

Drive & Control profile

Kangaroo Brands boosts pita pocket production with Veronica cartoner



Ultra Packaging's Veronica vertical cartoner provides an efficient, compact cartoning solution that enabled Kangaroo Brands to automate erecting and processing the cartoning of its fast-growing line of pita pocket sandwiches.

Kangaroo Brands, Inc. (www.kangaroobrands.com, Milwaukee, WI) is a fast-growing maker of ready-to-serve pita bread and sandwiches (Sandwich Bros. of WI), sold through a wide range of retailers and to national warehouse store chains. Recently, the company invested in cartoning technology to improve the productivity and flexibility of its packaging process.

They chose the compact, servo-driven Veronica vertical cartoner machine from Ultra Packaging,

Inc. (www.ultrapackaging.com, Bensenville, IL), which is powered by a complete electric drives and control solution from Bosch Rexroth Corporation (www.boschrexroth-us.com, Hoffman Estates, IL).

Responding to nationwide growth

When Kangaroo initially introduced its pita pocket sandwiches, the company used a manual cartoning process. However, once Kangaroo began supplying to large retailers including Walmart and warehouse stores, its

Challenge:

Help Ultra Packaging equip Kangaroo brands to increase capacity and reduce changeover time in its cartoning line, while maintaining a small production footprint with minimal cabling to fit existing floor space

Rexroth Solution:

- IndraDrive Mi integrated drive-motor solution
- IndraMotion XLC L25 motion-logic automation controller supports up to 16 axes of motion
- IndraWorks complete software suite programs HMIs, PLCs, Drives, and I/O in one IEC 61131-3 environment
- VCP 35 HMI touchscreen interface

Results:

- Handles four carton sizes to serve multiple markets
- Tenfold increase in cartoning production
- Compact machine fits existing space
- \$130,000 per year savings in workforce return
- Scalable for growth in consumer demand

needs changed. Monthly sales have grown exponentially each year from the original throughput of 250,000 pieces per month at the introduction of the product.

Now the food company produces seven different types of frozen ready-to-eat pita sandwiches made with pita bread baked fresh on the premises, and packages them in multiple types of cartons.

“In serving the larger retailers and club stores, we had to begin packaging our pita sandwiches in different count cartons,” said Justin Rice, Kangaroo plant manager. They now use four different carton sizes: a four-count, a six-count, a 12-count and a 14-count.

With these changes in their production, Kangaroo recognized that investing in end-of-line automated cartoning, with the ability to quickly and efficiently change carton sizes, was essential. In addition,

the new cartoning system needed to be implemented while keeping the process running in a physically limited space.

To meet these requirements, Rice contacted Ultra Packaging about its Veronica vertical cartoner with Rexroth electric drives and controls. “We have a long-standing relationship with Ultra Packaging and have purchased other machines from them, so when we decided to automate cartoning we chose to consider their Veronica machine.”

Veronica enables cartoning automation

Kangaroo already had two automated flow wrappers processing its pita sandwiches, so automated cartoning made sense.

The Veronica VHL is a seven-axis cartoner designed by Ultra for operations that require flexibility (multiple carton sizes), quick changeover (typically 10-15 minutes)



The IndraDrive Mi is engineered to fit into tight machine spaces and features a single cable combining power and communications. It is used to drive multiple axes on the Veronica, including automated closing and sealing of the carton flaps.

and user-friendly servo technology. It's a fast and reliable machine for erecting cartons from flat paperboard blanks and precisely transporting and synchronizing the loading, closing and gluing of the cartons.

The Veronica's versatility and efficient performance is built around an advanced drive and control platform from Bosch Rexroth. The Rexroth IndraDrive Mi integrated drive-motor system drives each machine axis. Each servo unit consists of a Rexroth motor with the drive electronics integrated into the motor housing, which allows the units to be located out on the machine rather than inside the control cabinet. The motor and drive combination also offers greater design flexibility, with multi-protocol communications hardware that supports PROFINET IO, EtherNet/IP, EtherCat and Sercos III.

The integrated motors and drives save space and cooling requirements in the cabinet and reduce the machine's component cost: a single cable for power and communication runs from the power supply in the cabinet, with



The compact size of the Veronica's control cabinet is enabled through the use of the IndraDrive Mi drive-integrated servomotor system, which removes the servo drives from the cabinets and incorporates them into the motor housing.

each IndraDrive Mi daisy-chained to the next, for significant savings.

“By using Rexroth’s IndraDrive Mi motor/drives, we reduced our linkages and other machine components by 60 percent compared to prior models,” said Bob Stockus, Ultra Packaging vice president. “Our cabling cost has gone down about 40 percent and our time for field wiring alone has dropped 40 percent.”

At the heart of the Veronica cartoner lies the Rexroth XLC motion logic controller, integrating synchronized motion on each axis as well as logic programming. The IndraMotion XLC is an advanced machine automation software platform and features a wide range of open interfaces, including Sercos III, PROFIBUS, PROFINET, and EtherNet/IP. The Veronica machine uses Sercos III for its communication bus, ensuring tight, efficient servo synchronization and control of multiple machine functions.

Fast changeovers and easy control

During operation, wrapped sandwiches are transported from the two upstream flow wrapping

machines to the cartoning machine via an inclined conveyor specially created to lift the products to the level of the Veronica’s transport belt.

The Veronica automatically erects a carton and closes the lower end. There are eight staffed packing stations, with four on each side of the machine. Each carton is transported past these stations as employees insert the required number of wrapped sandwiches into the carton, which the Veronica automatically seals once the carton is full.

According to Rice, one of the key reasons Kangaroo chose the Veronica was the speed and simplicity of changeovers to different carton sizes. “During a typical work week, we may perform 16 to 18 carton changeovers for various customers,” Rice said. “It typically only takes 10 to 15 minutes to do, and we’ve trained four different associates to use the touchscreen Human Machine Interface (HMI) to do the changeover.”

The HMI consists of a Rexroth VCP 35 terminal with a 10-inch color touchscreen, which provides complete

machine operator control. Rexroth’s XLCL25 Control is the state-of-the-art hardware platform that is programmed with the IndraWorks software suite. The IndraWorks software is a unified engineering framework that provides the tools and environment for project planning, programming, commissioning and diagnostics.

The XLC L25 is a cost-effective unit that utilizes the latest IEC 61131-C compliant Rexroth IndraLogic 2G kernel and can support up to 16 real and/or virtual machine axes. This enables it to control both the Veronica and the external conveyor feeding the machine. The modular Rexroth IndraDrive Mi configuration also allows for new axis to be added to the machine with minimal effort, if Kangaroo needs to do so in the future.

“The IndraWorks software is written to tie these multiple axes together results in the machine being very easy to adjust, very easy to monitor, and very easy to change over to different carton sizes,” Ultra Packaging’s Stockus said.

Fitting tight production space

Another reason Kangaroo chose the Veronica was its compact footprint -- this was important, since the available space at the plant where the machine was to be located was limited. “It was a small challenge to integrate the cartoner into our existing production design,” Rice said.

Originally, wrapped sandwiches were conveyed to the outside wall of the room for cartoning on two separate lines; product now feeds into one centrally located incline conveyor, which feeds the Veronica. Ultra Packaging was instrumental in



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helping engineer this conveyor to lift the sandwiches up to the Veronica for cartoning, and helped integrate it into the Veronica's controls platform. In addition, the IndraDrive Mi technology helped keep the Veronica's footprint compact; because the drive components are integrated into the individual Rexroth servo motors, the size of the control cabinet is reduced compared to other machines.

"It was a very seamless transition," Rice said. "The layout of the machine fit the production floor exactly as we needed it to."

Exceeding expectations

Automated cartoning has allowed Kangaroo to greatly increase output: Throughput rates run smoothly at about 240 sandwiches per minute, enabling comfortable production of a variety of carton sizes. "And if Kangaroo needs to increase throughput in its cartoning processes, the Veronica has the capacity," Stockus said. "It leaves a lot of room for future growth."

Kangaroo is also pleased that this investment in automation has generated other savings. "With the addition of Veronica, we gained



Veronica's automation control is from the IndraMotion XLC motion-logic automation controller, which supports up to 16 axes of motion and enables fast changeovers to different size cartons.

a savings in cartoning supplies of around \$20,000 per year and a workforce savings of around \$130,000 per year," Rice said; the company was able to reduce the labor cost associated with the semi-automated cartoning process and re-assign personnel to other locations in the plant. "In addition, we reduced losses of cartoning supplies, due to malfunctioning equipment, to less than one percent," Rice said.

"The solution has been performing at or above our expectations and production targets are consistently met," he added "The Veronica cartoner with the Rexroth drives and control platform is an effective approach to meet the requirements of our quickly changing production environment."



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