The food processing industry which deals with both human and animal food as well as animal feed is one of the most crucial industries around the world. The industry connects countries through the importing and exporting of a necessary good. The United States FDA (Food and Drug Administration) was established in 1906 to protect and promote public health by controlling and supervising food safety, and in 2011 the FSMA (Food Safety Modernization Act) was signed into legislation providing massive reform for food safety laws in over 70 years.

One of the major areas of focus for the FSMA deals with the prevention of bacteria growth as opposed to relying only on the reactive measures of a recall once a foodborne disease has already developed and begun to spread. The CDC (Centers for Disease Control and Prevention) estimates 48 million people get sick, 128,000 are hospitalized and 3,000 die from foodborne diseases each year in the United States. In order to prevent or at least limit these numbers, the FSMA calls for each food facility to implement a written HARPC (Hazard Analysis and Risk-based Preventive Controls) plan and to identify and correct any potential hygienic problem areas. This will essentially force the food industry to comply with similar vigorous cGMP’s (current Good Manufacturing Practice) requirements set by Pharmaceutical Quality and Manufacturing Standards.

To assist facilities in meeting these standards several organizations have developed principles aimed at the design of equipment which directly comes in contact with food, as well as the surfaces which do not. Such organizations as NSF (National Sanitation Foundation), AMIF (American Meat Institute Foundation) and of course the FDA themselves. The main goal behind these principles is to prevent the growth and spread of bacteria. According to the USDA (United States Department of Agriculture Food) bacteria grows most rapidly in the range...
American agency focused on cleaning, sanitizing, food safety and infection control products and services. ECOLAB services industries such as those dealing with foodservice, food and beverage processing, hospitality, textile care, pharmaceuticals, cosmetics, and vehicle wash industries. Among the programs and services offered are the testing and approval of cleaning agents. Products which have been tested in accordance with the ECOLAB Directives are resistant to aggressive cleaning agents and can be used in hygiene sensitive applications.

To further combat the growth of bacteria, under US regulation equipment including the safety devices and control buttons on the equipment that comes in contact with food being processed must not contain any shallow recesses. According to AMI 2003 7.1 “[Human]/Machine interfaces such as push buttons, valve handles, switches and touch screens, must be designed to ensure product and other residues (including liquid) do not penetrate or accumulate in or on the enclosure or interface.” Thus they must have zero dead leg. AMI also states that surfaces near the product contact zone areas must be designed as if they were product contact zone areas so “buttons on control panels must be easily cleaned and sanitized during operations in order to not create a microbial harborage.” NSF 5.1 has a similar requirement where equipment is designed to be constructed and maintained in a cleanable condition to prevent the ingress, survival and multiplication of microorganisms.

The Food Safety Modernization Act aims to hold the entire industry accountable “from the farm to the fork” to prevent foodborne illnesses. The equipment requirement as discussed is only one of several parts which have been or soon to be established from the massive reform. FSMA will also hold importers to stricter standards and provide the FDA with full authority to initiate a recall. Integrating hygienic design principles as described by AMIF, NSF and the FDA (among others) will help in preventing bacteria growth which in turn will prevent illness, recalls and lawsuits.

Author:
Devin Murray
Functional Safety Engineer
TÜV Rheinland ID-No. 4274/11 Machinery
Schmersal USA

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Schmersal USA
15 Skyline drive
Hawthorne, NY 10532

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