To meet constantly changing consumer demands for new and different packaging, food, beverage and personal-care manufacturers need flexible machinery that allows quick changeovers from one package format or size to another. With 40 years of experience, St. Paul, Minn.-based Delkor Systems designs innovative packaging machinery for secondary packaging that allow manufacturers to reach their profitability and sustainability goals while staying in lockstep with evolving consumer needs.

“In the last two years, we've introduced 15 completely new machines,” said John Kalkowski, director of marketing at Delkor Systems. “Our primary focus throughout this time has been to design machines capable of handling many different types of packaging, and executing changeovers in fewer than five minutes. Flexibility is the key, and Delkor is constantly looking to improve our systems by employing the latest technology that best fits customers’ unique needs.”

To that end, Delkor developed a robotic packer with integrated closer capable of handling a wide variety of different container shapes and sizes at speeds up to 230 units per minute. The high-speed system is equipped with a Delkor Robotic C series loader that uses a Delta robot from FANUC to collate and pack containers in a way that maximizes space inside each case or carton.

“One customer is using the robotic packer with integrated closer to pack its unique and modern wedge-shaped aseptic containers used for juice, tea and milk,” said Kalkowski. “The robot picks up and rotates each wedge-shaped package before placing it into the case, allowing the customer to maximize the number of packages in one case, and ultimately save time and money in the process.”

Unlike most packing and closing machines that are connected with a conveyor line, the Delkor Systems robotic packer with integrated closer connects the two machines in one compact system via EtherNet/IP™ to eliminate the need for a conveyor. This saves valuable floor space for customers.
The process is controlled by an Allen-Bradley® CompactLogix™ programmable automation controller, which manages all machine and motion functions, and provides high-performance control in a small footprint. The controller is tightly integrated with an Allen-Bradley Kinetix® 6000 servo drive via EtherNet/IP, providing high-speed motion synchronization. Operators can easily monitor the packing and closing operations using an Allen-Bradley PanelView™ Plus color touch-screen human machine interface.

To help customers increase product quality and minimize waste, the robotic packer with integrated closer uses a detection system with automatic soft-air reject system to identify proper placement of containers and prevent jamming. Unlike other machines that discard defective product into the trash, the Delkor Systems machine can gently divert packages for manual inspection and error diagnosis. This helps minimize machine downtime – by a minimum of 30 seconds per faulty product – because it eliminates the need to stop the machine and remove out-of-place product before it enters the load cycle.

The machine was also designed to improve operator safety. “We design safety systems into our machines early in the process so our customers don’t have to worry about it later,” said Kalkowski. “We also place a strong emphasis on safety during the training that our customers receive with each machine.”

Another Delkor Systems innovation is the flexible Trayfecta® Series carton-, case- and tray-former machines, which are among the most versatile machines of their type because they can be changed to run cartons, cases or trays made from corrugated, paperboard and microflute within five minutes or less. As the first step in a secondary packaging process, a Trayfecta machine takes a blank and forms either a shipping package or a retail-ready package that can be placed right on the shelf.

“The Trayfecta Series machines protect our customers' investments because they can be changed at a moment's notice with a quick tooling change,” said Kalkowski. “Our customers often can't predict the type of packaging a machine will need to handle a year from now. The Trayfecta Series is completely adjustable to match evolving needs.”

Customers have the option of purchasing a servo-driven or mechanical Trayfecta Series machine. The servo-driven version is controlled by a CompactLogix controller that seamlessly communicates with Kinetix 6000 servo drives for compact, high-performance motion control.

“Our relationship with Rockwell Automation helps us stay at the forefront of robotics, servo and vision technology so we can keep building new ideas that address our customers' most difficult challenges,” said Kalkowski. “This helps us keep learning and growing, and helps fuel our expanding export business. In fact, more than one quarter of Delkor's production is now being purchased by customers outside the United States.”

For more information, contact:
General Sales
Delkor Systems Inc.
Phone: 651.348.6724
Email: info@delkorsystems.com

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www.rockwellautomation.com

Power, Control and Information Solutions Headquarters
Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleelaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846