Enterprise Technology Review

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BERKSHIRE GREY

RADICALLY TRANSFORMING FULFILLMENT WITH ROBOTICS

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Despite the availability of innovative machinery and workforce, only 30 percent of warehouses in the U.S are operating efficiently, says a study by the Georgia Institute of Technology. This statistic poses a scarier follow-on question: what about the rest? Many warehouses are filled with people executing one of the most labor-intensive tasks in order fulfilment: picking. The monotonous and strenuous nature of picking also makes it prone to errors, costing warehouses and distribution centers substantial time and money. What makes this task more daunting and less profitable for retailers, distributors, and logistics companies is that increasingly, consumers are placing more ecommerce orders for fewer products more often, and stores have less-and-less storage space to hold excess inventory.

Given the varying products of different shapes and sizes that need to be shipped, picking—as much as it is a well-definedand repetitive process—has remained beyond the scope of traditional automation and robotics. Meanwhile, behemoths such as Amazon have made massive investments in multitudes of assistive robots in their warehouses—a feat that is beyond the reach of the majority of other retailers, distribution centers, and logistics companies.

Berkshire Grey is leveling the playing field in favor of these companies through intelligent robotic solutions enabled by integrated AI, computer vision, and cutting-edge electromechanicals that can pick, pack, and sort products. The company supports the true notion of omnichannel fulfillment by democratizing robotics for the

entire industry and disrupting the monopoly of large players.

"Our intelligent robotic solutions elevate the existing operations of retailers, distributors, and logistics companies, improving their order fulfillment workflows so they can serve customers better at lower cost," states Steve Johnson, the President and Chief Operating Officer at Berkshire Grey. "Some of our clients reduce picking labor costs by up to 70 to 80 percent while increasing throughput by 25 to 35 50 percent."

REMOVING THE BOTTLENECKS IN ORDER FULFILLMENT

As the lines between digital and physical shopping experiences continue to blur, companies need to be more agile and responsive to customers' needs, making order sorting and picking activities crucial for driving efficient order fulfillment. This has become all the more imperative for retailers who operate in an omnichannel environment and want to improve their replenishment processes. They need to ensure a balanced distribution of stocks in optimum quantities, both on store shelves as well as in their warehouses for e-commerce orders while preventing an excessive amount of inventory build-up. Optimal store replenishment can not only increase sales velocity but also deliver the items in demand, reduce the possibility of stock-outs, and ultimately drive enhanced customer satisfaction.

Berkshire Grey has addressed these trends, positioning itself to radically transform order fulfillment processes with its intelligent robotic solutions for order picking, packing, sorting, and shipping. The company designs complete systems to address the complex processes involved in picking and placing of items to assemble orders, not just with its robots and gripper technology but also by incorporating computer vision and AI.

The 2D and 3D perception technologies allow the solution to manipulate visual data and perform operations across a large variety of items. The added real-time performance assessment and agile manipulation results in fast accurate picks and makes the operations more efficient.

The core element of Berkshire Grey's solutions is the built-in AI and ML components that help its robots improve with every order fulfillment activity. These components enable the robots to identify items in cluttered and dynamic presentations, move faster, and modify ways to pick and place products efficiently.

Berkshire Grey's robotic solutions have built-in engineered electromechanical hardware including vision systems, sensors, gripping technology, and patented conveyance mechanisms. The sensors send signals including tactile pressure, light beam, and accelerometer readings to the AI, along with visual data to react in real-time. This enables Berkshire Grey's systems to handle the broadest assortment of products, including apparel, cell phones and electronics, food items, and many other types of general merchandise. Furthermore, the systems can auto-swap the gripper head in real-time according to the type of items being handled to precisely pick all types of random item sizes, shapes, and packaging materials with no slowing of the process. The systems also log real-time data that can be leveraged to make future decisions and enable intelligent product handling.

Berkshire Grey's solutions can be implemented in multiple configurations, and they integrate easily with clients' existing processes and systems. The solutions are capable of picking and packing many orders simultaneously, dynamically sorting orders to support downstream processes, and improving utilization of existing material handling assets such as sorters and Automatic Storage and Retrieval Systems (ASRS).

Additionally, a robotic parcel sortation solution generates value at every point of the supply chain. It helps retailers sort parcels for shipment to individual stores for consumer pickup. They also sort ecommerce parcels by zones to take advantage of zone skipping practices, thus resulting in freight saving from carriers and parcel delivery companies. Those same parcel companies can use the solution to sort packages by zone or ZIP code to more efficiently move bags or boxes of collected small parcels through their network and ultimately sort to the individual delivery trucks at local hubs.

BUILDING ON SUCCESS

As part of its working relationship with clients, Berkshire Grey starts with what its clients are looking to accomplish, including desired performance metrics and KPIs, as well as what their existing operations processes look like today. The company further examines the clients' product data to distinguish between robot-pickable merchandise and non-robot-pickable merchandise. Based on this information, Berkshire Grey provides a business case including the solution, its implementation process, and projected ROI. Following this, the company builds standard systems and configures them to meet the clients' needs. Typically, Berkshire Grey can effectively handle 70 to 80 percent of general merchandise with its robotic picking solution but will configure these systems to meet clients' specific needs, starting with a baseline set for the highest performance level.

Berkshire Grey has a designated team that goes on-site and deploys the system. It also has product specialists that train the clients on operating and maintaining the systems over time. Finally, the Berkshire Grey support team is available 24/7/365, assisting clients over calls and on-site.

Berkshire Grey invests in building systems that once deployed, run reliably and effectively to compensate for labor availability issues. These systems are built to run consistently over a long time span while enhancing order fulfillment efficiency for clients. "Our systems are scalable, fast, and reliable," says Johnson. "Clients can operate them on their own easily, with no robotics expertise required." This robustness is evident from the systems' capacity to generate ROI and improve the workflow for clients.

In one instance, Berkshire Grey's client was looking for efficient methods to improve store replenishment for less-than-case order picking and shipping. Previously, this client had employees staffed in a pick module to pick and sort four to eight orders each into reusable outbound containers. The inventory to pick was served to the pick module in large totes from an ASRS. After implementing the Berkshire Grey solution, the client was able to reallocate these employees into more critical operations within the distribution center. Today, the robotic system continuously picks millions of items per month, seven days per week, on multiple shifts. The robotic solution picks anything from general merchandise such as health and beauty products, to utensils, housewares, and apparel and sorts and packs them to be shipped to stores—all without human intervention.

TRANSFORMING ORDER FULFILLMENT NOW AND FOR THE FUTURE

Berkshire Grey credits its proven success among clients in the order fulfillment process space to "the incredible team of people behind our robotic innovations," explains Johnson. The company is planning to expand into international markets this year. They are also offering their solutions via Robots-as-a-Service (RaaS) implementation models to make the systems accessible to clients without upfront capital investment. "Ultimately, what we're doing is helping the whole retail ecosystem serve customers better through intelligent robotic solutions for order fulfillment operations and beyond," concludes Johnson. **ET**

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The annual listing of 10 companies that are at the forefront of providing Supply Chain Management solutions and transforming businesses