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DESIGN-BUILD



# Solutions

ESI specializes in food processing and distribution center design and construction.



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## Designing a Facility is a Process. Here's Why.

**WHEN IT COMES TO** designing and building a cold food processing plant or distribution center, there's more to it than ample parking and an attractive lobby. From the loading dock positions to the LED lighting, every facet of that building must be accounted for in the design process, according to Tim Gibbons, vice president of design and business development for ESI Group USA, Hartland, Wis.

"Design is a process," he adds. "I always tell my clients at the beginning, 'include everything you want, don't leave anything out because of assumed cost restrictions.' Priorities will later shape what the final product will become, and conscious-vetted decisions will be the judge of each part."

Some of the most common features involving the design process of today's cold food pro-

cessing and/or distribution facilities entail high-efficiency refrigeration systems. These plants utilize oversized condensers, variable frequency drives on compressors and fans that maximize the efficiencies of the refrigeration system. Using CO<sub>2</sub> as the refrigerant to chill the freezers, blast freezers and coolers along with LED high-bay lighting throughout the building are becoming more commonplace.



**Top, left:** LEED-certified distribution center.

**Top, right:** Mechanical equipment room.

**Bottom:** Product demonstration kitchen.



LEED certification also remains popular, Gibbons says, and is used to show environmental responsibility.

"It is an outstanding building certification that reminds both employee and visitor that sustainability is extremely important to consider every day," he adds.

Another common feature entails loading dock positions that allow trailer doors to swing open after the truck is backed up against the building. This reduces exterior air infiltration and maintains the "cold chain" that many owners' standard operation procedures require.

"Regarding food processing design, many companies are using clean rooms for packaging product following the cooking process," Gibbons says. "It creates a sanitized isolated environment in which to safely seal the product free from outside contaminants."

Typically these rooms are pressurized, are accessible only through restricted means and are the center point of sanitation for the production line. They create a very real barrier separating the raw product from the cooked and are critical for food safety.

Outside of achieving environmental responsibility and building to trend, the design process itself can be quite the challenge without a plan in place.

Here is a step-by-step guide of how to begin the design process:

1. **Outline the objective.** To begin a project, the customer and the design-build firm must determine the overall objectives of the project. What is the end goal in mind? What is the customer looking to achieve? This is extremely important to determine as these goals are considered in almost every decision moving forward.
2. **Verify the knowns.** Jot down the location and municipality to determine the site and building restrictions. Understand the utility limitations and determine if and how they can be improved. List other known facts

about the project that will help with the design of the building.

3. **Establish capacity.** Establish the desired capacity or production rates to size the facility accordingly. This information is needed for sizing raw product and work-in-process coolers.
4. **Determine supporting features.** The main process will have supporting areas such as vacuum pump mezzanines, battery charging stations, maintenance areas and packaging material storage, among others. For the building expansion to be successful, these auxiliary functions must be increased in size and capacity.
5. **Understand the client's current limitations.** When working with an existing facility, understand what the client likes and does not like about that facility. The opportunity may exist to improve some deficiencies and increase the utilization of the building.
6. **Understand the infrastructure.** Become familiar with where the project will take place. Can the existing building accommodate the new structure? Will there be enough land to hold the new facility? Will the materials used be acceptable in that environment?
7. **Take advantage of today's technological tools.** While the design process has not changed, the tools available have, says Gibbons. "Communication has improved through live video conferencing and the use of GoToMeeting," he adds. "But still, nothing beats a face-to-face meeting."
8. **Research rebates and tax incentives.** Contact the local chamber of commerce and utility company as well as your state representative to see what programs the project may qualify for.

Whether a renovation, addition or starting from the ground up, designing a facility is a process. "Be an expert in the field, but ask questions like you have never seen the operation," Gibbons says. "Otherwise you might miss something with preconceived notions." **ESI celebrates 25 years providing design-build services in 2016.**

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