Addressing Proper HACCP Implementation

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Food safety is almost exclusively referring to any methods and procedures that ensure reduced risks to individuals from foodborne illnesses. This means that handling, control and preparations for all food products that will be made available to the public must achieve food safety requirements starting from their very source up to the final stage where they are served for human consumption.

This author has previously written application notes and case studies pertaining to various thermal processing methods that will produce shelf-stable food products, and how the correct thermal process validation portfolio can provide solutions for process adequacy determination, establishment and verification, with regard to regulatory compliance for food preservation and safety.

In the commercial chain, while commercial food preservation in general has been known to serve the main purpose of slowing down the rate of food deterioration or spoilage and ensuring food safety, the fresh food market segment is the obvious opposite. Food products' safety level and quality deteriorate much faster and consequently food safety issues become a stronger concern.

This article will give emphasis to controls and management of the total food cycle in a commercial perspective where food safety is addressed by measurements, analysis and control of all possible hazards from raw material, handling, storage to distribution and consumer consumption.

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1. Proper HACCP Implementation

A food management system is so important that several internationally accepted regulations and certifications that addresses food safety in great detail exist. For example, the Food Safety System Certification (FSSC) scheme, like the FSSC 22000, which uses the ISO 22000 as its requirement for the management system, then the Global Food Safety Initiative (GFSI) that recognises one and not the other.

However, there is but one system common to the Food Industry segment that covers all critical steps in a food safety monitoring system - HACCP.

HACCP (Hazard Analysis Critical Control Points) is a management system in which food safety is addressed through the analysis and control of biological, chemical and physical hazards from raw materials, raw material production, procurement and handling up to distribution and consumption.

Since HACCP is designed for use in all segments of the food industry and its concept universally accepted by government agencies, HACCP is now emerging as an industry-driven concept that any companies or firms, food processing plants, retail food stores and food service operations such as groceries and supermarkets should correctly implement in full.

One of the most important parameter that must be monitored and controlled is temperature. A very good example of how important it is to measure and record temperature is best illustrated in *Figure 1*.

*Figure 1: FDA material showing how important it is to measure and record temperature. *Photo from the US FDA HACCP Guidance*

This was how the Critical Control Points (CCP) and Critical Limits was illustrated but presented by the FDA in a manner that best explains how important it is to measure temperatures in each stage of the Commercial Food cycle predetermined to be HACCP tasks - the need to record and control temperatures covering all areas that relates to food safety factors.

2. Dual Fold Back Thermometers

A suitable thermometer for performing HACCP tasks is the TLC 750 which Ebro, a Xylem brand, produce in three different types: The TLC 750 BT for Bluetooth data transmission, the TLC 750 NFC and the most popular and widely used TLC 750i with Dual Infrared (double laser pointer) and Fold-Back Thermometer.

These thermometers are highly beneficial in terms of usability due to the design that allows the user to measure surface temperatures using an infrared sensor and also the product temperature or core temperature with the strong and rigid Thermocouple penetration probe.

In one thermometer, the following applications can be covered:

- Slaughter Houses for Meat or Poultry Processing Operation and Management
- Control of Refrigeration Units and Cooling Rooms
- Incoming Goods Inspection
- Core Temperature Measurement
- Surface Temperature Measurement
- HACCP-compliant control and documentation of temperature events
- Storage and Distribution
- Retail Stores or Food Chain Inspections

Figure 2: Example of a Dual IR Fold-Back Thermometer.

Regulatory Compliance is not the only significant driver to mandating firms to implement a strict monitoring and control of temperatures but the science that points to temperature control as a critical factor to food safety.

Figure 3: The TLC 750i monitoring the temperatures of fish in market shelves which if not properly controlled can contribute to growth of microorganism and generate histamine levels, both constituting to food safety issues.

3. Case Study: The Lidl and Rewe Story

Lidl is a popular supermarket chain in Germany and has been using the Ebro TLC 730 thermometers, the old generation of fold-back thermometers, for 15 years.

They are using this for their Quality Control procedures primarily with checking incoming food products with a measurement range of -18.0°C to +7.0°C.

With the TLC 730 now being replaced by the new and improved TLC 750i Dual IR Fold-Back Thermometer, Lidl recently upgraded their monitoring instruments that resulted to a purchase of 7,600 units of the new TLC 750i thermometers with only an investment cost of $525,000.00.

Rewe Group on the other hand, being the third largest supermarket chain in Germany, is not far behind in terms of benefitting considerable time savings and manpower from using the TLC 750i in their routine QC checks for incoming goods and storage.

Rewe has also upgraded to the new TLC 750i with their most recent purchase of 600 units bringing their total number of TLC 750i to 2,400 units only for this year.

This trend is slowly occurring in Asia with hundreds of the TLC 750i now being used in the supermarket chains in Thailand.