/Seal (vf/f/s) machines draw the film over a forming collar to create a vertical tube of film. The machines then horizontally cut and separate the tube into individual bags, filling the bags or pouches with product before sealing. The top seal of one bag becomes the bottom seal of the next bag. Commonly used for free-flowing, fragile, or hard to handle products in the food industry, such as potato chips, in combination with weighers.

Form/Fill/Seal, Other: This would not include horizontal or vertical form/fill/seal types. This would include equipment such as the zipper/reclosure application category.

Pre-made Bag Loading & Sealing: Any machinery that takes bags that have been pre-formed on a separate line or operation (typically by a bag manufacturer) and fills and seals them, in contrast to the form/fill/seal method.

Bag Loading, Filling & Sealing – Machinery that enables manual, semi-automatic or fully automatic loading of product into pre made bags, and then seals them.

Vacuum Packaging – Specialized equipment that wraps a preformed bag tightly around a food product such as meat, poultry or cheese, by placing it into a vacuum chamber that seals by flushing gas and air from the chamber to eliminate oxygen for preservation and prevent air pockets.

Bag/Pouch Sealing Equipment – Machinery dedicated solely to the function of sealing premade bags or pouches.

Bag Sewing Equipment – Equipment that seals a preformed bag by sewing threads (in contrast to most heat sealing methods), such as for a bag of fertilizer.

Bag Closing Equipment – Machinery used to close any preformed bag, that is closed by a method usually other than heat sealing or sewing.

Wrapping Equipment: Machinery that envelops a product and sometimes a primary package with a thin plastic or paper layer.

Flow Wrappers – Flow wrappers are a specialized type of horizontal form/fill/seal (hf/f/s) machine that features a film reel mounted above the operating level, whereby the product is loaded horizontally and a longitudinal seal is formed below the pack. Typical applications include wrapping individual candy or granola bars.

Overwrappers – Machinery that applies a layer of paper or plastic wrapping over a primary package or another form of packaging, often for cylindrical or cubical products, such as an overwrap for a sealed carton of perfume.

Shrink Wrappers & Heat Tunnels – Single Item – Equipment that shrinks thermoplastic film tightly around the surface of an individual product or group of products, where the shrink is activated by heat.

Twist Wrappers – Also known as bunch wrappers, twist wrappers cut and wrap pieces of film via a twisting mechanism, usually around small, individual products such as candies.

Tray, Clamshell & Blister Packaging Equipment

Thermoform/Fill/Seal Equipment: Thermoform/fill/seal (TF/F/S) machines use heat and vacuum or pressure applied to continuous rolls of film to form rigid or semi-rigid containers of various shapes and sizes prior to filling, hermetically sealing and cutting them into individual units.

TF/F/S for Flexible and Semi-Rigid Film – Machines that heat and apply vacuum or pressure to continuous rolls of thermoformable film to form packages such as trays, cups, portion packs, and often their lids prior to filling, hermetically sealing and cutting the package.

TF/F/S for Tablet/Capsule Blister Packs – Machines that heat and apply vacuum or pressure to continuous rolls of nonrigid thermoformable film prior to filling and hermetically sealing small blister packs, such as in pharmaceutical or nutraceutical capsule applications.

Pre-made Tray/Cup/Bowl Packaging Equipment: Machines that handle, load, fill, and seal containers such as trays, blister packs, cups and bowls that have been manufactured offline on a separate operation.

Product Loading into Trays, Cups & Bowls – Machines dedicated to depositing products, often dry foods such as cookies, into individual, pre-made trays that have been formed in a separate operation.

Tray, Cup & Bowl Sealing – Equipment that takes a pre-made rigid container including a tray, cup, or bowl and seals the container using paper, plastic lid stock, foil, or other material, such as sealing of cups of ramen.

Denest/Fill/Seal (Integrated) – A monobloc machine that performs three main functions for rigid trays, cups, and bowls in a single, continuous operation: denesting or separating pre-made containers and dropping them as individual units onto a conveying device, filling the containers, and then sealing the containers.

Blister & Clamshell Packaging Equipment: Machines that load products into pre-made, highly rigid containers as individual packages and then seal the container.

Clamshell Closing & Welding Equipment – Machines that seal or close pre-made clamshell packages by pressing the lid down onto the bottom of the clamshell or using heat sealing technology to seal the lid onto the bottom of the clamshell, such as closing an individual portion pack of salad.

Blister Sealing Equipment (Retail Packs) – Machines that heat seal pre-made, rigid blister packs for retail, such as equipment that seals blister packs of batteries with a hang hole.

Clamshell & Blister Loading Equipment – Machinery dedicated solely to depositing or placing of wet or dry products into a pre-made clamshell or blister package.

Skin Packaging Equipment – Skin Packaging Equipment: A specialized type of vacuum packaging machine for non-food applications that draws air out of a plastic sheet to form a tight mold around the product, often with a retail card backing such as skin packaging for a hand tool for retail.

Custom Engineered Blister & Clamshell Packaging Equipment – Any custom engineered equipment, built per specification for specialized applications and not part of a supplier's standard product line, that is designed to load and seal pre-made blister and clamshell packages.

Conveying, Feeding & Handling

Accumulators: Devices that are used to buffer, accumulate and offload containers, package components and packages between machines or stages in a production operation.

Accumulation Tables – Devices that accumulate and offload containers and packages on a single, often horizontal level, such as a bi-directional accumulation table for aluminum cans.

Rotary Accumulators – Also known as turntable accumulators, these buffering machines store containers or packages on a flat rotating disk, for example, filled pharmaceutical vials.

Spiral/Helical Accumulators – Buffering system that accumulates and conveys containers or packages by elevating them in a spiral or helical formation above the line, as an example, buffering containers on high-volume bottle filling line.

Vertical Accumulators – A buffering system that aligns horizontal rows of containers or packages through indexing and then elevates the indexed rows in a vertical fashion as a stack, often used for high-volume lines.

Conveyors, Infeed & Discharge: Infeed and discharge conveyors move containers and packages into or out of a packaging machine. Often specific timing or back-pressure considerations apply to these conveyors.

Conveyors, Modular: Modular conveyors, also known as modular belt conveyors, consist of attachable modules, often of plastic, that can be quickly linked together via joint rods and pins for quick reconfiguration on a conveying line as needed.

Conveyors, Roller: Lineshaft or roller conveyors feature cylindrical rollers that move primary cartons or secondary packaging such as cases, through a production line.

Conveyors, Tabletop: Any flat conveyor system in a variety of formats and sizes that runs products horizontally, usually on a belt or belted system.

Conveyors, Other: This does not include accumulators, infeed & discharge, modular, roller, and tabletop conveyors. This includes, bucket, incline, cable, flighted, magnetic, screw, vibratory, and air/vacuum tabletop style conveyors, conveyor components and accessories, and guides, rails & adjustment systems.

Product & Package Handling: Systems related to handling products as well as empty or filled primary containers; often combined with conveyors or feeding equipment for specific handling functions.

Lane Dividers, Merge & Transfers – Also known as lane combiners and laners, these systems that sort, separate, merge or relocate outfed packages or containers, such as finished cases, often integrated into conveying operations.

Diverters & Rejects – Devices integrated with conveyors to remove, divert and stage for collection packages or containers considered rejects, such as unlabeled or otherwise defective items, or to otherwise separate products from a packaging line, such as in quality checks.

Elevators & Lowerators – Product and package handling equipment that raises or lowers containers or product from one elevation to another before feeding them into the next operation, such as elevators used for palletizing and depalletizing bottles.

Puck/Carrier Systems – Any equipment or packages or containers associated with the molded plastic or food grade stainless steel components that hold containers such as bottles, cans, and tube during conveyance through a line, including puckers, depuckers and the pucks themselves.

Timing Screws – Screws that help regulate the infeed of packages so they align with a later process, such as timing the infeed of a package into a packaging machine.

Denesters – Machines that unhinge and separate a stack of **–** containers, such as tray, clamshell and blister denesters, before placing them onto a conveyor, one by one, for a separate operation such as filling.

Stacking Machines – Machines that collect and stack products such as flat products and place them onto a pallet.

Tray/Crate Handling Machines – Any machinery associated with moving trays or crates, such as tray stackers.

Case Unloaders – Also known as decasers, this machinery is specifically dedicated to automatically unloading containers such as glass or plastic bottles from a reshipping case so that they are single file and upright for a later process.

Air/Vacuum Transport – Systems that use air or vacuum pressure to move and control empty containers that are suspended by their necks toward the neck of the container or bottle.

Dumpers & Bulk Unloading – Dumpers, tilts and other bulk unloaders used to discharge the contents of a material handling operation into another.

Tilters & Shakers – Also includes product settling conveyors, this equipment is used to vibrate the container so that the product inside settles or is more evenly distributed, such as shaking sticky ingredient powder in a bag.

Custom Engineered Product & Package Handling – Any custom engineered equipment, built per specification for specialized applications and not part of a supplier's standard product line, that is designed to handle empty or filled primary containers in conjunction with conveying and feeding equipment.

Feeding & Inserting Equipment: Packaging systems that sort, organize and insert packages or containers, usually associated with a filling operation.

Pick-and-Place – Automated systems that use robots that pick objects or products as part of a product or package handling operation.

Orienting/Unscrambling Machines – Machines that take containers and sometimes products and correctly orient or organize them prior to packaging, such as unscrambling and orienting empty plastic bottles into a single-file, mouth-up position before filling.

Placement/Feeder Systems – Placement or inserter machines and friction feeders that deposit items, such as product literature or desiccant sacks, into a package.

Hanger/Display Tab Applicators – Any machinery that applies a type of hanger to assist consumers in carrying a package, such as machines that attach a carry case plastic hanger for a two-gallon multipack of joined water jugs. Also, machines that apply hanger or display tab systems onto a package for retail display.

Protective Packaging Feeders – Systems for inserting protective packaging such as paper cushioning, rolls of corrugated wrap, or cellulose wadding into a package such as a shipping case.

Vibratory Feeders (Circular) – A feeding system usually for small or lightweight products such as screws that gently shakes and rotates materials or products inside a bowl to move them onto a narrow track to be counted and fed into a package, single-file.

Coding, Labeling, Printing, & Reading Equipment

Coding & Marking, Ink Jet: Coders that use liquid ink and spray it onto a package or product in a controlled pattern to create/add text and/or graphics

Coding & Marking, Laser: Machines that emit laser beams to produce codes text, and/or graphics in a controlled pattern directly onto a container.

Coding & Marking, Other: This does not include ink jet and laser coding & marking types. This includes thermal transfer coders and stamping machines (hot or cold).

Labeling Machines: Labeling machines apply preprinted or blank labels, stickers to packages, as well as perform shrink sleeve labeling. Also includes specialty labeling equipment like RFID applicators or electronic article surveillance (EAS) technology applicators.

Printer/Applicators – Printer/applicators, also known as print-and-apply labeling systems, combine the functions of label printing and dispensing into a single machine and can be used in a wide variety of applications, from barcode label printing to stickers and warning labels.

Pressure-Sensitive Label Applicators – Labeling machines that apply light pressure to labels coated with an adhesive backing on one side to separate the label from the face stock before adhering it to the package.

Roll-fed Labelers – Machines that remove a continuous roll of labels and separates and applies labels onto a container or package that is rotated while going through the label application head.

Pre-Cut Label Applicators – Also known as cut-and-stack labelers, these machines run stacks of labels that have been die cut with incisions, separate the labels from the stack and apply them to containers or packages.

Shrink Sleeve Labelers, Neck Banders & Heat Tunnels

Machines that use heat to apply plastic film material so that when cooled, it conforms to the body of the container for a snug fit, such as a full-body shrink sleeve label for a single-serve bottle of chocolate milk. Included here are neck banders, which employ similar heat application technology to apply neck bands for tamper-evidence in applications such as a neck band on a bottle of aspirin. Includes any equipment related to these technologies such as heat tunnels.

Stretch Sleeve Labelers – Stretch sleeve labelers apply plastics with sufficient – elasticity to maintain positioning, such as a wraparound sleeve label that is stretched and applied to a plastic container of cat litter.

RFID Encoders, Applicators & Readers – Any machine related to applying, encoding or reading Radio-frequency identification (RFID) label systems.

Electronic Article Surveillance Applicators – Electronic article surveillance (EAS) tag applicators are dedicated machines that apply security or anti-theft tags to a variety of packages most commonly after packages are filled and sealed.

Specialty Promotional & Decorative Systems – A wide range of equipment for specialty promotion and decorating including silk screening on bottles, foil hood decorating systems, colored band machines, decorative strips on pillow bags, and other specialty labeling equipment.

Label Dispensers – Machines that dispense pre-printed labels from a roll for manual application.

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Label Dispensers – Machines that dispense pre-printed labels from a roll for manual application.

Standalone Printers: Dedicated printers for a wide variety of applications, such as machines that print peel-off barcode or shipping labels or direct coding of shipping cases in an offline application, as opposed to printing codes on containers on the packaging line.

Tabletop Printers – Standalone industrial printers used to print labels.

Handheld Printers – Portable thermal or inkjet printers that operators use for manual application of coding or marking.

Offline Case & Carton Printers – Digital equipment that prints information such as barcodes, lots, company logos and other information directly onto pre-formed RSC cases, cartons, kraft bags and other paper-based packaging. Considered separate from converting related printing, where printing occurs on large webs before die-cutting, scoring and related operations.

Inline Digital Package Printer – Machines that use digital technology to print inline during a packaging process, such as inline digital printers that are configured to print bags as they are fed into a vertical form/fill/seal (vf/f/s) operation. Considered separate from converting and package formation printing, where printing is handled on dedicated equipment of usually large webs or rolls

Inspection & Testing Equipment

Package & Material Testing Equipment: Any equipment or device that tests the quality, integrity and performance of a packaging container or material.

Analyzers – Devices and equipment that measure attributes of packaging materials to optimize shelf life performance, such as the permeability of oxygen and carbon dioxide gasses and moisture. Includes modified

atmosphere packaging (MAP) headspace gas analyzers, permeation analyzers, hydrocarbon analyzers, moisture analyzers and related products.

Packaging Material Testing – A broad range of equipment that focuses on analyzing packaging material substrates, especially paper and film, for attributes such as color, opacity, material strength, heat-seal quality and performance.

Coatings and Thickness Testing – Any specialized testing and analytical equipment or device used to measure micro-level material thickness and coatings on packaging or substrates.

Packaging Inspection Equipment: A wide range of equipment to measure packages, detect anomalies in package integrity as part of a quality control or safety process, or otherwise test machinery on a packaging line.

Checkweighers – Machines that weigh the amount of a package to verify its weight is within designated limits, such as a checkweigher for cases.

Metal Detectors – Machines that inspect packaging for metallic foreign matter.

X-Ray Systems – Machines that emit x-rays in a variety of applications to detect the presence of a foreign substance or object.

Vision Inspection Systems – Also known as machine vision (MV), vision inspection systems use cameras and other imaging technologies to detect defects.

Thermal Scanners – Infrared and other thermal scanners that measure heat emitted from an area of a package, often used to detect seal integrity of heat-sealed packages and containers.

Package Integrity Testing – A wide range of equipment and systems used to test packaging integrity properties including test compression, seal integrity, and leaks.

Fill Level Inspection – Quality control systems that use cameras and other devices to detect uniform fill level.

Cap Torque Testing – Inspection equipment used on bottling lines to test the torque of a screw cap to define machine tolerances so the capping equipment can be properly calibrated to avoid destruction of bottles during the operation.

Process Inspection Equipment: Testing and analytical equipment used specifically for food, beverage and other processing operations for product (as opposed to package) quality and safety.

Process Analyzers – Devices and equipment that measure and analyze product attributes or the chemical composition of products, such as the presence of fat, sugar, and proteins in a food, beverage or other processed product. Includes inline and lab devices such as densitometers, viscometers, colorimeters, product moisture analyzers, spectrometers, sulfur analyzers, pH analyzers, sodium detection systems, water treatment analyzers, chloride detectors, chlorine analyzers, and related flow, density and level instruments.

Data Loggers – Devices that store data on a processing line, tracking process data, environmental factors such as humidity or other data on processing operation.

QA Lab: Companies that sell equipment or consumables related to quality assurance (QA) and packaging integrity testing.

Lab Infrastructure – Labs that offer services related to establishing, managing or maintaining controls, predictive analysis practices, processes and procedures that help ensure product quality and safety.

Lab Equipment – Highly specialized nonindustrial lab equipment used by quality assurance (QA) labs for testing of seal integrity, coatings, air and gas presence, temperature, permeation, and other packaging or product attributes.

Lab Services – Third-party labs that offer testing and quality assurance to consumer-packaged goods companies and other packagers.

Lab Consumables – Any lab accessory or consumable product used by quality assurance (QA) and other labs for testing of products and packages, such as, test tubes or chemicals used during testing.

Cartoning, Multipacking & Case Packing

Cartoning Equipment: Cartoning equipment is defined as machinery that forms cartons as primary packages from flat blanks, including several related functions including erecting, folding, closing, side seaming and sealing of cartons.

Carton Erectors/Formers – Equipment that forms cartons by erecting and forming flat blanks into a primary package.

Carton Sealers – Equipment that closes and seals carton flaps into a finished primary package after the carton has been loaded with product.

Carton Erect/Load/Seal (Integrated) – Machines that perform the cartoning functions of erecting, closing, folding, side seaming, and sealing, on a single machine.

Gabletop Cartoning Equipment – Any cartoning machine that performs a variety of functions specific to gabletop cartons, including forming, folding, and sealing.

Carton Loaders – Equipment that places product into cartons.

Sleevers – A wide variety of machines that apply a sleeve, typically made of paperboard or corrugated or other materials, around a single item or package.

Multipacking Equipment: A wide range of equipment that consolidates multiple items for single sale (such as cans of soup on a shrink-wrapped tray) or groups separate packages sold together as a single stock keeping unit (two water bottles shrink bundled together.)

Sleevers – Multiple Items – A wide variety of machines that apply a sleeve, typically made of paperboard or corrugated or other materials, around multiple products or packages.

Tray Formers – Equipment that forms (but does not load products onto) durable, corrugated trays used to ship multiple items from a packaging operation, such as machines that form trays used to ship 20 cans of soup.

Handle/Carrier Applicators – Machinery that erects any type of packaging carrier apparatus, such as equipment that applies plastic carriers onto six-packs of beer cans or machines that erect paperboard flats into six-pack carrying cases for glass bottles of soda.

Banders, Strapping and Tying Equipment – Equipment that applies a plastic or paper-based strip around a product.

Shrink Wrappers & Heat Tunnels – Multiple Items – Equipment, also known shrink bundlers, that wraps two or more single packages in film that is then passed through a shrink tunnel to form a tightly bound single unit for sale.

Custom Engineered Multipacking Equipment – Any custom engineered equipment, built per specification for specialized applications and not part of a supplier's standard product line, that is designed to consolidate multiple items or group separate packages together for single sale.

Case or Tray Erect/Load/Seal (Integrated): Machines that form, fill or load, and seal a case or tray on a single machine in a continuous operation.

Case or Tray Erectors & Formers: Equipment that assembles and readies paper-based cases and trays on a packaging line for later product filling or loading processes.

Case or Tray Loaders: Equipment that places primary packages into shipping trays.

Case Sealers: Machinery that closes flaps of a case before sealing it using tape or other adhesives.

Case Packing Equipment, Other: This does not include cartoning equipment, multipacking equipment, case or tray erectors & formers, case or tray loaders, and case sealers. This would include polybag case liner equipment and pad/partition inserters/dispensers.

Specialty Equipment

Specialty Equipment: Suppliers of equipment and accessories for a highly specialized set of products, from air drying equipment, static eliminators and adhesive applicators to suppliers of machine replacement parts.

Adhesive Applicators – Equipment designed specifically to apply an adhesive during packaging formation and sealing of cartons, cases and related material, or adheres paper labels to cans, and related applications.

Static Eliminators – Ionizers that remove buildup of static electricity from webs and roll film during winding and related operations so that contaminants do not adhere to the film during the operation.

Corona Treaters – Machines that apply an electrical charge, typically to plastic film and cast extrusion lines during converting, to raise surface tension of the plastic substrate to prepare it for later processes such as printing and adhesive coating.

Air Drying Systems – Also known as air knives, these air-drying systems use high pressure to wick or remove moisture from containers, labels or other packaging components, such as after a container is rinsed, cleaned, or filled.

Container Cleaning & Sanitizing Machines – Machinery that removes or aids in removing foreign objects and contaminants from rigid and semi-rigid containers, usually immediately before or after a filling operation.

Assembly Machines – Machines that are engineered to assemble different packaging components together, such as fitment assembly machines for containers.

Third-Party Replacement Parts – Seal jaws, auger replacements, forming collars, knives for cutting film, capping chucks, web and rollstock cores, finwheels, change parts and more.

Product/Package Recovery Machines – Machines and systems that can extract defective, mispackaged or otherwise unsellable finished product prior to end-of-line operations.

Industrial Recycling Equipment – Covers a range of machines that prepare industrial waste within a plant for later use, such as balers, or machines that take spent materials and generate them into fuel within the plant, such as incinerators that use spent coffee grounds for energy.

Tape Dispensers – Devices or machines that dispense adhesive tape.

Palletizing & Load Stabilization

Load Stabilization: Any machinery, systems, or accessories used to secure and stabilize a pallet while it is being loaded, or in later distribution or storage.

Stretch Wrappers – Semi-automatic and automatic machines that wrap highly elastic plastic film around finished pallet loads to protect and contain them during shipping and warehousing; includes rotary towers, turntable systems, orbital wrappers and other types of stretch wrapping systems.

Stretch Hooders – Machinery that vertically covers a pallet load from top to bottom with a hood of stretch film.

Load Stabilization Adhesive Systems – Systems that apply non-destructive adhesives to individual cases or bags as they are loaded onto a pallet so that they grip the next layer above or below. Can be used as an alternative to stretch wrapping.

Strapping – Transport Packaging – Any machine or manual tool that wraps and seals one or more plastic or metal straps around a load pallet to secure and stabilize it, ranging from manual strapping tensioners to automatic machines.

Corner Post & Edge Applicators – Corner posts, corner boards, edge protectors and related protective material and systems that provide corner protection and load stabilization to pallet loads during shipment and storage.

Depalletizing: Equipment that unloads empty containers such as glass or plastic bottles to be filled from a pallet onto a packaging line.

Depalletizers (Mechanical) – Mechanical or conventional depalletizing systems unload containers from a pallet onto a conveyor that feeds a packaging line without the use of robotics.

Depalletizers (Robotic) – Robotic depalletizers unload containers from a pallet onto a conveyor using robotic arms.

Depalletizers (Magnetic) – Depalletizing systems designed for unloading metal cans from a pallet onto a conveyor using a magnetic lift and release system.

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