

Optimized production of canned fruit and vegetables



McCall Farms installed CP7702 stainless steel Panel PCs with 15-inch touch screens throughout the plant. The stainless steel Panels with IP 65 protection feature virtually gapless housing design with flush-mounted touch panels and are tailored to control tasks under strict hygiene requirements, such as in food production.

Stainless steel Panel PCs help ensure hygiene standards in the food industry

McCall Farms, manufacturer of Southern-style foods including canned fruits and vegetables as well as heat and serve meals, has been enjoying significant growth since 2006. In order to keep up with the still growing demand, the company has installed a new automated spice blending facility and kettle room with control technology from Beckhoff. Stainless steel Panel PCs with gapless housing design ensure compliance with the high hygiene standards in the food processing industry.

Helping to keep culinary traditions alive, McCall Farms based in Effingham, South Carolina, provides a full line of canned fruits and vegetables and packaged meals under the Margaret Holmes brand. With the help of some very modern automation technology, the heritage of wholesome foods started back in 1838 continues to this day. "Since 2006 we have tripled our production output from 34,000 tons to more than 113,000 tons per year", said Jeff Crisp, Maintenance Manager, McCall Farms.

Beckhoff stainless steel Panel PCs meet the high hygiene standards in the food industry

McCall Farms must meet FDA inspection guidelines and everything in the company's food processing area must be able to withstand wash-down procedures. The environment is highly corrosive because of salt and other spices, which is why only stainless steel equipment is used. "I wanted modern, rugged and powerful stainless steel panels that can thrive in our challenging plant environment. In addition to the physical requirements of the panel, we sought a solution with Windows XP Embedded, because with this operating system we can run essentially any HMI we want."

McCall Farms found the answer in the Beckhoff CP7702 stainless steel Panel PCs with Intel® Atom™ processors. "The IP 65 panels with 15-inch touch screens are able to withstand the production environment with its high water vapor and steam content. In some cases they are even installed directly above the kettles in which the vegetables and fruit are prepared", explained Jeff Crisp. "Since the stainless steel panels aren't painted and won't rust, there is no chance of any particles falling into the food process. In addition, the gapless case design prevents contaminant deposits."

Recipe management from the operating panel

Systems integration firm, Manufacturing Automation was brought in to help automate the new spice mixing room and integrate stainless steel equipment. The AdvancedHMI software designed for McCall Farms is based on Microsoft .NET technology. Operation takes place via three stainless steel Panels: one of these is the kettle room HMI which shows production details for each kettle such as the temperature, fluid and salt levels, pump status, etc. Another HMI allows operators to select recipes and assign them to specific kettles. The third HMI is used in the blending room to control



feeders that handle and blend a variety of spices. “The new user interface virtually eliminates human operator error”, said Archie Jacobs, Owner of Manufacturing Automation.

PC-based control: the key ingredient for food processing and packaging

All production areas at McCall Farms, including spice mixing, food cooking, can filling and sealing, stacking, casing and palletizing are controlled by Beckhoff Embedded PCs with integrated Bus Terminals. In an upstairs level of the plant, the dry spice ingredients are mixed. Downstairs in the kettle room, liquid ingredients are added, which include a salt and vinegar mix and liquid sugar. Both production areas are controlled independently via Beckhoff CX1020 Embedded PCs. Communication takes place via Ethernet, based on TwinCAT ADS functionality.

The kettle room was recently converted over from PROFIBUS to EtherCAT networking. The BK1120 EtherCAT Bus Coupler allows McCall Farms to continue using the original Beckhoff Bus Terminals where necessary. The spice room also features 15 variable frequency drives that communicate with the Embedded PC via the KL6041 Bus Terminal, supported by the TwinCAT PLC Modbus RTU software library. “This simple solution eliminated a great deal of hardware and wiring expense”, said Archie Jacobs. Speed monitoring of the variable frequency drives also takes place via the Bus Terminals: by counting the revolutions on the spice room conveyors the McCall Farms system precisely measures the amount of spices added to the

food. “We use a Beckhoff KL5101 incremental encoder interface terminal to gather spice measurements and to accurately monitor our recipes”, explained Jeff Crisp.

In addition to succeeding in implementing stainless steel control components throughout, McCall Farms also managed to optimize the production through the introduction of PC- and EtherCAT-based control for spice blending. This means less wasted raw materials and considerable savings of several thousand dollars per day, according to Crisp. In addition, we saved a significant amount of programming time by utilizing existing software libraries.

Further Information:

www.mccallfarms.com

www.mfgcontrol.com

www.beckhoffautomation.com