

PERFORMANCE

MATERIAL HANDLING OPTIMIZATION

Mouser Handles Fast Growth, Amps up Quality with Enhanced Handling System

"Before, we were doing 1,750 shipments. Now, it's 5,000."

Mouser Electronics is one of the largest supplier-authorized distributors of electronic components in North America. The company provides engineers and buyers of electronic components the best possible service, regardless of the size of the customer or the size of the order.

Mouser's product line includes Semiconductors, Passives, Interconnects, Electromechanical, Power Sources, and Specialty Products. From its state of the art warehouse, Mouser Electronics ships most orders in one day—many are shipped in as little as 15 minutes from the time received.

Mouser is a wholly owned subsidiary of TTI, Inc., one of the largest global distributors of Passive and Interconnect components. (A performance report on TTI's innovative distribution center can be found on this website.)

According to Electronic Buyers News, Mouser Electronics is one of the top 10 most preferred distributors of electronic components in America. EBN also rated Mouser among the top 10 most preferred distributors in every product family surveyed including semiconductors, passives, interconnects, and electromechanical.

Application:

Distribution Center Conveyor System & Shipping Area Upgrades.



The Situation

In a business climate that has seen many of its competitors decline 40%, Mouser has grown 25% since 2000.

"In the electronics business, the markets definitely change," said Mouser President Glenn Smith. "Many of our customers understand that they have to add new products to grow. We have one supplier that has a third of their business in new stuff. That new stuff gets designed by engineers...and our customers are engineers."

Added Warehouse Operations Manager Pete Shopp: "People realize they

can't just go by what they have always made in this business, so they're designing new products. Those people are our customer base."

In its Mansfield, Texas distribution center, Mouser elected to utilize material handling to sustain excellent customer service. Mouser stocks over 104,000 sku's in the facility, with constant growth in the variety of inventory items. Mouser utilizes a single ten-hour shift.

Mouser moved from a smaller facility into its new 170,000 square foot DC in 2002. The new facility came together with equipment from the old build-

Customers swear by Mouser's Service: "If the customer needs the parts, they get it the same day or the next day."



ing. "We had a takeaway line of conveyor that was loud, old and used," said Shopp. "It was minimum pressure accumulation, not zero pressure. It also had pass through gates people had to mess with to cross the conveyor line. We had tubs dump over on that conveyor. It just didn't accumulate right."

"We couldn't get stuff in or out"

During peak times, the shipping area became congested. Mouser utilized carts and baskets in its shipping area. Said Shopp: "When we were throwing everything into carts or baskets, we were making mistakes. We found out that some things would get put into a cart and hauled off without getting processed. Or they were thrown into the wrong cart. It was congested—we couldn't get stuff in and out of there."



Foot traffic in and out of the shipping area was constant due to employees needing to leave their workstations to get shipping cartons or other supplies. "It caused a disruption in the flow of work," said Shopp. "It wasn't efficient to have people stop picking orders to chase boxes down."

"The biggest factor that told us we needed more automation was the increase in orders and lines—25% more orders and 35% more inventory," said Smith. "Just last week, we added over a thousand customers brand new—we'd never heard of them before. With that increase, we knew we had to do something."

The Desired Solution

Mouser focuses like a laser on satisfying its customer base. That means shipping orders faster than anyone else in the business and making sure those orders are correct. The company zeroed in on meeting its promised ship dates when it decided to automate its distribution center.

"If the customer needs the parts, they get it the same day or the next day," said Shopp.

Its customers swear by Mouser's service, but the company knew it would have to create more efficiency in its warehouse to handle the increasing order volume and ramped-up demand. It

had to stock a larger variety of products and still be able to ship them effectively and quickly.

Any solution had to reduce walk time for employees by making sure they could spend all their time packing orders and not replenishing cartons or other shipping supplies for their workstations. Mouser also wanted to increase the amount of usable workspace for each employee, as conditions could get cramped and difficult during high-volume shifts.

A pleasant, appealing facility was another top priority. The company is committed to employee satisfaction and knew the way it set up its warehouse would play a role in the overall pleasant, modern atmosphere desired for the facility. The facility also is meant to make a positive impression on visiting customers and suppliers.

A significant goal was the ability to change the way it picked orders in the future. Mouser intends to switch from pulling by lines instead of by orders and utilizing its conveyor system. "We are going to make a major change to the way we operate in the future," said Shopp, "and our current system must tie into that." Currently, orders are picked into totes and conveyed to the shipping area. In the future, totes will disappear from the process.

"We designed it with the idea that it

Errors declined by 25 percent while volume ramped up by 25 percent, and no additional staff was necessary

was eventually going to be a line consolidation arrangement instead of a tote arrangement,” Shopp elaborated, “where bagged items travel on the conveyor rather than inside totes. Line items of orders will be placed on the conveyor rather than completed orders. Line items will then be consolidated in packing and shipping.”

The Outcome

Mouser’s system, implemented in phases, accomplishes all its goals. Said Shopp: “If we didn’t have this system, with our growth, I don’t know what we’d be doing. We’ve had 25% growth this year. We have increased our inventory value 35% in nine months.”

• Increase Shipping Speed

“We’ve been able to ship 440 totes in an hour,” said Pete Shopp. “That’s basically with no increase in the number of people in shipping. We were doing 1,750 shipments in January. Now it’s 5,000, at the same staff level and the same amount of hours worked.”

Mouser picks its most active items from carousels and feeds them onto a conveyor line that feeds the shipping area. Slower moving and bulky items are stored away from the conveyor lines, while the busiest items are situated in bins and shelving near the conveyor line. A dedicated section deals with ESD parts to ensure they are handled safely and correctly.

The area closest to shipping hosts the fragile parts. “These are items we don’t want traveling too far,” Shopp said. “We store things that tend to walk away in



the carousels for added security...stuff like specialty tools and ESD development kits.”

Much of the improvement has come from reducing congestion. “With the completed carton takeaway conveyor,” Shopp said, “a key was the amount of accumulation we were able to design into it without losing any floor space at all. It was built against an unusable back wall, up in the air, and over existing areas.”

In the shipping area, selected stations are equipped to handle FedEx, COD, and international shipments. This helps Mouser process shipments more efficiently. “Those are the ones we have with reflective tape so they get diverted to the right shippers,” Shopp said. “Before, it was kind of ‘pack-and-throw’. People would get whatever, and we didn’t have a system.”

“As the FedEx business slows down during the day,” Shopp continued, “we can throw a switch and have regular orders go down that interior line so we

maximize usage.”

The system balances the lines out if one is full (and the other empty or nearly so). Unless one is on a tape divert only, then both lines will flow and balance each other out. Said Shopp, “At the busiest time of the day—usually at the end of the day—when we have completed FedEx and international shipments, the system keeps both lines working at an even rate.”

• Increase Quality & Shipping Accuracy

Mouser considers the quality and accuracy of its shipments to be paramount, but didn’t anticipate that its new material handling system would enhance quality as much as it has.

How much has quality increased? “A lot,” according to Mouser President Glenn Smith.

“We were thinking it would just make us more efficient,” Smith said. The system helps Mouser be even more customer-focused than ever. “We had a

goal to reduce footsteps in the warehouse, but we were thinking about that mostly about productivity. We didn't anticipate the quality increase we've seen."

"Errors have gone down 25%," Smith said. Considering over the same period that Mouser hasn't needed to add personnel or increase work hours, and has seen a 25% increase in its business, the quality increase is remarkable. Mouser defines quality as the total number of errors vs. line items shipped.

"We think one of the biggest factors is the fact that there are fewer footsteps in the warehouse," said Smith. "People aren't as tired. They are more productive and they don't make as many mistakes. There's no question that the system had a significant impact on the quality."

"The reduced congestion has been a huge part of our overall improvement," Shopp added. "I think a lot of our improvement is our new packing stations."

The packing stations feature adjustable legs to help taller employees be more comfortable and productive at the job. The design of the new packing stations has increased the amount of

useful packing space. "People were cramped before—almost tripping over their workstations with monitors, keyboards, boxes, and product all in a confined workstation," said Shopp. Now, they have room to work in a more ergonomically designed packing station.

• Reduce Nonproductive Walk Time

Increasing productive time in the shipping area was important to Mouser, and the new system delivers. The company cites the use of packing stations, conveyors, and process in this improvement.

"We get products out the door faster by eliminating waste," Smith said. "A lot of our waste was in steps. When I say steps, I mean footsteps—walking. By eliminating footsteps we have increased quality 25% this year."

Before any of the shippers arrive at work, their packing stations are loaded with the supplies they'll need for the day. "Combine it with the bubble wrap rolls," Shopp said, "and you've eliminated a lot of downtime simply by allowing people to pick more orders without having to get boxes and supplies."

moves the need to lift a heavy conveyor gate or interrupt the conveyor to cross the line.

• Ability to change for future requirements

Mouser's goal of being able to change its facility for future operating requirements was satisfied in the project. The company can convert to its preferred picking and shipping methods when the time comes.

• An Appealing, Safe, and Pleasant Facility

Besides making order picking more efficient, the pass-under conveyors helped Mouser with another goal—making it easier and more pleasant to work in the warehouse. The conveyor overpasses mean employees don't have to deal with lifting gates during their shifts, a definite ergonomic improvement. "For us," said Shopp, "that was a great thing."

The new belt conveyors added another quality-of-work advantage: silence. "The new belt conveyors compared to the old roller conveyors has made things a lot quieter," Shopp said. "Plus, they conform to our future requirements."



The facility also has conveyor overpasses rather than gates, making it easy for picking employees to cross the central conveyor line to access items on both sides. Besides being easier on the pickers, this reduces the time it takes to pick items and re-

Mouser also pursues a pleasant working environment. Its vendors, suppliers, and customers are impressed with the new warehouse. "It's a 'wow' factor," said Shopp. "It's an image we want to encourage. We set up the warehouse with good lighting, air conditioning, dry walled walls, and textured, painted ceilings. We want it to look nice and be a place people like to work."

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