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Equipment Designed With Sanitation In Mind Can Ease Processors' FSMA Requirements

Thorough cleaning and sanitizing of food-handling machines and equipment is a requirement, but the task becomes easier and faster when upfront consideration is given to sanitary design.

By Kevin T. Higgins, Managing Editor

With implementation of the Food Safety Modernization Act (FSMA) under way, sanitary design migrated from a nice-to-have to a must-have for the processing and handling equipment inside food & beverage manufacturing facilities.

Cleanability has moved from afterthought to a central consideration in total cost of ownership of equipment, particularly when there is direct contact with food. FSMA extends that consideration to include incoming materials, both food and nonfood, environmental conditions and the physical structure. Cross contact with allergens receives special attention in Hazard Analysis and Risk-Based Preventive Controls for Human Food, the FDA guidance document issued in August.

Building and equipping a plant from the ground up is one way of addressing sanitary design, but the vast majority of companies must work with the facility they already operate. Fortunately, even legacy sites can clear the higher sanitary bar, as evinced by General Mills' \$25 million commitment to its 110-year-old Buffalo, N.Y., cereal plant.

Guidelines for equipment design have existed since the 1920s, when the 3A certification program for dairy processors was created. A broader hygienic view began coming into focus 12 years ago, when a working group of meat processors and architectural engineers established 11 facility design principles. Working on behalf of the AMI Foundation, they advocated distinct and separate hygienic zones, control of airflow and humidity, cleanable walls and

ceilings and a tight building envelope that keeps pests out.

Design principles for both the facility and the equipment take aim at standing water and advocate surfaces that are “cleanable to a microbiological level.” That expectation has shaped the design of much of the processing and handling equipment placed in service in the past decade. Sloped surfaces, radial corners and hermetically sealed hollow tubing are routinely incorporated into the machines, conveyors and other food-contact equipment built by many OEMs.

Those principles guided re-engineering of a basic depanning system from Capway Automation Inc. (www.capwayautomation.com), a York, Pa., supplier of bakery equipment. Dubbed the Provident, the machine is rated IP69K for high-pressure washdown and cleaning with caustic chemicals. “FSMA is why we did this,” according to Bob Harrington, a principal and vice president at Capway.

“Bakery is going away from dry cleaning,” he maintains. “You’re seeing more and more high-pressure washdown in sweet-goods manufacturing.”

Many pizza manufacturers are subject to USDA oversight, and meat and poultry companies are acquiring bakeries as they migrate toward value-added products that

are enrobed in dough, he says. As a result, Capway considered USDA guidelines and 3A standards when designing Provident.

But FDA’s FSMA guidance clearly distinguishes between wet and dry processing environments and suggests any water use should be on an as-needed basis. “Water in a dry environment is one of the most significant risk factors for Salmonella contamination,” providing the essential ingredient for microbiological growth, the August guidance points out.

The decision to rely on sweeping, brushing, scraping and vacuuming to clean equipment surfaces or follow a controlled wet cleaning approach often comes down to the risk assessment of bakery personnel. Guidances for low-moisture foods from Grocery Manufacturers Assn. and PMMI’s OpX Leadership Network allow for both approaches while emphasizing the need to thoroughly dry the equipment and evacuate standing water.

KICK THE BUCKET

The GMA and OpX initiatives are helping establish standardized approaches to sanitary design, allows Jim Ruff, general manager-integrated solutions group at Key Technology (www.key.net), Walla Walla, Wash.



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Data Logging Technology and its Role in Food Processing

Learn how your company can use data logging efficiently.

By Julian Hough, Marketing Specialist, Cooper-Atkins Corporation

Imagine if you had enough money to put 8.5 million people through four years of private college, at an average annual cost of \$30K. Or, at a sticker price of \$23,810 each, you could buy a Prius for about 40% of all American families.

That's what \$1.6 trillion would get you.

That's trillion - with a "T". 12 zeros! It's also the figure that Americans spent in 2015 on food and beverages in grocery stores and eating out places (Canning, USDA, Economic Research Service, May 2017).

Today's busy and tech-savvy Millennials are acutely aware of the food they put into their bodies. Food safety and consumer health is featured in the news whenever an outbreak of foodborne illness occurs. CEOs are sitting up and taking notice. In a 2017 interview

McDonald's CEO, Steve Easterbrook, stated, "Food Safety is McDonald's number one priority".

REGULATIONS AND COMPLIANCY

The Obama administration implemented the Food Safety Modernization Act (FSMA) in 2011 and updated these FSMA laws in 2016 to enforce 'best practices'. Hazard Analysis and Risk-Based Preventive Controls (HARPC) and Hazard Analysis and Critical Control Points (HACCP) helps food processors identify, control and prevent hazards through a systematic approach. HACCP is currently mandatory for meat, poultry, seafood, dairy and juice processors in the United States, as well as retail food services. Because of the success in the food and meat industries, HACCP plans are also being applied to non-food industries.

Generally speaking, under the existing FSMA 2016 mandates, FDA-registered food facilities, manufacturing facilities and processors must:

- establish and maintain food safety systems that HACCP/HARPC plans.
- verify the controls are effective by monitoring, testing, and taking corrective actions and document the outcomes.
- maintain risk-based supply chain programs for raw materials and ingredients and provide education and training to their relevant employees.

FOOD SAFETY AND FSMA

FSMA laws are a positive way forward, their approach being one of promoting proactivity in preventing the outbreaks, rather than being reactive to them after the event.

In addition to a myriad of other wireless monitoring solutions, data loggers are a technology that has been embraced by a gamut of processing facilities - from meat, to dairy, to labs - to maintain regulatory compliance.

WHY DO YOU NEED DATA LOGGERS?

To independently verify the information in your process. Identifying non-compliance issues related to environmental factors that could affect your product and invalidate

your food safety plan are important. In addition, as a facility manager, you can verify the performance of energy conservation, create a continual record of a cold storage facility, or see how often an air handler cycles through.

Consider the options that are currently used to monitor critical limits in order to maintain an accurate record keeping system. They are likely to be a strip chart recorder (that has moving parts) or a thermometer (requiring employee/manual checking). It is not difficult to see how these methods are fraught with danger as part of food safety plans. Data loggers do not rely on mechanical, moving parts or constant employee attentiveness.

Temperature monitoring is especially critical for compliance with USDA and FDA regulations. Data loggers can be implemented into HACCP plans to easily achieve this goal. As each HACCP plan is unique to each facility the data logging solution is dependent upon the end users application and requirements.

This saves, time, energy and money, while simultaneously complying with new regulations.



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8 Quick Ways You Can Master Documentation

Follow these steps to make your next audit go smoother.

By Steve Weiland, PSSI Corporate Microbiologist

Mastering the complexities of documentation is a challenge across the food industry. In fact, audit compliance is the number one sanitation concern on the minds of food processing plant managers, according to a recent survey commissioned by Packers Sanitation Services, Inc. (PSSI). Thankfully, a few tools and strategies may help make compliance a little less of a headache. Try these eight steps to mastering your documentation:

1. Remember your ABCs.

Regardless of the record-keeping system used, the three most important things to remember are: Be Accurate, be Brief and be Clear. Audit documentation is a crucial step in the compliance process, so accuracy is essential. Being brief and clear will save time and provide more accessible

insights for reviewers.

2. Think Digital

Digital technology has changed the food industry's approach to documentation. Video and electronic recordkeeping capabilities make real-time documentation possible. PSSI, the nation's number one contract sanitation provider, has an electronic reporting system in which sanitors can fill out electronic documents during the sanitation shift. PSSI's switch to digital reports allows for efficient, daily inspection and compliance with procedures. At audit time, an auditor can easily download documents and verify that standards are being met.

3. Secure Your Process

Another aspect of electronic

documentation is the security capabilities gained with password and encryption protection. Biosecurity and food security measures are being scrutinized more and more, and encryption capabilities can prevent sensitive information from being misused.

4. Explore Templates

Documentation time can be saved by using online templates. Documents on food safety, HACCP, risk assessment and quality assurance can be great starting points for creating personalized reports. It's good to review these packages to see if they are worth the expenditure of time and money. And, make sure templates can be tailored to your specific production and sanitation operation needs.

5. Utilize Experts

Sometimes, it can be valuable to collaborate with an experienced consulting firm or documentation expert. This can allow for outside input and documentation that's personalized for specific aspects of your business.

6. Be Specific

The Food and Drug Administration (FDA) has recently investigated many cases of mislabeled or undeclared allergens, some leading to product recalls. These incidents seem to be reported with an alarming frequency and can be costly and damaging to your company's reputation. Adding

specific allergen-containing ingredients to a production line requires a comprehensive effort to accurately and completely address all production documents, label declarations, cleaning procedures and quality assurance programs. To avoid investigation and recall, your company needs to have specific allergen controls and the supporting documentation in place.

7. Reveal Traceability

One of the most important aspects of an audit is being able to trace all documents and forms back to each phase of food production. Traceability and proof must be part of a company's food safety plan and associated documentation.

8. Practice Makes Perfect

To evaluate the effectiveness of your record management system, conduct an internal "mock" recall exercise. Find out how easy or difficult it is to retrieve a document at any step and demonstrate preventative controls. This will identify any gaps in your system. Without full document traceability and security, your business may be at risk.

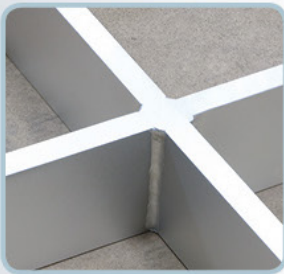
Documentation doesn't need to be as difficult as it seems. The experts at PSSI help manage sanitation compliance so that step is made easier come audit-time. To learn how PSSI can help you manage your company's sanitation program for audit-readiness, visit www.redefinecleanpssi.com.

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The Food Safety Modernization Act: Sanitary design principles and the role of scales in food processing

By Michelle Nelson, Rice Lake Weighing Systems

On January 4, 2011, President Obama signed the FDA Food Safety Modernization Act (FSMA) into law. The FSMA brought a much-needed focus of food safety laws into the food processing industry as well as to consumers, and the general public as a whole. The signing of the FSMA was arguably the largest reform to food safety in the previous 70 years. According to the U.S. Food & Drug Administration (FDA), the FSMA “aims to ensure the U.S. food supply is safe by shifting the focus from responding to contamination to preventing it.” The key focus being prevention versus reaction in regards to food safety, from all aspects and stages of food—from the farm to the table.

The FSMA was spurred into action from an increase in foodborne illnesses in the U.S.

The Centers for Disease Control and Prevention report almost 1 in 6 Americans fall ill to foodborne diseases each year. Foodborne illness became an issue of public health in the early 2000s, enabling the FDA to set higher preventative standards for food safety and elicit enforcement agencies to hold companies to these standards and contain any potential problems before they become a widespread risk of foodborne illness. To do this, the FDA under the FSMA can order companies to recall when needed.

The primary role of the FSMA is prevention. As noted by the FDA, “for the first time, FDA will have a legislative mandate to require comprehensive, science-based preventative controls across the food supply.” This legislative power ensures all U.S. companies that contribute to the food supply,

no matter their size, are subject to the authority of the FDA and their preventative and responding agency. Under the Prevention section of the FSMA, controls are given to the FDA for the following:

- Mandatory preventive controls for food facilities
- Mandatory produce safety standards
- Authority to prevent intentional contamination

These measures need to be qualified by scientific justifications by the FDA and are enforced by legislation. Under the mandatory preventative controls for food facilities is the addition of a preventative control plan that includes the following:

1. Evaluating the hazards that could affect food safety
2. Specifying what preventive steps, or controls, will be put in place to significantly minimize or prevent the hazards
3. Specifying how the facility will monitor these controls to ensure they are working
4. Maintaining routine records of the monitoring
5. Specifying what actions the facility will take to correct problems that arise.

Purchasing and using equipment that meets the Sanitary Design Principles (SDP) falls under these mandatory preventative measures as a control to prevent or minimize the possibility of foodborne contamination and disease.

WHAT ARE THE SANITARY DESIGN PRINCIPLES (SDP)?

The SDP was developed by the Equipment Design Task Force (EDTF), a group of representatives from meat and poultry processing companies, and was published in 2013. The EDTF's purpose in creating the SDP was to help equipment manufacturers and food processors ensure their equipment designs met specific criteria to reduce the risk of pathogens contaminating food. Although the SDP was created by representatives by businesses already in food processing, the intent is for the SDP to serve the entire industry, creating a standardized system of criteria for equipment to reduce contamination and recalls, benefiting food processors and consumers alike.

There are 10 Principles of Sanitary Design in the SDP, each focusing on a specific expectation for food processing equipment. The 10 Principles of Sanitary Design are as follows:

1. Cleanable to a Microbiological Level
This principle ensures that equipment is designed for deep, microbiological cleaning and has been constructed to meet that level of cleanliness, including "to prevent bacterial ingress, survival, growth and reproduction on both product and non-product contact surfaces."



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Foodborne Pathogens and Time-Temperature Measurements: Implementing Automated Food Safety Solutions

By Adam Fleder, President, TEGAM, Inc.

The Centers for Disease Control and Prevention (CDC) estimates that major foodborne pathogens cause 9 million illnesses each year. The number of foodborne illnesses motivated the FDA to create the Food Safety Modernization Act (FSMA), which Congress passed. To illustrate the scope of the problem, Table 1 below ranks the risks and costs of the 14 leading foodborne pathogens.

The Federal Government drafted the FSMA in response to the continuing occurrence of foodborne illnesses caused by these pathogens. Although passed by Congress in 2011, full implementation of the law's requirements did not begin until September 2016 for most food processing facilities.

At the core of the legislation, the FSMA requires a written food safety plan, called Hazard Analysis and Risk-based Controls (HARPC). As with existing HACCP protocols, temperature measurements remain one of the cornerstones of preventive controls in HARPC. Well-established time-temperature controls inhibit the growth of foodborne pathogens. According to the FSMA site at the FDA, the "Use of Time/Temperature Control as a Process Control" final rule is "coming soon" (as of November 2016). However, the HARPC Draft Guidance provides the likely temperature guidelines regarding time-temperature controls.

FSMA, HARPC, AND HACCP

Compared to prior food safety processes based on HACCP plans, the Aberdeen

Group reported that under the FSMA, “tighter control, documentation, and tracking of every ingredient and process used throughout the enterprise is now required.” For enterprise compliance and food safety officers, one of the biggest questions is: Who does the FSMA affect? The short answer: the FSMA affects every participant in the food supply chain. A frequently used term related to the FSMA is: Farm-to-fork coverage (including transportation). What about meat processing, which is currently regulated by the USDA/FSIS? If the products of the facility are sold into the food supply chain, the answer is, “Yes! You’re affected also.” Thus, these facilities are dual regulated under both the FSMA and USDA/FSIS regulations.

The key elements of the FSMA are:

1. Comprehensive prevention-based controls across the food supply; Inspection and compliance to hold the food industry accountable for producing safe food;
2. Imported food safety that requires importers to verify that their suppliers have adequate preventive controls and qualified third-party auditors; and

3. Response by the FDA which now has mandatory recall authority for all food products.

As we’ve seen, the driving motivation behind the FSMA’s HARPC food safety plan is to identify and prevent the risk of foodborne pathogens in food for human consumption.

TIME/TEMPERATURE CONTROLS

The FDA has already published its HARPC Draft Guidance on Time/Temperature Controls. It is reasonable to expect that most, if not all, of the risk-based controls regarding temperature in the Draft Guidance will be adopted as the final regulations. The draft guidance contains a detailed table on critical time/temperature limits, provided in the Addendum below.

TEMPERATURE MEASUREMENT LEADS TO RECORD KEEPING

The Aberdeen Group recently surveyed a group of 174 food processing executives and asked, “How has FSMA Changed the Business?” 50% of respondents ranked “Increase in documentation and record storage” as the number one impact.



Download the complete white paper **here**.

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The Pressures of Sanitation and Pest Management

Managing how sanitation tools are used and stored is important in continuing pest prevention efforts.

By Patricia Hottel, Technical Director, McCloud Services

Reduction of food, water and shelter is a critical component of a food facility pest management program. The more we can reduce the availability of these basic survival needs for pests, the easier it is to control them. However, there can be times that the type of cleaning strategies that are used to eliminate food can be detrimental to pest control efforts. This is most commonly found in food facilities when compressed air is used and power washing is performed. Although these cleaning techniques can be useful in moving food debris, they can also contribute to degradation of structural components. Because of this, these cleaning techniques must be managed properly to ensure that food debris is not moved to inaccessible areas without further cleaning attention.

SANITATION TOOLS

To help ensure that sanitation efforts are effective in reducing potential food sources for pests, these tools must be used judiciously. Food debris should be moved to make it more accessible for cleaning without moving it to another hard to reach and clean area. When compressed air is used improperly, you are at increased risk for stored product pest problems. When water is used under pressure for cleaning, you can also increase the risk for small flies and cockroaches.

COMPRESSED AIR

In some facilities like dry processing food plants, compressed air is used for cleaning. It can be useful in moving dry products like flour and flour-based mixes to areas for vacuuming. Although compressed air is

fast and can be helpful in getting materials like flour out of cracks and crevices, it can also move the flour to inaccessible areas such as ceiling voids, overhead pipes and electrical boxes creating even more cleanup challenges. The compressed air blasts can also move insects harboring in product to new harborages.

It is recommended that facility staff should vacuum as the first step, especially if insect activity has been observed in an area. Then the compressed air can be used to move the residual flour out of areas where the vacuum cannot reach. There are combination vacuum units available with dual capabilities of vacuuming and applying compressed air which can help with this task. Make sure that dry vacuum contents are promptly discarded, especially if insects have been vacuumed-up.

If compressed air is being used to move food residues out of cracks and crevices, consider sealing these openings. If these areas can be effectively sealed, it will provide a long-term pest control solution.

PRESSURE WASHING

In wet processing facilities, high pressure washing is often done to clean floors and other areas. High pressure washing is more energy efficient and a less labor-intensive method for cleaning., however, like with compressed air, the force of the water

tends to push food debris into inaccessible areas. This includes areas underneath equipment and floor areas where the pitch of the floor does not allow for proper drainage. Traditional mopping helps reduce these issues but is more time consuming. Raising equipment off the floor can help reduce the organic debris collection points underneath equipment, but this is not always feasible. When such design changes are not possible, place these hard to clean areas on a regular cleaning schedule to ensure that food deposits are not available for pest development. Placing equipment on wheels can also facilitate cleaning by providing easier access for staff.

High pressure cleaning can lead to more rapid deterioration of floor coatings and tile grout, increasing floor attractiveness to pests like the small flies, *Drosophila repleta* and *Drosophila melanogaster*. Tile grout can also deteriorate overtime when using this cleaning method allowing for moist organic material to accumulate between and underneath floor tiles. Use Epoxy grouts, which are more resistant to high pressure hoses than other grouting materials and will last longer.

Floor mats are an area where moisture and organic debris can accumulate.



Download the complete white paper **here**.