

Sizing Up the Situation

Bakers seek creative options to expand freezing capacity as their businesses grow.

by Dan Malovany

When it comes to right-sizing freezers, it's always better to take the positive perspective of half full rather than empty. It doesn't matter if they're blast, storage, spiral, tunnel or even cryogenic systems. Sooner or later, successful bakeries run out of space. Eventually, it becomes a matter of "when" — not "if" — they'll be expanding, and that can be a costly proposition.

"I've never come across bakers who, after five years, determined their companies put too much capacity in the freezers they built," noted Bryan Hobbs, director of North American sales, Ashworth Bros. "Almost always, they're looking to figure out ways to get more capacity from what they currently have or originally purchased."

Sometimes adding freezer capacity comes as a gradual progression that can be managed as business blossoms. In these cases, cautiously optimistic bakers need to have faith in what the future holds, according to Peter White, president, IJ White Systems. "The customer needs to understand his market and have confidence in his projections of future sales. Expansion planning should include layout drawings showing the location and flow of future production lines, and they should buy equipment that's expandable and flexible," he advised.

Other times, the need for additional capacity occurs almost overnight as the cold reality sets in that the demand from new and existing customers for the next hot product caught the baker by surprise. That can result in scrambling around the clock to fill orders or, in a worst-case scenario, seeing opportunity go by the wayside.

"It's very common for spiral freezers to be the bottle-

neck in bakery facilities," said Luke Facemyer, vice-president, refrigeration design, Stellar. "Sure, you can purchase a bigger oven or add packaging equipment fairly easily, but a spiral freezer is a huge piece of equipment right in the middle of your line. No matter how much you upgrade either side of it, your output is only as great as your freezer's capacity. Before investing in a spiral freezer, it's critical to establish your anticipated output and future production goals. Once the freezer is built in-place, moving it or replacing it can easily take four to six weeks — costing you money in downtime."

By the numbers

Calculating capacity requires careful analysis. Focusing on the wrong SKU or product type could result in a freezer that's the wrong size, according to Andrew Knowles, division product line manager, JBT, Inc. "It is important to make sure the target 'instantaneous' and 'daily packed throughput' values are based on the highest volume products," he pointed out. "In many instances, too much emphasis is placed on the largest product or most difficult product to freeze."

With spiral technology, bakers should consider the dimensions of both current and potential future baked goods. "A muffin is shallow and doesn't need as much clearance vertically, but another cake product might be taller," Mr. White said. "The size of future products should be a part of your thinking so the belt widths and product heights are taken into account."

In a greenfield bakery, he added, take the opportunity

New designs of stacker freezers offer a compact configuration as well as enhanced food safety features.

Intralox

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A cryogenic freezer can be installed before or after a mechanical freezer to boost performance. Linde

to prepare for the future and avoid shoehorning in additional production or even costly structural modifications. "When we're looking at a design, where are you locating the next line? Put it in the drawing," Mr. White said. "If your budget allows for it, leave room for it, buy a bigger building. Plan on expanding. Take an option on the building next door."

If floor space becomes an issue, height can be a baker's best friend. "When you are building a greenfield facility, you want high ceilings to expand vertically so you have more room to add production capacity on the floor," Mr. White suggested.

With brownfield facilities, options can be more limited. JBT works with customers to identify the scope of the project and assess the true costs associated with upgrading an existing building. "While it can be tempting to overpromise on lead time, installation time, start-up time allowances and capacity to win an order, JBT takes care in conveying to our customers' realistic and practical timelines," Mr. Knowles said.

Project managers, applications engineers and installation supervisors regularly conduct onsite reviews of the available space and staging areas. Moreover, Mr. Knowles recommended that bakers confirm the doorways and pathways allow for moving equipment through the facility. "Ensure the project is scoped out correctly to avoid hidden costs and scope creep during the

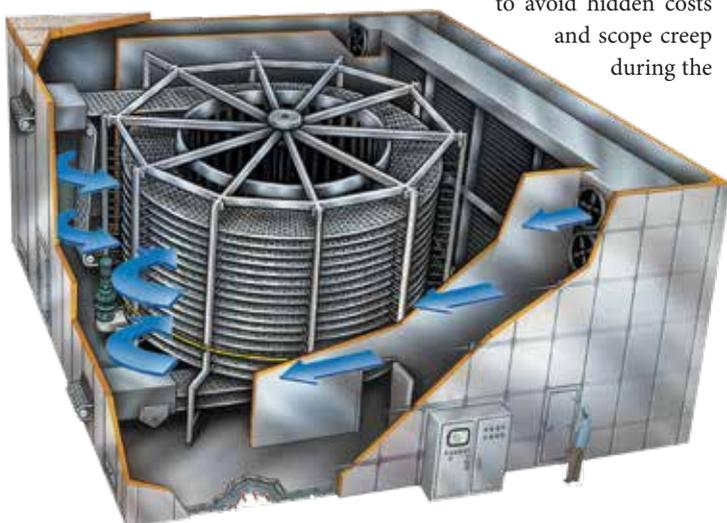
execution and installation phase," he added.

Mechanically, Mr. Knowles said, make sure the refrigerant feed method, refrigeration line sizes and the refrigeration system handle the initial low load and subsequent ramp-up period as well as potential long-term needs. "In many instances, companies can oversize the freezer heat exchanger, airflow and enclosure to allow our customers to add belt or additional capacity in the future," he observed.

Cryogenic freezing technology provides additional throughput in a minimal amount of space, according to Erik Fihlman, program manager, baking and prepared foods, Linde LLC. "Cryogenic freezers can be installed easily with minimal infrastructure and capital," he explained. "This allows bakers to launch products quickly without the long lead times of installing large mechanical freezers. Cryogenic freezers can also be used by bakers to 'boost' capacity of existing freezing lines. They are relatively small but can make a big impact. Giving an 'assist' to mechanical freezers can also increase overall refrigeration capacity to handle peak loads and sustained production increases."

To reduce initial capital investment, Mr. White suggested installing the refrigeration system near the blast freezer. "Think of where that engine room is and where to locate it under your [future] expansion," he noted. "Every foot of refrigeration piping and insulation is expensive today, so you want the refrigeration engine room very close to the where the process is happening."

Many blast freezers offer multiple options to expand and add capacity. IJWhite



Belting it out

Various sizes and types of belting allow bakers to adjust to space constraints. "If there is not a lot of space, but it happens to be a very tall facility, we can allow for different belting solutions that go around smaller cage diameters in a spiral freezer," said Jonathan Lasecki, chief engineer, Ashworth. "If you have height restrictions, we can design our belts to travel around a much larger diameter cage and add adequate amount of belting to provide the capacity needed in a freezer and still live within the constraints of the facility."

Another option involves installing only the amount of



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New belting design resolves product-orientation issues, especially for baked goods that are susceptible to moving on the belt surface.

Ashworth

blast freezer belt initially required and, as capacity rises, adding more belt length later. “We’re building our blast freezers so that they are modular so they are expandable and built for future expansion,” Mr. White said.

Often, product variety determines the type of belting used in freezers. Ashworth’s PosiDrive Spiral system engages the inside belt edge maintaining product orientation. “It addresses product-orientation issues when you have products like bread loaves or trayed products that are more susceptible to moving on the belt surface or shifting from airflow within a spiral freezer,” said Kenneth King, commercial support manager, Ashworth. “It keeps them in place so that when they travel toward packaging lines, they don’t negatively impact downstream packaging operations.”

Intralox developed the DirectDrive system a few years ago to eliminate overdrive and the friction variable on the drum surface for smooth conveying. The positive engagement combined with the company’s patented load reduction design ensures freezers achieve their maximum potential, noted Achraf Elhassouni, global products manager, spiral platform, Intralox.

Recently, the company adapted that technology to roll out the DirectDrive Stacker. “We were wondering how we could make stacker freezers operate far more efficiently and much more reliably,” Mr. Elhassouni said.

The lightweight modular plastic belt combines the hygienic and space-saving benefits of self-stackers with the advantages of the DirectDrive System. Specifically, stacker freezers are generally employed in bakeries with limited footprint or vertical space because the belts are “stacked” or located directly atop one another. A positively engaged drum drives the belt much like a giant sprocket, according to Mr. Elhassouni.

Stacker freezers are designed for short or thin products, such as pizza crust, pastries or croissants. Because the systems are so compact, they can be used to increase — in some cases double — the capacity of other freezer designs. “When you eliminate the structure supported system, you eliminate a lot of dead space between the tiers, so you can put more revolutions in the same space; that gives you much more dwell time. You can fit more product in a smaller space,” Mr. Elhassouni said.

With stacker freezers, food safety becomes paramount because the belt is the product zone. “There is no structure or other components whatsoever,” he added. “The product sits on the belt, and right above it is also a belt.”

Ashworth offers the OmniFlex family of belts with an open-rectangular mesh design that provides support and greater airflow for pies and other tin-panned desserts. Their Omni-Grid line features variable-mesh options to convey smaller products like buns and rolls. “If you plan to change products in a year or two, and the belt will last five to 10 years, you have to ensure the belt selected will serve your needs in the future,” Mr. Lasecki said. “You don’t want to have to replace a belt after a few years because the open area is too small or you don’t have the product support you need.”

For most bakers, it all boils down to whether they’re willing to invest today to prepare for opportunities down the line. In many cases, the choice becomes pay now or potentially spend a lot more later to expand freezing capacity. “No matter how much you want to plan for the future, in the end, it comes down to economics,” Mr. White said. ●

Find resources for freezing by visiting www.esourcebaking.com. Browse by category under Equipment, and click on Refrigerate/Freeze for listings.