



Innovative solutions for industrial food processing

Baader-Johnson optimizes production and reduces costs in food processing

It's no secret that processed meats, fish and other food products have to come from somewhere; they don't just magically appear in our meals, refrigerators or freezers pre-packaged, labeled and ready to go. Baader-Johnson, a company based in Kansas City, Kansas, specializes in machines for processing poultry, fish and other meats. Through innovative solutions the company intends to expand its position in the highly competitive North American food market. To achieve this aim, Baader-Johnson uses PC-based Control technology from Beckhoff. Based on Embedded PCs, EtherCAT I/Os and the TwinSAFE safety solution, Baader-Johnson has been able to increase the flexibility of its machines and significantly reduce machine development times and costs.

Baader-Johnson is a member of the Baader Group with headquarters in Lübeck, Germany. With subsidiaries and service locations in more 70 countries, Baader is a worldwide leader in the manufacturing of innovative machines and systems for the food processing industry. The successful strategy of the company, which revolutionized fish processing as early as 1922 by introducing the first fish filleting machine, is based on process optimization through automation, safety and quality. In this way consumers can also be sure that the food they buy meets the highest safety and hygiene standards. With customer satisfaction as a top priority, Baader-Johnson machines supply real-time data for each stage of production with full traceability. This enables machine operators to change

settings during production, in order to improve the quality and the production output, for example.

"Beyond our primary North American customer base with a particular focus on the poultry industry here, we also serve other food markets with our weighing and packaging solutions, such as fish, pork, beef, fruits and vegetables," explained Ryan Foltz, Sales Project Manager, Baader-Johnson.

"The processes for fish and poultry are similar," said Ryan Foltz: "Primary machinery from the Baader Group fillet and trim the product, then they utilize sizing equipment that weighs, sorts and delivers the product to packing stations where boxes and bags are packed according to pre-defined criteria such

**Baader-Johnson filleting unit
for Atlantic salmon**

The Baader-Johnson fish and poultry processing machines are controlled via a Beckhoff CX1030 Embedded PC, which is directly coupled to the standard and safety I/Os.



as product weight, product type and quality. A Beckhoff automation platform provides real-time monitoring and control throughout the complete process."

Clear advantage in control technology

Baader-Johnson has been using PC-based Control solutions from Beckhoff Automation for about six years now. "I originally encountered Beckhoff during a search for a robust, flexible hardware platform that was able to communicate in a variety of ways such as via EtherCAT, PROFIBUS and Modbus," Foltz recalled. "Meanwhile, there are approximately 70 Baader-Johnson food processing machines with Beckhoff control architectures worldwide, such as the 1910 Sizer, the 1902 Carton Weigher and the 1914 Check Weigher, the market's most accurate systems for sizing, weighing and transferring poultry at high speeds," Foltz explained.

The control platform used by Baader-Johnson incorporates a CX1030 Embedded PC, to which the EtherCAT Terminals including safety terminals are connected. Additional EtherCAT nodes utilize EK1100 EtherCAT Couplers to distribute the I/O across the machine. "The Embedded PCs helped to significantly improve our reliability compared to the previous machine generation. The CX1030 processor is stable and with the use of solid state memory, there are no moving parts aside from a simple and easily-replaceable fan cartridge. These factors keep critical processes running," explains the Project Manager. "Additionally, the Beckhoff solution gives us one centralized controller that can be easily programmed in one standard software platform and operating system. This also reduces costs and greatly simplifies system design efforts. An additional advantage is that the Beckhoff technology in our system solutions easily interfaces to our production management software."

TwinSAFE simplifies safety

Baader-Johnson also uses TwinSAFE, the integrated safety system from Beckhoff. "TwinSAFE helps us efficiently implement important safety functionality for E-stops and in other areas," says Foltz. With distributed safety I/O terminals such as the Beckhoff EL6900 EtherCAT Terminal with integrated TwinSAFE Safety PLC, Baader-Johnson can efficiently and effectively manage safety throughout the plant while adjusting safety zones by using TwinCAT as the standard TwinSAFE

programming tool. "On large, plant-wide projects it's beneficial to use EtherCAT Terminals as the standard I/O system," explains Foltz. With the installation of the TwinSAFE architecture it is possible to shut down Baader-Johnson machines and conveyors very quickly if anyone on the plant floor enters an unsafe part of the machine. "The methodology for E-stop wiring in the past was rather cumbersome, especially in a large plant. TwinSAFE cuts down on wiring and provides the flexibility to properly manage our safety implementations."

"In addition to supporting our safety programming efforts, our technicians appreciate the TwinCAT software platform's ease of use. It operates hand-in-hand with the familiar Windows OS and is the definition of reliable," Foltz explained. "I find that Windows-enabled machinery is much more user-friendly and our technicians can more easily manage troubleshooting efforts. Before heavily utilizing Windows, we frequently had to rely on upper level support and specialized programmers in order to properly support every application."

Remarkable cost savings

Baader-Johnson is very satisfied with the changeover to the PC- and EtherCAT-based control platform. "It gives us flexibility and openness for realizing further innovations and enables far more user-friendly operation, monitoring and control of our machines."

"Thanks to the compactness of the Beckhoff control platform we have reduced our electrical cabinet space by around 25 %. This is a significant cost factor, considering these plants typically require stainless steel cabinets, which come at a premium price," said Ryan Foltz.

Further Information:

www.baader.com

www.beckhoffautomation.com