The Next Generation of HMIs Offers More Than Just Screens

Mobility, security, maintenance all part of system considerations.

By Bob Vavra, *Control Engineering*

Christian Nondorf is a different kind of bean counter.

Responsible for automation and programming at Del Monte's vegetable processing facility in Cambria, Wis., Nondorf is responsible for making sure operators have the right information at the right time. In the past, that information couldn't keep pace with the speed of the green beans, sweet corn, and peas flying through the Cambria plant.

"Most of the data was not real-time data," Nondorf said. "It took a while to gather. Operators were running from machine to machine to gather data. It was time-consuming and costly, and by the time we gathered it, it was obsolete already."

In switching to a new HMI system a year ago, the Cambria staff is getting access to actionable data faster. In a food processing facility, that real time is real money.

"Now we're not running product that has to be thrown away. We can take actions much quicker," Nondorf said. "Because it's all in real time, any of supervision staff can pop into any system, track data, and make decisions."

At Crest Foods in Ashton, Ill., Rick Rice has similar issues. His dry goods processing facility packages both branded and private-label materials. He had a similar need for a functional way to deliver data more effectively.

"We need to keep track of uptime and downtime on equipment, collecting information on production counts," said Rice, the applications engineer at Crest Foods. "From a maintenance standpoint, we have some collection of maintenance points, but also tracking faults and indicators to see what might be trending out of range."

Visible data

The next generation of HMIs is delivering more than just visible information. They are making that visible information more easily actionable. That's always important for manufacturers, but it's especially important in process industries like food packaging. The need for tracking and traceability is

part of the FDA's regulatory process, and food processors need that data to make sure they are optimizing such issues as product freshness at every step along the way.

"It's information everywhere," said Mario Mitchell, product manager for the electronics business unit at Parker Hannifin, which installed the HMI systems at both plants. "It's about being able to cut the cost of maintenance. The process industry, as with all industries, is trending global. They want to have a support structure in place and respond to issues as needs arise."

HMI vendors are able to deliver not just the crisis alarms, but their data can spot performance trends before they become alarms. "Having those trending capabilities allows customers look at machine maintenance and help the customer understand where they're at in the production process," said Mitchell. "You have machine level control that can pass information to an Andon display. Being able to have that visualization creates a good sense of competition along lines, and increases productivity."

For larger organizations, it also helps to be able to spot best practices, and laggards, across multiple plants. "You have different areas of visualization," Mitchell said. "We have the local machine control and the scoreboard-type displays that are important, and then the supervisory aspect of the software can monitor the trends and access information in a central location."

Two major trends in HMI are security and mobility, and they are tied together. Mobility allows for hand-held devices to deliver the same HMI data as machine-mounted screens. But that requires a higher level of network security to make sure system information can't be compromised or corrupted from either internal or external sources.

"We just took steps last summer to start using tablets," Nondorf said. "We have a wireless network, so we just plug in and pull data out. It's new to us, and it's worked out fairly well. Some still have to go through training, but it's been easy to implement. From the security side, the applications on their tablet dictate what screen sets they can see."

"Applications on smartphones or tablets are part of future plans," said Rice. "That's a really big thing for us. Our plant is in Ashton, and our warehouse is three miles away. Anything that helps us connect the dots is pretty powerful.

"I don't live too far for plant, but I can monitor systems and so can any of our production managers," Rice added. "Now with a wide-open Internet and wide-open world, built-in security is very important."

"We're really trying to make sure we stay on top of that," Mitchell said. "A lot of things in the consumer market are crossing over quickly to the industrial market. The technology is there, up to us as manufacturers to take advantage of its ability to increase productivity. If an issue should arise, we should be able to take action on it."

Accessing the future

This next generation of HMIs delivers a wider array of capabilities, and the immediate temptation is to just give them all the work at the operator level and step back.

That might overlook an important step.

"You certainly have to look at environment issues," said Mitchell. "We see a quickly-evolving install base for HMIs in outdoor applications, such as oil and gas and the military. You have to take a look at the applications, take a look at the specifications, and look what you're trying to do with the machine.

"You also want to look at what you're trying to connect to: controllers, PLCs. Does it make sense to install an HMI with a PLC?" said Mitchell. "You want to take a good look at your application."

One HMI feature that has been especially helpful to a company like Del Monte is the use of multiple languages on its HMI. While the full-time staff at Cambria is 46 workers year round, including 32 just responsible for maintenance, the plant employs 280 seasonal and migrant workers for the three months when the plant operates on a 24/7 basis.

"We're a seasonal plant in the summer," said Nondorf. "With our seasonal staff, we see a lot of the same faces every year. A lot of seasonal staff are migrants, and the multiple language sets in the HMIs allow us to switch from English to Spanish so that they can understand the information."

The move to this next generation of HMIs is part of a continually evolving manufacturing strategy for workers who have a history of experience. Their experience grows with each packing season at Del Monte.

"During the off-season, we're tearing equipment apart, doing maintenance," Nondorf said. "We do training. Our guys have been doing this for a very long time, very good at what they do, very open to change if makes sense to do so."

Click [here](#) to see a short video demonstration of Parker's Information Anywhere technology.

www.parkermotion.com