



Intelligent Robot Solutions



Application: Palletizing

Industry: Food & Beverage

Products Used: FANUC M-410i



Robots continuously palletize day in and day out.

Challenges:

This producer of pasta evaluated its entire packaging operation and determined that in order to keep up with its customers' needs, it needed to make several upgrades, including robotics.

The company's objectives were to increase throughput and flexibility; however, at the end of the line other factors such as worker safety, ergonomics and mixed load palletizing were equally important. Generally considered a high physical stress job, palletizing operations have never been ideal for end-of-packaging line workers.

The company faced other demands at the end of the line besides the need to decrease worker liability. Automated palletizers would be required to handle a wider range of products with the ability to quickly change over to accommodate smaller lots and shorter delivery times.

Solution:

FANUC Robotics Canada, Ltd., provided the turnkey robotic palletizing solution including robots, application-specific software, system integration and after-sale support.

The customer's engineers decided to purchase two palletizing robots from FANUC Robotics, based on the robot manufacturer's reputation for high-quality products and service. Ergonomics was also a key factor since robotic systems save valuable plant floor space.

"Our space limitations were tight," said the project engineer. "The robots fit well into the system. Their long reach and small footprint didn't get in the way of equipment or workers."

Boxing and stacking of pasta products is now about as current as technology will allow. The latest packaging machinery, including high-speed form-fill sealers and verification equipment, automatically package over 35 different pasta shapes including spaghetti, penne and rotini. The end-of-packaging line uses high-speed robotics to pick and stack boxed pasta prior to shipment.

The project engineer said he is pleased with the project, which required a cooperative working relationship with several key equipment vendors.

Solution *(cont.)*

Here's How the New System Works

Loose pasta is conveyed using bucket conveyors to hoppers above form-fill seal machines. These machines automatically weigh and package the pasta into pouches.

Each pouch is in-line inspected for open seals and metal contamination and automatically rejected if required.

Inspected pouches are fed to automatic case erectors and packers, where they are packaged into cases of 12 pouches each. Full cases weighing between 6-11 kilograms are transferred to case sealers and onto an accumulation conveyor where they await palletizing.

Three in-feed conveyors shuttle cases into the palletizing work cell. A robot servicing two conveyors, automatically picks and stacks two cases at a time onto one of three pallets. A second robot is assigned to one conveyor and one pallet station. Completed unit loads are indexed from the work cell and transferred to a pallet accumulation conveyor prior to forklift removal and shipment.

The Results

In full production, running two, eight-hour shifts a day, the robots continuously palletize over 1,000 cases per hour. Advanced palletizing software helps the company meet its need for high-speed production and allows quick changeover to accommodate product size and weight variations.

“Our employees quickly adapted to the automated system,” said the project engineer. “Our operators find the robots easy to use and enjoy the variety of tasks associated with robot programming. In addition, we’ve been able to virtually eliminate strain-related injuries caused by repetitive and heavy lifting.”

The system was necessary in today’s competitive pasta industry and has paid for itself in about two years. According to the engineer, reduced labor costs, increased speed and high flexibility combined with ongoing vendor support have helped make the project a success.