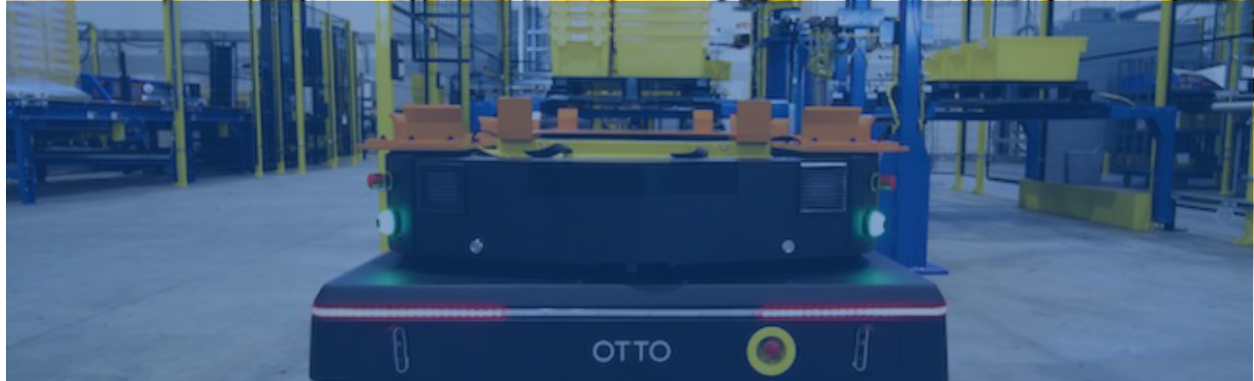




REHRIG PACIFIC CO. ADDRESSES PRODUCTIVITY AND SAFETY GOALS

ARTICLE BY: KELLY CHALMERS | SENIOR PROJECT MANAGER AT APPLIED MANUFACTURING TECHNOLOGIES



Mobile robots automate material-handling processes and improve productivity and safety for their operations.

MATERIAL HANDLING INSIGHTS

- Applied Manufacturing Technologies (AMT) collaborated with OTTO Motors to deliver a turnkey solution for Rehrig Pacific Co., aiming to enhance productivity and safety while addressing labor shortages.
- The solution automated material-handling processes at Rehrig Pacific's Orlando facility, integrating three systems to manage and palletize products more efficiently.
- The project included the use of autonomous mobile robots (AMRs) from OTTO Motors, which significantly improved the flexibility and efficiency of the manufacturing process.

A collaboration between Applied Manufacturing Technologies (AMT) and robotics provider OTTO Motors culminated in a turnkey solution for Rehrig Pacific Co., addressing its productivity and safety goals while mitigating labor shortage impacts.

Los Angeles, CA-based Rehrig Pacific Co. provides waste management, supply chain and direct store-delivery solutions for the convenience industry. The company produces its injection-molded products from sustainable, recyclable materials. Rehrig's Orlando, FL facility



AMR entry safety planning.

engaged AMT to design and implement a solution that automated the material-handling process into a single workflow using three integrated systems.

Orion, Michigan-based AMT is a provider of automated end-of-line solutions and material handling systems.

The Rehrig Pacific facility had a highly manual and labor-intensive mold machine that needed much tending. Its manual process was cumbersome to



manage. For example, the molding process itself was difficult to stop. The treated plastics and heating elements assumed a steady production pace; holding the system up caused a multitude of problems. Production-process pace and throughput were highly dependent on what came out of the mold machine.

In a previous project involving AMT, FANUC robots were used to manage tote movement from machine outfeed conveyors and for the application of barcode labels. Rehrig Pacific wanted to apply lessons learned from that project to this latest project at the Orlando facility.

The system accepted totes from the two molding machines and managed the dual infeed. The totes' RFID tag labels were inspected for correctness, ensuring the two labels, one on each side of the tote, matched and were not misprinted. The tote was moved to an RFID reader interfaced with the end customer's network and commissions the unique ID of the tote.

From there, instead of outputting the totes, the system palletized them into their shipping configuration. The new front-of-line system enhanced the entire process of labeling, accepting and managing a dual infeed. Its goal was not only to reduce labor but to improve how labor tasks are structured within the workforce.



Empty AMR entering front-of-line system.

END-OF-LINE SYSTEM

The end-of-line system supports the shipping and receiving side of the business. Pallet loads of totes are received from the front-of-line system, stretch wrapped and prepared for shipping. The end-of-line system needed to be optimized to support the increased throughput of the new front-of-line automation.

This part of the project was reconfigured when it was realized the planned robotic operation was not possible due to the pallets' variable quality. The pallets used at that time did not allow operations repeatable enough to allow stacking the full configuration on a shipping pallet. In other words, the pattern and height of the tote pallets had to be standardized to accommodate automation. After identifying the problem, AMT realized it had a simple solution: using Rehrig's own plastic products.



Full AMR leaving front-of-line system.

A new step was added to the front- and end-of-line systems. The front-of-line system was built on a plastic pallet manufactured by Rehrig Pacific. The stability resulting was enough to make the process repeatable. Subsequently, the load was transferred from that plastic pallet onto a shipping pallet at the end of the line. The end-of-line system was reconfigured to include a shipping pallet stacker so individual shipping pallets could be dispensed into the system for load transfer. Using pallet conveyor equipment running from machine to machine, the process incorporated the wrapper subsystem and joined front-of-line and end of line into one automated system.



FANUC industrial robot within AMT's automated material handling system for Rehrig Pacific Co.

AUTONOMOUS ROBOTS

Rehrig Pacific was interested in using autonomous mobile robot (AMR) technology as part of the third system. OTTO Motors, a Kitchener, ON-based provider of AMRs was brought into the project to support design of the third system, tying together the front- and back-end systems.

As the totes from the front-end system come in, they are stacked by a robotic arm onto a pallet. An AMR with a lift attachment then takes the full pallet from the front-end system and moves it to the end-of-line system to be wrapped.

“The flexibility of the system was a surprise to me because with the traditional automation software, you’re telling something to go from A to B, whereas with OTTO, you’re telling it to go from A to B, but it can choose its own path in between,” said Alex Kennedy, AMT senior controls engineer.

The AMRs operate like a taxi, moving pallets between the two robotic systems. The robotic cell PLCs are process-managed by the AMR fleet manager software. However, it was decided that

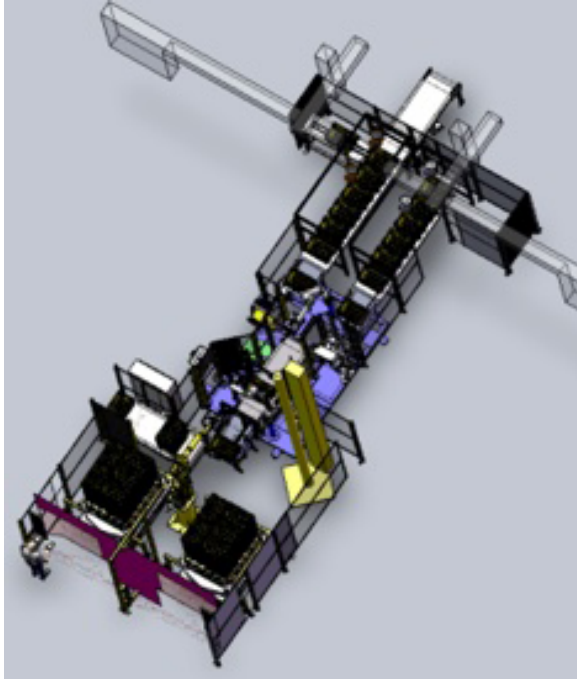
“I want to give a big shoutout to the team at Applied Manufacturing Technologies for their outstanding work on our automation project. Their positive attitudes, hard work and expertise were invaluable to the success of the project. I cannot thank them enough and would highly recommend AMT for any automation needs.”

-Brandon Lopez, Plant Engineer, Rehrig Pacific

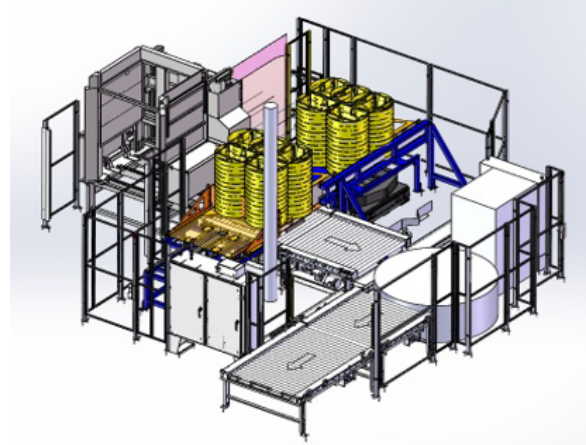
“The flexibility of the system was a surprise to me because with the traditional automation software, you’re telling something to go from A to B, whereas with OTTO, you’re telling it to go from A to B, but it can choose its own path in between.”

-Alex Kennedy, AMT Senior Controls Engineer

an additional engagement with the AMR system was needed. AMT designed a stand-alone interface that could also engage with the AMR system. This interface allows for both manual and automated transfer completions, allowing users an automated process, but with the opportunity to experiment with the system as needed.



Front-of-line palletizing robot.



End of the line system design.

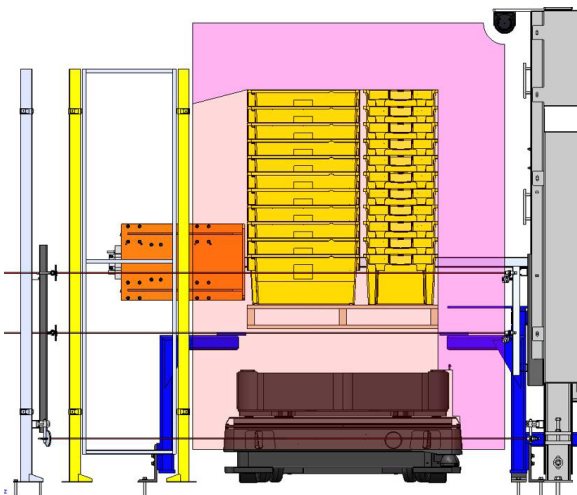
“I want to give a big shoutout to the team at Applied Manufacturing Technologies for their outstanding work on our automation project,” said Brandon Lopez, plant engineer at Rehrig Pacific. “Their positive attitudes, hard work and expertise were invaluable to the success of the project. I cannot thank them enough and would highly recommend AMT for any automation needs.”

Applied Manufacturing Technology (AMT)

248-409-2000 | sales@appliedmfg.com

<https://www.appliedmfg.com>

About the author: Kelly Chalmers is a senior project manager for Applied Manufacturing Technologies, a CFE Media and Technology content partner.



Front-of-line system design.