
ACHIEVING FOOD SAFETY AND TRACEABILITY WITH TECHNOLOGY



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Being concerned about food safety is not new to food and beverage manufacturers. It's what keeps those industry leaders up at night. The impact of coronavirus on the industry was just a recent example highlighting the complexities of food safety and traceability, as manufacturers had to quickly pivot and adapt to new production schedules.

The demand for flexibility and safety is only going to increase. For that reason, food and beverage manufacturers must seek out the best technology to ensure they stay agile, compliant and safe.

THE CHALLENGES OF FOOD SAFETY

Managing a plant means countless disciplines, like supply chain planning, inventory demand, production, finance and human resources. It doesn't stop there. Ensuring consumer health is not negatively impacted is critical.

“For food and beverage manufacturers, every transaction from the supplier all the way through the customer needs to be tracked to ensure the safety of the food that not only comes into the facility but also that leaves the facility,” said Mike Siems, Customer Account Executive, Plex Systems. “A manufacturer’s responsibilities include making sure perishable foods are kept at the correct temperature, confirming the shelf life of products, adhering to labeling and packaging requirements, and managing allergens in products or raw materials.

Tracking a product — either one received as an ingredient or processed at a plant — is critical, particularly if a product isn't up to par,” Siems said. “Manufacturers need to be able to identify specifically where the product is within the supply chain and bring it back into the facility or take other corrective actions.”

Unfortunately, food recalls are fairly common. *Food Safety Magazine*¹ counted 337 food recalls in 2019, with E. coli, undeclared allergens, listeria and foreign-material contamination topping the list of offenders. The Centers for Disease Control and Prevention² estimates that 48 million people, or one in seven Americans, become sick from contaminated food and beverages each year, with 3,000 people dying annually.

When you are making food or beverage products, it is essential to reduce risk.

In this industry, a mistake doesn't just affect a company's reputation or sales; it can cost lives.



FULL INGREDIENT TRACING IS NECESSARY BUT COMPLICATED

“Food-safety issues can occur at any point in the manufacturing process and involve more than the food ingredients,” said Scott Bredehoff, Account Manager, Plex Systems.

There are several high-risk times when safety issues are more likely to occur. When raw materials enter the plant and are inspected, they may be rejected because of contamination that may have occurred during shipment. A product might be rejected for the original purpose but used for scrap. “Manufacturers must be sure to set those ingredients apart and track them separately to ensure they don’t get mixed back in,” Bredehoff said.





SPEEDING TIME TO RECALL

In a recall, traceability helps manufacturers know which batches contained ingredients from a specific supplier. That way, manufacturers can quickly identify and isolate the product instead of having to guess and throw out additional inventory for the sake of caution.

The faster a company can trace and pinpoint where a tainted ingredient came from, the faster it can issue a recall and establish a correction — which saves time and money. The ability to do a mock recall to prepare for the real one can shave hours or even days off the tracing and isolating process.

Leading food and beverage manufactures are using technology to help speed up the process. For example, when Aaron Thomas, a snack food manufacturer and contract packager, implemented Plex, it decreased its mock recall from several days to seven minutes.

FOOD SAFETY REQUIRES CHECKING MACHINERY TOO



Another critical point for safety is at the end of the manufacturing process, when the final product goes through the metal detector. It's not enough for the product to pass detection for foreign objects. It's vital to ensure that the machine is operating correctly and that the inspection process is followed thoroughly.

"You have to check that metal detector at least every hour to ensure it is working properly. Go in there with a test object and make sure the metal detector finds that metal that you've introduced into its field. Then document that you have done so.

Make sure that the metal detector has not failed, because there is no redundancy there," Bredehoft said. "Having a system that ensures employees follow testing protocol and consistently document those results is key in maintaining food safety."



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- Scott Bredehoft, Account Manager, Plex Systems

BETTER TRACKING NEEDED FOR INSPECTIONS AND AUDITS



Besides having to track everything that happens in their plant, manufacturers undergo multiple regulatory inspections or audits each year, and they have to quickly and accurately pinpoint an item's or ingredient's journey during the process.

Two levels of compliance exist, and they can be complicated to follow. According to Juliana Canale, Food Industry Safety, Compliance and Regulatory Solutions Specialist, New Jersey Manufacturing Extension Program (NJMEP), companies follow mandatory compliance under the Food and Drug Administration (FDA) but there's also supply chain compliance, which is the Global Food Safety Initiative (GFSI), an umbrella term that covers a lot of codes. Within each regulation, manufacturers may face additional requirements based on their product or commodity sector.

"If I am a dairy manufacturer versus a cupcake manufacturer or a produce manufacturer, or if I import products from China or Australia, there are different rules and regulations to adhere to," she said. "You may have to adhere to one, or you may have to adhere to multiple."

Those FDA inspections and additional audits require manufacturers to ensure their tracking data is up to date and fingertip-ready. However, for many manufacturers, that is not the case. Manufacturers may spend weeks preparing for an audit, gathering spreadsheets, notes and reports from various sources. If the auditor requests information that hasn't been prepared, the manufacturer must scramble to produce it. The more complicated the manufacturing process, the greater the need for a reliable, streamlined and efficient system for tracing every ingredient from origin to shipment.

TECHNOLOGY CAN ADD OR REMOVE RISKS

Although it is vital to trace ingredients to maintain food safety, many manufacturers use outdated or disconnected systems to manage their data. Some use Excel spreadsheets or even pen and paper. Often that information is in the form of tribal knowledge. “It’s a single point of failure because only one person knows it. And if something were to happen to that person, then the manufacturers must scramble to have the appropriate data at their fingertips to make the appropriate decisions,” Siems said.

As a result of using unreliable systems, food and beverage manufacturers struggle to know what inventory they have in real time or how to follow regulatory requirements. They often do not have the necessary information to quickly make accurate decisions and ensure nothing falls through the cracks.

“You’re only as good as the tools that you have and the data that you input,” Canale said. “If you don’t have a system, you’re running around the warehouse, trying to figure out where a box went, or where someone wrote the information on a sticky note.”

Whether a manufacturer is gathering information for an audit or a recall, time is essential, she said. “If you don’t know where that information is, or it takes you hours to figure something out instead of a couple of minutes, that can have a huge impact on what actually occurs, what the risk is and how that impacts your business at the end of the day.”

According to Bredehoft, on a typical plant floor, manufacturers face two issues. Operators may have data written down on a piece of paper, but they don’t have the systems, such as computers or plant-floor hardware, to see that data in an electronic system. “They don’t have the IT infrastructure on the plant floor to input the data in a more automated fashion,” he said. He added that it’s even more worrisome if they don’t have controls in place as a critical control point to prevent manufacturing if a system has not been checked and verified.



CONNECTING THE ERP AND THE PLANT FLOOR



Some manufacturing companies use enterprise resource planning (ERP) systems. While those can help businesses with raw-materials inventory, finished goods, purchases from suppliers or orders from customers, Bredehoft said, “There’s this missing layer right below many ERPs that most food and beverage manufacturers have not digitized yet.”

Between manual processes, siloed departments and this missing layer, production leaders don’t have visibility across the organization, Siems said. “That means companies can’t be agile and flexible when changes occur. By digitizing, manufacturers can see every step of the process; every transaction is tracked, and that brings visibility from the plant floor to the top floor. They have the data to make better decisions on strategic directions.”



BY DIGITIZING,

MANUFACTURERS CAN SEE

EVERY STEP OF THE PROCESS.

- Mike Siems, Customer Account Executive, Plex Systems

MANUFACTURING EXECUTION SYSTEMS FILL THE VISIBILITY GAP

Food and beverage manufacturers are adding cloud-based manufacturing execution systems³ to their ERP system to coordinate information from all their machines and production lines, with finance and human resources, giving them a 360-degree view of the company at all levels of operation. With real-time data, they can optimize operations, streamline quality and food-safety processes, stay compliant, decrease risk and reduce costs.

A manufacturing execution system (MES) streamlines data, helping food and beverage companies prepare for audits, but it also helps govern operational behavior. “When a supplier provides a manufacturer with a material, the manufacturer now owns that material from stem to stern,” said Anthony Murphy, Senior Director Product Management, Applications, at Plex Systems. “The opportunity of something going awry is mitigated because of the controls the system has in place.”



For example, a manufacturer can determine that it will buy flour from specific suppliers and set up all the parameters for that material in the MES. “When it hits my door, I can confirm this is how I expect it to be. This is the container I expect it to be in. I can have my quality clerks come in and validate against those and report it all digitally,” he said.

GOING BEYOND THE SAFETY OF INGREDIENTS



This system of checks and balances isn't just for materials. An MES can streamline the process for food-safety compliance, ensuring the right employees conduct the appropriate tests along the way. Best of all, the information is captured in the system and available to customers and auditors in a digital format, Murphy said.

An MES simplifies the audit or inspection process – requiring less labor, time and expenses in preparation. Instead of scrambling around to find Excel spreadsheets and sticky notes, manufacturers can easily access the data they need.

“You can put in the lot number or whatever information the auditor asks for and trace all of those things backward and forward,” Murphy said. This allows manufacturers to show exactly what steps were taken, what was produced, where those items were shipped, who was involved and what quality tools were used. “All without having to run to a file cabinet,” he added.

When a manufacturer may have two hours to respond to an auditor's question, instant access is critical. This quick response is even more essential when a recall is involved.

More than ever, manufacturers need to adjust to changes in production. Often when companies find they cannot respond to current supply or demand, cannot reach growth goals or don't have visibility across functions, a manufacturing execution system provides the needed answer, Siems said.

Food and beverage companies have unique challenges in ensuring food safety. Fortunately, they also have a unique solution, by coupling their ERP with a manufacturing execution system. With the visibility of all manufacturing operations, an MES connects business operations with manufacturing processes, giving leaders the perspective needed to stay agile and make the best strategic decisions.

SOURCES

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