Data Logging Technology and its Role in Food Processing

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 Millenials 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 exisiting 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 acieve 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 simoultaneously complying with new regulations.

How do they work?

A data logger is an electronic measurement instrument that records environmental parameters such as temperature, humidity, pressure, pH and much more. The data is then retrieved through a wireless connection or downloaded directly to a PC.

From there, the data is available in graphical and tabular formats, which are date and time stamped. These records can be saved electronically or printed to provide to regulatory agencies.

Manual temperature monitoringis quickly being outdated by wireless monitoring solutions - saving operating costs.

Calibration and Recordkeeping

Reliable and regular calibration and maintenance of devices is crucial when monitoring and collecting data as part of your HACCP plan.

Taking measurements from thermometers that record temperature, and hygrometers that record humidity, require a much more labor intensive regimen, with a greater likelihood of error or deviation from calibration due to the manual process of recording such data.

Data loggers, by comparison, are a cost-effective means of extremely accurate data collection and record keeping over long periods of time in extreme environments.

To ensure data accuracy, most data logging companies provide services to maintain the correct and consistent calibration of its devices. A calibration certificate indicates the date and condition of the services, providing the documentation required by most regulatory agencies to prove proper periodic calibration.

Technology Suppliers

For more than 130 years, Cooper-Atkins has built a rock-solid reputation as a provider of environmental monitoring solutions and is a trusted resource in the industry. As a leading manufacturer of wireless monitoring solutions, Cooper-Atkins recently added state-of-the-art data logging technology to its stable of HACCP-compliant, wireless monitoring products.

Scott D'Aniello, Vice President of Industrial and Food Processing for Cooper-Atkins says, "Good data is essential to controlling production and creating a consistent high quality product. There is no room for guess-work. McDonald's recently awarded us the prestigious "Global Supplier of the Year 2015" which speaks volumes about who we are and how we can help facility managers. Today's technological innovations are helping to ease the burden and keep food safe for consumers."

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