Robotics247

SPECIAL FOCUS ISSUE
FEBRUARY 2024

Robots Enable More Efficient Reverse Logistics

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EDITOR'S NOTE

Reverse logistics is often considered a costly and time-prohibitive endeavor. Especially during the busy holiday seasons, retailers focus heavily on order fulfilment and delivery to consumers. But it's that next step in the process that often creates a warehouse bottleneck.

As part of the reverse logistics process, robots can help alleviate concerns with warehouse backlogs and, from a financial standpoint, give returned items another shot at selling to consumers. E-commerce organizations continue to grow, but so too do their complexities with inventory, logistics, supply chain and warehouse management.

Autonomous mobile robots (AMRs) work alongside humans to reduce the bottlenecks associated with returns and move packages to their designated spots within distribution facilities. Automation of repetitive tasks helps relieve employees of strenuous labor and turn their attention to more pressing elements of the returns process.

Fulfilment centers have turned to compact automated storage and retrieval systems (AS/RS) to utilize vertical storage offerings, while robotics as a service (RaaS) can manage fleets of AMRs to maximize speed and sortation. Robotics have just scratched the surface of reverse logistics applications, and now its up to logistics providers to find homes for robots that fit their specific needs.

In this Special Focus Issue, you can learn about ways robots and various automated processes can reduce the complexity of processing product returns and resulting materials. These problems overlap with environmental, financial and managerial concerns with product returns and repairs, and how organizations need elaborate methods to handle these problems as they arise, without creating new ones.

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How cobots have gained a foothold in reverse logistics operations

Retailers turn to cobot offerings as a way to reduce staffing burdens in warehouse settings

BY TIM CULVERHOUSE

"Oh, that's a box. That box looks like this other box, so they must be boxes. That means I can process this box this way."

In a recent discussion with *Robotics 24/7*, Chris Franzer, business development manager of Universal Robots, eloquently described one of the biggest challenges in the reverse logistics and robotics discussion: teaching robots how to identify objects, even when the same item is presented in different boxes and in various conditions.

Humans can view a box - or more specifically a collection of boxes - and decide how to pick and sort them most efficiently. How will robots and cobots designed and trained to work alongside humans learn those skills? Calibrating AI perception is an ongoing challenge that robot developers and reverse logistics operators continue to tackle by evolving to handle the overflow of inventory flowing into warehouses around the world.

Universal Robots new UR30 cobot has a payload capacity of 30 kg. Source: Universal Robots

Lending a (robotic) helping hand

According to the Reverse Logistics Association's "Returns Report: 2023 Holiday Predictions" based on goTRG 2023 Holiday Survey data, there's an $816 billion retail return problem. Almost a trillion dollars in inventory making its way from consumers back to e-commerce retailers creates a potential nightmare for organizations without a concrete plan in place to handle the influx of returned merchandise.

Coupled with the jump in returns, organizations are also struggling to fill spots in warehouses to handle these tasks. According to a 2024 report from the U.S. Chamber of Commerce, America's labor force participation rate sits at 62.5%. That marks a 0.8% drop since February 2020, and a decline of 4.7% since January 2001.

"If labor is a challenge, and I can't process these orders, or process to rework and refurbish the product and certify that it works properly, then I've got volume of product now sitting at that cell or taking up warehouse space," Franzer said.

Cobots come into the picture with their ability to handle repetitive, tedious and boring tasks. Organizations that invest in a cobot (or several) can train them to handle various elements of their reverse logistics processes and allow staff to work in other high-value areas in the warehouse. While there's still a need

for human intervention when the robot encounters a problem it can't solve, employees no longer need to perform the same monotonous tasks, moving and sorting boxes from one pallet to another.

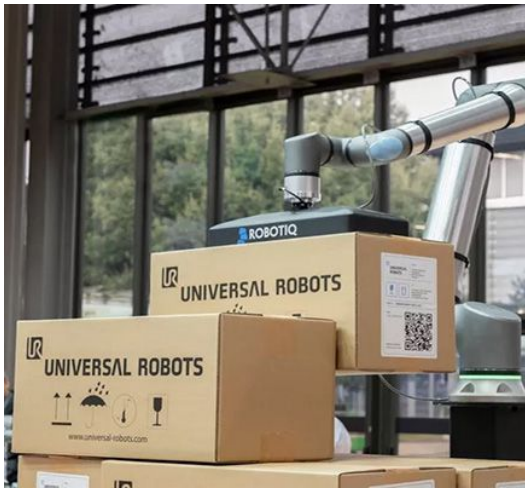
What's in the box?

Outside of the sheer volume problem at hand, another common issue plaguing retailers and robotics providers is the box issue. Returns are by no means a standardized, predictable undertaking.

"There's times when you see a pallet, some of them are in a standard box that the product came in," Franzer said. "On that same pallet, you may have a box from someone's grocery store that used to hold gallons of milk and now it holds the product with tape and an RMA number written on the side of it. And in the same pallet, you may have a product that has absolutely no packing."

The lack of return uniformity adds another wrinkle to the return logistics process. Should the cobots depalletize these boxes and restack them? Should the cobots put the inventory on a conveyor belt for further sortation? Where does the human-robot interaction occur and how does that oversight potentially take away from other value that the staff or machine can add to other areas?

"Every pallet is different. When these products are shipped back from FedEx, or UPS, or whatever it is, they all look different," Franzer said. "They're all palletized differently, different sized pallets, different boxes, different shrink wrap around the outside, different packaging. That makes it a challenge."



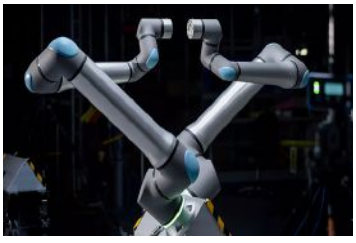
A Universal Robots cobot handling boxes. Source: Universal Robots

Heavier cobot payload options

Universal Robots expanded its cobot offerings with the UR30 in late 2023. The sixth generation offering (alongside the UR20), can handle 30 kg payloads, a 10 kg increase compared to the UR20.

As the cobot industry grows, so too do the demands of its users. Increased payload capabilities allows other organizations to wade into the cobot waters, and utilize these tools as a way to optimize their reverse logistics ecosystem.

"We've opened up a higher breadth of applications," Franzer added. "Palletizing, specifically



The UR20 cobot from Universal Robots. Source: Universal Robots

in the material handling space…Maybe even like assembly and test, where you're loading and unloading machines… When you look at the macro with automation and robotics, and then you shift over to the collaborative robotics space, the market was there."

The UR30 also comes at a similar footprint to its UR20 counterpart. The added payload capability didn't come with the tradeoff of extra space accommodations in the warehouse, a major pain point for organizations.

What's next for robots in reverse logistics?

E-commerce operations show no signs of slowing down. It's to be determined what the returns segment of the operation undergoes in terms of changes to lighten the load of warehouse staff and cobots. One area Franzer brought up for down the road is AI.

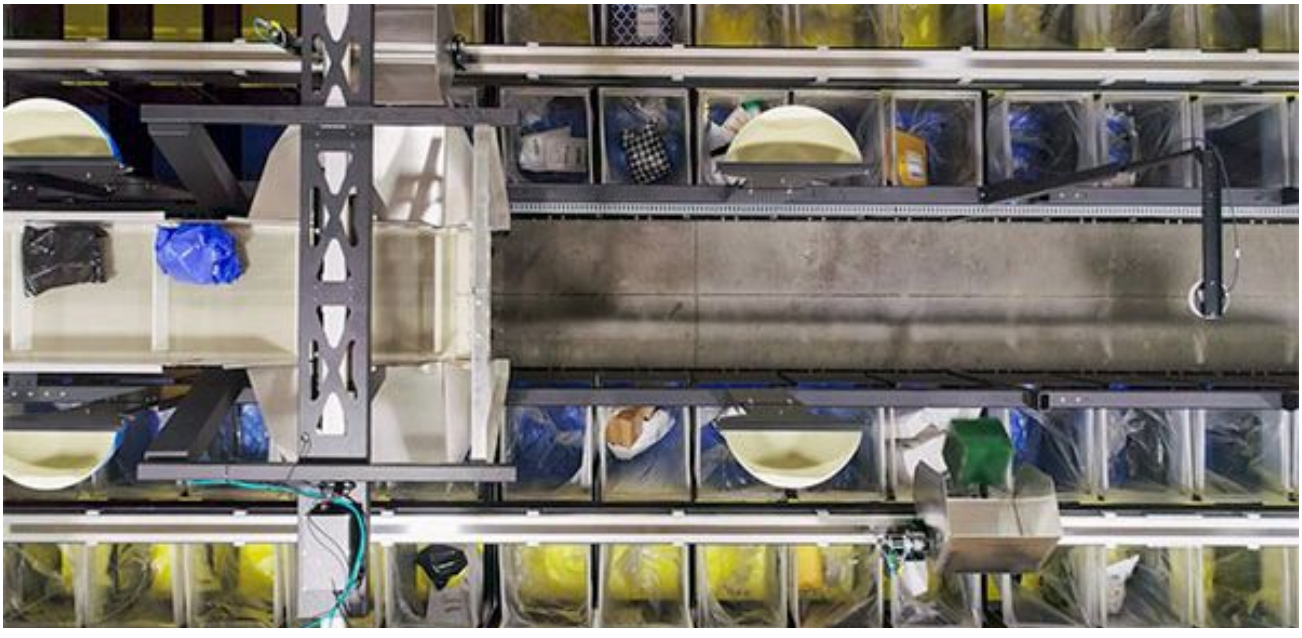
"I think we're seeing a lot of AI, and in the background is machine vision, the optics and the vision aspect of things is a challenge," he said. "Really connecting the dots with different lighting techniques and reflections and missing labels and things that don't come in box… If I had a crystal ball for the next five years, I would assume that's a large uptick." •

Tim Culverhouse *is the Editorial Director of* Robotics 24/7.

Berkshire Grey's systems handle hard-to-sort returns

Chris Geyer, Berkshire Grey VP and Fellow, discusses automated sortation for reverse logistics

BY DONALD HALSING



Automated systems, such as Berkshire Grey's Robotic Process Sortation and Identification (RPSi), can take on tedious returns sortation tasks, expediting reverse logistics workflows. Source: Berkshire Grey

Returns processing is a necessary, tedious and time consuming operation. Hence why it's it a prime candidate for robotic systems.

In 2023, $743 billion in retail merchandise was returned – about 14.5% of sales – according to a National Retail Federation (NRF) and Appriss Retail report. The NRF also reported a full-year retail sales increase of 3.6% from 2022 to 2023.

These hefty dollar amounts showcase just how necessary reverse-logistics operations remain as part of an organization's customer service process.

Bedford, Mass.-based Berkshire Grey develops robotic sortation systems for retail and e-commerce distributors. In its "2022 State of Retail & eCommerce Fulfillment Report" the company found 72% of executives believed they would lose customers if they didn't offer free returns, and 80% who saw increased returns in 2020 needed to increase headcount to accommodate.

The survey of chief supply chain officers also found 51% of executives believed implementing automation will increase employee satisfaction, and 43% believed it will lead to a decrease in employee turnover.

Chris Geyer, vice president and fellow at Berkshire Grey, recently spoke with *Robotics 24/7* about automated sortation of returned merchandise and other reverse logistics operations. Geyer was previously a research scientist at Carnegie Mellon University and iRobot.

Berkshire Grey's Robotic Process Sortation and Identification (RPSi) can pick items off conveyor belts, release them through a barcode scan tunnel, then sort the product into a cubby or bin. Source: Berkshire Grey

Automation for loose and unpackaged item sortation

Can the same type of equipment be used for both returning and goods-to-person processes?

Geyer: The automation systems that we use to sort goods can be used in multiple workflows in a warehouse.

Could returning and goods-to-person items all pass through one stream instead of two separate streams?

Geyer: It depends in part because of the nature of the goods and the equipment that you're using. For different companies and for different industries, there are different ways in which the returned goods are presented and how they intend to be handled. The ability to handle those SKUs depends on the systems.

One of our customers is in apparel, so the returns that they see are typically unpackaged goods. You open up the mailer in which the item comes, and then you've got to figure out what to do with it. This particular retailer had many jeans, so typical automation systems that do both sortation and picking couldn't handle the unbagged jeans, whereas our robotic picking systems could. That was because of the nature of presentation of the goods in the returns through a reverse logistics process.

In the case of those jeans, we can both fulfill them and we can do the reverse logistics. The way that the goods are presented when they're returned can affect where you can handle them in an automated way.

Does non-uniform condition of packages, or even different types and sizes mixed together, add complexity to reverse logistics sorting?

Geyer: Complexity is there in the fulfillment or distribution process, but is worsened by differing conditions of the product. There's perhaps a consumer makeup, or something about the company that impacts that condition. It depends on the company, it depends on the automation systems.

How are Berkshire Grey's sortation systems configured to handle different types of items?

Geyer: Our singulation systems were from the beginning designed to handle a wide variety of goods. At the very beginning - when we developed the technology - went to general merchandisers like Target and Walmart, filled up our shopping cart, and determined the kind of material handling gripping system that will lead to the highest eligibility or coverage of SKUs. As a result of that, we can generally handle the widest variety of conditions in the reverse logistics context.

On the sortation side, we've also designed our sortation systems to have a very high eligibility in general, even outside of reverse logistics. Our automated Robotic Shuttle Putwall (RSPW) was designed to be able to handle shoe boxes. That system can handle those shoe boxes irregardless of whether that's for fulfillment, a distribution operation, or a reverse-logistics operation.

Returning apparel and e-commerce products to market quickly

Are there particular industries or areas where Berkshire Grey's product deployments have been most successful?

Geyer: In the apparel space we've had a lot of success, especially in fast fashion. Our customers want to get the product out to the stores as quickly as possible. We also do general merchandise for store replenishment and e-commerce, so a great variety of goods. That's in part because we are able to handle a great variety of items. Our sweet spot is items that aren't in cases, and eaches that are in the up-to-five-pound range.

Do you know what items your customers see returned most often?

Geyer: In general what we see in those kinds of operations – perhaps more generally in apparel – is that consumers will purchase multiple sizes of the same item, not knowing which one will fit best, and then return the one or two that don't fit. That's the most common if there's any one common thing.

Berkshire Grey's Robotic Shuttle Putwall (RSPW) can sort small boxes and items in poly bags to expedite reverse logistics workflows. Source: Berkshire Grey

What can Robotic Process Sortation and Identification (RPSi) do to help expedite reverse logistics?

Geyer: Our RPSi system does three things. It does the singulation: pick an item out of a cluttered bin or off a conveyor belt with multiple items on it. Then it has to know where to sort it to, and so in order to do that it's got to scan it. It's able to scan the product automatically by presenting it to a barcode scanner. And then based on the output of the barcode scanner, it determines which cubby or bin to sort the product to.

Our systems do their scanning in a couple of different ways. The way that it works in most RPSi's is it releases the product that it's picked over a scan tunnel. As the product descends, it's scanning for the barcode from multiple different directions. That's particularly good for poly bags and apparel that would tend to crumple or fold. As the product descends, it can reveal the barcode by opening partially up. We also do scanning by holding the product and presenting it to barcode scanners.

Automating sortation allows employees to handle return fraud

In what ways does Berkshire Grey's robots help cut back on the cost and time of recycling, repackaging, and transporting items through reverse-logistics processes?

Geyer: In the fast apparel industry, you want those items back on the shelves as fast as possible so that they're still current, so that they're not marked down. We work to get those on the shelf as fast as possible by automating the process. You don't need as many people to do the sortation or singulation to get the items back on the shelves, either in the stores or in the warehouses.

Labor of course is a tremendous problem for many of the folks in the warehouses and logistics industry, so we're reducing that labor. There are many steps in a reverse logistics process that have to do with reducing fraud. We let the people who are good at that do that, but we help with the manual handling processes in the reverse logistics workflow.

Automated systems, such as Berkshire Grey's Robotic Shuttle Putwall, can handle returns sortation tasks, allowing employees to address fraudulent returns. Source: Berkshire Grey

Would you agree that a lot of the robotic innovation that we're seeing lately is not necessarily to replace jobs, but to ensure human employees' skills are being capitalized on?

Geyer: Absolutely. In so many warehouses, what we're doing is helping to increase job satisfaction – in many cases by making the processes and the work that people have to do more interesting or easier for them. We've heard instances where people have stayed on longer than they otherwise would have because of the systems that we've installed.

Berkshire Grey launches its 4th generation of systems

What's new with Berkshire Grey's fourth fourth generation of products compared to the previous generation?

Geyer: The fourth generation has a greater number of destinations: up to 100 store locations, so this system is often used in store replenishment. It is faster than the prior generation.

Those are the two biggest desires: faster and more destinations, which are really important to our customers. The more destinations and open orders, the more efficient their upstream processes can be.

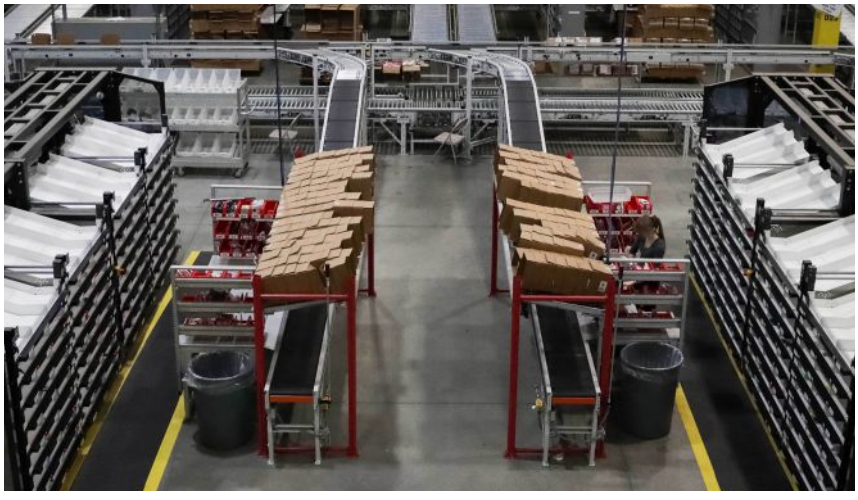
What does the future look like for sortation systems going into 2024?

Geyer: More BG systems out there! We're really excited about our fourth generation system. It's got that speed and higher destination count, as well as aspects that increase usability for operators. I think a big thing is to help many more customers impact their upstream processes.

We see the sortation systems essentially allowing customers to do more with existing AS/RS systems that they have, or making AS/RS systems more efficient, which allows brownfield sites to do more with what they have.

At greenfield sites – at new installations – we can do more with the existing storage system or with storage systems that are planned. We can reduce the number of cranes in an AS/RS or the number of robots in an AS/RS by using the sortation system, which allows many, many more open orders than if you just had a goods-to-person station. •

Donald Halsing *is Associate Editor of* Robotics24/7.

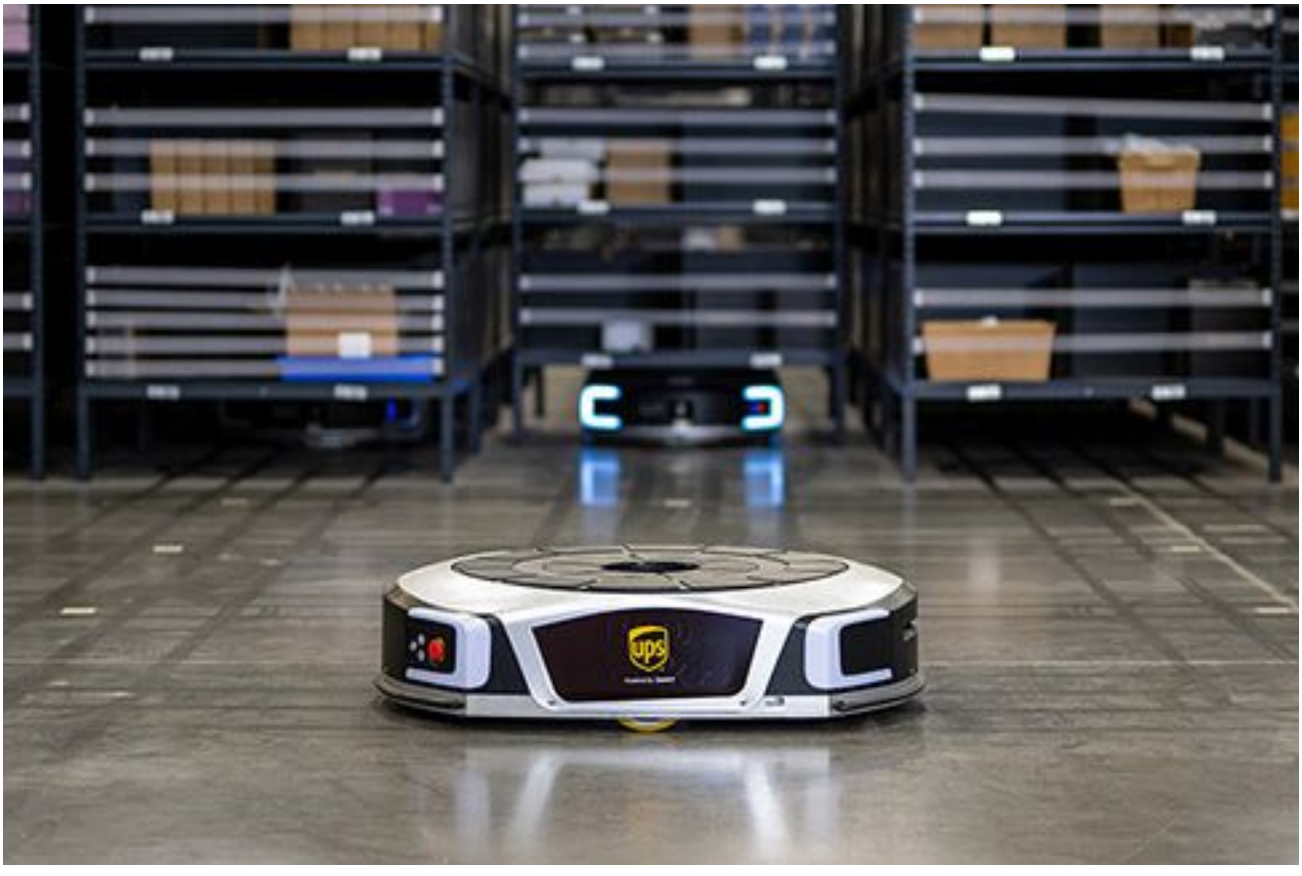


Berkshire Grey's automated robotic sortation systems can be integrated into larger logistics workflows. Source: Berkshire Grey

UPS uses robots and AI to strengthen network capabilities, enhance the employee experience

UPS said it is testing and using technologies for pick-and-place, loading and unloading, and moving parcels

BY ROBOTICS 24/7 STAFF



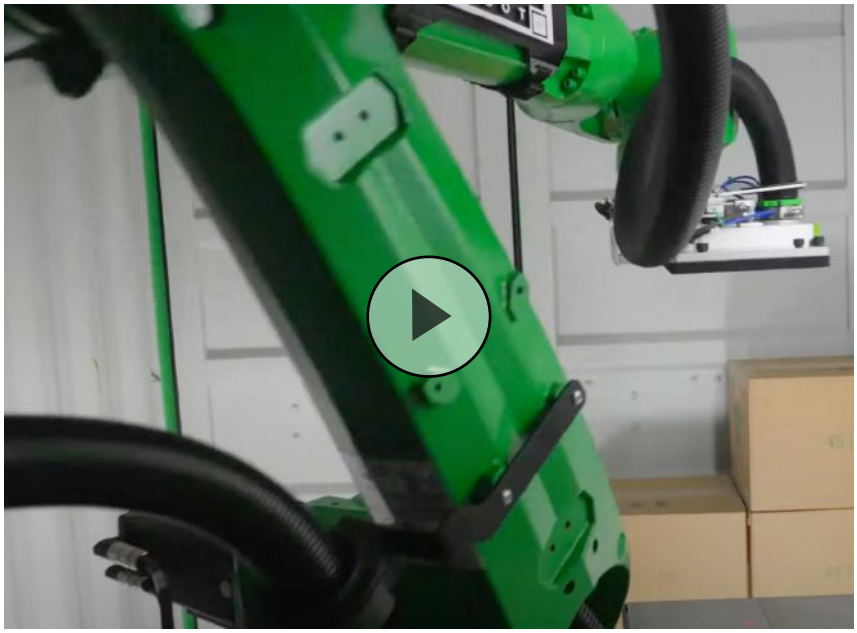
UPS is using robots from multiple vendors to accelerate parcel handling. Source: UPS

United Parcel Service of America, Inc. (UPS) recently said it uses technology to improve package flow and the overall efficiency of its network. UPS also described its use of robotics and automation to reduce repetitive tasks and physical stress for its employees.

Founded in 1907, the company claimed that it has a long history of driving innovations for logistics. Atlanta-based UPS

noted that its use of automation and digital technologies has accelerated with advances in artificial intelligence.

"UPS has been a technology company since its founding. Innovation is in our DNA," said Carol Tomé, CEO of UPS. "We continuously look for ways to leverage technology to improve our employee experience and increase efficiency. This is how we build a better and bolder UPS that will continue to be customer-first, people-led, and innovation-driven for years to come."



UPS targets specific tasks for automation

This year, UPS said that 57% of the packages processed through its network went through automated facilities using the latest sorting, processing, and data-capture technologies. The company added that its major air facilities include package-flow automation and that its embrace of cutting-edge technologies advance its business and the logistics industry as a whole.

Recently, UPS made several improvements to its operations targeting specific processes that can be repetitive and physically demanding, such as picking and packing, loading and unloading, and moving irregularly sized shipments.

UPS is using pick-and-place technologies from Dexterity, Fortna, and Plus One Robotics to help employees sort small packages. That task requires repetitive motion and can be inconsistent as it flexes with customer demands.

Pick-and-place robots will make these jobs easier, safer, and offer a better overall experience for its employees, said the company.

UPS is also using Pickle Robot's unloading technologies to ease the challenging job of unloading trailers, making the role less physically demanding for employees and delivering better package care and reliability for customers.

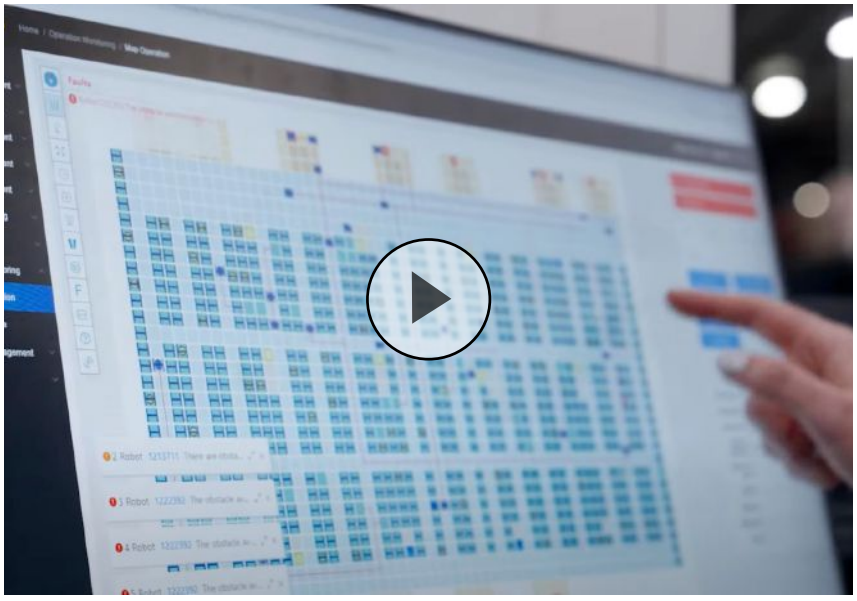
UPS is using autonomous guided vehicles (AGVs) powered by Dane, Geek+, Locus Robotics, Crown Equipment, and Toyota-Raymond to simplify demanding jobs. Many of these AGVs can move small packages and irregular-sized shipments more safely and easily through UPS facilities, noted the logistics provider.

Irregular shipments that don't fit on conveyor belts can often be heavy and difficult to move, said UPS. These automated vehicles can "exponentially streamline these movements and promote safety," it claimed.

Digital technologies part of competitive strategy

UPS said it is also using digital technologies to ensure the safety of every delivery around the world by using Delivery Photo and Delivery Defense to decrease fraud for customers. The company said it is using these innovations today in select facilities across the U.S. as it continues to execute its strategic plan.

"In providing industry-leading livelihoods for our people, we are now also using technology, innovation and automation to provide for their well-being," said Bala Subramanian, exec-



utive vice president and chief digital and technology officer at UPS. "UPSers will always be our differentiator even as we optimize our network through technology."

UPS said it is one of the world's largest companies, with a 2022 revenue of $100.3 billion. Its more than 500,000 employees provide a range of integrated logistics offerings for customers in more than 200 countries and territories.

Logistics robot market expected to grow

While the growth of e-commerce demand may have slowed since the peak of the COVID-19 pandemic, third-party logistics providers (3PLs) can still use robotics to mitigate labor shortages, reported market research firms.

The global market for logistics robots could expand from $7.1 billion in 2023 to $22.6 billion by 2033 at a compound annual growth rate (CAGR) of 12.3%, estimated Fact.MR. It cited improvements in sensors, robotic platforms, AI and the Internet of Things (IoT) as contributing factors.

Similarly, Future Market Insights forecast a CAGR of 16.5% from $8.28 billion in 2023 to $38.13 billion by 2033, propelled by worker shortages and resurgent manufacturing.

The North American logistics robot market alone could have a CAGR of more than 17% between 2023 and 2032, said Acumen Research and Consulting.

IMARC Services Pvt. Ltd. was even more bullish, predicting a global CAGR of 22.6% from $15.2 billion in 2022 to $58.6 billion by 2028 because of the need for efficiency, worker safety, and productivity. Other 3PLs testing and rolling out robotics include DHL and FedEx Corp. •

UPS describes its operations in its Houston facility. Source: UPS

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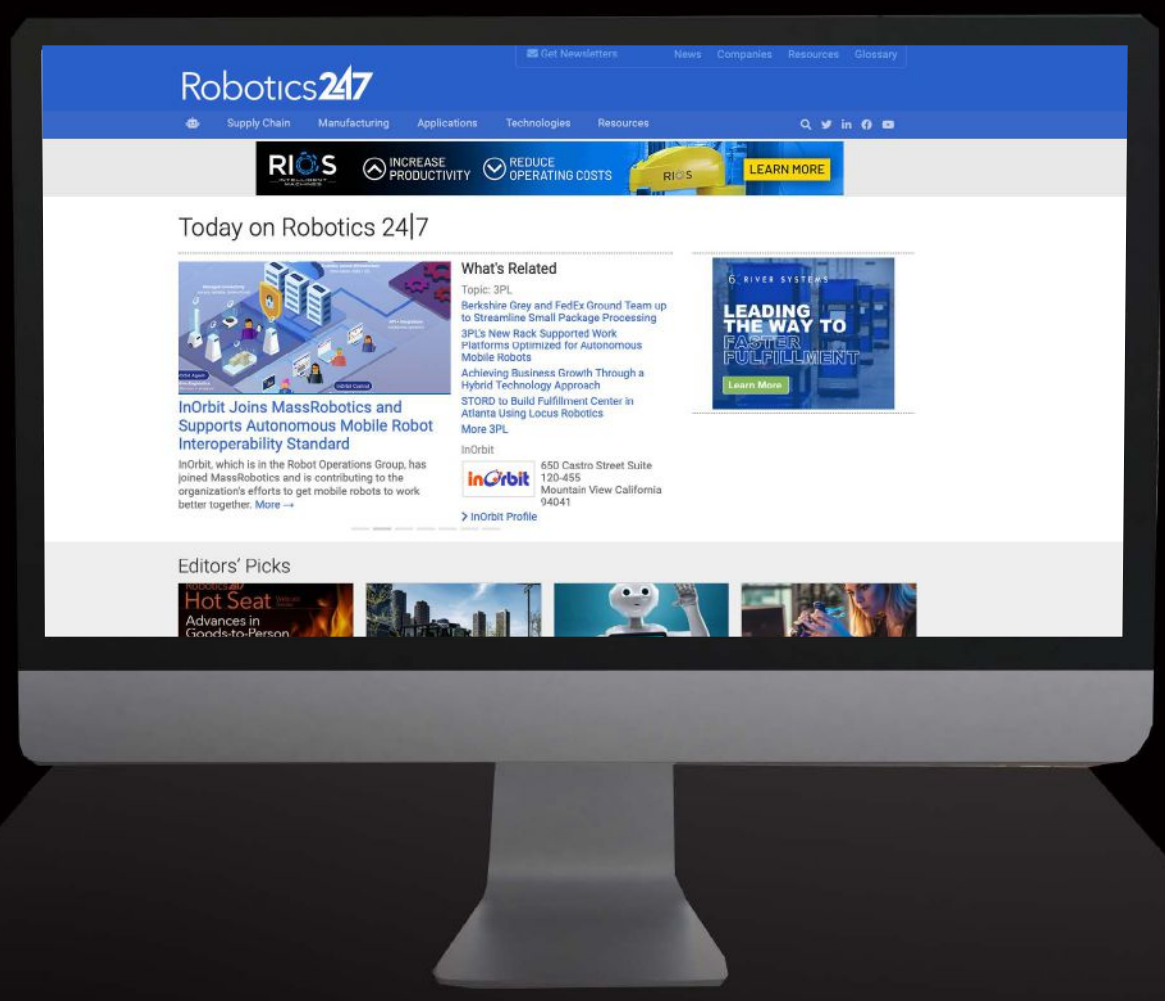

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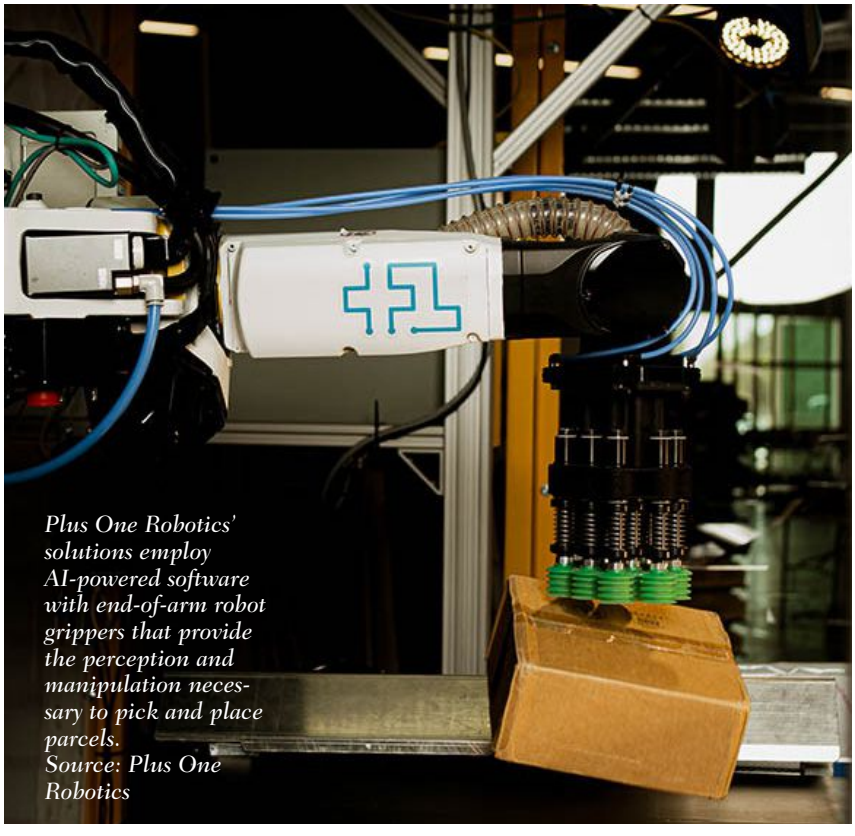
Plus One Robotics raises $50M in Series C to advance AI vision software products

Plus One Robotics said e-commerce demand and labor challenges continue to be key factors driving automation adoption

BY ROBOTICS 24/7 STAFF



Plus One Robotics' solutions employ AI-powered software with end-of-arm robot grippers that provide the perception and manipulation necessary to pick and place parcels.
Source: Plus One Robotics

Plus One Robotics, a provider of advanced AI vision software and solutions for robotic parcel handling, announced in March 2023 that is has raised $50 million in Series C funding. That brings the company's total funding to nearly $100 million.

Founded in 2016, San Antonio-based Plus One Robotics said it combines computer vision, AI, and supervised autonomy to pick parcels for leading logistics and e-commerce organizations in the Global 100.

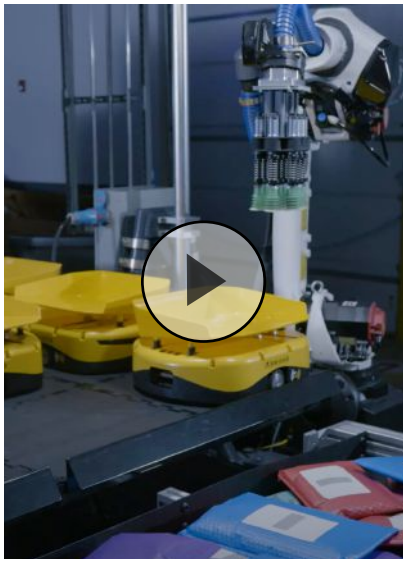
The company has claimed that its technology helps alleviate the persistent shortage of manual labor through robotic solutions, dramatically streamlining the parcel picking and depalletizing processes.

Plus One added that its deployments perform over one million parcel picks each day in production and currently hold an industry-leading metric of more than half a billion parcel picks globally.

With these new funds, Plus One said it can further increase its capacity and rapidly scale deployment, as well as expand its sales and marketing efforts in North America and internationally.

This expansion builds on Plus One Robotics' existing relationships with customers in the parcel post, logistics, and general merchandise industries, serving customers that include FedEx, MSC Industrial, and many more, it said.

The funding round was led by Scale Venture Partners, with partner Rory O'Driscoll joining the board of directors. Top Tier Capital Partners, Tyche Partners, ROBO Global Ventures, Translink, McRock Capital and Pritzker Group Venture Capital also participated in the round alongside existing investors.



The labor problem

"The labor shortage is hitting the shipping industry hard, and parcel picking is an often overlooked yet essential part of the process," said O'Driscoll. "By automating the parcel handling piece, Plus One Robotics is rapidly modernizing an outdated system that's no longer sustainable. It is stepping up and leading the way in a $128 billion market, with fundamentals that prove its value."

E-commerce has grown to represent 19% of U.S. retail sales, with approximately 20 billion parcels delivered in the U.S. in 2021, it said. Shipping growth is expected to rise by 25% over the next five years, resulting in warehouses and distribution centers not having the workforce to keep up.

On the supply side, over 80% of warehouses are manual, and with the demands placed on shipping expected to grow, there will be over 1 million more jobs to fill by 2025 despite the shrinking of available labor sources – and costs are rising, the company said. Labor costs average $25 per hour and continues to increase. This creates a perfect storm threatening the supply chain and impeding future e-commerce growth.

"The growth of e-commerce has placed tremendous pressure on shipping responsiveness and scalability that has significantly exacerbated labor and capacity issues," said Erik Nieves, CEO and co-founder of Plus One Robotics. "Automation is key, but keeping a human in the loop is essential to running a business 24/7 with greater speed and fewer errors. With the ongoing labor shortages, I believe we'll see an increase in the adoption of Robots-as-a-Service (RaaS) to lower capital expenditures and deploy automation on a subscription basis. This new funding will help us scale up and meet the need for these solutions."

Proven solutions

Plus One Robotics' solutions employ AI-powered software with end-of-arm robot grippers that provide the perception and manipulation necessary to pick and place parcels. Key to Plus One Robotics' effectiveness is its approach to human-in-the-loop software, it explained.

Employees, remote or on-premises, can supervise multiple robots from any location, speeding the robot's ability to handle exceptions, and enabling 24/7 operations. Users benefit from improved sorting and picking throughput by 30% or greater while decreasing operational costs.

Plus One has experienced nearly three times year-over-year growth from expanded business with existing customers and new deployments.

Additionally, Plus One Robotics has increased its adoption of the human-in-the-loop capability and RaaS offering among its parcel and post, third-party logistics (3PL), and general merchandise customers. •

Pitney Bowes to automate middle mile sorting with Ambi Robotics

Pitney Bowes deployed the new AmbiSort B-Series system at U.S. coastal hubs ahead of 2023 peak season

BY ROBOTICS 24/7 STAFF

Pitney Bowes and Ambi Robotics partnered to develop and deploy the AmbiSort B-Series across the U.S. Source: Business Wire

Pitney Bowes Inc. and Ambi Robotics Inc. announced in October 2023 that they have successfully deployed the new AmbiSort B-Series modular system for parcel induction and sorting in middle-mile operations.

"Today's e-commerce demands must be met with speed, and as such, technological solutions must be scaled quickly," stated Stephanie Cannon, senior vice president of operations excellence and collaborative innovation at Pitney Bowes.

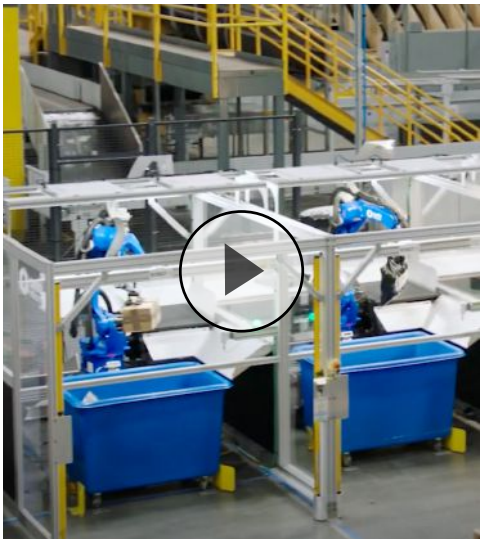
"At Pitney Bowes, we are partnering with some of the most innovative companies in the industry to make B2C [business-to-consumer] e-commerce logistics easier for our clients," she added. "With Ambi Robotics, we were able to develop a sortation system that solved a particular need and scaled it quickly across our ecommerce hubs, adding capacity for our clients ahead of peak season."

Pitney Bowes accelerates parcel sortation

As global parcel volume exceeds 161 billion pieces annually, logistics and delivery organizations are seeking automation that can quickly scale to meet their needs, noted the latest Pitney Bowes Parcel Shipping Index. The Stamford, Conn.-based company said it provides shipping and mailing technology, logistics, and financial services to more than 90% of the Fortune 500.

Pitney Bowes said that small-business, retail, enterprise, and government clients around the world rely on it to remove the complexity of sending mail and parcels. It initially deployed the AmbiSort A-Series sortation system for small parcels in last-mile operations.

The company then partnered with Ambi Robotics to develop and deploy the AmbiSort B-Series in Pitney Bowes e-commerce hubs across the U.S. It said the artificial intelligence-powered robotics will help speed parcel sortation to



middle-mile delivery providers while improving productivity, accuracy, and worker safety.

"We view automation as the execution of the undesirable tasks that humans don't want to do so that employees can build a sustainable career," said Ryan Hannon, vice president of industrial engineering and collaborative innovation at Pitney Bowes. "We achieve this by elevating the working conditions, setting the new standard of human work, and creating new desirable roles like robot operator and super robot operator."

AmbiSort B-Series adaptable, says Ambi Robotics

Ambi Robotics said its AmbiSort B-Series can reduce operating costs by inducting and sorting parcels into gaylord destinations. It also claimed that the system addresses the challenges of labor-intensive manual sorting throughout high-speed supply chain operations.

"The AmbiSort B-Series solution adapts to various use cases, such as reverse logistics, interfacility sortation, sort-to-carrier, zone-skipping, and automated parcel induction," the company asserted.

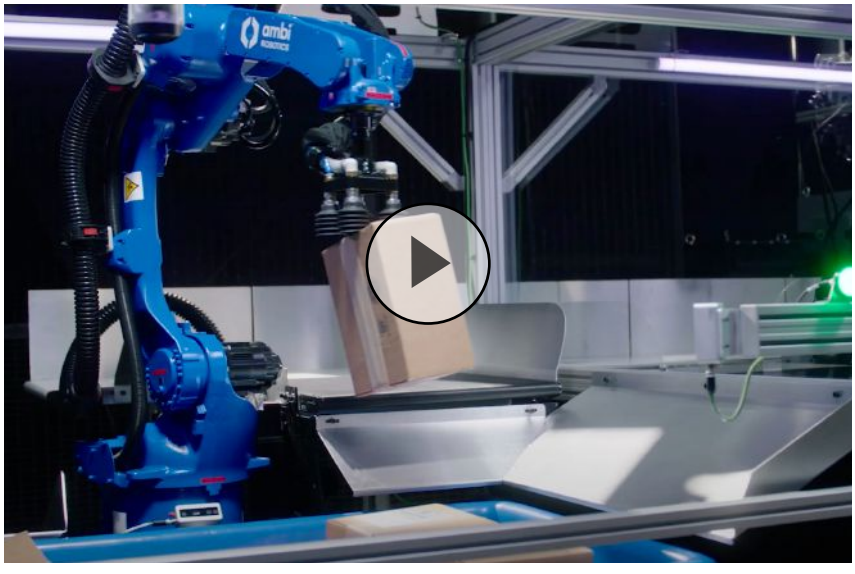
"The successful deployment of the AmbiSort B-Series is a result of strategic and collaborative innovation between the two companies," said Jim Liefer, CEO of Ambi Robotics, in a release. "Pitney Bowes is pioneering the future of smart logistics and has been at the forefront of transforming warehouse work to align with the demands of constant e-commerce."

"This partnership serves as a model of such collaborative innovation and sets a high bar for future supply chain modernization," he said.

Founded in 2018, Ambi Robotics said it develops AI and robotics to enable e-commerce operations to meet demand "while empowering humans to handle more." Its AmbiOS operating system uses proprietary simulation-to-reality (Sim2Real) technology to operate highly-dexterous robotic systems.

The Berkeley, Calif.-based company said it employs "the world's top roboticists, AI researchers, and leading business professionals." It raised $32 million in additional funding in October 2022.

The global market for parcel sortation systems could expand from $2 billion in 2023 to $2.8 billion by 2028 at a compound annual growth rate (CAGR) of 7%, according to Markets and Markets. It attributed that growth to the e-commerce industry and growing adoption of sortation systems. •

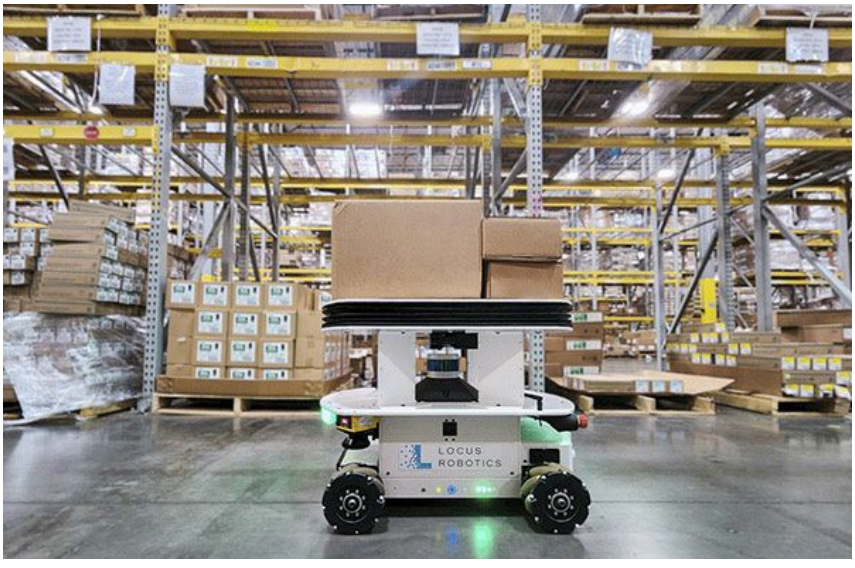


Ambi Robotics said its AmbiSort B-Series is a modular parcel induction and sorting solution that offers speed, flexibility, and scalability to the shipping logistics market.

Optoro and Locus Robotics team up to deliver integrated, high volume reverse logistics system

Strategic alliance comes on the heels of the annual peak in post-holiday retail return season to help retailers easily scale to efficiently meet growing returns demand while reducing costs

BY ROBOTICS 24/7 STAFF



Optoro has integrated its platform with Locus AMRs for reverse logistics. Source: Locus Robotics

Optoro Inc. and Locus Robotics Corp. announced a strategic partnership in March 2023. The companies said they will provide said they will provide a fully integrated, robust, and highly scalable software and robotics hardware system for high-volume returns processing in retail and e-commerce.

"Partnering with Locus enables us to deliver a proven robotics automation solution that is well-positioned to meet the high throughput demands of today's return centers," said Amena Ali, CEO of Optoro. "Together, we can help retailers move inventory faster and more efficiently through the supply chain, cut costs, minimize their environmental impact, and improve the customer experience."

Washington, D.C.-based Optoro said it offers data science and real-time decision-making automation to improve the returns process. The company said that its customer returns portal is easy to use and provides warehouse processing and resale software.

Optoro cited leading retailers and brands – including American Eagle, Best Buy, Staples, and IKEA – that trust its technology "to make returns a strategic advantage for their business and enable sustainability initiatives across their supply chain."

Optoro integrates AMRs to keep up with return volume

Increasing order volumes in e-commerce mean a corresponding increase in returns, noted the companies. U.S. retail returns totaled $816 billion in 2022, with e-commerce returns totaling $212 billion, according to the National Retail Federation (NRF). Both totals more than doubled since 2019, it said.

Reverse logistics includes product returns, refurbishment and repairs, recycling of packaged materials, and disposal of end-of-life products, explained the partners. It involves many areas across an organization, including returns management,

sales, finance, warehousing, logistics, recycling management, and environmental compliance. It is also an important part of the customer experience, said Locus Robotics and Optoro.

Optoro has integrated its returns platform with Locus' autonomous mobile robots (AMRs) to to handle order returns – whose numbers typically increase substantially during the holiday season. By determining the best path for each returned item, the technology can improve efficiency, maximize repurchases and recovery, and reduce labor costs and waste, claimed the companies.

In addition, Optoro said the integration of its software with Locus' AMRs "allows retailers to focus on forward fulfillment while offering the best customer experience."

Locus Robotics brings experience, scalability

"Returns and reverse logistics have historically been high-volume, high-cost functions that are typically quite complicated," said Al Dekin, chief revenue officer at Locus Robotics. "We believe our partnership with Optoro will provide 3PLs [third-party logistics companies], retailers, warehouse operators, and others a repeatable, efficient, and proven solution."

Locus said its system enables operators to easily manage large-scale AMR fleets to speed up returns processing, minimize restocking challenges, and lower labor costs by seamlessly scaling up and down whenever demand changes. The Wilmington, Mass.-based company asserted that it delivers enterprise-level, large-scale e-commerce automation that is suitable for high-throughput, 24/7 operations.

Locus has deployed its LocusBots in both single-level and multi-level mezzanine environments.

"During the recent peak season, Locus had several sites operating more than 500 LocusBots apiece, and dozens of others with more than 100 bots each," Dekin said. "Our experience and success in deploying large fleets not only instills the confidence our customers require, but the speed at which we can deploy is [also] equally critical."

Locus said its AMRs work with people and can double or triple productivity. Named to the Inc. 500 two years in a row, and winning over 17 industry and technology awards, the company said its system can reduce operational costs and improve workplace quality, safety, and ergonomics.

Supporting more than 100 of the world's top brands and deployed at over 250 sites around the world, Locus said it enables retailers, 3PLs, and specialty warehouses to efficiently meet and exceed the increasingly complex and demanding requirements of today's fulfillment environments. •

The Perfect Pick System is a dense-inventory storage solution. Source: Opex Corp.

Advanced Robotics to begin selling OPEX's Perfect Pick and SureSort Systems to European warehouse customers

Perfect Pick is an AS/RS designed to help warehouse workers take advantage of vertical space

BY ROBOTICS 24/7 STAFF

Advanced Robotics Zrt announced in April 2023 that it will be the first European systems integrator to sell OPEX Corp.'s Perfect Pick, an automated storage and retrieval system (AS/RS) designed for e-commerce fulfillment and micro-fulfillment customers.

Budapest, Hungary-based Advanced Robotics plans to install three Perfect Pick aisles at one of its client's facilities in Hungary. Perfect Pick features intelligent, wireless iBOT vehicles that access inventory in a single aisle, traveling around the storage rack at rates of up to 1,000 dual-cycles per hour, according to OPEX.

Advanced Robotics said it focuses on intelligent logistics solutions that are unique to the Hungarian as well as Central and Eastern European markets, using robotics as well as artificial intelligence technologies to solve warehouse and factory logistics operations, saving time, energy, and cost.

"Perfect Pick is a great solution for e-commerce fulfillment and micro-fulfillment because of its scalability and narrow footprint," said Nicolas Dewit, director of business development – Europe, Middle East, and Asia (EMEA) for OPEX Warehouse Automation. "Perfect Pick utilizes a warehouse's vertical space, increasing throughput, reliability, and effectiveness."

Advanced Robotics will also sell SureSort item-sorting system

Advanced Robotics will also sell OPEX's Sure Sort, a compact small-item sorting system. Moorestown, N.J.-based OPEX said the Sure Sort automated put wall is scalable, configurable, and reduces the number of excessive touches associated with other sorters. It's used by retailers, third-party logistics providers, and distributors that require cost-effective and accurate order handling, parcel sorting, and reverse logistics, the company added.

In January, OPEX expanded the capabilities of its SureSort by incorporating radio frequency identification (RFID).

OPEX featured their warehouse automation solutions at LogiMAT, Europe's international trade show for intralogistics solutions and process management, held April 2023 in Stuttgart, Germany.

OPEX sells more than just warehouse solutions. It also provides automation products for document and mail sorting. Earlier this year, the company opened a new office and showroom demonstrating its mail technology, including Gemini high-speed scanners, Mail Matrix mail sorters, and Eagle remittance processing systems. •

Ambi Robotics releases AmbiSort B-Series, a robotic modular parcel induction system

Ambi Robotics said its new system marks its entry into automated induction

BY ROBOTICS 24/7 STAFF

Ambi Robotics has released its new AmbiSort Series B for parcel induction tasks. Source: Ambi Robotics

Ambi Robotics announced the release of a new robotic parcel system in June 2023. The AmbiSort B-Series is a modular parcel induction system that automates the process of inducting and sorting parcels into gaylord boxes, which are boxes used to transfer bulk product.

The AmbiSort B-Series uses multiple robot arms in unison to sort parcels at high speed from bulk unstructured input bins into gaylord destinations, the Berkeley, Calif.-based company said.

The sorting solution is versatile, with the number of outputs and layout adjustable to fit specific needs and footprints, according to the company. The system was designed to provide a complete sortation process automation, including induction, grasping, a six-side scan tunnel, quality control and accurate placement into output locations.

"The AmbiSort B-Series is a testament to our proven expertise in AI-powered robotic parcel sortation, meticulous engineering, and unwavering dedication to delivering a product that aligns with market demands," said Jim Liefer, CEO of Ambi Robotics, in a statement. "The AmbiSort B-Series marks Ambi Robotics' entry into automated induction, middle-mile sortation, and reverse logistics as we build upon

the success of the 80 flagship AmbiSort A-Series systems deployed across the US."

The AmbiSort B-Series is the company's second system. The company also offers the AmbiSort A-Series, which is a small-item sorting system. In October 2022, the company raised $32 million in funding. In total, the company has raised $65 million, according to Crunchbase.

AmbiSort B Series offers flexibility

Ambi Robotics noted the AmbiSort B-Series is modular. Customers can configure the system to their precise sorting needs, seamlessly integrating automated induction, sorting, item manipulation, and accurate placement.

Configurations include:

- **Induction Cell**
  Automated induction from deep bin or conveyor to conveyor, trays, and containers.
- **End-to-End Sortation**
  Automated induction onto a central conveyor with six-sided scan tunnel and bidirectional conveyor divert modules, sorting to a variety of output containers including gaylords, wire containers, and more.
- **Vision-Based Sorter Expansion**
  Enhance capacity and efficiency in high-speed sorting operations by integrating AI-based quality control with upstream sorters. Seamlessly integrate with existing machinery to enable advanced tracking and package analysis throughout middle-mile parcel sorting operations, optimizing performance and minimizing errors.

AmbiSort B-Series can be leveraged for induction only, reverse logistics, sort-to-carrier, zone-skipping and final-mile sortation. The system can also be configured for conveyor and AI vision systems only.

The AmbiSort B-Series expands with existing processes and is flexible and modular so customers can add additional induction cells to boost throughput speeds or expand the number of destinations to increase capacity, the company said.

The system automates labor-intensive and manual sorting processes involved in inducting and sorting mixed parcels into gaylord destinations. It is powered by the company's proprietary simulation-to-reality (Sim2Real) AI.

"Today's ecommerce retailers need fast and flexible AI-powered sorting capabilities that enable them to inject packages at strategic points within the growing parcel network," said Jeff Mahler, Co-founder and CTO of Ambi Robotics. "Configurable from its core, the AmbiSort B-Series couples cutting-edge parcel induction, with high-speed end-to-end sortation, unlocking new levels of productivity, accuracy and worker safety." •