



Schulze and Burch *mGrip* Solution Keeps Food Packaging Equipment from Sucking Up Profits

CUSTOMER

Schulze and Burch

INDUSTRY

Food Production/Packaging

SOLUTION

***mGrip* on Delta robot for fast pick-and-place of delicate cereal bars**

CHALLENGES

- High-speed picking of delicate food product
- Reducing maintenance, improving uptime over vacuum gripper solutions
- Cut down on product waste from miss picks

RESULTS

- Increased line **speed by 50%**
- Eliminated **unscheduled downtime**
- Cut maintenance by **20-40 hours per week**
- Reduced waste by **up to 25%**
- Demonstrated solution using client product in **10 minutes**

IN TODAY'S MODERN WORLD, getting off to a fast start is important but not at the expense of a nutritional breakfast. In fact, maintaining optimal health by putting the best foot forward has never been as important as it is to today's mobile society. That's why Schulze and Burch Biscuit Co. (Chicago) is a leader in the \$1.8 billion food bar market, as well as a key supplier of toaster pastries and other filled breakfast products, cookies, crackers, and cereal.

In addition to keeping up with an annualized product demand growth of 4% or more, Schulze and Burch also lends their food manufacturing and packaging expertise to other major U.S. food brands. As a result, Schulze and Burch production lines need to operate at optimal capacity and accommodate shifting demands from their diverse contract food manufacturing client base.

Cereal Bars and Vacuums Don't Mix

In 2018, Schulze and Burch launched a new production line for cereal bars. Automated conveyors carry unbaked materials into ovens, which cook the bars before transporting them to a packing station.

After the ovens, the bars travel on a series of conveyors, which separate one bar from another, before being deposited on two parallel packing conveyors. As each bar transitions to the packing conveyors, the exchange creates an empty area, or buffer zone, around each bar on the conveyor. The buffer zone helps four separate machine vision systems using cameras and specialized image processing software to identify and locate each bar. Each machine vision system passes a bar's location data to the controller for one of the four robotic arms, allowing it to quickly grab a bar and place it on a lug conveyor for transport to the wrapping machine.

Maintaining the buffer zone around each bar is important because the machine vision systems cannot recognize one or more bars if they are touching each other. Overlapping or occluded bars lead to missed picks and wasted product. Unfortunately, when a robotic arm fails to cleanly pick a bar or drops it during transport to the lug conveyor, the bar often ends up touching another bar, doubling the amount of waste.

"The original vacuum grippers we used on this work cell were not consistently able to pick the products at the speed we needed, resulting in significant waste," explains Ryan Kaminski,

*"After shifting to the mGrip, we were able to increase our **cycle times from up to 40 picks per minute to up to 60 picks per minute** with virtually no missed or dropped picks. Based on these higher pick speeds and reliability, we were able to **increase overall line speed by 50%** by moving to the mGrip solution."*

—RYAN KAMINSKI, senior project engineer at Schulze and Burch



senior project engineer at Schulze and Burch. “The vacuum was sucking up food particles and the system was regularly down for maintenance.”

Luckily, in 2018, Schulze and Burch’s vice president of operations came across a new robotic gripper from Soft Robotics, a designer and manufacturer of advanced technologies that enable automation of variable products and processes, in a trade magazine that promised to consistently pick variable and fragile products at high speeds.

Food-Grade, Modular Grippers *mGrip*

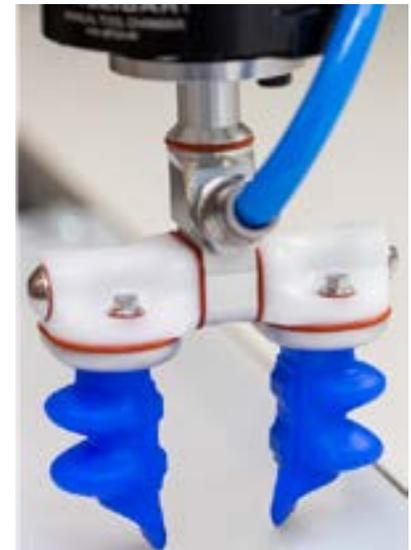
Within a few days of contacting Soft Robotics, a local representative came by with a demonstration kit. “Within 10 minutes, he had the gripper on the end of our robot and picking up our cereal bars. Most demos bring their own product to demonstrate their technology. Seeing that they could get the gripper to work consistently within just a few minutes showed me this was a solution worth investigating further,” said Kaminski. Soft Robotics *mGrip* is a modular robotic gripper that can be configured in either parallel or circular configurations with up to six fingers to accommodate different sized products. *mGrip* enables adaptive handling of unstructured objects of varying size, shape, and weight. This integrated and easy-to-use solution, which includes an *mGrip* gripper paired with a high-performance control unit, is perfect for automating pick-and-place applications.

Since the cereal-bar line was installed in Schulze and Burch’s Chicago facility in 2013, maintenance personnel had spent every night shift disassembling each of the 16 vacuum grippers, removing bits of cereal bar that would be sucked into the vacuum gripper and cleaning the devices for safe food production the next day. “Most days, we were able to run the entire shift before the gripper became unusable, but not always,” said Kaminski. “After moving to the Soft Robotics *mGrip* tooling, we could simply wipe down the robotic fingers each night and be ready for the next day’s shift.” Cumulatively, maintenance personnel spent



between 20 and 40 hours a week, every week, maintaining the vacuum grippers on the cereal bar packing line, all of which was virtually eliminated by the move to food-grade *mGrip* robotic tooling.

In addition to higher reliability, improved uptime, and lower maintenance, the *mGrip* solution was also able to work faster. Vacuum grippers would peak at roughly 40 picks per minute; faster movements would result in unacceptably high bar drops by the robot. As it was, Kaminski said, the vacuum grippers would drop up to 25% of the picks. These dropped picks had a negative cascade effect on the cereal bar line, causing considerable waste from failed picks and unused packaging film (the lug conveyor assumes every slot is filled). Cost also increased with the need for additional manual labor to reinject the missed cereal bars into the packing line or destroy them entirely.



"After shifting to the *mGrip*, we were able to increase our cycle times from up to 40 picks per minute to up to 60 picks per minute with virtually no missed or dropped picks," Kaminski said. "The robots work in series, with the second robot picking fewer bars than the first. Based on these higher pick speeds and reliability, we were able to increase overall line speed by 50% by moving to the *mGrip* solution." The actual process was tested at up to 80 picks per minute.

Within two weeks of installing the first *mGrip* end-of-arm robotic tooling on the first Bosch delta robot, Schulze and Burch installed 15 additional *mGrip* grippers on the 15 remaining delta robots manning four separate cereal bar production lines.

"We've been in operation for two years without any unscheduled downtime or equipment failures," said Kaminski. "Even during installation, Soft Robotics' support team was able to help us figure out a control issue and get us back running quickly."

Based on the early success of the cereal bar packaging line, it seems that at Schulze and Burch, there's always room for a little more automated productivity when it comes to producing healthy snacks.

For more information on Soft Robotics solutions, contact solutions@softroboticsinc.com or visit SoftRoboticsInc.com to watch the *mGrip* in action in food packaging and related applications.



Solving workforce challenges through modular robotic gripper solutions that offer the human touch



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