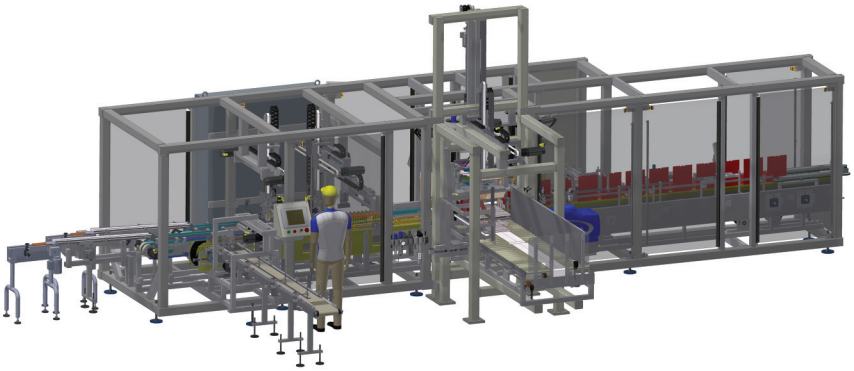
Solutions in Action

AFA Systems
Packaging Automation

Rockwell Automation
Machine Builder Partner

Allen-Bradley ControlLogix Controller



This autoload cartoner from AFA Systems completes all operations in about half the space required for a conventional multi-machine solution.

Allen-Bradley Kinetix 5500 EtherNet/IP Servo Drive

Allen-Bradley PowerFlex 525 AC Drive

In the food and beverage and consumer packaged goods industries, developing unique products in response to market demand is just part of the equation. Product differentiation – and marketing success – also rely heavily on packaging.

Whether a packaging OEM can meet novel specifications cost-effectively is directly related to their approach to machine design – and the flexibility of their control platform.

"Many packaging OEMs require customers to design products that match their machine specifications," said Eric Langen, sales and marketing manager, AFA Systems. "Whereas we understand the importance of packaging differentiation and will customize our standard assemblies to accommodate demanding requirements."

Located just outside Toronto, in Brampton, Ontario, AFA Systems is a leading provider of engineered packaging automation systems worldwide. The company's portfolio extends from robotics, cartoners and case erectors to case packers and palletizers.

Recently, AFA Systems was approached by a customer in China seeking a high-speed packaging solution for a new nutraceutical product. The company planned to sell the liquid elixir in small 100 milliliter bottles, packaged 50 to a carton. In addition, the customer required a wraparound carton with a perforation that could serve as a tray for the consumer, once the flap was opened.

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"This carton design enables the customer to meet two marketing initiatives," Langen explained. "The carton can serve as a retail-ready package for the sale of individual products or a convenient storage device for consumers purchasing a full carton of product."

Packaging specifications also included the insertion of five packs of 10 drinking straws in each carton.

To meet customer requirements, AFA Systems designed a new machine assembly, a heavy-duty, intermittent motion autoload cartoner for bottling or vial lines. Built on a monobloc frame, the machine completes all operations within 30 square feet – about half the space typically required for a conventional multi-machine solution. The machine runs 1,200 bottles per minute.

The complex system includes six AFA Systems robots – and showcases the company's robotic expertise.

After filling, capping and labeling, the bottles are laid on their sides and enter the machine through two infeeds. The bottles are transported to two gantry robots via a pocket conveyor. The gantry robots pick ten bottles each – 20 bottles total each cycle – from the pocket conveyor. The robots place the bottles into a plastic tray, which holds 50 bottles. Once the tray is filled, a third gantry robot pushes the tray into a carton, which has been erected by another gantry robot. The carton advances to the straw packing stations.

Simultaneously, a singulator conveyor stages drinking straw packets single file for two delta robots. The robots pick the straw packets and place them on a staging plate, where they are rotated on edge and end-loaded into the carton between the rows of bottles. The carton is sealed and discharged from the machine.

"This is an extremely complicated application," said Langen. "However, we were able to simplify training, operation and maintenance for our customer by using just one control platform for all machine operations. A separate robotic platform is not required."

The machine is based on a Rockwell Automation® control platform featuring two Allen-Bradley® ControlLogix® processors and 22 Allen-Bradley Kinetix® servo drives. Allen-Bradley PowerFlex® 525 drives run the conveyors. The system is integrated on an EtherNet/IP™ network and monitored on an Allen-Bradley PanelView™ graphic interface.

To deliver better service to their Chinese customer, AFA Systems integrated a remote monitoring system into the control platform.

"Our customers overseas often don't have easy access to technicians who can troubleshoot their equipment," Langen said. "Remote monitoring allows us to help mitigate any machine issues from a distance."

In addition, the company's Chinese customer wanted to monitor energy and compressed air consumption on the new equipment. To meet this requirement, AFA Systems included the Allen-Bradley PowerMonitor™ 500 and airflow sensors as part of the system.

While the initial machine implementation is designed to run a single product, AFA Systems anticipates future installations of the machine may require frequent changeovers.

"For many of our customers, fast changeover is a critical requirement," Langen said. "We can incorporate Allen-Bradley servo-driven, automatic changeover technology into this machine assembly, if needed."

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