

**Problem:**

Machine design required high-speed, with precise staging and feed timing for accurate, consistent package counts per carton.

Solution:

Two Tolomatic MXB belt-drive actuators—one to position cartons, the other to move them to a fill zone.

Results:

Space-saving, durable, cost-effective solution with consistent position repeatability.

Belt-drive actuators from Tolomatic deliver speed and positioning accuracy for innovative packaging technology

Tolomatic MXB rodless electric actuators meet demanding requirements of carton staging and feed system.

DES PLAINES, ILL.—Builders of packaging machines continue to develop new technologies that boost product throughput and lower costs for their customers. One such technology, recently developed by Cloud Packaging Equipment Co., is designed to ensure both fast and accurate filling of pouches and cartons. For speedy and precise carton movement, the carefully designed cartoning portion of Cloud's new system relies on a pair of MXB belt-driven actuators from Tolomatic.

Cloud's new Performa SP packaging system is a horizontal form-fill-seal (HFFS) pouch machine that makes plastic bags out of a flat roll of plastic film, then fills the bags with product and seals them. The Performa SP system is designed with state-of-the-art technology and precise calibration to process 4,500 pouches per minute with the greatest efficiency possible.

Cloud has completed construction of two of its Performa SP systems, which are used to fill and package small sugar pouches used in restaurants.

Currently, the company is in the process of building two more of the systems.

At the end of the Performa HFFS process, a transfer wheel allows an exact count as filled pouches are dropped into cartons. Pouches follow a carton as it indexes to complete the

desired count. When one carton is filled, pouches start dropping into the next unfilled carton.

The higher speed of the new machine also required a new carton staging and feed system, because the actuators used in the carton staging and feed timing are critical to ensure accurate and consistent package counts per carton.

Actuators play key role in cartoning

Key components of the cartoning system include two actuators, one for the initial positioning of each carton and another to move cartons through the fill zone. Cloud got help in choosing these actuators from Flow Products Inc., a Chicago-based Tolomatic distributor that develops and sells hydraulic, pneumatic and electromechanical equipment. The design team initially considered ball-screw actuators for the system, but eventually determined that belt-drive actuators were a better choice because the belt-drive units

needed to meet the application's thrust and acceleration requirements were much smaller and more cost-effective than ball-screw actuators with similar capabilities.

Once Cloud decided to use belt-drive actuators, the next step was choosing an actuator for the system. Cloud initially considered actuators produced by several manufacturers. While there were similarities among all these actuators, Tolomatic units stood out because of their larger input shafts, oversized pulley bearings and consistent repeatability. Tolomatic's MXB belt-driven actuators are capable of delivering consistent position repeatability of ± 0.002 inch. (± 0.5 mm). Precise positioning accuracy is achieved using a calibration process in which initial position error is determined and then eliminated via programming.

"I was surprised that a number of manufacturers use extremely small input shafts and bearings for this application," said James Sybeldon, a senior project engineer at Cloud involved in the design of the new packaging technology. "I felt more comfortable with the Tolomatic products because the input shaft and bearing sizes seemed more appropriate for the sort of power that the servo motor in our machine was capable of delivering."

Cloud thought the Tolomatic MXB-P guided belt-drive electric actuator was a good fit for the Performa SP based on these key features:

- A rodless design that takes up less space than rod-style actuators
- Lightweight aluminum construction optimized for rigidity and strength
- Profiled rail bearing system to reduce friction and extend actuator life



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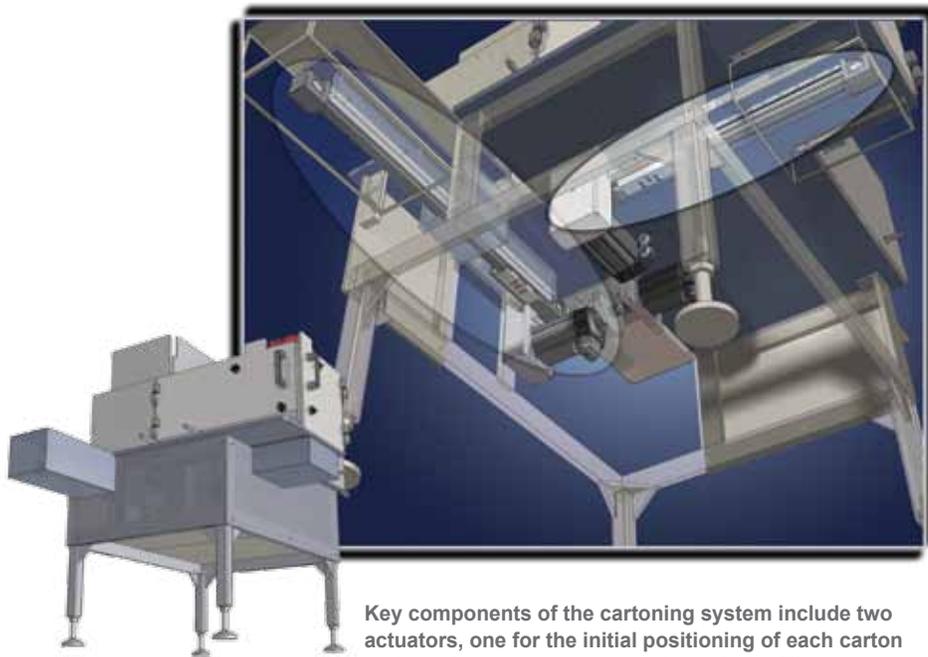
Fast, precise movement distinguishes actuator choice

On the Performa machine, the MXB-P actuators work with servo motors to provide both the speed and the positional accuracy required by the cartoning system. The servo drives also allow carton size and fill count to be changed via programming, which is quicker and easier than making mechanical changes to linkages or conveyor sections. "With programmable servo drives, we can develop a set of motions that work for a particular product, and then save that information so the system can set itself up the next time we run that product," said Sybeldon.

In Cloud's cartoning system, one MXB-P actuator, with a 16-inch stroke length, positions each carton at the starting point of the fill zone. The other actuator, with a 25-inch stroke, feeds the carton at the precise speed required to ensure that it contains an accurate count of pouches as it exits the system.

With their speed and positional accuracy, the MXB-P units are integral to the success of the Performa SP's sugar-packaging operations. Sybeldon and Cloud Packaging would expect no less on this high-tech machine that provides faster operation and lower costs for their customers.

Tolomatic has been a leading supplier of electric linear motion and pneumatic actuators for more than 50 years. Its extensive product line also includes servo-driven high-thrust actuators, servo- and stepper motors and drives, and configured linear motion systems. Tolomatic's electric linear and pneumatic actuators are used in a variety of industries including packaging, material handling, medical, food processing, automotive, semiconductor and general automation. Tolomatic also manufactures right-angle gear drives, caliper disc brakes and clutches.



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