Article

The modern approach to food: Automation for innovation

Ever wonder how, when a new food fad grips the consumer market, suddenly every major brand has their version of the latest trend? Consumers may be happy to have a variety of new options in their refrigerator or pantry, but getting new products to market can be a grind for most manufacturers.

"Probably the largest obstacle the food industry faces today is the fact that you've got a hundred – two hundred –year history of building infrastructure that's predicated on providing scale, [like] large volumes of food [delivered] in a safe manner," says Ed Rodden, CIO of SugarCreek Packing Co, a private label diversified food manufacturer. " But while that philosophy has worked for a long time, consumers today don't fit that model, because scale is not what they want. They want diversity. They want innovation."

To satisfy this need, as well as to create efficiency and reduce costs, food manufacturers across the country are turning to digital technologies.

According to Food Engineering's 2016 Annual State of the Food Manufacturing Survey, automation ranks as the top technology investment that will change manufacturing operations. Over a third of the respondents' process control hardware and/or software purchase plans for 2016 included PLCs and/or digital sensors/transmitters.

Similarly, the market research report from PMMI (The Association for Packaging and Processing Technologies) entitled "2017 Trends in Food Processing Operations," noted that capital spending will increase. Half of the respondents are focused on increasing automation in the next three-to-five years. And they predict that robotics, now used in 30% of processing operations and in 94%

of packaging operations, will increase in usage.

So, what can automation do for you? Ask Queen City Candy, a 35-year-old family-owned company that for most of its years operated as a buyer, packager, and reseller of candy. When supply chain problems led to product delays, the company realized it could bring a product to market quicker if they made it themselves.

Using a Siemens programmable logic controller (PLC) and human machine interface (HMI) coupled with packaging technology from Bosch and a custom enterprise resource planning system (ERP) for inventory and production management, Queen City Candy transformed itself from reseller to manufacturer – with the help of automation. Now, the company manufactures 60% of the product lines it sells, and this percentage is growing.

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While Queen City Candy was able to start from scratch, other companies begin their digital transformation by updating existing equipment. According to Sal Spada, a research director at ARC Advisory Group, the food and beverage market has a huge legacy install base of machinery which is not connected, very inflexible and unable to make rapid changes. "You have to think about the ground up and getting it connected," advises Spada. "Take your legacy machinery, make it visible and start to understand where the problems are in your factory. And then you can begin to integrate further into the whole digital world." Eventually, Spada continues, data from machines can be moved into the cloud where software can perform more analytics, and identify problems that weren't correlated to any other events before. "So, there's a whole new world that could be discovered with data."

Innovation for food manufacturers does not just equate to diversity. It includes efficiency and the ability to deliver fast, flexible, on-demand products through open and integrated control architecture.

"[There's a need to] set up an operation and drive scale in the factory, and to satisfy the need for differentiation at the same time. So, if we can make it plug and play – pull things out, push things in –and that equipment naturally talks to each other, and if it doesn't require a programmer to spend hours and hours and hours making it fit and integrate – it will completely transform food manufacturing," says Paul Myler, vice president of supply chain at KIND Snacks Enter the Open Process

Automation Forum, a working group within The Open Group, a vendor and technology-neutral industry consortium. The new Open Process Automation Forum is focused on developing a standards-based, secure and interoperable process control architecture that can be leveraged across multiple industries including food and beverage, oil and gas, petrochemical, mining and metals, pulp and paper, pharmaceutical and utilities.

Open system architectures are often consistent with data management, global standards and uniform hardware and software interfaces, which minimize engineering time, reduced costs and boosted flexibility.

While this initiative gets underway, food and beverage companies continue to boost their automation efforts. Chobani, a Greek yogurt manufacturer, uses digital technology and advanced automation to facilitate its culture of innovation, as well as to improve safety and efficiency. Its Twin Falls, Idaho, manufacturing facility is the largest yogurt factory in the world and was named Food Engineering's plant of the year in 2013. Automation components have created better data visibility for the entire enterprise. "We've automated a lot of things," says Alicia Lomas, Chobani's automation and controls manager. "You've got automated changeover so that you can switch on to your next product very quickly. There's still a control room of operators but a lot of the information is there to help them make decisions."

Lomas considers the plant to be about 60% of the way towards optimized automation. "A beautiful future for me would be to be able to take a lot of the decisions out of the operators' hands and create automation," says Lomas. "Making it fit and integrate will completely transform food manufacturing."