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GCCA & CEBA **Cold Chain Innovation** Showcase & Buyers Guide

GCCA & CEBA Cold Chain Innovation Showcase & Buyers Guide is published once a year by the Global Cold Chain Alliance (GCCA), an organization that unites partners to be innovative leaders in the temperature-controlled products

CONTACT US:

Global Cold Chain Alliance Attn: Shane Brennan 241 18th Street South Suite 620 Arlington, Virginia 22202 United States

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tel +1 703 373 4300 fax +1 703 373 4301 sbrennan@gcca.org | www.gcca.org

Editorial ideas are welcome; contact Editor-In-Chief Alexandra Walsh at +1 301 523 3318 or awalsh@associationvision.com. Contact Jeff Rhodes at +1 410 584 1994 or jeff.rhodes@wearemci.com for advertising opportunities in GCCA publications.

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While the material in this publication has been compiled with care, the Global Cold Chain Alliance (GCCA) and Controlled Environment Building Association (CEBA) have not validated all of the information contained herein and do not assume any responsibility for its use, accuracy, or applicability.



About the Cover

Read case studies of the 2023 Built by the Best winners, Ti Cold and Fisher Construction Group, on page 10. (Photo courtesy of Fisher Construction Group.)



For more information on GCCA initiatives and activities follow us on LinkedIn at: www.linkedin.com/company/ global-cold-chain-alliance-gcca/

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WELCOME

MESSAGES FROM GCCA LEADERS

EBA IS A PROUD PARTNER IN THE GLOBAL COLD CHAIN ALLIANCE, AND IT IS MY HONOR TO SERVE AS CHAIRMAN THIS YEAR. WE CONTINUE TO STAY LASER FOCUSED ON OUR STRATEGY OF ACHIEVING MEMBER RECOGNITION THROUGH BUILDING future talent, promoting value, and developing expertise that is driving significant growth and success across CEBA's events and programs.

As we fast approach our 44th CEBA Conference and Expo in Ponte Vedra Beach, Florida, it's a great time to reflect on how far we have come. As we gear up for another sell-out event, attendees can look forward to excellent speakers, valuable networking opportunities, CEBA suppliers, solution providers and the highly anticipated Built by the Best competition finale. I look forward to seeing many of you there with us. See the preview article on page 18.

The CEBA Professional Training and Certificate program is also off to a strong start and we are excited to welcome students in Dallas this October. This follows a successful pilot program completed in the spring, and I'm proud of the momentum it generates in developing and recognizing industry talent. This new training and recognition program, developed for the industry, is a vital part of fulfilling our mission and purpose as an association. Find out more at https://www.gcca.org/about/controlled-environment-building/ceba-program/

As a Board, we have a clear strategy to ensure that more customers choose CEBA members for their projects. We pursue this goal because we know that distinctive expertise matters in controlled environment construction, and that we achieve this through setting high standards. We are so excited by the positive response so far, not only from those that participated, but those that have shown interest in putting forward candidates.

CEBA continues to make real progress in providing resources to the industry. Our recent work on the international fire code approach to smoke vents in controlled environment buildings is an example of engagement with code bodies and industry stakeholders. It's also a great example of the practical collaboration between GCCA and CEBA members on issues of shared interest.

The joint GCCA/CEBA Construction Codes Committee is just one case study of the great, rewarding work done by volunteers across our committees. Right now, we are asking volunteers from across member companies to step up and help shape your associations' resources and advocacy work. Places are also available on the GCCA Education Committee, CEBA Marketing and Business Development and International Committees – if you are interested, please contact the staff team.

The 2024 GCCA & CEBA Cold Chain Innovation Showcase and Buyers Guide, received alongside Cold Facts, is a who's who of the specialist contractors and suppliers leading the controlled environment building sector. Make sure to keep it close by in the months ahead.

Thank you again to everyone involved in making CEBA a success in the past year.



SAM TIPPMANN CEBA CHAIRMAN



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By Alexandra Walsh

COVER STORY



BEST IN CLASS IN AUTOMATION AND COLD

Customer perspectives on delivering controlled environment design-build.

ichael Adkins, Cold Storage Leader at BGO
Cold Storage and Michael Lynch, Senior Vice
President, Sustainable Energy at United States
Cold Storage (USCS) share their perspectives,
as cold storage building and design customers, on
automation. You will be able to hear them both, along with
other industry leaders, address this topic in the General
Session at the CEBA Convention November 11-14.

Q: Is automation the right decision for every temperature-controlled environment?

Michael Adkins: Every facility should be designed with automation in mind. Facilities from the 1970s and 1980s are still in use, so I anticipate that new facilities built today will also be operational in the 2070s and 2080s.

The key to ensuring this longevity is to plan for automation.

Michael Lynch: A cold storage warehouse needs to be operationally flexible, and automation inherently is limited operationally, so understanding the requirements from a product handling and throughput standpoint is paramount. Automation projects are typically more expensive, take a longer time to complete and require additional knowledge and training on the automation equipment and software platforms (WCS).

Automation is not always the answer and the adage "one size fits all" does not apply. There are a lot of providers and solutions to choose from so finding what works for your company is important for success.

Q: What goes into the thinking around how automation is going to impact your business and your customers?

MA: Flexibility is key. We don't want to ever say to a customer that they can't do something. We look at automation options and ensure they can fit in what is being built today as well as future concepts. This ranges from utilizing conventional racking and AGVs, to Turrets and VNAs, to multidirectional pallet moles and layers pickers, as well as rack-support AS/RS with integrated picking, and we ensure we can do all of these things in our cold chain spaces.

ML: Getting started in warehouse automation is a big step for a company to undertake. You have to find a partner that will help develop the right solution for the warehouse and your customer(s). We always start with the data such as SKU profiles and velocity, order profiles, order inventory levels, pallet height and weights. From this a material flow diagram (MFD) is developed and tested through computer modeling. Once the MFD is confirmed, the project would move into early stages of design and rough order of magnitude (ROM) costing before moving forward with project justification.

Q: Do you to have to educate your customer on what their needs are?

MA: We let the customers educate us through collaboration and shared best practices. We are clear if we think they are too focused on one item and help ensure we can all be successful. IF needed, we will push back and support our beliefs with data.

ML: Automation does add another level of complexity, as we have to ensure that the pallets and product going into the automated systems meet the quality standards necessary to safely and efficiently move throughout the systems. Typically, we do come across products that will not work in our automation systems for any number of reasons, and we communicate with our customers, so they know what we are experiencing, and work with them to address any issues and challenges together.

Q: What's different when building an automated site that is not customerspecific?

MA: When a facility is not customer specific, it limits the depth of automation you can install from day one.

ML: When designing an automated facility, we need to consider room temperature and whether temperature convertibility is necessary, maximizing the throughput in the design so the operation can handle peak days, and ensuring that we can take taller pallets and pallets that sometimes don't fit in a standard 40x48 footprint. This is why the data and the development of the MFD is so important. Operational flexibility and adaptability are the keys to supporting our customers.

Q: How do you adapt to a new client and also ensure the building is sustainable and serviceable into the future?

MA: It starts with front-end planning and determining what should be automated versus what can be automated. I think it's key all products still come in on pallets and need to be stored. If you can be mindful of pallet heights and facility density, a large part of the core business can be automated.

ML: Along with our design process, we engage our business development and operations teams to understand the challenges and opportunities, and our automated systems are built with energy efficiency and longevity in

Maintain substantial amounts of automation spare parts to maximize system up time. Also important are cooperative relationships with your automation providers, regular meetings to review systems performance, scheduling preventive maintenance and future upgrades - mechanical, electrical and software.

Q: Levels that rise and lower to fit different pallet heights? What would you like to see in the automated cold storage facility of tomorrow?

MA: Flexibility will remain crucial. I would appreciate automation options that are less integrated into the construction of the facility and can be added based on customers' needs. Possibly, moved or even sold back to third parties. Further standardizing operating systems to allow technologies from different companies to work together would allow for more entrants into the market performing specific tasks.

ML: Although low-oxygen fire protection exists, it is not yet prevalent here in the United States, therefore many automated systems still rely on in-rack fire protection, making the adjustment of pallet storage heights cost prohibitive. That being said, the ability to quickly change pallet location heights would be a game changer as it would allow us to maximize storage space and better utilize energy resources when cooling rooms.

Q: How important is it to have automation, integration and construction expertise under a single umbrella in one company?

MA: Each company should have its experts and teams constantly learning and expanding their automation expertise. It's okay to have multiple "umbrellas" as long as they can collaborate effectively. However, having that single source to bring it all together will continue to be a differentiator for companies.

I feel that the industry needs to look at automation like it does cold storage overall. The Built by the Best award presented by CEBA heavily considers the number of participating CEBA members as part of the project scoring criteria. It makes sense because these contractors are experts in cold storage and understand what is necessary for a project to succeed, not just for their trade but overall. CEBA members have excelled in this industry by providing exceptional service, understanding customer needs and providing education on aspects that may not be clearly defined in specifications or project drawings. Additionally, these members collaborate to construct top-notch cold storage facilities.

Successful cold chain automation teams must have firsthand experience in the field. This involves collaborating with customers and fellow contractors. If they can bring it all together, both automation and cold, they will be best in class.

ML: We have found some great partners to work with. Building a strong relationship with open communication has been key to our success. USCS continues to develop a team that understands all facets of our automation system and requirements.

Automation effects everything from operations to transportation to the customer. Change is not always comfortable but needs to be promoted and achieved. Getting everyone on board and engaged early in the process greatly helps.



Why NH₃ & CO₂?

EVAPCO is focused on the innovation and manufacturing of industrial refrigeration equipment and systems designed for use with the leading two natural refrigerants in the world – NH₃ and CO₂. Synthetic refrigerants dominated the commercial market for decades, but the passing of the American Innovation and Manufacturing Act (AIM Act) in early 2021 has solidified the phasedown of production and consumption of HFCs. Many states, and now the federal government (specifically the EPA), started this initiative, and are now executing it, because of the harmful effects HFCs have on the environment.

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Evapcold® LCR products include several state-of-the-art innovations in heat transfer technology, energy efficiency and microprocessor control for reliable low charge operation. EVAPCO has invested heavily, and continues to do so, in developing new models and configurations under the Evapcold® brand and the product model nomenclature "LCR" (Low Charge Refrigeration). This includes LCR-P Penthouse units, LCR-C Chillers and the new LCR-S Split system units.

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ecognizing the increased level of competition

outstanding work submitted for 2023, the Built by the Best awards, created by the Controlled **Environment Building** Association (CEBA), a core partner of the Global Cold Chain Alliance (GCCA), honored two winners one for a project under \$35 million and one for a more than \$35 million project.

The winners were announced at the 2023 **CEBA** Conference with Fisher Construction Group taking first place in the over \$35 million project category and Ti Cold went home with first place in the under \$35 million group.

FISHER CONSTRUCTION GROUP **AND TI COLD WIN 2023 BUILT BY THE BEST AWARDS**

Top cold storage design competition recognizes two best-in-industry projects.

By Keith Loria



Ti Cold's 2023 Built by the Best award-winning project for Core X. The facility's tight proximity is evident in an aerial shot. (Photo courtesy of Ti Cold.)

Under \$35M Winner - Ti Cold

Core X Complete is noted for providing frozen and refrigerated warehousing and truckload shipping solutions throughout New England and the entire Northeast of the United States. When it was time to expand, the company hired Ti Cold to master plan a high-density, 83,000-square-foot cold storage facility with 17,700 pallet positions in Sturbridge, Massachusetts.

Challenges From the Start

"They started kicking around a site in Massachusetts that was compact and tight, and they needed to get as many pallets as they could," says Rob Adams, Executive Vice President of Ti Cold. "We looked at a traditional layout but we just couldn't get that many pallets, so we needed to make the facility as dense as we could, and we ended up with mobile racking."

The \$28.5 million facility was selected as the winner of the Built by the Best due to Ti Cold's investigative and creative engineering team, finetuned implementation from project management, and commitment to excellence, all of which resulted in a facility that will contribute to the supply chain for decades to come.

"Every square foot of this project is simply well built; from the installation of major components like the mobile racking down to the minute details of curbs," Adams says. "When you walk into Core X, you know you are standing in something solid."

The project was not without its challenges. From a timeline standpoint, there were some initial issues. As it had to be built on only 7.05 acres, that created some logistical pressure. Plus, the project site was next to a busy highway with

a number of residential and industrial areas nearby.

COVID-induced supply chain shortages demanded proactivity to ensure switchgear delivery, so the project schedule stayed intact.

Plus, being in Massachusetts, which is known for its rocky earth, blasting was required on the site. Add to that the fact that winter conditions froze the subgrade, it required a high level of coordination to progress permitting.

"Construction on such a tight site resulted in two off-site storage locations and their ensuing logistics coordination, as well as complex storm drain construction in lieu of a retention pond," Adams says. "COVID-induced supply chain shortages demanded proactivity to ensure switchgear delivery, so the project schedule stayed intact."

Additionally, spot-on sequencing was necessary for intricate concrete and rail installation for mobile racking and coordination with prepunched beams for in-rack sprinklers.

"We had a timeline, but we needed to deal with all of these things," Adams says. "The project was also halted by the Massachusetts Department of Transportation. But we overcame all challenges, including supply chain disturbances, and the budget was sustained."

Advanced Design

Some of the innovative features include convertible rooms cooled by transcritical CO2 refrigeration, which allow for easy adaptation to the client's needs. Three underground storm basins were engineered in order to coordinate the necessary above-ground space (truck parking, employee parking, fire loop, and water tower) while maximizing the facility's square feet. And also installing convertible cooler/ freezer rooms that are adaptable at very low cost and allow the facility to meet future needs without having to add on to its footprint.

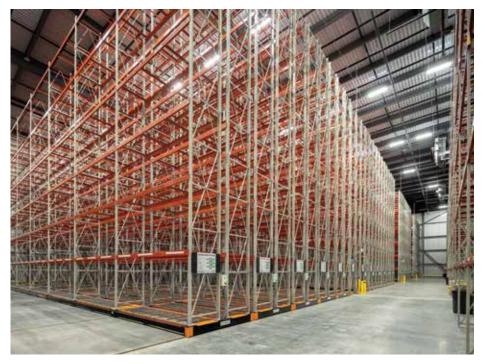
"It was the mobile racking that was probably the biggest accomplishment," Adams says. "The facility hosts 17,700 pallet positions, compared to less than 10,000 pallets with standard stationary racking."

Ti Cold has built many similar facilities, but Adams believes the craftsmanship for this project is one of its best.

"When you just look at this facility, the fit and finish of this building is just over the top," he says. "It was a very intricate building and really fits within the landscape of the community."



M&M Carnot's Transcritical Co2 Refrigeration System. (Photo courtesy of Ti Cold.)



Flex space mobile racking in the finished facility. (Photo courtesy of Ti Cold.)

2023 Built by the Best Award-Winning **Supplier Profiles**

These are the companies integral to the success of the Ti Cold winning project.

Albany - Dynaco High **Performance Doors.**

All Weather Insulated Panels

Coldbox Builders

Colmac Coil Manufacturing Inc.

CSI of Virginia

Fastener Systems Inc.

Frank Door Company

FREEZ Construction

Jamison Door Company

M&M Carnot

Metl-span

Puga Thermal Services

Rite-Hite

Shambaugh & Son, L.P.

The Fricks Company

Ti Cold



The racking rails, seen here pre-pour, had to be precision calibrated. (Photo courtesy of Ti Cold.)



Underground storm drainage basins were used because of the tight site space. (Photo courtesy of Ti Cold.)



Over \$35M Winner – Fisher Construction Group

When Netherlands-based NewCold, which specializes in temperature-controlled warehousing and distribution, was seeking to have built the largest automated cold storage facility in Indiana, it turned to Fisher Construction Group.

"This was our third negotiated highrise cold storage in the United States with NewCold," says Christopher Wright, Project Manager for the job. "NewCold was looking for a partner it could count on, and it trusted and selected Fisher for its third-consecutive project. Fisher's strategy is to provide NewCold - and all of our customers - with the best value and best service on all their projects to help them meet their customers' needs."

The \$62.3 million job was selected as the winner of the Built by the Best award in the over \$35 million category. The completed 464,646-square-foot Indianapolis cold storage facility was designed with state-of-the-art technology, including automated storage and retrieval systems (ASRS) to automatically move and store products in the dark high-bay warehouse.

"Like many others, the project started during the pandemic, which required our team to pivot from a LEAN Construction just-in-time approach to a batch and queue process to ensure procurement aligned with our client and construction needs," Wright says. "The primary portion of the building was done on time, but our racking, on the other hand, was directly impacted by global

supply chain challenges and arrived after the anticipated start date."

To ensure it was able to meet the needs of NewCold and their client, the Fisher team needed to crash the racking construction schedule.

"For approximately four months, our site was open from 4:30 a.m. to 2:30 a.m., seven days a week, with a 250,000-square-foot area fully illuminated to ensure preassembly measures could occur during the hours of darkness," Wright says. "The hard work and efforts of both Voestalpine and Global Metal Construction truly allowed the project to be

delivered on time for NewCold and its client's "first pallet in" date."

Overcoming Challenges

The project was divided into three sections, the 250,000-square-foot highbay, dispatch area and layer pick area, and each presented its challenges.

"Ordering material well ahead of time was a constant challenge," Wright say. "On NewCold Phase I, our roofing division, Fisher Roofing Services, spearheaded by Darrell Kidwell with alignment and agreement amongst our team members and shareholders, purchased



The rack-supported building, which allows far greater storage heights, is 130-feet tall. (Photo courtesy of Fisher Construction Group.)



Once a pallet is unloaded, it is placed on an inbound conveyor where the system tracks each pallet and designates it a position in the freezer. (Photo courtesy of Fisher Construction Group.)

approximately two football fields of underfloor insulation," Wright says. "During this period, many projects were impacted by the global challenges and lull in production of insulation."

Kidwell looked ahead, identified this early on, and made a substantial purchase long before it became an issue on the project.

"In my opinion, all challenges have solutions; this example is just one of many that was identified, mitigated and addressed long before becoming a true challenge to the project schedule and deliverable to NewCold," Wright says.

In addition, in the Midwest, at the time, this was the largest project as it related to the needs and requirements of concrete reinforcement.

"Tyler Vuurman from B&B Site Maintenance looked ahead at the issue and pulled as much rebar as he could out of local facilities," Wright says. "When they were depleted, he moved to the next resource. During the construction of NewCold Phase I, by the end of the required procurement process, we were pulling rebar out of South Carolina 630 miles away from the project site."

For Wright, all challenges have solutions, the driver is how badly one wants to address the challenge.

Another challenge was the thermal principles separating areas by zones. With multiple elevations connecting separate portions of the building and environments, ranging from -19 F to chilled 40 F environments to an exterior that can often have a heat index well over 100 F, it took a lot to ensure everything was done perfectly.

To solve this, Fisher's thermal team designers and onsite team conducted multiple thermal detail reviews prior to construction, collecting insight from various members of both companies to create a working value engineered solution that made sense to both parties.

Innovative Features

Unlike typical large storage spaces, the NewCold facility is innovative in several key areas. For example, the structure that carries the weight of the walls and roof, also doubles as the racking for the product stored on pallets.

"Traditional storage facilities usually comprise a steel supported building, with standalong racking independent of the structure," Wright says. "Rack-supported buildings allow for far greater storage heights. This project in particular is 130-feet tall. Typical cold storage facilities rarely crest 50 feet in height."

Fire protection within the freezer was accomplished by lowering the concentration of oxygen and replacing it with nitrogen, so any fire that potentially starts quickly is snuffed out by lack of oxygen to sustain burning. This method is used as an alternative to traditional water sprinkler systems.

"Because of the low oxygen nature of the freezer, all pallets in and out of the freezer are handled by an automation system comprised of conveyors, monorails and cranes," Wright says. "Forklifts are only used to unload and load the trucks. Once a pallet is unloaded from a truck, it is placed on an inbound conveyor. From there, the system tracks each pallet, designating a position in the freezer where through a system of conveyors, mono-

rails and cranes, a pallet is delivered. The process is reversed when the pallet is designated to be loaded onto an outbound truck."

The NewCold facility was unique in its design for the sheer size and scale of the facility. Other elements include the almost total automation of product storage and retrieval with 17 ASRS cranes; the requirements set forth with a layer picking building with a chilled environment and a -19 F environment; and for the alternative method used for fire protection within the freezer environment that replaced traditional water sprinklers with a low oxygen system provided by Wagner Fire Protection.

A Top Team

At 141-feet high, half the size of the mammoth Lucas Oil stadium, home of the Indianapolis Colts football team, the completed facility offers more than 100,000 pallet positions and its advanced cold chain solution ensures that processes are sustainable and traceable.

Wright believes that the largest accomplishment behind any project is the people, and the Fisher team helped make this project award winning.

"Working as a traveling project manager requires a personal investment in communities and the ability to quickly build relationships with trade partners," Wright says. "On NewCold Phase I, more than 425,000 hours were worked and at peak times, over 140 men and women were on the project. Building a team from all walks of life, from the laborer to the structural engineers and architects, and putting a goal in place that all parties can get behind is by far the largest accomplishment. I am personally proud of all of the work that went into achieving this goal, and the successful completion of NewCold Phase I."



Because of the low oxygen nature of the freezer, all pallets in and out of the freezer are handled by an automation system comprised of conveyors, monorails and cranes. (Photo courtesy of Fisher Construction Group.)

Among those who played a big part in the project were Jeff Coville, Senior Superintendent; Anthony Prus, Project Superintendent; Travis Fernandez, Onsite Safety Manager; and Josh King, Project Engineer.

The Fisher motto is "Builders First," meaning that when a challenge occurs, the solution or start of a solution lies in front of them with its onsite team, coordination and assistance as needed from industry experts, and a hands-on approach, often involving whiteboards and team calls, to ensure all parties agree, are aligned, and can support the works, according to Wright.

"Our company, which is based out of the Pacific Northwest, is made up of like-minded individuals spearheaded by leaders within the company who believe no matter what the client's needs are, that it is important to address the needs and challenges of a project head on," Wright says. "Dan Powers' leadership has and continues to exemplify that no project is too small nor too large and that solutions can always be found when working together as a team."

2023 Built by the **Best Award-Winning Supplier Profiles**

These are the companies integral to the success of the Fisher Construction Group winning project.

Baltimore Air Coil

Colmac Coil Manufacturing Inc

Fastner Systems Inc

M&M Carnot

Mayekawa USA Inc

Nucor

Open Concepts

Republic Refrigeration

Ricker Thermline

Rite-Hite

Shadco LLC

Wagner Fire Safety @

KEITH LORIA is an award-winning journalist who writes on topics as diverse as sports, business and technology.

EMAIL: freelancekeith@gmail.com







ARE YOU PLANNING TO BUILD OR MAKE CAPITAL **INVESTMENTS OR UPGRADES IN YOUR FACILITIES?**

- Do you plan to build a new facility or renovate an existing one?
- Do you plan on making any capital investments in refrigeration, material handling, doors or other equipment related to a construction
- Do you plan on fixing any floor, walls, roofs, update your docks or make improvements to anything else inside the building?

If you answered yes, you wont want to miss the Controlled-Environment Building conference & Expo occurring November 11-14, 2024, Ponte Vedra Beach, Florida, United States | Sawgrass Marriott Golf Resort & Spa

FACILITY OWNERS AND EXECUTIVES ANNUALLY SEND THE FOLLOWING EMPLOYEES TO LEARN AND CONNECT WITH THE WORLDS TOP PROVIDERS:

- **Chief Engineers**
- Facility Engineers & Maintenance
- Heads of construction or individual that oversees/liaise with general contractors, refrigeration contractors
- Anyone involved in the procurement or planning for capital investments equipment related to construction projects to the annual conference

BENEFITS OF ATTENDING



CEBA Construction Café is to create an exchange of ideas and stimulate facilitated discussion on critical industry issues. Participants choose from 10 different topics, join the table at which the issue is being discussed, and spend 20 minutes sharing ideas. Participants then switch tables to discuss another topic.



Engage with leading solutions provider in the expo. Over 50 providers of doors, floors, racking, roofing, thermal envelope, refrigeration equipment & contractors, fire protection, automation & material handling and more.





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By GEA Heating and Refrigeration Technologies

e are living in a time where quality cold chain management has never been more important. Estimates suggest that approximately onethird of perishable goods worldwide do not reach the consumer due to inadequate cold storage or distribution. As the earth's population continues to swell, keeping post-harvest losses to a minimum has never been more critical.

In light of these issues, there is a growing focus on sustainable practices within the cold chain industry. Sustainable refrigeration technology can help improve efficiency, reducing energy consumption and carbon emissions, futureproofing operations for the years to come.

Aiming High in Storage Capacity and **Carbon Footprint Reduction**

Some of the latest refrigerated storage facilities are addressing these challenges by using a high bay design. This allows for greater storage capacity within a smaller footprint.

High bay storage typically uses automated

storage and retrieval systems (AS/RS), which involves the automated robotic stacking of items. So, the only movement within the store is the stacking crane going up and down. As a result, air turbulence within the space is kept to a minimum, allowing a more natural flow of air around the building and thus a more consistent temperature throughout.

As well as enabling the goods to be maintained at an even temperature, the high bay automated model also helps to reduce energy bills. In the traditional cold storage model, infiltration of outside air through the structure and door openings of the building can sometimes account for around 50% of the refrigeration load. This requires compressor power, and when compressors are running, the condensers also need to run. An oxygen reduction system is also needed, adding a further cost.

Opposite Page: Example of cold store refrigeration plant featuring three GEA BluAstrum chillers.

The Cold Lake Model

In this model principle and natural convection reduces the fan power used for air distribution compared with traditional cold storage constructions. Outside air filtration and interior air turbulence are also minimized, so more expensive levels of refrigeration are not needed to compensate for disruption of cold air. Many leading cold chain technology providers are convinced that this model, combined with digitization and automation is undoubtedly the future of cold chain. The reduced energy usage is also equivalent to a reduction in emissions.

One of the most efficient high bay cold store facilities in Europe has been developed by Magnavale in Lincolnshire, UK. At 47 meters high, the site is the tallest high bay cold store in the UK and will be powered using 100% renewable sources, featuring a fully ammonia-based refrigeration plant from technology provider GEA.

Working in conjunction with Magnavale, GEA developed a bespoke refrigeration solution for the new facility, which was designed with the capability to reach minus 28 degrees Celsius, so it can be used for storing a wide range of products including fish and ice cream. GEA's in-house computational fluid dynamics (CFD) simulations illustrated the air flow and temperature profile based on the cold lake principle and demonstrated its excellent efficiency compared to conventional refrigeration methods.

Commenting on the installation, David Blankley, Director Advanced Refrigeration at GEA Heating & Refrigeration Technologies said: "The combination of the technology used with the cold lake design has maximized the cooling efficiency and sustainability of the plant. Ammonia refrigeration is a future proof choice because of its superb efficiency and it has no harmful effects on the environment."

Smart energy hubs combining heating and cooling

Such high bay cold storage projects are part of an emerging and exciting trend in the cold chain industry. With our growing population, environmental protection and energy efficiency are vital. Moving beyond just the cold storage and distribution of food, some of the latest cold chain facilities are also combining refrigeration with heat recovery as part of a wider energy hub concept.

At the SmartParc SEGRO facility in Derby, UK, food is being brought to consumers in a way that is faster and fresher than ever before. The processing, packing and logistics of food is joined up seamlessly on one site in a convenient location with easy access to major transport networks. To maximize efficiency, SmartParc has had a centralized heating and refrigeration plant installed. Waste heat from the refrigeration plant is recovered, using an ammonia-based heat pump. It is then redistributed throughout the site, providing heating and vastly reducing electricity use and carbon emissions.

With an increasing number of countries banning the use of chemical substances that damage the environment, installing a combined ammonia-based refrigeration and heat pump system can futureproof facilities for decades to come.

Cost-effective natural refrigeration

As well as the obvious benefits to the environment, energy efficient and sustainable refrigeration is also highly cost-effective.

When the Godden Food Group in Australia relocated and built a 27,000 m³ cold store, the company knew that a sustainable refrigeration system was the best way forward for the business and the planet. GEA recommended a centralized low-charge ammonia refrigeration system, noting that significant long-term savings on energy costs could be achieved.

The low-charge system contains very little ammonia, around four to five times lower than a conventional liquid overfeed system. Because it runs at a much lower refrigerant pipeline pressure drop, it is highly energy efficient.

The plant at Godden Foods is making energy savings of around two-thirds compared with an air-cooled HFC system. And the technology, if correctly maintained, should on average provide 30 to 40 years of reliable service. Since ammonia is one of the cheapest available refrigerants and has a long lifespan compared to synthetic refrigerants, the investment will remain energy efficient for many years into the future.

Reducing waste, carbon footprint and costs

Preventing excess heat from being lost to the environment can save vast amounts of energy, reducing emissions and operational costs. By utilizing that energy as part of the process or by selling it to another service such as district heating the heat is not wasted and significantly improves environmental footprint.

Learn more at GEA.com/coldstorage.



Example of GEA integrated cooling and heat pump machine room.



Join Your Colleagues in November in Florida!

he 44th Annual CEBA Conference & Expo will be held November 11-14, 2024, at the Sawgrass Marriott Golf Resort & Spa in Ponte Vedra Beach, Florida. The annual CEBA Conference & Expo is the only event in the world dedicated to best practices in controlled environment facility construction, design and maintenance. The event draws more than 350 controlled environment facility construction, logistics and supply chain operations professionals from around the world who want to gain valuable insight to improving their business.

General Sessions

The general sessions at the CEBA Conference & Expo provide attendees with a thorough look at the latest innovations in controlled environment design and building.

The 5 Es of Turning Customers Into Raving Fans

Jesse Cole, aka "the guy in the yellow tuxedo," Founder of Fans First Entertainment and the owner of the world-famous Savannah Bananas as well as the Party Animals and Firefighters.

Jesse Cole, the inventor of Banana Ball, has

introduced a fast-paced and entertaining version of baseball with unique rules, including a two-hour time limit and the ability for fans to catch a foul ball for an out.

With the mantra "Fans First. Entertain Always," the Savannah Bananas are on a mission to make baseball fun by creating the Greatest Show in Sports. The team has sold out every game since their inaugural season, growing a ticket waitlist of more than 2 million fans worldwide, and it boasts more than 15 million social media followers with features on major media outlets and a documentary



The Customer Perspective: Delivering on Controlled Environment Building & Design

Moderator: Marko Dzeletovich, CEO & Founder, Coldbox Builders/Immediate Past Chairman, CEBA

Invited Panelists: Michael Adkins, Cold Storage Industry Leader, BGO; Michael Lynch, Senior Vice President, Sustainable Engineering, United States Cold Storage; Mike Tecza, Vice President, Construction, Americold

This session will delve into the practical challenges and innovative solutions

in building, designing and maintaining temperature-controlled environments and highlight firsthand customer experiences with building designs, technologies and collaboration strategies that ensure optimal facility project delivery. Learn about the latest advancements, common challenges and how end-user collaboration is shaping the future of temperature-controlled infrastructure.

Whether you're involved in construction, facility management or supply chain logistics, this discussion will provide valuable insights into achieving efficiency, compliance and sustainability in temperature-sensitive environments. (Want to know what to expect from this session? See questions and answers with panelist Michael Adkins in the sidebar.)

Construction Café

The Construction Café is a roundtable discussion component of the program where attendees will participate in valuable dialogue with their peers. Participants will engage in up to three fast-paced, 20-minute discussions and choose from over 10 different topics.

How will this work? Each participant will receive a list of 10 different questions, topics and/or issues. Each topic will correspond to a numbered table in the ballroom. Participants join the table/topic of their choosing and spend the next 20 minutes discussing that topic with their peers. The goal is in 20 minutes, each group will share tools and ideas and have a stimulating conversation about a particular topic. That will happen two more times. By the end of the entire session, each participant will have spent 20 minutes with three different topics/issues/questions.

Why are we doing this? The Construction Café allows CEBA conference attendees the chance to share and discuss relevant topics important to them. Everyone will be sure to learn something new and carry on the discussion throughout the conference.

Previous topics for the Construction Café included:

- Supply Chain Disruptions & Dynamics
- Automation
- Recruitment & Retention
- · Refrigeration Regulations
- Consumer Trends
- Economic Trends
- Energy Efficiency
- Technology/Innovation
- Emerging Markets/ Non-Food Channels
- Controlled Environment Design

44th CEBA Conference & Expo Exhibitors



Built by the Best Award

The CEBA Built by the Best Award was created to acknowledge association members around the globe for their expertise and innovation in constructing, renovating and/or modernizing controlled environment buildings across the world. Buildings recognized with the Built by the Best Award seal represent some of the most innovative and complex facilities built around the globe according to the intricate, unique standards set forth by the controlled environment industry.

Going into its ninth year in 2024, the award program includes two award categories. One

award recognizes buildings constructed under \$35 million (USD) and the other award is for projects over \$35 million (USD). The award recognizes the varying level of controlled environment buildings being constructed globally throughout the cold chain. Applicants are welcome to submit projects in each category.

This award is open to project teams in any country comprised of contractor/design-build companies and processor/end-user/warehouse/third-party logistics companies that meet the following criteria:

• Contractor or design-build company



28th GCCA European Cold Chain Conference 26-28 March 2025 Copenhagen, Denmark Global Cold Chain Alliance

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must be a CEBA member. Processor/end user/warehouse/third-party logistics company does not need to be a member.

- · Building must maintain a controlled environment.
- Projects must be completed within the timeframe of January 1, 2023 - March 31, 2024.
- Submission must be received by the submission deadline. Late applications will not be accepted.
- Project must have been completed on or ahead of schedule.

The Expo

The Expo is an experience not to miss, and features the latest technologies, solutions, products and services from some of the most respected names in the industry. Here's just a small sampling of the products and services that will be featured at this year's expo:

- Cold Storage Contractors
- Doors
- Energy Efficiency Solutions
- Fire Detection Systems
- Flexible Walls
- Flooring
- Insulated Panels
- Insulation
- Lighting
- · Materials Handling
- Racking
- Refrigeration Solutions
- Roofing

Networking

Prominent social activities, receptions and the exhibit hall all give members and industry suppliers unparalleled access to build partnerships with construction/design-build, warehousing and food processor decision-makers. Other networking opportunities include a first timer and new member reception, an opening night reception, a rooftop networking reception, time, set aside to catch up with peers and vendors for private business meetings, a golf tournament, a pickle ball tournament and a farewell brunch.

This is the only event in the world dedicated to best practices in controlled environment facility construction, design and maintenance, and serves to further CEBA's vision to be the association where anyone looking to build, renovate or modernize a first-rate, innovative facility comes to find the most experienced designers, contractors, manufacturers and suppliers.



Thank you to our 44th CEBA Conference & Expo Sponsors!

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COLD CHAIN BUYERS GUIDE

GCCA & CEBA COLD CHAIN INNOVATION SHOWCASE & BUYERS GUIDE

The 2024 GCCA & CEBA Cold Chain Innovation Showcase & Buyers Guide includes only companies that are members of the Global Cold Chain Alliance (GCCA) and the Controlled Environment Building Association (CEBA), organizations that unite partners to be innovative leaders in the temperature-controlled warehousing, design-build, transportation and logistics industry.

This directory is your source for any company supplying products and services to the temperature-controlled warehousing, logistics, transportation and construction industry.

To access listings that contain full company details for all GCCA and CEBA Members, please visit the online GCCA and CEBA Directory & Buyers Guide at gcca.org/directory/all.

To be featured in this buyers guide and the online directory, contact James Rogers at jrogers@gcca.org. For listings of temperature-controlled warehousing and logistics providers, please refer to the 2024 GCCA Refrigerated Warehouse and Logistics Showcase and Member Directory.

Members as of October 1, 2024

Air Curtains and Doors

AMERICAN MOTORS PILALIS SA

Athens, Greece www.ampilalis.com

Berner Air Curtains

New Castle, Pennsylvania United States www.berner.com

Plymouth, Minnesota United States www.everidae.com

Hormann High Performance Doors Burgettstown, Pennsylvania United States www.hormann-flexon.com

Jamison Door Company

Hagerstown, Maryland United States www.jamisondoor.com

KPS Global

Fort Worth, Texas United States www.kpsglobal.com

Mayekawa U.S.A., Inc.

Katy, Texas United States www.mayekawausa.com

Open Concepts

Newport Beach, California United States www.openconcepts.biz

Southern Thermal Solutions Inc.

Mt. Crawford, Virginia United States

www.sthermalsolutions.com/contact-us Tracy Cold Storage Construction, Inc.

Point Lookout, New York United States www.tracycoldstorage.com

Trinity Insulation Company

Garland, Texas United States

Unitherm, Inc.

Charlotte, North Carolina United States www.unitherm1.com

Ammonia Screw Packages

American Refrigeration LLC

Jacksonville, Florida United States www.americanrefrigerationusa.com

Cold Core Group

Menomonee Falls, Wisconsin United States www.coldcoregroup.com

IHG Mechanical Holdings LLC Fort Worth, Texas United States www.ihgmechanical.com

Ammonia/Chemical Supplies

KMI Services

Lakeland Florida, United States

Tanner Industries Inc.

Southampton, Pennsylvania United States www.tannerind.com

Ammonia/Environmental Monitoring Equipment

A Perks Consultancy Enterprises

Durbanville, Western Cape South Africa www.andrewperks.co.za

Advanced Energy Control, Inc.

Randolph, Wisconsin United States www.advancedenergycontrol.com

Bridge Industrial Partners

Rosemont, Illinois United States www.bridgedev.com

CO2Meter

Ormond Beach, Florida United States www.CO2Meter.com

Logix Refrigeration Controls

Kirkland, Washington United States www.logix-controls.com

MRBraz & Associates, PLLC

Azle. Texas United States www mr-braz com

Republic Refrigeration, Inc.

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Tanner Industries Inc.

Southampton, Pennsylvania United States www.tannerind.com

Architect

ARCO National Construction

St. Louis, Missouri United States www.arconational.com

Beam Professionals

Dallas, Texas United States www.beamprof.com

Bosz Arch, Inc.

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Culver City, California United States www.thelic.com

Peak Design Company

Jacksonville, Florida United States www.peakdesigncompany.com

RL COLD - Atlanta, Georgia

Atlanta, Georgia United States www.rlcold.com

The Weitz Company

Cedar Rapids, Iowa United States www.weitz.com

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Irvine, California United States www.waremalcomb.com

Audit and Inspection Provider

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Highland, Utah United States www.apsm.net

Graycor Construction Company

Oakbrook Terrace, Illinois United States www.gravcor.com

Mole Master Corporation

Marietta, Ohio United States www.molemaster.com

Automation

ABB SPA

Torino, Italy

Al Storage Solutions

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Distribution X LLC

Flowery Branch, Georgia United States www.distributionxusa.com

Engineered Products

Greenville, South Carolina United States www.engprod.com

Loadsmart

Chicago, Illinois United States www.opendock.com

LTW Intralogistics, Inc.

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SSI Schäfer Automation GmbH

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Indianapolis, Indiana United States www.Stakkdstorage.com

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York, Pennsylvania United States www.westfaliausa.com

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Ethium by EControls

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Clothing

Ergodyne

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Clothing and Personal **Protective Equiptment**

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Mt Gambier, South Australia Australia www.badgeraustralia.com.au

Goldfreeze Europe BV

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RefrigiWear Inc.

Dahlonega, Georgia United States www.refrigiwear.com

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AC&R Specialists

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ARCO National Construction

St. Louis, Missouri United States www.arconational.com

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Controlled Environment Systems LLC Mansfield, Massachusetts United States

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Cresa

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Fisher Refrigeration, Inc.

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Gartner Refrigeration Inc.

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International Coolers, LLC

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Keeley Construction, Inc.

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Roselle, Illinois United States www.panelsplus.com

Performance Contracting Inc. Lakeland, Florida United States www.pcg.com

Polar Temp Thermal Insulation LLC Monticello, Georgia United States www.polartempthermal.org

Polytemp Corporation Baltimore, Maryland United States www.polytempcorp.com

PowerShinale

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Preston Refrigeration

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Woodstock, Georgia United States www.primusbuilders.com

Proform Thermal Systems, Inc. North Branch, Minnesota United States www.proformthermal.com

Rain City Industrial Langley, British Columbia Canada www.raincityindustrial.com

Refrigerated Structures of New England Lakeville, Massachusetts United States

RINAC India Limited Bangalore, India www.rinac.com

RL COLD - Atlanta, Georgia Atlanta, Georgia United States www.rlcold.com

Ryan Companies US, Inc. Minneapolis, Minnesota United States www.ryancompanies.com

SBP Builders Salisbury, Queensland Australia www.sbpa.com.au

Sealand Building Group Inc. Bedford, Nova Scotia Canada www.sealandgroup.ca

SINA

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SNL Enterprises USA, Inc. Louisville, Kentucky United States www.snlenterprises.net

Southeast Concrete Systems Alpharetta, Georgia United States www.seconcretesystems.com

Sprinkmann Sons Corporation Milwaukee, Wisconsin United States www.sprinkmannsonscorp.com

Startec Refrigeration Services, Ltd. -Calgary, AB CALGARY, Alberta Canada www..Startec.ca

Steel Worx Solutions LLC Groveland, Florida United States

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SubZero Constructors, Inc. Rancho Santa Margarita, California United States

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Global Energy Partners Frisco, Texas United States www.globalenergy.partners

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www.gleesonllc.com

Gray Construction

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Graycor Construction Company

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Griffco Design/Build, Inc.

Kennesaw, Georgia United States

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Nampa, Idaho United States www.hansen-rice.com

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Elmhurst, Illinois United States

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Keeley Construction, Inc.

Villa Park, Illinois United States www.keeley.com

KPS Global

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www.kpsglobal.com

Lobar Associates

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www.lobarassoc.com

Lost Creek Construction, Inc.

Hahira, Georgia United States

Maple Reinders Constructors Ltd. Mississauga, Ontario Canada

www.maple.ca

Baton Rouge, Louisiana United States www.mappbuilt.com

Matheson Constructors

Aurora, Ontario Canada www.mathesonconstructors.com

McShane Construction Company Rosemont, Illinois United States

www.mcshaneconstruction.com

Mecalfab Ltd. Port of Spain, Trinidad and Tobago

www.mecalfab.com

Menard USA

Metl-Fab, Inc.

www.metl-fab.com

Carnegie, Pennsylvania United States www.menardusa.com

Omaha, Nebraska United States

Morgan Harbour Construction, LLC WIllowbrook, Illinois United States www.morganharbour.com

Moy Industrial Electric Inc. Downey, California United States

North American Fire Protection Fort Wayne, Indiana United States www.nafpco.com

North Scientific division of North Mechanical Services, Inc. Bloomington, Indiana United States www.northscientificservice.com

Oomiak Pty Ltd. Dudley Park, South Australia Australia www.oomiak.com.au

Peak Construction Corporation Rosemont, Illinois United States www.Peakconstruction.com

Peak Design Company Jacksonville, Florida United States www.peakdesigncompany.com

Perley-Halladay Associates Inc. West Chester, Pennsylvania United States www.perleyhalladay.com

Woodstock, Georgia United States

Rain City Industrial Langley, British Columbia Canada www.raincityindustrial.com

www.primusbuilders.com

Republic Refrigeration, Inc. Monroe, North Carolina United States www.republicrefrigeration.com

Ricker Thermline Martinez, California United States www.rickerthermline.com

RL COLD - Atlanta, Georgia Atlanta, Georgia United States www.rlcold.com

Ryan Companies US, Inc. Minneapolis, Minnesota United States www.ryancompanies.com

Samet Corporation Greensboro, North Carolina United States www.sametcorp.com

Sealand Building Group Inc. Bedford, Nova Scotia Canada www.sealandgroup.ca

Shambaugh & Son, L.P. Fort Wayne, Indiana United States www.shambaugh.com

Sistemas de Refrigeracion Totales SA de CV Estado de Mexico, México Mexico www.srtMexico.com.mx

Jacksonville, Florida United States www.stellar.net

SubZero Constructors, Inc. Rancho Santa Margarita, California United States

www.szero.com

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Thermal Technologies, Inc.

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Tracy Cold Storage Construction, Inc. Point Lookout, New York United States www.tracycoldstorage.com

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ARCO National Construction Completes State-of-the-Art Cold Storage Facility for Cypress Cold Storage

"ARCO's ability to provide alternative solutions to improve overall cost-effectiveness and maximize square footage was truly invaluable. For example, ARCO redesigned the building, which resulted in a reduction of square footage by 15,000 square feet while simultaneously enhancing overall building efficiency and pallet position capacity." - Tony Nichols, CEO, Cypress Cold Storage

ARCO National Construction recently completed a 207,285 SF cold storage facility for Cypress Cold Storage, a provider of temperature-controlled warehouse space and value-added services for the food sector. Located in Springdale, Arkansas, the state-of-the-art facility features cutting-edge refrigeration and freezing technology and offers customers end-to-end flexible cold storage solutions.

Design Flexibility & Space Optimization

ARCO worked closely with Cypress Cold Storage to maximize square footage and overall building efficiency, redesigning their original concept layout and decreasing the overall square footage by 15,000 square feet. Despite the reduction in size, the optimized design increased pallet capacity and provided Cypress Cold Storage with significant cost savings.

Additionally, the facility features flexible and space maximization features, such as multiple convertible freezers capable of accommodating temperatures ranging from $-12^{\circ}F - 28^{\circ}F$ and max density racking for a total of over 22,000

pallet positions. The building's finish floor height was also established to allow for future rail docks in one of the convertible freezer spaces, allowing Cypress Cold Storage to quickly react to changing distribution channels.

The facility also features a central ammonia refrigeration system with roof-mounted penthouses and a prefabricated engine room enclosure, allowing Cypress Cold Storage to save valuable floor space.

Blast Freezing Capabilities

The facility features a blast freezing portion with in-rack freezing capable of handling 252 pallet positions. This advanced blast freezing technology enables Cypress Cold Storage to expedite freezing processes significantly — bringing product from 35°F to 0°F in 24 to 48 hours — while optimizing energy consumption.

ARCO successfully coordinated the construction and installation of the blast freezing capabilities during the initial phases of the project. This allowed for a streamlined building design to integrate the technology

seamlessly and a strategic sequencing plan to avoid potential schedule delays.

About ARCO National Construction

Backed by decades of experience and millions of square feet of cold storage space completed each year, ARCO National Construction's unparalleled industry expertise has established us as a trusted partner for food and beverage clients across the nation. Led by Vice President Brian Westre, our team of design-build experts can provide the best, most cost-effective solutions for clients' cold storage design and construction needs, regardless of project complexity or scale.



Brian Westre
ARCO NATIONAL
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Vice President &

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Industrial Products LLC

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Johns Manville

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Kingspan Insulated Panels Pty Ltd. St Marys, New South Wales Australia www.kingspanpanels.com.au

LTI Contracting

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Meadowwood Enterprises, LLC Canton, Georgia United States www.me-thermal.com

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Phase Change Solutions
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www.phasechange.com

Polyguard Products Ennis, Texas United States www.polyguardproducts.com

Preferred Construction, Inc. Schaumburg, Illinois United States

Republic Refrigeration, Inc. Monroe, North Carolina United States www.republicrefrigeration.com

Shadco LLC

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Versi-Foam

New Berlin, Wisconsin United States www.rhhfoamsystems.com

Insulated Panels

All Weather Insulated Panels Vacaville, California United States www.awipanels.com

Alliance Industrial Refrigeration Services, Inc.

Walnut, California United States www.therefrigerationalliance.com

AmeriPanel

Lowell, Arkansas United States www.ameri-panel.com

Anis Ahmed & Brothers

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ARI

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Askin Performance Panels - South Melbourne, Victoria

South Melbourne, Victoria Australia

BRUCHA Insulated Metal Panels

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Calfreeze Corp.

Maywood, California United States www.calfreezecorp.com

Coldmatic Building Systems Etobicoke, Ontario Canada www.coldmatic.com

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International Coolers, LLC
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KPS Global

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LTI Contracting

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Port of Spain, Trinidad and Tobago www.mecalfab.com

Metecno Colombia

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www.metecnocolombia.com

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Midwest Materials Company Joplin, Missouri United States www.midwestmaterials.com

Norbec Architectural Inc. Boucherville, Quebec Canada www.norbec.com

Open Concepts

Newport Beach, California United States www.openconcepts.biz

Panel Tech

Omaha, Nebraska United States www.paneltechmidwest.com

Panels Plus Inc

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Perley-Halladay Associates Inc. West Chester, Pennsylvania United States www.perleyhalladay.com

Permatherm

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SLATTING

Slatting occurs prior to the pallet entering the blast freezer. A warehouse associate inserts slats between each pallet layer. This requires tearing the pallet apart, inserting the slats, then rebuilding the pallet. It is time consuming, but essential for proper freezing because the slats allow air to flow over the top and bottom of every case.



DE-SLATTING

Once the product comes out of the blast freezer, the slats must be removed. This is even more difficult because moisture from the product can freeze to the slats. Operators often use crow bars to separate slats from the product. It is one of the most difficult jobs to fill and retain because of its physical demands and challenging surroundings.

THE SOLUTION

Primus's in-house automation design team, Primus Solutions Group, can work with you to determine the best automation solution. In this case, the recommendation would be integrating robots to slat and de-slat your product. This equipment can complete up to 20 pallets/hour, which is triple the amount that is typically completed manually (6-7 pallets/hour). The product can then be moved via conveyor to connect de-slatting with automatic stretch wrapping for a completely automated solution.





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