

Sanitary design: no compromise with inspection technologies

The food sector is under constant scrutiny when it comes to safety. Pressure is mounting from all sides – be it consumers, governing bodies or retailers – for more and more stringent measures to be taken in the production process and this has led to a greater emphasis on the sanitary design of production line equipment.

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Many types of foods go through secondary processes prior to the product reaching the consumer. These processes, that may include cooking, reprocessing or significant alteration of the raw material, often help to sterilise the product.

However, for meat and poultry, a large percentage of products are provided to the consumer in the raw state. They will go through a series of processes that will alter form, such as grinding for hamburgers, or deboning and trimming chickens, but those items that are reaching consumers are still raw and have not usually been secondary processed.

As a result, sanitary design applications are most common in the meat and poultry industry. However, an increasing amount of manufacturers outside of this sector are turning to sanitary designed systems – primarily to offer a higher level of food safety, which can be more attractive to retailers, but also to provide an extra layer of protection against potential product recalls.

What is sanitary design?

The guide that the North American Meat Institute (NAMI) originally presented in 2002 in terms of sanitary design principles has been a good workmanship style document that outlines what sanitary design should mean both to a customer and a manufacturer. It has been a good roadmap for suppliers to be able to look at the design and to quantify

whether a system is going to be compliant and fit for purpose.

In theory, every supplier of product inspection equipment can design a device to perform a certain way at a specific point of time.

What is a challenge is to keep that performance consistent and in specification for long periods of time while continuously running. Sanitary designed systems should be built to last – especially given the rigours and conditions of the environments they operate in. The robustness of a system is all important.

Where inspection is concerned, precision x-ray technology performs best when applied in a well-defined and controlled manner. When the necessary robustness required for the environment and operational longevity is added in, these two things may appear to be in conflict.

Achieving the right balance

Robustness and precision do not necessarily go hand-in-hand but are not mutually exclusive either, they must be balanced carefully with each specifically addressed. In an x-ray system, for example, there is a generator, which produces a beam that is shot through a window, through the product, through the conveyor and then through to the detector all contained within a housing to prevent x-ray emissions.

When we talk about sanitary design both inside and out with the need to clean machines rigorously every day, we have to do so while maintaining the integrity of the technology and its safe operation.

Good design practices take these varying requirements into account with the manufacturer integrating them into a solution which effectively satisfies the needs for hygiene, longevity, and precise inspection.

Machines built using sanitary principles, such as those provided by NAMI and the Sanitary Equipment Design Taskforce, are designed so they meet a set of industry driven criteria that quantifiably defines sanitary construction. This includes such topics as the types and finishes

of materials to be used and elimination of harbourage areas where product can accumulate and create a microbiological risk. The specifications are also very operations-centric, providing guidance on best practices for inspection, maintenance and cleaning protocols.

The continuing challenge to manufacturers is to define what is the right amount of hygiene and sanitation for their specific operation and environment, while still being profitable, protecting the consumer and the brand and complying with governmental standards and regulations.

IP69 does not guarantee hygienic design

For the food sector, things such as ease of access and cleaning are very important in product inspection systems, as is ensuring there are no areas that could trap foreign material or microbiological contaminants. These challenges should be addressed at the initial design stage with part of that process being to ensure the machines are easy to inspect before, during, and after cleaning to ensure the process has been carried out completely. The latest systems enable line of sight inspections that do not take long at all – leading to faster sanitation cycles and increased production uptime.

Many associate sanitary designs with IP69 ratings, but these are often confused. IP69 and sanitary design is not the same thing, it is simply an ingress protection rating. Having a system with an IP69 rating does not mean you have a hygienic machine; conversely a sanitary design does not have to be IP69 rated, however it is a common requirement in this type of application in order to survive the rigours of sanitation over many years of cleaning cycles.

The rating simply ensures that cabinets and enclosures will maintain their ingress integrity during the specified wash down process. We have machines that are IP69 rated that are not hygienically designed – whereas all our sanitary

machines are designed to comply with IP69 ingress protection standards. It is important to understand this subtle but significant difference.

The correct approach to design

Eagle's approach is slightly different in terms of the design process. A lot of suppliers try to adapt designs that are used in general packaging for use in hostile and harsh environments, whereas Eagle elected not to do that. Several systems have been intentionally designed from the ground up to follow the NAMI guidelines and to deliver machines that are built specifically for those environments and applications. To alter an existing machine and try to adapt it for a purpose for which it was not designed does not make sense.

It is far better to have a machine that is designed specifically for purpose using specific guidelines such as NAMI, NSF and European EHEDG. This way, customers can be supplied with a robust product that is designed for their intended use. If you compare a product designed in this way to one that has been adapted, the differences are very noticeable. Of course, an adapted machine may be less expensive upon initial offering, but a machine designed for purpose will have a far more attractive total cost of ownership (TCO), longer life, and will deliver a far bigger incremental value to the user. Of course, many customers are aware of what is required already, but sometimes there is a preconception that inspection technologies need a 'hall pass' when it comes to hygienic design and that there must be significant compromise to achieve the desired inspection results to the detriment of the sanitary element.

This is not the case, systems which are designed from the ground up check the necessary boxes required for sanitary construction along the way. Just because it is an inspection technology does not mean there should be a compromise on standards or expectations. ■