

Drive & Control profile

Mullins Food Products Dips Into Faster Production with Rexroth Servo System



Besides production volume, package and product waste have also significantly improved.

Mullins Food Products, a contract blender and packager of condiments for the fast food industry, used a high-speed servo-driven casepacker to increase production speed, quality, efficiency and overall productivity.

When you're in the business of providing sauce packs and cups for major fast food suppliers, speed is of the essence. Stop and consider how many condiment packs are produced in a given week to serve the market, especially when customers often ask for an extra cup of dipping sauce with their chicken or an extra packet of ketchup with their fries.

Mullins Food Products develops, manufactures and packages the condiments found in many leading fast food restaurants. Their product line ranges from ketchups, mustards and barbecue sauces to mayonnaise, salsas and other dressings and blends. The company produces a large volume of packets so any speed improvement in the packaging line can lead to

Challenge

Improve overall speed and efficiency of packaging line with new high-speed servo-driven casepacker tied in to existing upstream cup machine.

Bosch Rexroth Solution

- High-performance intelligent IndraDrive digital servo drives with 230 to 480 VAC autoranging input voltage and absolute feedback to eliminate homing
- MSK servo motors
- PPC-R motion and logic controller synchronizing all of the servo motions
- Precision ball screw actuators

Results

- Speed increased from 58-60 cycles per minute to 70 cycles per minute
- Waste dropped nearly 10 percent
- Compact design of IndraDrive servo drives and MSK servo motors allows for smaller 12-inch cabinets
- PPC-R controller synchronizes upstream cup machine with end of line casepacker

noticeable results. With this in mind Mullins examined its entire production process and identified specific areas where speed and efficiency could be improved.

One area immediately identified for improvement was in the way they package their dipping sauce cups into larger cases for shipping. The final packing area of the line largely determined the overall speed of the line.

To better meet its customers' demands for one-ounce cup products, Mullins decided to commission a new casepacking machine capable of quickly picking and placing the cups in cases for distribution. They purchased a high-speed three-axis casepacker made by Soleri Design/Automation Inc. (West Lake Village, CA SoleriDsn@aol.com) equipped with a high-performance servo system from the Bosch Rexroth Corporation [Electric Drives and Controls](#) group (Hoffman Estates,



With the Soleri casepacker, throughput times have accelerated nicely for Mullins Food products.

IL www.boschrexroth-us.com/brc). As another option, Soleri Design/Automation also offers a robotic style three-axis case packer with a smaller footprint.

Designed to accelerate speed across the entire production line, Soleri's casepacker and corresponding Rexroth components integrated seamlessly with an upstream, previously installed cup filling machine from [Winpak](http://www.winpak.com) (San Bernardino, CA www.winpak.com). With this integration Mullins significantly accelerated the overall speed of its cup line.

Servo-driven Pick and Place Accelerates Production

When the filled one-ounce cups travel down the production line toward the packaging area, 50 containers are picked up with a suction head and then oriented and placed into the case.

While a current set of cups are being placed in the box, a separate pick head places a cardboard slip sheet in between each layer of cups to add strength and to ensure the cups are not damaged during shipment. There are five layers, providing a total of 250 cups per case.

The machine is driven by Rexroth intelligent [IndraDrive](#) digital servo drives and [MSK](#) servo motors. The high-performance servo drives are unique because they offer many advanced features, including [distributed intelligence](#) to close all the loops down in the drive, freeing up the controller to calculate and execute the pick and place path planning. The drives also provide 230 to 480 VAC autoranging input voltage, absolute feedbacks to eliminate homing, and a built-in "personality module" or SD memory card for laptop-free replacement in minutes. In



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When sauce cups are being placed in the box, a separate pick head places a cardboard slip sheet in between each layer of cups to add strength and to ensure the cups are not damaged during shipment.

In addition, the compact design of the drive amplifiers allows the use of standard 12-inch cabinets for a smaller machine design.

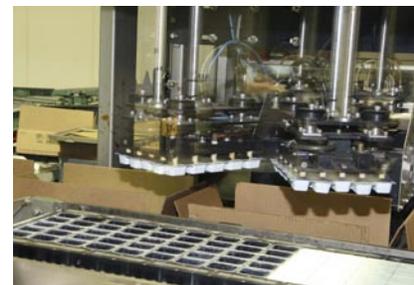
Upstream Synchronization with Rexroth Controller

A key component of the system is the high-performance Rexroth [PPC-R controller](#), a Power PC-based motion and logic controller which resides upstream on the Winpak cup-making machine. This compact rack-based system synchronizes all of the servo motions. It controls both the Winpak cup machine and the Soleri casepacker. As a result, the speed of each machine directly corresponds with the tempo of the other one. For example, if the Winpak machine ramps up its production to 65 cycles per minute, the Soleri casepacker can seamlessly adapt to handle the volume, offering an overall increase in line speed.

In addition to the servo system, Rexroth also provided precision [ball screw actuators](#) from its [Linear Motion and Assembly Technologies](#) group.

To help with the controls specifications, Soleri relied on its 10-year relationship with local Rexroth automation distributor [Applied International Motion](#) (AIM), (www.aimotion.com Laverne, California).

When discussing possible specifications with Soleri, AIM's Dan Dal Colletto determined the most beneficial architecture from the Rexroth family of electrical, mechanical and pneumatic product lines. In this instance, AIM helped Soleri by coming up with an optimal electric controls architecture as well as a gearbox and ball screw combination for vertical actuation. As a result,



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Soleri was able to utilize smaller servos, keeping the machine footprint to a minimum while still achieving the overall speed increase they were seeking.

“The Rexroth control components simplified the entire process,” stated Richard Soleri, the equipment company’s owner. “With their high-quality components and applications engineering support, they helped to optimize the system for what Mullins wanted to achieve.”

Servo System Leads to More Throughput

It didn’t take long for Mullins to reap the rewards of the Soleri casepacker. In an industry governed by speed, the Soleri machine immediately produced a sizeable increase in cycle speed, according to Mullins maintenance manager, Larry Coons.

“In terms of calculating production, we are ultimately measured by cycles per minute, and with this casepacker our throughput times have accelerated nicely,” said Coons. “Prior to the install of the Soleri machine, we maxed out at around 58 to 60 cycles per minute,” he said. “We’re now running at least 70 cycles per minute—about 17 percent faster production. The casepacker has provided exceptional performance for us,” Coons added. “We will eventually convert more casepackers to servo technology because we’ve witnessed such a significant increase in production,” he said.



Soleri’s case packer and Rexroth servo system integrated seamlessly with existing upstream cup filling machine.

Production volume isn’t the only thing that’s improved. Coons said package and product waste have improved also. With the servo system, the machine is designed to move slightly slower while the cups are en route to the box, but faster on the return to pick up more cups. This overall controlled action reduces the potential for lost or damaged products, a number which Coons said has dropped by nearly 10 percent.

With the successful installation of its Rexroth-equipped Soleri casepacker, Mullins is pumping out sauces and condiments much faster, and has the ability to go even higher. So the next time

you’re eating at your favorite lunch stop, don’t hesitate to request another cup of sauce—Mullins Food Products will help ensure there’s always more available.

Rexroth
Bosch Group