Robotic palletizing solution from Honeywell Intelligrated adds staffing and production flexibility

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Robotic Palletizing Solution From Honeywell Intelligrated Adds Staffing and Production Flexibility, Avoids Worker Injuries, and Yields Floor Space Savings

Please note: “Honeywell Intelligrated” within this case study refers to FKI Logistex. Intelligrated, which was purchased by Honeywell in 2016, acquired the North and South American operations of FKI Logistex in 2009.

Dan Schodowski faced a challenge. As president and CEO of Solon, Ohio-based JTM Products, Inc., Schodowski knew the company was ready to grow, and making the right investment choices would be critical. Should the company buy an existing facility or build a new one? What new material handling equipment would be needed to support the company's growth? Perhaps best known as the remaining piece of the original manufacturer of Murphy® Oil Soap, which was sold to the Colgate-Palmolive Company in 1991, JTM was founded in 1890 as the Phoenix Oil Company, producing axle greases, belt dressings and lubricants for the Industrial Revolution. Today, the company is still privately held by grandparents of the founder, Jeremiah Timothy Murphy, whose initials now form the company’s name. JTM’s business centers around two product lines: Murphy’s® tire mounting and demounting lubricants; and Phoenix® pipe joint lubricants used in the construction of water and sewer lines. The company also does private label and specialty product manufacturing. For Schodowski, JTM’s steady performance of up to $10 million in annual sales and an estimated 65 percent market share for its two main product lines gave the company financial stability on which to grow. But in the back of his mind, Schodowski knew that if he were to expand JTM, changes in production techniques would be inevitable for the 114-year-old company, its employees, and its owners.

Once JTM decided on a new site — its present location just outside of Cleveland — Schodowski’s next challenge was to meet the material handling demands of JTM’s product range. While the Murphy’s line of products is primarily packaged in 25- and 40-pound pails, the Phoenix line is primarily packaged in cases of either quart or gallon containers. With both sets of products needing to be palletized before shipment, Schodowski’s factory staff was left with a lot of slow and heavy lifting. “When we decided to move, we looked at how we could set up our operations differently,” said Schodowski. “Our layout was fragmented in the old building, and we could not bring in automated palletizers or other automated equipment. We were faced with having to keep adding people to manually load the product on the pallets and truck them somewhere else to have them shrink-wrapped.” The Move to Automation “When we started laying out the new facility, we knew that we had a lot more room and that we would be able to run both lines at the same time,” said Schodowski. “Running simultaneously in the old plant was a predicament. To do that, we needed extra staff on hand—staff that would be there, even if both lines were not running.” What was needed was a solution that could handle both product lines. This would allow JTM to allocate more space in the new 70,000-squarefoot facility for its chemical processing and packaging equipment and its inventory. The answer was an automated palletizer that could palletize both pails and cases.

“Killing two birds with one stone, we thought if we have an automatic palletizer then we don’t need somebody at the end of the line,” said Schodowski. “The idea was not to eliminate any jobs, but we also didn’t want to have to add any personnel when the business started growing.” Together with Larry Wilson, JTM’s director of operations, the pair researched their options. The two, both veterans of Colgate-Palmolive — Wilson, in human resources and manufacturing, and Schodowski, in accounting and finance — were convinced that an automated palletizing solution would be the most cost-effective way to go. A short list of vendors was drawn up. It was quickly narrowed down to one: palletizers from Honeywell Intelligrated, the only vendor who offered an integrated solution that could handle both pails and cases. That solution, an integrated robotic palletizing cell featuring a Motoman® articulated-arm robot with an Alvey vacuum end-effector, would win the sale from JTM. JTM’s robotic palletizer uses a Motoman articulated-arm and an Alvey vacuum-type end-effector designed and built in-house at Honeywell Intelligrated. The vacuum end-effector allows the robot to efficiently handle both pails and cartons and the variety of pallet patterns that JTM employs. “It was either buy two separate palletizers to handle the cases and handle the pallets, or look at a solution that could do both,” said Schodowski. “When we found out that Honeywell Intelligrated’s palletizers offered us the ability to palletize both product lines with one piece of equipment, we wanted to look at that option.” Installing the robotic palletizer would also free up floor space in the new plant.

Flexibility in Motion Roughly in the center of JTM’s new factory floor, surrounded on one side by the processing and packaging equipment, and on the other by pallets of stacked cases and pails, sits JTM’s robotic palletizing cell, enclosed in a safety cage. Pails of Murphy’s tire lubricant paste being filled, capped and conveyed up to the cell chug along in the background. With a whir of motion, the robot rotates to pick up an empty pallet from its pallet-loading station and places it in position at the start of an outfeed pallet conveyor so it can begin palletizing the pails. In the project’s original design, 10 pallets are preloaded onto the palletloading station at the start of a sequence and the robot counts its way down. Honeywell Intelligrated is currently working on a modification that will allow the palletizer to sense how many pails have been loaded onto the pallet station. This will allow the operator to load any number of pallets at the start of a run up to 10, providing JTM flexibility to do shorter runs and vary sizes without having to manually pull pallets out of the cell. On the infed side of the cell, Honeywell Intelligrated accumulation conveyors take up the pallets from the production conveyors and queue them for the robot on instruction from the robot’s control system. Depending on the product size and stacking pattern used in the particular palletizing operation, the robot’s vacuum tool picks up one or three pails at a time by attaching to their tops, and then puts them down to form the rows and layers of palletized product. When the pallets are full, they are shrink-wrapped by an automatic shrink-wraper and taken by forklift to inventory on the shop floor.

A similar process occurs for the cases of Phoenix pipe lubricant. The operator sets the system up at the outset, loads the pallets, and lets the robot pick a pallet to begin stacking. The cases come into the cell from a second infed line, and the process starts anew. Design flexibility is built into the Honeywell Intelligrated system. While JTM does not currently use the robot’s full capacity to run both lines into the palletizing cell simultaneously, the robot gives JTM the ability to ramp up production at any time. Beyond allowing JTM to run two lines at once, the palletizing cell handles a variety of stacking patterns and pallet sizes in addition to managing different pallet and case sizes. For the 25-pound Murphy’s pallets, the robot stacks 40” by 48” pallets with four layers, each containing 12 pails. The 40-pound Murphy’s pallets are stacked in two patterns. On 40” by 48” pallets, the pattern is three layers of 12 pails each. On 48” by 48” pallets, the pattern is three layers of 16 pails each. For the Phoenix cases of quart containers, the robot uses a 40” by 48” pallet to load 10 layers of five cases each. For the cases of gallon containers, the robot stacks a 40” by 48” pallet six on a layer, six layers tall. Since the case patterns require different placement angles, the robot is able to pick two cases at a time, put one down, turn the second, and then put it down. Honeywell Intelligrated has helped add an additional stacking pattern since the robot was installed.

"JTM's robotics cell uses a sophisticated control system that minimizes the amount of operator interface required," said Tom Simone, engineering manager, robotic products, Honeywell Intelligrated. "To design this cell, we had to look at the sizes of the pails and boxes that would be handled. Since each product has its own pallet build pattern and production rate, we had to determine how much of each product we had to load at a time, and then go about building the patterns." We also decided that since we had to handle pails and boxes, we would use a vacuum end-effector instead of a mechanical one," added Simone. "Because we had to pick up different product and different quantities, and because the patterns required us to release product in a few variations, the vacuum was the right tool. We also chose the vacuum because it could pick both types of product from the top, which was the most efficient and efficient method for doing that." A Heavyweight Performer JTM’s robotic palletizer has lived up to Schodowski’s and Wilson's expectations. While JTM only uses the system at 65 percent of capacity, leaving the extra capacity for continued growth, Wilson estimates that the cell now has lived up to Schodowski’s and Wilson’s expectations. While JTM only uses the system at 65 percent of capacity, leaving the extra capacity for continued growth, Wilson estimates that the cell now
loyalty looks like the formula for another 114 years of success.

If I was going to buy again, I would buy again from Honeywell Intelligrated, no matter what the application.” For the dedicated employees, managers and owners of JTM Products, that same tradition of Wilson. “They bring the engineering, the stang, the integration, the whole package from start to nish. They start with a piece of a paper and end up on the oor producing what they need to produce.

credits Honeywell Intelligrated with the design, integration and support of a system that has met and exceeded all of the company’s goals. “Honeywell Intelligrated goes the whole nine yards,” said

“Long as we need it.” Wilson, the project’s chief architect along with Schodowski, worked hard at getting the company’s ownership and employees onboard with the decision to implement a robot. He

“All they have to do now is pack the boxes and the robot gets them all stacked.” JTM’s robotic palletizer, rated for a lifespan of up to 20 years, has performed reliably since it was installed. JTM, which

themselves one day to recongure one of their heavily manual secondary lines to also run through the robot. “They took the line, reversed all the conveyors, and ran it through the palletizer,” he said. “If we maintain the equipment, we expect it to last as long as we need it.” Wilson, the project’s chief architect along with Schodowski, worked hard at getting the company’s ownership and employees onboard with the decision to implement a robot. He

his crew started to say, “Wow, we haven’t picked up any cases or pails for a long time. This is really nice.” In fact, Wilson added, the trepidation also turned to inspiration, as his crew took it upon

On the Shop Floor When the robot rst arrived, Wilson said his crew was a bit skeptical and a bit concerned. But over time, those feelings turned into appreciation. After a couple of months, says Wilson,

According to Schodowski, the project's return on investment is substantial. “The most obvious thing is that productivity is up, and there is a reduction in labor-intensive work has been eliminated.

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One of the reasons why Wilson and Schodowski chose Universal Robots was its ease of use and the lower barriers to implementation. "The level of software and the support that they provide is really something that we were looking for," said Wilson.

Universal Robots has a reputation for being user-friendly, and Schodowski noted that the company’s employees quickly became adept at using the robot. "We were able to train our people very quickly, and they were able to work with the robot right away," he said.

"The company's ownership and employees were onboard with the decision to implement a robot," said Wilson. "They were excited about the possibilities and were eager to see the project through to completion."

"The return on investment is substantial," said Schodowski. "The most obvious thing is that productivity is up, and there is a reduction in labor costs. In addition, the company has been able to maintain a high level of quality while reducing the risk of human error."

On a personal level, Wilson said he was glad that he could help the company upgrade its operations and modernize its processes. "It was important to me to be able to contribute in this way, and I'm pleased with the outcome."

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