Online Wellness Retailer iHerb Doubles Throughput Capacity with New Automated Order-Fulfillment Facility

New pick-to-order and material-handling systems improve labor efficiency 300 percent compared to legacy facility

**Challenge**

iHerb needed to meet increased production needs due to growing customer demands by building a new East Coast order-fulfillment facility.

**Solutions**

**Material-Handling System**

- Allen-Bradley L72 ControlLogix controllers provide control for the system’s carton erectors and conveyors, which deliver shipping containers to workers in tandem with products that are retrieved from a separate pick-to-order system.
- FactoryTalk View HMI software enables operators to run equipment, monitor machine states and track metrics.
- Field boxes with Allen-Bradley POINT I/O racks reduce the facility’s wiring burden.

**Results**

**Increased Efficiencies**

- Doubled capacity from about 10,000 orders to 15,000 to 20,000 per shift
- Improved labor efficiency by 300 percent

**Faster Time-to-Market**

- Orders can run through the facility in as quickly as 15 minutes.

**Background**

For all the potential the Internet continues to hold for the future, one use remains a constant – shopping. U.S. retail e-commerce sales totaled an estimated $305 billion in 2014, according to the U.S. Department of Commerce, an increase of more than 15 percent from 2013. Additionally, retail e-commerce sales accounted for nearly 7 percent of total sales in 2014.

Some retailers struggle to find the right balance between brick-and-mortar locations and online sales. Others opt for an online-only presence. Among those taking the strictly online route is iHerb, which was founded in 1996 to promote benefits of St. John’s wort and has expanded its product catalog over the years to include a wider range of natural, health-focused products.

Today, California-based iHerb sells nutritional supplements and wellness products, including bath and beauty, specialty grocery, pet care, aromatherapy and fitness products exclusively online. The company offers 35,000 different products from more than 1,000 brands to customers in more than 150 countries.
Until recently, all of iHerb’s inventory and shipping activities were handled at its lone warehouse in Moreno Valley, California. Amid growing demand, however, the company sought to expand its operations with a new East Coast facility in Hebron, Kentucky. Not only would this help iHerb deliver a growing number of customer orders accurately and on time, it also would provide an opportunity to improve efficiencies in the company’s order-fulfillment processes.

**Challenge**

The 390,000-square-foot iHerb warehouse in Moreno Valley opened in 2010 as the company’s first automated facility. The climate-controlled facility achieved Good Manufacturing Practices certification and achieved virtually 100 percent accuracy for the orders being shipped around the world.

Still, iHerb saw opportunities to speed existing operations to get customer orders out the door faster in the new Hebron facility. Specifically, the company wanted to implement an alternative to the existing batch-picking system. The system bunches orders into batches rather than individually processing each order, which is more time consuming on a per-order basis compared to a pick-to-order system. The existing system also relies on many manual-labor-intensive processes that could be automated to speed up the order-fulfillment process.

“As our business grew, it became more pressing to find opportunities to improve efficiencies and speed to market,” said Kurt Cheek, director of operations at the iHerb Hebron facility. “A big part of that involved exploring an alternative to the batch-picking system that would help us maximize the number of orders that can be shipped same-day while still achieving very high order accuracy.”

The company uses a warehouse management system (WMS) to process orders into batches, direct workers where to find the products, and identify the quantities needed for each batch. The products are hand-placed in totes that are then delivered down conveyors to work cells, where workers use radio-frequency (RF) scanners to scan each product.

A light that corresponds to each product scan identifies which shipping container each product should be placed in, and a “stop” light indicates when an order’s container is complete. The container is then sent off for sealing, weighing and shipping.

iHerb turned to Rockwell Automation OEM Partner Bastian Solutions to help. Working with Bastian Solutions, iHerb sought to design the new Hebron facility with efficiency improvements that could help further automate and speed up these highly accurate but sometimes labor-intensive processes.

**Solution**

iHerb opted to implement a pick-to-order system at the new Hebron facility in place of the batch-picking system used at the Moreno Valley facility. This new approach would allow products to be picked real time to each customer order.

It also required close harmonization of all machine and human activities in the warehouse. The correct products for each order must be pulled from the inventory and delivered to packing operators in tandem with the appropriate shipping container. iHerb used two separate but complementary systems to manage this operation.

The first is a pick-to-order system that contains 10 inventory aisles equipped with robots to locate and pick products for each order. The products are placed in totes and delivered to operators at work cells on 10 corresponding conveyor lines. A put-to-light system guides workers to place products in their designated shipping containers.

The second is a material-handling system that includes five carton-erecting machines, labeling and weighing machines, sorters, 48 RF scanners, and packing-material dispensers, among other technologies. When an order is inducted into the system, it calls for one of nine box sizes. The carton erector shapes the box, and a conveyor delivers it to the operator in concert with the products retrieved from the pick-to-order system. After the operators place the products in the container, the conveyor sends it on for packing, weighing and shipping.

Light-directed picking is used for iHerb’s most popular products.
Two master control panels containing Allen-Bradley® L72 ControlLogix® controllers provide control for the carton-erecting equipment and conveyors, while also interfacing with the pick-to-order system. A remote panel with a third ControlLogix controller provides additional motor control. Operators run the material-handling operations, monitor the conveyor run states and track key metrics, such as the RF scanner read rates, using FactoryTalk® View HMI software.

Thirteen field boxes with Allen-Bradley POINT I/O™ racks are strategically located throughout the facility in areas with high I/O concentrations. The POINT I/O racks allow I/O devices to be wired locally versus bringing the wiring back to one of the two master control panels, making installation easier and reducing the burden of field wiring.

Machine control, I/O and HMI communications all take place on an Ethernet network, along with communications with the host system.

Results

The Hebron facility became operational in July 2013. Today, iHerb can process individual orders – from induction to shipping – in as little as 15 minutes. Workers can fulfill 15,000 to 20,000 orders – containing as many as 100,000 individual products – in one shift. That’s double the order capacity of the Moreno Valley facility for a single shift, all while maintaining an accuracy rate of around 99 percent.

The new system also improved labor efficiency approximately 300 percent compared to the batch-processing system used in the Moreno Valley facility. Each aisle operator can pick as many as 800 items per hour.

“The order-fulfillment speed, order accuracy and improved efficiencies have made our Hebron facility an absolute success,” Cheek said. “Being able to deliver our customers’ orders quickly and accurately is our highest priority as an online retailer. This new facility empowers us to do that on a consistent basis and positions us for continued growth in order volumes.”

The facility currently operates one outbound shift at the facility, but can easily expand into additional shifts as demand requires. The control architecture is also designed to support additional lines for up to 30 percent additional capacity without the need for additional controllers or programming.

The control architecture approach also provided efficiencies during the installation and commissioning processes, helping the facility become operational in only four months. For example, a single operator’s work station program was created in Rockwell Software Studio 5000 Logix Designer™ software and then replicated for 20 work stations, which all used identical tasks. This eliminated the need to create a program from scratch for each individual station.

iHerb is in the process of upgrading its Moreno Valley operations, and is looking to carry over the successes from the Hebron facility into the new Moreno Valley facility. The new facility will be larger and involve more processes, but iHerb plans to use the same pick-to-order approach and the same hardware.

The results mentioned above are specific to this iHerb’s use of Rockwell Automation products and services in conjunction with other products. Specific results may vary for other customers.

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