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Reduce Contamination with the Right Enclosure for Your Food and Beverage Application

White Paper
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Summary

It can be tough navigating the numerous enclosures in today's market, understanding the various regulatory requirements, and identifying the correct enclosure for your application. The food and beverage industry can be especially challenging as you have multiple zones to consider where hygiene and safety are a top priority.

After reading this paper you will gain a better understanding of the importance of proper equipment and enclosures to maintain a hygienic environment throughout your facility. You will understand the three zones found in a food and beverage facility and how they differ. Furthermore, this paper will provide an overview of federal regulations and the various enclosure ratings and certifications, provide information on materials from gaskets to accessories and from metals to finishes, and will walk through key considerations in enclosure selection so that you can make the most informed decision to help ensure proper safety throughout your facility.

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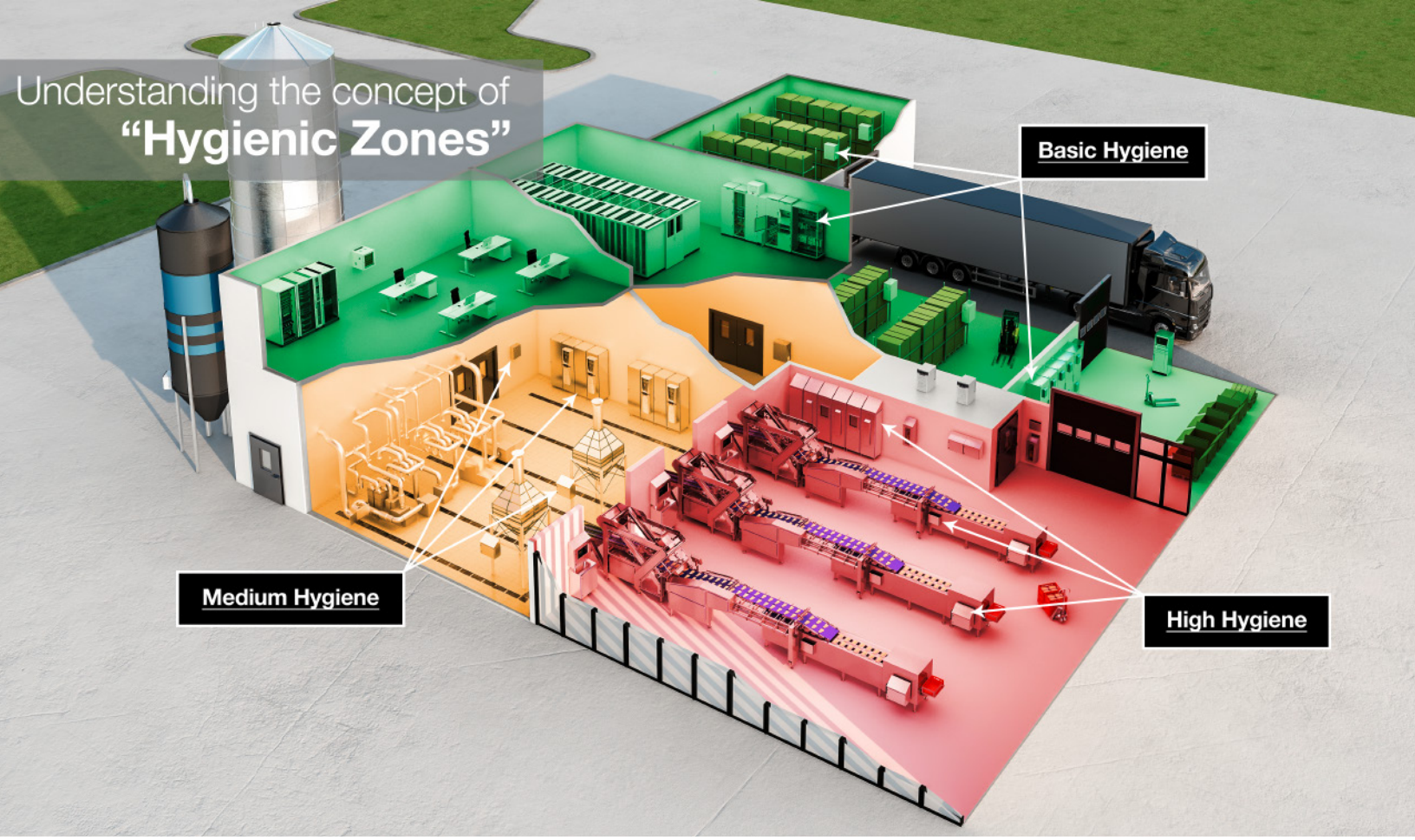
Introduction

Food and beverage facilities are especially susceptible to bacteria harborage on equipment due to the nature of the environment. Having the right product in the right application is essential to adhering to federal regulations, helping to ensure the safety of consumers, and preventing equipment failure. Keeping these facilities up and running is critical to the supply chain marketplace. Within each application, having the right products in the right zone will help ensure you have a hygienic environment and prevent unplanned downtime.

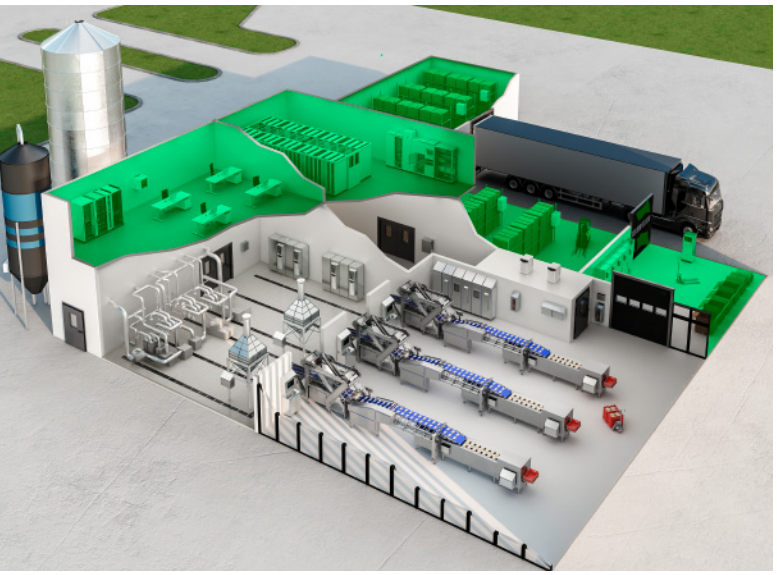
Many processing plants have questions when selecting the right enclosures for their applications or facilities, such as what equipment will the enclosure protect, will this enclosure work in my environment, what material is best for my application, can the enclosure hold the needed internal components including controls and cables, and many more. To make your selection easier, we're going to walk through the basics to each of these questions starting with the three zones in a food and beverage facility, understanding regulations and certifications, discussing types of materials, and wrapping up with key considerations on deciding which enclosure is right for your needs.

The ideal enclosure for your industrial application does exist and making the right selection will help you overcome challenges, increase your flexibility, prevent unnecessary downtime, and decrease your maintenance costs.



Understanding the Zones

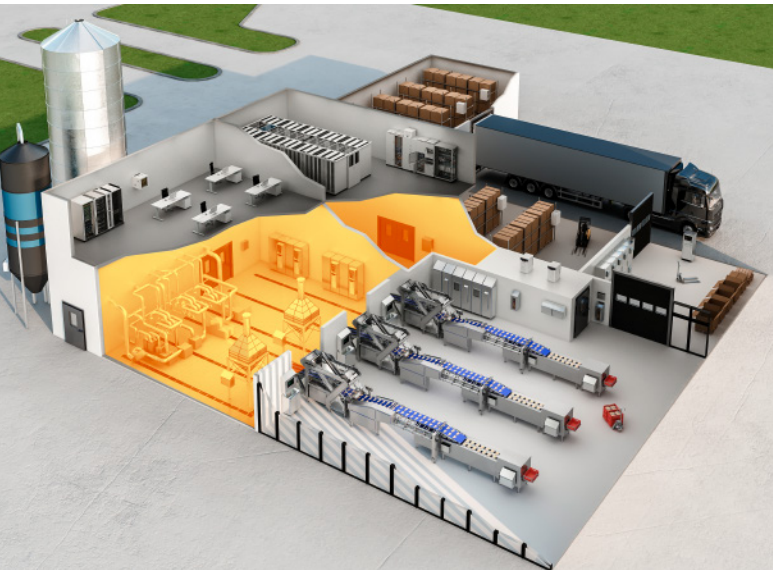
There is an increased focus on sanitation, reducing viruses, bacteria, and contaminants throughout production. If you don't have the right equipment for each zone, there is an increased risk of exposure to contaminants and bacteria spreading throughout the food production process. Additionally, using improper materials for the zone requirements can reduce the lifespan of equipment causing costs to rise as equipment deteriorates or internal components are exposed to the elements and begin to fail. There are three types of hygienic zones throughout the facility. While these zones may be known as other names, for our purposes we're going to refer to them as Basic, Medium, and High Hygiene Zones. Understanding the different requirements and proper equipment for each can be overwhelming so we're going to start with an overview of each zone's environment.



Basic Hygiene Zone

In your Basic Hygiene Zone or non-contact area there is no direct contact with food across equipment from conveyors to meat cutting devices. There are no open processes where food can be contaminated as it is outside of the production area. Therefore, this zone has minimal regulations outside of cross contamination areas.

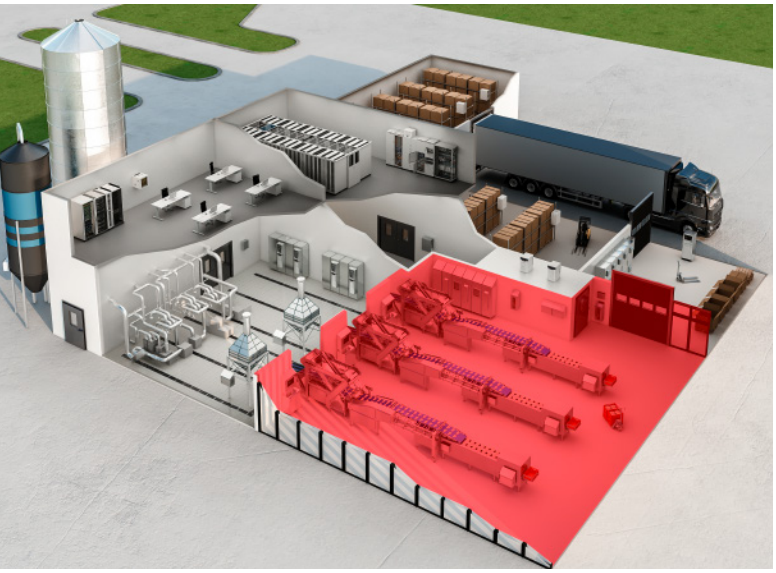
Equipment needs are less stringent in this area and you can use lower cost materials since they are not being inundated with high temperatures, chemicals, or high-pressure wash downs. The minimum requirements are to keep dirt and debris free from equipment and small amounts of dripping liquid which utilizes a NEMA Type 12 enclosure rating.



Medium Hygiene Zone

Your wipe down zone or Medium Hygiene Zone is the area that may have wash down requirements, but not at a high pressure. This area is focused on packaging foods so minimal contact with equipment is made. If food and beverages are being produced in this area they are contained and includes mixed processes and batch tanks, piping, and other closed processes. To clean equipment in this area, it will be drained and flushed, wiped down, or washed down with low pressure and little to no chemical involvement.

The equipment in this area should be resistant to splashing water, corrosion, and chemical vapors. This type of enclosure is considered a NEMA Type 4 rating. Depending on the contact and corrosivity of this area you may need a stronger metal composition to withstand the environment. As this may be a hybrid zone where exposure to chemicals becomes more frequent, you will typically not see softer metals such as aluminum and copper in this area.



High Hygiene Zone

In this High Hygiene Zone, you'll have open contact with food which will likely splash onto equipment and machines. Therefore, this zone will have the highest sanitation and cleaning requirements and is where we will focus our attention. This zone is highly regulated by the National Sanitation Foundation, FDA, and other federal regulations which emphasizes the need for quality construction and design. The high standards are critical to this area as equipment and design failure can lead to serious illnesses due to contaminants breeding bacteria and viruses within the food production process. The best ratings for enclosures in this area are IP69K as there is not a NEMA equivalent.

The high sanitation requirements of this environment demands intense cleaning. During the cleaning process equipment is exposed to high temperatures and high pressure wash down. A normal PSI for this area can range from 1,200 to 1,450 PSI with water temperatures reaching, on average, between 170 to 176 degrees Fahrenheit, then you start adding aggressive chemicals, cleaning agents, and sanitizing agents to the mix along with the demanding frequency of cleaning and maintenance can lead to the breakdown of foam gaskets and other components.

To prevent breakdown and failure, there are materials that are designed for this area that will be more reliable and require less maintenance. Reducing your maintenance will prevent downtime and lower overall costs and increase production as systems are running more efficiently. Additionally, you are protecting your electronic equipment and most importantly, preventing the harborage or potential growth of contaminating organisms and bacterial growth when using equipment designed for this area. The dark, wet, and warm environment within the dead space of equipment creates the perfect breeding ground and preventing this growth is key to a safe and healthy production line.

Regulations and Standards

There are four main regulatory institutes that will be discussed and referenced throughout this whitepaper. They are the National Sanitation Foundation, the North American Meat Institute, 3-A, and the FDA.



The **National Sanitation Foundation** facilitates the development of public health standards for manufacturers, regulators, and consumers alike. Their focus is on equipment within the meat and poultry sector as well as retail foods and food services. The **North American Meat Institute** provides rapid updates around new legislation and regulations for the meat processing sector. They also conduct research to improve operations and products. **3-A** maintains a large inventory of design criteria for equipment and processing systems used in the food and beverage space. They focus primarily on dairy and egg processing. Their requirements are conducted to promote acceptance across the USDA and the **FDA**. The FDA provides guidance on the equipment throughout food and beverage facilities. Their standards are used to design equipment and enclosures for the food and beverage industry with the intent of preventing the spread of bacteria, viruses, or other contaminants.

According to the North American Meat Institute, equipment must be constructed to ensure effective and efficient cleaning over the life of the equipment down to a microbiological level. Equipment should be designed to prevent bacterial ingress, survival, growth, reproduction, etc. with both contact and non-contact products. In short, there should be no dead space on a design that prevents easily identifying food debris or other contaminants.

Dead space is any dark area that can harbor water, debris, and / or contaminants. As an example, think of the door to an enclosure that's folded at a 90-degree angle. You have the gasket and there is a space between the fold of the metal and the gasket. That space is considered dead space and is the perfect place for bacterial growth. This is what you want to eliminate in equipment designs especially if being used in the high hygienic zones. You will need to consider external hinges, locking mechanisms, screwdriver inserts, and more on enclosures which will be discussed later.

Ratings and Certifications

There are only a handful of ratings and certifications that apply to the enclosures being discussed and used throughout the three food and beverage facility zones. However, there are additional ratings and comprehensive descriptions that can be found by accessing the links provided below each section.

National Electrical Manufacturers Association (NEMA)

NEMA is the U.S. design standard for determining the amount and type of protection an enclosure has. Keep in mind that the final product should carry a certification such as UL, TÜV, or others, to ensure that the enclosure meets the specified NEMA rating. Therefore, manufacturers will need to conduct product testing to achieve product certification as that ensures the enclosure meets the desired specifications stated in the standards. One of the leading testing companies UL, can certify the enclosure ratings so you can be assured the product meets the requirements as stated in the standard specifications. Products that have achieved UL Certification will bear the UL Mark indicating that the product meets the requirements of the NEMA rating that was specified in the standard.

NEMA Type 12: Protects from the ingress of circulating dirt, dust, and dripping non-corrosive liquids or water. This is usually found in your clean rooms and can be used in your Basic Hygiene Zone.

NEMA Type 4: Protects internal components when being washed down. However, the test is conducted at low pressure and from 10 feet away. This enclosure rating can be used in your Medium Hygiene Zone.

NEMA Type 3R: Protects the enclosure and controls from rain or heavy water accumulation. This type states that water must be expelled faster than it can get in so that it prevents accumulation.

When working in the High Hygiene Zone, you need enhanced protection. Currently, NEMA does not have a rating qualified for this zone so you need to look at IP ratings.

Additional ratings, requirements, and descriptions for each type along with UL Standard comparisons can be found by **downloading the full chart from NEMA**.

International Electrotechnical Commission (IEC)

The IEC has developed the ingress protection (IP) ratings to grade the resistance of an enclosure against dust or liquids. IP standards are used globally, but are not a direct comparison to NEMA standards. However, they are similar in describing degrees of protection. IP ratings are also more stringent in regard to water ingress and corrosion.

IP uses a two-digit system for rating enclosures. The first digit indicates the protection against solid foreign objects and the second digit is the level of protection against water or liquids. Additional details on IP ratings can be found by **viewing the full chart** from IEC.

IP55: IEC states that some water can enter the enclosure if it is non-damaging. Slight pooling and condensation are okay. This rating is similar to NEMA Type 12, which does not allow any water to enter the enclosure, and is suitable for the Basic Hygiene Zone.

IP67 and IP68: Both ratings protect against wash down water and only differ by the amount of water and the pressure being used. These are comparable to NEMA Type 4 and can be used in the Medium Hygiene Zone.

IP69 and IP69K: Protects against high pressure jets and high temperatures. The IP69K test is for installed equipment that needs to withstand severe wash down pressure. This is stronger and more reliable than the NEMA Type 3R or 4 / 4X and is the minimum rating that should be used for enclosures in the High Hygiene Zone.

Additionally, anytime a modification is made to the enclosure, all materials and seals need to maintain the highest-level rating. If the accessory or part being installed is of a lower rating, the entire enclosure is reduced to the lowest rated part. In doing so, you are diminishing the protection of your enclosure, leaving the room for contaminants and debris to enter or water and other liquids to accumulate. It is crucial to maintain enclosure ratings in the High Hygiene Zone to safeguard the food production process.

Certification Testing Process

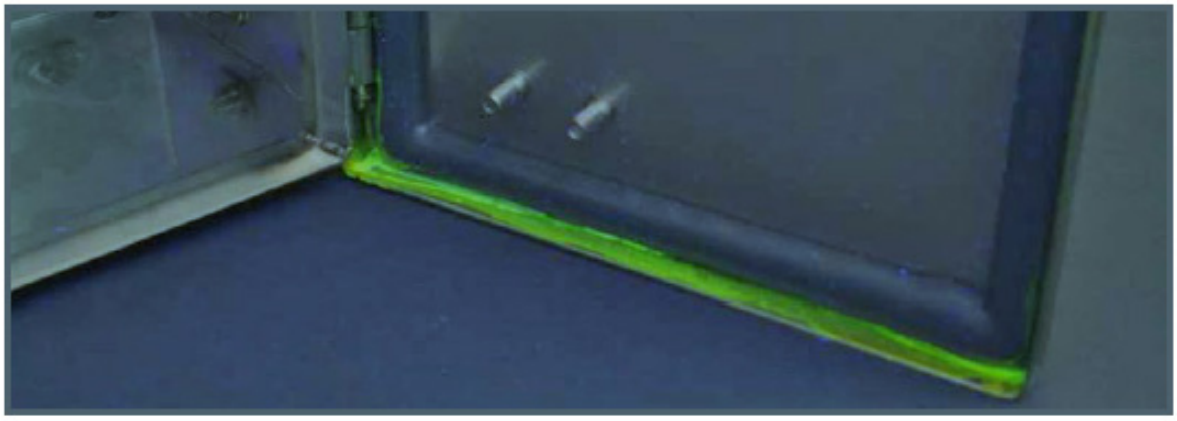
Enclosure testing procedures are done by a recognized testing institute as noted above and undergo a rigorous process to ensure the design rating specifications are met. General conditions are replicated to simulate the environment and process in which enclosures will be kept and cleaned. This includes temperatures, test distance, drying time, cleaning agents, and more. Below is an example of one possible testing process.

On the left is the HD enclosure before contamination and on the right is the enclosure after being contaminated for testing.

The five basic steps in the testing process are as follows:

1. The enclosure is first contaminated with a fluorescently labeled milk product.
2. The enclosure is cleaned using the water pressure rating, distance, and amount.
3. It then dries for a set amount of time.
4. After the cleaning procedure is complete, any remaining residues are identified by fluorescence.
5. All results are logged and determined if the design specifications are met for certification.

In this image, you see the upper hinge of the HD enclosure prior to the testing experiment and the results after the experiment showing all contamination is removed and no residue is left behind.



As a comparison, the above image shows a conventional enclosure that has undergone the same testing procedure. In the photo, you can easily identify the contamination left behind due to improper design for the environment. This contamination can further cause bacteria throughout the food production process, allow water and chemicals to enter the enclosure, and cause possible electronic and electrical control failures. The need for properly designed and certified enclosures is crucial for operating a safe and sanitary environment and prevent unplanned downtime.

Indirect Costs of Consumer Perception

Food contamination is a concern for manufacturers and consumers as recalls can affect millions of people. Depending on the severity of the recall, it may cost the manufacturer millions of dollars, create extraordinary waste, and at worst can lead to sickness and potential death.

Hygiene concerns were amplified across food and beverage facilities from the onset of the pandemic. Recalls are becoming an ever-increasing concern of consumers as they are more keyed into best practices for manufacturers. Ensuring your facility is operating according to federal regulations is mandatory, but it is important to prepare for the future of food safety, increased demand, and consumer expectations.

According to Investopedia, the **5 largest US food recalls** resulted in a company going bankrupt, hundreds falling ill, and mass recalls including 143 million pounds of beef, half-billion eggs, 35 million pounds of turkey, and more detrimental effects. Each of these companies suffered financially due to the contaminated food, on average, **$10 million dollars in direct costs** are associated with food recalls.

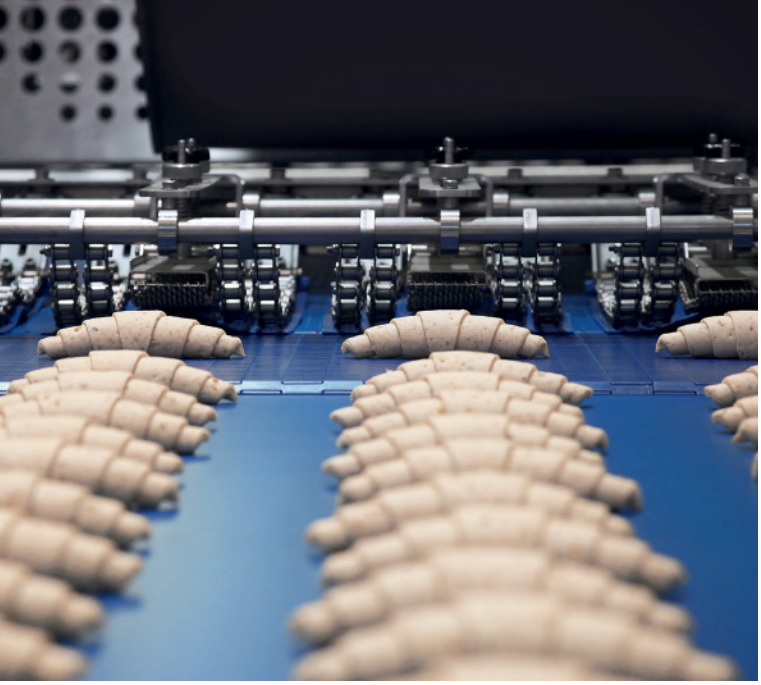
Indirect costs should be considered as well. The expense of managing the recall, production loss, regulatory ramifications, and more are only a small part of these hidden costs; the consumer's perception of your brand has likely been skewed.

Consumers are increasingly hyper aware of the impact of the recall especially when they have been directly affected. They will approach brands with multiple recalls cautiously or avoid them altogether creating a long-term negative impact to the manufacturer.

Losing public trust during a recall can result in:

- 55% of consumers would switch brands temporarily
- 15% would never purchase that product again
- 21% would avoid purchasing any products made by that manufacturer

It will take countless hours and positive publicity to transform the consumer's attitude towards your brand. Taking a proactive approach focused on eliminating contaminants and bacteria will help reduce the risk of recalls and potential damage to your brand. Understanding the equipment needs of each zone throughout your facility can help to prevent contamination throughout production that leads to recalls and ensures a hygienic and sanitary environment.



Key Considerations to Choosing Your Enclosure

You have three goals when choosing enclosures for your food and beverage facility. First, provide the overall sanitary conditions of processing equipment, production lines, auxiliary equipment, and facilities. Second, reduce the time and resources required for cleaning, sanitizing, and inspecting. Third, reduce maintenance and repair time and costs due to water ingress. Understanding key areas of concern will help you meet these goals.

Accessibility

When working in an environment where sanitation is top of mind, it is important that every stage from accessing parts for inspection or maintenance to cleaning equipment maintain the sanitary environment. Using tools can breed cross contamination and introduce other safety issues into the environment such as broken pieces from tools mixing with food production. To minimize these issues, accessing the enclosure without tools is key. Tool-less entry will increase speed when inspecting or completing maintenance inside the enclosure, but it will also maintain the sanitary environment as dead space is eliminated. Product surfaces can be easily accessible for cleaning and inspection and the risk of adding foreign materials to the production line is significantly reduced.

Accumulation of Water or Liquids

One of the most important factors is the prevention of water or liquid pooling on your equipment. Self-draining equipment will ensure water and other liquids cannot accumulate or condense which can lead to bacterial growth. An enclosure designed with sloped surfaces will prevent water buildup. You do not need a high degree of slope, as little as three degrees will prevent water from accumulating. When you are looking at enclosure designs, there are two roof top options. One that stops with the body of the door and one where the roof hangs past the door.

The first option will push all the water and debris into the rain channel which typically slopes towards the hinged side of the door. This will direct contaminants, debris, and water build up to higher risk areas on your enclosure where potential dead spaces are. Additionally, it creates more work as you need to further inspect this area and provide extra cleaning to ensure all debris

is removed from crevices. An overhanging door helps to prevent the accumulation of debris by establishing a path for all water and debris to run off and away from the enclosure including the rain channel, door, and other sensitive areas.

Flash Condensation

Temperature fluctuations can affect water condensation as well. If the interior of an enclosure is cool and the outside is hit with high temperature water and / or cleaning solution, you can create flash condensation on the inside of the enclosure. This condensation can damage the internal components leading to a halt in production and increased repair costs. As a preventative method, proper enclosure climate control is needed. Shutting down the cooling unit and raising the internal temperature close to that of the wash down water will eliminate condensation.

Climate Control

Proper cooling is essential in keeping your components operational. Now many people believe that cooler is better, but this is not the case. If the interior of your enclosure becomes too cold you risk the likelihood of internal condensation being formed or electronic control failure. The standard temperature for electronics and electrical components is between 90- and 104- degrees Fahrenheit. Using internal fans will help keep the air moving and prevent water buildup and adding a condensation drain will remove any internal liquids without allowing outside fluids to enter the enclosure. Additionally, proper climate control can result in **energy savings**.

Wall or Floor Mounting

There are a handful of enclosures that do not have an option for wall or floor mounting. If these options are not standard, you are likely modifying the enclosure yourself or using an integrator. If being modified, you need to make certain that you are following regulations and rating specifications with the modified design.

In the food and beverage space, any equipment being wall mounted needs to be a minimum of four inches off the wall and any equipment being mounted to the floor needs to be six inches off the ground, at minimum.

The support feet or legs need to be smooth with rounded edges. There should never be a part that allows water or liquid to accumulate. This includes the hydraulics, steam, air, and water equipment. Any load bearing support needs to be sealed. Leveling feet cannot be used in this application as they are threaded and will create areas that can harbor water and bacteria. Any design being used should protect the space from contaminants.

As modifications are being made, you are creating extra holes or dead space. Proper sealing is crucial to prevent contamination, water accumulation, and potential equipment failure. As discussed previously, any modifications using a lower rated part will degrade the entire enclosure to that lowest rating. To prevent these risks, certify that all hollow areas are hermetically sealed and done so in accordance with the design to maintain the high ratings and certifications. Although, it's better to look for a design that has already incorporated wall mount and floor mount options to prevent the need to add sealing plates or hermetic seals and eliminate the concerns mentioned above.

Door Design

Typically, doors will have external hinges. The issue with this design feature is it creates extra surfaces for contaminants to live and breed. In the High Hygiene Zone, codes say piano hinges or continuous hinges on enclosures are not permitted as it can harbor water and debris creating health hazards in your production line. Switching to a design that utilizes an internal hinge will prevent contamination and further eliminate extra dead space reducing the contamination risks.

Human Machine Interfaces (HMI)

HMI is the part of the design where you have people operating systems. They are touching buttons and switches, managing lights, and working with a variety of controls or you may have a screen or printer that is needed on the plant floor. It is required that all parts remain protected and sealed to prevent contamination and buildup. You want to make sure that the hygienic design windows are covering the controls and push buttons and the command panels and housings are all protected appropriately. These devices should remain in line with the standards of other equipment in terms of metal requirements, sloped design, and rating certifications.

Cable Management

Cable management can be challenging in a High Hygiene Zone. To prevent dead space, ensure that the connectors are sealed and that the appropriate material is being used including gaskets and metals. Incompatible materials have the potential to rust or cause surface deterioration where they are in contact with each other.

Proper design considerations are key from the start of the project. Enclosures that are built with these key considerations in mind will prevent unplanned downtime, create a safer and healthier environment, and will meet all certification requirements.

Enclosure Materials

Having a thorough understanding of various materials used throughout the enclosure design is indispensable to establishing the proper material needed for the environment and application. You will further expedite your cleaning and sanitizing process while maintaining regulatory standards to help ensure impurities cannot enter the enclosure.

Gaskets

Non metallics are regulated as indirect food under the **code of federal regulations** which includes your gaskets and O-rings. Regulations also state that they shall be made of non-toxic, non-porous, and non-absorbent materials so that they cannot be affected by food products.

If using a foamed in place gasket, robotically applied polyurethane isocyanate gasket in the enclosure within a High Hygiene Zone, the high pressure, high temperatures, and high chemical use will quickly destroy the gasket. Once the gasket is destroyed, the internal enclosure components are exposed to the elements and the risk of contaminants increases exponentially. You have a couple of options to correct the issue.

1. Replace the entire enclosure. This will be time consuming, costly, and will likely shut down the plant process. You will need to modify the new enclosure to your specifications, install controls, and wire everything before it can be functional.
2. If your design allows, you can replace the enclosure door. This option allows you to leave your controls in place and can reduce the downtime and costs associated with replacing an entire enclosure.

Neither of these two options are ideal because your costs are high and you're losing production time. What if there is a third option you never considered? An option that would save you time and money while providing a stronger barrier against contaminants. An

enclosure designed to prevent damage to the gasket but make it easy to replace in the event a tear occurs. The best design will allow for an easy gasket replacement that causes little to no downtime and therefore your facility maintains regulations and production lines stay moving. Using a silicone gasket is the best solution for this environment.

In the food and beverage space, it is best practice to use blue gaskets. The blue color makes it easy to quickly identify contamination since there are few blue foods. Gaskets made of silicone can be dyed blue and will withstand the harsh environment to a higher degree than the foamed in place gaskets. An elaborative design of a silicone gasket that has multiple folds does an excellent job at keeping out high pressure water as it conforms to the enclosure eliminating dead space. This design not only fits all the codes and regulations for the High Hygiene Zone, but it is also easy to remove and therefore replace in the event of a tear or damage to the gasket. Using this type of gasket will save you time by allowing for quick inspections and fast replacement if the need arises and it saves money as only the gasket needs to be replaced not the entire enclosure or door. Foamed in place gaskets are concealed behind the door. However, in a hygienic environment, the gasket should protrude under the door and seal against the body of the enclosure.

Fasteners

The best enclosure design will exclude fasteners from the door. Now that's more difficult to accomplish and is generally impractical to implement so you need an alternate solution. Using fasteners that do not have threads and are made of a compatible material will abide by regulations. Using fasteners without threads will prevent dirt, debris, and bacteria from forming in crevices. Adopting sloped accessories will expel liquids that may pool on even the smallest surfaces like the head of a screw or fastener. Using accessories that have gaskets built onto them will eliminate dead spaces and maintain the proper materials and standards for the environment that prevent unsanitary areas caused by food absorption or harborage of water in even the smallest areas.

Metals

According to regulations from the institutions previously mentioned, metal contact surfaces should be from the 300 series of stainless steel. This includes 304 and 316; both having different chemical alloy makeups from their chromium and nickel composition.

316-steel has more chromium and nickel than 304 making it a harder steel. The added chromium provides stronger corrosion resistance, and the extra nickel increases the strength of the equipment. However, most food and beverage applications can use 304-steel which is

less expensive than its 316-steel counterpart so understanding the applications for each is essential. Some materials such as softer metals can lead to pits, folds, cracks, or crevices being formed due to the chemicals being used during washdown and therefore it is critical to use the specified material grade in each environment so that exposure to unsanitary conditions is kept at a minimum.

Finish

Applying the proper finish will further preserve sanitary requirements. A 400-grain or number four brush finish is the industry minimum. The surface roughness is about eight microns high. This will give a smooth appearance, but more importantly, it will make sure you do not have areas of contamination sitting on the enclosure. This is an extra line of defense in maintaining a safe and healthy environment throughout your production line.

Hygienic Design Enclosure

Hygienic Design (HD) enclosures from Rittal are designed to prevent the harborage of water across all surfaces. The toolless entry design allows easy and quick access to the interior when needed but is also eliminates gaps where debris can build. The blue silicone and HD enclosures allows you to easily inspect equipment with a quick glance. You can feel secure knowing that the blue gasket is easily identifiable as being hygienic and designed for the harsh environment.

Everything from your electronics and electronic controls to switches and command panels to fire extinguishers need to be protected at the same rating. There is no equipment within the High Hygiene Zone that can be exposed to the environment or you risk health and safety concerns. As previously discussed, having enclosures designed for the High Hygiene Zone will help ensure that you have met design specifications and regulations for the food and beverage industry. You'll have peace of mind that all areas throughout the plant are up to code and preventing contaminants.

HD Line of Products

All products within **Rittal's HD line** of products are designed and engineered to be easily cleaned and sanitized. Features include an all-round silicone seal to prevent gaps, hygienic hexagon quick-release locks, and a minimum of a three-degree slope on all surfaces and a thirty-degree slope on roofs to prevent pooling and contaminants. This line is designed with your needs in mind to equip every area within your High Hygiene Zone from control boxes to full enclosure systems.

HD Junction Box: Essential housing solution for the most sensitive electrical equipment.

HD Fire-Extinguisher Enclosure: Provide hygienic protection and quick access to important safety equipment on the plant floor.

HD Switch Enclosure: Keep your controls safe and easily accessible throughout your facility.

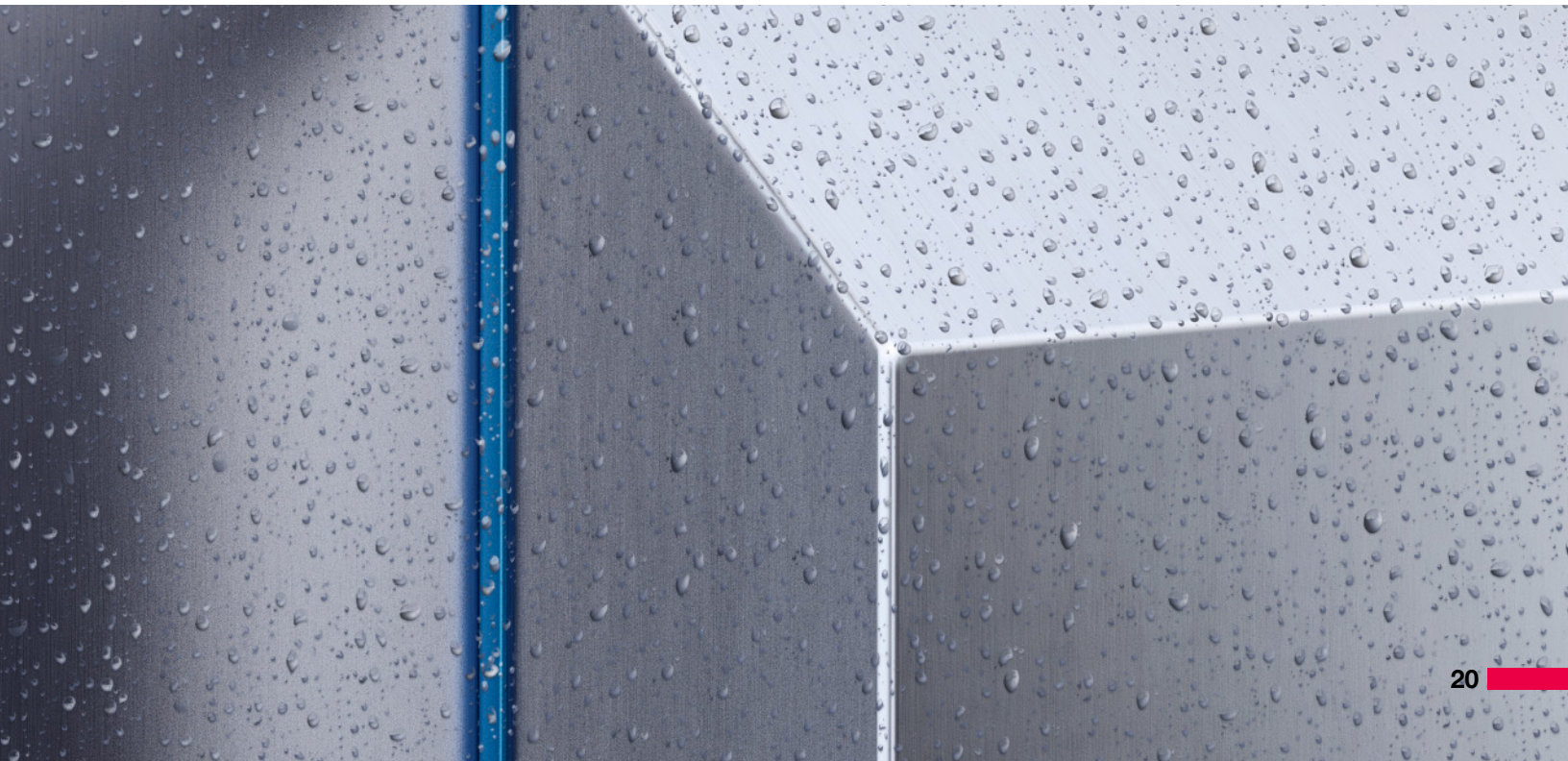
HD Command Panel: Ideal solution for monitors, PCs, and other components with displays.

HD Printer Enclosure: Designed for the installation of printers or other components in the production area.

HD Accessories: Compatible accessories for the High Hygiene Zone include leveling feet, wall spacer brackets, and cable glands.

HD Wall-Mounted Air/ Water Heat Exchanger: Keep your enclosures sanitary and at the right temperature with this easy-to-clean design.

HD Enclosures: The compact enclosures come in single and double door models that are tailored to meet your requirements. If you need a flexible solution, you can use the baying enclosure system with standard VX mounting plate and fitting components that ensure a perfect seal.



Reclaim Production

You're off to a great start when the enclosure is designed to prevent dead space and prevent bacterial or fungal growth on or within the enclosure. You can have confidence when needing to change out gaskets or other parts, clean with high pressure and high temperatures, and use harsh chemicals on the enclosure because it was designed to make the process simple. Production lines will stay operational for longer periods of time as you reduce the time needed for cleaning and inspecting equipment.

The need to cover enclosures with rudimentary methods such as plastic coverings is no longer needed when using HD products in the food and beverage space. Using the right equipment will allow you to save time and money as the need to purchase and install covering daily is obsolete.

Repetitive work of cleaning, sanitizing, and inspecting costs money. If you can reduce the cleaning and maintenance time, you can spend more time in production which means increasing revenues.

Conclusion

It is essential to follow the codes and regulations enacted from leading food and beverage institutions with the goal of establishing guidelines that are intended to prevent bacteria and other contaminants from spreading throughout the facility.

As discussed, it can be challenging to find the right enclosure solution for your application or to modify enclosures and keep the necessary ratings. There are many surfaces that can harbor water and debris if the enclosure is not structured to prevent this buildup from happening which can lead to health and safety concerns across the production line. Furthermore, inadequate materials can degrade, further increasing these concerns, but can also cause unplanned downtime and added costs.

Choosing the right equipment for the environment will help ensure health and safety standards, provide cost savings, and prevent unplanned downtime. Your entire facility will be protected when using the HD line of enclosures from Rittal. The power to keep your food and beverage facility operational and up to code is at your fingertips – rely on Rittal!

To learn more about our HD enclosure line,

Download the HD Brochure

https://info.rittal.us/hygienic-design-brochure

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