The NuminaGroup

Order Fulfillment Experts

Schumacher **Triples Throughput in Existing DCs,** Gains a Scalable Solution for Continued Growth

With the Numina Group's Help, Company
Leverages Technology and Achieves a **12-Month ROI**

Schumacher Electric, headquartered in Mt. Prospect, Ill., with plants in Mexico, China and the USA, is the world's foremost manufacturer of battery chargers. Founded in 1947, the company has built a thriving business by selling its products to large retailers such as Walmart, Napa, Advance, and Pep Boys, as well as the world's leading multinational equipment manufacturers.

Business Challenge

Manual order fulfillment processes were limiting Schumacher's potential for growth. A large percentage of Schumacher's daily orders were high case volume shipments to major retailer clients, ranging from 15,000 to 50,000 units per order. All the cases required picking by fork truck, staging, hand labeling, and re-palletizing the orders, a process that required a dedicated staff of ten to sixteen people a day to accomplish the task.

Fulfillment was further complicated by the fact that many of Schumacher's large retail customers require vendor-compliant shipping labels on every carton shipped. The risk of applying the wrong compliance labels to a customer's shipment result in costly shipping and compliance fines imposed by the retailer.

Additionally, due to an increasing volume of internet orders, parcel shipping was becoming a fast growing segment of the business and adding new complexity to the fulfillment workflow.

As business continued to grow, Schumacher hit a ceiling on order throughput with its existing paper-driven order fulfillment processes. "On our best day, we could only process $1.5 million in orders a day between our two DCs," said Chris Hadsall, Executive Vice President for Schumacher. "We needed more throughput and higher efficiency."

As a first step, Schumacher introduced barcode scanning to the order picking process to improve picking accuracy. However, the potential for fulfillment errors were still present due to manual batch printing and hand-applying the compliance labels to each case at the pallet build operation.

To alleviate the bottleneck in growth, Hadsall took on the initiative to improve throughput and accuracy in the company's distribution centers (DCs). Hadsall, a seasoned business professional with a background in civil engineering, computer science, and business operations, knew that significant efficiency gains could be achieved by applying the right automation expertise and technologies.

Solution

Schumacher engaged The Numina Group, a leading order fulfillment automation integrator with 30 years of experience in the design and implementation of automated warehouses and distribution centers, to perform a design study. The Numina Group studied the company's current DC operation and made recommendations on better practices and technologies to improve efficiency and order throughput.

Design Study Yields a More Efficient Picking Strategy

Numina's study gave Schumacher a clear game plan to improve efficiency and throughput by reengineering its order fulfillment operation to eliminate labor-intensive manual processes, maximize throughput, and provide the projected ROI through an investment in automation.

Numina Group analyzed SKU movement and the DCs' existing slotting to identify inefficiencies in storage and improve product movement by designing a more efficient pick path. This included locating the highest moving SKUs along the conveyor line to eliminate wasted walk time and fork truck travel. This led to improved efficiencies in picking and reduced replenishment cycles.

The new DC design slotted slow-moving SKUs in locations separately from the high-velocity SKUs. High movers were located in accessible and ergonomically friendly pallet flow in an efficient pick path resulting in fast picking and easy replenishment. The key to adding efficiency was the step of slotting the highest moving products in pallet flow lanes directly along the conveyor. This was an essential step to gaining productivity by locating the A and B products in the closest locations along the conveyor line to eliminate wasted walking time.

The second component of the study assessed the potential of improving efficiency through automation technologies such as voice-directed picking, automated print-and-apply labeling, and the use of conveyor and order sorting system to reduce the use of fork trucks for the majority of case picking.
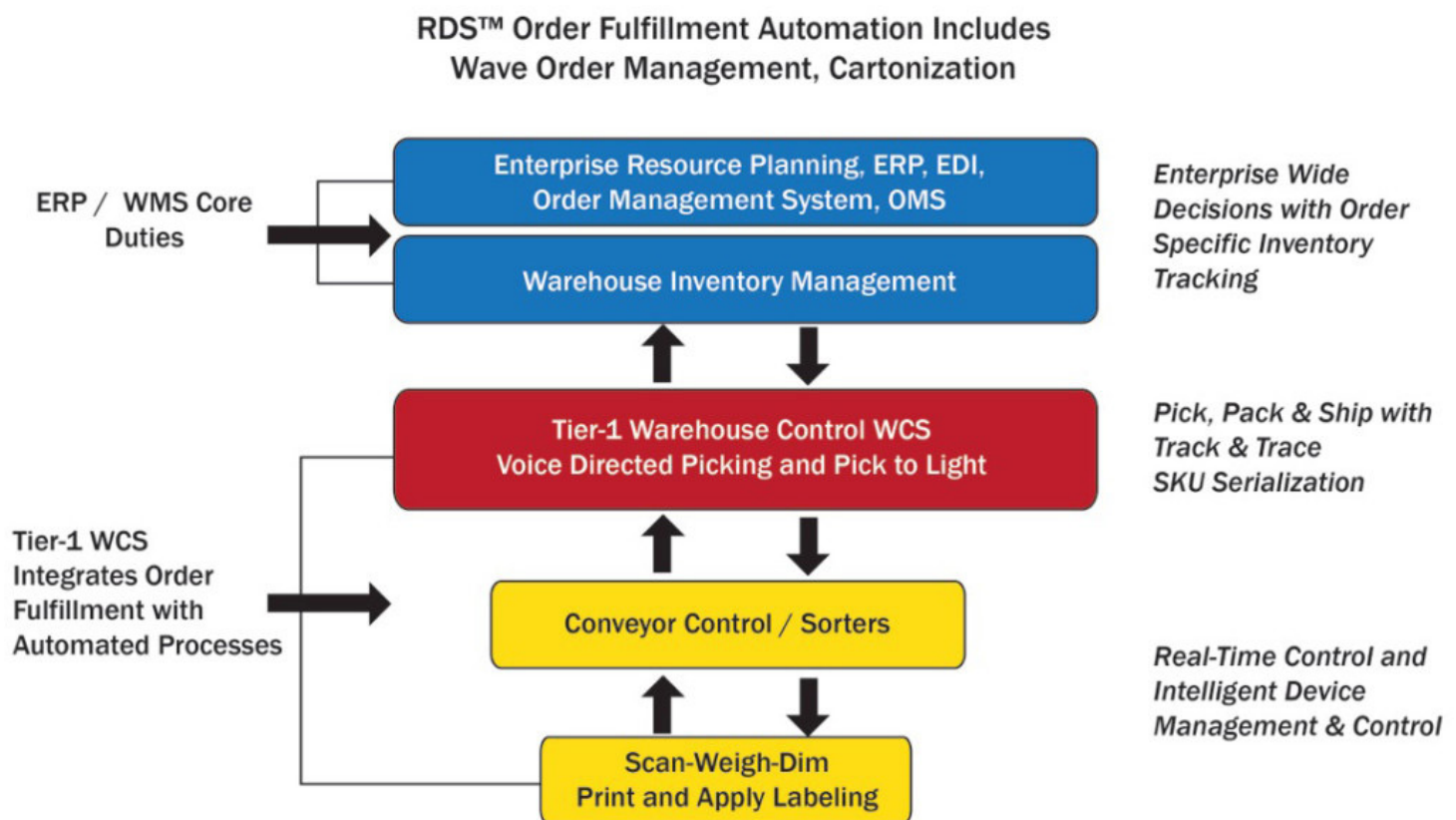
New Conveyor and Order Sorting System Streamlines Fulfillment

In addition to reconfiguring the warehouse to improve slotting, Schumacher implemented a new conveyor and order sorting system with in-line scan, weigh, and print-and-apply labeling capabilities to automate the application of both the shipping and retail compliance label. Voice picking is used throughout the operation with voice managing the slow movers more efficiently by batch picking these SKUs using a fork truck. When a mixed pallet of cases for the pick wave is complete, the operator is directed to drop off the pallets for loading onto the conveyor system.

To streamline Schumacher's growing small parcel shipping volume, Numina also recommended adding voice technology to guide workers as they pick items to totes and bring them to a manual pack and manifesting area for processing. This area will also be streamlined by adding a new print and apply labeling system for automated manifesting and parcel labeling.

Warehouse Execution and Control System Guides Workflow

The entire order fulfillment operation is managed by Numina Group's Real-time Distribution System, a top tier Warehouse Execution and Control System, (WES-WCS). RDS's order fulfillment automation module includes voice picking technology along with in-motion case barcode scanning, print and apply labeling, and the pallet build sorting process control. RDS manages the pick-to-conveyor process and assigns and validates cases, matches the order requirements for each specific retailer's UCC compliance label and the order pallet-build rules with no human intervention.

RDS™ Order Fulfillment Automation Includes Wave Order Management, Cartonization

ERP / WMS Core Duties	Enterprise Resource Planning, ERP, EDI, Order Management System, OMS
	Warehouse Inventory Management

Enterprise Wide Decisions with Order Specific Inventory Tracking

Tier-1 Warehouse Control WCS
Voice Directed Picking and Pick to Light

Pick, Pack & Ship with Track & Trace SKU Serialization

Tier-1 WCS Integrates Order Fulfillment with Automated Processes

Conveyor Control / Sorters

Real-Time Control and Intelligent Device Management & Control

Scan-Weigh-Dim Print and Apply Labeling

Moving to voice-directed picking

has increased accuracy and efficiency throughout the DC. Now, order pickers are directed in the most efficient walk path to the product storage location, and using the combination of voice instructions and hands-free storage location and product barcode scanning, are able to batch-pick cases across multiple orders.

The operators are voice directed to pick the required quantity and place the cases on to an automated MDR conveyor line that transports and meters each case through an in-line scan-weigh scan tunnel audit system. The case SKU barcode is captured, the carton is weighed, and the print and apply applicator automatically applies either a compliance label or both a compliance and parcel carrier shipping label to each case.

The scan tunnel provides the case pick count verification and the RDS labeling software module assigns the case to the customer specific order, and prints and applies the required label. Additional barcode scanners after the labeling process are used to validate the entire pick and ship process. Each case is then conveyed to a pallet and shipping sorter where cases are again scanned and sorted to the order specific pallet build stations or directly to FedEx or UPS shipment lanes.

According to Hadsall, one huge benefit of speaker independent voice technology is that it virtually eliminated worker training.

" *When we need to bring temps in for the heavy season, it used to take us one to two weeks to train somebody so we were confident they weren't going to screw up a customer shipment. Now, with the speaker independent voice picking system, there is zero voice training, so we can train workers in less than five minutes. Our CFO came in and we strapped the headgear on him. In less than five minutes he was a picking professional."*

Hadsall also noted that employees are fully onboard with the new system. "At first, our DC staff was really skeptical about the new technologies we were putting in place. But once we got the system in and running they were beside themselves. They couldn't figure out why we didn't pull the trigger on this system five, six, even ten years ago," he said.
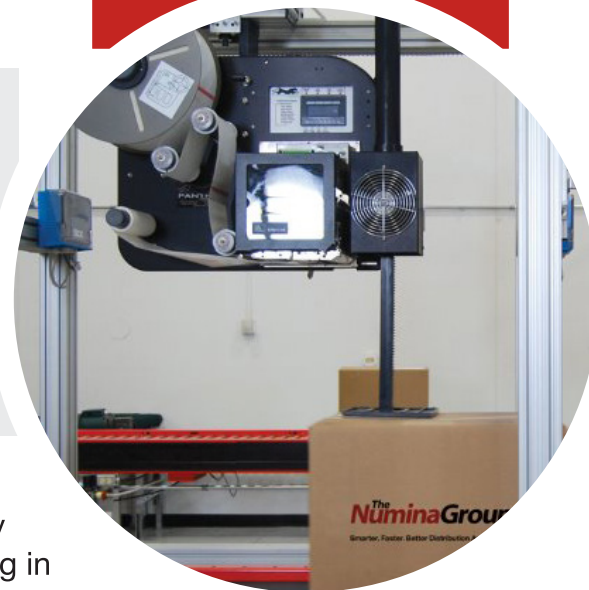
Automation is Free – With the Right Return on Investment (ROI)

Schumacher was able to implement their new fulfillment system in a six-month period. Equally important, the company's ROI has been very rapid. "When we put the first voice pick and labeling automation system in, it was just slightly under $600,000 and we certainly saw the payback within the first year," said Hadsall.

Overall we invested $1.4 million across both DCs including the conveyor system. "The investment has proven to be well worth it," Hadsall said. "We've not only improved picking and shipping accuracy, but we've also increased throughput capacity from $1.5 million to more than $5 million in order shipments per day."

Future Enhancements

Hadsall wants to add scanning to the process of trailer loading. This entails scanning and capturing pallet loading to the truck to increase accuracy and eliminate current manual data recording. "Right now, the staff loads the truck and logs load movement using paper work to record the operation. Additional labor is required to record and enter pallet movement into our ERP system," he said. "The paperwork is not always completed correctly and becomes a source of error. We want to automate pallet to trailer movement with voice and scan validation for additional checks and balances and close the loop on our shipment history reporting."

Hadsall also plans to add cameras, so that as the product is being loaded in the truck, a picture is taken with a time stamp and the order number included with it. "The Numina Group has these tools," he said. "We can add them so if somebody says we shorted them 10 pieces, we can go back through the camera and verify that the pallet was complete when it went on the truck. The picture is worth a 1000 words and provides the final order shipment confirmation."

Hadsall said:

" *The company will probably be adding a scan tunnel to dimension lines down the road. "We already know the carton dimensions, but it would be nice to have a real time audit check that verifies the weight and dimensions in case a split case order got repacked in the pack area, especially with the higher costs of dimensional weigh parcel shipments.* "