



A look at GENCO's robotics solutions

Robotics improves fulfillment operations

Fulfillment operations present a number of challenges. There are continual pressures for warehouses to grow, increase productivity, speed and accuracy.

Unfortunately, traditional material-handling systems in the majority of warehouses are slow, inflexible and costly. That's surprising, considering robotics technologies are out there just waiting to be implemented.

Why are most companies slow to adapt to the new technology? "No one wants to be the first—they feel there is too much risk," says Gary Siefert, GENCO's vice president, Strategic Processes & Technology and Six Sigma Black Belt. "We see robotics as an ever-evolving technology that keeps up with and anticipates warehouse management fulfillment needs.

In fact, order fulfillment promises to be one of the fastest-growing robotics initiatives."

Mobile Fulfillment System

As companies seek to improve their fulfillment operations, traditional solutions have clear limitations. Storage commands a greater percentage of cost than any other individual portion: the options are basically to carry less inventory, establish just-in-time inventory parameters or change the process.

"Off-the-shelf technology offered some solutions, but no material-handling solution addressed the automation need directly or demonstrated a distinct advantage," Siefert says. "Until now." GENCO has partnered with the leading-edge manufacturer of a new technology, which employs a unique type of

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Strategic Processes & Technology and Six Sigma Black Belt**

custom software coupled with inventory storage pods and robots that manage the storage, movement and sortation of inventory for any item to any operator at any time.

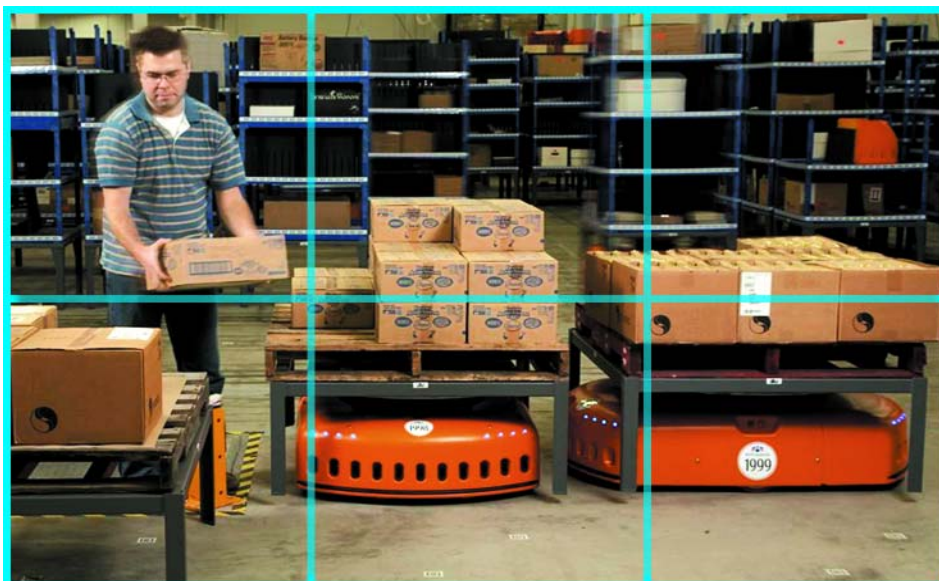
The technology is based on a warehouse configuration laid out on a grid with inventory pods in the center, work stations on the perimeter and a control system that directs the hardware. Unique features include:

- Real-time, parallel, random access to all locations in the warehouse
- Simultaneous picking and putaway
- Combination of storage, movement and sortation in one set of equipment

- A system that is customizable, modular and flexible

The technology's software has many distinct features:

- Continually optimizes-high velocity inventory moves closest to workers and eliminates A/B/C profiling
- Adaptive-adjusts in real-time to changes in SKUs, form factor, demand
- Configurable for operational objectives (LIFO/FIFO, priority orders) and for individual workers (height, strength, abilities, break times)



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Case in point

The Mobile Fulfillment System advantage

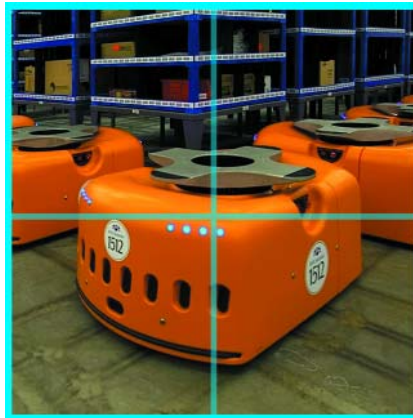
During the summer of 2005, a pilot program using the new Mobile Inventory technology was implemented at a GENCO-managed facility.

Less than two-feet high, three-feet long and sporting an orange shell, the robot is the most colorful representation of this technology. Short in stature, but big on results, the robot responds to commands from a centralized computer, which signals instructions wirelessly to each robot. Moving through GENCO's facility, the robots are guided by optical navigation systems linked to barcode floor markers.

At the designated location, they access multi-shelved inventory pods by positioning themselves beneath the six-foot-tall units and lifting them. The number of shelves per pod can be selected and configured to meet specific needs, providing additional flexibility. Loaded pods can weigh as much as 1,000 lbs.

89 percent. As a result, a significant reduction in staff can be realized from the technology. It completely eliminates the travel needed for picking, which typically takes up most of the time to do any type of fulfillment, split case or full case operations."

Minimal operator training is required. The technology can be installed and ready to deploy in eight hours. The pilot was so well received that GENCO is currently working on a case pick pilot.



"The key is to always enhance the productivity and accuracy of our customers' facilities to provide them with the best supply chain solutions available."

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Once the robot has secured the pod, it delivers the specified inventory to the queue of fulfillment/picking station operators, at which time the robot parks the pod. The system is designed to present a new "pick face" to the operator every six seconds. Based on real-time order volumes, the computer can also instruct the robots to leave the pods that hold the most frequently ordered products in easily accessible locations. "The four-month pilot was a great success" Siefert notes. "Productivity was increased by

Eliminate unnecessary forklift travel

Spending \$25,000 for a piece of material-handling equipment that gives you the ability to move pallets vertically doesn't make a lot of sense if 55 percent of the time that equipment is actually moving horizontally.

In fact, that's what GENCO's Six Sigma studies and analysis discovered in many large facilities, usually with empty forks while traveling.

"We need to do something about it," says Siefert. "Our goal is to eliminate unnecessary

Benefits of Robotics

Labor Benefits:

- Increases speed, productivity, accuracy and flexibility
- Two total touches
- Autonomous operators
- Tailored operator-specific picks
- Operator utilized 95 percent of the time
- Transportation efficiency-no travel distance

SKU Management:

- Zero re-slotting, profiling
- Reduced on-hand inventory, rapid dock-stock
- Dynamically adjusts to changing mix
- In-line cycle count, easy physical count
- Robust, no single point of failure

System Benefits:

- Rapid design, installation and ramp-installation within eight hours
- Increased use of split-case-can be very economical
- Increase SKU facings
- Pop-up seasonal capacity DC-mobile to any location

travel throughout the warehouse. In this particular instance, we need to eliminate that waste and ensure the equipment is used for its intended purpose." To that end, GENCO is piloting an unmanned tugger that can pull multiple flatbed carts with multiple pallets on each cart and take them from one area to another.

"We teach the tugger a specific path-from A to B to C, etc.," Siefert adds. "It pulls pallets from one end of the warehouse to another. While it is not fast, it does not require an operator as with a hlift."

The technology manufacturer GENCO partners with utilizes 3D MOS digital imaging (Complimentary Metal Oxide Semiconductors) to constantly recreate its environment. It reduces non-value added transport work in a facility. By “teaching” the unit to travel from point to point within the facility, it can transport multiple pallets on a repeating circuit that can be directed by the warehouse management system. “The unit can currently haul up to six pallets or 10,000 pounds at a time,” Siefert says, “while the carts can be customized to haul additional weight as required. This system is currently being beta tested at a GENCO-managed facility.”

A different application will also be piloted in late fall, utilizing a single or double pallet jack to transport pallets. The pallets will be loaded onto the pallet jack by a worker, sent on a path or multiple paths and automatically dropped off at various specified locations without human intervention.

The difference between the two applications is that with the tugger someone loads pallets on a cart at the initial starting point, while another worker with a lift is required to meet those carts at a designated location to lift those pallets off the carts onto the warehouse floor or, conversely, load those pallets on the carts to take them from point to point.

The advantage of the new application is that it will be able to travel and drop off pallets independently, without the assistance of a material handler, which is a huge advantage over carts. A worker positions the jack to pick up the pallets then assigns the desired path destinations. After selecting start, the jack speeds away to the designated delivery points. The material handler will not be required to monitor



drop-offs as the jack moves from point to point. Once this technology is proven to be efficient and cost effective, we can then extrapolate this into other applications, possibly loading or unloading trailers utilizing a variation of the software and equipment.

Many opportunities exist

“These robotics technology initiatives are just the tip of the iceberg. There are more to follow in the near future, said Siefert. “We are always looking ahead to explore how we can cut costs while reducing unnecessary touching and travel in the process. The key is to always enhance the productivity and accuracy of our customers’ facilities to provide them with the best supply chain solutions available. As business needs expand and evolve, technology will continue to respond.”

GENCO can implement these and other technology solutions in customer-operated or GENCO-operated facilities.

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