



THE SOLUTION PROVIDER'S PERSPECTIVE

Leading industry suppliers offer their unique point of view on trends and advancements shaping cold storage design and construction.

Three leaders with expertise in the supplier and solution provider segments of temperature-controlled construction share their perspectives with COLD FACTS on topics ranging from the vast potential of AI to the uncertainties created by tariffs and trade riffs.

Trade Disruptions

"I don't like disruptions to trade," says Bob Tippmann, President, QuickFreeze. "The very public nature of the tariff negotiations are frustrating because nobody knows what to expect. Consequently, there's a rush to get product across the Mexican and Canadian

borders, not knowing where we would land on all these different tariff issues."

On the other hand, Tippmann says he was very excited about the prospect of reciprocal tariffs, and he thought it was great that other countries would be encouraged to lower their own tariffs. Then the reality of the reciprocal

numbers settled in. "I remember vividly that there was a 30% tariff on the product that we're shipping, and the reciprocal tariff was 10 or 12%," he says. "It turns out the tariff rate was based on a trade imbalance. A great idea – I only wish the implementation had been more precise."

Trade uncertainty affects future capacity but risk can be minimized through flexible design, says Todd Steffen, SIOR, Partner/Market Leader at industrial real estate experts KBC Advisors. "Planning for expansion now provides you with the flexibility to take advantage of opportunities as they arise," he says. "For instance, port regulations could shift to change portside capacity needs. Economics

may also change in an effort to avoid tariffs.”

As an equipment builder, Brian Kelly, Vice President of Refrigeration at Mayekawa USA, Inc., says they have noticed that vendor lead times have not come back to “normal” pre-COVID lead times and delivery. “The lead times are still extended to this date and impact various items such as motors, starters, velocity frequency drivers, and valves,” says Kelly. “Tariffs have not negatively impacted lead times, however, the tariffs have increased costs on the project budget.”

Impactful Trends

As he is mainly concerned with blast freezing equipment, a trend that Tippmann really likes is warehouses designed so that the blast freeze equipment is located in the warehouse portion of the building, rather than in a separate room.

“They’re able to install that equipment at floor level instead of trying to go five or six levels high with dangerous-to-handle pallets that aren’t shrink-wrapped because they’re being frozen,” Tippmann says. “Being able to do it all at floor level is something that I see everyone adopting.”

Steffan believes the adequate power needed

to fuel cold storage will be dwarfed by the data center, which traditional technologies will not be able to support. “We will need to expand power and infrastructure to include analyzing transportation data and modeling other factors so that the right decisions can be made on where to locate capacity.”

Kelly notes, “Internet of Things (IoT) sensors can monitor equipment and read in real time, vibration, temperature, and power usage data. You can log data in cloud servers and send alerts via SMS in real time to plant operators and management in the event of an alarm or failure.”

Of the sensors in the market, the one that Tippmann is most excited about is infrared.

“About six years ago, I plugged in some infrared cameras for the first time and started looking at the temperature readings from an analytical point of view to see how we could apply that in the freezer,” Tippmann says. “I determined that while I was able to sense the freezing of a pallet with this infrared camera, the amount of data required to make a universal sensor know when a pallet was frozen was about the equivalent of the number of pallets that are frozen in the United States each year. It was unattainable.”

That’s why Tippmann is excited about smaller AI programs like one purpose-built for infrared. “We’ve been getting really great results with a much smaller data set.”

Keeping Up With AI

“Artificial intelligence and the Internet of Things are being implemented, and it is very exciting for our industry!” says Kelly. “AI and machine learning are analyzing trends to predict when a piece of equipment is likely to fail or alert when performance starts to degrade before any negative impact on the system, such as downtime, occurs.”

Kelly says the potential return on investment is in fewer unplanned outages and unnecessary service, extended equipment life, product loss prevention, and regulatory compliance.

When it comes to site selection for cold storage construction, Steffan says design should be based on where capacity is needed. “You identify sufficient pools of cold food production in frozen and chilled sectors and analyze everything, including transport costs to cold storage facilities. This is the information needed to make the design successful.”

Today, AI models can identify current food



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production locations and can also analyze future cold food pallet locations, Steffan says. “Consider the time needed to design and construct a cold storage facility and look ahead five years – you need to design for the capacity required then.”

Steffan says it’s compelling when industry peers who have been around for 30 years say this kind of insight just wasn’t around before, at least not the whole picture.

At this stage, Tippmann’s experience with AI is trust but verify. “Sometimes it seems like a little bit of a mystery black box that you feed data into, and most of the time it comes back,” he says. “But you need to build in safeguards, and you need to design for the times when AI just straight up lies to you.”

Tippmann advises keeping that in mind when designing or employing products that utilize AI technology, especially when applied to something as important as the safety and security of a nation’s food supply.

State of the Market

“When it comes to the potential of what AI can do, I don’t know that even Elon can see 24 months ahead. If you look at where AI was 24 months ago and where it is today, it’s night and day,” says Tippmann.

“With the advances in technology over the past five years, we can get very good results with a much smaller data set. I can make good decisions with less input through AI today than I could five years ago with machine learning,” says Tippmann. “And that’s directing the development of the equipment that we’re designing and building now for smaller AI programs like the one purpose-built for infrared that we’re excited about.”

“Buildings today must be leased to generate a profit for the developer, rather than competing with an existing facility. Add 8,000 square feet that’s not necessarily justified, and you have a blood bath of pricing wars versus location,” says Steffan. “That is the crux of where to put capacity. You must match capacity design with the needs of the market, whether producing for export or importing.”

Steffan says what interests him is the relationship between food producers and 3PLs. “There is a real opportunity for those two groups to come together, to discuss future production and capacity needs, and talk strategically about where capacity might really be needed.”

“I think that for a while during COVID, we seemed pretty indispensable with all the

The Architectural Perspective

Two architects specializing in temperature-controlled design/build share with COLD FACTS a trend that excites them and their outlook for 2026.

Describe a design trend that excites you, and an example of its real-life application.

“Package refrigeration systems are popular, especially with the growing availability of options that utilize a variety of refrigerants. Their benefits include efficient installation during construction and simplified maintenance through standardized components.

“A Saxum Development’s building for Arcadia Cold in Joliet, Illinois, showcases this trend with the use of pre-manufactured penthouse refrigeration units. These units are convertible, allowing for flexibility as the building’s needs evolve over time.”

Kate Lyle, Principal, Lamar Johnson Collaborative

“Automated storage and retrieval systems and robotic picking are becoming more standard in new cold storage construction. These systems improve inventory accuracy, labor efficiency, and turnaround times – especially critical for high-throughput environments like e-grocery and meal kit fulfillment.

“The design of a project in Arizona was recently completed and is currently under construction. The facility will service a diversified clientele across the state and multiple platforms. The facility has a freezer, cooler with multiple temperature zones, and dry storage. The product is stored in multiple-level racking systems and distributed by a conveyor system from a multiple-level pick module. The

building has been designed with flexibility to expand the square footage of each area with infrastructure in place to convert cooler to freezer and dry to cooler. Sensors are utilized to monitor and control each of the temperature-sensitive areas.

Michael Cody, Practice Leader/ Director, Industrial Cold and Food, Ware Malcomb

What’s your forecast for the cold storage design/build market in 2026?

“I predict that in 2026, the location for new cold storage construction will increasingly be influenced by access to reliable power. While proximity to food sources or to population have traditionally driven site selection, energy availability is a critical factor in future development decisions.”

Kate Lyle

“We predict the cold storage design/build market in 2026 to remain strong, driven by several converging trends and structural shifts in supply chains, food logistics, and healthcare. Here’s our prediction based upon our recent deal flow, opportunities, and industry momentum.

“Key 2026 design build trends include a shift to spec-to-suit over speculative builds to reduce vacancy risks; more customized builds; accelerated adoption of automation-first facilities, especially in urban or high-throughput environments; modular, multi-temp, convertible temperature zones for added flexibility; and smaller, high-tech cold storage hubs built closer to population centers to support rapid grocery and meal kit delivery.”

Michael Cody

media coverage of the cold chain delivering vaccines, and the demand from food producers to expand their stores,” says Tippmann. “I believe all that attention really put our industry in the spotlight, drawing in people who didn’t know what they were doing and will likely cause us problems in the future.”

Tippmann says he doesn’t know when the recovery will be over from all that overbuilding.

“There are still a few markets that have a lot of capacity to store pallets, and there’s

still going to be recovery in a couple of those markets that were very attractive three years ago and now are sitting at 50% capacity,” Tippmann says. “But luckily, people are going to continue to eat food. So, I think it’ll be all right.” ☺

ALEXANDRA WALSH is a Senior Publishing Consultant with Association Vision and Editor-in-Chief of COLD FACTS.

EMAIL: awalsh@associationvision.com