Solutions in Action

MARLEN
A DURAVANT COMPANY

Machine Builder
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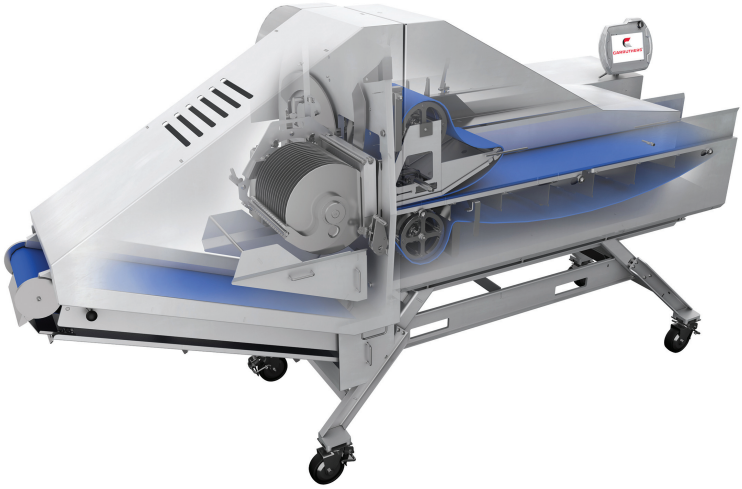

The DuraKut 6000 size-reduction machine for meat and poultry processing features an intuitive icon-based HMI.

Allen-Bradley CompactLogix 5370 Controllers

Allen-Bradley Kinetix 5500 EtherNet/IP Servo Drives

Allen-Bradley PanelView Graphic Terminals

"Home cooking" has taken on a whole new meaning. Today's busy young professionals and families no longer spend hours preparing three square meals a day. Instead, they increasingly seek ready-to-eat items – or at the very least choose options that minimize slicing, dicing and other meal prep chores.

"Ready-to-eat meals is a major topic in every food processing plant I visit – and that means more slicing and dicing," said Doug Wilson, director of engineering, Marlen. "In addition, everyone is experiencing worker shortages – and food safety is a critical concern, too."

Marlen is a premium manufacturer of highly engineered food processing equipment and systems specializing in high-quality proteins and other food products. From their headquarters in Riverside, Missouri, Marlen serves a global customer base representing leading food brands and operates under Duravant, its Chicago-based parent.

With customer challenges at the forefront, Marlen recently launched its popular DuraKut™ product line. The new DuraKut 6000 series features continuous flow size reduction for meat and poultry processing. The versatile equipment cuts fresh, vacuum tumbled, crust frozen or cooked products into cubes or strips.

"We know our customers must tool-up differently to meet today's demands," said Wilson. "But to help ensure our redesign addressed customer needs, we invited some major producers onsite to critique our existing product line – and to provide input on improvements."

Rockwell Automation

This "voice of the customer" – plus internal design reviews that included engineering, service and production personnel – led to significant equipment enhancements.

"Over the years, we had made improvements in the language-switching capabilities in our HMI," said Wilson. "However, we discovered that toggling back and forth between French and Spanish when workers spoke different languages wasn't always practical on the plant floor."

And due to high turnover, workers were often not on the job long enough to truly learn the system.

To ease operation and training, Marlen developed a simple operator interface that relies strictly on icons – not words. In addition, machine breakdown procedures for changeover and sanitation are icon-based and embedded in the HMI rather than hidden in manuals.

The clean, intuitive and seamlessly integrated operator interface includes other features that bolster machine flexibility.

For example, in many food size reduction applications, a processor must switch from two-dimensional (2D) slicing to three-dimensional (3D) dicing. A gang knife assembly at the front of the machine makes slices by cutting through the product vertically. To change to a dicing application, an operator simply adds a horizontal slicing attachment to the back of the machine. The HMI immediately calls-up the functions for the new attachment as soon as the two units are connected.

"Another significant improvement is tool-free disassembly," said Wilson. "Tearing down a machine for changeover or sanitation procedures used to take 20 to 30 minutes. With the new machine, the process can be completed in about 5 minutes."

Hygienic design is also a critical focus of this next generation system. The DuraKut 6000 features easy-to-clean sloped surfaces – and no external hinges on the covers or door handles.

"Plus, based on customer feedback, we designed a more robust no-leak electrical enclosure," said Wilson. "The patent-pending enclosure includes improved seals, which were pressure-checked for enhanced durability during washdown procedures."

The DuraKut 6000 relies on a Rockwell Automation® control platform featuring an Allen-Bradley® CompactLogix™ controller and an Allen-Bradley PanelView™ Plus 7 graphic terminal. Allen-Bradley PowerFlex® 525 AC drives control the conveyance system that transports the product throughout the cutting and discharge process. For precision cubing and strip cutting, Marlen offers a servo-driven option, featuring Allen-Bradley Kinetix® 5500 servo drives.

"Overall, we are able to achieve more precision in the new machine," Wilson explained. "Our new design allows us to hold the meat tightly next to the blade – within 120 thousandths of an inch. More precise cuts mean less food waste."

Marlen also designed the DuraKut 6000 with new digital technologies in mind.

"We are always looking for ways to enhance the performance and usability of our offerings," said Wilson.

"For example, I foresee a day when we could make the whole machine available through augmented reality (AR) to ease training – and streamline troubleshooting and maintenance."

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Publication OEM-AP720A-EN-P – November 2019