MODERN
MATERIALS HANDLING

MAKING THE CASE FOR

AUTOMATED GUIDED VEHICLES IN THE WAREHOUSE

As the digital business world continues to evolve and as labor becomes harder to come by, smart warehouse and DC operators are investing in automated technology that helps them work more efficiently and profitably in any business conditions.

Challenges in Today's Fulfillment Environment

TODAY'S WAREHOUSE OPERATORS FACE CHALLENGES that their predecessors couldn't have even envisioned. A lack of labor, the speed of digital business, shifting customer expectations, and the race to deliver orders as fast as possible are all having massive impacts on their operations.

"Fulfillment is king right now, and everybody wants to receive their orders same-day or next-day," says Christopher Anderson, AGV sales manager - Rocla AGV Solutions at UniCarriers Americas Corp, a forklift manufacturer and part of Mitsubishi Heavy Industries. "Automation is more critical than ever for these companies, all of which are also dealing with an extremely tight labor market."

The good news is that these supply chain professionals also have technology on their side. Where 10 years ago the go-to solution would have been to "throw more labor" at the problem, robotics and automation are stepping up to the plate and helping fulfillment operations run more efficiently and profitably. These automated solutions readily manage repetitive or mundane tasks, thus freeing up human workers to focus on higher-value and/or highly complex activities.

ADDRESSING THE LABOR SHORTAGE

In some areas of the country—the Midwest, for example—the unemployment rate is now at 1.5% (versus a 3.5% national unemployment rate as of January 2020).

"Companies located in geographically-larger states that have smaller populations are facing some pretty extreme challenges when it comes to finding labor right now," says Jason Weilbaker, AGV sales manager - Rocla AGV Solutions at UniCarriers Americas Corp. "The situation isn't expected to let up anytime soon."

With a labor shortage expected to leave about 2.4 million positions unfilled between 2018 and 2028, labor is a pressing issue for all fulfillment operations. Industry growth is outpacing the available labor pool by a ratio of 6:1 in a sector where the annual turnover rate is 35% for warehouse workers. And, roughly 600,000 warehouse jobs are going unfilled every year.

"Both manufacturers and distributors are trying to keep their inventory levels as lean as possible while also giving customers more choices and faster delivery times… This introduces new complexities into the fulfillment process, results in higher material handling costs, and really drives the need for automation."

— *Jeff Christensen, VP of products, Seegrid*

With e-commerce distribution volumes accelerating at an annual pace of 25%, the push is on to get things done faster and more efficiently. The need to manage inventory at lower levels is even more important to support same-day or next-day delivery on a wider variety of SKUs.

"Both manufacturers and distributors are trying to keep their inventory levels as lean as possible while also giving

customers more choices and faster delivery times," says Jeff Christensen, VP of products at Seegrid, a manufacturer of connected self-driving vision guided vehicles (VGVs) for materials handling. "This introduces new complexities into the fulfillment process, results in higher material handling costs, and really drives the need for automation."

In addition to operational efficiency improvements, Safety is always the highest priority for today's companies. The U.S. Bureau of Labor Statistics reports five injuries per 100 full-time warehouse workers (over 50% higher than the overall average for the workplace), and where repetitive motion injuries are costing employers $80 million annually.

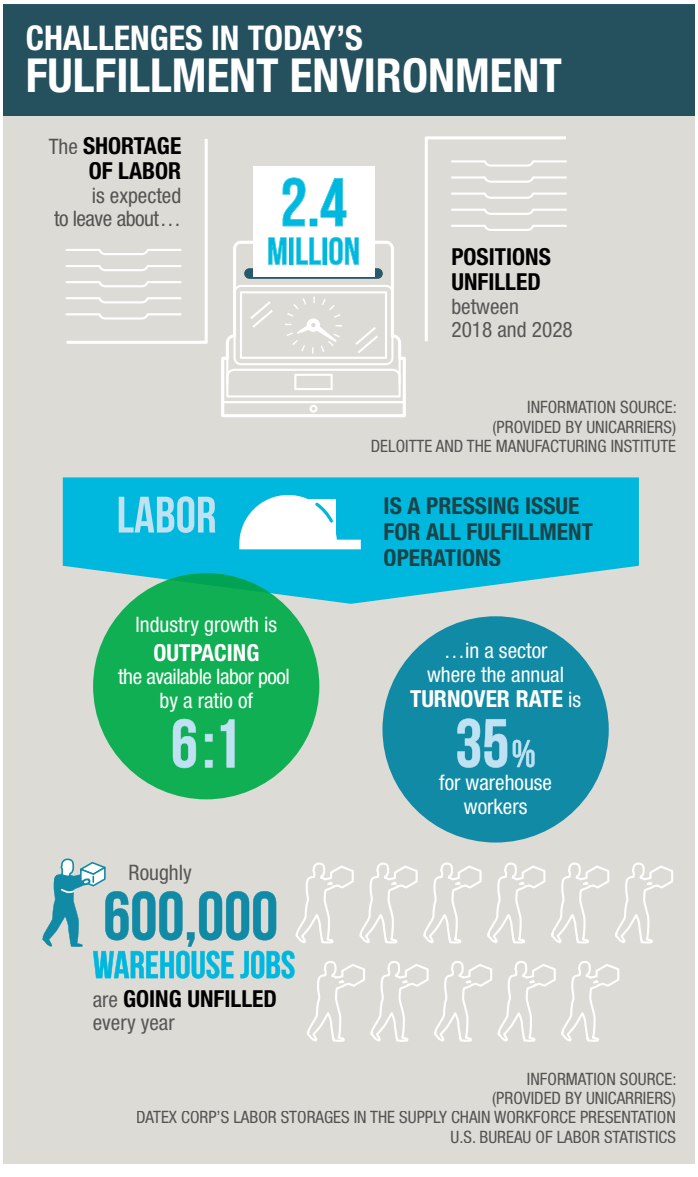
AUTOMATING PROCESSES

Automated systems are not only operational 24/7—and with no interruptions to the fulfillment process—but they also deliver products to the right place, at the right time, every time. Automated guided vehicles (AGVs) comprise one or more computer-controlled, wheel-based load carriers (normally battery-powered) that run on the warehouse floor without the need for an onboard operator or driver. These vehicles help fill a critical need for fulfillment operations that are being asked to do more with less.

Industrial trucks that are used primarily in manufacturing and distribution settings, AGVs replace human-operated vehicles. They help warehouse operators worry less about finding enough forklift operators to complete the workload within the prescribed timeline, and more about getting orders fulfilled quickly.

Working with Rocla, UniCarriers System Solutions provides AGVs to companies throughout the Americas. Designed for warehouses and DCs that need innovative ways to improve operational performance, the AGVs are enhanced with Rocla's Route Optimizer control software, which continuously calculates efficient driving routes for an entire AGV fleet.

In return for their investments in AGVs, companies typically experience increased productivity levels, reduced downtime, better efficiencies, fewer labor issues and a payback period generally in 18-24 months. In this Making the Case, we show how AGVs have evolved to their current state, show how they're being used in today's fulfillment operations, and reveal what ROI they deliver for both the fulfillment center and the C-suite.



At Your Service: AGVs to the Rescue

AS COMPANIES ACROSS ALL INDUSTRIES STRIVE TO CREATE proactive operations that can efficiently predict and respond to customers' changing needs, more warehouses and DCs will be leaning on automation to help them overcome the obstacles outlined in the previous article.

For companies rooted in the old ways of doing things, highly reliant on labor, and/or operating from older facilities, the idea of autonomous vehicles shuttling around the DC floor could sound unattainable. In reality, modern warehouse automation is within reach for companies of all sizes and at all stages of their digital transformations.

As warehouses have evolved so too has the technology that goes into the modern AGV. Sophisticated pieces of equipment that can deftly navigate DC aisles, pick products, supply materials, and handle myriad other tasks, AGVs are being used in just about any material handling application that are seen within manufacturing, paper and printing, packaging, inbound and outbound logistics, warehousing, distribution and food and beverage industries (among others). With recent developments in technology and cost improvement there are now more applications where AGVs can be deployed and address labor issues.

Made for both transport and high-lift applications, Rocla AGVs include narrow aisle, counterbalance, straddle, fork over, and reach mast with several different types of load-handling configurations. With Rocla's modular design strategy, the drive unit is standardized allowing its use in many different applications and simplifying future maintenance. Using sophisticated navigation, sensors, and cameras, these AGVs rely on software for traffic control, localization, and navigation.

"AGVs have come a long way over the last 60 years, and demand for them is booming right now," says Kari Viitanen, AGV sales

manager - Rocla AGV Solutions at UniCarriers Americas Corp. "With all of the advanced technology that's now being introduced—including vision and laser guidance—the market is only going to grow."

BUILT TO MOVE EFFICIENTLY AND SAFELY

At a basic level, AGVs are built to move products just like a manual forklift operator would. In a single workflow they take products from point A to point B based on commands that are input/output from either a human interaction (push button or touch screen) or from other automated equipment. In automating several workflows the AGV system can get its commands as it is interfaced with a warehouse management system (WMS) or enterprise resource planning (ERP) system to optimize the work performed.

"There are many different ways for AGVs to integrate with a company's higher-level systems," says Viitanen. In terms of the types of material handling applications that AGVs automate, the options go beyond just forklifts and also extend to the roller decks placed at the end of a conveyor line. The AGV can implement a "handshake" with the equipment, telling it that the vehicle is in place and ready to receive product. The autonomous vehicle then takes the goods to a predetermined point that might include a static or gravity-fed stand where it can then interface with a robotic arm.

"There are a lot of different pieces of automation or of automation integration that can be aligned with automatic vehicles," Chris Anderson, AGV sales manager - Rocla AGV Solutions at UniCarriers Americas Corp., explains. Navigation options utilize laser guidance, wire guidance, inertial or natural navigation, or a combination of these, depending on the application.

Looking ahead, Oskari Lindstedt, sales director Americas –Rocla AGV Solutions at UniCarriers Americas Corp., says the software that drives AGVs will continue to evolve and incorporate even more functionalities, intelligence, and awareness. For example, UniCarriers will soon introduce a new fleet controller that will help companies optimize and improve their order processing functions.

"As technology continues to evolve, the AGVs and the systems that run them are only getting better and more effective," says Lindstedt. "The advancements over the last few years have already been significant, but it's not stopping there; it's continuing."

Lindstedt continues, "Rocla AGVs have been operating for over 37 years without an incident reported to Rocla. With the industry focus on safety, adding AGV systems will improve the safety within your operations."

"AGVs have come a long way over the last 60 years, and demand for them is booming right now…With all of advanced technology that's now being introduced—including vision and laser guidance—the market is only going to grow."

— Kari Viitanen, AGV sales manager
Rocla AGV Solutions at UniCarriers Americas Corp.

CASE STUDY

Seeberger Uses AGVs to Manage Fulfillment

SEEBERGER GMBH, GERMANY'S LEADING PRODUCER OF DRIED FRUIT AND NUTS, uses Rocla's AGVs at its production plant in Ulm. Seeberger was challenged with a high volume of transport movements and synchronizing the raw materials with their packing machines without impacting current infrastructure. The AGV stood out as the best solution in this regard.

Today, five Rocla AGVs transport the raw materials from the warehouse to Seeberger's production facility. The fruit and nut pallets are relatively lightweight, which is why Seeberger chose the ATX model. An AGV designed specifically for pallet transport, the ATX can lift loads of up to 2,755 pounds to a height of six feet. The structure of this vehicle is modular and particularly compact, making it especially suitable for use in areas with limited space.

Project manager Marc Eberhardt is pleased with the AGVs and stresses the reliability and efficiency of the system. "The AGV and our automatic high-bay storage facility are controlled by our production management system (PMS)," he says. "This allows optimum interaction of our various systems. We achieve maximum utilization of the AGV system's transport capacity thanks to minimal waiting times at the warehouse and accurately synchronized delivery of the raw materials to the packing machines."

"Before commissioning, we implemented a thorough planning phase followed by various simulations. Only then were the machines deployed. We invested sufficient time in each phase in order to achieve the best possible results. The system has been running very stably since the end of the optimization phase. No major corrections were necessary," emphasizes Eberhardt, with satisfaction.

Eberhardt says that while employees were initially reluctant to work with the new driverless transport vehicles, they got onboard when they saw how reliably, safely, and efficiently the AGV works. According to Eberhardt, since the system was deployed, there have been no accidents or any damage to Seeberger's property.

> **"The high level of automation ensures that the right goods are in the right place at the right time and in the right quantities… Moreover, we maintain a constant accurate overview of our current flow of goods and stock levels."**
>
> — *Marc Eberhardt, project manager, Seeberger GmbH*

"The high level of automation ensures that the right goods are in the right place at the right time and in the right quantities," says Eberhardt. "Moreover, we maintain a constant accurate overview of our current flow of goods and stock levels."

What's in it for us?

When companies invest in Rocla AGV Solutions/UniCarriers Americas Corp., automated guided vehicles, the benefits are many. Here's a snapshot of the top "wins" that your company will achieve by taking this step:

IMPLEMENTATION

- Short delivery time
- Easy implementation even during full production
- Minimum modification to existing buildings
- Quick ramp up to full operation

OPERATION

- Reduced risk of damage to customer products, buildings, or machinery
- Improved product quality
- Reliable 24/7 operation in critical applications
- Increased productivity
- Traceable, properly identified product movement
- Labor savings
- Improved safety
- Real-time data and statistics

MAINTENANCE AND MODIFICATIONS

- Logistical flexibility - easy updates and modifications
- Low lifecycle cost
- Reduced operation and maintenance costs:
  - — Local maintenance through the Rocla service network
  - — 24/7 global on-line support

MAKING THE CASE FOR Automated Guided Vehicles in the Warehouse

WHEN COMPANIES LET AGVS DO THE "HEAVY LIFTING" ON THE WAREHOUSE OR DC FLOOR, EVERYONE WINS.

FOR THE WAREHOUSE OR FLEET MANAGER: Automated guided vehicles alleviate the largest challenge for a warehouse or fleet manager: having enough staff to cover all of their shifts. For warehouses that operate around the clock, this pain point can be almost insurmountable in today's labor-constrained business environment.

"I've visited operations where up to 25% of the workforce needed to support the operations wasn't available on any given day," says Jason Weilbaker, AGV sales manager - Rocla AGV Solutions, at UniCarriers Americas Corp. "Bringing in an AGV fleet relieves worry over whether the work will get done or not."

The benefits begin to add up when product damage is minimized, productivity increased, safety is improved, and employees are freed up to work on higher-value tasks. Oskari Lindstedt, sales director Americas – Rocla AGV Solutions for UniCarriers Americas Corp., says that warehouse and fleet managers can also rest easy knowing that the goods in their facilities are being moved in a quick, safe, efficient manner in an environment that demands it.

FOR THE VP OF SUPPLY CHAIN: focused on getting shipments in and out of the door profitably and on time, VPs of supply chain need systems that help them hit all of their KPIs in the most frictionless manner possible. "With automation, companies can basically do the same thing over and over again in a very accurate, reliable manner," says Chris Anderson, AGV sales manager - Rocla AGV Solutions at UniCarriers Americas Corp.

So, when a specific part, item, package, or pallet needs to be in a certain place at a predetermined time, the VP of supply chain knows that the AGV will fulfill its obligation the first time, and every time. He or she can also have confidence in the fact that these operations are being managed in a very safe manner, and with little or reduced risk of damage to customer products to vehicles, infrastructure, and product.

"That's because the AGV monitors its path and utilizes advanced navigation to slow down, stop, and/or otherwise address obstacles that lie in its path. "The faster it moves," says Linstedt, "the further out the AGV is looking for potential obstacles."

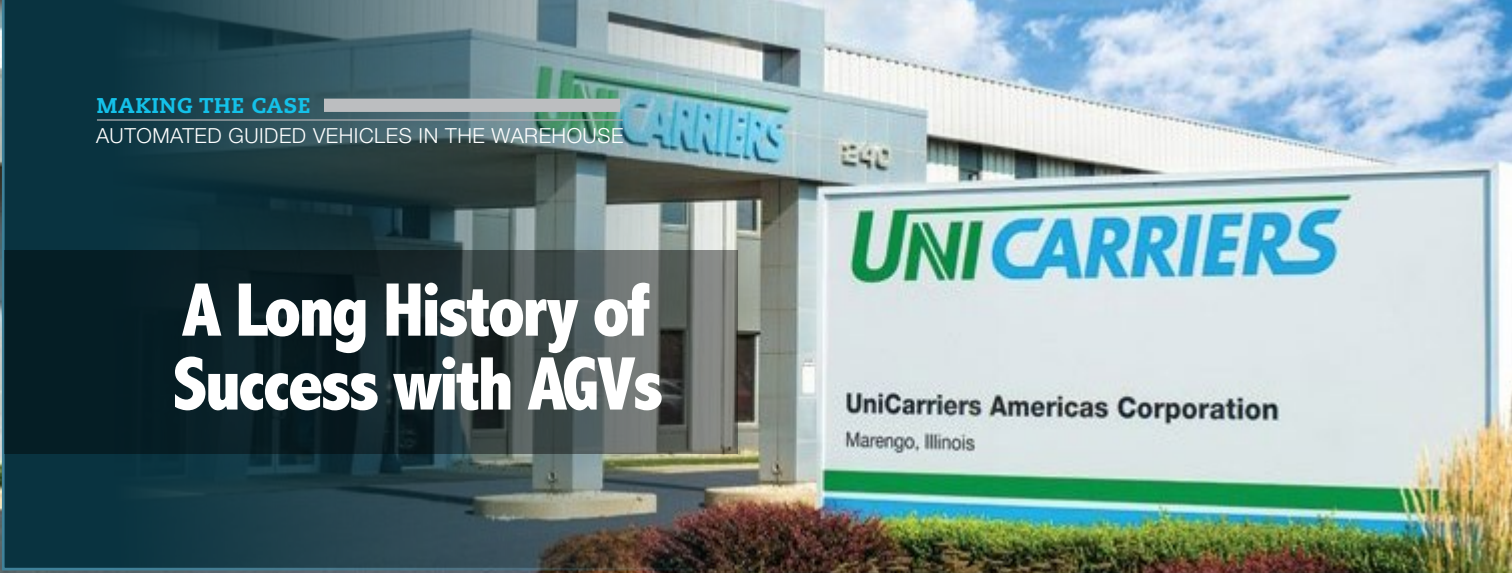
FOR THE CFO: The AGV systems have a payback of 18 to 24 months depending on the application and the solution deployed. The cost savings from reduction in overtime, costs related to safety and product damage and improved productivity are the driving elements for securing a short payback period. This will help companies deal with the constrained labor market by allowing them to have enough workforce to accomplish their work and allows the reallocation of employees to critical and/or high value tasks.

Jeff Christensen, VP of products at Seegrid, says CFOs are also enamored by the mobile nature of the AGV. When working with a customer recently, he says the finance department had its "big lightbulb" moment when it realized that it would be able to physically move the AGVs to a different facility during seasonal business slowdowns. "Having autonomous vehicles that can be moved from site-to-site was a big selling point for that customer," says Christensen. "That kind of flexibility was just astonishing to them, and unheard of with old-style, stationary robots."

"I've visited operations where up to 25% of the workforce needed to support the operations wasn't available on any given day…Bringing in an AGV fleet relieves worry over whether the work will get done or not."

— Jason Weilbaker, AGV sales manager, Rocla AGV Solutions, at UniCarriers Americas Corp.

FOR THE CEO: With business complexities increasing right along with the speed of doing business, CEOs are being asked to improve the companies' overall performance. "They're looking for ways to compete in a very challenging landscape," says Weilbaker, who tells CEOs to look beyond the perception that AGVs are "brand new technology" and are a proven material handling option. AGV systems can help address labor issues, reduce costs and improve operational productivity helping deliver more profit to the bottom line.



A Long History of Success with AGVs

AS HE SURVEYS THE MODERN FULFILLMENT ENVIRONMENT, Jeff Christensen, VP of products at Seegrid, says most operations are forced to choose between doing more or doing it better. Using automation allows them to have their cake and eat it too, so to speak, and not have to choose between one or the other. "In many cases, companies can't achieve their top-line goals without additional capacity," Christensen explains, "but they also can't get the added capacity using traditional means."

With AGVs, the same company can effectively increase capacity in the most labor-constrained environment while also achieving their productivity and efficiency goals. Even better, they can do this without having to choose between "doing more" or "doing it better." They can have it all.

"We've been making AGVs for over 37 years, so we have a long history of developing vehicles that factor speed, efficiency, and safety into the equation," says Oskari Lindstedt, sales director Americas - Rocla AGV solutions at UniCarriers Americas Corp. The company also focuses on building products that last anywhere from 15 to 20 years (on average) that are not only affordable, but deliver good return on investment (ROI) for the companies that invest in them.

> **"We've been making AGVs for over 37 years, so we have a long history of developing vehicles that factor speed, efficiency, and safety into the equation."**
>
> — *Oskari Linstedt, sales director Americas, Rocla AGV solutions at UniCarriers Americas Corp.*

UniCarriers System Solutions, through its partnership with Rocla, provides AGVs to companies throughout the Americas. An ideal solution for warehouses and DCs that need innovative ways to improve operational performance, the AGVs are enhanced with Rocla's Route Optimizer control software, which continuously calculates efficient driving routes for the entire AGV fleet.

Automatically-navigated and operated without drivers, the AGVs become part of the company's production and intra-logistics, and are used to increase both production and warehousing performance. All AGVs are built according to the highest safety standards using safety programmable logic controllers (PLCs), which control all safety functions; front laser scanners; rear bumpers or laser scanners; a safety edge around the vehicle; and emergency push buttons.

Combined, these strengths help companies use technology to tackle the challenges of today's fulfillment environment in any business conditions. That means that even if the nation's 10-year-long economic rebound takes a breather in 2020, fulfillment centers will need automated solutions to help them stay the course.

"Even in a slowdown, the labor pool can't necessarily keep up with demand," explains Christopher Anderson, AGV sales manager - Rocla AGV Solutions at UniCarriers Americas Corp. "To stay ahead of the competition, companies really need to start automating now or risk being left behind."

UNICARRIERS®
FORKLIFT

TO FIND OUT MORE ABOUT UNICARRIERS,
VISIT: UNICARRIERSAMERICAS.COM
CALL: 1.800.871.5438 (LIFT)
EMAIL: OLINDSTEDT@UNICARRIERSAMERICAS.COM

UNICARRIERS
240 N PROSPECT ST
MARENGO, IL 60152

LINKEDIN • FACEBOOK • YOUTUBE