

Automation as a Means of Compliance with the Food Safety Modernization Act



With FDA food safety requirements and inspections on the rise in response to the Food Safety Modernization Act deployment, the first question for most people involved in the food industry is: Who does this law affect? In reality, it affects everybody from one end of the supply chain to the other. Primarily, it will affect food producers and processors, as they will be tasked with identifying where the risks are in their systems and controlling them.

That's where automation comes into the picture.

The following advice comes from by Dr. David Acheson, managing director for food and import safety practice at Leavitt Partners. Dr. Acheson has also served as Chief Medical Officer at the U.S. Food and Drug Administration Center for food safety and applied nutrition, as well as serving as associate commissioner for foods at the FDA. The points detailed here were drawn from Dr. Acheson's keynote presentation at The Automation Conference 2012.

Production Tracking

The food industry has long struggled with product tracking, but this new law requires one-up, one-back tracing capabilities, which is a big challenge for supply Chain control Food producers now have to truly Understand the safety and security of the supply chain.

For example, if you are relying on imported shrimp from China, what do you know about the shrimp farmer? What do you know about the drugs that he is putting in that pond to control bugs and keep the shrimp healthy?



If you don't know the answers to these questions, you are at risk. That's why product tracking in supply chain systems is critical. You have to be able to show through some form of automated documentation process exactly what you are doing to control those risks.

As an example, say you have raw nuts going in one end of your roasting process and roasted nuts coming out the other end. What matters are the temperature of the roaster, the speed of the belt through the roaster, and the depth of the nuts on that belt. If the belt's moving too fast, the nuts won't get cooked enough. If the depth of the nuts on the belt is too deep, then the ones underneath won't get enough heat.

With production tracking software, it's simple to monitor, react and record all this information on a continuous basis. You simply have to monitor these three factors to know when something is going out of spec so that you can take corrective actions and you'll have recorded verification that the corrective actions have worked.



Packaging and Equipment

The bottom line is that food companies are looking to minimize risk—not just compliance risk, but safety and quality first and foremost. And that means that to satisfy all three issues—compliance, safety and quality—the legacy equipment in place throughout much of the industry will need to be upgraded or replaced. Four areas to focus on with equipment include:

- Perform any equipment upgrades with validation in mind. The equipment will need to be able to validate that you exposed the product to enough heat to kill the salmonella and verify that it is working and capturing critical production/processing data elements.
- Validation capabilities also need to address equipment cleaning. With allergens, for example, a food company will typically run products containing allergens at the end of a day or at the end of a run; but then you need an effective and documented cleanup process before you run a product through the system with no allergens.
- Recognize that packaging equipment comes into contact with food. The notion that packaging is an inert item in your production process won't fly any more. Machinery comes into contact with food. As such, this is a relevant risk that the FDA now recognizes and around which documentation needs to occur.

- Labeling control (i.e., a product is not correctly labeled with regard to its contents) is another issue falling under tighter control with the Food Safety Modernization Act. This is an especially critical matter on the subject of allergens. This is a simple issue to address with a product tracking system.

Six Tips for Complying with Food Safety Requirements

Automation can improve compliance with the Food Safety Modernization Act. These tips can help you improve execution and operational practices:

1. **Ideal system.** Design and install food safety systems that are locked down to prevent human bypass and that navigate through garbage-in, garbage-out temptations while remaining extremely user-friendly.



2. **Use FDA/3A-certified devices.** For process instrumentation that must come into contact with the food products, definitely look for an FDA/3A certification when selecting appropriate devices for CIP and SIP (sterilize in place) applications.

3. **Look to operators.** Safety in the processed food industry depends on the operator's proficiency in the operation and maintenance of the equipment. Well-written procedural documentation, whether it's a single-point lesson or a repeatable maintenance procedure, is an invaluable teaching aid in achieving the optimum speed, output and efficiency from any piece of equipment. A well-informed and well-trained operator and maintenance tech is an integral part of food safety in processing equipment.

4. **Verification critical.** The CCP in HACCP is critical. Establish standard operating procedures and at least a double control system that can verify any products before they leave the production line. You will need enough inventory to keep the products in a safe place and wait for all testing to be confirmed before selling the product.

5. **Track from origin through distribution.** The FSMA requires that any contamination be prevented. This means following a product from the origin of raw materials to product distribution. The most convenient method, apart of training, communication and following GMP, is to use sensors in the different stages: in origin, loading and transportation of raw materials. Manufacturing processes require the most continuous analysis possible. You need to establish processes to track products through distribution as well.



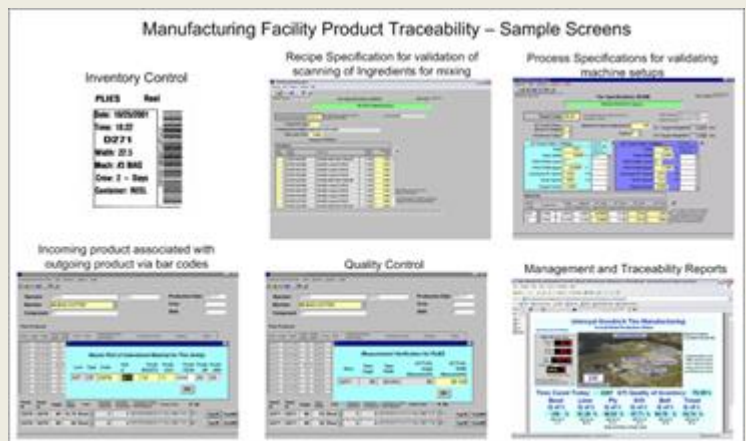
- 6. Real-time test results.** To improve execution accuracy, implement real-time input for food safety test results and on-floor checklists, all of which should be stored in a central database that is accessible to quality assurance, production management and supervisory personnel.

Automated Track and Trace Key to Food Safety Measures

Food safety is a very important aspect in the food and beverage industry. Just as it is essential to protect the food system from cross-contamination, it is also necessary to trace a bad sector of contaminated food and remove it from the system/recycle. If the bad product is detected when it is out of factory, it will be necessary to trace the entire production lifecycle of the product to check for root cause of contamination.

Good automation system practices that can help you do these jobs to ensure food safety include:

1. An effective batch processing software with a material traceability module with genealogy. This will ensure complete tracing of the product from raw material to end product. In addition to providing quality assurance for the product, it also enables easy compliance with food regulations.



2. Use various sensors like IP cameras and monitoring systems, access control systems, etc., to provide a tight surveillance on production areas of the plant.
3. Develop a very effective security management system.