

Simpler System Soups Up Productivity

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Can Lines partners with Festo to develop a state-of-the-art retort basket unloading system that improves productivity by 30%.

When a leading soup canning facility asked [Can Lines Engineering Inc.](#), Downey, Calif., for an advanced retort basket unloading system, the company joined forces with Festo to develop a solution. [Festo](#) provides pneumatic and electrical automation components and assemblies. Can Lines' goal was to replace its old sweep unloading method with a basket retort unloading system that could economically boost productivity, reliability, and safety.



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Can Lines, which manufactures container and material conveying systems for the food, beverage, and consumer products industries, collaborated with Festo to design and build the new system that uses a magnetic head carriage. In contrast to the sweep method, which relies on chains and crossbars to unload baskets, the magnetic head carriage enables the end user to meet productivity and safety goals as well as simplify system control.

The advantage of the magnetic head is that, as detailed in the following paragraphs, it reduces the number of moving parts. This leads to faster installation and more trouble-free operation. The system is much gentler—the magnet will pick the cans from the top, which means fewer damaged cans and much faster transfer. All in all, it's a more elegant solution that can be a learning tool for others in the industry.



Filled soup cans are placed into baskets that can weigh hundreds of pounds, which are then manually loaded into horizontal steam retorts. After the retort process culminates, the loaded baskets are placed on a conveyor that leads to a basket unpacking station. Then, at this point, the cans are moved onto a labeling and case-packing line.

Smooth Transitions

At the basket unloading station, multiple layers of cans are automatically removed from the baskets one layer at the time. In the new Can Lines system, a hydraulic cylinder pushes up the cans, effectively indexing each layer of cans toward the top of the basket. The magnetic head carriage picks up cans layer by layer and

deposits them on the conveyor in a smooth, uninterrupted motion. The total weight of the magnetic head, frame, and cans is more than 1,000 pounds. Each layer of cans, which can vary from 25 to 80 cans, is moved at more than three feet per second.



With such mass and weight, accuracy, repeatability, and safety become essential qualities. On that front, CoDeSys soft motion software is used to synchronize two Festo electric linear guides—actuated by servo-controlled motors—to run in parallel. Servo-controlled motion is far more accurate and repeatable than the previous mechanical chain-sweep system.

Faster Startup

Unlike the sweep method, which required I/O points to be individually wired (meaning 30 to 40 cables to install and maintain), a CANopen-based Fieldbus system simplified control. All inputs of the new system are brought back to a programmable controller by a single cable. The end result? Cost of wire installation dropped 20% to 25%. CANopen also offers superior diagnostic capabilities for quickly pinpointing various I/O issues.

Productivity Payoff

The new retort magnetic head basket unloading system is easier to maintain, too. This system improved the end user's packaging line productivity by 30% and reduced rejects by 20%, improving overall throughput.

The key aspects of this application of interest to the food and beverage industry will be the impact of cost-effective CANopen Fieldbus and the latest advances in servo-controlled motion on reduced wiring; faster,



more trouble-free installation; and lower maintenance. Above all else, it's a real-world example of how to boost productivity and quality.

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