

WHITE PAPERS

2014 TRENDS & PREDICTIONS



PREFACE

Food processors are constantly adapting business processes to meet new challenges in food safety, increased competition and cost containment. In this white paper, we look at some of the trends moving the industry forward and improving operational efficiencies within plants. From sustainability to food safety to wireless automation, we examine these new programs and techniques that, we predict, will be more widely adapted in 2014.

DEMAND RISES FOR HIGH PRESSURE PROCESSING

High pressure processing (HPP) is gaining popularity among food manufacturers as a method that induces a pasteurizing effect on packaged food without subjecting the products to thermal energy. The recent explosion of the health and organic markets is partially responsible for the increased acceptance of this natural and environmentally friendly process.

As its name suggests, HPP uses pressure, rather than thermal or chemical treatments, to extend the product's shelf life and product integrity by terminally disrupting the life cycle of food spoiling bacteria, food-borne pathogens and other microbiological threats. While traditional and thermal methods of food preservation can alter a food's flavor and nutritional value, HPP preserves the food's original sensory characteristics including taste and smell.

HPP works by exposing products to a high level of hydrostatic pressure, typically up to 87,000 pounds per square inch. Pressure is applied uniformly, typically for three to five minutes, to allow the product package to maintain its shape as long as the product is suitable to withstand the pressure. The product must contain water and harbor no internal cavities that may collapse under pressure. This pressure disrupts and kills dangerous bacteria including salmonella, E. coli and listeria, thus extending the product's shelf life. Foods that would typically have a three-to-four-day shelf life through traditional pasteurization are fresh up to 30 days with HPP.

THE KEY ADVANTAGES OF HPP ARE:

- Food quality - foods retain their original taste, smell, consistency and quality
- No nutritional impact - HPP does not affect foods at their molecular level allowing them to retain their nutritional value, including proteins, enzymes, nutrients, prebiotics, vitamins and minerals
- Food safety - the process destroys dangerous pathogens to meet food safety requirements
- Longer-lasting products - HPP extends product shelf life up to 30 days or longer by inactivating dangerous bacteria
- Fewer food preservatives - the need for preservatives is greatly diminished or removed, especially in packaging
- A greener process - this environmentally friendly and sustainable process requires only water and electricity.
- Higher Production Yields - Facilitates the meat extraction of mollusks (clams and oysters) and crustaceans (lobsters and crabs).

Products that best lend themselves to HPP include items packaged in flexible containers, including packaged meats, juices and seafood, in addition to sauces and dressings sold in pouches.

GREEN GLOBES® GAINS TRACTION AS ALTERNATIVE TO LEED®

For many companies, obtaining LEED (Leadership in Energy and Environmental Design) certification is often too costly, and the documentation process too cumbersome, to warrant the effort. While not as well recognized, Green Globes is gaining traction as a less-expensive and more user-friendly alternative to LEED certification. Established in the U.S. in 2004, Green Globes is administered by the Green Building Initiative (GBI).

According to the Associated Press (AP), several states have recently banned LEED requirements from public contracts, bringing more attention to Green Globes. The AP says that the U.S. General Services Administration recommended that Green Globes be used alongside LEED for new construction and renovation projects, with projects achieving dual certification.

LEED categories include Certified, Silver, Gold, and Platinum. Similar to LEED, Green Globes relies on a point system and offers certification for buildings that achieve 35 percent or more of the 1,000 points possible. Rating classifications are:

- **Four Globes:** 85 to 100 percent of required points demonstrates national leadership and excellence in energy, water, and environmental efficiency to reduce environmental impacts
- **Three Globes:** 70 to 84 percent demonstrates leadership in applying best practices regarding energy, water, and environmental efficiency
- **Two Globes:** 55 to 69 percent demonstrates excellent progress in the reduction of environmental impacts and use of environmental efficiency practices
- **One Globe:** 35 to 54 percent demonstrates a commitment to environmental efficiency practices

Both LEED and Green Globes were derived from a global environmental assessment method called BREEAM (Building Research Establishment Environmental Assessment Method). The systems are similar in that they each emphasize goals such as energy, water and resource efficiency, site ecology, indoor air quality, and pollution. The primary differences between the programs are in process and content.

KEY DIFFERENCES INCLUDE

- **Materials:** Green Globes is less stringent when it comes to the types of materials permitted such as plastics, chemicals and timber. For example, it allows four types of wood certifications, while LEED only gives credit for wood products certified by the Forest Stewardship Council.
- **Process:** LEED involves a fairly intensive process, while Green Globes is user-friendly and fully web-based.
- **Brand recognition:** LEED has strong brand recognition and is often perceived as a marketing advantage for many companies. Green Globes has a much smaller market share and is not as well known within the industry.

- **Assessment:** Green Globes provides on-site, third-party assessors to review a project's progress, while the LEED review process is all done remotely, making it difficult to personally interact with reviewers.
- **Emphasis:** Green Globes awards more points for energy use, while LEED allocates more points for materials selection.
- **Cost:** LEED fees are based on the project's square footage, while Green Globes charges a flat fee regardless of the size of the project. LEED's rigorous process and investment to educate contractors can cost up to double that of Green Globes certification.

FOOD PROCESSING PLANTS CUT THE CORD WITH WIRELESS AUTOMATION

Many food processors are turning to wireless automation to improve the efficiency and interoperability of the plant's control systems. This method of automation architecture offers significant cost savings in engineering and installation, while providing more flexible access to data for monitoring and analysis.

The first step in selecting a wireless technology is to ensure that it can easily integrate into your existing network, including any wired components. It's also important to evaluate the site and develop an installation plan, addressing issues including radio frequency (RF) interference, physical and network security, and location of power for wireless routers. As with control panels, engineers should also evaluate the environmental conditions where the equipment will be installed such as temperature, humidity, condensation, weather, and wash downs.

FOOD PROCESSING PLANTS CUT THE CORD WITH WIRELESS AUTOMATION

- **Interoperability** – Wireless technology integrates control and monitoring capabilities among a variety of building automation devices regardless of the manufacturer.
- **Reduced cost** – Eliminating the expense of cables and wires, a wireless network can result in a 90% savings over that of a wired network. In addition, wireless technology is flexible and scalable, allowing points in the network to be integrated incrementally to accommodate future plant growth.
- **Ease of installation** – Installation is much more efficient and less disruptive to operations as there are no wires or cables to be routed through walls and flooring.
- **Increased reliability** – Removing hard wire from the network eliminates the potential for cuts or physical damage that may result in communication failures. Wireless architectures can use “mesh” technology that provides redundant paths of communication.
- **Operational efficiencies** – Wireless technology allows engineers to more effectively diagnose and troubleshoot equipment issues in real-time, in addition to performing predictive maintenance.

POTENTIAL BARRIERS TO MAKING THE SWITCH SECURITY

Security concerns are typically the primary roadblock in a facility's decision to deploy a wireless automation network. ISA100.11a, a wireless networking technology standard developed by the International Society of Automation (ISA), offers many built-in security features including encryption, authentication, integrity and key management. Your network administrator is responsible for the security of your wireless network, maintaining all keys and access parameters. This data should be safeguarded and changed periodically to protect the network.

RELIABILITY

Reliability of a wireless network is also of great concern among plant engineers. The ISA-100.11a standard employs numerous techniques to increase reliability including redundancy, intelligent channel hopping, and time synchronization. Data can be spread across multiple channels and then reassembled at the point of the receiver to avoid channel congestion and to improve security. Measures such as channel blacklisting and adaptive hopping should also be taken to reduce any electronic and electrical noise within the plant that may interfere or cause disturbances in the spectrum.

NEW FOOD SAFETY RULES IN THE NEW YEAR

For the Food Safety Modernization Act (FSMA), 2014 will be a year of change. The President's 2014 budget includes a request for \$295.8 million allocated to the FDA's food safety initiatives. According the FDA's 2014 Congressional Budget Request, the agency's priorities this year include:

- Preventive control standards - developing and implementing preventive control standards required by the FSMA
- Increased training - requiring FDA, state, and other regulatory partners to be trained in new inspectional protocols to ensure uniform compliance with preventive controls requirements
- Additional inspections - increasing the frequency and accuracy of domestic and foreign inspections
- Strengthened partnerships - continuing to build the capacity of FDA state partners in order to leverage their programs and resources
- Closer watch on imports - implementing the FDA's new FSMA import authorities to ensure the efficient entry of safe imported foods and feeds

As the FDA prepares to issue new preventive controls under the FSMA, food processors need to review the proposed rules and provide comments on the regulations that will impact their operations. These proposed rules include new requirements for hazard analysis and risk-based preventive controls along with updates to Current Good Manufacturing Practice (GMP) requirements. Visit the FDA's website for details on the proposed rules and how to comment.

SALMONELLA ACTION PLAN

Also on tap for food safety in 2014 is the USDA's Food Safety Inspection Service's (FSIS) recently released Salmonella Action Plan. FSIS plans to issue several directives in 2014 related to reducing Salmonella outbreaks including:

- A new proposed poultry slaughter rule
- A revision to Salmonella sampling plans
- Training FSIS inspectors to effectively combat Salmonella
- Issuing a directive for sanitary dressing in hogs
- Publication of more information regarding the Salmonella performance categorization of FSIS-regulated establishments
- Increasing performance-standard related activities
- More effective communications to consumers regarding Salmonella

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