

COMMERCIAL CASE STUDY

Convoy of Hope



Springfield, Missouri



Keeping faith with donors through cost-effective VRF technology

Convoy of Hope is an international nonprofit based in Springfield, Missouri. Founded in 1994 by Hal Donaldson, the humanitarian organization strives to feed the world and end intergenerational poverty. Programs include training and equipping local farmers to create food security, feeding more than 533,000 children every school day worldwide, U.S. and international disaster response and empowering women as entrepreneurs and in the workforce. Since its founding, Convoy of Hope has served more than 250 million people and provided more than \$2.5 billion worth of supplies to those in need.

In 2021, Convoy of Hope's leadership decided that building a new headquarters and training center would improve the organization's ability to serve humanity. For the first time in its nearly 30-year existence, Convoy

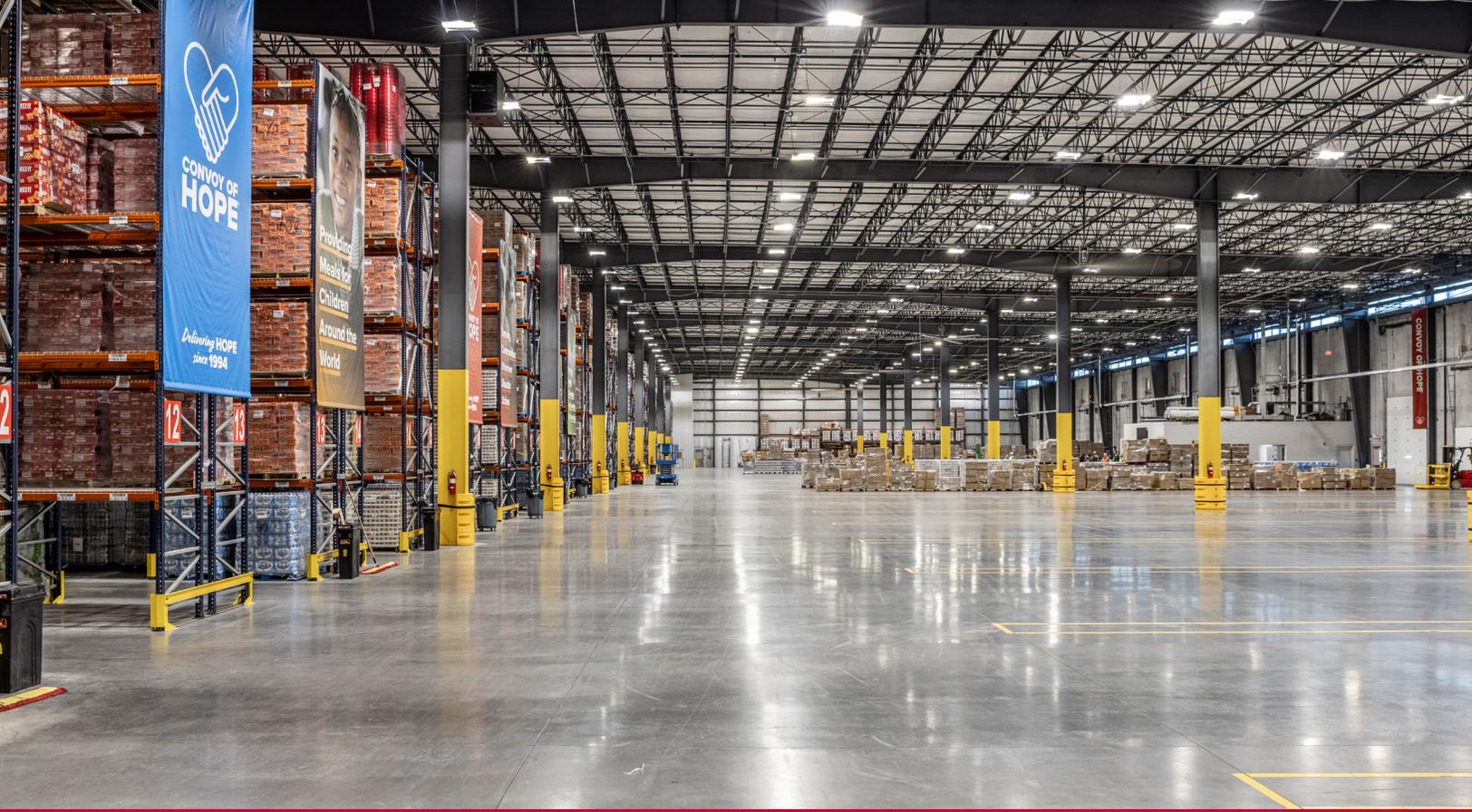
of Hope would bring staff together on one campus to tackle its global priorities. The new facility would be a point of pride in Springfield and connect team members in an inviting and comfortable setting. Additionally, the building would reflect the culture of the humanitarian organization and demonstrate good stewardship of financial resources.

“We're a non-profit organization, so we don't want to spend more than we need to. We need to be able to take care of the heating and cooling needs in a way that's efficient and cost-effective.”

- Ethan Forhetz, Vice President of Public Engagement, Convoy of Hope



Ahead of the Expected with LG HVAC Solutions



Project Highlights

Convoy of Hope's headquarters is a 200,000-square foot, modern, industrial-styled, open-concept, multi-use facility. The building houses a large atrium, auditorium, cafeteria, dining room, kitchen, open office spaces and private offices. More than 280 of the organization's 500-plus total employees work at the facility daily.

The project team, assembled in 2021, collaborated from the design phase through the grand opening in 2023. Buxton Kubik Dodd, Inc., a full-service design firm in Springfield, did the architectural design, interior design, and mechanical engineering. Knight Heating & Air Conditioning, a local, family-owned HVAC contractor, did the installation and project management with support from Fields Mechanical Systems, a local LG applied representative firm.

“We try to recommend a product to the customer that has good local representation. It usually boils down to who supports a product the best. So that's why we recommended LG.”

- Chris Knight, Vice President, Knight Heating and Air Conditioning



Challenges

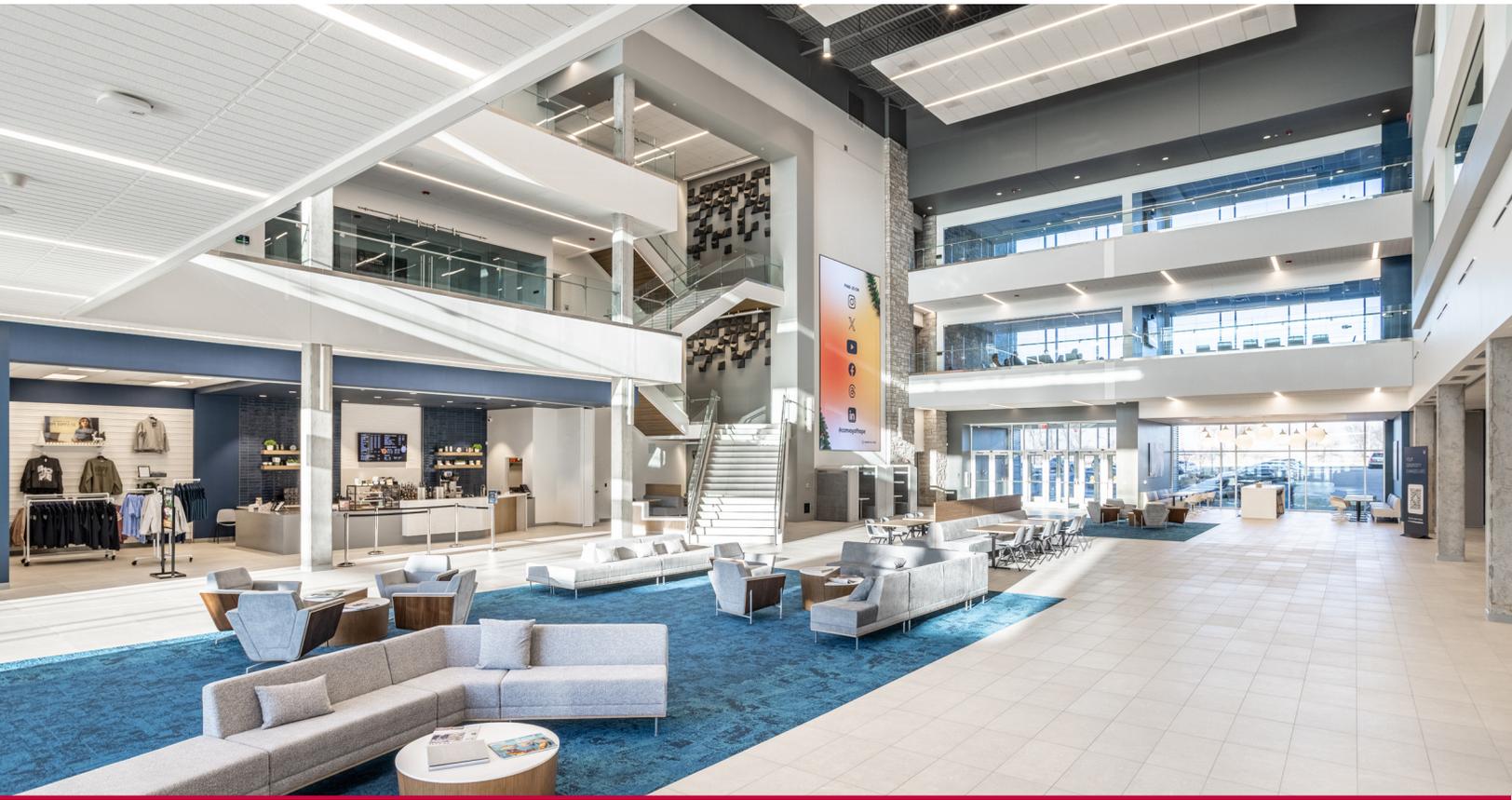
Load diversity was the project team's most significant challenge. Comfort requirements in the multi-use building vary by each space's purpose, solar orientation, time of day, glazing and whether the space is on the perimeter or interior. Southwest-facing offices have different heating and cooling needs than similar offices on the northeast side, as does the large, wide-open atrium versus the kitchen. On cold days when most of the building requires heating, some spaces still require cooling due to the facility's glass frontage. The heating and cooling system would need to satisfy diverse comfort requirements simultaneously throughout the seasons, as Missouri's weather ranged from intense heat to extreme cold.

The project team also considered acoustics while evaluating mechanical systems and designs. Convoy of Hope's headquarters embraces an industrial aesthetic, which includes hard floors and concrete, exposed ceilings. With large, open spaces and few surfaces to absorb noise, a noisy HVAC system would disturb employees and reduce each space's usability. The heating and cooling solution needed to operate quietly and fit in aesthetically.

Given the facility's size and profile in the community, Convoy of Hope tasked the project team with concealing the HVAC equipment so that it did not detract from the exterior appearance of the building. Thousands of cars pass the facility daily. The team rejected mechanical options that would have required extensive ductwork and equipment sitting in full view on the building's lower roofs. While hiding the equipment posed an engineering challenge, Convoy of Hope prioritized the building's beauty as part of being a good neighbor.

“The ability to handle varying loads comfortably and seamlessly was the main goal of the project.”

- Dylan Chorce, Principal Engineer, Buxton Kubik Dodd, Inc.





Solution

The project team decided that a variable refrigerant flow (VRF) system with heat recovery from LG would be the best and most cost-effective solution for meeting Convoy of Hope's needs.

“Early in the process, we knew LG was the partner we wanted to work with.”

- Dylan Chorce, Principal Engineer, Buxton Kubik Dodd, Inc.

LG's Multi V 5 system uses comprehensive controls and outdoor units with inverters to vary compressor speeds and heating and cooling capacity based on occupant comfort needs and ambient conditions. Every outdoor unit connects to multiple indoor units, each serving a zone within the building. With LG's inverter technology, the all-electric system uses minimal energy to move heat out of zones requiring cooling and transfer heat to zones that need heating.

“What LG does for us here is allow us to meet the unique needs of our building's individual spaces.”

- Ethan Forhertz, VP of Public Engagement, Convoy of Hope

The project team specified an LG Multi V 5 system with a heat-recovery unit to solve Convoy of Hope's load diversity challenge with simultaneous heating and cooling. VRF systems typically reject indoor heat to the outdoors during cooling and operate in one mode at a time: heating or cooling. Adding a heat-recovery unit enables LG's VRF system to transfer heat from zones in cooling mode and simultaneously use it to warm zones in heating mode. By repurposing heat instead of rejecting it, a VRF system with

heat recovery increases efficiency and cost savings while keeping diverse spaces comfortable. For example, the Multi V 5 can cool Convoy of Hope's southwest-facing offices and account for solar gain while using that heat to warm the building's cooler opposite side. The technology also allows Convoy of Hope to customize setpoints for each zone based on individual and administrator preferences. Powered by the Niagara 4 Framework®, LG's MultiSITE VM3 controls empower facility managers to visualize, monitor and control the entire VRF system.

The project team installed mid-static ducted units in the areas with covered ceilings. In the open office spaces with exposed high ceilings, the project team installed LG's DUAL Vane 4-way cassettes. The cassettes cover wide spaces and contribute to healthier air with a five-step filtration and purification kit. To better match the space's aesthetic requirements, the team placed shrouds on the cassettes, giving the units a cloud-like look that fits seamlessly into the design. The Multi V 5 solution also supported Convoy of Hope's aesthetic needs and reduced costs by requiring less ductwork than alternative systems.

LG's VRF system runs very quietly. Convoy of Hope team members can focus on their work without complaints about comfort or mechanical noise.

The Multi V 5's long, compact refrigerant lines enabled the project team to tackle the facility's exterior design challenges. By installing the VRF outdoor units on the third floor's roof, the project team kept the system out of sight to passing neighbors or people entering the parking lot. The refrigerant lines run from the upper roof and down the sides of the buildings to serve the lower floors without requiring units on the ground or the lower roofs.

Result

Convoy of Hope is currently listed among the top 50 organizations in the Forbes list of America's Top 100 Charities. With its new headquarters and training center, the organization is positioned to continue and grow its humanitarian work.

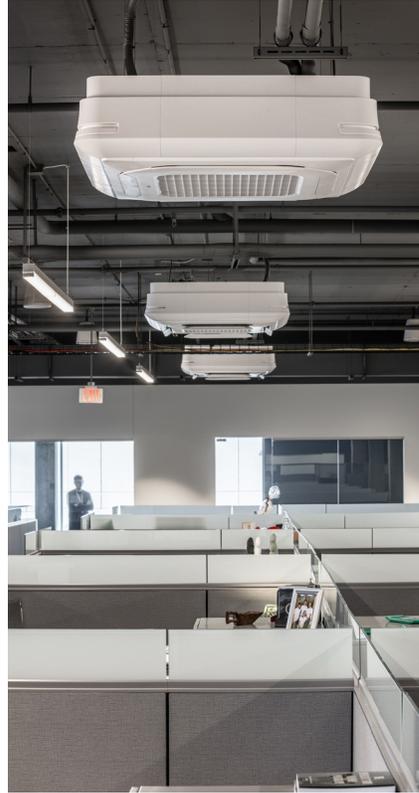
“It’s a brand-new building. It’s a big building. But it felt very homey right off the bat. I think a large part of that is because it’s very comfortable.”

- Ethan Forhetz, VP of Public Engagement, Convoy of Hope

LG’s Multi V 5 VRF system with heat recovery satisfies Convoy of Hope’s requirements across comfort, efficiency, acoustics and aesthetics. The facility is a community showpiece that helps the organization keep faith with its financial supporters through cost-effective operation.

“Convoy of Hope plans to be here for a very long time, so every dollar we can save on utility bills is another dollar they can put toward their mission, which is critically important.”

- Dylan Chorce, Principal Engineer, Buxton Kubik Dodd, Inc.



LG HVAC Products:

- Multi V 5 (20 - 40 Ton)
- MultiSITE VM3
- DUAL Vane 4way Cassettes
- Ceiling Concealed Duct Unit (Mid-Static)

Project Team:

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The individual(s) or company featured in this case study is a customer sharing their personal experience with LG Air Conditioning Technology products. Their statements are based on their personal opinions and experiences. The case study is intended for informational purposes only.