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## From Experience

### The Value of Accessible Interstitial Spaces

The production areas within a food and beverage plant are the most critical spaces in the facility. In addition to the production equipment itself, these areas require the appropriate design and maintenance to support proper hygiene and sanitation. They are also typically the most utility-intensive spaces as well.

All of these reasons make production areas prime real estate. Therefore, an important rule of thumb for these rooms should be to minimize elements that are not critical to the process, or which may have an adverse effect on the cleanability or hygiene of the space.

One strategy to minimize the use of prime real estate and support cleanability is to include interstitial utility space above the production floor (often in the form of a walkable ceiling). These areas can house utilities and equipment that support production, but are not directly involved in the process itself, e.g., ductwork, utility piping, conduit, valves for equipment below, pumps, control panels and more.

However, an interstitial floor or walkable ceiling doesn't come without a price tag. This may cause some facility owners to question their value. In

Hixson's experience, interstitial spaces can provide facilities with numerous benefits, including some that can offset some or all their initial cost. These include:

- **Hygienic and Sanitary Design.** A walkable ceiling provides the opportunity to locate the physical elements outside of the micro-sensitive production space, thereby reducing the risk of contamination and making sanitation easier and more effective. Horizontal surfaces provide significant opportunity for moisture and bacteria to accumulate and grow. Keeping these harborage points out of the production space makes it more hygienic and exposes fewer elements to the intense sanitation environment within the space.

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Energy efficiency is another benefit: Since walkable ceilings reduce the overall volume of conditioned space within a production area, they yield savings through reduced energy consumption. They also do not need to be conditioned to the same degree as production spaces.

- **Personnel Safety.** Production spaces can often be less safe due to the specific nature of the work and its environmental requirements. Moving required access points outside of the production space and into an interstitial space can provide safer access and working spaces for facility and maintenance personnel. A walkable ceiling can also provide access to maintenance items at a safe working height without the use of lifts or ladders.
- **Product Safety.** One straightforward strategy to attain product safety is to minimize the number of occupants within a micro-sensitive space. Providing an accessible ceiling above a production area removes many maintenance functions from the space and reduces the need for lifts and employees within the space to perform these tasks. In this way, interstitial spaces help to reduce the amount of foot-traffic both into and through the most sensitive parts of the facility.
- **Operational Efficiency.** By providing accessible interstitial spaces, maintenance personnel can easily get to utilities and controls without entering (and often interrupting) the production floor. This gives them the ability to perform important maintenance and inspection activities outside of critical areas, all potentially without affecting or stopping the operation.
- **Optimization of Space.** Accessible ceilings above process spaces make efficient use of available vertical space within a facility. Food and beverage facilities are often tall due to the nature of what's being housed inside, and a walkable ceiling provides the opportunity to use this available vertical space and potentially minimize expensive footprint.
- **Reduced material costs.** Elements that remain within the production space are inherently more expensive. Piping, conduit, structure, platforms, etc. are typically constructed of stainless steel to allow for cleanability and to prevent corrosion. More costly construction methods, like welded joints and connections, are necessary to ensure proper hygiene and easy sanitation. Moving elements out of the production space can allow for the use of other, less expensive materials and methods of construction.

Incorporating interstitial spaces in food and beverage plants can be a great way to minimize microbial risk to products, improve personnel safety, and gain overall operational benefits. Given these advantages, organizations may find it beneficial to consider the potential of interstitial spaces in their facility designs.

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