The Expert Guide to Sanitary Facility Design
For Greenfield and Renovation Projects
When a consumer selects a food product from the shelves of the local grocery store, there is an expectation of safety. That expectation is based on a line of trust that runs upward from the consumer to the supermarket, to the distributor, to the supplier, and all the way back to the product’s manufacturer. The responsibility for safety in food and beverage production is a burden no manufacturer takes lightly. When safety standards are not met, lives are put at risk.

“You could have the largest, most efficient facility, but if it’s not sanitary it doesn’t matter,” said John-Paul Saenz, President of Consumer & Packaged Goods for Haskell.

For that reason, the firm makes sanitation a priority at every stage of design, engineering, and construction for clients with both greenfield plants and renovation projects.

This paper will provide food and beverage facility owners insight into how the right team achieves sanitary facility design.

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Establish a Foundation for Safety

Over the last four decades, Haskell has set the standard in the food and beverage industry and instilled best practices in new generations through educational courses at prestigious universities. Best practices begin with the first stage of Haskell’s integrated design-build process: site selection. For greenfield plants, selecting a site with proximity to a water supply is key. But more important than keeping resources close, is keeping contaminants at a distance. Livestock operations, dusty fields, and other external contamination threats are best kept at safe lengths from processing facilities.

“We look at food and beverage facilities similar to hospital design,” said Saenz, who has two decades of experience with Haskell. “We want to know what we can do at every stage to increase safety.”

Plants undergoing expansions face a different external contamination threat. Conducting construction operations while maintaining daily production levels at an existing plant creates multiple opportunities for contamination. Haskell’s construction management team minimizes these opportunities with thorough planning and secure barriers that keep facilities up and running without compromising food safety.

Design a Flow for Containment and Separation

From peanut butter to poultry, every food and beverage processing facility starts with raw material and ends with a ready-to-eat (RTE) product. How those products safely navigate from one stage to the next without cross-contamination comes down to product flow and critical barriers to isolate raw from processed, allergen vs. non-allergen, and isolation of products from cleaning solutions and external contaminants.

Physical separation of the processing stages not only prevents raw and RTE products from interacting, it also defines clean zones between business and processing spaces. Offices, bathrooms, and other necessary employee facilities must be physically separated from areas where food and beverage products are being processed.
“We look closely at all stages of the process, from receiving the raw goods to shipping the finished product, to identify any areas vulnerable to contamination so that our designs can address all of our client’s sanitary needs,” said Saenz.

Beyond physical partitions, processing plants also have to create barriers between systems. Haskell’s designs ensure that plumbing and HVAC systems are built to keep air and water from circulating through separate processing areas, further protecting against raw and RTE cross-contamination, as well as external pathogenic and bacterial threats.

Conveyor systems are also a key element Haskell experts carefully plan to ensure products take a precisely timed path from stage to stage. This reduces the risk of bacterial contamination during processing. Conveyor systems are also designed to safely pass food between the containment barriers and reduce human interaction with food products, another protective safety measure.

Haskell’s team stays up to date on all the latest federal, state, and municipal regulations related to barriers in food processing to ensure that these requirements are accounted for in the design and budget of every capex project from the outset.

SANITARY DESIGN HISTORY

Haskell’s expertise in CIP was enhanced in 2013 when the company acquired Seiberling, based out of Beloit, WI.

Company founder Dale Seiberling pioneered CIP technology to help reduce the significant amount of time that was required to disassemble and manually clean all of the process piping and equipment related to milk processing in a dairy.

Since the early days of CIP development in the 1950’s, the technology has become a pivotal tool for efficiency and has spread from its humble dairy origins to all aspects of food production and pharmaceutical and biotechnology operations.

The 1st CIP Unit installed in 1955
Maximize ROI with the Right Equipment

When it comes to selecting equipment, Haskell’s integrated design-build team puts unparalleled expertise to work for its clients.

“One thing that sets us apart is that we don’t manufacture equipment, so we don’t have a bias when it comes to selecting equipment,” said Robert Price, Senior Project Manager for Seiberling Associates, Inc., a Haskell company. “We go out and find the best equipment with the latest technology that’s been tested and proven to work.”

In today’s market, clean-in-place (CIP) technology is central to food sanitation. Current CIP design utilizing mix-proof valves may seem initially cost-prohibitive to many producers, but over time creates a positive ROI by reducing downtime associated with manual connections as well as making for a more reliable and safe operation that reduces errors caused by human intervention.

Systems that incorporate a high level of CIP automation can provide consistent cleaning results that are properly documented reducing the chances of cross contamination between production runs and the possibility of unsafe final products.

Educate New Generations, Industry Leaders, & Global Communities

Sanitary design is so crucial for Haskell. The team has taken a personal interest in making sure that today’s engineers, designers, and construction management personnel are educated in the best practices for food safety. Through partnerships with Cornell University and The Ohio State University, Haskell offers unique courses for students, clients, and industry professionals for a better understanding of current hygienic design standards and applications of process/CIP technology to their specific industries.

“Graduates today have the basics of engineering and design, but very few of them are being exposed to real world production demands that they will encounter upon leaving school,” said Price. “That’s why we decided to team with a number of universities and offer these courses, to expand their knowledge base in this critical area.”
In addition to classroom guidance, Haskell also mentors every new engineer in the importance of sanitary design. Whether they are process, controls, environmental, or construction engineers, personnel from all disciplines are provided with in-house training and on-the-job shadowing. Senior engineers oversee every Haskell project from the initial design to final commissioning efforts, ensuring that food safety standards are met or exceeded at every phase.

“We put a high priority on the training and development of people,” said Saenz. “From day one, our designers and construction managers learn sanitation is an important part of our daily vernacular.”

Haskell’s educational programs also go beyond U.S. borders where standards in food and beverage facilities are, in many cases, woefully inadequate. Haskell’s North American and overseas operations have extended the company’s knowledge base to assist other countries in developing better safety regulations.

“We sometimes take food safety regulations for granted in the United States,” said Saenz. “In other countries it’s not as safe. That’s why we’ve helped enhance government rules and shared best practices that have led to numerous improvements in Mexico and Latin America.”

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**The Haskell Advantage**  
**Building Confidence & Reducing Uncertainty**

As one of the country’s leaders in designing greenfield processing facilities, Haskell’s experience in sanitary design is unmatched. The company has also been called in to assist facilities after a food safety crisis or FDA audit to correct failing systems and processes. In each instance, Haskell was able to help the plant resume production with new safety standards in place to prevent another crisis.

“Food safety is a huge liability,” said Saenz. “We want to make sure that lives are not put in danger, first and foremost, but also that we save our clients from wasting time, energy, or product due to contamination that could have been avoided.” A recall due to contaminated product can be catastrophic for a company and recovery can take years.

Haskell’s experience, commitment, and investment in sanitary design means the firm’s clients can have confidence that every product processed and shipped deserves the trust of the consumer who takes it off the shelf.