

MODERN

mmh.com

MATERIALS HANDLING®

September 2009

Empire Merchants: **Serving Gotham**

page 16

EQUIPMENT REPORT

Rise of the plastic pallet 24

BEST PRACTICES

Reverse logistics 28

INFORMATION MANAGEMENT

Manufacturing execution
software systems 32

Tony Magliocco, chief
operational officer

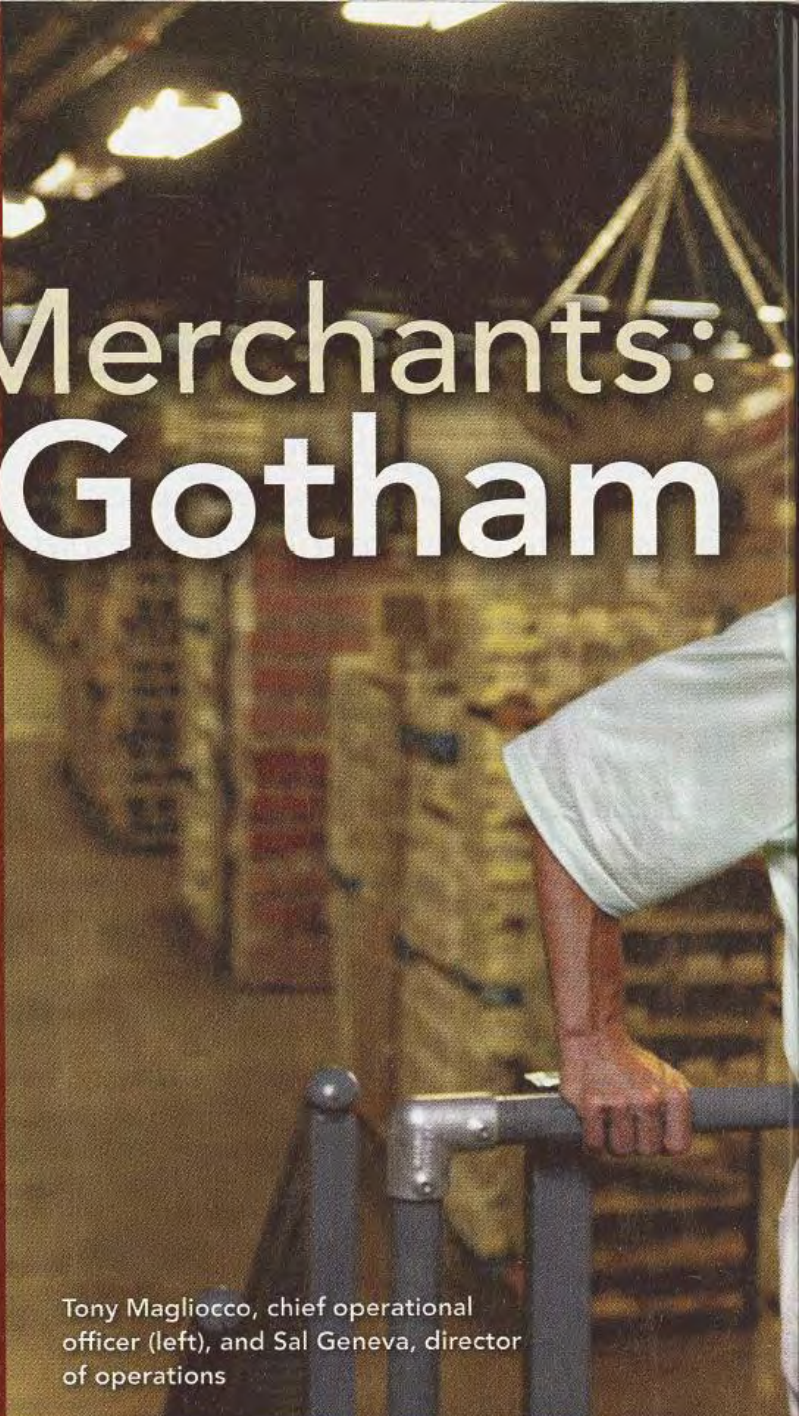


W&H SYSTEMS
INNOVATIVE PROCESSES & TECHNOLOGY SOLUTIONS

Empire Merchants: Serving Gotham

After consolidating two wine and spirits distributors and upgrading a distribution center in Brooklyn, Empire Merchants is handling 75% more volume and preparing for tomorrow's growth

By Bob Trebilcock, Executive Editor



Tony Magliocco, chief operational officer (left), and Sal Geneva, director of operations

The wine and spirits industry is undergoing a transformation. One by one, smaller distilleries and wineries are merging, consolidating or being acquired. Like the food industry, the market is now dominated by a handful of large, international suppliers including Diageo, Bacardi and Brown Foreman.

That consolidation has put pressure on distributors. Traditionally, wine and spirits distributors were smaller family-owned companies running manual operations. Many wine and spirits DCs still use floor storage, lift trucks and manual labor to get the job done. But that is evolving as distributors undergo the same changes as the producers, with fewer and larger distributors squeezing inefficiency out of their operations.

“Our suppliers want to deal with fewer distributors—distributors who have accurate and efficient

operations,” says Tony Magliocco, chief operational officer for Brooklyn-based Empire Merchants, a joint-venture co-owned by the Magliocco family and the former owners of Charmer Industries, a subsidiary of the Charmer Sunbelt Company. “Likewise, this is ultimately a customer service business: Our customers not only want a competitive price, they demand accurate and timely deliveries.”

Those pressures led to the creation of Empire two years ago when Peerless Importers, the company founded by Magliocco's grandfather and the largest



wine and spirits distributor in New York, combined with Charmer Industries, one of Peerless's largest competitors. Both were among the top 10 distributors in the country in terms of volume, with more than \$1 billion a year in revenue. The combined companies serve more than 10,000 customers—nearly every bar, restaurant, hotel and liquor store—in the metropolitan New York area.

Before the consolidation, both companies were serving many of the same customers, but with different brands. "Peerless might send out a truck with 250 cases to a customer and Charmer was delivering 250 cases to that same account," adds Sal Geneva, director of operations. "Now, we get those efficiencies by sending out one truck with 500 cases from one facility to that account. It allows the combined

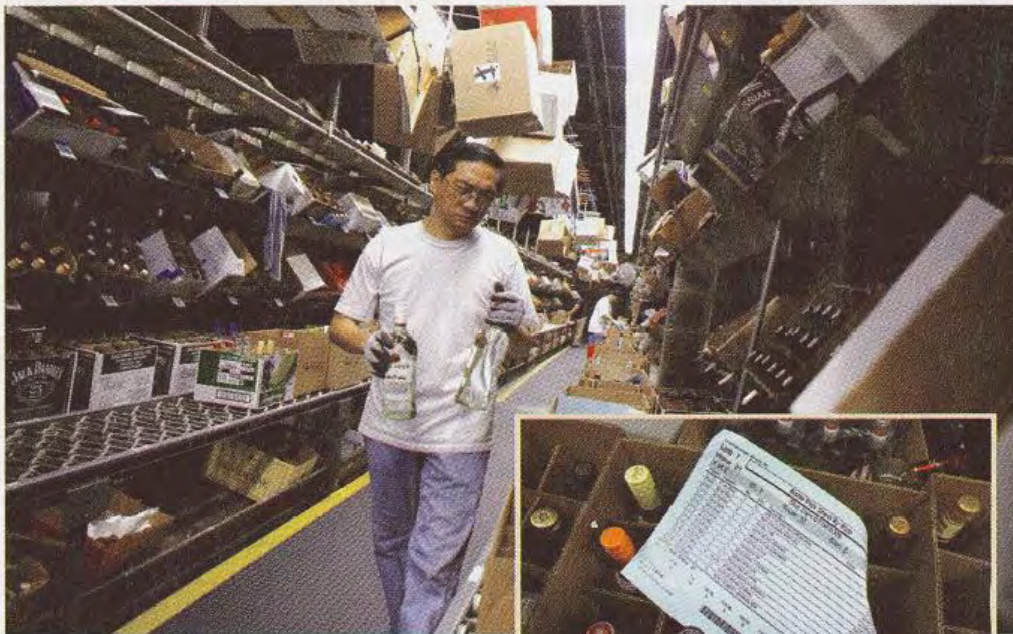
companies to maximize our payload and minimize our stops."

But simply combining shipments was not enough for Empire to realize the full benefits of the consolidation. "The only way to really get lean was to get all of the stock keeping units (SKUs) we distribute in one building rather than two," says Magliocco.

To achieve that goal, Empire worked with a systems integrator (W&H Systems, 201-933-7840, www.whsystems.com) to design and implement a highly automated case handling order fulfillment system featuring:

- A warehouse management system (WMS) to manage as many as 11,000 SKUs,
- Wave picking software to sequence picking for first-in/last-out truck loading,

PHOTOGRAPHY BY MATT CARRETTI IMAGES



Order selectors pick mixed case orders in the bottle room. A paper ticket travels with the case by conveyor to the next zone.

- Pick modules handling full and split case picking,
- 5 miles of case conveyor,
- Three pre-merges that lead to a combiner to remove inefficiencies from the wave release process and increase the overall throughput rate,
- A high-speed conveyor and sortation system capable of handling 10,000 cases per hour. Currently, peak periods are 8,000 cases per hour and 6,000 cases per hour on a sustained basis,
- A seven-head scan tunnel to improve read rates and reject cases with misapplied labels, and
- A vision system to capture digital images of the contents of cases for additional order verification and security after a truck leaves the facility.

All told, the facility ships more than 9.5 million cases per year, while providing 24-hour turnaround on orders. "Orders received by 5 p.m. begin ship-

The fastest-moving inventory is stored on the floor and in pallet racks throughout the facility.

ping at 6:30 the next morning," says Geneva.

"We're handling an increase of 75% volume in the facility since this system went live in February," adds Magliocco.

Overcoming inefficiency

Meeting the distribution requirements

of two companies after the combination created some unique challenges for the new company. "We now had to bring together two different sets of products," says Magliocco. "We wanted to consolidate the distribution operations that had been handled by two different warehouses. That meant we had to develop a new distribution strategy and then develop the systems and the processes to support that strategy."

In the best of all worlds, Empire needed at least 750,000 square feet of distribution space, but that wasn't available in either location. In Brooklyn, for instance, there was no room to expand in the block where the existing facility was located.

After meeting with materials handling and supply chain software consulting firms, Empire created a unique model that spread the space across the two facilities. Orders would be filled from Peerless's 500,000-square-foot distribution center in Brooklyn.

That facility now maintains a representation of all 11,000 SKUs distributed by Empire in enough quantity to fill orders. That also means accounts





An order selector on a man-up lift truck picks cases from pallets.

can be serviced from one truck leaving from one distribution center. Meanwhile, bulk quantities of the top 700 SKUs are warehoused about 10 miles away in the 250,000-square-foot Charmer distribution center in Astoria. That DC transfers inventory to Brooklyn each day to replenish pick modules.

The Brooklyn facility, which had been created by joining several contiguous buildings in an industrial area, had several factors in its favor. One was that the facility already featured a significant amount of automation, thanks to a major renovation in 2005.

"We already had 75% of the system in place that we have now, including most of the sortation and pre-merges," says Magliocco. "We also had the wave picking software system we use now."

To handle the additional volume, Empire added additional pick modules, another pre-merge, a high-rate combiner and additional shipping lines to the existing system. The company also added a new WMS to keep

Once cartons are picked, they are inducted onto conveyors which are then combined into a single conveyor that delivers them to a sorter.



After the combiner (below), cartons are sorted to one of more than a dozen shipping doors.

track of inventory. "We have receiving operations in two buildings, and product might be stored in any of several elevations across the buildings," says Magliocco. "The WMS coordinates all of that for us."

In all, almost 5 miles of conveyor are used through the system, much

of it accumulation conveyor that provides a buffer for optimal operations. After pick lines have been pre-merged onto three conveyor lines, the cases are transported and accumulated to a final merge where the three lines are merged with any recirculated cases. The combiner creates a single stream of cases that are properly gapped and ready for sortation to their assigned loading door.

Improving accuracy

Empire did more than drive efficiencies. The system includes several features to ensure the accuracy—and the security—of the orders that are filled.

For example, once cases are on the pick conveyor, the labels are scanned for verification before leaving a picking module. The scanner stops multi-reads and no-reads in the pick module before they become a problem in the system. Similarly, a label on the side of a mixed case in the split case picking area is scanned before releasing the cases into the system.

Prior to sortation, cases pass through a seven-head scan tunnel that reads the bar codes, identifies the cases and directs them to the right lane. At that






Empire stocks more than 10,000 different SKUs (left) to serve its customers. After sorting, those SKUs are loaded on a first in/last out basis in delivery trucks.

point, the system will reject cases that have misapplied labels by checking the applied picking label against the manufacturer's bar code. At the end of each

shipping lane, cases are scanned one last time as a final verification prior to loading them on the truck.

Empire installed a vision system that captures an image of each carton to compare against a database of images. That allows Empire to follow up with truck drivers if there are any questions about whether a case was loaded on a delivery truck.

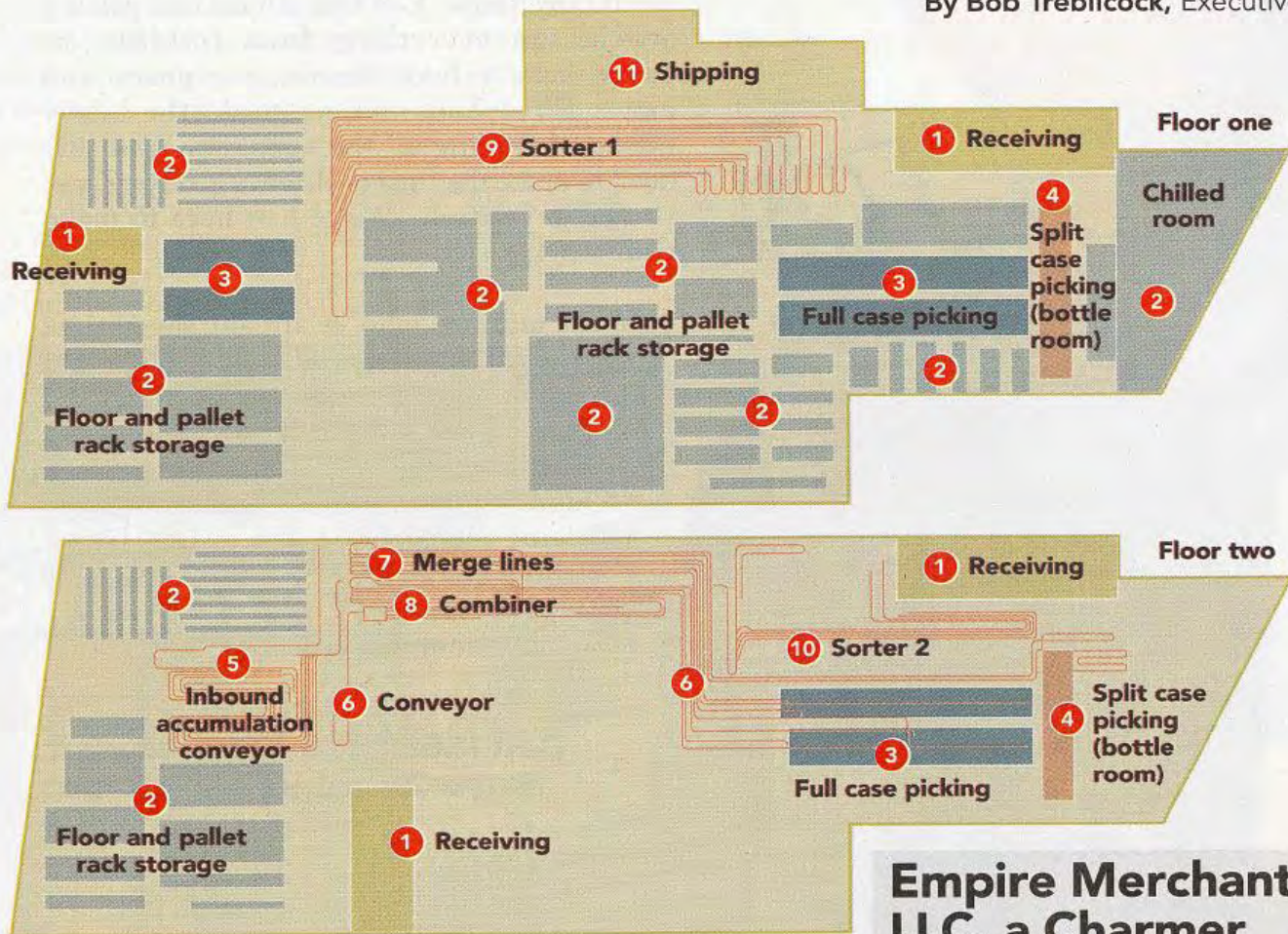
Six months after the system went live, Empire Beverage was already seeing improved throughput rates and industry-leading accuracy. But the real test came this past July, traditionally one of the busiest months of the year. "In July, we were able to do the equivalent of four-weeks volume in a two-week period," says Magliocco. "The system exceeded our expectations." 



Sorting it out at Empire Merchants

A high-speed sortation system speeds up to 8,000 cases per hour during peak times through Empire Merchants' wine and spirits distribution center.

By Bob Trebilcock, Executive Editor



**Empire Merchants LLC, a Charmer Sunbelt Company
Brooklyn, N.Y.**

SIZE: 500,000 square feet in Brooklyn;
250,000 square feet in Astoria
PRODUCTS: Wine and spirits
SHIFTS: Two shifts, five days a week
EMPLOYEES: about 140 in the warehouse
THROUGHPUT: 9.5 million cases per year

EMPIRE MERCHANTS COMBINED several contiguous buildings in Brooklyn and installed a high-speed case sortation system to meet the distribution requirements of two companies from one facility. The system allows the distributor to take orders from customers across the New York metropolitan area up until 5 p.m. for next-day delivery.

Illustration by Daniel Guidera

Receiving: During the day shift, product is received ① in Brooklyn from vendors along with transfers of the most popular items from the Astoria facility. Inventory may be delivered on pallets, slip sheets or floor-loaded in a trailer. In the receiving area, inventory is staged on the dock for confirmation against a purchase order in the warehouse management system (WMS). After the order is scanned, floor-loaded cases are palletized. The system then creates a license plate bar code label for each pallet. Once that label is applied and scanned, pallets are ready for putaway.

Putaway and replenishment: After receiving, the WMS simultaneously directs the putaway of new inventory ② and the replenishment of the picking modules ③, ④ based on the capacity in a rack and what was picked the previous evening. The fastest moving items are stored in floor locations; other products are stored on the floor, in pallet racks (both push-back and single-deep pallet rack), or in carton flow racks in the pick modules. Since this is a multi-level facility, product may be moved by lift trucks, order pickers and pallet jacks on the floor level, or by conveyor to reach one of the elevated levels. And, while the WMS is directing activities, operators have the ability to override the system to make more efficient use of the space. Once product has been scanned into a location, that inventory is available for picking in the WMS.

Picking: Empire receives orders up until 5 p.m. for next-day delivery to the five boroughs of New York plus Westchester, Nassau and Suffolk counties on Long Island. As the orders come in, delivery routes are created based on geography, the number of stops, and the number of pieces. A truck traveling the 100 miles to Montauk, for instance, will have fewer stops than a truck serving restaurants in Manhattan. Completed routes are then sent to a software system that creates pick waves to match the routes.

The system assigns routes to an ID,

and then creates waves for each truck that will be loaded. Picking is done sequentially so the truck can be loaded on a first-in/last-out basis. Once the waves are created, the system generates picking labels for full case and bottle picking. There are 15 separate pick modules, including full case lines picking from pallets for the fastest-moving

case and released into the system ⑤, ⑥. The cases are then shrink wrapped to keep the bottles secure in transit to the customer. Once the order is confirmed, the carton travels to a merge lane ⑦ just like full case orders.

From the merged lines, cartons travel to one of three pre-merges and to the combiner ⑧ on the mezzanine level after

System suppliers

SYSTEMS INTEGRATOR AND WAREHOUSE CONTROLS: W&H Systems, 201-933-7841, www.whsystems.com

PROJECT MANAGEMENT: SJL Consulting Services, 845-271-9192, www.sjlconsultingservices.com

WAREHOUSE MANAGEMENT IMPLEMENTATION: Ciber, 303-220-0100, www.ciber.com

WAREHOUSE MANAGEMENT SYSTEM: HighJump Software, 800-328-3271, www.highjumpsoftware.com

WAREHOUSE CONTROL SYSTEM: Contech Systems, 708-361-4999

CONVEYOR, SORTATION AND COMBINER: Intelligrated (formerly FKI Logistex), 513-701-7300, www.intelligrated.com

GRAVITY CONVEYOR: Logitech, 614-871-2822

SCANNING SYSTEM: Accu-Sort, 800-227-2633, www.accusort.com

FLOW RACK: Unex, 800-695-7726, www.unex.com

PALLET RACK: Interlake Mecalux, 800-468-5253, www.interlake.com

MEZZANINE: Steel Solutions, 888-542-5099, www.steelesolutions.com

TRUCK LOADERS: Stewart Glapat, 740-452-3601, www.adjustoveyor.com

MONORAIL: Jervis B. Webb, 248-553-1000, www.jervisbwebb.com

LIFT TRUCKS: Bendi, 785-562-5381, www.landoll.com/mhp/

items, and from flow rack for medium and slow moving items along with split case lines for bottles. The operators in the full-case pick modules ③ pick the cases from pallets or from flow rack onto the conveyor line ⑤, ⑥ and place a bar code label on the top of each case. Once on the pick conveyor, the labels are scanned for verification before leaving the module. This scanner also stops multi-reads and no-reads in the pick modules before they become an issue elsewhere in the system.

Once a label is read, the case travels to one of the merge lines ⑦. Operators in the split case module ④, known as the bottle room, pick bottles to build mixed cases based on the pick sheets generated by the wave picking system. At the discharge point in the bottle room, the order is checked and a bar code label is placed on the side of the

which they are scanned by a seven-head scan tunnel that reads the bar codes, identifies the cases and directs them to their lane assignment. Any cases that have misapplied labels are rejected. A vision capture system immediately follows the scan tunnel and provides additional verification and security by photographing the carton prior to shipment and comparing it against the database of images.

Finally, cases are directed to one of 14 shipping lines by a sliding shoe sorter ⑧. One divert sends the cartons to a second sortation system ⑩ that serves additional dock doors. On the decline to the shipping area ⑪ on the floor level, a scanner confirms that the right case is going to the right shipping door. Once a truck is loaded, it is sealed and parked in the yard for dispatch and delivery the next morning. ⑫